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SURFACE WATER SUPPLY *of the* UNITED STATES 1929

PART XII
NORTH PACIFIC SLOPE DRAINAGE BASINS
A. PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN

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CONTENTS

	Page
Authorization and scope of work	1
Definition of terms	2
Explanation of data	2
Accuracy of field data and computed results	4
Publications	5
Cooperation	10
Division of work	10
Gaging-station records	12
Drainage basins between Columbia River and Puget Sound	12
Naselle River Basin	12
Naselle River near Naselle, Wash	12
North River Basin	13
North River near Raymond, Wash	13
Chehalis River Basin	14
Chehalis River near Chehalis, Wash	14
Chehalis River near Grand Mound, Wash	15
Newaukum River near Chehalis, Wash	16
Skookumchuck River near Centralia, Wash	17
Satsop River near Satsop, Wash	18
Wynoochee River at Oxbow, near Aberdeen, Wash	19
Wynoochee River near Montesano, Wash	20
Quinault River Basin	21
Quinault River at Quinault Lake, Wash	21
Hoh River Basin	22
Hoh River near Spruce, Wash	22
Elwha River Basin	23
Elwha River at McDonald Bridge, near Port Angeles, Wash	23
Dungeness River Basin	24
Dungeness River near Sequim, Wash	24
Puget Sound Basins	25
Dosewallips River Basin	25
Dosewallips River at Brinnon, Wash	25
Hamma Hamma River Basin	27
Hamma Hamma River near Hoodsport, Wash	27
Skokomish River Basin	28
North Fork of Skokomish River below Staircase Rapids, near Hoodsport, Wash	28
North Fork of Skokomish River near Hoodsport, Wash	29
South Fork of Skokomish River near Potlatch, Wash	30
Nisqually River Basin	31
Nisqually River near La Grande, Wash	31
Little Nisqually River near Alder, Wash	32
Ohop Creek near Eatonville, Wash	33

Gaging-station records—Continued.
Puget Sound Basins—Continued. Page
Puyallup River Basin 34
Puyallup River at Puyallup, Wash 34
Kapowsin Creek near Kapowsin, Wash 35
Carbon River near Fairfax, Wash 36
White River at Greenwater, Wash 37
White River near Buckley, Wash 38
Greenwater River at Greenwater, Wash 39
Lake Washington Basin 40
Cedar River at Cedar Falls, Wash 40
Cedar River near Landsberg, Wash 41
Snohomish River Basin 42
Tye River near Skykomish, Wash 42
South Fork of Skykomish River near Skykomish, Wash 42
South Fork of Skykomish River near Index, Wash 43
Skykomish River near Gold Bar, Wash 44
Miller Creek at Miller River, Wash 45
North Fork of Skykomish River at Index, Wash 46
Wallace River at Gold Bar, Wash 47
Olney Creek near Startup, Wash 48
May Creek near Gold Bar, Wash 49
Sultan River near Sultan, Wash 50
Middle Fork of Snoqualmie River near North Bend, Wash 51
Snoqualmie River near Tolt, Wash 52
North Fork of Snoqualmie River near North Bend, Wash 53
South Fork of Snoqualmie River at North Bend, Wash 54
Tokul Creek near Snoqualmie, Wash 55
Tolt River near Tolt, Wash 56
Stillaguamish River Basin 58
South Fork of Stillaguamish River near Silvertown, Wash 58
South Fork of Stillaguamish River near Granite Falls, Wash 59
South Fork of Stillaguamish River near Arlington, Wash 61
Canyon Creek near Granite Falls, Wash 62
North Fork of Stillaguamish River near Arlington, Wash 63
Deer Creek at Oso, Wash 65
Pilchuck Creek near Bryant, Wash 66
Skagit River Basin 67
Skagit River below Ruby Creek, near Marblemount, Wash 67
Skagit River near Marblemount, Wash 68
Skagit River near Concrete, Wash 69
Thunder Creek near Marblemount, Wash 71
Cascade River at Marblemount, Wash 72
Sauk River above Whitechuck River, near Darrington, Wash 73
Sauk River at Darrington, Wash 74
Sauk River near Sauk, Wash 76
South Fork of Sauk River near Barlow Pass, Wash 78
Baker River below Anderson Creek, near Concrete, Wash 79
Upper Columbia River Basin 80
Main stream 80
Columbia River at Trail, British Columbia 80
Columbia River at Kettle Falls, Wash 81
Columbia River at Grand Coulee, near Nespelem, Wash 82
Columbia River at Vernita, Wash 85

Gaging-station records—Continued.
Upper Columbia River Basin—Continued. Page
Kootenai River Basin 87
Kootenai River near Rexford, Mont 87
Kootenai River at Libby, Mont 88
Kootenai River at Leonia, Idaho 89
Kootenai River at Katka, Idaho 90
Kootenai River at Boom Camp, near Bonners Ferry, Idaho 91
Kootenai River at Bonners Ferry, Idaho 92
Kootenai River near Bonners Ferry, Idaho 94
Kootenai River at Deep Creek near Bonners Ferry, Idaho 94
Kootenai River at Myrtle Creek, near Bonners Ferry, Idaho 95
Kootenai River at Klockmann ranch, near Bonners Ferry, Idaho 96
Kootenai River at Spurling ranch, near Copeland, Idaho 96
Kootenai River at DesVoigne ranch, near Copeland, Idaho 97
Kootenai River at Krause ranch, near Copeland, Idaho 98
Kootenai River at Ashby ranch, near Copeland, Idaho 98
Kootenai River at Copeland, Idaho 99
Kootenai River at Jerome Slough, near Copeland, Idaho 100
Kootenai River at Lucas Creek, near Port Hill, Idaho 101
Kootenai River at Port Hill, Idaho 102
Boulder Creek near Leonia, Idaho 104
Moyie River at Eileen, Idaho 105
Cow Creek near Bonners Ferry, Idaho 106
Deep Creek at Moravia, Idaho 107
Snow Creek near Moravia, Idaho 108
Caribou Creek near Moravia, Idaho 109
Myrtle Creek near Bonners Ferry, Idaho 110
Ball Creek near Bonners Ferry, Idaho 111
Trout Creek near Copeland, Idaho 112
Mission Creek at Copeland, Idaho 113
Rock Creek near Copeland, Idaho 114
Brush Creek near Copeland, Idaho 115
Parker Creek near Copeland, Idaho 116
Long Canyon Creek near Port Hill, Idaho 117
Smith Creek near Port Hill, Idaho 118
Boundary Creek near Port Hill, Idaho 119
Clark Fork Basin 120
Clark Fork above Missoula, Mont 120
Clark Fork at St. Regis, Mont 121
Clark Fork near Plains, Mont 122
Clark Fork near Heron, Mont 123
Pend Oreille Lake at Hope, Idaho 124
Clark Fork at Priest River, Idaho 125
Clark Fork below Z Canyon, near Metaline Falls, Wash 128
Flathead River near Trail Creek, Mont 129
Flathead River near Columbia Falls, Mont 130
Flathead River at Columbia Falls, Mont 131
Flathead River near Kalispell, Mont 132
Flathead River at Demersville, near Kalispell, Mont 133
Flathead River at Damon ranch, near Kalispell, Mont 134
Flathead River at Keller ranch, near Holt, Mont 135
Flathead Lake at Somers, Mont 136

Gaging-station records—Continued.
Upper Columbia River Basin—Continued.
Clark Fork Basin—Continued. Page
Flathead Lake at Polson, Mont 137
Flathead River near Polson, Mont 138
Middle Fork of Flathead River at Belton, Mont 139
South Fork of Flathead River, near Columbia Falls, Mont 140
Stillwater River near Kalispell, Mont 141
Whitefish River near Kalispell, Mont 142
Swan River near Big Fork, Mont 143
Big Creek near Polson, Mont 144
Priest Lake at outlet, near Coolin, Idaho 145
Priest River at outlet of Priest Lake, near Coolin, Idaho 146
Priest River at Priest River, Idaho 147
Kettle River Basin 148
Kettle River near Ferry, Wash 148
Colville River Basin 149
Colville River at Meyers Falls, Wash 149
Hall Creek Basin 150
Hall Creek at Inchelium, Wash 150
Stranger Creek Basin 151
Stranger Creek at Meteor, Wash 151
Spokane River Basin 152
Coeur d'Alene River near Cataldo, Idaho 152
Coeur d'Alene Lake at Coeur d'Alene, Idaho 153
Spokane River at Post Falls, Idaho 153
Spokane River at Spokane, Wash 155
Spokane River below Little Falls, near Long Lake, Wash 156
St. Joe River at Calder, Idaho 157
St. Maries River at Lotus, Idaho 158
Hayden Lake at Hayden Lake, Idaho 159
Spokane Valley Farms Co.'s canal at Post Falls, Idaho 160
Little Spokane River at Dartford, Wash 161
Nespelem River Basin 161
Nespelem River at Nespelem, Wash 161
Nespelem Canal at Nespelem, Wash 163
Okanogan River Basin 164
Osoyoos Lake near Oroville, Wash 164
Okanogan River near Tonasket, Wash 165
Similkameen River near Nighthawk, Wash 166
Sinlahekin Creek above Blue Lake, near Loomis, Wash 167
Methow River Basin 168
Methow River at Twisp, Wash 168
Chelan River Basin 169
Stehekin River at Stehekin, Wash 169
Lake Chelan at Chelan, Wash 170
Chelan River at Chelan, Wash 171
Railroad Creek at Lucerne, Wash 172
Wenatchee River Basin 173
Wenatchee River near Leavenworth, Wash 173
Wenatchee River at Peshastin, Wash 174
Phelps Creek near Plain, Wash 175

Gaging-station records—Continued
Upper Columbia River Basin—Continued. Page
Yakima River Basin 176
Yakima River near Martin, Wash 176
Yakima River at Cle Elum, Wash 177
Yakima River near Prosser, Wash 178
Kachess River near Easton, Wash 179
Cle Elum River near Roslyn, Wash 180
Bumping River near Nile, Wash 181
Tieton River at Tieton Dam, near Naches, Wash 182
Tieton River at headworks of Tieton Canal, near Naches, Wash 183
Tieton Canal near Naches, Wash 184
Miscellaneous discharge measurements 185
Index 187

ILLUSTRATION

Page
FIGURE 1. Typical river-measurement station showing concrete well and house for water-stage recorder and staff gages, cable, and car 3

SURFACE WATER SUPPLY OF PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN, 1929

AUTHORIZATION AND SCOPE OF WORK

This volume is one of a series of 14 reports presenting results of measurements of flow made on streams in the United States during the year ending September 30, 1929.

The data presented in these reports were collected by the United States Geological Survey under the following authority contained in the organic law (20 Stat. L., p. 394):

> *Provided*, That this officer [the director] shall have the direction of the Geological Survey and the classification of public lands and examination of the geological structure, mineral resources, and products of the national domain.

The work was begun in 1888 in connection with special studies relating to irrigation. Since the fiscal year ending June 30, 1895, successive appropriation bills passed by Congress have carried the following items:

> For gaging the streams and determining the water supply of the United States and for the investigation of underground currents and artesian wells, and for the preparation of reports upon the best methods of utilizing the water resources.

Annual appropriations for the fiscal years ending June 30, 1895–1930

1895	$12, 500. 00	1908–1910	$100, 000. 00	1926	$165, 000. 00
1896	24, 500. 00	1911–1917	150, 000. 00	1927	151, 000. 00
1897–1899	50, 000. 00	1918	175, 000. 00	1928	147, 000. 00
1900	70, 000. 00	1919	148, 244. 10	1929	270, 500. 00
1901–2	100, 000. 00	1920	175, 000. 00	1930	275, 000. 00
1903–1906	200, 000. 00	1921–1923	180, 000. 00		
1907	150, 000. 00	1924–25	170, 000. 00		

In the execution of the work many private and State organizations have cooperated, either by furnishing data or by assisting in collecting data. Acknowledgments for cooperation of the first kind are made in connection with the description of each station affected; cooperation of the second kind is acknowledged on page 10.

Measurements of stream flow have been made at about 5,830 points in the United States and also at many points in Alaska and the Hawaiian Islands. In July, 1929, 2,240 gaging stations were being maintained by the Geological Survey and the cooperating organizations. Many miscellaneous discharge measurements were

made at other points. In connection with this work data were also collected in regard to precipitation, evaporation, storage reservoirs, river profiles, and water power in many sections of the country and will be made available in water-supply papers from time to time.

DEFINITION OF TERMS

The volume of water flowing in a stream—the "run-off" or "discharge"— is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups—(1) those that represent a rate of flow, as second-feet, gallons per minute, miner's inches, and discharge in second-feet per square mile, and (2) those that represent the actual quantity of water, as run-off in inches, acre-feet, and millions of cubic feet. The principal terms used in this series of reports are second-feet, second-feet per square mile, run-off in inches, and acre-feet. They may be defined as follows:

"Second-feet" is an abbreviation for "cubic feet per second." A second-foot is the rate of discharge of water flowing in a channel of rectangular cross section 1 foot wide and 1 foot deep at an average velocity of 1 foot per second. It is generally used as a fundamental unit from which others are computed.

"Second-feet per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the run-off is distributed uniformly both as regards time and area.

"Run-off in inches" is the depth to which an area would be covered if all the water flowing from it in a given period were uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in inches.

An "acre-foot," equivalent to 43,560 cubic feet, is the quantity required to cover an acre to the depth of 1 foot. The term is commonly used in connection with storage for irrigation.

The following terms not in common use are here defined:

"Stage-discharge relation," an abbreviation for the term "relation of gage height to discharge."

"Control," a term used to designate the natural section or stretch of the channel or artificial structure below the gage which determines the stage-discharge relation at the gage.

EXPLANATION OF DATA

The data presented in this report cover the year beginning October 1, 1928, and ending September 30, 1929. At the beginning of January in most parts of the United States much of the precipitation in the preceding three months is stored in the form of snow or ice, or in ponds, lakes, and swamps, or as underground water and this

stored water passes off in the streams during the spring break-up. At the end of September, on the other hand, the only stored water available for run-off is possibly a small quantity in the ground; therefore the run-off for the year beginning October 1 is practically all derived from precipitation within that year.

The base data collected at gaging stations consist of records of stage, measurements of discharge, and general information used to

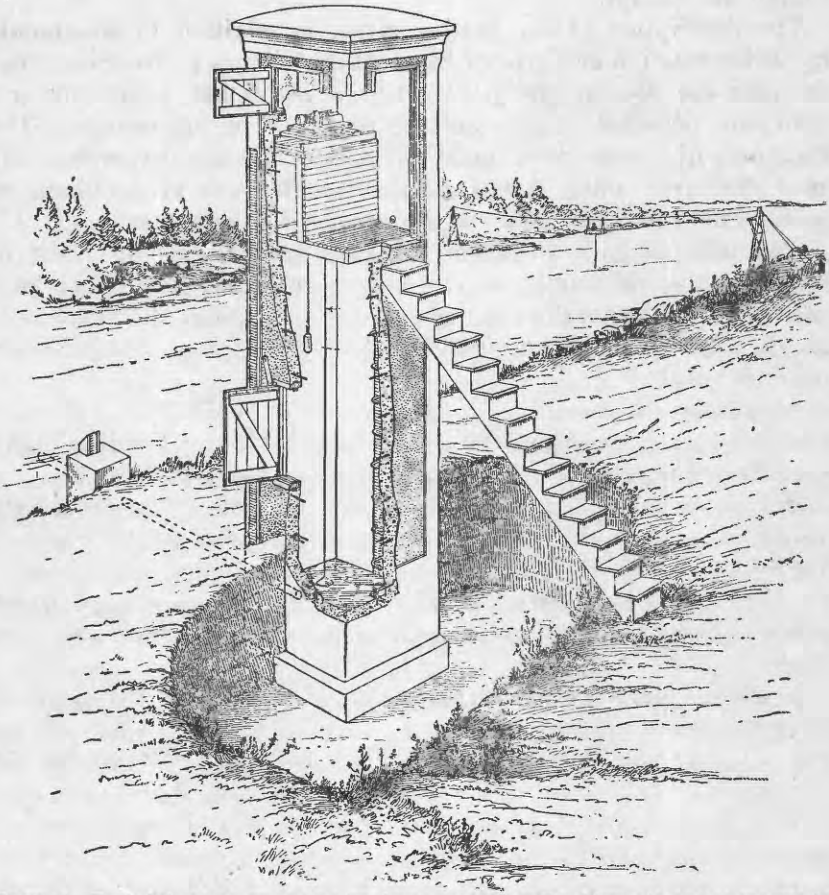

FIGURE 1.—Typical river-measurement station showing concrete well and house for water-stage recorder and staff gages, cable, and car

supplement the gage heights and discharge measurements in determining the daily flow. The records of stage are obtained either from direct readings on a staff gage or chain gage, or from a water-stage recorder that gives a continuous record of the fluctuations. Measurements of discharge are made with a current meter by the general methods outlined in standard textbooks on the measurement of river discharge. A typical gaging station, equipped with water-stage recorder and measuring cable and car, is shown in Figure 1.

From the discharge measurements rating tables are prepared that give the discharge for any stage. The application of the daily gage height to these rating tables gives the daily discharge from which the monthly and yearly mean discharge is computed.

The data presented for each gaging station in the area covered by this report comprise a description of the station, a table showing the daily discharge of the stream, and a table of monthly and yearly discharge and run-off.

The description of the station gives, in addition to statements regarding location and type of gage, information as to diversions that decrease the flow at the gage, artificial regulation, maximum and minimum recorded stages, and the accuracy of the records. The maximum discharge given under "Extremes" does not represent the crest discharge unless a water-stage recorder was in operation or unless a nonrecording gage was read at the time of the crest.

The table of daily discharge gives, in general, the discharge in second-feet corresponding to the daily gage height which may be a once daily reading or the mean of twice daily readings of a nonrecording gage, or the mean daily gage height obtained from a water-stage recorder graph.

At stations on streams subject to sudden or rapid diurnal fluctuation the discharge obtained from the rating table and the mean daily gage height may not be the true mean discharge for the day. If such stations are equipped with water-stage recorders, the mean daily discharge may be obtained by averaging discharge at regular intervals during the day or by using the discharge integrator, an instrument for obtaining mean daily discharge from a continuous gage-height graph and containing as an essential element the rating curve of the station.

In the table of monthly discharge the column headed "Maximum" gives the maximum daily discharge, and not the discharge when the water surface was at crest height. Likewise, in the column headed "Minimum" the quantity given is the minimum daily discharge. The column headed "Mean" is the average flow in cubic feet per second during the month. On this average flow are based computations recorded in the remaining columns, which are defined on page 2.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

The accuracy of stream-flow data depends primarily (1) on the permanency of the stage-discharge relation and (2) on the accuracy of observation of stage, measurements of flow, and interpretation of records.

The station description gives a statement in regard to the general accuracy of the records. "Excellent" indicates that records are

accurate within 5 per cent; "good," within 10 per cent; "fair," within 15 per cent; and "poor," 20 per cent or more.

The monthly means for any station may represent with high accuracy the quantity of water flowing past the gage, but the figures showing discharge per square mile and run-off in inches may be subject to gross errors caused by the inclusion of large noncontributing districts in the measured drainage area, by lack of information concerning water diverted for irrigation or other use, or by inability to interpret the effect of artificial regulation of the flow of the river above the station. "Second-feet per square mile" and "run-off in inches" are therefore not computed if such errors appear probable. The computations are also omitted for stations on streams draining areas in which the annual rainfall is less than 20 inches.

The table of monthly discharge gives a general idea of the flow at the station. The table of daily discharge allows more detailed studies of the variation in flow. It should be borne in mind, however, that the observations in each succeeding year may be expected to throw new light on data previously published.

Many gaging stations on streams in the irrigated areas of the United States are located above most of the diversions from those streams, and the discharge recorded does not show the water supply available for further development, as prior appropriations below the stations must first be satisfied.

PUBLICATIONS

Investigation of water resources by the United States Geological Survey has consisted in large part of measurements of the volume of flow of streams and studies of the conditions affecting that flow, but it has comprised also investigations of such closely allied subjects as irrigation, water storage, water powers, underground waters, and quality of waters. Most of the results of these investigations have been published in the series of water-supply papers, but some have appeared in the bulletins, professional papers, monographs, and annual reports.

The results of stream-flow measurements are now published annually in 12 parts, each part covering an area whose boundaries coincide with natural drainage features, as indicated below:

Part I. North Atlantic slope basins (St. John River to York River).
II. South Atlantic slope and eastern Gulf of Mexico basins (James River to the Mississippi.)
III. Ohio River Basin.
IV. St. Lawrence River Basin.
V. Hudson Bay and upper Mississippi River Basins.
VI. Missouri River Basin.
VII. Lower Mississippi River Basin.
VIII. Western Gulf of Mexico basins.

Part IX. Colorado River Basin.
X. The Great Basin.
XI. Pacific slope basins in California.
XII. North Pacific slope drainage basins in three parts:
A, Pacific slope basins in Washington and upper Columbia River Basin.
B, Snake River Basin.
C, Pacific slope basins in Oregon and lower Columbia River Basin.

Water-supply papers and other publications of the United States Geological Survey containing data in regard to the water resources of the United States may be obtained or consulted as indicated below:

1. Copies may be purchased at nominal cost from the Superintendent of Documents, Government Printing Office, Washington, D. C., who will, on application, furnish lists giving prices.

2. Sets of the reports may be consulted in the libraries of the principal cities in the United States.

3. Sets are available for consultation in the local offices of the water-resources branch of the Geological Survey, as follows:

Augusta, Me., Statehouse.
Boston, Mass., 2500 Customhouse.
Hartford, Conn., 318 State Office Building.
Albany, N. Y., 506 Broadway-Arcade Building.
Trenton, N. J., 710 Trenton Trust Building.
Harrisburg, Pa., Claster Building.
Charlottesville, Va., Brooks Museum, University of Virginia.
South Charleston, W. Va., Naval Ordnance Plant.
Asheville, N. C., 220 Post Office Building.
Columbia, S. C., 801 National Loan & Exchange Bank Building.
Ocala, Fla., Post Office Building.
Tuscaloosa, Ala., Post Office Building.
Chattanooga, Tenn., 630 Power Building.
Columbus, Ohio, Engineering Experiment Station, Ohio State University.
Indianapolis, Ind., 315 Federal Building.
Chicago, Ill., 1503 Consumers Building.
Madison, Wis., 337N State Capitol.
St. Paul, Minn., 202 Old State Capitol.
Topeka, Kans., 23 Federal Building.
Rolla, Mo., Rolla Building, School of Mines and Metallurgy.
Fort Smith, Ark., Post Office Building.
Austin, Tex., State Capitol.
Santa Fe, N. Mex., State Capitol.
Tucson, Ariz., 210 Post Office Building.
Denver, Colo., 403 Post Office Building.
Salt Lake City, Utah, 313 Federal Building.
Idaho Falls, Idaho, 228 Federal Building.
Boise, Idaho, Federal Building.
Helena, Mont., 416 Power Block.
Tacoma, Wash., 406 Federal Building.
Portland, Oreg., 606 Post Office Building.
San Francisco, Calif., 303 Customhouse.
Los Angeles, Calif., 751 South Figueroa Street, room 510.
Honolulu, Hawaii, Territorial Office Building.

A list of the Geological Survey's publications may be obtained by applying to the Director, United States Geological Survey, Washington, D. C.

Stream-flow records have been obtained at about 5,830 points in the United States, and the data obtained have been published in the reports tabulated below:

Stream-flow data in reports of the United States Geological Survey

[A=Annual Report; B=Bulletin; W=Water-Supply Paper]

Report	Character of data	Year
10th A, pt. 2	Descriptive information only	
11th A, pt. 2	Monthly discharge and descriptive information	1884 to Sept., 1890.
12th A, pt. 2	do	1884 to June 30, 1891.
13th A, pt. 3	Mean discharge in second-feet	1884 to Dec. 31, 1892.
14th A, pt. 2	Monthly discharge (long-time records, 1871 to 1893)	1888 to Dec. 31, 1893.
B 131	Descriptions, measurements, gage heights, and ratings	1893 and 1894.
16th A, pt. 2	Descriptive information only	
B 140	Descriptions, measurements, gage heights, ratings, and monthly discharge (also many data covering earlier years).	1895.
W 11	Gage heights (also gage heights for earlier years)	1896.
18th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also similar data for some earlier years).	1895 and 1896
W 15	Descriptions, measurements, and gage heights eastern United States, eastern Mississippi River, and Missouri River above junction with Kansas.	1897.
W 16	Descriptions, measurements, and gage heights, western Mississippi River below junction of Missouri and Platte, and western United States.	1897.
19th A, pt. 4	Descriptions measurements, ratings, and monthly discharge (also some long-time records).	1897.
W 27	Measurements, ratings, and gage heights, eastern United States, eastern Mississippi River, and Missouri River.	1898.
W 28	Measurements, ratings, and gage heights, Arkansas River and western United States.	1898.
20th A, pt. 4	Monthly discharge (also for many earlier years)	1898.
W 35 to 39	Descriptions, measurements, gage heights, and ratings	1899.
21st A, pt. 4	Monthly discharge	1899.
W 47 to 52	Descriptions, measurements, gage heights, and ratings	1900.
22d A, pt. 4	Monthly discharge	1900.
W 65, 66	Descriptions, measurements, gage heights, and ratings	1901.
W 75	Monthly discharge	1901.
W 82 to 85	Complete data	1902.
W 97 to 100	do	1903.
W 124 to 135	do	1904.
W 165 to 178	do	1905.
W 201 to 214	do	1906.
W 241 to 252	do	1907–8.
W 261 to 272	do	1909.
W 281 to 292	do	1910.
W 301 to 312	do	1911.
W 321 to 332	do	1912.
W 351 to 362	do	1913.
W 381 to 394	do	1914.
W 401 to 414	do	1915.
W 431 to 444	do	1916.
W 451 to 464	do	1917.
W 471 to 484	do	1918.
W 501 to 514	do	1919 and 1920.
W 521 to 534	do	1921.
W 541 to 554	do	1922.
W 561 to 574	do	1923.
W 581 to 594	do	1924.
W 601 to 614	do	1925.
W 621 to 634	do	1926.
W 641 to 654	do	1927.
W 661 to 674	do	1928.
W 681 to 694	do	1929.

The records at most of the stations discussed in these reports extend over a series of years. Miscellaneous measurements at many points other than regular gaging stations have been made each year

and are published under "Miscellaneous discharge measurements" at the end of each report in the same relative order as the regular gaging stations. An index of the reports containing records obtained prior to 1904 has been published in Water-Supply Paper 119.

The following table gives, by years and drainage basins, the numbers of the papers on surface-water supply published from 1899 to 1929. The data for any particular station will, as a rule, be found in the reports covering the years during which the station was maintained. For example, data for 1910 to 1920 for any station in the area covered by Part III are published in Water-Supply Papers 283, 303, 323, 353, 383, 403, 433, 453, 473, and 503, which contain records for the Ohio River Basin for those years.

Numbers of water-supply papers containing results of stream measurements, 1899–1929

[For basins included see p. 5]

Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII-A	XII-B	XII-C
1899 [a]	35	[b] 35, 36	36	36	36	[c] 36, 37	37	37	[d] 37, 38	38, [e] 39	38, [f] 39	38	38	38
1900 [g]	47, [h] 48	48	48, [i] 49	49	49	49, [j] 50	50	50	50	51	51	51	51	51
1901	65, 75	65, 75	65, 75	65, 75	[k] 65, 66, 75	66, 75	[k] 65, 66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75
1902	82	[b] 82, 83	83	[l] 82, 83	[k] 83, 85	84	[k] 83, 84	84	85	85	85	85	85	85
1903	97	[b] 97, 98	98	97	[k] 98, 99, [m] 100	99	[k] 98, 99	99	100	100	100	100	100	100
1904	[n] 124, [o] 125 [p] 126	[p] 126, 127	128	129	[k] 128, 130	130, [q] 131	[k] 128, 131	132	133	133, [r] 134	134	135	135	135
1905	[n] 165, [o] 166 [p] 167	[p] 167, 168	169	170	171	172	[k] 169, 173	174	175, [s] 177	176, [r] 177	177	178	178	[t] 177, 178
1906	[n] 201, [o] 202 [p] 203	[p] 203, 204	205	206	207	208	[k] 205, 209	210	211, [s] 213	212, [r] 213	213	214	214	214
1907–8	241	242	243	244	245	246	247	248	249	250, [r] 251	251	252	252	252
1909	261	262	263	264	265	266	267	268	269	270, [r] 271	271	272	272	272
1910	281	282	283	284	285	286	287	288	289	290	291	292	292	292
1911	301	302	303	304	305	306	307	308	309	310	311	312	312	312
1912	321	322	323	324	325	326	327	328	329	330	331	332–A	332–B	332–C
1913	351	352	353	354	355	356	357	358	359	360	361	362–A	362–B	362–C
1914	381	382	383	384	385	386	387	388	389	390	391	392	393	394
1915	401	402	403	404	405	406	407	408	409	410	411	412	413	414
1916	431	432	433	434	435	436	437	438	439	440	441	442	443	444
1917	451	452	453	454	455	456	457	458	459	460	461	462	463	464
1918	471	472	473	474	475	476	477	478	479	480	481	482	483	484
1919–20	501	502	503	504	505	506	507	508	509	510	511	512	513	514
1921	521	522	523	524	525	526	527	528	529	530	531	532	533	534
1922	541	542	543	544	545	546	547	548	549	550	551	552	553	554
1923	561	562	563	564	565	566	567	568	569	570	571	572	573	574
1924	581	582	583	584	585	586	587	588	589	590	591	592	593	594
1925	601	602	603	604	605	606	607	608	609	610	611	612	613	614
1926	621	622	623	624	625	626	627	628	629	630	631	632	633	634
1927	641	642	643	644	645	646	647	648	649	650	651	652	653	654
1928	661	662	663	664	665	666	667	668	669	670	671	672	673	674
1929	681	682	683	684	685	686	687	698	689	690	691	692	693	694

[a] Rating tables and index to Water-Supply Papers 35–39 contained in Water-Supply Paper 39. Tables of monthly discharge for 1899 in Twenty-first Annual Report, Part IV.
[b] James River only.
[c] Gallatin River.
[d] Green and Gunnison Rivers and Grand River above junction with Gunnison.
[e] Mohave River only.
[f] Kings and Kern Rivers and South Pacific slope basins.
[g] Rating tables and index to Water-Supply Papers 47–52 and data on precipitation, wells, and irrigation in California and Utah contained in Water-Supply Paper 52. Table of monthly discharge for 1900 in Twenty-second Annual Report, Part IV.
[h] Wissahickon and Schuylkill Rivers to James River.
[i] Scioto River.
[j] Loup and Platte Rivers near Columbus, Nebr., and all tributaries below junction with Platte.
[k] Tributaries of Mississippi from east.
[l] Lake Ontario and tributaries to St. Lawrence River proper.
[m] Hudson Bay only.
[n] New England rivers only.
[o] Hudson River to Delaware River, inclusive.
[p] Susquehanna River to Yadkin River, inclusive.
[q] Platte and Kansas Rivers.
[r] Great Basin in California except Truckee and Carson River Basins.
[s] Below junction with Gila.
[t] Rogue, Umpqua, and Siletz Rivers only.

COOPERATION

The work in Washington, Montana, and Idaho was carried on under cooperative agreements between the United States Geological Survey and the respective States. Cooperation with the States is effected under contracts made between the Director of the United States Geological Survey and the State engineers or other officials and authorized by legislative act appropriating money. Work in Washington was carried on in cooperation with the Department of Conservation and Development, Erle J. Barnes, director. Cooperative relations were administered by R. K. Tiffany, supervisor of hydraulics, division of water resources. Acknowledgments are due J. S. James, State engineer of Montana, and George N. Garter, commissioner of reclamation of Idaho, for cooperation in their respective States. Acknowledgments are also due the United States Department of State, the United States Bureau of Reclamation, the United States Forest Service, the United States Office of Indian Affairs, and the United States Weather Bureau for assistance, suggestions, and the freest use of data gathered exclusively for them and paid for by them. Acknowledgment is due also to the Corps of Engineers, United States Army, for financial assistance in collecting records published herein.

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DIVISION OF WORK

The data for stations in Washington and for Clark Fork at Priest River, Idaho, Coeur d'Alene Lake at Coeur d'Alene, Idaho, Spokane River at Post Falls, Idaho, and Spokane Valley Farms Co.'s canal at Post Falls, Idaho, were collected and prepared for publication under the direction of G. L. Parker, district engineer, assisted by D. J. F. Calkins, D. A. Dudley, R. B. Kilgore, Arthur Johnson, G. M. Thayer, M. C. Boyer, H. C. Woster, L. T. Gabrielsen, L. I. Meyer, R. J. Swanson, and A. P. Martinson.

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The data for stations in Idaho, except those mentioned above, and for Kootenai River near Rexford, Mont., Clark Fork near Heron, Mont., and Flathead River near Trail Creek, Mont., were collected and prepared for publication under the direction of C. G. Paulsen, district engineer, assisted by Berkeley Johnson, F. M. Veatch, R. G. Kasel, T. R. Newell, F. C. Craig, and Miss E. H. Haugse.

The data for stations in Yakima River Basin were collected and results computed under the general supervision of P. J. Preston, project manager, Yakima project, United States Bureau of Reclamation, by Paul Taylor, engineer in charge of hydrometric work, assisted by R. O. Crawford, F. A. Jenne, H. A. Seaman, and by J. S. Moore, superintendent of ditches, assisted by T. C. Mead.

The manuscript was assembled and reviewed by H. F. Hill, jr.

GAGING-STATION RECORDS

DRAINAGE BASINS BETWEEN COLUMBIA RIVER AND PUGET SOUND

NASELLE RIVER BASIN

NASELLE RIVER NEAR NASELLE, WASH.

LOCATION.—Staff gage in SW. ¼ sec. 1, T. 10 N., R. 9 W., 1½ miles above Salmon Creek and 3½ miles east of Naselle.
DRAINAGE AREA.—66 square miles.
RECORDS AVAILABLE.—May to September, 1929.
EXTREMES.—Maximum discharge during period, 864 second-feet June 18 (gage height, 4.50 feet); minimum, 26 second-feet Sept. 30 (gage height, 1.79 feet).
REMARKS.—Records good. No diversions or regulation above station.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	------	97	138	49	32	16	160	263	77	37	27
2	------	97	130	49	37	17	149	468	73	37	27
3	------	97	121	49	37	18	138	718	65	43	27
4	------	93	117	49	35	19	138	673	65	47	27
5	------	93	113	49	32	20	134	468	83	37	27
6	------	93	107	49	32	21	121	358	76	37	28
7	------	92	101	47	31	22	117	293	63	37	32
8	------	86	97	47	29	23	117	249	63	39	32
9	------	86	95	44	28	24	149	222	63	41	32
10	209	86	95	44	28	25	160	209	63	37	33
11	209	84	88	42	27	26	138	184	63	36	37
12	209	79	81	41	27	27	121	172	62	34	35
13	184	79	79	38	27	28	117	160	60	33	27
14	160	79	79	37	27	29	113	149	52	32	27
15	160	293	79	37	27	30	99	138	50	32	27
						31	97	------	49	32	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
May 10-31	209	97	145	2.20	1.80	6,330
June	718	79	209	3.17	3.54	12,400
July	138	49	82.2	1.25	1.44	5,050
August	49	32	40.7	.617	.71	2,500
September	37	27	30.0	.455	.51	1,790
The period						28,100

NORTH RIVER BASIN

NORTH RIVER NEAR RAYMOND, WASH.

LOCATION.—Water-stage recorder in sec. 6, T. 15 N., R. 9 W., 1¼ miles above Salmon Creek and 10 miles northwest of Raymond.

RECORDS AVAILABLE.—August, 1927, to September, 1929.

EXTREMES.—Maximum discharge during year, 5,660 second-feet Mar. 27 (gage height, 6.40 feet); minimum, 31 second-feet Sept. 16 (gage height, 0.46 foot).

1927–1929: Maximum discharge, 8,610 second-feet Nov. 24, 1927 (gage height, 7.8 feet); minimum, 16 second-feet Aug. 16, 1928 (gage height, 0.27 foot).

REMARKS.—Records good. Splash dam 800 feet above gage operated at irregular intervals.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	205	510	2,220	661	1,040	1,870	337	228	202	88	73
2	75	202	525	2,160	724	1,000	1,530	740	222	191	88	74
3	118	214	505	2,490	662	984	1,300	754	216	181	87	70
4	202	287	460	2,220	568	906	1,160	1,120	205	173	87	70
5	225	278	423	1,680	515	850	1,120	697	216	168	87	69
6	695	265	395	1,380	470	822	1,000	1,560	236	163	93	65
7	850	246	415	1,160	445	850	1,160	555	248	150	96	63
8	984	424	524	1,000	431	857	1,430	1,030	236	145	100	61
9	1,160	1,280	1,060	906	423	843	1,530	478	222	145	96	60
10	1,200	1,910	2,520	815	415	864	1,340	530	214	139	93	59
11	857	1,580	2,910	738	407	864	1,250	500	202	133	87	59
12	552	1,530	1,920	680	399	808	1,200	468	194	129	87	55
13	391	1,630	1,430	632	387	752	1,200	442	191	127	85	53
14	318	1,530	1,160	584	371	698	2,300	418	191	123	82	56
15	363	1,250	960	557	360	662	3,860	396	319	123	79	55
16	470	1,120	843	525	387	668	2,940	375	375	123	77	46
17	478	1,040	738	510	525	738	2,160	361	446	118	75	52
18	968	913	668	520	656	668	1,740	344	606	113	78	55
19	662	808	614	515	632	608	1,430	331	725	110	80	55
20	520	717	557	455	680	620	1,380	319	758	143	88	58
21	423	644	546	435	936	731	1,480	304	589	147	96	61
22	359	584	552	411	1,120	878	1,380	292	446	150	91	62
23	315	530	525	391	1,530	801	1,250	283	372	133	98	69
24	287	480	520	399	1,850	731	1,080	286	328	122	86	71
25	265	445	843	518	1,630	738	1,000	325	289	113	83	69
26	243	574	1,160	731	1,430	2,230	913	368	271	115	79	66
27	225	738	1,120	864	1,250	4,780	843	319	254	108	76	63
28	214	698	1,250	766	1,120	4,880	780	280	245	106	73	60
29	208	574	1,850	668	------	4,040	724	260	225	99	70	59
30	208	525	2,630	596	------	3,020	686	245	216	94	70	58
31	214	------	2,780	552	------	2,350	------	234	------	91	69	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,200	56	455	28,000
November	1,910	202	774	46,100
December	2,910	395	1,060	65,200
January	2,490	391	906	55,708
February	1,850	360	749	41,600
March	4,880	608	1,330	81,800
April	3,860	686	1,430	85,100
May	1,560	234	482	29,600
June	758	191	316	18,800
July	202	91	135	8,300
August	100	69	84.6	5,200
September	74	46	61.5	3,660
The year	4,880	46	648	469,000

CHEHALIS RIVER BASIN

CHEHALIS RIVER NEAR CHEHALIS, WASH.

LOCATION.—Chain gage on line between secs. 1 and 2, T. 13 N., R. 3 W., at highway bridge 1½ miles above Newaukum River and southwest of Chehalis.
DRAINAGE AREA.—465 square miles.
RECORDS AVAILABLE.—February to September, 1929.
EXTREMES.—Maximum discharge during period, 7,630 second-feet Apr. 15 (gage height, 23.86 feet); minimum, 60 second-feet Sept. 27 (gage height, 1.43 feet).
REMARKS.—Records good. No diversions or regulation above station.

Daily and monthly discharge, in second-feet, 1929

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	1,640	2,760	1,160	402	[a] 292	138	88
2	------	1,670	2,200	1,070	381	283	[a] 135	[a] 91
3	------	1,580	2,020	1,100	381	283	132	94
4	------	1,460	1,950	1,070	381	[a] 265	132	74
5	------	1,430	1,790	1,040	381	247	[a] 122	88
6	------	1,400	1,400	1,040	361	[a] 247	112	88
7	------	1,280	1,580	1,010	361	247	[a] 118	[a] 85
8	------	1,280	1,280	980	341	[a] 242	125	82
9	------	1,220	1,160	950	321	238	[a] 121	[a] 80
10	------	1,700	1,640	770	321	[a] 238	[a] 117	77
11	------	1,700	2,160	713	321	238	[a] 113	[a] 76
12	------	1,490	1,980	619		[a] 238	[a] 109	76
13	------	1,310	2,370	575		238	[a] 105	75
14	------	1,220	7,180	575	[a] 550	238	[a] 101	[a] 74
15	------	1,100	7,630	553		[a] 225	[a] 97	73
16	------	1,190	6,410	575		212	94	[a] 73
17	------	1,160	4,490	531	800	[a] 193	100	[a] 73
18	------	1,040	4,220	531	1,370	174	94	[a] 73
19	------	950	3,660	509	1,850	166	[a] 91	73
20	------	950	2,900	487	1,250	[a] 170	88	75
21	------	1,280	2,540	487	[a] 934	174	94	[a] 83
22	------	1,250	2,160	444	619	[a] 174	94	[a] 91
23	------	1,220	1,790	444	553	174	88	100
24	------	1,070	1,640	423	[a] 498	[a] 170	[a] 106	112
25	------	920	1,670	402	444	166	125	100
26	------	3,520	1,520	402	[a] 412	[a] 162	82	65
27	------	7,010	1,430	402	381	159	[a] 89	60
28	1,790	6,330	1,370	402	361	152	[a] 97	62
29	------	5,570	1,280	423	341	[a] 148	[a] 104	132
30	------	4,810	1,250	423	302	145	112	76
31	------	3,360	------	423	------	[a] 142	94	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
February 28	------	------	------	------	------	3,550
March	7,010	920	2,040	4.39	5.06	125,000
April	7,630	1,160	2,580	5.55	6.19	154,000
May	1,160	402	662	1.42	1.64	40,700
June	1,850	302	561	1.21	1.35	33,400
July	292	142	208	.447	.52	12,800
August	138	82	107	.230	.27	6,580
September	132	60	82.3	.177	.20	4,900
The period	------	------	------	------	------	381,000

[a] Estimated.

CHEHALIS RIVER NEAR GRAND MOUND, WASH.

LOCATION.—Staff gage in NW. ¼ sec. 23, T. 15 N., R. 3 W., at Meadow, 1½ miles southwest of Grand Mound.

DRAINAGE AREA.—928 square miles.

RECORDS AVAILABLE.—October, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period, 13,500 second-feet Mar. 27 (gage height, 7.94 feet); minimum, 170 second-feet Aug. 13, 17, and Sept. 13 (gage height, 0.22 foot).

REMARKS.—Records good. Cities of Chehalis and Centralia divert about 15 second-feet from Newaukum River, a tributary, for municipal use. No noticeable regulation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	272	950	7,260	1,730	3,080	5,500	1,730	610	690	240	185
2	------	266	1,000	7,260	1,660	2,920	6,070	1,730	650	645	228	196
3	------	260	900	7,660	1,730	2,920	5,310	2,010	610	600	214	208
4	------	284	800	7,860	1,870	2,610	3,240	2,010	570	560	228	180
5	------	390	710	5,500	1,660	2,610	2,920	2,160	650	560	199	185
6	------	327	665	5,310	1,520	2,610	2,610	2,010	695	520	202	196
7	------	314	665	4,240	1,320	2,460	2,610	1,870	610	520	202	190
8	------	320	800	2,760	1,010	2,310	3,400	1,800	610	512	193	188
9	------	524	1,380	2,460	950	2,310	3,240	1,730	535	488	188	178
10	1,660	2,140	8,490	2,160	950	3,240	3,080	1,660	535	448	190	185
11	1,100	3,690	7,690	2,010	895	3,730	3,400	1,450	535	440	180	185
12	710	2,810	4,670	1,730	895	3,240	3,240	1,380	500	433	172	185
13	540	2,400	3,690	1,590	895	2,760	3,240	1,380	500	426	170	170
14	446	2,020	2,530	1,590	840	2,460	5,310	1,130	535	370	175	185
15	446	1,660	2,140	1,320	840	2,160	13,200	1,070	650	370	180	202
16	540	1,430	2,020	1,260	950	2,310	10,800	1,010	1,130	364	178	196
17	710	1,380	1,430	1,190	1,130	2,460	6,260	950	1,130	346	172	185
18	850	1,210	1,320	1,190	2,010	2,160	5,880	950	1,590	334	175	182
19	665	1,100	1,320	1,380	2,010	2,010	5,690	895	2,540	334	178	185
20	540	950	1,100	1,190	2,760	1,870	5,500	840	2,040	346	188	190
21	453	800	1,000	1,190	4,410	2,760	5,310	790	1,590	398	185	211
22	439	755	1,050	1,070	5,310	2,920	4,770	740	1,420	391	188	248
23	390	710	950	1,010	5,310	2,610	3,900	740	1,120	328	190	236
24	348	665	900	950	5,310	2,310	3,400	695	1,020	305	214	220
25	334	620	1,430	1,450	4,950	2,010	2,920	1,010	920	290	214	214
26	320	665	2,400	2,760	4,410	3,730	2,460	1,010	825	290	205	205
27	308	1,660	3,690	2,760	3,730	13,500	2,310	895	780	280	188	202
28	290	1,320	3,090	2,610	3,240	11,900	2,160	695	735	252	188	202
29	284	1,100	5,550	2,610	------	11,000	2,160	695	690	270	185	214
30	284	1,000	10,800	1,800	------	9,520	1,870	650	690	236	182	211
31	290	------	9,730	1,800	------	7,660	------	650	------	224	185	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October 10–31	1,660	284	543	0.585	0.48	23,700
November	3,690	260	1,100	1.19	1.33	65,500
December	10,800	665	2,740	2.95	3.40	168,000
January	7,860	950	2,800	3.02	3.48	172,000
February	5,310	840	2,300	2.48	2.58	128,000
March	13,500	1,870	3,940	4.25	4.90	242,000
April	13,200	1,870	4,390	4.73	5.28	261,000
May	2,160	650	1,240	1.34	1.54	76,200
June	2,540	500	900	.970	1.08	53,600
July	690	224	405	.436	.50	24,900
August	240	170	193	.208	.24	11,900
September	248	170	197	.212	.24	11,700
The period	------	------	------	------	------	1,240,000

NEWAUKUM RIVER NEAR CHEHALIS, WASH.

LOCATION.—Staff gage on line between secs. 9 and 16, T. 13 N., R. 2 W., 3 miles above mouth of river and southeast of Chehalis.
DRAINAGE AREA.—158 square miles.
RECORDS AVAILABLE.—March to September, 1929.
EXTREMES.—Maximum discharge during period, 2,880 second-feet Mar. 27 (gage height, 7.40 feet); minimum, 32 second-feet Sept. 8–20.
REMARKS.—Records excellent. Cities of Chehalis and Centralia divert about 15 second-feet for municipal use. No regulation.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	735	1,060	353	122	80	42	43
2	797	647	405	129	76	42	42
3	705	564	379	114	73	45	36
4	647	537	379	110	70	44	35
5	675	510	379	131	68	42	34
6	619	431	379	142	68	40	34
7	537	510	379	127	65	39	33
8	537	619	353	110	66	39	32
9	510	564	379	106	68	38	32
10	861	619	316	106	65	38	32
11	735	675	290	106	65	37	32
12	647	591	278	94	62	37	32
13	537	619	266	98	60	37	32
14	483	1,750	240	135	60	37	32
15	457	1,500	228	228	58	36	32
16	564	1,260	204	316	56	36	32
17	510	925	192	290	56	36	32
18	457	735	180	303	54	36	32
19	405	647	180	405	54	42	32
20	483	829	168	303	56	39	32
21	960	861	168	228	61	37	36
22	829	705	157	204	54	36	56
23	647	591	150	157	52	42	52
24	564	537	168	139	51	56	42
25	483	483	216	122	50	41	38
26	1,030	431	180	114	50	38	36
27	2,420	405	153	104	54	36	37
28	1,700	405	137	96	47	35	35
29	1,460	457	127	89	46	35	34
30	1,260	405	122	83	44	35	34
31	960	------	120	------	44	35	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March	2,420	405	781	48,000
April	1,750	405	696	41,400
May	405	120	246	15,100
June	405	83	160	9,520
July	80	44	59.1	3,630
August	56	35	39.0	2,400
September	56	32	35.8	2,130
The period				122,000

SKOOKUMCHUCK RIVER NEAR CENTRALIA, WASH.

LOCATION.—Staff gage in NE. ¼ sec. 18, T. 15 N., R. 1 E., about 15 miles northeast of Centralia.

DRAINAGE AREA.—60 square miles.

RECORDS AVAILABLE.—April to September, 1929.

EXTREMES.—Maximum discharge during period, 1,470 second-feet Apr. 14 (gage height, 5.60 feet); minimum, 23 second-feet Sept. 15–20 (gage height, 1.38 feet).

REMARKS.—Records good. Discharge, 259 second-feet Feb. 26, result of current-meter measurement. No diversions or regulation above station.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	212	191	90	61	34	34	16	722	133	152	42	28	23
2	212	212	79	58	34	28	17	560	124	181	42	28	23
3	212	222	73	56	34	27	18	449	116	212	41	30	23
4	212	233	69	54	33	25	19	381	116	308	41	32	23
5	212	233	69	53	33	25	20	467	116	222	46	30	24
6	212	222	69	52	33	25	21	522	108	161	43	28	26
7	268	201	67	50	31	24	22	467	108	133	39	28	30
8	244	201	65	49	31	24	23	398	101	108	39	36	31
9	222	244	62	48	31	24	24	350	116	94	39	34	30
10	212	212	60	47	31	24	25	308	133	86	37	29	27
11	244	201	58	46	30	24	26	294	101	80	39	28	30
12	244	191	56	44	30	24	27	268	93	75	38	27	26
13	256	181	62	44	30	24	28	244	86	71	36	27	25
14	970	171	65	43	30	24	29	233	80	67	36	27	24
15	860	142	116	43	30	23	30	212	79	62	36	27	24
							31	------	79	------	34	27	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
April	970	212	356	5.93	6.62	21,200
May	244	79	153	2.55	2.94	9,410
June	308	56	102	1.70	1.90	6,070
July	61	34	44.4	.740	.85	2,730
August	36	27	30.4	.507	.58	1,870
September	34	23	25.6	.427	.48	1,520
The period						42,800

SATSOP RIVER NEAR SATSOP, WASH.

LOCATION.—Staff gage in sec. 36, T. 18 N., R. 7 W., 1 mile west of Satsop.
DRAINAGE AREA.—315 square miles.
RECORDS AVAILABLE.—March to September, 1929.
EXTREMES.—Maximum discharge during period, 8,870 second-feet Apr. 14 (gage height, 8.80 feet); minimum, 220 second-feet Sept. 11–22 and 25–30.
REMARKS.—Records good. Discharge estimated Mar. 9. No diversions or regulation above station.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	2,430	1,250	588	560	322	260
2	------	2,170	1,820	560	535	322	245
3	------	1,930	1,710	560	510	305	245
4	------	1,820	1,510	535	485	305	245
5	------	1,610	1,420	535	485	305	245
6	------	1,510	1,330	535	460	305	232
7	1,180	1,710	1,250	535	438	305	232
8	1,180	1,710	1,250	510	438	290	232
9	1,370	1,610	1,250	510	415	290	232
10	1,560	1,610	1,170	485	438	290	232
11	1,270	1,930	1,090	485	415	275	220
12	1,180	1,930	1,020	485	415	275	220
13	1,100	2,170	1,020	460	395	275	220
14	1,100	8,870	940	460	395	275	220
15	1,100	5,470	905	675	395	275	220
16	1,270	4,750	870	735	375	260	220
17	1,270	3,750	835	1,710	375	260	220
18	1,180	2,990	800	2,170	375	290	220
19	1,100	2,710	800	2,050	358	290	220
20	1,270	2,850	768	1,420	438	275	220
21	1,560	2,850	735	1,170	438	275	220
22	1,360	2,430	735	1,020	415	275	220
23	1,180	2,300	735	870	415	358	232
24	1,100	2,050	768	800	395	305	232
25	1,100	1,930	800	735	375	275	220
26	7,130	1,820	735	705	375	275	220
27	6,750	1,610	675	705	358	260	220
28	7,890	1,510	675	645	340	260	220
29	5,290	1,420	645	615	340	245	220
30	3,910	1,330	615	560	340	245	220
31	2,990	------	615	------	322	245	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
March 7–31	7,890	1,100	2,300	7.30	6.79	114,000
April	8,870	1,330	2,490	7.90	8.81	148,000
May	1,820	615	992	3.15	3.63	61,000
June	2,170	460	794	2.52	2.81	47,200
July	560	322	413	1.31	1.51	25,400
August	358	245	284	.902	1.04	17,500
September	260	220	227	.721	.80	13,500
The period	------	------	------	------	------	427,000

WYNOOCHEE RIVER AT OXBOW, NEAR ABERDEEN, WASH.

LOCATION.—Water-stage recorder in sec. 12, T. 21 N., R. 8 W., 1 mile below Oxbow and 24 miles northeast of Aberdeen.

DRAINAGE AREA.—65 square miles.

RECORDS AVAILABLE.—May, 1925, to September, 1929.

EXTREMES.—Maximum discharge during year, 5,560 second-feet Mar. 28 (gage height, 16.3 feet); minimum, 87 second-feet Sept. 30 (gage height, 2.21 feet).

1925–1929: Maximum discharge, 9,910 second-feet Jan. 12, 1928 (gage height, 21.9 feet); minimum, 80 second-feet Oct. 23 and 24, 1925 (gage height, 0.27 foot).

REMARKS.—Records excellent except those for Oct. 1–15, Dec. 24 to Jan. 7, May 13 to June 7, and June 12 to July 7, which are good. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	390	257	439	1,200	264	312	740	535	350	350	155	113
2		250	418	1,350	250	320	665	1,030	340	350	154	110
3		318	387	1,100	243	312	604	942	320	330	153	109
4		559	367	980	229	338	558	765	320	310	150	105
5		470	348	870	229	357	513	690	340	280	144	104
6	1,990	502	338	770	216	357	470	616	370	260	142	102
7		418	418	660	216	387	481	569	330	260	141	100
8		1,370	830	580	204	377	460	580	348	257	138	98
9		2,770	2,420	546	204	491	439	569	348	250	137	97
10		2,460	2,200	513	198	690	460	546	329	242	134	97
11	930	2,150	1,340	492	198	535	502	580	329	242	132	96
12		3,110	1,220	470	193	460	558	665	330	227	132	96
13		2,420	1,020	450	193	408	691	640	330	220	128	95
14		1,440	840	439	188	367	2,340	600	320	213	127	95
15		1,100	715	418	188	387	1,490	570	550	213	125	95
16	763	1,020	616	397	193	450	1,370	530	800	199	124	95
17	866	865	569	377	193	439	1,100	500	1,400	192	122	94
18	616	740	513	377	183	397	916	500	1,850	186	126	93
19	492	665	492	348	188	377	840	550	1,550	180	129	92
20	428	616	460	329	204	418	942	600	1,300	206	125	93
21	387	569	513	320	198	604	968	580	900	186	120	97
22	377	535	481	312	269	524	840	620	800	192	139	95
23	367	492	513	295	450	450	815	620	680	250	173	95
24	329	460	650	303	367	408	790	670	560	206	143	95
25	312	460	1,300	320	418	434	790	730	530	186	130	94
26	295	640	1,200	320	377	1,720	815	560	510	213	125	92
27	280	569	1,100	295	348	2,660	790	400	470	192	119	90
28	272	502	1,100	287	320	3,470	715	400	397	180	116	88
29	280	460	1,780	280	-------	1,540	640	400	350	167	114	88
30	280	450	1,500	264	-------	1,100	580	380	350	167	112	87
31	257	-------	1,200	257	-------	865	-------	360	-------	159	111	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	----------	----------	747	45,900
November	3,110	250	955	56,800
December	2,420	338	880	54,100
January	1,350	257	514	31,600
February	450	183	247	13,700
March	3,470	312	708	43,500
April	2,340	439	796	47,400
May	1,030	360	590	36,300
June	1,850	320	590	35,100
July	350	159	228	14,000
August	173	111	133	8,180
September	113	87	96.7	5,750
The year	----------	87	542	392,000

WYNOOCHEE RIVER NEAR MONTESANO, WASH.

LOCATION.—Staff gage in sec. 36, T. 20 N., R. 8 W., at Waters ranch, 3 miles below Shafer Creek and 14 miles north of Montesano.

DRAINAGE AREA.—About 105 square miles.

RECORDS AVAILABLE.—February, 1923, to September, 1929.

EXTREMES.—Maximum discharge during year, 6,400 second-feet Mar. 28 (gage height, 7.50 feet); minimum, 100 second-feet Sept. 28–30 (gage height, 1.30 feet).

1923–1929: Maximum discharge, about 25,000 second-feet Feb. 11, 1924 (gage height, 17.0 feet); minimum, that of Sept. 28–30, 1929.

REMARKS.—Records excellent. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	145	349	605	1,930	370	515	1,160	635	440	415	190	132
2	306	349	575	2,540	370	515	1,000	1,160	415	415	187	132
3	271	392	515	2,320	328	490	888	1,320	392	392	187	125
4	980	705	490	1,750	328	490	812	1,080	392	370	183	122
5	765	575	465	1,400	308	515	740	888	415	349	180	122
6	1,180	670	440	1,240	308	515	670	812	440	328	174	118
7	1,900	545	465	1,080	288	575	705	740	392	328	167	118
8	2,100	1,320	670	925	288	545	705	740	392	308	167	115
9	4,100	3,820	3,010	812	288	575	670	740	392	308	161	113
10	1,840	3,540	3,820	740	269	1,000	670	705	392	288	161	113
11	2,020	2,890	2,220	670	269	775	812	740	370	288	154	111
12	888	3,540	1,930	635	269	670	850	775	370	269	148	109
13	740	3,540	1,570	605	250	575	1,000	740	370	269	148	109
14	670	2,120	1,240	575	250	515	3,960	705	370	269	148	109
15	812	1,570	1,080	545	250	605	2,540	670	605	269	143	104
16	812	1,570	888	545	269	605	2,120	635	962	250	140	104
17	1,400	1,240	812	515	269	605	1,750	575	2,020	239	138	104
18	925	1,080	705	515	269	575	1,400	575	2,540	232	154	104
19	740	962	635	490	269	515	1,240	635	2,120	228	151	104
20	635	850	605	440	328	545	1,320	670	1,400	221	148	104
21	575	775	670	440	328	850	1,320	635	1,000	214	148	109
22	545	705	670	415	415	775	1,240	670	850	232	207	109
23	515	635	635	392	888	635	1,080	670	740	269	204	104
24	490	575	775	415	670	575	1,080	740	635	269	177	104
25	440	545	2,320	415	775	575	1,080	850	605	232	154	104
26	415	888	1,750	465	670	2,650	1,000	635	575	250	148	104
27	415	850	1,400	415	635	3,010	1,000	545	515	243	143	104
28	370	705	1,400	415	545	5,280	925	490	490	225	138	102
29	370	635	3,540	392	-------	2,540	850	490	415	211	135	100
30	392	605	2,650	392	-------	1,750	740	465	415	200	132	100
31	370	-------	1,930	370	-------	1,400	-------	440	-------	197	132	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	4,100	145	907	55,800
November	3,820	349	1,280	76,200
December	3,820	440	1,310	80,600
January	2,540	370	800	49,200
February	888	250	384	21,300
March	5,280	490	1,020	62,700
April	3,960	670	1,180	70,200
May	1,320	440	715	44,000
June	2,540	370	714	42,500
July	415	197	277	17,000
August	207	132	160	9,840
September	132	100	110	6,550
The year	5,280	100	740	536,000

QUINAULT RIVER BASIN

QUINAULT RIVER AT QUINAULT LAKE, WASH.

LOCATION.—Water-stage recorder in sec. 25, T. 23 N., R. 10 W., at outlet of Quinault Lake and 4 miles southwest of Quinault.

DRAINAGE AREA.—264 square miles.

RECORDS AVAILABLE.—October, 1911, to December, 1922; July, 1924, to September, 1929.

EXTREMES.—Maximum discharge during year, 10,300 second-feet Nov. 13 (gage height, 7.44 feet); minimum, 305 second-feet Sept. 30 (gage height, 0.79 foot). 1911–1922, 1924–1929: Maximum discharge, 37,000 second-feet Dec. 12, 1921 (gage height, 16.3 feet); minimum, 285 second-feet Sept. 20, 1924.

REMARKS.—Records good. Discharge estimated Mar. 1–3. No diversions above station. Slight regulation caused by natural storage in lake.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	394	967	1,360	3,400	783	887	3,110	2,090	2,220	2,350	1,050	568
2	618	949	1,290	3,870	776	892	2,620	2,620	2,090	2,350	1,010	552
3	758	985	1,230	4,030	751	896	2,280	3,400	1,970	2,280	985	535
4	1,180	1,290	1,170	3,560	726	900	2,030	3,330	1,970	2,220	932	508
5	1,730	1,460	1,110	2,970	709	924	1,850	2,970	2,090	2,090	883	503
6	2,470	1,620	1,070	2,480	674	957	1,680	2,690	2,280	2,030	845	476
7	4,200	1,620	1,090	2,160	662	1,010	1,680	2,480	2,280	1,970	810	461
8	5,390	1,920	1,310	1,910	640	1,010	1,620	2,280	2,350	1,910	789	455
9	9,360	4,950	3,070	1,730	618	1,080	1,510	2,220	2,350	1,850	776	440
10	7,150	6,350	5,010	1,560	612	1,460	1,410	2,220	2,350	1,790	764	435
11	4,820	7,360	5,200	1,510	584	1,620	1,460	2,280	2,350	1,730	745	419
12	3,480	9,130	4,550	1,410	574	1,510	1,460	2,550	2,280	1,620	732	414
13	2,690	9,600	4,030	1,360	557	1,410	1,560	2,900	2,280	1,510	709	414
14	2,220	6,950	3,330	1,300	546	1,310	2,660	2,900	2,360	1,510	697	404
15	2,160	5,200	2,760	1,240	535	1,290	3,630	2,760	2,950	1,510	674	409
16	2,220	4,110	2,350	1,180	541	1,310	3,630	2,620	4,110	1,460	657	404
17	2,760	3,330	2,090	1,150	546	1,300	3,560	2,550	5,960	1,410	646	404
18	2,620	2,830	1,850	1,110	541	1,260	2,970	2,550	6,950	1,360	629	399
19	2,220	2,480	1,680	1,070	541	1,190	2,620	2,690	7,780	1,300	646	394
20	1,970	2,220	1,560	994	546	1,200	2,350	2,900	6,350	1,290	634	380
21	1,730	2,090	1,510	932	557	1,460	2,350	3,110	5,010	1,270	623	394
22	1,620	2,030	1,460	916	601	1,620	2,280	3,330	4,110	1,210	629	390
23	1,560	1,970	1,510	859	764	1,560	2,160	3,560	3,630	1,240	680	385
24	1,460	1,850	1,560	852	838	1,460	2,160	3,950	3,400	1,240	685	371
25	1,360	1,730	2,340	867	900	1,460	2,220	4,110	3,260	1,200	668	361
26	1,280	1,730	2,900	924	924	2,530	2,350	3,630	3,040	1,200	646	352
27	1,190	1,680	2,830	891	924	4,230	2,480	3,110	2,900	1,190	612	343
28	1,110	1,560	2,620	859	883	8,000	2,480	2,760	2,760	1,150	590	326
29	1,070	1,460	3,510	845	-------	6,750	2,480	2,550	2,620	1,100	574	318
30	1,050	1,410	4,200	817	-------	5,010	2,350	2,420	2,480	1,080	552	309
31	1,020	-------	3,790	783	-------	3,870	-------	2,350	-------	1,080	552	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	9,360	394	2,410	9.13	10.53	148,000
November	9,600	949	3,090	11.7	13.05	184,000
December	5,200	1,070	2,430	9.20	10.61	149,000
January	4,030	783	1,600	6.06	6.99	98,400
February	924	535	673	2.55	2.66	37,400
March	8,000	887	1,980	7.50	8.65	122,000
April	3,630	1,410	2,300	8.71	9.72	137,000
May	4,110	2,090	2,830	10.7	12.34	174,000
June	7,780	1,970	3,280	12.4	13.83	195,000
July	2,350	1,080	1,560	5.91	6.81	95,900
August	1,050	552	723	2.74	3.16	44,500
September	568	309	417	1.58	1.76	24,800
The year	9,600	309	1,950	7.39	100.11	1,410,000

HOH RIVER BASIN

HOH RIVER NEAR SPRUCE, WASH.

LOCATION.—Water-stage recorder in sec. 34, T. 27 N., R. 11 W., 2¼ miles below Spruce and 5 miles below South Fork.

DRAINAGE AREA.—193 square miles.

RECORDS AVAILABLE.—August, 1926, to September, 1929.

EXTREMES.—Maximum discharge during year, 11,900 second-feet Oct. 8 (gage height, 11.04 feet); minimum, 401 second-feet Sept. 29 (gage height, 1.67 feet).

1926–1929: Maximum discharge, 16,800 second-feet Jan. 12, 1928 (gage height, 13.13 feet); minimum, 356 second-feet Sept. 25, 1926 (gage height, 1.57 feet).

REMARKS.—Records excellent. Discharge estimated May 27–31. No diversions or regulation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,060	772	926	2,310	620	759	1,760	1,340	1,450	1,830	1,480	964
2	1,340	925	834	2,960	580	828	1,560	2,620	1,320	2,160	1,450	864
3	870	1,350	776	2,480	560	788	1,450	2,660	1,270	2,080	1,360	781
4	1,800	1,620	742	1,920	560	892	1,350	2,100	1,420	1,760	1,200	789
5	1,200	1,590	704	1,630	540	937	1,210	1,800	1,820	1,710	1,100	856
6	3,960	1,360	676	1,410	540	935	1,100	1,650	1,930	1,800	1,130	808
7	3,320	1,070	875	1,270	520	940	1,200	1,540	1,880	1,770	1,230	736
8	5,730	2,670	1,520	1,150	500	884	1,120	1,530	1,920	1,780	1,260	766
9	7,310	4,680	4,140	1,050	497	1,100	1,040	1,460	1,750	1,760	1,280	867
10	3,300	4,380	3,800	994	494	1,480	1,000	1,500	1,780	1,660	1,350	924
11	2,160	5,050	2,750	966	491	1,150	1,000	1,680	1,790	1,450	1,330	944
12	1,640	6,500	2,600	930	488	1,010	1,040	2,070	1,850	1,320	1,180	948
13	1,350	4,500	2,060	912	485	922	1,080	2,040	2,100	1,550	1,130	1,060
14	1,350	3,070	1,680	882	476	856	2,860	1,780	2,060	1,760	1,180	1,110
15	2,040	2,390	1,450	832	479	843	2,360	1,680	3,530	1,690	1,060	906
16	2,420	2,160	1,280	790	520	900	3,140	1,590	3,500	1,490	983	955
17	2,600	1,780	1,160	780	520	867	2,510	1,550	4,510	1,430	1,000	994
18	1,640	1,560	1,060	791	491	813	1,990	1,680	4,960	1,470	1,120	858
19	1,360	1,400	1,000	711	520	778	1,800	1,920	4,580	1,400	1,050	772
20	1,160	1,440	956	674	602	914	1,780	2,040	3,130	1,330	956	750
21	1,030	1,460	1,030	659	556	1,360	1,740	2,120	2,550	1,200	972	698
22	1,320	1,390	948	635	802	1,180	1,570	2,180	2,340	1,240	1,120	645
23	1,450	1,260	966	610	1,060	1,030	1,610	2,300	2,250	1,670	1,470	605
24	1,160	1,130	1,090	668	908	962	1,620	2,740	2,370	1,550	1,070	570
25	1,020	1,060	1,990	756	932	1,010	1,650		2,340	1,330	978	544
26	950	1,160	1,610	794	839	3,040	1,710		2,190	1,510	954	524
27	867	1,020	1,380	684	802	4,080	1,740		2,190	1,320	1,100	514
28	813	944	1,500	656	754	5,590	1,710	2,130	2,120	1,280	1,180	516
29	908	878	3,250	635	-------	3,380	1,650		2,030	1,470	1,090	470
30	971	898	2,630	602	-------	2,500	1,440		1,840	1,590	1,120	434
31	827	-------	2,010	598	-------	2,000	-------		-------	1,560	1,110	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	7,310	813	1,900	9.84	11.34	117,000
November	6,500	772	2,050	10.6	11.83	122,000
December	4,140	676	1,590	8.24	9.50	97,800
January	2,960	598	1,060	5.49	6.33	65,200
February	1,060	476	612	3.17	3.30	34,000
March	5,590	759	1,440	7.46	8.60	88,500
April	3,140	1,000	1,630	8.45	9.43	97,000
May	-------	1,340	1,950	10.1	11.64	120,000
June	4,960	1,270	2,360	12.2	13.61	140,000
July	2,160	1,200	1,580	8.19	9.44	97,200
August	1,480	954	1,160	6.01	6.93	71,300
September	1,110	434	772	4.00	4.46	45,900
The year	7,310	434	1,510	7.82	106.41	1,100,000

ELWHA RIVER BASIN

ELWHA RIVER AT McDONALD BRIDGE, NEAR PORT ANGELES, WASH.

LOCATION.—Water-stage recorder in NE. ¼ NW. ¼ sec. 33, T. 30 N., R. 7 W., at McDonald Bridge, 8 miles southwest of Port Angeles. Zero of gage, 206.29 feet above mean sea level.

DRAINAGE AREA.—262 square miles.

RECORDS AVAILABLE.—October, 1897, to December, 1901; October, 1918, to September, 1929.

EXTREMES.—Maximum discharge during year, 8,200 second-feet Oct. 9 (gage height, 6.65 feet); minimum, 30 second-feet Sept. 30 (gage height, 0.39 foot). 1897–1901, 1918–1929: Maximum discharge, 23,800 second-feet Nov. 27, 1901 (gage height, 10.6 feet); minimum, 8 second-feet Oct. 9, 1927 (gage height, −0.07 foot).

REMARKS.—Records good. Discharge estimated Jan. 27 to Feb. 3 and Feb. 5–8. Flow regulated by operation of Glines Canyon Reservoir. Results of many discharge measurements furnished by Northwestern Power & Light Co.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	267	775	786	1,160		452	716	1,310	1,630	1,920	1,000	439
2	356	586	604	1,340	500	417	858	1,330	1,550	1,700	935	33
3	529	772	740	1,330		204	822	1,330	1,580	2,180	957	365
4	220	478	732	1,170	595	308	774	1,340	1,590	1,570	849	478
5	560	774	794	899		381	810	1,070	1,670	1,810	923	428
6	266	591	743	838	400	406	784	1,220	2,270	1,910	901	495
7	36	644	786	882		376	729	1,320	2,270	2,040	842	446
8	2,080	678	930	846		366	762	1,330	2,410	1,640	847	444
9	4,010	1,070	986	897	506	452	782	1,330	2,140	1,380	819	431
10	1,170	1,280	2,270	947	336	216	785	1,330	1,900	1,610	910	354
11	782	1,370	1,450	754	442	370	814	1,330	2,400	1,390	820	566
12	894	3,320	1,530	759	503	338	774	1,820	2,050	1,310	740	526
13	725	2,360	1,280	746	465	339	718	2,060	2,260	1,440	787	463
14	810	1,680	1,050	929	492	347	653	1,860	2,500	1,600	771	520
15	933	1,230	1,060	780	585	409	820	1,790	2,820	1,420	767	408
16	844	1,330	923	807	502	529	879	1,670	2,860	1,280	774	352
17	1,020	1,290	958	754	376	355	784	1,780	2,580	1,240	695	426
18	988	799	834	768	462	277	817	1,720	2,360	1,420	712	438
19	958	933	991	728	566	436	844	2,060	2,820	1,270	688	524
20	840	834	806	646	440	480	898	2,410	2,070	1,220	673	486
21	710	1,060	1,070	745	600	515	662	2,510	2,030	978	627	464
22	802	1,310	1,200	729	521	657	684	2,750	1,580	1,120	628	277
23	642	1,080	1,230	672	521	619	1,040	2,800	2,040	1,140	661	449
24	698	904	572	677	322	354	1,160	3,040	2,090	1,180	648	456
25	700	720	272	686	493	542	1,280	2,280	2,410	1,050	560	428
26	672	930	919	710	572	836	1,280	2,010	2,190	990	660	410
27	666	857	982		442	810	1,280	1,580	2,000	966	681	422
28	509	849	1,020		484	919	1,210	1,580	2,000	918	674	538
29	606	1,040	1,300	600	-------	1,260	1,240	1,780	2,020	1,070	621	263
30	669	858	1,110		-------	1,070	1,340	1,780	2,060	1,190	591	398
31	755	-------	1,100		-------	793	-------	2,060	-------	1,120	575	-------

Month	Observed				Gain or loss in storage in Glines Canyon Reservoir (acre-feet)	Corrected for storage			
	Maximum	Minimum	Mean	Run-off in acre-feet		Run-off in acre-feet	Mean	Per square mile	Run-off in inches
October	4,010	36	830	51,000	+3,790	54,800	891	3.40	3.92
November	3,320	478	1,080	64,300	+2,220	66,500	1,120	4.27	4.76
December	2,270	272	1,000	61,500	+462	62,000	1,010	3.85	4.44
January	1,340	-------	813	50,000	−5,220	44,800	729	2.78	3.20
February	-------	-------	476	26,400	−3,290	23,100	416	1.59	1.66
March	1,260	204	511	31,400	+8,380	39,800	647	2.47	2.85
April	1,340	653	900	53,600	−840	52,800	887	3.39	3.78
May	3,040	1,070	1,790	110,000	+1,430	111,000	1,810	6.91	7.97
June	2,860	1,550	2,140	127,000	+43	127,000	2,140	8.17	9.12
July	2,180	918	1,390	85,500	+258	85,800	1,400	5.34	6.16
August	1,000	560	753	46,300	−2,700	43,600	709	2.71	3.12
September	566	33	424	25,200	−1,360	23,800	400	1.53	1.71
The year	4,010	33	1,010	732,000	+3,170	735,000	1,020	3.89	52.69

DUNGENESS RIVER BASIN

DUNGENESS RIVER NEAR SEQUIM, WASH.

LOCATION.—Staff gage in sec. 12, T. 29 N., R. 4 W., half a mile above State fish hatchery and 4½ miles southwest of Sequim.

DRAINAGE AREA.—150 square miles.

RECORDS AVAILABLE.—June, 1923, to September, 1929. July, 1897, to July, 1898, at a station 1½ miles downstream.

EXTREMES.—Maximum discharge during year, 1,000 second-feet June 15 (gage height, 2.90 feet); minimum discharge, 82 second-feet Oct. 1; minimum gage height, 0.84 foot Feb. 22 and 25.

1897–98, 1923–1929: Maximum discharge, 5,140 second-feet Feb. 12, 1924 (gage height, 6.0 feet); minimum, 77 second-feet Sept. 10, 1928.

REMARKS.—Records fair. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	82	164	173	192	[a] 112	105	147	297	512	595	326	164
2	140	164	164	182	[a] 112	[a] 119	140	460	495	650	312	156
3	105	182	164	173	[a] 112	[a] 133	132	442	478	595	297	147
4	118	173	156	[a] 160	112	147	132	408	495	[a] 562	284	147
5	132	164	156	147	[a] 110	[a] 140	125	374	595	530	270	140
6	140	164	156	[a] 144	[a] 108	132	125	357	710	570	312	140
7	201	164	164	140	[a] 107	[a] 130	[a] 125	342	775	550	258	140
8	234	173	164	[a] 140	105	[a] 128	125	357	775	530	258	140
9	595	284	297	140	[a] 108	125	[a] 122	342	710	530	258	140
10	312	222	478	[a] 138	[a] 110	140	118	374	680	512	258	140
11	245	234	326	[a] 135	112	[a] 135	[a] 122	425	680	512	245	140
12	222	390	234	132	[a] 112	[a] 130	125	512	740	425	245	140
13	192	326	182	[a] 132	[a] 112	125	[a] 198	550	920	460	234	140
14	192	258	173	132	[a] 112	125	270	530	845	512	234	140
15	182	[a] 230	173	[a] 132	112	[a] 125	212	512	1,000	495	222	140
16	201	201	164	[a] 132	[a] 108	125	245	495	880	442	212	140
17	201	182	156	132	[a] 104	[a] 125	222	512	680	425	201	140
18	192	182	147	[a] 128	99	[a] 125	192	512	620	425	192	132
19	182	173	140	125	[a] 99	125	182	570	550	425	201	132
20	173	182	140	[a] 125	[a] 99	[a] 125	173	650	550	408	192	125
21	164	201	140	125	[a] 99	[a] 125	284	740	530	357	192	125
22	164	222	140	[a] 123	99	125	245	810	550	357	201	118
23	164	212	132	[a] 120	[a] 99	[a] 132	258	845	595	342	201	112
24	164	212	132	118	[a] 99	140	258	845	620	357	192	112
25	156	201	173	[a] 115	99	[a] 140	270	680	710	342	192	105
26	147	201	164	112	[a] 100	140	284	595	680	326	182	99
27	147	182	147	[a] 112	[a] 102	147	326	550	650	312	182	99
28	147	182	173	[a] 112	[a] 103	156	312	530	680	312	182	99
29	147	182	258	[a] 112	-------	[a] 160	284	530	650	312	182	93
30	147	173	201	[a] 112	-------	164	284	570	620	342	173	93
31	156	-------	192	[a] 112	-------	156	-------	550	-------	342	173	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	595	82	185	1.23	1.42	11,400
November	390	164	206	1.37	1.53	12,300
December	478	132	186	1.24	1.43	11,400
January	192	112	133	.887	1.02	8,180
February	112	99	106	.707	.74	5,890
March	164	105	134	.893	1.03	8,240
April	326	118	201	1.34	1.50	12,000
May	845	297	525	3.50	4.04	32,300
June	1,000	478	666	4.44	4.95	39,600
July	650	312	447	2.98	3.44	27,500
August	326	173	228	1.52	1.75	14,000
September	164	93	129	.860	.96	7,680
The year	1,000	82	263	1.75	23.81	190,000

[a] Estimated.

PUGET SOUND BASINS

DOSEWALLIPS RIVER BASIN

DOSEWALLIPS RIVER AT BRINNON, WASH.

LOCATION.—Staff gage in sec. 2, T. 25 N., R. 2 W., at old highway bridge at Brinnon, and half a mile above mouth of river.

DRAINAGE AREA.—130 square miles.

RECORDS AVAILABLE.—October, 1910, to October, 1911; July, 1924, to December, 1925; July, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period July, 1928, to September, 1929, 2,200 second-feet Nov. 12 (gage height, 3.8 feet); minimum, 73 second-feet Feb. 19–21 (gage height, 1.27 feet).

1910–11, 1924–25, 1928–29: Maximum discharge, 4,920 second-feet Nov. 20, 1910 (gage height, 6.2 feet); minimum, 19 second-feet Aug. 24, 1925 (result of regulation).

REMARKS.—Records fair. Discharge estimated Oct. 10. Flash dam formerly used as aid to logging no longer in use. No diversions or regulation.

Daily discharge, in second-feet, 1928–29

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1928				1928				1928			
1	-------	278	124	11	-------	206	97	21	282	141	141
2	-------	245	124	12	-------	225	97	22	286	134	141
3	-------	198	124	13	-------	225	345	23	291	141	111
4	-------	198	127	14	-------	225	266	24	295	141	111
5	-------	191	111	15	-------	168	151	25	299	141	88
6	-------	225	111	16	-------	154	117	26	320	141	88
7	-------	214	111	17	-------	154	151	27	278	141	88
8	-------	214	111	18	-------	154	141	28	299	141	101
9	-------	214	97	19	-------	141	111	29	320	141	101
10	-------	206	97	20	278	134	111	30	245	127	101
								31	299	124	------

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1928–29												
1	101	111	217	465	122	86	278	400	570	650	370	141
2	144	109	191	500	106	88	262	610	570	690	370	137
3	191	345	179	465	101	92	245	610	535	690	320	124
4	176	299	172	400	99	158	225	535	570	650	320	122
5	191	202	165	345	97	158	214	465	690	610	278	122
6	198	176	161	299	92	141	198	465	775	650	278	122
7	370	151	161	278	79	130	194	430	775	610	278	111
8	400	245	202	257	79	127	179	430	820	610	278	111
9	274	650	570	237	88	134	165	430	730	610	278	114
10	266	500	975	225	83	320	161	500	730	570	278	117
11	258	500	570	229	83	253	176	570	730	500	278	119
12	217	2,200	610	229	79	217	165	690	730	465	270	122
13	191	1,090	535	233	79	191	183	775	920	500	253	134
14	172	690	430	233	77	179	820	730	820	570	257	144
15	210	535	370	221	77	176	500	650	1,150	535	237	127
16	191	430	320	210	77	176	570	650	975	500	221	117
17	249	370	299	202	75	172	500	650	820	465	214	127
18	179	320	270	198	75	168	400	650	820	500	214	117
19	151	278	253	183	73	168	345	775	820	465	214	117
20	137	274	237	154	73	183	320	870	690	465	194	106
21	127	320	237	165	73	241	320	975	650	400	183	97
22	119	370	225	161	81	229	299	975	690	400	183	88
23	117	345	217	130	86	210	345	1,030	690	400	237	92
24	114	320	229	147	86	191	370	975	730	400	183	83
25	114	299	690	134	86	191	400	775	820	370	161	79
26	111	278	570	134	79	249	465	650	775	400	165	77
27	101	262	465	127	79	278	535	570	730	370	161	75
28	99	237	430	117	79	610	535	535	730	345	168	75
29	94	229	1,030	117	-------	465	500	610	730	400	165	75
30	119	214	650	104	-------	370	430	650	650	400	165	75
31	114	-------	500	111	-------	320	-------	610	-------	370	165	------

Monthly discharge, in second-feet, of Dosewallips River at Brinnon, Wash., 1928–29

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1928						
July 20–31	320	245	291	2.24	1.00	6,930
August	278	124	177	1.36	1.57	10,900
September	345	88	126	.969	1.08	7,500
The period						25,300
1928–29						
October	400	94	177	1.36	1.57	10,900
November	2,200	109	412	3.17	3.54	24,500
December	1,030	161	391	3.01	3.47	24,000
January	500	104	226	1.74	2.01	13,900
February	122	73	84.4	.649	.68	4,690
March	610	86	215	1.65	1.90	13,200
April	820	161	343	2.64	2.94	20,400
May	1,030	400	653	5.02	5.79	40,200
June	1,150	535	748	5.75	6.42	44,500
July	690	345	502	3.86	[illegible]	30,900
August	370	161	237	1.82	2.10	14,600
September	144	75	109	.838	.94	6,490
The year	2,200	73	343	2.64	35.80	248,000

HAMMA HAMMA RIVER BASIN

HAMMA HAMMA RIVER NEAR HOODSPORT, WASH.

LOCATION.—Staff gage in NW ¼ sec. 27, T. 24 N., R. 3 W., three-fourths of a mile above mouth of river and 11 miles northwest of Hoodsport.

DRAINAGE AREA.—75 square miles.

RECORDS AVAILABLE.—February, 1926, to September, 1929.

EXTREMES.—Maximum discharge during year, 3,750 second-feet Nov. 12 (gage height, 6.4 feet); minimum, 23 second-feet Sept. 28 (gage height, 1.25 feet) 1926–1929: Maximum discharge, 5,080 second-feet Dec. 2, 1926 (gage height, 7.7 feet); minimum, that of Sept. 28, 1929.

REMARKS.—Records good. Discharge estimated Oct. 1, Aug. 22 and 23. No. diversions or regulation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	35	91	310	718	108	108	413	386	310	386	129	49
2	46	93	687	845	103	108	358	386	334	386	135	52
3	67	121	687	718	96	108	334	413	386	358	129	55
4	71	309	718	718	96	108	334	443	413	358	123	68
5	226	299	687	473	98	110	358	473	413	358	123	76
6	610	218	687	413	98	113	310	473	413	358	120	76
7	580	233	718	386	98	113	265	533	413	310	106	80
8	460	1,410	718	310	96	185	215	533	473	310	98	80
9	430	1,650	1,120	265	98	413	185	533	473	310	98	76
10	347	2,180	1,590	265	98	473	223	533	473	265	98	68
11	290	1,650	1,120	265	96	473	208	533	473	265	94	55
12	256	3,750	980	257	96	473	265	503	443	252	94	54
13	218	1,930	910	257	96	261	780	533	473	257	94	48
14	185	1,750	687	223	96	223	1,590	533	473	257	89	40
15	179	1,430	656	257	108	265	1,590	594	594	223	85	39
16	185	780	656	257	98	265	845	594	718	231	80	36
17	179	780	656	223	76	265	656	625	980	223	80	34
18	171	718	358	223	76	257	533	625	1,120	215	76	28
19	152	656	334	204	76	248	473	656	1,050	208	76	28
20	134	594	310	185	74	265	443	718	980	215	76	35
21	130	533	310	178	76	265	473	718	780	185	68	38
22	125	473	310	178	85	257	358	749	656	178	70	38
23	125	473	310	204	98	240	473	780	594	172	80	35
24	121	413	358	185	98	215	473	845	533	165	52	33
25	108	413	1,120	165	103	223	473	845	533	159	49	28
26	108	386	980	178	108	656	533	718	473	159	49	27
27	95	386	625	152	113	718	564	533	473	152	46	26
28	99	413	594	149	113	980	533	533	473	146	40	23
29	99	334	1,350	123	-------	1,050	473	473	443	146	38	26
30	112	310	980	118	-------	1,050	413	413	473	140	40	28
31	95	-------	656	113	-------	980	-------	334	-------	135	44	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	610	35	195	2.60	3.00	12,000
November	3,750	91	826	11.0	12.27	49,200
December	1,590	310	716	9.55	11.01	44,000
January	845	113	297	3.96	4.56	18,300
February	113	74	95.5	1.27	1.32	5,300
March	1,050	108	370	4.93	5.68	22,800
April	1,590	185	505	6.73	7.51	30,000
May	845	334	566	7.55	8.70	34,800
June	1,120	310	561	7.48	8.34	33,400
July	386	135	241	3.21	3.70	14,800
August	135	38	83.2	1.11	1.28	5,120
September	80	23	46.0	.613	.68	2,740
The year	3,750	23	376	5.01	68.05	272,000

SKOKOMISH RIVER BASIN

NORTH FORK OF SKOKOMISH RIVER BELOW STAIRCASE RAPIDS, NEAR HOODSPORT, WASH.

LOCATION.—Water-stage recorder in SW. ¼ sec. 3, T. 23 N., R. 5 W., 2 miles above Dry Creek and 10½ miles northwest of Hoodsport.

DRAINAGE AREA.—60 square miles.

RECORDS AVAILABLE.—July, 1924, to September, 1929.

EXTREMES.—Maximum discharge during year, 2,540 second-feet Nov. 9 (gage height, 5.49 feet); minimum, 47 second-feet Sept. 30 (gage height, 1.35 feet).

1924–1929: Maximum discharge, 5,350 second-feet Dec. 1, 1926 (gage height, 7.5 feet); minimum, 28 second-feet Sept. 14 and 15, 1926 (gage height, 1.25 feet).

REMARKS.—Records good. No diversions above station. Results of many discharge measurements furnished by the city of Tacoma.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	109	105	216	336	120	98	294	319	404	352	174	77
2	139	111	200	390	120	109	262	784	376	363	163	74
3	211	332	190	346	117	118	241	652	366	346	154	71
4	400	449	180	294	117	149	219	483	422	323	147	67
5	282	297	172	262	118	156	202	418	513	323	136	66
6	939	268	170	236	117	151	184	394	540	323	130	65
7	692	219	213	219	117	143	182	386	500	316	134	62
8	817	1,020	428	208	115	141	167	422	531	313	136	61
9	808	1,630	1,250	197	117	281	158	444	508	316	132	61
10	400	1,240	1,140	193	117	380	158	483	513	303	126	61
11	300	1,600	610	197	115	281	156	620	463	281	122	61
12	241	1,960	560	197	115	233	160	796	448	265	122	61
13	208	1,220	451	205	115	208	177	760	531	284	115	60
14	190	716	363	205	115	200	409	635	504	284	113	60
15	205	522	326	197	115	216	339	580	1,050	268	109	59
16	224	436	287	190	113	227	369	560	1,030	250	104	56
17	262	369	268	182	115	224	319	545	1,240	241	98	56
18	194	332	253	177	113	213	272	620	1,480	241	109	55
19	172	310	244	160	111	219	262	742	1,040	227	105	54
20	158	310	233	151	109	253	284	827	712	241	96	54
21	147	332	247	149	109	339	294	883	575	210	91	56
22	147	339	241	145	105	287	290	960	540	208	93	53
23	136	323	244	138	105	253	332	925	526	216	105	53
24	126	300	281	138	104	227	363	960	540	202	93	53
25	122	290	455	141	105	221	429	718	522	192	86	52
26	117	310	373	141	98	471	526	526	475	197	85	51
27	111	275	316	128	91	1,080	555	444	436	190	83	49
28	107	253	294	122	91	1,300	487	444	422	184	81	49
29	113	236	380	122	------	590	397	451	383	184	80	48
30	117	227	359	120	------	390	342	433	352	184	80	47
31	111	-----	313	120	------	332	------	425	------	180	78	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	939	107	268	4.47	5.15	16,500
November	1,960	105	544	9.07	10.12	32,400
December	1,250	170	363	6.05	6.98	22,300
January	390	120	194	3.23	3.72	11,900
February	120	91	111	1.85	1.93	6,160
March	1,300	98	306	5.10	5.88	18,800
April	555	156	294	4.90	5.47	17,500
May	960	319	601	10.0	11.53	37,000
June	1,480	352	598	9.97	11.12	35,600
July	363	180	258	4.30	4.96	15,900
August	174	78	112	1.87	2.16	6,890
September	77	47	58.4	.973	1.09	3,480
The year	1,960	47	310	5.17	70.11	224,000

NORTH FORK OF SKOKOMISH RIVER NEAR HOODSPORT, WASH.

LOCATION.—Water-stage recorded in NE. ¼ sec. 8, T. 22 N., R. 4 W., 1 mile below Cushman Reservoir dam and 3½ miles west of Hoodsport.

DRAINAGE AREA.—92 square miles.

RECORDS AVAILABLE.—October, 1923, to September, 1929. August, 1910, to September, 1911, and February, 1913, to September, 1923, at site of dam 1 mile above.

EXTREMES.—Maximum discharge during year, 2,370 second-feet Nov. 26 (gage height, 8.40 feet); minimum, 3 second-feet July 10–16.

1910–11, 1913–1929: Maximum discharge (estimated), 14,000 second-feet Jan. 6, 1914 (gage height, about 23.5 feet); practically no flow when gates in dam and at power house are closed during late summer.

REMARKS.—Records excellent. Discharge estimated Nov. 13–16, Jan. 3, 4, and Feb. 25. No diversions that are not returned to river above gage. Flow is controlled by storage in Cushman Reservoir.

Daily and Monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,050	1,490	1,140	531	1,590	1,030	769	234	85	4	402	21
2	810	1,300	500	1,380	1,300	773	668	130	30	5	463	20
3	980	1,030	1,380	1,320	656	253	754	148	91	5	319	980
4	832	373	1,540	1,350	1,450	556	769	80	112	4	34	1,110
5	638	1,340	1,610	1,320	1,550	549	782	110	106	4	567	1,030
6	592	1,400	1,640	528	1,590	646	672	170	109	4	694	1,270
7	38	1,500	1,520	1,370	1,870	524	178	102	115	4	240	1,090
8	550	1,450	1,040	1,650	1,830	544	744	125	78	4	160	508
9	725	786	138	1,700	1,750	542	738	143	66	4	118	944
10	689	448	772	1,680	1,370	152	700	95	85	3	90	808
11	625	96	852	1,460	1,600	548	736	88	96	3	173	790
12	570	402	868	1,390	1,800	641	686	8	91	3	392	546
13	500	656	854	492	1,820	599	658	136	152	3	598	488
14	61	631	969	1,410	1,850	678	162	102	106	3	596	221
15	641	631	763	1,460	1,830	776	719	72	8	3	726	11
16	619	808	265	1,460	1,880	680	720	68	10	3	743	448
17	616	635	1,220	1,400	1,550	106	622	94	10	24	642	517
18	724	293	1,200	1,380	1,740	702	556	62	15	178	373	488
19	678	959	1,330	1,500	1,750	754	613	62	10	636	853	647
20	542	1,030	1,400	1,080	1,640	827	576	98	9	332	1,100	758
21	78	925	1,410	1,640	1,300	782	59	58	8	27	1,040	990
22	522	1,040	1,120	1,660	1,220	783	492	28	8	375	954	30
23	614	1,140	777	1,850	1,190	671	566	68	8	578	526	1,050
24	712	1,140	1,140	1,830	289	166	420	169	6	438	576	1,230
25	707	766	300	1,630	723	850	194	104	7	545	72	980
26	898	1,180	1,140	1,560	1,090	834	320	20	6	476	804	1,160
27	900	1,100	1,190	1,050	1,160	758	283	132	6	479	602	1,280
28	206	1,300	1,240	1,710	1,220	794	68	94	6	1,000	390	1,140
29	854	562	1,230	1,760	-------	816	360	85	5	718	570	268
30	913	1,250	478	1,640	-------	748	196	34	5	420	552	1,090
31	1,310	-------	1,120	1,720	-------	260	-------	68	-------	463	464	-------

Month	Observed				Gain or loss in storage in Cushman Reservoir (acre-feet)	Corrected for storage			
	Maximum	Minimum	Mean	Run-off in acre-feet		Run-off in acre-feet	Mean	Per square mile	Run-off in inches
October	1,310	38	651	40,000	−14,200	25,800	420	4.57	5.27
November	1,500	96	922	54,900	+430	55,300	929	10.1	11.27
December	1,640	138	1,040	64,000	−16,900	47,100	766	8.33	9.60
January	1,850	492	1,420	87,300	−63,600	23,700	385	4.18	4.82
February	1,880	289	1,450	80,500	−69,400	11,100	200	2.17	2.26
March	1,030	106	624	38,400	−2,750	35,600	579	6.29	7.25
April	782	59	526	31,300	+7,130	38,400	645	7.01	7.82
May	234	8	96.4	5,930	+42,900	48,800	794	8.63	9.95
June	152	5	48.3	2.870	+46,700	49,600	834	9.07	10.12
July	1,000	3	218	13,400	+8,360	21,800	355	3.86	4.45
August	1,100	34	511	31,400	−20,900	10,500	171	1.86	2.14
September	1,280	11	730	43,400	−35,700	7,700	129	1.40	1.56
The year	1,880	3	681	493,000	−118,000	375,000	518	5.63	76.51

SOUTH FORK OF SKOKOMISH RIVER NEAR POTLATCH, WASH.

LOCATION.—Water-stage recorded in NW. ¼ sec. 22, T. 22 N., R. 5 W., at head of canyon, 2 miles below Brown Creek and 7½ miles west of Potlatch.

DRAINAGE AREA.—68 square miles.

RECORDS AVAILABLE.—October, 1923, to September, 1929.

EXTREMES.—Maximum discharge during year, 3,010 second-feet Mar 28 (gage height, 7.64 feet); minimum, 66 second-feet Sept. 30.

1923–1929: Maximum discharge, about 9,950 second-feet Jan. 31, 1924 (gage height, 14.86 feet); minimum, 38 second-feet Sept. 15, 1926 (gage height, 1.22 feet).

REMARKS.—Records fair. Discharge estimated Dec. 1–18 and Feb. 4–17. No diversions or regulations above station. Results of many discharge measurements furnished by city of Tacoma.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	88	137		827	216	214	505	446	340	270	135	91
2	158	139		1,110	214	218	446	736	328	263	131	87
3	197	242		942	212	229	404	678	316	247	129	85
4	656	434	320	722		254	365	556	316	240	127	85
5	448	340		556		270	340	505	328	232	123	85
6	949	340		475	200	270	328	475	328	223	125	85
7	1,000	282		432		263	316	446	316	214	123	84
8	1,100	1,220		391		263	304	460	316	207	121	82
9	1,460	2,140		365		340	293	460	316	201	123	80
10	746	1,930	980	352		575	304	460	316	190	121	79
11	475	1,790		340		432	304	490	304	183	121	78
12	352	2,400		340	190	378	328	556	293	177	121	78
13	304	1,890		340		340	365	538	293	170	121	78
14	261	1,200		328		316	1,350	490	304	164	117	76
15	254	920		328		340	1,010	460	488	160	114	76
16	257	788	420	304	180	378	1,010	446	587	160	112	76
17	352	656		293		365	832	432	1,140	156	112	74
18	270	556		282	177	340	678	432	1,520	152	114	74
19	238	505	340	282	168	328	614	460	1,200	152	112	74
20	216	475	328	270	170	352	678	475	766	164	108	74
21	194	446	328	261	168	432	700	490	575	154	108	74
22	185	418	340	254	201	391	635	490	475	154	110	73
23	175	378	340	247	245	340	656	490	432	168	121	92
24	166	365	411	243	234	328	678	538	391	154	112	73
25	156	365	1,020	245	238	340	678	505	365	152	108	73
26	150	446	766	243	232	1,080	700	432	340	154	99	72
27	147	432	594	232	221	1,650	678	391	328	147	96	70
28	141	391	538	229	214	2,220	594	378	304	143	95	69
29	143	365	1,180	227	-------	1,140	522	365	293	139	93	69
30	141	352	1,040	218	-------	810	475	352	282	137	93	67
31	135	-------	788	216	-------	614	-------	340	-------	137	87	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,460	88	371	5.46	6.30	22,800
November	2,400	137	745	11.0	12.27	44,300
December	-------	-------	588	8.65	9.97	36,200
January	1,110	216	384	5.65	6.51	23,600
February	245	168	200	2.94	3.06	11,100
March	2,220	214	510	7.50	8.65	31,400
April	1,350	293	570	8.38	9.35	33,900
May	736	340	477	7.01	80.8	29,300
June	1,520	282	463	6.81	7.60	27,600
July	270	137	179	2.63	3.03	11,000
August	135	87	114	1.68	1.94	7,010
September	91	67	77.1	1.13	1.26	4,590
The year	2,400	67	391	5.75	78.02	283,000

NISQUALLY RIVER BASIN

NISQUALLY RIVER NEAR LA GRANDE, WASH.

LOCATION.—Water-stage recorder in sec. 9, T. 15 N., R. 4 E., 1,200 feet below diversion dam of Tacoma's municipal power plant and 2½ miles southeast of La Grande. Also water-stage recorder on power conduit.

DRAINAGE AREA.—287 square miles.

RECORDS AVAILABLE.—October, 1919, to September, 1929; September, 1906, to October, 1911, fragmentary.

EXTREMES.—Maximum combined discharge of river and power conduit during year, 4,590 second-feet Dec. 10; minimum, 6 second-feet Oct. 31.

1919–1929: Maximum combined discharge of river and power conduit, 19,500 second-feet Dec. 12, 1921 (river gage height, 15.6 feet). Practically no flow at times when conduit gates are closed and pondage is building up.

REMARKS.—Records good except those for Oct. 31 to Nov. 8 and Jan. 27 to Mar. 6, which are fair. Slight regulation caused by use of flashboards on dam. Results of many discharge measurements furnished by city of Tacoma.

Daily and monthly discharge, in second-feet, of Nisqually River and Tacoma power conduit near La Grande, Wash., 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	364		482	1,430		590	1,430	1,540	1,500	1,230	893	518
2	472	400	440	1,950	500	680	1,270	1,800	1,370	1,280	860	371
3	371		408	1,890		700	1,150	2,100	1,310	1,240	833	395
4	454		402	1,420	440	710	1,060	1,990	1,380	1,120	696	422
5	566		383	1,190		730	998	1,840	1,590	1,140	660	440
6	480	430	351	1,080	400	750	917	1,810	1,990	1,100	613	394
7	1,000		405	936		922	897	1,640	1,780	991	741	384
8	1,660		580	524		864	885	1,730	1,760	1,030	701	408
9	1,670	2,110	1,020	562	380	866	844	2,060	1,630	1,100	688	439
10	1,250	2,010	3,500	516		1,100	823	1,880	1,580	1,080	749	469
11	846	1,720	2,260	664		1,110	788	1,920	1,530	879	316	483
12	695	1,570	1,610	655		972	778	2,210	1,470	790	701	537
13	596	1,240	1,250	664		871	784	2,570	1,930	941	687	590
14	541	1,000	1,050	649	360	828	2,440	2,520	2,110	924	676	595
15	1,200	853	900	622		821	2,240	2,250	2,300	908	600	585
16	1,500	789	791	602		930	1,930	2,180	2,110	815	594	583
17	1,350	751	726	618		921	1,600	2,110	1,960	820	576	554
18	1,000	642	703	674		887	1,380	2,080	2,080	823	624	447
19	839	606	638	556	340	855	1,290	2,290	2,460	614	476	490
20	703	566	590	467	380	1,130	1,560	2,610	2,090	782	507	458
21	613	569	565	518	410	2,260	1,730	2,660	1,790	595	540	282
22	613	554	561	509	440	2,050	1,610	2,710	1,630	652	556	309
23	567	508	531	380	610	1,640	1,610	2,700	1,530	624	665	353
24	521	488	521	487	640	1,340	1,610	2,880	1,630	650	478	257
25	527	463	671	550	660	1,180	1,640	2,670	1,780	680	488	264
26	490	558	1,060	528	610	1,970	1,770	2,150	1,650	720	581	222
27	416	590	1,170	490	540	3,070	1,920	1,820	1,480	650	630	229
28	453	526	1,040	447	530	2,960	1,850	1,560	1,530	447	640	186
29	440	480	1,910	440	------	2,590	2,000	1,460	1,440	759	636	211
30	424	461	1,850	430	------	2,080	1,770	1,360	1,290	842	638	230
31	390	------	1,470	420	------	1,670	------	1,480	------	882	574	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,670	364	742	2.59	2.99	45,600
November	2,110	----------	747	2.60	2.90	44,400
December	3,500	351	963	3.36	3.87	59,200
January	1,950	380	738	2.57	2.96	45,400
February	----------	----------	440	1.53	1.59	24,400
March	3,070	----------	1,290	4.49	5.18	79,300
April	2,440	778	1,420	4.95	5.52	84,500
May	2,880	1,360	2,080	7.25	8.36	128,000
June	2,460	1,290	1,720	5.99	6.68	102,000
July	1,280	447	874	3.05	3.52	53,700
August	893	316	633	2.21	2.55	38,900
September	595	186	404	1.41	1.57	24,000
The year	3,500	186	1,010	3.52	47.69	729,000

LITTLE NISQUALLY RIVER NEAR ALDER, WASH.

LOCATION.—Water-stage recorder in NW. ¼ sec. 16, T. 15 N., R. 4 E., 1,500 feet above mouth, 3,000 feet from diversion dam of city of Tacoma's power plant, and 1½ miles southwest of Alder.

DRAINAGE AREA.—28.5 square miles.

RECORDS AVAILABLE.—August, 1920, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,210 second-feet Dec. 10 (gage height, 4.43 feet); minimum, 6.2 second-feet Sept. 30.

1920–1929: Maximum discharge, 2,200 second-feet Jan. 7, 1923 (gage height, 6.4 feet); minimum, 0.9 second-foot July 17, 192[illegible] (gage height, 0.58 foot).

REMARKS.—Records good except those for Jan. 28 to Feb. 19, which are fair. No diversions. Results of many discharge measurements furnished by city of Tacoma.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	17	54	284		60	176	158	70	38	14	9.1
2	25	17	47	452	40	72	143	216	66	34	15	9.1
3	40	17	42	394		77	121	238	60	33	13	9.1
4	58	26	39	268		96	106	212	61	31	13	9.1
5	46	21	38	198		136	98	198	64	31	13	9.1
6	112	19	36	155		134	87	190	66	30	13	8.5
7	306	18	45	125		116	84	173	64	29	12	8.0
8	244	57	87	106	30	104	80	179	61	27	12	8.0
9	232	253	307	91		110	75	204	56	26	10	7.6
10	158	423	901	78		166	70	182	52	25	10	7.6
1	89	360	442	73		173	70	173	48	24	10	8.0
12	67	336	268	73		148	68	207	43	22	9.7	8.0
13	41	226	179	75		121	88	212	51	22	10	8.0
14	35	160	132	77	30	104	603	179	52	21	11	7.6
15	36	116	108	75		104	490	173	110	20	12	6.7
16	35	98	91	70	30	123	370	134	96	19	12	6.7
17	47	84	77	68		129	290	125	127	19	12	6.7
18	36	70	68	68		125	229	123	212	19	11	6.7
19	34	62	60	61		119	210	143	275	18	12	7.2
20	28	55	55	54	39	152	292	150	190	19	12	7.2
21	26	50	55	47	42	300	350	143	150	20	12	7.2
22	22	46	55	43	45	256	300	136	102	20	12	8.5
23	21	42	52	43	68	196	287	129	84	20	14	9.1
24	19	38	52	50	64	153	265	153	72	19	14	8.5
25	19	34	95	47	75	129	259	143	64	18	13	7.2
26	19	56	199	51	68	437	262	102	56	18	12	8.5
27	18	64	211	47	62	677	256	82	54	19	12	7.6
28	18	52	187		58	565	232	72	47	18	10	7.6
29	18	47	413	40	-------	426	226	70	42	18	9.7	6.7
30	18	47	377		-------	300	190	66	40	17	8.5	6.2
31	18	-------	271		-------	218	-------	68	-------	15	8.5	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	306	14	61.3	2.15	2.48	3,770
November	423	17	97.0	3.40	3.79	5,770
December	901	36	163	5.72	6.60	10,000
January	452	----------	108	3.79	4.37	6,640
February	75	----------	40.0	1.40	1.46	2,220
March	677	60	194	6.81	7.85	11,900
April	603	68	213	7.47	8.33	12,700
May	238	66	153	5.37	6.19	9,410
June	275	40	84.5	2.96	3.30	5,030
July	38	15	22.9	.804	.93	1,410
August	15	8.5	11.7	.411	.47	719
September	9.1	6.2	7.84	.275	.31	467
The year	901	6.2	96.7	3.39	46.08	70,000

OHOP CREEK NEAR EATONVILLE, WASH.

LOCATION.—Water-stage recorder in SE. ¼ sec. 10, T. 16 N., R. 4 E., 400 feet below mouth of Lynch Creek, 600 feet below outlet of Ohop Lake, and 1¼ miles northwest of Eatonville. Zero of gage, 521.58 feet above mean sea level.

RECORDS AVAILABLE.—June, 1927, to September, 1929.

EXTREMES.—Maximum discharge during year, 288 second-feet Dec. 10 (gage height, 2.05 feet); minimum, 5.2 second-feet Sept. 16.

1927–1929: Maximum discharge, 511 second-feet Jan. 3, 1928 (gage height, 2.97 feet); minimum, that of Sept. 16, 1929.

REMARKS.—Records good. Natural regulation in Ohop Lake. No diversions. Results of many discharge measurements furnished by city of Tacoma.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	19	22	115	45	111	129	91	74	25	9.0	7.9
2	17	17	22	124	59	146	109	87	71	24	8.5	8.4
3	18	17	21	143	50	133	94	87	61	22	8.5	7.9
4	16	17	20	117	45	129	86	91	54	21	8.0	7.3
5	20	17	18	96	41	131	80	91	52	20	8.0	6.8
6	17	17	17	82	35	113	74	128	52	20	8.0	6.3
7	22	16	18	70	34	98	72	136	48	19	8.0	6.3
8	27	15	19	61	33	89	72	139	44	18	8.0	6.2
9	35	18	26	54	32	86	72	198	47	17	7.5	5.8
10	32	35	172	49	31	111	74	156	47	16	7.5	5.8
11	26	38	113	45	30	129	80	129	48	16	7.0	5.7
12	24	44	92	42	29	115	82	109	45	15	7.0	5.7
13	22	39	76	38	29	100	84	91	71	15	6.5	5.7
14	21	36	62	38	28	89	147	80	86	15	6.5	5.6
15	48	32	54	37	27	87	160	71	74	14	6.5	6.6
16	43	33	47	35	29	98	150	65	70	13	6.1	5.6
17	105	32	41	33	33	89	131	59	64	12	6.1	5.6
18	65	29	37	41	36	82	113	54	64	12	6.1	5.5
19	52	28	33	38	37	74	100	49	79	12	7.0	5.5
20	44	26	31	34	46	107	124	45	68	12	6.5	5.5
21	38	24	30	34	65	185	143	43	59	11	6.5	5.8
22	34	23	31	32	65	146	136	39	50	11	6.5	7.6
23	31	22	30	25	92	115	120	37	45	11	10	14
24	28	22	28	32	102	94	107	39	42	11	10	7.5
25	25	21	31	57	107	86	98	47	38	11	8.0	7.0
26	23	20	45	74	100	120	91	90	35	11	8.0	7.0
27	22	23	65	68	98	251	86	66	33	11	8.0	7.0
28	21	22	64	59	98	251	86	57	31	10	7.5	6.5
29	20	22	98	54	------	231	98	50	29	10	7.5	6.5
30	20	21	138	48	------	193	107	48	27	9.6	7.0	6.4
31	22	------	133	45	------	158	------	55	------	9.0	7.0	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	105	12	30.6	1,880
November	44	15	24.8	1,480
December	172	17	52.7	3,240
January	143	25	58.7	3,610
February	107	27	52.0	2,890
March	251	74	127	7,810
April	160	72	104	6,190
May	198	37	81.5	5,010
June	86	27	53.6	3,190
July	25	9.0	14.6	898
August	10	6.1	7.49	461
September	14	5.5	6.67	397
The year	251	5.5	51.2	37,100

PUYALLUP RIVER BASIN

PUYALLUP RIVER AT PUYALLUP, WASH.

LOCATION.—Water-stage recorder in NE. ¼ sec. 20, T. 20 N., R. 4 E., 1 mile northwest of Puyallup.

DRAINAGE AREA.—914 square miles.

RECORDS AVAILABLE.—May, 1914, to September, 1929.

EXTREMES.—Maximum discharge during year, 8,610 second-feet June 14 (gage height, 7.17 feet); minimum not determined (may have occurred during period of no gage-height record).

1914–1929: Maximum discharge, 40,500 second-feet Dec. 18, 1917 (gage height, 34.15 feet[1]); minimum, 726 second-feet Nov. 18, 1917 (gage height, 17.36 feet[1]).

REMARKS.—Records good except those for Dec. 28 to Jan. 18, which were estimated and are poor. No diversions that are not returned to river above gage. Flow of White River, a tributary, is regulated by Lake Tapps Reservoir. Some pondage on the upper Puyallup and other tributaries.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,660	1,570	1,480		1,570	1,850	3,300	3,300	4,030	3,160	2,770	1,570
2	1,750	1,570	1,240		1,570	2,060	3,030	3,300	4,510	3,440	2,640	1,400
3	1,570	1,400	1,480		1,480	1,750	2,900	4,030	4,850	3,160	2,640	1,750
4	1,570	1,320	1,480		1,480	2,060	3,030	3,730	4,850	2,640	1,750	1,750
5	1,570	1,400	1,400	1,800	1,570	2,170	2,900	3,440	5,200	3,300	2,170	1,750
6	1,400	1,400	1,400		1,660	2,060	2,770	3,880	5,930	3,580	2,280	1,750
7	1,750	1,400	1,480		1,570	2,170	2,400	4,030	4,680	3,580	2,400	1,570
8	2,900	1,480	1,320		1,570	2,170	2,640	4,03 (	4,190	3,300	2,520	1,320
9	3,030	1,570	1,240		1,480	2,060	2,770	5,020	3,880	3,300	2,400	1,480
10	2,900	1,850	2,400		1,480	1,750	2,770	4,850	4,030	3,440	2,170	1,750
11	2,170	1,570	2,640		1,480	2,400	2,520	4,850	4,030	2,900	1,750	1,750
12	1,950	1,660	2,060		1,480	2,170	2,400	4,680	5,200	2,640	2,170	1,850
13	1,570	1,570	1,850		1,570	2,170	2,280	5,930	6,900	2,770	2,400	1,950
14	1,240	1,570	1,750	1,700	1,480	2,170	2,280	5,930	8,170	2,900	2,400	1,950
15	2,400	1,570	1,570		1,480	2,170	2,900	5,380	7,730	2,900	2,280	1,570
16	3,880	1,570	1,400		1,480	2,280	2,900	5,740	5,930	2,640	2,400	1,750
17	3,730	1,480	1,480		1,480	1,850	2,640	6,500	5,020	2,400	2,170	1,950
18	3,030	1,400	1,570		1,660	2,170	2,520	5,930	4,350	2,640	1,660	1,850
19	2,400	1,570	1,660	1,660	1,750	2,280	2,400	5,020	5,020	2,640	2,060	1,660
20	2,060	1,570	1,570	1,480	1,750	2,400	2,400	5,740	4,680	2,280	1,950	1,570
21	1,570	1,570	1,570	1,660	1,850	5,200	2,400	5,930	4,350	1,850	1,850	1,480
22	2,400	1,570	1,570	1,660	1,570	5,740	2,520	6,310	4,190	2,280	1,850	1,400
23	2,170	1,570	1,400	1,660	1,850	3,440	2,900	6,500	4,350	2,060	1,950	1,320
24	1,950	1,480	1,400	1,660	1,660	2,770	3,030	7,100	5,560	2,170	1,750	1,400
25	1,950	1,320	1,480	1,660	1,850	2,900	3,030	6,900	6,120	2,170	1,400	1,480
26	1,950	1,480	1,660	1,660	1,850	3,300	3,160	5,930	5,930	2,170	1,850	1,480
27	1,850	1,570	1,570	1,570	1,850	4,850	3,160	5,200	5,560	2,170	2,060	1,480
28	1,400	1,570	1,550	1,750	1,850	4,850	2,900	4,190	5,020	1,660	2,060	1,450
29	1,850	1,240	1,500	1,750	------	4,850	3,580	3,730	5,200	2,170	2,060	1,350
30	1,750	1,570	1,450	1,660	------	4,190	3,580	3,030	4,350	2,520	2,060	1,300
31	1,660	------	1,600	1,570	------	3,300	------	3,580	------	2,520	2,060	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	3,880	1,240	2,100			129,000
November	1,850	1,240	1,510			89,800
December	2,640	1,240	1,590			97,800
January		1,480	1,710			105,000
February	1,850	1,480	1,620			90,000
March	5,740	1,750	2,820			173,000
April	3,580	2,280	2,800			167,000
May	7,100	3,030	4,960			305,000
June	8,170	3,880	5,130			305,000
July	3,580	1,660	2,690			165,000
August	2,770	1,400	2,130			131,000
September	1,950	1,300	1,600			95,200
The year	8,170	1,240	2,560	2.80	38.01	1,850,000

[1] On gage 1¼ miles above present site and at different datum.

KAPOWSIN CREEK NEAR KAPOWSIN, WASH.

LOCATION.—Water-stage recorder in NE. ¼ sec. 5, T. 17 N., R. 5 E., half a mile below Kapowsin Lake and 1½ miles east of Kapowsin. Zero of gage, 564.23 feet above mean sea level.

RECORDS AVAILABLE.—June, 1927, to September, 1929.

EXTREMES.—Maximum discharge during year, 149 second-feet Mar. 29 (gage height, 2.56 feet); minimum, 3.5 second-feet Sept. 19 and 21 (gage height, 0.88 foot).

1927–1929: Maximum discharge, 302 second-feet Jan. 4, 1928 (gage height, 3.31 feet); minimum, 2.5 second-feet Sept. 10, 1928 (gage height, 0.82 foot).

REMARKS.—Records goods. Flow subject to natural regulation in Kapowsin Lake. Results of many discharge measurements furnished by city of Tacoma.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.8	18	24	74	43	74	112	62	50	30	6.1	4.6
2	5.6	18	24	81	43	78	98	62	52	28	5.6	4.4
3	6.4	17	24	94	42	84	87	62	51	26	5.6	4.4
4	7.5	16	23	94	41	85	79	61	48	24	5.4	4.4
5	8.1	16	22	87	40	87	74	63	47	22	5.4	4.4
6	9.5	15	22	78	38	87	70	71	46	21	5.2	4.2
7	12	15	22	72	35	84	65	80	44	19	5.2	4.2
8	14	14	24	66	35	81	63	88	43	18	5.2	4.2
9	18	14	26	61	35	77	63	114	42	17	4.8	4.2
10	22	20	47	56	34	79	62	122	41	15	4.4	4.2
11	22	26	76	51	34	87	63	117	40	13	4.4	4.2
12	22	30	83	48	32	89	67	106	39	13	4.2	4.2
13	20	31	77	44	31	84	67	96	42	12	4.0	4.0
14	18	31	70	43	29	77	72	88	45	12	4.0	4.0
15	21	30	64	42	28	73	83	82	48	12	3.8	4.0
16	24	29	57	41	28	72	91	74	48	11	3.8	4.0
17	31	28	52	39	29	69	94	67	48	10	3.6	3.8
18	37	27	48	40	29	66	89	63	49	9.9	3.8	3.8
19	37	26	44	40	30	64	84	57	52	9.1	4.0	3.6
20	36	26	41	37	33	62	85	54	55	9.1	3.8	3.6
21	34	25	39	35	38	74	89	49	54	8.4	3.8	3.8
22	31	24	37	35	42	76	91	45	51	8.4	3.6	4.2
23	29	24	35	32	50	75	85	43	49	8.1	4.4	4.8
24	28	22	34	33	58	73	80	42	46	8.1	4.8	5.2
25	26	22	34	37	64	69	78	42	44	7.5	5.0	5.2
26	24	22	35	42	67	75	72	47	41	7.2	4.6	5.2
27	22	24	41	48	69	110	66	49	39	6.7	4.6	5.2
28	21	25	45	48	70	137	65	49	38	6.7	4.8	5.2
29	20	25	48	47	------	148	63	47	34	6.7	4.4	5.2
30	19	24	59	44	------	142	65	46	32	6.1	4.4	5.2
31	19	------	68	43	------	128	------	47	------	5.8	4.4	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	37	4.8	20.9	1,290
November	31	14	22.8	1,360
December	83	22	43.4	2,670
January	94	32	52.6	3,230
February	70	28	41.0	2,280
March	148	62	86.0	5,290
April	112	62	77.4	4,610
May	122	42	67.6	4,160
June	55	32	45.3	2,700
July	30	5.8	13.3	818
August	6.1	3.6	4.55	280
September	5.2	3.6	4.39	261
The year	148	3.6	39.9	28,900

CARBON RIVER NEAR FAIRFAX, WASH.

LOCATION.—Water-stage recorder in SW. ¼ sec. 22, T. 18 N., R. 6 E., 1¼ miles northwest of Fairfax.

DRAINAGE AREA.—82 square miles.

RECORDS AVAILABLE.—March to September, 1929; November, 1910, to July, 1912, for a station 1¼ miles above.

EXTREMES.—Maximum discharge during the period Mar. to Sept., 1929, 1,330 second-feet Aug. 2 (gage height, 4.62 feet); minimum, 49 second-feet Sept. 30 (gage height, 1.80 feet).

1910–1912, 1929: Maximum discharge, 2,840 second-feet Nov. 19, 1911 (gage height, 10.5 feet); minimum, that of Sept. 30, 1929.

REMARKS.—Records fair. Water diverted for use in lumber industry but returned to river above gage.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	378	336	487	660	776	845
2	------	328	448	450	766	910	681
3	------	290	660	405	670	787	480
4	------	266	542	328	679	433	264
5	------	238	470	503	790	312	200
6	------	207	455	684	873	365	164
7	------	204	402	608	648	426	126
8	------	189	470	614	778	456	118
9	------	167	554	583	794	404	140
10	------	154	504	572	722	456	174
11	------	154	546	555	454	520	232
12	------	146	740	619	420	438	248
13	------	189	819	767	594	360	374
14	------	223	713	1,010	790	329	524
15	------	223	628	962	530	284	414
16	------	246	597	952	417	234	342
17	------	250	606	749	431	246	382
18	------	207	609	662	483	266	228
19	------	219	756	736	454	191	155
20	------	178	846	602	353	186	108
21	------	178	842	552	298	184	79
22	------	189	851	578	304	180	91
23	------	215	850	576	297	247	85
24	------	246	937	702	351	167	68
25	------	286	754	876	302	163	63
26	------	362	578	812	312	219	58
27	632	419	464	756	340	348	56
28	768	429	402	870	314	512	56
29	621	496	388	740	466	734	51
30	510	404	372	626	544	786	50
31	430	------	428	------	702	991	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
March 27-31	768	430	592	7.22	1.34	5,870
April	496	146	256	3.12	3.48	15,200
May	937	336	599	7.30	8.42	36,800
June	1,010	405	668	8.15	9.09	39,700
July	873	297	533	6.50	7.49	32,800
August	991	163	416	5.07	5.84	25,600
September	845	50	229	2.79	3.11	13,600
The period	------	------	------	------	------	170,000

WHITE RIVER AT GREENWATER, WASH.

LOCATION.—Water-stage recorder in SE. ¼ sec. 10, T. 19 N., R. 9 E., above mouth of Greenwater River and three-fourths of a mile southeast of Greenwater.

DRAINAGE AREA.—216 square miles.

RECORDS AVAILABLE.—March to September, 1929; September, 1911, to May, 1912, fragmentary, for a station 2 miles above, published as White River near Enumclaw, Wash.

EXTREMES.—Maximum discharge during period March to September, 1929, 1,920 second-feet May 24 and June 15 (gage height, 4.65 feet); minimum, 216 second-feet Sept. 30 (gage height, 2.37 feet).

1911–12, 1929: Maximum discharge, 2,120 second-feet Jan. 14, 1912 (gage height, 5.7 feet, at station 2 miles above); minimum, that of Sept. 30, 1929.

REMARKS.—Records excellent May to September, and good for March and April. Discharge estimated Mar. 31, Apr. 7, 14, 21, 22, and 28. No diversions above station.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	500	764	1,030	1,420	939	516
2	------	357	905	982	1,420	914	467
3	------	339	998	973	1,290	854	433
4	------	322	930	1,020	1,240	780	441
5	------	286	846	1,160	1,240	748	426
6	------	286	820	1,380	1,240	772	389
7	------	276	780	1,380	1,200	772	382
8	------	266	854	1,380	1,160	796	378
9	------	266	905	1,330	1,160	796	408
10	------	246	939	1,330	1,060	804	451
11	------	246	1,030	1,290	922	796	475
12	------	269	1,240	1,380	914	740	484
13	------	240	1,420	1,640	998	740	506
14	------	285	1,380	1,690	1,020	724	560
15	------	330	1,330	1,780	982	684	478
16	------	326	1,330	1,740	896	684	506
17	------	386	1,330	1,460	922	684	466
18	------	386	1,330	1,380	948	660	408
19	------	408	1,510	1,290	896	572	388
20	------	465	1,640	1,080	772	556	328
21	------	530	1,740	1,120	740	572	276
22	------	595	1,820	1,160	740	604	266
23	------	660	1,820	1,240	748	612	252
24	------	740	1,870	1,420	788	532	237
25	------	796	1,600	1,600	724	540	231
26	------	990	1,330	1,560	788	636	231
27	------	1,060	1,160	1,510	748	708	222
28	------	1,020	1,040	1,510	780	700	225
29	684	973	1,020	1,460	837	692	225
30	572	854	1,020	1,420	837	684	225
31	536	------	1,080	------	922	636	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
March 29–31	684	536	597	2.76	0.31	3,550
April	1,060	240	490	2.27	2.53	29,200
May	1,870	764	1,220	5.65	6.51	75,000
June	1,780	973	1,360	6.30	7.03	80,900
July	1,420	724	979	4.53	5.22	60,200
August	939	532	707	3.27	3.77	43,500
September	560	222	376	1.74	1.94	22,400
The period	------	------	------	------	------	315,000

WHITE RIVER NEAR BUCKLEY, WASH.

LOCATION.—Water-stage recorder in SE. ¼ NE. ¼ sec. 9, T. 19 N., R. 7 E., 5 miles east of Buckley.

DRAINAGE AREA.—400 square miles.

RECORDS AVAILABLE.—October, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period, 4,350 second-feet May 24 (gage height, 8.95 feet); minimum not determined, occured during Feb. 6–14, when stage-discharge relation was affected by ice.

REMARKS.—Records excellent except those for periods of ice effect (Jan. 21 to Feb. 4 and Feb. 7–14), which are fair. Discharge estimated Oct. 27, 28, Nov. 2, 4, 11, 17, 18, 25–27, 29, and Sept. 30. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	419	419	554		483	985	1,410	2,040	1,920	1,060	659
2	-------	408	383	674	350	764	918	1,660	1,800	1,920	1,020	644
3	-------	398	338	719		719	854	2,100	1,740	1,680	985	569
4	-------	396	310	659		719	824	1,920	1,800	1,620	886	584
5	-------	395	315	584	323	854	764	1,740	1,980	1,620	886	569
6	-------	368	328	539	320	824	719	1,680	2,520	1,680	854	539
7	-------	357	357	509		764	704	1,560	2,440	1,560	886	524
8	-------	357	434	494		704	674	1,680	2,440	1,510	886	509
9	-------	704	539	464		704	659	1,980	2,290	1,460	886	554
10	-------	918	1,120	449	300	794	629	1,920	2,290	1,360	886	599
11	-------	804	871	434		794	644	2,040	2,290	1,140	886	614
12	-------	689	719	449		734	629	2,600	2,290	1,140	824	629
13	-------	614	629	449		689	644	3,070	2,970	1,220	854	659
14	-------	554	569	464		659	870	2,970	3,170	1,260	854	689
15	-------	509	524	449	308	674	950	2,690	3,270	1,180	764	659
16	-------	539	494	434	323	719	950	2,690	3,170	1,100	764	659
17	-------	514	464	464	325	749	886	2,600	2,520	1,100	764	659
18	-------	489	449	509	306	749	824	2,600	2,440	1,140	794	584
19	-------	464	434	419	301	749	854	3,070	2,360	1,100	689	569
20	-------	449	419	352	363	1,360	950	3,490	2,040	950	674	539
21	-------	464	434		338	3,170	1,020	3,720	1,920	886	689	464
22	-------	464	449		333	2,040	1,060	3,840	1,920	918	719	449
23	-------	449	419		389	1,410	1,260	3,840	1,980	886	794	434
24	-------	434	404		401	1,100	1,410	4,220	2,160	950	689	404
25	-------	426	434		419	950	1,560	3,380	2,520	854	674	371
26	464	419	464	350	386	1,120	1,860	2,690	2,290	918	734	349
27	449	411	479		389	1,510	1,980	2,220	2,160	886	794	338
28	434	404	449		386	2,040	1,980	1,920	2,220	886	764	330
29	419	401	554		-------	1,800	1,980	1,800	2,100	950	764	323
30	494	398	599		-------	1,360	1,620	1,740	1,980	950	764	320
31	479	-------	554		-------	1,180	-------	1,920	-------	1,020	764	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October 26–31	494	419	456	1.14	0.25	5,430
November	918	357	487	1.22	1.36	29,000
December	1,120	310	495	1.24	1.43	30,400
January	719	----------	449	1.12	1.29	27,600
February	419	----------	336	.840	.87	18,700
March	3,170	483	1,060	2.65	3.06	65,200
April	1,980	629	1,060	2.65	2.96	63,100
May	4,220	1,410	2,480	6.20	7.15	152,000
June	3,270	1,740	2,300	5.75	6.42	137,000
July	1,920	854	1,220	3.05	3.52	75,000
August	1,060	674	815	2.04	2.35	50,100
September	689	320	526	1.32	1.47	31,300
The period	----------	----------	----------	----------	----------	685,000

GREENWATER RIVER AT GREENWATER, WASH.

LOCATION.—Water-stage recorder in NW. ¼ NW. ¼ sec. 11, T. 19 N., R. 9 E., 1 mile above mouth of river and east of Greenwater.

DRAINAGE AREA.—75 square miles.

RECORDS AVAILABLE.—September, 1911, to August, 1912, fragmentary (published as Greenwater River near Enumcaw, Wash.); May to September, 1929.

EXTREMES.—Maximum discharge during period May to September, 1929, 759 second-feet May 21–24 (gage height, 4.3 feet); minimum, 35 second-feet Sept. 29 and 30 (gage height, 1.58 feet).

1911–12, 1929: Maximum discharge (estimated), 2,800 second-feet Nov. 19, 1911 (gage height, 5.0 feet); minimum, that of Sept. 29 and 30, 1929.

REMARKS.—Records good. Discharge estimated May 5, 19, and 26. No diversions above station.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	260	389	232	79	47	16	555	451	116	55	36
2	280	378	219	77	53	17	555	414	111	54	35
3	277	358	209	76	47	18	555	403	105	53	36
4	361	352	196	74	45	19	616	410	105	53	36
5	331	361	189	69	44	20	676	372	103	53	36
6	301	403	175	67	43	21	759	342	99	52	41
7	352	422	170	66	42	22	759	320	96	51	43
8	320	433	160	66	42	23	759	310	94	52	44
9	304	422	149	64	41	24	759	304	91	52	44
10	342	407	145	62	41	25	676	307	91	51	40
11	382	403	136	60	40	26	573	298	89	49	38
12	516	403	132	59	40	27	470	280	86	48	37
13	614	425	127	56	38	28	410	271	83	46	36
14	614	436	120	56	38	29	372	263	82	46	35
15	574	448	116	55	38	30	361	246	80	45	35
						31	372	------	80	45	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
May	759	260	486	6.48	7.47	29,900
June	451	246	368	4.91	5.48	21,900
July	232	80	129	1.72	1.98	7,930
August	79	45	57.8	.771	.89	3,550
September	53	35	40.4	.539	.60	2,400
The period						65,700

LAKE WASHINGTON BASIN

CEDAR RIVER AT CEDAR FALLS, WASH.

LOCATION.—Water-stage recorder in sec. 4, T. 22 N., R. 8 E., 0.7 mile below Seattle municipal power plant at Cedar Falls.

DRAINAGE AREA.—83 square miles.

RECORDS AVAILABLE.—April, 1914, to September, 1929.

EXTREMES.—Maximum discharge during year, 714 second-feet Apr. 29 (gage height, 6.14 feet); minimum, 19 second-feet Oct. 14 (gage height, 4.19 feet). 1914–1929: Maximum discharge, 6,290 second-feet Dec. 19, 1917 (gage height, 11.4 feet); no flow Nov. 25, 1917, and Aug. 18, 1923.

REMARKS.—Records good. Discharge estimated Oct. 1, Dec. 17–20, Jan. 28 to Feb. 5, and July 16. All diversions returned to river above station. Flow partly controlled by storage in Cedar Lake Reservoir. Results of some discharge measurements furnished by the city of Seattle.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	116	216	73	78	210	176	327	359	216	181	112	42
2	204	76	62	176	232	163	393	330	145	173	146	42
3	275	84	80	170	227	235	352	366	310	165	94	42
4	238	57	87	154	209	143	281	326	322	112	102	40
5	212	74	70	154	197	265	331	336	396	117	115	38
6	162	64	74	72	225	272	351	324	442	123	106	34
7	197	69	76	172	221	240	372	297	384	112	226	35
8	280	82	70	140	206	235	278	358	398	145	238	36
9	204	64	60	150	103	241	270	308	372	171	217	35
10	74	106	80	182	47	218	298	292	444	180	164	41
11	74	72	72	182	197	222	296	219	374	181	117	46
12	82	96	75	130	154	214	306	186	370	167	137	40
13	74	63	80	64	224	219	296	322	364	168	118	32
14	53	64	84	154	192	222	188	328	372	111	112	31
15	142	66	68	98	222	187	318	260	246	144	95	32
16	112	70	56	118	183	198	342	268	147	188	88	33
17	124	76	81	118	75	85	310	209	292	187	70	32
18	132	54	82	109	260	101	284	193	298	155	213	34
19	116	79	89	109	236	76	284	215	382	107	66	33
20	94	82	81	31	190	95	254	206	398	116	70	55
21	305	67	76	142	188	84	252	212	448	117	54	35
22	133	71	74	119	59	77	192	120	422	120	45	60
23	160	93	56	289	128	90	188	243	293	134	44	38
24	174	79	80	186	87	81	266	248	324	143	42	47
25	228	58	59	115	136	103	307	235	346	114	30	34
26	178	58	82	106	147	109	364	142	326	112	34	34
27	176	91	86	189	182	85	460	285	239	94	36	35
28	170	66	93	261	200	91	346	293	196	104	54	30
29	228	72	153	263	------	136	391	299	163	96	42	28
30	248	86	70	262	------	196	340	162	122	101	54	28
31	241	------	123	230	------	446	------	263	------	93	41	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	305	53	16.8	------	------	10,300
November	216	54	78.5	------	------	4,670
December	153	56	79.1	------	------	4,860
January	289	31	152	------	------	9,350
February	260	47	176	------	------	9,780
March	446	76	171	------	------	10,500
April	460	188	308	------	------	18,300
May	366	120	265	------	------	16,300
June	448	122	318	------	------	18,900
July	188	93	136	------	------	8,360
August	238	30	99.4	------	------	6,110
September	60	28	37.4	------	------	2,230
The year	460	28	165	1.99	27.01	120,000

CEDAR RIVER NEAR LANDSBERG, WASH.

LOCATION.—Water-stage recorder in sec. 17, T. 22 N., R. 7 E., 1¾ miles above intake of Seattle water-supply system at Landsberg.

DRAINAGE AREA.—135 square miles.

RECORDS AVAILABLE.—April, 1914, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,180 second-feet Mar. 31 (gage height, 3.07 feet); minimum, 230 second-feet Sept. 30 (gage height, 1.12 feet).

1914–1929: Maximum discharge, 7,500 second-feet Dec. 29, 1917 (gage height, 13.55 feet); minimum, 162 second-feet Oct. 15, 1914. Discharge may have been lower sometime between Oct. 15–26, 1925, when water was below intake to stilling well.

REMARKS.—Records good. All diversions returned to river above station. Flow partly controlled by storage in Cedar Lake Reservoir.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	298	410	300	385	508	625	774	760	682	600	443	316
2	417	250	284	496	500	738	830	804	598	596	518	312
3	474	238	300	549	462	751	804	838	729	582	444	318
4	452	234	307	494	518	618	677	783	748	528	434	300
5	433	236	292	462	441	740	732	790	841	514	464	303
6	410	235	291	386	454	741	760	794	899	522	453	296
7	430	234	297	448	474	675	824	748	868	504	563	290
8	541	257	300	425	464	654	712	832	861	546	622	288
9	688	285	295	428	340	637	714	786	837	567	590	286
10	479	373	446	442	266	628	772	718	913	588	518	285
11	386	336	392	458	417	620	777	653	880	588	490	292
12	366	324	368	392	379	600	788	626	860	574	480	290
13	344	278	354	324	445	589	799	774	884	564	456	274
14	322	261	350	406	420	573	848	784	930	499	450	272
15	581	256	332	360	446	534	924	674	843	530	430	270
16	568	280	316	356	409	582	854	670	721	552	432	268
17	597	296	320	376	302	451	768	568	860	600	383	266
18	515	265	328	380	487	448	735	581	850	552	580	268
19	446	278	326	357	486	416	716	626	930	481	390	266
20	392		322	282	448	512	676	604	940	498	386	262
21	535		324	384	452	680	676	624	977	482	362	298
22	376		321	359	311	582	652	530	932	495	346	283
23	310			548	432	532	605	654	807	498	350	289
24	358			480	390	484	676	694	792	512	338	272
25	406	280		394	504	480	740	672	818	473	316	255
26	346		350	402	485	622	804	573	786	474	315	250
27	344			429	598	744	879	698	702	449	316	252
28	340			597	611	784	802	704	636	448	332	252
29	380			617	------	745	832	702	602	452	324	244
30	432			587	------	684	755	558	546	452	344	237
31	420	------		550	------	996	------	683	------	435	320	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	688	298	432	------	------	26,600
November	410	234	280	------	------	16,700
December	446	284	333	------	------	20,500
January	617	282	437	------	------	26,900
February	611	266	445	------	------	24,700
March	996	416	628	------	------	38,600
April	924	605	764	------	------	45,500
May	838	530	694	------	------	42,700
June	977	546	809	------	------	48,100
July	600	435	521	------	------	32,000
August	622	315	425	------	------	26,100
September	318	237	278	------	------	16,500
The year	996	234	504	3.71	50.33	365,000

SNOHOMISH RIVER BASIN

TYE RIVER NEAR SKYKOMISH, WASH.

LOCATION.—Staff gage in SW. ¼ sec. 29, T. 26 N., R. 12 E., a quarter of a mile above Foss River and 3 miles east of Skykomish.
DRAINAGE AREA.—80 square miles.
RECORDS AVAILABLE.—August to September, 1929.
EXTREMES.—Maximum discharge during period, 164 second-feet Aug. 1 and 2 (gage height, 3.35 feet); minimum, 65 second-feet Sept. 30 (gage height, 2.74 feet).
REMARKS.—Records excellent. No diversions above station.

Daily and monthly discharge, in second-feet, 1929

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1	164	90	11	122	74	21	106	79
2	164	95	12	122	72	22	104	93
3	156	88	13	122	72	23	114	98
4	148	85	14	122	71	24	114	80
5	122	84	15	114	70	25	101	72
6	148	80	16	114	70	26	101	71
7	148	79	17	114	68	27	98	68
8	139	79	18	114	68	28	95	66
9	139	77	19	130	66	29	93	66
10	148	76	20	114	68	30	93	65
						31	92	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
August	164	92	122	1.52	1.75	7,500
September	98	65	76.3	.954	1.06	4,540
The period						12,000

SOUTH FORK OF SKYKOMISH RIVER NEAR SKYKOMISH, WASH.

LOCATION.—Staff gage in SE. ¼ SW. ¼ sec. 30., T. 26 N., R. 12 E., a quarter of a mile below Foss River and 2 miles east of Skykomish.
DRAINAGE AREA.—137 square miles.
RECORDS AVAILABLE.—August to September, 1929.
EXTREMES.—Maximum discharge during period, 439 second-feet Aug. 1–3 and 5 (gage height, 3.3 feet); minimum, 142 second-feet Sept. 29 (gage height, 1.70 feet).
REMARKS.—Records good. No diversions above station.

Daily and monthly discharge, in second-feet, 1929

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1	439	249	11	367	200	21	267	185
2	439	249	12	367	200	22	267	192
3	439	232	13	324	216	23	304	163
4	414	216	14	324	216	24	267	170
5	439	216	15	324	216	25	267	156
6	367	216	16	304	216	26	267	156
7	367	200	17	285	232	27	267	149
8	367	200	18	285	200	28	267	142
9	367	200	19	324	192	29	267	304
10	367	200	20	285	185	30	249	304
						31	249	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
August	439	249	327	2.39	2.76	20,100
September	304	142	206	1.50	1.67	12,300
The period						32,[illegible]00

SOUTH FORK OF SKYKOMISH RIVER NEAR INDEX, WASH.

LOCATION.—Staff gage in NE. ¼ sec. 29, T. 27 N., R. 10 E., 300 feet above Sunset Falls, 2 miles above North Fork of Skykomish River, and 2 miles southeast of Index.

DRAINAGE AREA.—355 square miles.

RECORDS AVAILABLE.—October, 1902, to September, 1905, and April, 1911, to September, 1929.

EXTREMES.—Maximum discharge during year, 9,490 second-feet Oct. 9 (gage height, 9.70 feet); minimum, 271 second-fee tSept. 30 (gage height, 0.66 foot). 1902–1905, 1911–1929: Maximum discharge, 47,000 second-feet Dec. 18, 1917 (gage height, 22.6 feet); minimum, 214 second-feet Oct. 15–21 and 23, 1925 (gage height, 0.4 foot).

REMARKS.—Records good except those for Jan. 29 to Feb. 19, which are fair. Discharge estimated Nov. 14–16. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	575	650	735	830		930	1,640	2,570	4,170	3,160	780	399
2	1,560	575	690	980		1,280	1,420	5,910	3,700	2,960	735	399
3	1,220	575	610	980		1,220	1,350	4,930	3,370	2,760	735	399
4	1,350	780	610	880		1,160	1,220	3,930	4,050	2,570	690	374
5	1,880	735	575	780	420	1,560	1,100	3,370	4,540	2,480	650	374
6	1,800	690	575	690		1,420	1,040	3,160	5,760	2,570	650	350
7	2,960	650	575	650		1,280	980	2,960	5,480	2,210	610	350
8	4,800	650	980	650		1,160	980	3,370	5,340	2,300	610	327
9	9,490	1,960	2,210	610		1,220	880	3,060	4,930	2,210	610	350
10	4,540	2,210	2,760	575		1,280	880	2,960	4,540	2,120	575	350
11	2,960	2,040	2,040	575	400	1,220	830	3,810	4,170	1,800	575	350
12	2,210	1,720	1,720	575		1,040	830	4,800	4,290	1,720	540	350
13	1,720	1,420	1,420	575		980	1,100	6,210	6,210	1,720	540	350
14	1,420	1,370	1,160	575		980	1,880	5,480	5,620	1,720	510	350
15	2,480	1,320	1,040	575		1,040	1,640	5,200	6,670	1,560	510	350
16	2,570	1,270	930	540	370	1,100	1,720	5,060	5,340	1,560	480	350
17	2,660	1,220	830	540		1,220	1,560	4,670	5,200	1,420	480	350
18	1,960	1,100	780	575		1,160	1,420	4,930	5,620	1,420	480	327
19	1,560	980	735	540		1,350	1,420	6,360	5,200	1,350	540	327
20	1,350	930	690	480	575	1,560	1,560	6,990	4,170	1,350	480	327
21	1,160	1,100	690	510	480	3,590	1,880	6,830	3,810	1,160	452	374
22	1,100	1,100	690	510	480	2,390	1,880	8,170	3,930	1,100	452	399
23	1,040	980	650	480	540	1,720	2,390	7,310	4,290	1,040	480	425
24	930	980	610	480	540	1,560	2,760	8,350	4,930	1,040	510	374
25	880	880	780	540	690	1,350	3,060	6,210	4,290	1,040	452	350
26	780	1,040	930	540	610	2,960	3,590	4,670	3,810	1,040	452	327
27	780	880	780	510	610	3,260	4,050	3,810	3,480	930	452	304
28	690	780	830	425	575	4,800	3,480	3,260	3,590	880	452	304
29	650	735	830		------	3,160	3,590	3,160	3,260	830	425	282
30	690	690	980	420	------	2,390	2,760	3,160	3,160	880	425	271
31	690	------	830		------	1,880	------	4,290	------	830	399	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	9,490	575	1,950	5.49	6.33	120,000
November	2,210	575	1,070	3.01	3.36	63,700
December	2,760	575	976	2.75	3.17	60,000
January	980	----------	595	1.68	1.94	36,600
February	690	----------	454	1.28	1.33	25,200
March	4,800	930	1,720	4.85	5.59	106,000
April	4,050	830	1,830	5.15	5.75	109,000
May	8,350	2,570	4,800	13.5	15.56	295,000
June	6,670	3,160	4,560	12.8	14.28	271,000
July	3,160	830	1,670	4.70	5.42	103,000
August	780	399	540	1.52	1.75	33,200
September	425	271	350	.986	1.10	20,800
The year	9,490	271	1,720	4.85	65.58	1,240,000

SKYKOMISH RIVER NEAR GOLD BAR, WASH.

LOCATION.—Water-stage recorder in SW. ¼ sec. 9, T. 27 N., R. 9 E., 2 miles southeast of Gold Bar.

DRAINAGE AREA.—535 square miles.

RECORDS AVAILABLE.—September, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period, 18,800 second-feet Oct. 9 (gage height, 10.55 feet); minimum, 440 second-feet Sept. 30, 1929 (gage height, 2.80 feet).

REMARKS.—Records good through October; excellent thereafter. Discharge estimated Nov. 8–11. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	718	1,110	1,380	1,480	939	1,200	2,570	3,630	6,380	4,960	1,430	726
2	------	3,210	1,030	1,270	1,650	867	2,000	2,300	7,360	5,860	5,080	1,350	718
3	------	2,240	993	1,180	1,700	777	2,000	2,120	8,580	5,080	4,360	1,330	686
4	------	2,060	1,180	1,120	1,540	742	1,940	2,000	6,380	6,250	4,250	1,220	646
5	------	2,500	1,280	1,080	1,400	718	2,500	1,820	5,210	7,460	4,030	1,160	638
6	------	3,210	1,290	1,030	1,290	686	2,440	1,700	4,840	8,860	4,030	1,110	614
7	------	8,300	1,130	1,070	1,220	662	2,120	1,700	4,480	9,140	3,540	1,110	590
8	------	8,860	1,450	1,650	1,190	654	1,940	1,600	4,960	8,860	3,630	1,110	574
9	------	15,900	1,760	3,140	1,120	654	1,880	1,540	4,840	8,020	3,630	1,100	566
10	------	11,100	2,080	4,500	1,080	662	2,120	1,480	4,600	7,040	3,370	1,070	550
11	------	6,250	2,390	3,460	1,070	646	2,060	1,430	6,120	6,510	2,920	1,040	558
12	------	3,460	2,710	2,780	1,050	638	1,880	1,420	8,580	6,510	2,710	1,000	574
13	------	5,860	2,570	2,300	1,050	646	1,700	1,480	10,300	9,140	2,780	975	558
14	------	6,120	2,240	2,000	1,070	638	1,700	2,470	9,420	9,420	2,850	930	574
15	------	5,730	1,940	1,760	1,020	646	1,760	2,710	8,580	9,980	2,640	894	574
16	750	5,860	2,180	1,650	1,000	670	1,880	2,640	8,580	9,140	2,440	885	558
17	734	5,210	2,120	1,480	1,000	678	2,000	2,440	7,740	8,580	2,370	849	566
18	768	3,720	1,880	1,400	1,080	630	1,940	2,240	7,740	8,300	2,300	840	550
19	702	3,060	1,760	1,320	948	646	2,000	2,300	9,700	9,140	2,180	939	518
20	662	2,240	1,650	1,260	858	858	2,440	2,440	10,800	7,180	2,120	912	518
21	638	2,060	1,760	1,200	912	849	4,700	2,780	11,400	6,380	2,000	849	606
22	606	2,440	1,940	1,230	903	840	3,660	2,920	12,300	6,250	1,880	804	759
23	614	2,240	1,760	1,180	813	948	2,780	3,630	12,300	6,640	1,760	840	813
24	614	2,120	1,650	1,130	849	993	2,440	4,250	12,900	7,740	1,760	1,010	694
25	558	2,000	1,600	1,300	957	1,190	2,240	4,840	10,800	7,740	1,650	939	614
26	542	1,820	1,600	1,480	1,000	1,090	3,530	5,990	7,740	6,250	1,650	849	558
27	526	1,540	1,540	1,430	921	1,110	4,960	6,510	6,120	5,470	1,600	822	510
28	510	1,410	1,430	1,350	858	1080	7,460	5,470	5,080	5,990	1,540	822	496
29	503	1,300	1,350	1,540	930	------	5,410	5,470	4,960	5,470	1,480	777	468
30	496	1,200	1,330	1,650	903	------	3,720	4,360	4,960	5,080	1,480	768	447
31	------	1,190	------	1,540	903	------	2,920	------	6,770	------	1,480	750	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1928						
September 16–30	768	496	615	1.15	0.64	18,300
1928–29						
October	15,900	718	4,030	7.53	8.68	248,000
November	2,710	993	1,690	3.16	3.53	101,000
December	4,500	1,030	1,670	3.12	3.60	103,000
January	1,700	813	1,090	2.04	2.35	67,000
February	1,190	630	791	1.48	1.54	43,900
March	7,460	1,200	2,690	5.03	5.80	165,000
April	6,510	1,420	2,890	5.40	6.02	172,000
May	12,900	3,630	7,670	14.3	16.49	472,000
June	9,980	5,080	7,330	13.7	15.29	436,000
July	5,080	1,480	2,720	5.08	5.86	167,000
August	1,430	750	983	1.84	2.12	60,400
September	813	447	594	1.11	1.24	35,300
The year	15,900	447	2,860	5.35	72.52	2,070,000

MILLER CREEK AT MILLER RIVER, WASH.

LOCATION.—Staff gage in SW. ¼ sec. 28, T. 26 N., R. 11 E., five-eighths mile south of Miller River.

DRAINAGE AREA.—44.2 square miles.

RECORDS AVAILABLE.—May, 1911, to June, 1919; December, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period December, 1928, to September, 1929, 1,630 second-feet May 3 (gage height, 5.02 feet); minimum, 23 second-feet Sept. 30 (gage height, 0.78 foot).

1911–1919, 1928–29: Maximum stage occurred during flood of Dec. 18, 1917, which destroyed gage; estimated by observer at 7 or 8 feet (discharge not estimated); minimum discharge, that of Sept. 30, 1929.

REMARKS.—Records fair. Discharge estimated Jan. 30 to Feb. 2, Aug. 28 to Sept. 6, Sept. 8, 14–26, and 28. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	188	38	77	220	840	470	605	209	42
2	------	209	36	77	178	1,550	490	558	209	39
3	------	198	34	82	168	1,630	490	512	198	27
4	------	149	34	85	109	955	605	490	168	34
5	------	96	34	79	71	535	630	450	178	32
6	------	79	34	71	69	512	1,020	450	168	29
7	------	79	34	69	53	490	895	295	158	26
8	------	79	34	64	46	490	895	280	140	25
9	------	77	34	69	46	490	785	280	131	24
10	------	75	33	69	53	490	840	268	131	24
11	------	75	33	77	77	630	840	310	131	24
12	------	75	33	88	123	1,020	840	310	131	24
13	209	75	33	112	168	1,080	955	295	131	24
14	168	75	34	131	280	1,020	1,020	310	131	
15	131	74	34	131	280	955	895	310	131	
16	115	74	34	123	295	895	840	340	131	25
17	102	71	35	131	231	840	840	340	123	
18	96	66	38	123	268	840	840	325	115	
19	91	61	47	112	280	955	840	325	112	
20	79	61	55	209	295	1,200	840	325	112	
21	77	61	61	450	325	1,480	840	310	105	
22	102	59	64	410	450	1,410	840	310	102	
23	88	57	66	280	535	1,340	840	310	96	
24	77	49	69	255	535	1,080	840	295	91	40
25	82	46	69	198	680	895	730	295	71	
26	131	44	71	785	785	840	630	268	61	
27	109	44	71	680	730	630	630	255	55	28
28	112	44	74	1,020	680	470	680	243	52	26
29	131	43	------	680	580	450	680	243	50	24
30	140	42	------	430	490	450	680	243	47	23
31	168	40	------	268	------	450	------	231	45	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
December 13–31	209	77	116	2.62	1.85	4,370
January	209	40	79.5	1.80	2.08	4,890
February	74	33	45.2	1.02	1.06	2,510
March	1,020	64	240	5.43	6.26	14,800
April	785	46	303	6.86	7.65	18,000
May	1,630	450	868	19.6	22.6	53,400
June	1,020	470	775	17.5	19.52	46,100
July	605	231	335	7.58	8.74	20,600
August	209	45	120	2.71	3.12	7,380
September	------	23	29.7	.672	.75	1,770
The period	------	------	------	------	------	174,000

NORTH FORK OF SKYKOMISH RIVER AT INDEX, WASH.

LOCATION.—Chain gage in SE. ¼ sec. 17, T. 27 N., R. 10 E., on highway bridge at Index 1¾ miles above mouth of river.

DRAINAGE AREA.—149 square miles (revised).

RECORDS AVAILABLE.—August, 1910, to September, 1922; February to September, 1929.

EXTREMES.—Maximum discharge during period February to September, 1929, 4,100 second-feet May 21 (gage height, 5.80 feet); minimum, 99 second-feet Sept. 29 and 30 (gage height, 2.48 feet).

1910–1922, 1929: Maximum discharge, 17,000 second-feet Dec. 29, 1917 (gage height, 13 feet), discharge probably greater Dec. 12, 1921; minimum, 80 second-feet Feb. 23 and 24, 1922.

REMARKS.—Records good. Discharge estimated June 23. No diversions above station.

Daily and monthly discharge, in second-feet, 1929

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	265	680	1,160	2,140	1,520	390	172
2	------	640	600	2,650	1,740	1,520	366	180
3	------	525	525	2,310	1,520	1,330	354	172
4	------	600	490	1,970	2,140	1,270	319	156
5	------	765	403	1,590	2,310	1,220	286	148
6	------	600	390	1,460	2,820	1,270	286	140
7	------	525	403	1,460	2,650	1,220	297	133
8	------	525	403	1,660	2,650	1,160	286	133
9	------	490	378	1,520	2,310	1,160	275	126
10	------	525	378	1,520	2,140	1,050	275	133
11	------	562	342	2,060	2,060	855	275	133
12	------	562	342	2,820	1,970	855	245	133
13	------	562	342	2,990	3,350	855	235	133
14	------	562	902	2,650	2,820	902	235	140
15	------	455	765	2,480	3,350	765	225	140
16	------	442	765	2,480	2,650	680	216	126
17	------	429	640	2,140	2,820	680	207	133
18	------	525	600	2,310	2,480	680	216	119
19	------	600	680	2,820	2,650	640	225	126
20	207	855	722	2,990	2,140	680	207	126
21	180	1,390	810	4,100	2,060	525	189	255
22	180	902	855	3,350	1,810	525	180	245
23	198	722	1,270	3,350	1,980	490	297	198
24	198	640	1,330	3,530	2,140	490	275	156
25	198	600	1,590	3,170	2,140	416	216	133
26	255	1,050	1,810	2,310	1,810	525	198	119
27	265	1,390	2,060	1,970	1,660	416	198	119
28	265	2,310	1,740	1,660	1,660	429	198	112
29	------	1,390	1,660	1,660	1,520	403	189	99
30	------	1,050	1,270	1,660	1,520	416	180	99
31	------	765	------	2,310	------	403	180	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
February 20–28	265	180	216	1.45	0.49	3,860
March	2,310	265	749	5.03	5.80	46,100
April	2,060	342	838	5.62	6.27	49,900
May	4,100	1,160	2,330	15.6	17.99	143,000
June	3,350	1,520	2,230	15.0	16.74	133,000
July	1,520	403	818	5.49	6.33	50,300
August	390	180	249	1.67	1.92	15,300
September	255	99	145	.973	1.09	8,630
The period						450,000

WALLACE RIVER AT GOLD BAR, WASH.

LOCATION.—Staff gage in NE. ¼ sec. 6, T. 27 N., R. 9 E., at highway bridge in Gold Bar.

DRAINAGE AREA.—18.7 square miles.

RECORDS AVAILABLE.—December, 1928, to September 30, 1929.

EXTREMES.—Maximum discharge during period, 470 second-feet June 14 and 15; minimum, 11 second-feet Sept. 14–19.

REMARKS.—Records good. Discharge estimated May 6, July 7, and Sept. 22. No diversions above station. Gage heights Dec. 9 to Feb. 28 furnished by Robert Howes, consulting engineer, of Seattle.

Daily and monthly discharge, in second-feet, 1928–29

Day	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	68	30	52	134	143	300	94	21	17
2	------	64	28	210	102	420	210	102	21	18
3	------	64	28	110	95	222	200	91	21	17
4	------	64	28	110	85	235	248	81	21	16
5	------	62	28	161	81	222	260	80	18	13
6	------	62	26	118	73	211	300	78	18	13
7	------	62	26	102	70	200	235	76	18	13
8	------	56	24	88	75	235	222	75	17	13
9	435	56	24	87	70	200	200	64	17	12
10	260	56	24	126	62	260	190	70	17	12
11	200	52	24	102	64	248	180	62	16	12
12	161	50	24	88	60	248	190	49	15	12
13	134	50	24	81	62	134	452	50	15	12
14	102	50	22	78	152	110	470	55	15	11
15	74	50	22	82	95	88	470	44	15	11
16	60	48	22	87	102	95	390	42	14	11
17	60	48	30	88	85	200	360	38	14	11
18	56	45	30	81	82	222	360	37	18	11
19	56	45	28	85	95	180	345	37	21	11
20	52	45	32	190	118	134	235	47	17	13
21	48	42	33	315	143	114	210	39	15	25
22	45	42	33	180	134	95	175	33	14	34
23	42	40	40	134	170	87	185	31	57	44
24	42	40	40	110	190	300	185	31	42	30
25	102	40	46	102	210	375	145	28	21	23
26	81	40	40	210	260	330	127	47	18	20
27	48	38	42	248	260	190	124	33	17	17
28	42	30	42	390	235	180	118	26	15	16
29	42	32	------	222	222	170	113	25	15	15
30	81	28	------	152	170	161	117	24	14	15
31	68	28	------	134	------	272	------	22	16	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
December 9–31	435	42	99.6	5.33	4.56	4,540
January	68	28	48.3	2.58	2.97	2,970
February	46	22	30.0	1.60	1.67	1,670
March	390	52	139	7.43	8.57	8,550
April	260	60	125	6.68	7.45	7,440
May	420	87	203	10.9	12.57	12,500
June	470	113	244	13.0	14.50	14,500
July	102	22	52.0	2.78	3.20	3,200
August	57	14	19.1	1.02	1.18	1,170
September	44	11	16.6	.888	.99	988
The period						57,500

OLNEY CREEK NEAR STARTUP, WASH.

LOCATION.—Water-stage recorder in SE. ¼ sec. 12, T. 28 N., R. 8 E., 1½ miles above Stickney Bridge and 5 miles northeast of Startup.

DRAINAGE AREA.—10 square miles.

RECORDS AVAILABLE.—October, 1922, to October, 1926; February to September, 1929.

EXTREMES.—Maximum discharge during period February to September, 1929, 430 second-feet Mar. 21 (gage height, 3.31 feet); minimum, 6.9 second-feet Sept. 17–19 (gage height, 0.79 foot).

1922–1926, 1929: Maximum discharge, 1,600 second-feet Oct. 27, 1925 (gage height, 5.97 feet); minimum, 3.8 second-feet Oct. 16, 1925 (gage height, 0.67 foot).

REMARKS.—Records excellent. No diversions above gage.

Daily and monthly discharge, in second-feet, 1929

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	117	61	92	144	51	9.2	16
2	------	216	53	180	118	48	8.9	13
3	------	115	49	161	95	40	8.9	9.2
4	------	112	45	138	115	41	8.3	8.3
5	------	139	42	126	107	38	8.3	7.9
6	------	96	37	133	114	35	8.0	7.9
7	------	84	36	112	110	32	7.9	7.8
8	------	72	36	127	91	35	7.8	7.6
9	------	82	35	127	85	29	7.8	7.4
10	------	113	35	110	84	31	7.7	7.2
11	------	86	36	133	80	30	7.6	7.2
12	------	64	37	157	85	25	7.5	7.1
13	------	54	44	149	146	24	7.6	7.1
14	------	50	145	118	118	21	7.5	7.0
15	------	55	96	113	207	19	7.5	7.0
16	------	74	91	109	159	17	7.5	7.0
17	------	74	70	92	189	16	7.3	6.9
18	------	61	63	113	205	15	9.5	6.9
19	------	58	67	142	238	14	12	6.9
20	------	193	142	135	127	21	8.0	8.4
21	------	274	132	138	105	19	7.8	13
22	20	120	107	138	93	14	7.6	45
23	28	82	115	129	93	13	45	28
24	29	68	116	159	94	12	28	17
25	35	64	129	203	71	11	13	11
26	29	180	138	115	60	16	10	9.5
27	35	180	131	94	64	14	9.2	8.0
28	32	282	164	84	60	11	8.3	7.9
29	------	137	147	79	53	10	8.0	7.4
30	------	92	113	73	52	10	7.8	7.2
31	------	72	------	114	------	10	8.6	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
February 22–28	35	20	29.7	2.97	0.77	412
March	282	50	112	11.2	12.91	6,890
April	164	35	83.7	8.37	9.34	4,980
May	203	73	126	12.6	14.53	7,750
June	238	52	112	11.2	12.50	6,660
July	51	10	23.3	2.33	2.69	1,430
August	45	7.3	10.3	1.03	1.19	633
September	45	6.9	10.6	1.06	1.18	631
The period						29,400

MAY CREEK NEAR GOLD BAR, WASH.

LOCATION.—Staff gage in sec. 2, T. 27 N., R. 9 E., three-quarters of a mile below Lake Isabel and 3½ miles east of Gold Bar.

DRAINAGE AREA.—4.3 square miles.

RECORDS AVAILABLE.—September, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period, 138 second-feet Oct. 9 (gage height, 2.83 feet); minimum, 1.6 second-feet Sept. 15–19, 1929; minimum stage, 0.37 foot Sept. 19, 1929.

REMARKS.—Records good. No diversions above station. Gage-height record prior to Dec. 11 furnished by Cascade Power Co.

Daily and monthly discharge, in second-feet, 1928–29

Day	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.7	7.7	15	15	15	7.1	6.5	24	42	72	46	5.8	2.3
2	7.1	11	14	15	16	7.1	9.8	23	56	68	43	5.5	2.4
3	7.1	14	13	14	15	7.1	13	22	63	58	40	5.2	2.4
4	7.1	16	13	14	14	6.5	15	20	63	55	39	4.7	2.3
5	7.1	24	14	13	13	6.2	17	19	56	68	38	3.9	2.3
6	6.8	26	14	12	11	5.9	15	18	56	79	35	3.6	2.3
7	6.8	28	13	14	10	5.9	15	17	49	86	34	3.4	2.2
8	6.5	33	12	14	10	5.6	14	16	46	90	32	3.1	2.0
9	5.9	138	18	20	9.1	5.6	14	15	46	76	30	2.8	2.0
10	5.9	130	22	27	9.1	6.2	14	15	46	72	29	2.7	2.0
11	5.9	80	27	26	8.5	6.5	15	14	49	68	27	2.7	1.9
12	7.1	56	27	24	8.2	5.9	13	14	66	62	24	2.6	1.8
13	8.8	46	28	22	8.2	4.7	12	13	91	79	23	2.5	1.7
14	9.4	41	27	19	8.2	4.0	12	22	91	86	22	2.4	1.7
15	8.2	66	26	19	8.0	3.6	13	17	84	93	21	2.3	1.6
16	8.0	102	27	17	8.0	3.4	13	17	80	100	19	2.3	1.6
17	7.1	84	26	16	8.2	6.2	14	16	77	100	17	2.3	1.6
18	8.8	74	25	15	9.1	5.3	13	15	77	93	16	2.2	1.6
19	8.2	52	22	13	8.5	5.9	13	17	84	100	16	2.6	1.6
20	8.0	39	20	13	8.2	5.9	20	18	91	90	15	2.5	1.8
21	7.1	30	18	12	7.7	6.2	26	20	98	86	14	2.4	2.0
22	6.8	27	18	12	7.1	5.6	24	22	106	79	13	2.3	3.1
23	6.5	24	18	12	6.8	6.2	22	23	106	68	12	2.3	4.1
24	8.8	24	17	11	6.8	6.5	21	27	100	65	11	2.7	3.9
25	7.7	24	15	14	8.0	7.1	20	32	100	62	10	2.6	3.5
26	7.1	23	18	15	8.8	7.1	27	39	93	58	9.4	2.4	2.9
27	6.5	22	17	13	9.4	7.4	29	46	79	55	9.0	2.4	2.6
28	6.5	19	17	13	8.5	6.8	43	49	68	52	8.7	2.3	2.5
29	4.7	17	15	15	8.0	------	37	46	58	49	8.1	2.3	2.4
30	6.5	17	15	17	7.7	------	33	46	55	49	7.1	2.3	2.3
31	------	16	------	14	7.4	------	29	------	62	------	6.3	2.2	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1928						
September	9.4	4.7	7.19	1.67	1.86	428
1928–29						
October	138	7.7	42.3	9.84	11.34	2,600
November	28	12	19.0	4.42	4.93	1,130
December	27	11	15.8	3.67	4.23	972
January	16	6.8	9.40	2.19	2.52	578
February	7.4	3.4	5.98	1.39	1.45	332
March	43	6.5	18.8	4.37	5.04	1,160
April	49	13	23.4	5.44	6.07	1,390
May	106	42	72.2	16.8	19.37	4,440
June	100	49	73.9	17.2	19.19	4,400
July	46	6.3	21.8	5.07	5.84	1,340
August	5.8	2.2	2.95	.686	.79	181
September	4.1	1.6	2.28	.530	.59	136
The year	138	1.6	25.8	6.00	81.36	18,700

SULTAN RIVER NEAR SULTAN, WASH.

LOCATION.—Water-stage recorder in sec. 8, T. 28 N., R. 8 E., at Horseshoe Bend, 4½ miles north of Sultan and mouth of river.

DRAINAGE AREA.—88 square miles.

RECORDS AVAILABLE.—August, 1911, to October, 1926; February to September, 1929.

EXTREMES.—Maximum stage recorded during period February to September, 1929, 3,320 second-feet Mar. 28 (gage height, 6.90 feet); minimum, 39 second-feet Sept. 20 (gage height, 0.20 foot).

1911–1926, 1929: Maximum discharge, 24,600 second-feet Dec. 12, 1921 (gage height, 18.5 feet); minimum, 31 second-feet Oct. 23, 1925 (gage height, −0.05 foot).

REMARKS.—Records excellent. Discharge estimated July 30 to Aug. 9. City of Everett diverts water above station for municipal use. See result of measurement of Everett water supply conduit, page 185.

Daily and monthly discharge, in second-feet, 1929

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	443	570	888	1,160	610	179	103
2	------	910	500	1,840	1,040	610	172	113
3	------	630	450	1,960	888	518	165	100
4	------	610	405	1,430	1,060	500	158	85
5	------	798	367	1,160	1,160	482	151	77
6	------	670	331	1,080	1,250	465	144	73
7	------	630	343	985	1,160	405	137	67
8	------	518	331	1,160	1,060	435	130	59
9	------	500	320	1,140	985	435	123	56
10	------	730	320	1,010	888	405	116	52
11	------	632	320	1,280	842	367	111	50
12	------	482	331	1,640	820	331	107	49
13	------	420	367	1,670	1,250	355	100	47
14	------	392	1,000	1,430	1,310	379	95	45
15	------	435	820	1,310	1,740	320	91	45
16	------	535	842	1,280	1,600	287	85	44
17	------	287	650	1,110	1,780	277	82	41
18	------	236	552	1,190	1,780	287	90	41
19	------	234	590	1,430	2,200	267	140	41
20	------	910	820	1,600	1,400	287	107	46
21	------	1,600	935	1,600	1,060	277	90	92
22	------	960	888	1,670	960	240	82	143
23	227	670	1,060	1,560	935	224	189	195
24	227	552	1,160	1,700	985	220	277	154
25	277	535	1,280	1,780	910	203	181	117
26	229	1,250	1,400	1,160	690	238	135	95
27	234	1,430	1,400	960	650	229	116	83
28	238	2,280	1,310	775	730	203	103	71
29	------	1,310	1,370	752	650	201	94	62
30	------	888	1,080	710	610	193	84	59
31	------	690	------	1,060	------	186	85	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
February 23–28	277	227	239	2,840
March	2,280	234	747	45,900
April	1,400	320	737	43,900
May	1,960	710	1,300	79,900
June	2,200	610	1,120	66,600
July	610	186	337	20,700
August	277	82	126	7,750
September	195	41	76.8	4,570
The period	------	------	------	272,000

MIDDLE FORK OF SNOQUALMIE RIVER NEAR NORTH BEND, WASH.

LOCATION.—Staff gage in sec. 34, T. 24 N., R. 8 E., at highway bridge 1½ miles north of North Bend.

DRAINAGE AREA.—173 square miles.

RECORDS AVAILABLE.—August, 1907, to September, 1926; February to September, 1929.

EXTREMES.—Maximum discharge during period February to September, 1929, 3,820 second-feet May 24 (gage height, 6.10 feet); minimum, 145 second-feet Sept. 30 (gage height, 1.46 feet).

1907–1926, 1929: Maximum discharge, 18,300 second-feet Dec. 18, 1917 (gage height, 12.2 feet), discharge may have been greater during floods of November, 1909, and November, 1910; minimum, 102 second-feet Oct. 24, 1925 (gage height, 1.15 feet).

REMARKS.—Records good. No diversions above station.

Daily and monthly discharge, in second-feet, 1929

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	630	870	1,390	2,280	1,550	415	191
2	------	1,470	575	2,790	1,900	1,470	392	191
3	------	1,150	780	2,790	1,720	1,470	370	191
4	------	1,010	690	2,080	1,900	1,470	348	191
5	------	1,150	630	1,810	2,180	1,390	325	185
6	------	1,150	602	1,630	3,010	1,230	325	185
7	------	905	575	1,720	2,900	1,150	325	185
8	------	810	548	1,720	2,580	1,150	305	185
9	------	750	520	1,630	3,010	1,150	305	185
10	------	940	492	1,550	2,080	1,080	285	185
11	------	870	492	1,990	2,080	940	285	185
12	------	750	492	2,680	2,080	780	268	185
13	------	630	1,150	3,010	3,120	940	268	185
14	------	630	1,630	2,680	3,230	1,010	250	185
15	232	660	1,990	2,580	3,460	940	250	185
16	348	690	1,230	2,580	2,790	810	250	185
17	285	720	492	2,180	2,680	810	246	185
18	285	660	905	2,280	2,900	780	229	185
19	285	690	905	2,900	3,010	780	229	185
20	520	1,810	1,080	3,010	1,990	690	229	197
21	548	3,010	1,150	3,010	1,810	630	222	203
22	415	1,990	1,310	3,120	1,810	575	222	203
23	520	1,230	1,470	3,120	2,080	548	222	222
24	520	1,080	1,630	3,820	2,180	492	222	203
25	780	940	1,810	2,680	2,380	465	215	185
26	548	2,380	1,990	2,080	2,180	465	212	179
27	602	2,080	2,180	1,630	1,990	492	209	158
28	520	2,480	1,990	1,470	1,810	465	209	155
29	------	1,810	1,630	1,470	1,630	440	203	150
30	------	1,630	1,550	1,550	1,550	440	197	145
31	------	1,150	------	2,180	------	415	191	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
February 15–28	780	232	458	2.65	1.38	12,700
March	3,010	630	1,220	7.05	8.13	75,000
April	2,180	492	1,110	6.42	7.16	66,000
May	3,820	1,390	2,290	13.2	15.22	141,000
June	3,460	1,550	2,340	13.5	15.06	139,000
July	1,550	415	872	5.04	5.81	53,600
August	415	191	265	1.53	1.76	16,300
September	222	145	185	1.07	1.19	11,000
The period	------	------	------	------	------	515,000

SNOQUALMIE RIVER NEAR TOLT, WASH.

LOCATION.—Chain gage in sec. 9, T. 25 N., R. 7 E., at highway bridge 1 mile northwest of Tolt.

DRAINAGE AREA.—605 square miles.

RECORDS AVAILABLE.—February to September, 1929.

EXTREMES.—Maximum discharge during period, 9,540 second-feet May 3 and 22–25 (gage height, 5.9 feet); minimum, 430 second-feet Sept. 13 (gage height, 0.70 foot).

REMARKS.—Records fair. Low-water flow diverted for power purposes at Snoqualmie Falls but returned to river above gage. Some regulation of flow caused by operation of power plant.

Daily and monthly discharge, in second-feet, 1929

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	1,840	3,690	4,050	3,870	3,350	930	545
2	------	4,050	3,690	4,050	5,940	3,690	820	600
3	------	3,350	3,180	9,540	5,250	3,350	750	545
4	------	3,690	2,860	6,450	4,830	3,020	820	520
5	------	3,520	2,550	5,250	5,700	3,020	820	520
6	------	3,350	2,400	4,630	6,720	2,860	785	495
7	------	3,180	2,250	4,050	8,540	2,250	750	470
8	------	2,550	1,840	4,630	7,000	2,700	750	450
9	------	2,550	2,400	4,630	6,190	2,700	750	495
10	------	2,550	1,970	4,430	5,470	2,550	820	470
11	------	3,180	1,840	4,830	5,250	2,250	750	470
12	------	2,700	1,590	7,000	5,040	1,970	720	450
13	------	2,550	1,590	8,540	5,940	1,840	720	430
14	------	2,400	2,400	7,900	8,540	1,970	690	470
15	------	1,970	4,630	7,290	8,540	1,840	660	470
16	------	1,350	3,520	7,000	8,870	1,840	660	450
17	------	2,700	4,050	6,190	6,450	1,240	600	470
18	------	2,550	2,700	5,940	7,290	1,710	630	470
19	------	2,110	3,020	7,290	8,540	1,590	750	470
20	------	2,400	3,020	9,200	6,450	1,710	690	450
21	------	7,000	4,630	9,200	5,250	1,470	630	470
22	------	7,290	4,240	9,540	5,040	1,410	545	690
23	------	5,040	3,870	9,540	4,830	1,350	630	660
24	------	4,050	4,430	9,540	5,470	1,050	750	855
25	------	3,180	4,830	9,540	6,720	1,050	690	660
26	------	4,830	5,250	7,000	4,830	1,010	630	570
27	------	7,590	5,940	5,040	4,240	1,010	600	545
28	1,840	7,900	5,250	4,050	4,240	1,010	600	495
29	------	8,220	5,470	3,350	3,870	1,010	470	495
30	------	5,470	5,040	3,690	3,870	970	545	470
31	------	4,240	------	3,690	------	930	520	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
February 28	------	------	1,840	------	------	3,650
March	8,220	1,350	3,850	6.36	7.33	237,000
April	5,940	1,590	3,470	5.74	6.40	206,000
May	9,540	3,350	6,360	10.5	12.11	391,000
June	8,870	3,870	5,960	9.85	10.99	355,000
July	3,690	930	1,930	3.19	3.68	119,000
August	930	470	693	1.15	1.33	42,600
September	855	430	521	.861	.96	31,000
The period	------	------	------	------	------	1,390,000

NORTH FORK OF SNOQUALMIE RIVER NEAR NORTH BEND, WASH.

LOCATION.—Water-stage recorder in NE. ¼ sec. 26, T. 24 N., R. 8 E., 2 miles above mouth of river and 3½ miles northeast of North Bend.

DRAINAGE AREA.—105 square miles.

RECORDS AVAILABLE.—July, 1907, to September, 1926; February to September, 1929.

EXTREMES.—Maximum discharge during period February to September, 1929, 2,700 second-feet May 2 (gage height, 5.25 feet); minimum, 59 second-feet Sept. 18–20 (gage height, 1.59 feet).

1907–1926, 1929: Maximum discharge, 11,100 second-feet Nov. 18, 1911 (gage height, 14.5 feet); minimum, 55 second-feet Oct. 24, 1925 (gage height, 1.52 feet).

REMARKS.—Records good. Discharge Sept. 27–30 estimated. No diversions above station.

Daily and monthly discharge, in second-feet, 1929

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	236	649	825	1,260	678	152	78
2	------	587	554	1,880	1,480	700	144	81
3	------	493	499	1,880	1,180	600	142	78
4	------	464	464	1,290	1,260	568	138	75
5	------	580	410	1,100	1,390	548	131	72
6	------	587	370	1,040	1,640	523	127	71
7	------	475	358	928	1,580	464	124	70
8	------	436	334	1,100	1,530	464	120	68
9	------	415	322	1,110	1,330	464	115	66
10	------	568	298	1,050	1,200	420	109	65
11	------	535	290	1,330	1,140	358	106	64
12	------	436	284	1,760	1,200	346	102	62
13	------	380	290	1,940	1,700	334	101	62
14	120	354	574	1,700	1,820	318	99	61
15	120	354	670	1,580	1,820	294	94	61
16	126	395	621	1,580	1,530	281	90	60
17	136	426	535	1,360	1,530	260	89	60
18	131	400	475	1,480	1,640	239	90	60
19	127	400	487	1,880	1,580	224	113	59
20	152	715	685	2,000	1,200	224	111	61
21	168	1,820	893	1,940	1,090	230	97	74
22	158	1,220	785	2,000	1,020	206	90	136
23	172	842	893	1,940	1,040	196	104	140
24	184	685	1,000	2,120	1,130	194	109	118
25	212	580	1,140	1,640	1,100	186	104	108
26	196	834	1,290	1,220	868	190	94	96
27	192	1,300	1,290	982	761	190	89	91
28	190	1,820	1,160	842	842	176	86	86
29	------	1,340	1,200	876	730	170	84	81
30	------	955	973	793	700	162	80	76
31	------	769	------	1,090	------	158	78	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
February 14–28	212	120	159	1.51	0.84	4,730
March	1,820	236	690	6.57	7.57	42,400
April	1,290	284	660	6.29	7.02	39,300
May	2,120	793	1,430	13.6	15.68	87,900
June	1,820	700	1,280	12.2	13.61	76,200
July	700	158	334	3.18	3.67	20,500
August	152	78	107	1.02	1.18	6,580
September	140	59	78	.743	.83	4,640
The period						282,000

SOUTH FORK OF SNOQUALMIE RIVER AT NORTH BEND, WASH.

LOCATION.—Water-stage recorder in SE. ¼ sec. 9, T. 23 N., R. 8 E., half a mile south of North Bend and 3½ miles above mouth of river.

DRAINAGE AREA.—84 square miles.

RECORDS AVAILABLE.—July, 1907, to September, 1926; February to September, 1929.

EXTREMES.—Maximum discharge during period February to September, 1929, 1,600 second-feet May 22 (gage height, 4.98 feet); minimum, 78 second-feet Sept. 30 (gage height, 1.37 feet).

1907–1926, 1929: Water over gage Nov. 3, 4, 19, 23, and 29, 1909 (gage height and discharge not determined); minimum discharge, 63 second-feet Oct. 22, 1925 (gage height, 1.14 feet).

REMARKS.—Records good. Discharge estimated June 26–29, July 14, 15, and Aug. 2 and 3. No diversions above station.

Daily and monthly discharge, in second-feet, 1929

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	257	541	750	1,000	650	254	113
2	------	384	482	1,010	975	650	246	111
3	------	388	448	1,300	875	605	238	109
4	------	376	408	1,080	950	590	230	105
5	------	460	376	925	1,020	570	227	105
6	------	469	340	875	1,180	555	224	103
7	------	400	344	800	1,220	528	218	103
8	------	356	340	875	1,150	510	215	101
9	------	352	326	900	1,050	500	212	99
10	------	392	302	875	975	482	209	99
11	------	388	296	975	975	460	204	97
12	123	336	290	1,220	950	436	195	95
13	123	305	299	1,300	1,120	432	190	93
14	123	302	595	1,300	1,220	415	185	91
15	123	312	700	1,220	1,250	398	180	91
16	137	322	645	1,220	1,250	380	173	95
17	151	330	570	1,150	1,150	376	168	93
18	139	319	510	1,100	1,180	364	165	91
19	137	322	510	1,250	1,250	352	161	91
20	159	700	555	1,450	1,080	344	153	93
21	173	1,100	650	1,450	1,000	333	149	99
22	168	900	635	1,500	975	319	143	111
23	204	675	750	1,500	975	312	143	113
24	212	541	825	1,550	1,000	305	139	101
25	239	478	900	1,350	1,050	299	135	95
26	224	692	1,000	1,100	750	299	129	89
27	245	1,000	1,080	925		293	123	87
28	236	1,180	975	825		281	121	83
29	------	1,050	975	825		272	119	81
30	------	800	850	800	675	266	115	81
31	------	645	------	950	------	257	117	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
February 12–28	245	123	172	2.05	1.30	5,800
March	1,180	257	533	6.35	7.32	32,800
April	1,080	290	584	6.95	7.75	34,800
May	1,550	750	1,110	13.2	15.22	68,200
June	1,250	675	1,020	12.1	13.50	60,700
July	650	257	414	4.93	5.68	25,500
August	254	115	177	2.11	2.43	10,900
September	113	81	97.3	1.16	1.29	5,790
The period	----------	----------	----------	----------	----------	244,000

TOKUL CREEK NEAR SNOQUALMIE, WASH.

LOCATION.—Staff gage in sec. 19, T. 24 N., R. 8 E., 800 feet above mouth of creek and 1¾ miles north of Snoqualmie.

DRAINAGE AREA.—35.5 square miles.

RECORDS AVAILABLE.—March to September, 1929; July, 1907, to October, 1914, for a station 1½ miles above.

EXTREMES.—Maximum discharge during period March to September, 1929, 415 second-feet Mar. 29 (gage height, 1.98 feet); minimum, 23 second-feet Sept. 10–20 (gage height, 0.62 foot).

1907–1914, 1929: Maximum discharge not determined, probably occurred in November, 1909 (stage reported higher than 7.0 feet in November, 1909, February, March, and November, 1910). Minimum discharge, 13 second-feet Sept. 16–20, 1909 (gage height, 1.5 feet on former gage).

REMARKS.—Records good. Small diversion furnishes water for Snoqualmie Falls lumber mill and settlement.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	302	94	89	72	28	26
2	------	271	106	138	63	28	26
3	------	239	100	138	63	28	25
4	------	227	97	131	59	27	25
5	------	203	97	100	55	27	24
6	------	188	109	103	51	27	24
7	------	251	121	118	51	27	24
8	------	165	131	106	51	26	24
9	------	155	131	106	45	26	24
10	------	144	127	100	42	26	23
11	------	138	118	100	42	26	23
12	------	134	106	100	40	26	23
13	------	127	100	100	37	26	23
14	------	148	89	112	37	26	23
15	------	176	86	118	35	26	23
16	------	180	78	138	34	26	23
17	------	180	75	138	33	26	23
18	------	169	70	144	33	25	23
19	------	155	61	227	33	28	23
20	162	144	55	211	31	27	23
21	227	158	55	180	31	26	24
22	342	144	53	165	30	26	25
23	342	134	53	144	30	26	26
24	293	124	53	131	30	26	27
25	255	115	51	112	30	26	26
26	284	109	61	97	28	26	25
27	342	100	57	100	28	26	24
28	365	100	49	89	28	25	24
29	415	97	45	83	28	25	24
30	365	94	46	72	28	25	24
31	320	------	47	------	28	25	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March 20–31	415	162	309	7,350
April	302	94	162	9,640
May	131	45	81.3	5,000
June	227	72	123	7,320
July	72	28	39.5	2,430
August	28	25	26.3	1,620
September	27	23	24.1	1,430
The period	----------	----------	----------	34,800

TOLT RIVER NEAR TOLT, WASH.

LOCATION.—Water-stage recorder in sec. 31, T. 26 N., R. 8 E., 150 feet below confluence of North Fork and South Fork of Tolt River and 6 miles northeast of Tolt.

DRAINAGE AREA.—80 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period, 3,280 second-feet Oct. 9 (gage height, 7.1 feet); minimum, 65 second-feet Sept. 11, 1928 (gage height, 0.79 foot).

REMARKS.—Records good except those for Sept. 16 to Oct. 5, 1928, Jan. 29 to Feb. 17, July 15–26, and Aug. 10–26, 1929, which are fair.

Daily discharge, in second-feet, 1928–29

Day	Aug.	Sept.	Day	Aug.	Sept.
1928					
1	-------	72	16	87	
2	-------	70	17	85	
3	-------	69	18	84	
4	-------	69	19	83	
5	-------	68	20	82	
6	-------	68	21	82	
7	-------	68	22	82	
8	-------	68	23	81	80
9	-------	66	24	81	
10	94	66	25	78	
11	94	65	26	78	
12	91	77	27	77	
13	93	96	28	76	
14	91	435	29	75	
15	89	160	30	73	
			31	73	-------

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1928–29												
1		234	226	401		387	590	628	856	420	131	99
2		215	207	609		795	533	1,170	1,020	420	128	96
3	800	204	194	514		609	496	1,040	820	392	125	93
4		262	189	417	120	590	453	795	772	365	121	85
5		285	180	362		668	420	708	845	345	115	84
6	449	254	170	316		590	396	729	895	335	112	81
7	365	228	210	282		514	375	688	970	316	108	79
8	1,100	237	433	270		478	362	750	795	306	107	79
9	3,280	644	668	259		474	348	795	750	309	102	79
10	1,210	742	1,170	245		571	328	729	688	291		79
11	688	688	710	237		533	325	845	668	276		78
12	471	533	515	234	130	460	319	1,070	668	256		76
13	382	453	414	228		403	335	1,180	943	248		75
14	338	386	358	228		372	655	1,020	1,040	245		74
15	1,450	335	319	220		375	628	920	1,040		100	73
16	1,450	424	288	207		431	590	945	1,020			73
17	1,070	389	268	207		514	533	820	1,040			72
18	668	335	248	220	135	464	478	845	1,110			72
19	514	306	245	197	135	438	478	1,040	1,070			72
20	410	282	228	175	170	773	723	1,130	820			77
21	379	291	220	175	175	1,460	822	1,070	708	150		132
22	352	291	228	172	170	945	668	1,100	648			332
23	386	268	223	166	231	688	708	1,070	628			228
24	322	248	212	164	265	590	750	1,160	648		400	150
25	291	234	272	166	335	533	795	1,070	628			115
26	270	282	331	172	282	971	870	845	552			102
27	248	270	345	175	259	1,240	870	708	496	157	96	96
28	237	240	288	172	254	1,470	795	609	514	153	94	89
29	234	217	416		-------	1,040	820	590	464	145	91	84
30	237	220	478	150	-------	772	750	552	438	140	89	85
31	259	-------	406		-------	648	-------	708	-------	136	90	-------

Monthly discharge, in second-feet, of Tolt River near Tolt, Wash., 1928–29

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1928						
August 10–31	94	73	83.1	1.04	0.85	3,630
September	435	65	90.6	1.13	1.26	5,390
The period						9,020
1928–29						
October	3,280	234	679	8.49	9.79	41,800
November	742	204	333	4.16	4.64	19,800
December	1,170	170	344	4.30	4.96	21,200
January	609		246	3.08	3.55	15,100
February	335		163	2.04	2.12	9,050
March	1,470	372	671	8.39	9.67	41,300
April	870	319	574	7.18	8.01	34,200
May	1,180	552	882	11.0	12.68	54,200
June	1,110	438	785	9.81	10.94	46,700
July	420		228	2.85	3.29	14,000
August			162	2.02	2.33	9,960
September	332	72	100	1.25	1.46	5,950
The year	3,280	72	433	5.41	73.38	313,000

STILLAGUAMISH RIVER BASIN

SOUTH FORK OF STILLAGUAMISH RIVER NEAR SILVERTON, WASH.

LOCATION.—Staff gage in SE. ¼ NE. ¼ sec. 24, T. 30 N., R. 9 E., three-fourths of a mile downstream from Silverton.

DRAINAGE AREA.—38.4 square miles.

RECORDS AVAILABLE.—May to September, 1929; September, 1910, to December, 1917, at station in SW. ¼ sec. 23, T. 30 N., R. 9 E., a quarter of a mile below Martin Creek and 2½ miles downstream from Silverton.

EXTREMES.—Maximum discharge during year, 1,050 second-feet June 15 (gage height, 3.12 feet); minimum, 27 second-feet Sept. 30 (gage height, 0.86 foot).

1910–1917, 1929: Maximum discharge, 5,720 second-feet Nov. 20, 1910; minimum, that of Sept. 30, 1929.

REMARKS.—Records good. Discharge estimated June 3, 7, and 9. No diversions above station.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	------	525	348	119	53	16	------	745	186	59	35
2	------	423	348	109	65	17	------	1,050	180	50	34
3	------	448	318	100	52	18	------	950	180	56	34
4	------	473	304	96	46	19	------	860	167	65	32
5	------	580	289	87	44	20	------	580	186	54	33
6	------	610	285	79	40	21	------	473	167	50	44
7	------	581	266	79	39	22	------	448	144	78	62
8	------	552	294	79	38	23	820	499	136	144	59
9	------	500	285	76	37	24	950	525	136	141	50
10	------	448	285	76	37	25	780	473	119	87	40
11	------	423	231	74	37	26	499	398	167	68	36
12	------	423	249	62	37	27	423	373	131	62	30
13	------	675	231	65	37	28	323	423	123	59	30
14	------	675	227	62	36	29	348	398	126	54	29
15	------	1,050	208	62	36	30	348	348	128	52	27
						31	580	------	128	50	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
May 23–31	950	323	563	14.7	4.92	10,100
June	1,050	348	564	14.7	16.40	33,600
July	348	119	212	5.52	6.36	13,000
August	144	50	75.9	1.98	2.28	4,670
September	65	27	40.3	1.05	1.17	2,400
The period						63,800

SOUTH FORK OF STILLAGUAMISH RIVER NEAR GRANITE FALLS, WASH.

LOCATION.—Water-stage recorder in SW. ¼ NW. ¼ sec. 8, T. 30 N., R. 7 E., 2 miles northeast of Granite Falls.

DRAINAGE AREA.—119 square miles.

RECORDS AVAILABLE.—July, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period, 12,000 second-feet Oct. 9 (gage height, 12.4 feet); minimum, 74 second-feet Sept. 30, 1929 (gage height, 3.10 feet).

REMARKS.—Records fair July to February; good thereafter. No diversion or regulation above station.

Daily discharge, in second-feet, 1928–29

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1928											
1	------	159	88	11	------	134	81	21	231	99	116
2	------	154	88	12	------	130	91	22	237	99	109
3	------	145	88	13	------	134	116	23	241	99	103
4	------	141	88	14	------	132	1,300	24	237	99	99
5	------	134	88	15	------	118	340	25	244	99	95
6	------	132	88	16	------	114	203	26	221	98	95
7	------	128	88	17	------	113	162	27	218	95	91
8	------	128	84	18	------	109	159	28	198	95	88
9	------	128	82	19	------	109	170	29	198	92	88
10	------	128	81	20	221	104	139	30	186	91	88
								31	170	88	------

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1928–29												
1	1,430	209	344	948	175	438	745	968	1,300	654	203	116
2	2,310	192	297	1,440	159	1,050	654	2,480	1,090	672	186	149
3	1,400	186	261	898	146	813	583	2,880	933	589	186	132
4	1,260	282	234	648	139	826	542	1,770	1,050	553	181	111
5	1,300	305	218	513	136	884	480	1,440	1,260	536	162	105
6	1,890	272	209	428	120	807	428	1,300	1,350	519	154	95
7	1,910	231	346	378	113	727	453	1,170	1,260	464	146	91
8	3,570	350	1,030	348	120	618	443	1,440	1,130	475	146	88
9	7,400	1,460	2,600	324	134	660	433	1,400	1,050	496	142	86
10	2,270	2,440	3,310	305	127	1,010	419	1,260	954	480	136	84
11	1,220	1,810	1,560	286	127	807	419	1,530	891	448	134	82
12	832	1,770	968	278	125	612	409	1,970	891	382	132	82
13	636	1,720	727	282	125	513	513	2,020	1,400	378	127	82
14	553	1,000	577	290	125	469	1,780	1,720	1,480	409	120	84
15	1,210	727	469	272	129	502	1,170	1,530	2,130	369	116	84
16	1,530	851	409	250	154	672	1,260	1,530	2,020	320	113	84
17	1,680	764	360	258	159	678	912	1,260	2,370	309	107	81
18	898	606	328	261	164	565	770	1,400	3,470	305	120	81
19	666	502	312	212	172	553	770	1,720	2,920	301	175	77
20	524	443	286	192	181	1,030	1,350	1,870	1,580	309	136	84
21	443	453	282	218	181	1,990	1,220	1,870	1,170	320	116	109
22	373	480	320	209	189	1,090	1,050	1,970	1,010	272	109	142
23	395	428	290	142	328	801	1,260	1,870	1,010	244	296	170
24	336	382	275	175	316	696	1,350	2,130	1,050	241	386	142
25	286	344	1,090	206	382	714	1,480	2,080	1,010	225	221	116
26	264	475	891	209	316	1,860	1,620	1,300	813	247	167	99
27	241	419	733	186	286	2,190	1,670	996	739	261	139	89
28	228	340	571	164	286	3,850	1,480	832	776	221	127	84
29	209	301	1,490	164	------	1,800	1,480	801	714	215	118	81
30	212	301	982	162	------	1,130	1,220	776	684	212	111	77
31	241	------	666	178	------	870	------	1,260	------	206	111	------

Monthly discharge, in second-feet, of South Fork of Stillaguamish River near Granite Falls, Wash., 1928–29

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1928						
July 20–31	244	170	217	1.82	0.81	5,160
August	159	88	117	.983	1.13	7,190
September	1,300	81	153	1.29	1.44	9,100
The period						21.400
1928–29						
October	7,400	209	1,220	10.3	11.87	75,000
November	2,440	186	668	5.61	6.26	39,700
December	3,310	209	724	6.08	7.01	44,500
January	1,440	142	349	2.93	3.38	21,500
February	382	113	183	1.54	1.60	10,200
March	3,850	438	1,010	8.49	9.79	62,100
April	1,780	409	945	7.94	8.86	56,200
May	2,880	776	1,570	13.2	15.22	96,500
June	3,470	684	1,320	11.1	12.38	78,600
July	672	206	375	3.15	3.63	23,100
August	386	107	156	1.31	1.51	9,590
September	170	77	99.6	.837	.93	5,930
The year	7,400	77	721	6.06	82.44	523,000

SOUTH FORK OF STILLAGUAMISH RIVER NEAR ARLINGTON, WASH.

LOCATION.—Staff gage in NW. ¼ sec. 7, T. 31 N., R. 6 E., 1½ miles east of Arlington.

DRAINAGE AREA.—254 square miles.

RECORDS AVAILABLE.—December, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period, 6,660 second-feet Mar. 28 (gage height, 7.10 feet); minimum, 141 second-feet Sept. 14, 16, 18, and 19 (gage height, 2.40 feet).

REMARKS.—Records good. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	1,100	320	850	1,400	1,760	1,610	990	288	185
2	------	2.770	360	2,130	1,270	1,680	1,760	1,040	278	205
3	------	2,130	388	1,830	1,150	6,000	1,400	895	270	233
4	------	1,400	388	1,830	1,040	3,630	1,540	850	261	198
5	------	1,100	360	1,760	990	3,280	1,900	808	233	177
6	------	895	415	1,830	895	2,610	1,900	765	222	166
7	------	850	475	1,680	895	2,450	1,980	685	345	161
8	------	765	445	1,470	940	2,290	1,680	685	211	166
9	------	685	415	1,270	895	2,610	1,540	725	205	154
10	------	610	360	1,980	895	2,130	1,400	685	205	150
11	------	575	320	1,680	895	2,450	1,340	725	201	145
12	------	610	292	1,400	940	3,280	1,270	610	198	148
13	------	508	283	1,150	990	3,450	1,470	575	194	143
14	------	685	283	1,040	1,270	2,770	2,130	575	191	141
15	------	540	257	940	1,470	2,450	1,980	540	185	143
16	------	475	261	1,340	2,770	2,610	3,280	540	180	141
17	------	475	350	1,470	2,450	2,130	3,280	508	171	143
18	648	540	301	1,150	1,610	2,130	2,940	445	166	141
19	540	508	274	1,100	1,340	2,610	6,000	415	292	141
20	508	445	310	1,150	1,400	3,110	2,770	415	249	145
21	475	445	475	4,560	2,770	2,940	1,980	575	198	163
22	540	415	475	2,450	1,830	2,940	1,680	445	180	198
23	540	415	685	1,900	2,290	2,770	1,540	388	211	306
24	540	306	850	1,270	2,290	2,940	1,680	350	725	253
25	610	360	850	1,340	2,450	3,280	1,680	345	415	215
26	2,450	415	895	1,610	2,770	1,980	1,270	315	292	194
27	1,830	360	765	3,110	2,940	1,680	1,100	445	233	174
28	1,270	330	765	6,660	2,290	1,270	1,150	340	208	166
29	2,610	360	------	3,990	2,450	1,150	1,100	310	194	159
30	2,130	335	------	2,290	2,130	1,100	1,040	301	185	152
31	1,400	360	------	1,760	------	1,680	------	292	180	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
December 18–31	2,610	475	1,150	4.53	2.33	31,900
January	2,770	306	702	2.76	3.18	43,200
February	895	257	451	1.78	1.85	25,000
March	6,660	850	1,940	7.64	8.81	119,000
April	2,940	895	1,660	6.54	7.30	98,800
May	6,000	1,100	2,550	10.0	11.53	157,000
June	6,000	1,040	1,910	7.52	8.37	114,000
July	1,040	292	567	2.23	2.57	34,900
August	725	166	244	.961	1.11	15,000
September	306	141	174	.685	.76	10,400
The period	------	------	------	------	------	649,000

CANYON CREEK NEAR GRANITE FALLS, WASH.

LOCATION.—Staff gage in NE. ¼ sec. 6, T. 30 N., R. 7 E., 3 miles north of Granite Falls.

DRAINAGE AREA.—59 square miles.

RECORDS AVAILABLE.—December, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period, 1,900 second-feet Mar. 28 (gage height, 5.50 feet); minimum, 39 second-feet Sept. 12–19 and 30 (gage height, 1.40 feet).

REMARKS.—Records good. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	348	90	240	365	635	560	215	70	51
2	------	850	90	635	330	1,220	512	215	65	51
3	------	468	82	535	330	1,220	445	215	65	51
4	------	330	82	560	295	795	385	190	60	47
5	------	280	75	512	265	740	365	178	60	47
6	------	228	75	445	240	610	425	165	60	47
7	------	202	70	535	228	635	445	165	60	43
8	------	202	65	585	215	635	365	165	55	43
9	------	178	65	585	295	610	365	155	55	43
10	------	165	65	685	215	560	348	145	55	43
11	------	155	65	535	228	585	330	135	51	43
12	------	155	65	348	240	685	312	125	51	39
13	------	165	65	385	850	740	445	115	51	39
14	------	155	65	405	585	635	535	115	51	39
15	------	155	65	405	535	560	910	115	51	39
16	------	145	75	425	490	585	970	105	51	39
17	------	135	75	405	445	585	1,100	98	51	39
18	------	135	75	405	365	610	795	90	51	39
19	145	115	75	365	385	635	1,030	82	90	39
20	135	98	75	685	635	635	560	155	55	43
21	145	98	75	1,360	685	635	445	105	55	55
22	145	98	82	635	635	635	405	98	55	65
23	145	90	98	468	635	635	365	90	312	65
24	145	98	155	365	635	740	330	90	145	63
25	970	105	155	348	635	635	295	90	70	60
26	405	98	155	1,160	635	535	280	90	60	53
27	330	90	145	910	635	385	252	90	55	45
28	280	90	190	1,900	685	365	240	82	55	43
29	910	90	------	740	635	330	252	75	55	41
30	425	90	------	365	585	295	228	75	51	39
31	312	90	------	365	------	512	------	70	51	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
December 19–31	970	135	346	5.86	2.83	8,920
January	850	90	184	3.12	3.60	11,300
February	190	65	89.8	1.52	1.58	4,990
March	1,900	240	590	10.0	11.53	36,300
April	850	215	465	7.88	8.79	27,700
May	1,220	295	633	10.7	12.34	38,900
June	1,100	228	476	8.07	9.00	28,300
July	215	70	126	2.14	2.47	7,750
August	312	51	68.5	1.16	1.34	4,210
September	65	39	46.4	.786	.88	2,760
The period	------	------	------	------	------	171,000

NORTH FORK OF STILLAGUAMISH RIVER NEAR ARLINGTON, WASH.

LOCATION.—Water-stage recorder in SE. ¼ NW. ¼ sec. 16, T. 32 N., R. 6 E., 6 miles above mouth of river and northeast of Arlington.

DRAINAGE AREA.—282 square miles.

RECORDS AVAILABLE.—July, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period, July 21, 1928, to Sept. 30, 1929, 14,300 second-feet Oct. 9 (gage height, 9.70 feet); minimum (estimated), 176 second-feet Sept. 9 and 10, 1928.

REMARKS.—Records below 5,000 second-feet good; others fair. Discharge estimated Aug. 27 to Sept. 12, Sept. 17, Nov. 21–25, Nov. 28 to Dec. 2, Dec. 5, 8, 9, 12, 26, 1928, Jan. 29 to Feb. 3, and Aug. 26–28. No diversions or regulation above station.

Daily discharge, in second-feet, 1928–29

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1928				1928				1928			
1	-------	279	200	11	-------	249	184	21	390	218	222
2	-------	273	200	12	-------	244	210	22	440	218	218
3	-------	265	200	13	-------	244	227	23	440	220	218
4	-------	257	196	14	-------	249	1,100	24	400	221	216
5	-------	253	196	15	-------	239	600	25	400	221	212
6	-------	249	184	16	-------	233	310	26	360	218	209
7	-------	249	184	17	-------	230	278	27	346	215	208
8	-------	251	184	18	-------	224	247	28	333	212	208
9	-------	249	176	19	-------	221	265	29	319	206	206
10	-------	249	176	20	-------	221	233	30	306	203	212
								31	292	203	------

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1928–29												
1	526	425	680	1,610		1,210	1,820	1,740	1,860	890	340	268
2	2,480	389	600	2,760	390	2,050	1,620	3,770	1,740	890	328	290
3	1,840	373	515	2,070		1,960	1,460	3,800	1,500	830	328	260
4	1,920	538	502	1,470	378	1,910	1,380	2,700	1,620	775	316	242
5	1,930	569	468	1,200	372	1,910	1,240	2,460	1,820	725	300	236
6	2,860	605	434	990	358	1,740	1,140	2,250	1,910	700	290	230
7	3,300	488	470	875	358	1,540	1,140	2,100	1,820	650	288	225
8	3,970	611	2,000	825	364	1,350	1,140	2,250	1,700	650	285	221
9	10,000	5,220	3,000	775	337	1,320	1,100	2,150	1,580	650	280	219
10	3,700	4,240	4,510	725	331	2,050	1,040	2,050	1,500	675	275	219
11	2,290	3,150	3,010	675	328	1,780	1,010	2,300	1,380	675	275	219
12	1,600	3,800	1,800	650	331	1,420	980	2,700	1,320	570	268	219
13	1,200	4,240	1,430	650	328	1,180	1,140	2,820	1,700	548	262	217
14	1,020	2,640	1,230	700	334	1,100	2,610	2,520	1,960	566	260	221
15	1,430	1,960	1,020	650	325	1,100	2,940	2,300	2,410	534	256	216
16	1,600	1,850	900	605	392	1,320	2,640	2,300	2,360	486	252	214
17	2,590	1,520	825	605	410	1,320	2,100	2,050	2,520	466	246	216
18	1,520	1,270	750	628	368	1,140	1,780	2,100	2,640	458	262	208
19	1,120	1,020	700	492	354	1,100	1,660	2,520	3,150	446	316	205
20	900	960	650	452	454	1,680	2,080	2,640	2,300	474	278	205
21	800		650	492	510	3,010	2,520	2,640	1,860	590	258	212
22	725		675	470	494	2,150	2,000	2,760	1,580	474	256	223
23	750	900	650	413	725	1,660	2,100	2,640	1,500	430	606	238
24	650		650	479	725	1,380	2,200	2,700	1,460	418	539	225
25	582		2,650	510	980	1,240	2,360	2,580	1,420	392	372	212
26	533	960	1,700	488	802	2,590	2,460	1,960	1,210	438	344	205
27	492	750	1,350	417	802	3,220	2,520	1,620	1,100	466	316	203
28	466		1,160	405	750	5,670	2,360	1,420	1,100	392	288	198
29	434	670	2,250		-------	3,220	2,300	1,350	1,010	372	260	194
30	434		2,180	400	-------	2,460	1,960	1,350	950	361	254	193
31	479	-------	1,470		-------	2,100	-------	1,860	-------	350	254	------

Monthly discharge, in second-feet, of North Fork of Stillaguamish River, near Arlington, Wash., 1928–29

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1928						
July 21–31	440	292	366	1.30	0.53	7,990
August	279	203	235	.833	.96	14,400
September	1,100	176	256	.908	1.01	15,200
1928–29						
October	10,000	434	1,750	6.21	7.16	108,000
November	5,220	373	1,470	5.21	5.81	87,500
December	4,510	434	1,300	4.61	5.32	79,900
January	2,760	----------	783	2.78	3.20	48,100
February	980	325	467	1.66	1.73	25,900
March	5,670	1,100	1,900	6.74	7.77	117,000
April	2,940	980	1,830	6.49	7.24	109,000
May	3,800	1,350	2,340	8.30	9.57	144,000
June	3,150	950	1,730	6.13	6.84	103,000
July	890	350	559	1.98	2.28	34,400
August	606	246	305	1.08	1.24	18,800
September	290	193	222	.787	.88	13,200
The year	10,000	193	1,230	4.36	59.04	889,000

DEER CREEK AT OSO, WASH.

LOCATION.—Water-stage recorder in sec. 5, T. 32 N., R. 7 E., 1¼ miles above Oso and junction with North Fork of Stillaguamish River.

DRAINAGE AREA.—84 square miles.

RECORDS AVAILABLE.—August, 1917, to September, 1929.

EXTREMES.—Maximum discharge during year, 6,030 second-feet Nov. 9 (gage height, 8.53 feet); minimum, 23 second-feet Sept. 15, 18, and 30.

1917–1929: Maximum discharge, 10,400 second-feet Dec. 12, 1921 (gage height, 11.7 feet); minimum, 18.5 second-feet Aug. 15–17, 1926.

REMARKS.—Records excellent. Discharge estimated Jan. 29 to Feb. 2, and Sept. 5–9. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	500	101	214	645	94	313	363	482	620	158	47	54
2	734	87	160	1,080	92	645	312	2,290	520	155	46	60
3	452	87	128	542	90	560	278	1,450	450	144	44	42
4	927	179	112	351	86	520	270	842	540	127	42	36
5	584	166	99	265	81	500	222	760	600	119	40	34
6	1,540	199	106	222	76	390	207	642	600	109	38	33
7	1,130	139	272	197	74	334	207	600	540	102	35	31
8	2,120	324	960	185	76	282	207	688	500	98	34	29
9	3,550	3,160	1,690	170	76	336	203	620	435	95	34	28
10	1,050	1,930	1,700	153	76	735	199	600	405	119	33	26
11	532	1,070	782	149	76	462	199	788	360	109	33	26
12	351	1,750	482	160	74	317	207	1,040	357	88	33	25
13	260	1,760	360	164	71	247	275	1,040	520	81	32	24
14	235	745	278	177	69	227	1,300	815	540	78	30	24
15	462	465	231	162	63	244	910	760	822	75	30	23
16	611	560	201	149	71	363	742	760	620	69	30	24
17	927	390	179	156	69	348	465	620	867	66	29	24
18	405	306	166	146	61	288	375	755	1,040	63	34	23
19	285	254	155	114	61	270	375	1,010	1,120	60	55	24
20	222	254	142	123	86	619	889	1,010	620	76	36	26
21	189	258	151	114	87	1,300	985	1,040	450	99	32	32
22	201	247	179	101	90	582	620	1,070	390	71	30	40
23	212	212	171	87	175	390	688	980	342	63	347	49
24	166	187	175	130	173	317	710	1,070	328	58	109	36
25	140	170	869	146	222	290	788	870	295	57	59	31
26	125	247	512	120	156	1,280	842	580	242	101	48	28
27	112	212	334	108	164	1,340	842	465	218	90	40	27
28	103	170	247	102	155	2,390	815	405	210	65	38	26
29	96	147	1,050		-------	872	735	420	189	57	35	25
30	102	164	605	98	-------	540	560	435	170	52	33	23
31	119	-------	366		-------	435	-------	642	-------	50	33	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	3,550	96	595	7.08	8.16	36,600
November	3,160	87	531	6.32	7.05	31,600
December	1,700	99	422	5.02	5.79	25,900
January	1,080	----------	210	2.50	2.88	12,900
February	222	61	98.0	1.17	1.23	5,440
March	2,390	227	572	6.81	7.85	35,200
April	1,300	199	526	6.26	6.98	31,300
May	2,290	405	824	9.81	11.3[illegible]	50,700
June	1,120	170	497	5.92	6.60	29,600
July	158	50	88.8	1.06	1.23	5,460
August	347	29	49.6	.590	.68	3,050
September	60	23	31.1	.370	.4[illegible]	1,850
The year	3,550	23	372	4.43	60.15	270,000

PILCHUCK CREEK NEAR BRYANT, WASH.

LOCATION.—Staff gage in NE. ¼ sec. 16, T. 32 N., R. 5 E., at highway bridge 2 miles north of Bryant.

DRAINAGE AREA.—52 square miles.

RECORDS AVAILABLE.—March to September, 1929.

EXTREMES.—Maximum discharge during period, 1,420 second-feet Mar. 26 (gage height, 2.56 feet); minimum, 4.6 second-feet Aug. 15–18 (gage height, 0.19 foot).

REMARKS.—Records good. No diversions above station.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	365	261	132	31	9.3	7.0
2	------	249	850	126	28	8.7	6.5
3	------	219	387	120	27	8.1	14
4	------	205	417	108	25	7.5	10
5	------	189	315	93	23	7.0	8.1
6	------	205	231	88	21	7.0	7.0
7	------	205	205	93	18	6.5	7.0
8	------	209	417	86	18	6.5	7.0
9	------	213	261	81	18	6.0	6.5
10	------	225	267	75	20	6.0	6.5
11	------	209	237	71	27	5.6	6.0
12	273	197	225	65	23	5.2	5.6
13	237	287	213	88	18	4.9	5.2
14	231	1,250	189	98	17	4.9	5.2
15	231	495	181	315	16	4.6	4.9
16	373	512	170	237	14	4.6	4.9
17	343	387	145	193	13	4.6	5.2
18	287	261	138	561	12	4.6	5.2
19	231	255	135	249	12	10	4.9
20	665	464	138	111	12	9.3	6.5
21	900	503	142	79	17	8.1	9.3
22	373	456	135	75	16	7.0	10
23	343	410	142	69	15	138	11
24	273	387	145	65	13	54	12
25	261	350	166	58	12	32	9.3
26	1,420	322	152	50	12	20	8.1
27	755	273	98	45	20	14	6.5
28	755	365	88	43	16	10	6.0
29	578	329	96	36	11	9.3	5.6
30	373	280	93	32	10	8.7	5.2
31	343	------	120	------	9.3	8.1	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
March 12–31	1,420	231	462	8.88	6.60	18,300
April	1,250	189	343	6.60	7.36	20,400
May	850	88	218	4.19	4.83	13,400
June	561	32	118	2.27	2.53	7,020
July	31	9.3	17.6	.338	.39	1,080
August	138	4.6	14.2	.273	.31	873
September	14	4.9	7.21	.139	.16	429
The period						61,500

SKAGIT RIVER BASIN

SKAGIT RIVER BELOW RUBY CREEK, NEAR MARBLEMOUNT, WASH.

LOCATION.—Water-stage recorder in Whatcom County three-fourths of a mile below Ruby Creek and 23 miles northeast of Marblemount, Skagit County.

DRAINAGE AREA.—978 square miles, of which 390 square miles is in Canada.

RECORDS AVAILABLE.—June, 1919, to September, 1929.

EXTREMES.—Maximum discharge during year, 13,600 second-feet May 23 (gage height, 9.65 feet); minimum not determined, occurred during February when stage-discharge relation was affected by ice.

1919–1929: Maximum discharge, 45,700 second-feet Dec. 12, 1921 (gage height, 16.1 feet); minimum, 450 second-feet Oct. 13, 1925 (gage height, 3.0 feet), may have been lower in February, 1929.

REMARKS.—Records excellent except those for Jan. 27 to Mar. 7 and Aug. 20 to Sept. 5, which were estimated. No diversion above station. Results of some discharge measurements furnished by city of Seattle.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	873	1,090	1,030	754			1,480	3,450	7,200	4,850	2,220	
2	1,010	1,040	992	761			1,380	4,360	6,690	4,850	2,150	
3	852	1,020	888	728			1,320	5,170	5,960	4,560	2,150	1,100
4	859	1,030	852	710		560	1,250	4,650	6,200	4,180	1,960	
5	968	1,010	838	680	460		1,170	4,360	7,730	4,090	1,770	
6	1,270	968	845	662			1,090	4,180	9,900	4,090	1,770	936
7	1,560	920	880	662			1,070	4,180	11,300	3,920	1,830	904
8	3,470	928	968	674		578	1,020	4,460	11,000	3,920	1,890	920
9	10,100	1,190	1,380	668		596	976	4,460	10,600	3,920	1,890	976
10	4,840	1,320	1,480	662		644	952	4,560	9,550	3,680	1,890	992
11	3,220	1,380	1,380	662		662	920	5,390	8,600	3,150	1,830	1,040
12	2,560	1,430	1,320	662		668	888	6,690	8,000	2,920	1,770	1,080
13	2,150	1,600	1,220	650		674	873	8,000	8,600	3,080	1,650	1,130
14	1,960	1,480	1,140	656		686	1,020	8,300	9,900	3,450	1,600	1,180
15	1,960	1,330	1,080	644	500	716	1,120	7,730	10,200	3,450	1,540	1,080
16	1,350	1,270	1,040	632		747	1,180	7,730	9,200	3,080	1,430	1,040
17	3,080	1,190	1,000	638		768	1,190	7,460	7,730	3,000	1,430	1,110
18	2,350	1,100	968	632		768	1,200	7,200	6,690	3,000	1,480	1,020
19	2,020	1,060	952	590		817	1,230	8,000	6,440	2,920	1,480	960
20	1,770	1,020	896	566		928	1,300	9,550	5,620	2,700		880
21	1,600	1,090	888	566		1,090	1,430	11,000	5,280	2,420		803
22	1,600	1,200	873	566		1,130	1,650	12,400	5,170	2,350		747
23	1,710	1,230	859	566		1,110	1,890	13,200	5,500	2,280		734
24	1,600	1,200	845	578		1,080	2,220	12,800	5,960	2,280		704
25	1,480	1,190	859	590	540	1,060	2,700	10,600	6,200	2,150	1,400	674
26	1,380	1,170	824	566		1,110	3,300	8,000	5,960	2,220		656
27	1,310	1,130	810			1,320	4,000	6,940	5,500	2,080		638
28	1,260	1,080	789			2,150	4,000	6,080	5,390	2,020		626
29	1,210	1,060	803	490	-------	2,080	3,920	6,200	5,170	2,150		620
30	1,170	1,040	789		-------	1,830	3,600	6,440	4,960	2,280		620
31	1,140	-------	754		-------	1,650	-------	6,940	-------	2,280		-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	10,100	852	2,090	2.14	2.47	129,000
November	1,600	920	1,160	1.19	1.33	69,000
December	1,480	754	976	.998	1.15	60,000
January	761	----------	619	.633	.73	38,100
February	----------	----------	497	.508	.53	27,600
March	2,150	----------	928	.949	1.09	57,100
April	4,000	873	1,710	1.75	1.95	102,000
May	13,200	3,450	7,110	7.27	8.38	437,000
June	11,300	4,960	7,410	7.58	8.46	441,000
July	4,850	2,020	3,140	3.21	3.70	193,000
August	2,220	----------	1,630	1.67	1.92	100,000
September	----------	620	919	.940	1.05	54,700
The year	13,200	----------	2,360	2.41	32.76	1,710,000

SKAGIT RIVER NEAR MARBLEMOUNT, WASH.

LOCATION.—Water-stage recorder in SE. ¼ sec. 21, T. 37 N., R. 12 E., at city of Seattle power plant, one-fourth of a mile above Newhalem Creek and 16 miles above Marblemount. Zero of gage, 400 feet above mean sea level.

DRAINAGE AREA.—1,160 square miles, of which 390 square miles is in Canada.

RECORDS AVAILABLE.—December, 1908, to May, 1914, and October, 1920, to September, 1929.

EXTREMES.—Maximum discharge during year, 23,600 second-feet Oct. 9 (gage height, 89.15 feet); minimum, 327 second-feet Sept. 8 (gage height, 79.28 feet).

1908–1914, 1920–1929: Maximum discharge, 60,000 second-feet Dec. 12, 1921 (gage height, 94.2 feet); minimum, that of Sept. 28, 1929.

REMARKS.—Records excellent except those for Oct. 9, Nov. 18–20, Jan. 27 to Feb. 11, and May 19–24, which were estimated. Water diverted 3 miles above station returns to river at the Seattle power plant just above station. Flow partly controlled by storage of water at tunnel intake and above Diablo Dam.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,510	1,390	1,310	978		598	1,900	4,220	8,440	6,380	3,510	2,080
2	1,800	1,310	1,250	986		626	1,740	5,990	7,680	6,570	3,630	1,870
3	1,340	1,260	1,140	939		682	1,620	6,620	6,850	6,110	3,560	1,580
4	1,300	1,350	1,060	912		717	1,520	5,910	7,490	5,770	3,190	1,550
5	1,480	1,290	1,060	868		814	1,420	5,510	9,630	5,570	2,880	1,640
6	2,110	1,270	1,060	832	600	812	1,350	5,290	11,900	5,650	2,950	1,450
7	2,860	1,160	1,130	824		782	1,280	5,210	13,500	5,460	3,240	1,380
8	7,690	1,190	1,330	856		763	1,320	5,560	13,300	5,590	3,320	1,430
9	7,620	1,800	2,100	829		783	1,200	5,580	12,900	5,610	3,400	1,640
10	7,560	2,030	2,200	814		844	1,140	5,740	11,600	5,220	3,320	1,680
11	4,720	2,050	2,030	804		877	1,120	6,810	10,400	4,300	3,210	1,850
12	3,620	2,090	1,820	789	607	838	1,090	8,680	9,800	4,030	2,970	1,960
13	2,950	2,350	1,680	824	592	836	1,070	10,200	11,000	4,370	2,770	2,180
14	2,620	2,100	1,550	820	593	845	1,340	10,300	12,600	4,960	2,690	2,330
15	2,940	1,880	1,440	807	602	870	1,440	9,490	12,900	4,370	2,520	1,920
16	3,830	1,730	1,370	762	622	910	1,540	9,520	12,000	4,470	2,310	2,000
17	4,990	1,600	1,300	780	604	938	1,500	8,960	9,660	4,380	2,390	2,130
18	3,460	1,590	1,270	768	594	964	1,500	8,900	8,310	4,550	2,540	1,810
19	2,810	1,580	1,200	662	576	1,040	1,540		7,840	4,410	2,410	1,610
20	2,410	1,570	1,190	658	608	1,190	1,500		6,870	3,960	1,970	1,370
21	2,150	1,560	1,160	755	588	1,480	1,790	13,000	6,440	3,370	1,940	1,120
22	2,310	1,670	1,120	697	588	1,470	2,110		6,470	3,300	1,950	1,060
23	2,520	1,670	1,110	696	594	1,390	2,470		6,940	3,150	2,890	969
24	2,170	1,630	1,070	734	591	1,360	2,860		7,740	3,390	2,380	920
25	2,030	1,560	1,110	752	608	1,300	3,420	12,400	8,370	3,100	1,980	861
26	1,880	1,540	1,070	716	597	1,450	4,260	9,570	7,690	3,390	2,130	782
27	1,750	1,460	1,040		586	1,750	5,170	7,940	7,010	2,920	2,440	785
28	1,680	1,400	998		582	3,200	5,090	7,020	6,980	3,030	2,700	743
29	1,580	1,350	1,040	605	-------	2,930	5,010	7,200	6,880	3,440	2,500	716
30	1,520	1,350	1,030		-------	2,420	4,540	7,510	6,530	3,760	2,340	704
31	1,480	-------	956		-------	2,160	-------	8,000	--------	3,780	2,340	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	7,690	1,300	2,930	2.53	2.92	180,000
November	2,350	1,160	1,590	1.37	1.53	94,600
December	2,200	956	1,300	1.12	1.29	79,900
January	986	----------	771	.665	.77	47,400
February	----------	----------	598	.516	.54	33,200
March	3,200	598	1,210	1.04	1.20	74,400
April	5,170	1,070	2,160	1.86	2.08	129,000
May	----------	4,220	8,580	7.40	8.53	528,000
June	13,500	6,440	9,190	7.92	8.84	547,000
July	6,570	2,920	4,460	3.84	4.43	274,000
August	3,630	1,940	2,720	2.34	2.70	167,000
September	2,330	704	1,470	1.27	1.42	87,500
The year	----------	----------	3,100	2.67	36.25	2,240,000

SKAGIT RIVER NEAR CONCRETE, WASH.

LOCATION.—Water-stage recorder in sec. 16, T. 35 N., R. 8 E., at dalles 2 miles below Baker River and 2½ miles southwest of Concrete. Zero of gage, 163 feet above mean sea level.

DRAINAGE AREA.—2,700 square miles, of which 390 square miles is in Canada.

RECORDS AVAILABLE.—September, 1924, to September, 1929.

EXTREMES.—Maximum discharge during year, 74,300 second-feet Oct. 9 (gage height, 17.25 feet); minimum not determined, probably occurred during period of clogged intake, Feb. 20–28.

1924–1929: Maximum discharge, 95,500 second-feet Jan. 12, 1928 (gage height, 20.2 feet); minimum, probably less than 2,160 second-feet during period Oct. 1–24, 1925.

High-water marks at gage height 56.6 feet indicate a flood of 500,000 second-feet about 1815. Other early floods are given in Water-Supply Paper 612.

REMARKS.—Records excellent except those for Dec. 3–7, 21–25, Jan. 1, 5–30, Feb. 10, 17, 20–28, and Sept. 29 and 30, which were estimated. Water is diverted for operation of power plants upstream but is returned to river above station. At low stages flow partly controlled by storage of water at power plants.

Daily discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,940	6,690	7,000	6,700	3,790	3,000	9,080	12,900	24,600	21,700	11,300	6,540
2	11,000	6,570	6,580	6,790	3,650	3,100	8,530	17,900	22,400	23,000	10,800	6,280
3	8,320	6,410		6,630	2,770	3,360	8,040	22,900	19,300	21,600	11,000	6,550
4	7,180	6,200		6,430	3,520	3,740	7,520	19,100	21,800	19,400	10,000	6,400
5	8,340	6,760	6,000		3,780	4,200	7,100	15,700	27,200	19,100	9,460	6,390
6	9,500	6,740			3,920	4,580	6,800	15,400	34,200	19,300	9,300	6,320
7	13,500	6,440		5,300	3,600	4,350	6,200	15,500	35,700	17,000	9,820	5,860
8	21,600	6,380	6,370		3,700	4,500	6,360	16,000	35,700	19,300	10,100	4,800
9	62,200	10,400	9,860		3,380	4,550	6,250	16,100	34,200	19,400	10,200	5,940
10	33,400	11,800	12,400		3,340	4,530	5,930	15,600	31,300	18,100	10,100	6,220
11	19,100	12,000	10,800		3,290	5,230	5,840	17,600	28,300	15,500	9,360	6,460
12	14,000	11,700	9,260		3,340	5,440	5,540	22,200	26,600	13,600	9,550	6,480
13	12,000	12,800	8,170		3,200	4,980	5,560	26,500	31,700	14,400	9,160	6,840
14	10,400	11,400	7,620		3,030	5,040	6,280	26,400	39,000	15,800	8,920	7,380
15	11,400	10,200	6,850		3,020	5,060	9,180	24,400	41,200	16,200	8,780	6,800
16	13,600	9,550	5,660	4,600	3,190	4,960	8,780	24,300	39,500	14,500	8,290	6,560
17	20,300	8,960	6,580		3,070	4,500	8,140	22,800	31,200	14,000	8,360	6,930
18	14,400	8,120	6,260		2,950	5,000	7,640	22,200	28,800	14,200	8,230	6,430
19	11,300	8,030	6,120		2,810	5,120	7,540	24,600	28,800	13,600	8,800	5,920
20	10,000	7,960	5,980			5,700	7,540	31,700	23,800	12,900	7,620	5,150
21	8,410	8,430				8,000	7,460	37,300	20,800	11,500	7,060	4,950
22	8,900	9,020				7,860	9,030	41,700	20,500	11,100	7,240	3,900
23	9,960	8,750	5,800			6,990	10,400	43,900	21,800	10,800	8,130	4,660
24	8,880	8,340			2,900	5,660	11,400	44,400	25,600	11,400	8,880	4,700
25	8,440	7,920		3,700		6,540	12,600	37,800	28,800	10,700	7,140	4,700
26	8,010	7,800	6,070			7,320	14,400	27,400	26,000	11,100	7,440	4,520
27	7,580	7,480	6,210			9,660	16,600	22,800	23,000	10,600	7,900	4,250
28	6,900	7,280	5,940			14,800	14,700	19,200	23,400	9,890	8,540	4,250
29	7,070	6,910	6,440		-------	14,200	15,400	18,300	23,400	10,800	8,150	4,200
30	7,280	6,850	6,530		-------	11,600	14,000	19,900	21,800	11,500	7,670	4,200
31	7,180	--------	6,620	3,540	-------	9,370	--------	23,400	--------	11,800	7,900	------

Monthly discharge, in second-feet, of Skagit River, near Concrete, Wash., 1928–29

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	62,200	5,940	13,100			806,000
November	12,800	6,200	8,460			503,000
December	12,400		6,850			421,000
January	6,790		4,670			287,000
February	3,920		3,190			177,000
March	14,800	3,000	6,220			382,000
April	16,600	5,540	8,990			535,000
May	44,400	12,900	24,100			1,480,000
June	41,200	19,300	28,000			1,670,000
July	23,000	9,890	15,000			922,000
August	11,300	7,060	8,880			546,000
September	7,380	3,900	5,690			339,000
The year	62,200		11,100	4.11	56.05	8,070,000

NOTE.—Monthly discharge in second-feet per square mile and run-off in inches not computed, owing to regulation on Baker River. The yearly figures closely represent the natural flow.

THUNDER CREEK NEAR MARBLEMOUNT, WASH.

LOCATION.—Water-stage recorder in Whatcom County a quarter of a mile above mouth of creek and 20 miles northeast of Marblemount, Skagit County.

DRAINAGE AREA.—111 square miles.

RECORDS AVAILABLE.—February, 1919, to September, 1929.

EXTREMES.—Maximum discharge during year, 6,260 second-feet Oct. 9 (gage height, 12.48 feet); minimum not determined, occurred during period Jan. 19 to Feb. 15, when stage-discharge was affected by ice.

1919–1929: Maximum discharge, 9,720 second-feet Dec. 12, 1921 (gage height, 15.5 feet); minimum probably occurred during period Jan. 19 to Feb. 15, 1929.

REMARKS.—Records good except those for Jan. 19 to Feb. 15 and July 27 to Aug. 3, which were estimated. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	513	220	155	97		65	165	420	855	1,180		755
2	464	205	145	97		65	155	660	705	1,290	1,200	615
3	300	205	127	91		65	145	705	660	1,180		480
4	273	205	127	91		65	136	615	805	1,120	1,120	525
5	260	190	127	85	50	65	127	570	1,180	1,180	1,010	615
6	456	178	127	85		65	127	548	1,530	1,230	1,120	480
7	551	165	136	85		65	119	548	1,710	1,180	1,230	420
8	1,810	155	145	85		65	111	570	1,590	1,290	1,290	518
9	4,290	250	235	80		65	111	570	1,530	1,290	1,350	682
0	1,530	285	235	80		70	104	615	1,410	1,120	1,290	728
11	955	268	205	80		70	104	705	1,230	805	1,230	855
12	755	250	178	80		70	97	905	1,230	855	1,120	953
13	615	268	165	80	60	65	104	1,180	1,650	1,060	1,010	1,070
14	570	250	155	75		65	127	1,120	1,980	1,410	1,010	1,120
15	805	235	145	75		70	136	1,010	2,050	1,350	905	805
16	1,060	220	136	75	70	70	145	1,060	1,710	1,120	855	992
17	1,350	190	136	75	65	75	136	1,010	1,290	1,230	1,010	1,010
18	705	178	127	75	65	75	136	1,010	1,060	1,350	1,030	755
19	525	178	127		65	75	136	1,120	905	1,290	768	660
20	420	178	119		65	91	145	1,350	805	1,120	615	460
21	360	220	119	70	65	111	155	1,530	755	905	660	285
22	542	220	111		65	111	178	1,650	855	905	660	235
23	525	220	111		65	111	235	1,710	1,010	955	742	190
24	400	205	104		65	111	268	1,650	1,290	1,060	705	165
25	340	190	111		65	111	320	1,230	1,470	955	654	145
26	320	190	104		65	127	440	905	1,290	1,120	809	127
27	285	178	104		65	145	548	705	1,120		1,080	127
28	268	165	97	50	65	285	502	615	1,230		1,180	127
29	250	165	97		-------	285	502	705	1,230	1,150	1,040	136
30	250	155	97		-------	220	440	755	1,120		1,000	145
31	235	-------	91		-------	190	-------	805	-------		955	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	4,290	235	709	6.39	7.37	43,600
November	285	155	206	1.86	2.0[illegible]	12,300
December	235	91	135	1.22	1.4[illegible]	8,300
January	97	----------	73.6	.663	.7[illegible]	4,530
February	----------	----------	58.9	.531	.5[illegible]	3,270
March	285	65	103	.928	1.07	6,330
April	548	97	205	1.85	2.0[illegible]	12,200
May	1,710	420	921	8.30	9.57	56,600
June	2,050	660	1,240	11.2	12.50	73,800
July	1,410	805	1,140	10.3	11.87	70,100
August	----------	615	1,000	9.01	10.39	61,500
September	1,120	127	539	4.86	5.42	32,100
The year	4,290	----------	531	4.78	65.05	385,000

CASCADE RIVER AT MARBLEMOUNT, WASH.

LOCATION.—Water-stage recorder in SW. ¼ sec. 9, T. 35 N., R. 11 E., 2 miles east of Marblemount.

DRAINAGE AREA.—180 square miles.

RECORDS AVAILABLE.—September, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period, 6,500 second-feet Oct. 9 (gage height, 9.20 feet); minimum not determined, probably occurred during January or February when water-stage recorder was not operating.

REMARKS.—Records good except those for estimated periods, which are fair. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	590	301	295	244		157	448	820	1,480	1,720	960	520
2	-------	792	283	278	253		183	405	1,310	1,310	1,800	902	510
3	-------	570	280	262	244		193	369	1,450	1,110	1,640	902	452
4	461	488	328	255	233		201	342	1,170	1,450	1,560	848	409
5	479	479	314	244	226		233	310	1,080	1,920	1,480	765	401
6	434	710	295	244	220	140	229	286	1,020	2,260	1,520	738	397
7	320	848	278	262	215		215	283	1,050	2,080	1,450	792	361
8	289	2,260	295	328	218		207	268	1,080	2,120	1,480	820	342
9	278	5,430	635	590	211		211	255	1,050	2,170	1,560	820	357
10	275	1,800	710	685	211		242	244	1,050	2,040	1,520	820	381
11	272	1,140	660	560	211		242	244	1,310	1,880	1,280	792	
12	292	820	635	474	211		224	235	1,720	1,800	1,080	765	
13	590	710	635	409	215		215	237	1,920	2,350	1,140	710	420
14	902	685	528	373	215	150	215	373	1,760	2,620	1,340	685	
15	479	1,050	470	345	213		224	448	1,080	2,800	1,310	660	
16	393	1,240	443	317	209		237	448	1,720	2,530	1,200	635	443
17	349	1,480	397	298	207		242	393	1,520	2,000	1,170		484
18	361	930	369	286		144	244	381	1,600	1,720	1,240	600	443
19	301	738	349	278	200	148	255	385	1,880	1,720	1,200		405
20	270	635	373	268		153	314	438	2,170	1,480	1,080		365
21	278	560	479	260		151	421	524	2,350	1,380	930	595	338
22	353	660	502	255		149	393	580	2,530	1,450	875	575	310
23	421	660	452	251		151	353	685	2,440	1,680	848	820	289
24	377	510	413	244	190	149	320	738	2,440	1,880	902	710	265
25	304	434	389	260		153	304	848	1,920	2,040	848	600	233
26	307	434	377	258		151	342	1,020	1,520	1,880	902	560	222
27	338	397	342	251		148	461	1,140	1,280	1,720	848	546	215
28	286	373	324	244		146	848	1,050	1,140	1,800	820	590	211
29	286	349	310	265	140	-------	710	1,020	1,140	1,800	902	570	209
30	369	349	307	255		-------	585	875	1,240	1,720	990	551	207
31	-------	328	-------	244		-------	497	-------	1,480	-------	1,020	524	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1928						
September 4-30	902	270	373	2.07	2.08	20,000
1928-29						
October	5,430	328	918	5.10	5.88	56,400
November	710	278	416	2.31	2.58	24,800
December	685	244	317	1.76	2.03	19,500
January	253	----------	201	1.12	1.29	12,400
February	----------	----------	146	.811	.84	8,110
March	848	157	313	1.74	2.01	19,200
April	1,140	235	509	2.83	3.16	30,300
May	2,530	820	1,540	8.56	9.87	94,700
June	2,800	1,110	1,870	10.4	11.60	111,000
July	1,800	820	1,210	6.72	7.75	74,400
August	960	524	699	3.88	4.47	43,000
September	----------	207	362	2.01	2.24	21,500
The year	5,430	----------	713	3.96	53.72	515,000

SAUK RIVER ABOVE WHITECHUCK RIVER, NEAR DARRINGTON, WASH.

LOCATION.—Water-stage recorder in NW. ¼ sec. 24, T. 31 N., R. 10 E., half a mile above Whitechuck River and 9½ miles southeast of Darrington.

DRAINAGE AREA.—152 square miles.

RECORDS AVAILABLE.—August to November, 1910 (fragmentary gage heights); October, 1917, to September, 1922; August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period August, 1928, to September, 1929, 7,030 second-feet Oct. 9 (gage height, 7.50 feet); minimum, 156 second-feet Sept. 30, 1929 (gage height, 2.03 feet).

1917–1922, 1928–29: Maximum discharge, 23,000 second-feet Dec. 12, 1921 (gage height, 14.65 feet); minimum, that of Sept. 30, 1929.

REMARKS.—Records excellent except those for Aug. 19, 26, Aug. 30 to Sept. 2, Sept. 12, 13, 18, 1928, Jan. 23–26, Jan. 28 to Feb. 14 and July 30 to Aug. 1, which were estimated. No diversions above station.

Daily discharge, in second-feet, 1928–29

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1	-------	312	11	-------	190	21	349	190
2	-------	299	12	-------	514	22	349	182
3	-------	287	13	-------	837	23	380	190
4	-------	264	14	-------	1,160	24	412	190
5	-------	269	15	-------	444	25	412	178
6	-------	242	16	-------	292	26	399	175
7	-------	219	17	392	264	27	386	175
8	-------	216	18	392	236	28	344	172
9	-------	198	19	376	207	29	349	168
10	-------	198	20	360	198	30	337	172
						31	324	-------

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	630	296	360	360		185	612	988	1,880	1,710	607	260
2	1,380	269	327	458		250	532	1,600	1,600	1,710	582	269
3	833	264	296	412		253	490	2,000	1,500	1,550	590	246
4	833	316	287	349		264	451	1,600	1,710	1,550	504	236
5	1,070	310	269	316		322	392	1,350	2,120	1,500	438	232
6	1,290	296	256	292		316	360	1,260	2,460	1,500	438	225
7	1,670	274	292	282		300	366	1,260	2,460	1,350	458	216
8	2,750	292	438	274	160	278	332	1,300	2,530	1,400	470	213
9	5,340	702	1,190	256		296	322	1,300	2,320	1,450	470	216
10	2,380	865	1,500	250		380	310	1,300	2,190	1,260	444	219
11	1,450	857	1,040	246		354	305	1,550	2,000	1,150	438	228
12	1,080	857	793	242		310	296	2,060	2,000	1,060	470	228
13	897	865	672	246		296	316	2,390	2,600	1,160	386	239
14	801	695	553	250		292	672	2,320	2,820	1,210	360	242
15	996	598	490	246	168	296	672	2,120	3,210	1,110	349	236
16	1,180	612	444	236	170	316	665	2,120	2,900	996	327	232
17	1,450	539	392	232	166	338	575	2,000	2,390	970	322	239
18	996	477	366	228	162	327	518	2,000	2,390	988	327	222
19	809	451	338	216	164	327	511	2,390	2,390	929	373	213
20	702	418	327	210	172	418	525	2,820	1,940	881	344	213
21	605	451	327	213	168	688	575	3,130	1,760	793	278	216
22	568	504	305		168	620	628	3,530	1,710	762	269	216
23	560	470	292		182	497	785	3,620	1,880	732	354	216
24	497	458	282	210	185	458	913	3,620	2,260	762	412	204
25	444	432	392		192	432	1,080	2,900	2,390	672	322	188
26	418	425	386		182	817	1,260	2,120	2,000	740	296	180
27	380	399	338	207	182	1,050	1,450	1,710	1,760	672	322	168
28	349	360	322		180	1,550	1,350	1,500	1,880	635	338	166
29	322	349	444	170	-------	1,140	1,260	1,450	1,760	680	305	164
30	322	360	444		-------	857	1,090	1,500	1,710	656	282	160
31	322	-------	354		-------	695	-------	1,940	-------	631	274	-------

Monthly discharge, in second-feet, of Sauk River above Whitechuck River, near Darrington, Wash., 1928–29

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1928						
August 17–31	412	324	371	2.44	1.36	11,000
September	1,160	168	288	1.89	2.11	17,100
The period						28,100
1928–29						
October	5,340	322	1,070	7.04	8.12	65,800
November	865	264	482	3.17	3.54	28,700
December	1,500	256	468	3.08	3.55	28,800
January	458		250	1.64	1.89	15,400
February	192		167	1.10	1.14	9,280
March	1,550	185	481	3.16	3.64	29,600
April	1,450	296	654	4.30	4.80	38,900
May	3,620	988	2,020	13.3	15.33	124,000
June	3,210	1,500	2,150	14.1	15.73	128,000
July	1,710	631	1,070	7.04	8.12	65,800
August	607	269	392	2.58	2.97	24,100
September	269	160	217	1.43	1.60	12,900
The year	5,340		790	5.20	70.43	571,000

SAUK RIVER AT DARRINGTON, WASH.

LOCATION.—Staff gage in SE. ¼ sec. 24, T. 32 N., R. 9 E., half a mile southeast of Darrington.

DRAINAGE AREA.—293 square miles.

RECORDS AVAILABLE.—June, 1914, to October, 1926; June, 1927, to September, 1929.

EXTREMES.—Maximum discharge during period June, 1928, to September, 1929, occurred Oct. 9 (stage and discharge not determined); minimum, 295 second-feet Sept. 10–12, 1928 (gage height, 1.70 feet); minimum gage height, 1.48 feet on Sept. 27, 1929.

1914–1926, 1928–29: Maximum discharge, 36,000 second-feet Dec. 29, 1917, and Dec. 12, 1921 (gage height, 15.0 feet); minimum, 286 second-feet Oct. 13–16 and 18, 1925.

REMARKS.—Records good except those for August and September, 1928, which are poor. No diversions above station.

Daily discharge, in second-feet, 1928–29

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1928					1928				
1		2,070		514	16		1,620		530
2		2,070		522	17		1,620		450
3		2,490		506	18		1,620		554
4		[a] 2,420		482	19		1,420		[a] 506
5		2,340		482	20		1,320		[a] 458
			[a] 950					[a] 550	
6		2,200		426	21		1,520		[a] 410
7		2,070		386	22	3,190	1,730		362
8		2,200		340	23	3,790	1,730		610
9		2,070		332	24	4,000	1,620		450
10		2,070		295	25	4,000	1,620		410
11		2,200		295	26	3,790	1,520		310
12		2,340		295	27	2,820	1,620		450
13		1,950	[a] 700	538	28	2,340	1,420		394
14		1,840		1,420	29	2,200	1,520	[a] 450	394
15		1,730		554	30	2,070	1,420		410
					31		[a] 1,300		

[a] Estimated.

Daily discharge, in second-feet, of Sauk River at Darrington, Wash., 1928–29—Con.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1928–29												
1	1,420	585	700	1,080	[a] 410	410	1,180	1,620	3,000	3,000	1,130	490
2	2,490	550	620	1,420		660	1,040	4,210	2,820	2,820	1,040	520
3	1,520	550	585	1,180	462	700	950	3,590	2,490	2,650	995	462
4	1,520	1,180	585	950	490	550	908	3,000	3,000	2,820	908	435
5	1,950	660	520	780	435	865	822	2,340	3,790	3,000	865	462
6	1,420	822	550	700	[a] 380	780	780	1,840	4,420	2,490	950	435
7	2,650	550	585	740		700	740	2,200	4,210	2,650	950	435
8	4,420	550	1,040	585		660	700	2,340	4,420	2,340	1,040	410
9	[a] 10,000	2,340	3,000	585		620	700	2,200	4,210	2,340	1,080	385
10	4,840	1,620	3,000	550		700	700	2,490	3,590	2,200	1,040	385
11	2,820	1,840	1,950	550		822	620	3,190	3,390	1,840	1,040	385
12	1,950	1,840	1,520	550	385	740	620	3,390	3,390	1,840	865	435
13	1,520	2,070	1,080	550	[a] 362	660	660	4,210	5,060	2,070	700	550
14	1,320	1,520	1,040	550	340	620	2,070	4,210	4,630	1,950	780	585
15	1,620	1,220	1,040	550	[a] 340	660	1,320	3,790	6,630	1,950	660	620
16	1,840	1,320	950	520	340	700	1,420	3,390	4,630	1,730	620	620
17	3,190	1,130	950	520	340	700	1,130	3,190	4,420	1,620	700	462
18	1,840	950	822	490	320	700	1,080	3,390	4,420	1,620	585	385
19	1,420	865	780	462	320	700	995	4,000	4,210	1,620	550	385
20	1,220	822	740	462	362	1,080	1,180	4,840	3,000	1,520	620	385
21	1,040	908	740	462	340	1,620	1,080	5,280	2,820	1,320	550	385
22	1,080	1,040	660	462	340	1,220	1,840	5,720	2,820	1,220	520	410
23	1,040	908	629	[a] 400	385	1,040	1,620	5,720	3,390	1,220	1,080	385
24	865	822	620		385	950	1,730	5,500	4,630	1,220	700	340
25	822	780	1,130		385	865	2,070	4,840	3,790	1,220	550	340
26	780	865	995		385	2,200	2,490	3,390	3,000	1,320	550	300
27	700	908	908		362	2,650	2,490	2,650	3,000	1,080	822	300
28	780	700	822		385	4,210	2,340	2,340	3,190	1,320	585	300
29	620	740	1,520		-------	2,340	2,200	2,340	3,000	1,320	520	300
30	620	660	1,080		-------	1,730	2,070	2,340	3,000	1,130	520	300
31	660	-------	908		-------	1,420	-------	3,390	-------	1,080	620	------

[a] Estimated.

Monthly discharge, in second-feet, of Sauk River at Darrington, Wash., 1928–29

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1928						
June 22–30	4,000	2,070	3,130	10.7	3.58	55,900
July	2,490	1,300	1,830	6.25	7.21	113,000
August	----------	----------	684	2.33	2.69	42,100
September	1,420	295	470	1.60	1.78	28,000
The period	----------	----------	----------	----------	----------	239,000
1928–29						
October	10,000	620	1,930	6.59	7.60	119,000
November	2,340	550	1,040	3.55	3.96	61,900
December	3,000	520	1,030	3.52	4.06	63,300
January	1,420	----------	590	2.01	2.32	36,300
February	490	----------	377	1.29	1.34	20,900
March	4,210	410	1,110	3.79	4.37	68,200
April	2,490	620	1,320	4.51	5.03	78,600
May	5,720	1,620	3,450	11.8	13.60	212,000
June	6,630	2,490	3,750	12.8	14.28	223,000
July	3,000	1,080	1,860	6.35	7.32	114,000
August	1,130	520	779	2.66	3.07	47,900
September	620	300	420	1.43	1.60	25,000
The year	10,000	300	1,480	5.05	68.55	1,070,000

SAUK RIVER NEAR SAUK, WASH.

LOCATION.—Water-stage recorder in NW. ¼ sec. 19, T. 34 N., R. 10 E., 5 miles above mouth of river and southeast of Sauk.

DRAINAGE AREA.—714 square miles.

RECORDS AVAILABLE.—July, 1928, to September, 1929. August, 1910, to August, 1912, for a station 1 mile below.

EXTREMES.—Maximum discharge during period July, 1928, to September, 1929, 21,800 second-feet Oct. 9 (gage height, 9.33 feet); minimum, 652 second-feet Sept. 30, 1929 (gage height, 2.74 feet).

1910–1912, 1928–29: Maximum discharge, that of Oct. 9, 1928; minimum, that of Sept. 30, 1929.

REMARKS.—Records excellent except those for Dec. 27 to Jan. 11, Jan. 23–26, Jan. 28 to Feb. 5, and Mar. 9–25, which were estimated. No diversions above station.

Daily discharge, in second-feet, 1928–29

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1928				1928				1928			
1	-------	2,610	1,780	11	-------	2,610	1,180	21	-------	1,680	1,050
2	-------	2,400	1,920	12	-------	2,100	1,160	22	-------	1,630	1,140
3	-------	2,310	1,700	13	-------	2,100	1,080	23	-------	1,870	1,380
4	-------	2,520	1,650	14	-------	1,870	3,440	24	4,340	1,940	1,410
5	-------	2,290	1,620	15	-------	1,750	1,910	25	4,340	1,920	1,180
6	-------	2,190	1,560	16	-------	1,760	1,420	26	4,110	1,790	1,160
7	-------	2,370	1,290	17	-------	1,810	1,380	27	4,110	1,600	1,200
8	-------	2,420	1,200	18	-------	1,780	1,450	28	3,880	1,500	1,140
9	-------	2,420	1,290	19	-------	1,860	1,220	29	3,440	1,500	1,110
10	-------	2,520	1,190	20	-------	1,600	1,030	30	3,220	1,540	1,090
								31	2,810	1,670	------

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1928–29												
1	1,580	1,290	1,500			888	2,520	3,440	6,570	6,570	3,010	1,680
2	4,340	1,240	1,390			1,130	2,280	5,320	5,720	6,880	2,810	1,600
3	2,910	1,190	1,310		850	1,340	2,110	7,030	5,200	6,130	2,910	1,440
4	2,400	1,340	1,280	1,800		1,420	1,990	5,450	5,720	5,990	2,610	1,380
5	3,010	1,340	1,230			1,620	1,830	4,820	7,350	5,990	2,380	1,390
6	3,180	1,280	1,200		833	1,630	1,730	4,460	8,730	5,990	2,350	1,310
7	4,340	1,180	1,270	1,390	833	1,540	1,730	4,340	9,100	5,450	2,520	1,280
8	6,680	1,240	1,890		822	1,450	1,620	4,460	9,280	5,580	2,610	1,280
9	17,500	3,030	4,010		811		1,560	4,460	8,730	5,850	2,610	1,310
10	8,270	3,550	5,070	1,300	811		1,460	4,340	8,020	5,580	2,610	1,380
11	4,940	3,660	3,660		800		1,450	4,940	7,520	4,580	2,520	1,480
12	3,770	3,440	2,910	1,290	770	1,400	1,420	6,570	7,190	4,220	2,380	1,520
13	2,910	3,550	2,420	1,290	740		1,480	7,680	9,470	4,580	2,260	1,600
14	2,610	2,810	2,100	1,290	730		2,680	7,350	10,600	5,070	2,190	1,750
15	3,220	2,370	1,910	1,290	700		3,120	6,720	11,800	4,820	2,130	1,590
16	4,000	2,330	1,760	1,270	710		2,910	6,720	11,000	4,340	2,030	1,480
17	4,940	2,150	1,620	1,240	710		2,520	6,130	8,920	4,220	1,990	1,640
18	3,550	1,920	1,570	1,190	692	1,500	2,280	6,280	8,020	4,340	2,030	1,320
19	2,810	1,780	1,480	1,100	692		2,260	7,350	8,200	4,110	2,060	1,310
20	2,420	1,730	1,420	1,040	730		2,330	8,920	6,720	3,660	1,700	1,200
21	2,110	1,870	1,420	1,050	770		2,520	9,850	5,990	3,220	1,620	946
22	2,010	1,990	1,390	1,050	730		2,520	11,400	5,990	3,220	1,700	866
23	2,190	1,890	1,320		790	2,000	3,010	11,800	6,720	3,010	2,020	855
24	1,870	1,760	1,340		811		3,440	11,800	7,850	3,220	2,130	800
25	1,750	1,730	1,890	1,050	855		3,770	9,850	8,920	3,010	1,680	780
26	1,650	1,730	1,920		899	3,440	4,460	7,190	7,680	3,120	1,700	770
27	1,520	1,620		1,040	877	4,110	4,940	5,850	6,720	2,910	1,990	720
28	1,450	1,500			844	6,120	4,580	5,070	7,030	2,810	2,110	700
29	1,390	1,450	1,900	950	-------	4,580	4,460	4,940	6,880	3,120	2,010	684
30	1,410	1,460			-------	3,550	3,880	5,200	6,570	3,220	1,870	676
31	1,410	-------			-------	2,910	-------	6,420	-------	3,220	1,860	------

Monthly discharge, in second-feet, of Sauk River near Sauk, Wash., 1928–29

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1928						
July 24–31	4,340	2,810	3,780	5.29	1.57	60,000
August	2,610	1,500	2,000	2.80	3.23	123,000
September	3,440	1,030	1,410	1.97	2.20	83,900
The period						267,000
1928–29						
October	17,500	1,390	3,490	4.89	5.64	215,000
November	3,660	1,180	1,980	2.77	3.09	118,000
December	5,070	1,200	1,930	2.70	3.11	119,000
January			1,280	1.79	2.06	78,700
February		692	793	1.11	1.16	44,000
March	6,120	888	2,030	2.84	3.27	125,000
April	4,940	1,420	2,630	3.68	4.11	156,000
May	11,800	3,440	6,650	9.31	10.73	409,000
June	11,800	5,200	7,810	10.9	12.16	465,000
July	6,880	2,810	4,450	6.23	7.18	274,000
August	3,010	1,620	2,210	3.10	3.57	136,000
September	1,750	676	1,220	1.71	1.91	72,600
The year	17,500	676	3,050	4.27	57.99	2,210,000

SOUTH FORK OF SAUK RIVER NEAR BARLOW PASS, WASH.

LOCATION.—Water-stage recorder in SW. ¼ sec. 21, T. 30 N., R. 11 E., 2¾ miles above mouth of river and 4 miles northeast of Barlow Pass.

DRAINAGE AREA.—32.7 square miles.

RECORDS AVAILABLE.—October, 1917, to October, 1921; October, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period October, 1928 to September, 1929, 1,100 second-feet June 15 (gage height, 5.37 feet); minimum may have been less than 30 second-feet during period Feb. 1–19.

1917–1921, 1928–29: Maximum discharge, 5,800 second-feet Dec. 29, 1917 (gage height, 9.1 feet); minimum probably occurred during Feb. 1–19, 1929.

REMARKS.—Records good except those for estimated periods, which are poor. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	102	114	109		35	137	240	427	483	230	90
2	-------	95	109	132		82	119	489	352	505	210	91
3	-------	91	99	121		67	111	561	316	451	203	86
4	-------	107	97	107		65	104	396	380	442	177	80
5	-------	107	94	100		102	96	320	528	438	158	68
6	-------	106	86	95		99	91	296	623	442	155	53
7	-------	95	98			91	92	302	588	397		49
8	-------	97	147			68	89	330	582	438	160	49
9	-------	237	378			79	84	306	522	447		48
10	-------	289	516		30	109	82	306	473	419	147	49
11	-------	275	331	70		109	80	390	422	347	149	53
12	-------	261	245			102	77	548	444	331		57
13	-------	254	201			92	81	616	724	388		67
14	-------	220	172			86	138	554	841	408		76
15	-------	191	152	57		89	141	490	978	356		68
16	-------	196	140	53		102	144	478	848	323	120	67
17	-------	181	130	54		106	125	438	712	326		68
18	-------	161	119	51		106	119	444	672	324		58
19	258	148	114	44		109	119	561	780	301		60
20	231	140	109	41	32	134	123	713	577	281		70
21	201	150	106	39	31	154	141	807	499	246	90	69
22	186	174	99	39	31	174	164	906	505	234	84	68
23	176	170	95	39	33	142	215	283	564	230	119	70
24	163	156	94	37	33	130	249	310	704	234	142	68
25	150	148	121	37	38	118	302	736	688	209	112	58
26	134	142	112	36	33	193	362	496	546	238	100	44
27	127	132	99		31	214	406	380	494	210	102	37
28	118	123	94		31	406	343	320	564	211	104	35
29	112	116	125	40	-------	283	327	306	516	230	101	32
30	112	114	116		-------	204	273	306	483	241	95	31
31	109	-------	106		-------	159	-------	455	-------	243	91	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October 19–31	258	109	160	4.89	2.36	4,130
November	289	91	159	4.86	5.42	9,460
December	516	86	149	4.56	5.26	9,160
January	132	----------	62.9	1.92	2.21	3,870
February	----------	----------	30.8	.942	.98	1,710
March	406	35	129	3.94	4.54	7,930
April	406	77	164	5.02	5.60	9,760
May	906	240	454	13.9	16.03	27,900
June	978	316	578	17.7	19.75	34,400
July	505	209	335	10.2	11.76	20,600
August	230	84	133	4.07	4.69	8,180
September	91	31	60.6	1.85	2.06	3,610
The period	----------	----------	----------	----------	----------	141,000

BAKER RIVER BELOW ANDERSON CREEK, NEAR CONCRETE, WASH.

LOCATION.—Water-stage recorder in SE. ¼ sec. 30, T. 37 N., R. 9 E., 350 feet below Anderson Creek and 9 miles northeast of Concrete.

DRAINAGE AREA.—184 square miles.

RECORDS AVAILABLE.—September, 1910, to October, 1925; August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period August, 1928, to September, 1929, 20,900 second-feet Oct. 8 (gage height, 10.15 feet); minimum not determined, occurred during period Jan. 26 to Feb. 3.

1910–1925, 1928–29: Maximum discharge, 36,800 second-feet Dec. 29, 1917 (gage height, 13.7 feet); minimum, 219 second-feet Dec. 15 and 16, 1919 (gage height, 1.21 feet).

REMARKS.—Records good except those for Jan. 26 to Feb. 17, Feb. 19, and Mar. 4 and 5, which were estimated. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	1,270	1,560	658	783	874		470	1,080	1,510	2,820	3,000	1,880	1,120
2	------	1,270	1,360	625	724	1,000	340	482	952	3,260	2,340	3,060	1,820	1,040
3	------	1,220	1,060	674	669	923		506	860	3,650	2,220	2,820	1,710	930
4	------	1,140	1,220	990	625	814	341	518	795	2,820	2,760	2,580	1,510	909
5	------	1,100	1,400	938	595	747		531	724	2,400	3,520	2,400	1,420	923
6	------	918	3,420	874	575	691		544	680	2,160	4,100	2,460	1,460	854
7	------	825	3,530	777	647	664	350	526	669	2,220	4,020	2,520	1,560	808
8	------	765	9,740	916	1,190	642		510	636	2,460	3,940	2,760	1,610	909
9	------	710	15,000	1,980	2,580	615		534	610	2,460	3,580	2,760	1,660	998
10	------	710	5,100	2,340	2,400	580		735	590	2,460	3,260	2,520	1,660	1,040
11	------	666	2,820	2,170	1,880	570		691	575	2,940	3,000	2,040	1,610	1,040
12	------	655	1,930	2,640	1,510	548		625	570	3,580	2,880	1,880	1,510	1,080
13	------	1,310	1,460	2,520	1,280	544		580	636	3,860	3,580	2,160	1,420	1,200
14	------	3,590	1,330	1,880	1,120	544		575	1,040	3,460	4,450	2,520	1,280	1,200
15	------	1,820	1,610	1,510	975	530	370	600	990	3,200	5,740	2,280	1,200	1,080
16	------	1,220	2,630	1,330	874	522		652	1,000	3,260	4,540	1,980	1,160	1,160
17	------	1,100	3,320	1,160	808	518		669	960	3,000	4,020	1,980	1,160	1,080
18	------	1,020	2,160	1,040	759	510	380	669	902	3,060	3,860	2,040	1,160	975
19	------	885	1,610	938	730	474	394	696	916	3,580	3,790	1,930	1,160	854
20	------	795	1,280	1,120	691	458	408	895	1,000	4,020	3,060	1,820	1,040	753
21	------	795	1,120	1,200	696	454	436	1,280	1,160	4,270	2,640	1,660	945	647
22	------	885	1,550	1,330	680	450	440	1,200	1,240	4,540	2,640	1,510	909	610
23	------	950	1,560	1,280	647	446	446	1,080	1,510	4,640	2,940	1,460	1,860	557
24	------	825	1,330	1,200	652	446	462	945	1,660	4,840	3,320	1,610	1,460	502
25	------	738	1,120	1,080	783	443	458	874	1,930	3,790	3,390	1,560	1,280	462
26	------	738	1,000	1,080	753		470	1,040	2,280	2,820	3,000	1,710	1,240	436
27	------	765	923	975	713		450	1,420	2,580	2,220	2,760	1,560	1,330	432
28	------	738	840	874	686	380	454	2,640	2,160	1,930	3,060	1,610	1,380	440
29	------	710	783	814	916		------	2,040	1,930	1,930	3,060	1,760	1,280	450
30	------	682	753	795	968		------	1,560	1,660	2,040	2,940	1,930	1,240	474
31	1,140	------	718	------	847		------	1,280	------	2,820	------	1,980	1,200	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1928						
September	3,590	655	1,030	5.60	6.25	61,300
1928–29						
October	15,000	718	2,430	13.2	15.22	149,000
November	2,640	625	1,260	6.85	7.64	75,000
December	2,580	575	960	5.22	6.02	59,000
January	1,000	----------	558	3.03	3.49	34,300
February	470	----------	387	2.10	2.19	21,500
March	2,640	470	883	4.80	5.53	54,300
April	2,580	570	1,140	6.20	6.92	67,800
May	4,840	1,510	3,070	16.7	19.25	189,000
June	5,740	2,220	3,370	18.3	20.42	201,000
July	3,060	1,460	2,120	11.5	13.26	130,000
August	1,880	909	1,390	7.55	8.70	85,500
September	1,200	432	832	4.52	5.04	49,500
The year	15,000	----------	1,540	8.37	113.68	1,120,000

UPPER COLUMBIA RIVER BASIN

MAIN STREAM

COLUMBIA RIVER AT TRAIL, BRITISH COLUMBIA

LOCATION.—Chain gage on highway bridge at Trail, 15 miles above international boundary and mouth of Clark Fork.

DRAINAGE AREA.—34,000 square miles.

RECORDS AVAILABLE.—April, 1913, to September, 1929.

EXTREMES.—Maximum mean daily discharge during year, 224,000 second-feet June 16 and 17 (gage height, 33.5 feet); minimum, 10,000 second-feet Feb. 25 to Mar. 5 (gage height, 7.0 feet).

1913–1929: Maximum discharge, 312,000 second-feet June 14 and 15, 1913 (gage height, 41.6 feet); minimum, 9,600 second-feet Mar. 28, 1917.

REMARKS.—Small amount of water diverted above station. No regulation except natural storage in lakes. Complete record furnished by Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	42,400	32,200	22,500	16,000	12,000	10,000	14,400	25,600	138,000	159,000	104,000	74,400
2	41,800	31,600	21,900	16,000	12,000	10,000	14,400	27,400	144,000	157,000	103,000	74,400
3	41,200	31,000	21,900	16,000	12,000	10,000	14,800	29,200	150,000	155,000	103,000	74,400
4	40,000	30,400	21,300	15,600	12,000	10,000	14,800	31,600	156,000	153,000	103,000	74,400
5	39,400	29,800	20,800	15,600	12,000	10,000	15,200	32,800	163,000	150,000	103,000	73,600
6	38,800	29,200	20,400	15,600	11,600	10,400	15,200	34,600	170,000	147,000	103,000	72,000
7	38,200	28,600	20,000	15,600	11,600	10,400	15,200	35,800	178,000	145,000	103,000	70,400
8	38,200	28,000	19,600	15,200	11,600	10,400	15,200	37,000	187,000	141,000	102,000	68,000
9	38,800	28,000	19,600	15,200	11,200	10,400	15,200	38,200	195,000	138,000	102,000	65,600
10	40,000	28,000	19,200	15,200	11,200	11,200	15,200	39,400	202,000	135,000	102,000	63,200
11	40,000	28,000	19,200	14,800	10,800	12,000	15,200	41,200	210,000	132,000	102,000	60,800
12	39,400	27,400	19,600	14,800	10,800	11,600	15,200	42,400	215,000	130,000	101,000	58,600
13	39,400	26,800	19,600	14,800	10,800	11,600	15,200	44,200	218,000	128,000	100,000	57,200
14	38,800	26,800	19,600	14,800	10,800	11,200	15,200	46,000	221,000	125,000	100,000	55,100
15	38,800	26,800	19,200	14,800	10,800	11,200	15,200	48,800	223,000	122,000	99,300	54,400
16	38,200	26,200	19,200	14,800	10,800	11,600	15,200	51,600	224,000	121,000	98,400	53,700
17	38,200	25,600	18,800	14,800	10,800	11,600	15,600	54,400	224,000	119,000	97,500	53,000
18	38,200	25,600	18,800	14,800	10,800	12,000	15,600	57,900	223,000	118,000	96,600	53,000
19	37,600	25,000	18,400	14,800	10,800	12,000	16,000	61,600	221,000	118,000	95,700	52,300
20	37,600	24,500	18,400	14,400	10,800	12,000	16,400	65,600	217,000	118,000	94,800	52,300
21	37,600	24,000	18,000	14,400	10,800	12,400	16,800	69,600	212,000	119,000	93,000	52,300
22	36,400	24,500	18,000	14,000	10,800	12,400	17,200	76,000	205,000	120,000	91,400	52,300
23	36,400	24,500	18,000	14,000	10,400	12,800	17,200	84,100	196,000	120,000	89,000	52,300
24	35,800	24,000	17,600	13,600	10,400	12,800	18,000	92,200	188,000	119,000	86,600	52,300
25	35,800	24,000	17,600	13,600	10,000	13,200	18,400	102,000	181,000	117,000	85,600	52,300
26	35,200	23,500	17,200	13,200	10,000	13,200	19,200	111,000	175,000	115,000	82,300	51,600
27	34,600	23,500	17,200	13,200	10,000	13,200	20,000	120,000	170,000	113,000	80,500	50,200
28	34,600	23,000	16,800	13,220	10,000	13,600	21,300	126,000	166,000	111,000	78,700	48,800
29	34,000	23,000	16,800	13,200	------	13,600	23,000	130,000	162,000	109,000	76,900	47,400
30	33,400	22,500	16,400	12,400	------	14,000	24,500	134,000	160,000	107,000	74,400	45,400
31	32,800	------	16,400	12,400	------	14,400	------	135,000	------	105,000	74,400	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	42,400	32,800	37,800	1.11	1.28	2,320,000
November	32,200	22,500	26,500	.78	.87	1,580,000
December	22,500	16,400	19,000	.56	.65	1,170,000
January	16,000	12,400	14,500	.43	.50	892,000
February	12,000	10,000	11,000	.32	.33	611,000
March	14,400	10,000	11,800	.35	.40	726,000
April	24,500	14,400	16,700	.49	.55	994,000
May	135,000	25,600	65,300	1.92	2.21	4,020,000
June	224,000	138,000	190,000	5.59	6.24	11,300,000
July	159,000	105,000	128,000	3.76	4.34	7,870,000
August	104,000	74,400	94,400	2.77	3.19	5,800,000
September	74,400	45,400	58,900	1.73	1.93	3,500,000
The year	224,000	10,000	56,200	1.65	22.49	40,800,000

COLUMBIA RIVER AT KETTLE FALLS, WASH.

LOCATION.—Staff gage in SW. ¼ sec. 23, T. 36 N., R. 37 E., at Kettle Falls, 1½ miles above mouth of Colville River. Gage set to mean sea level datum.

DRAINAGE AREA.—64,500 square miles.

RECORDS AVAILABLE.—April, 1913, to September, 1929.

EXTREMES.—Maximum discharge during year, 313,000 second-feet June 16 and 17 (gage height, 1,188.1 feet); minimum estimated at 17,200 second-feet on Jan. 30 and 31.

1913–1929: Maximum discharge, 468,000 second-feet June 14 and 15, 1913 (gage height, 34.2 feet, from high-water mark referred to United States Weather Bureau gage at Marcus); minimum, 15,800 second-feet, result of current-meter measurement, Feb. 16, 1923.

Maximum stage and discharge for the 1894 flood as previously published appear to be unduly large in the light of new information obtained from several sources, which indicates that the maximum discharge was about 700,000 second-feet.

REMARKS.—Records excellent except those for period Jan. 22 to Feb. 28, and July 3 and Aug. 4, which were estimated. Numerous diversions above gage for irrigation, but amount very small in proportion to flow past gage. No regulation except natural storage in numerous lakes above gage.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	50,600	38,000	31,100	24,000		18,600	24,900	45,100	210,000	217,000	122,000	81,300
2	50,600	38,700	30,500	24,000		18,600	25,300	48,000	215,000	215,000	121,000	81,300
3	49,800	38,000	30,000	24,000		18,900	25,300	50,900	218,000	211,000	121,000	81,300
4	49,100	37,400	29,500	24,000		18,900	25,800	54,800	225,000	207,000	120,000	81,300
5	48,400	36,800	29,500	23,600	17,500	19,200	25,800	56,400	234,000	202,000	120,000	79,400
6	48,400	36,200	28,500	23,200		19,200	25,800	59,000	242,000	199,000	118,000	77,500
7	47,700	36,200	28,500	23,200		19,200	26,200	60,700	251,000	194,000	117,000	74,700
8	47,700	35,600	28,000	23,200		19,500	26,200	61,600	260,000	189,000	116,000	72,900
9	47,000	35,100	28,000	22,800		19,800	26,200	64,300	260,000	185,000	115,000	70,200
10	48,400	35,100	28,000	22,400		20,400	26,200	66,100	258,000	178,000	113,000	67,700
11	48,400	36,800	28,000	22,400		20,700	26,200	68,800	276,000	174,000	112,000	65,200
12	47,700	36,800	28,000	22,000		20,700	26,200	71,500	293,000	170,000	112,000	63,600
13	47,700	36,800	28,000	22,000		20,700	26,200	77,200	298,000	166,000	111,000	62,000
14	47,700	36,800	27,500	21,700	18,000	20,700	26,200	83,000	302,000	162,000	111,000	61,200
15	47,000	36,200	27,500	21,400		20,700	27,100	86,000	309,000	157,000	110,000	59,600
16	47,000	35,600	27,100	21,000		20,700	27,100	88,000	313,000	154,000	109,000	58,900
17	46,300	35,600	26,600	21,000		21,000	27,100	91,000	313,000	150,000	107,000	58,100
18	46,300	35,100	26,200	20,800		21,000	27,100	96,500	309,000	148,000	107,000	57,300
19	46,300	34,500	25,700	20,600		21,400	27,100	101,000	304,000	146,000	105,000	57,300
20	45,600	33,900	25,700	20,300		21,700	27,600	108,000	300,000	145,000	102,000	57,300
21	45,600	33,900	25,300	20,100		21,700	29,000	117,000	291,000	145,000	101,000	57,300
22	44,900	33,900	25,300			22,000	30,100	128,000	281,000	145,000	98,800	57,300
23	44,900	33,300	24,900			22,400	30,600	137,000	270,000	145,000	96,500	57,300
24	44,900	33,300	24,900		18,500	22,400	31,100	148,000	272,000	142,000	93,200	57,300
25	44,200	32,700	24,900			22,800	32,300	162,000	251,000	139,000	91,000	57,300
26	44,200	32,700	24,400	19,000		22,800	34,000	170,000	244,000	137,000	90,000	55,800
27	43,500	32,700	24,400			22,400	35,800	178,000	235,000	134,000	88,000	54,300
28	42,800	32,200	24,400			22,800	38,200	186,000	230,000	132,000	85,100	52,800
29	41,400	31,600	24,400			23,600	42,300	193,000	225,000	133,000	84,200	51,300
30	40,000	31,100	24,400		-------	24,000	43,700	196,000	220,000	137,000	83,200	49,800
31	38,700	-------	24,400		-------	24,400	-------	202,000	-------	124,000	83,200	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	50,600	38,700	46,200	0.716	0.83	2,840,000
November	38,700	31,100	35,100	.544	.61	2,090,000
December	31,100	24,400	26,900	.417	.48	1,650,000
January	24,000	----------	21,200	.329	.38	1,300,000
February	----------	----------	18,000	.279	.29	1,000,000
March	24,400	18,600	21,100	.327	.38	1,300,000
April	43,700	24,900	29,100	.451	.50	1,730,000
May	202,000	45,100	105,000	1.63	1.88	6,460,000
June	313,000	210,000	264,000	4.09	4.56	15,700,000
July	217,000	124,000	164,000	2.54	2.93	10,100,000
August	122,000	82,200	105,000	1.63	1.88	6,460,000
September	81,300	49,800	64,000	.992	1.11	3,810,000
The year	313,000	----------	75,200	1.17	15.83	54,400,000

COLUMBIA RIVER AT GRAND COULEE, NEAR NESPELEM, WASH.

LOCATION.—Staff gage in NE. ¼ sec. 1, T. 28 N., R. 30 E., at Grant County ferry at Grand Coulee, 15 miles south of Nespelem. Gage set to mean sea level datum.

DRAINAGE AREA.—74,100 square miles.

RECORDS AVAILABLE.—June to December, 1923; June ,1928, to September, 1929; monthly discharge, April, 1913, to June, 1923, and January, 1924, to May, 1928.

EXTREMES.—Maximum discharge during period June, 1928, to September, 1929, 490,000 second-feet June 1, 1928 (gage height, 985.8 feet from well defined high-water marks); minimum not determined occurred during period Jan. 24 to Mar. 4.

1913–1929: Maximum discharge, 492,000 second-feet June 15, 1913 (determined from records at other gaging stations); minimum, about 20,000 second-feet during December, 1919, and January, 1924.

Maximum discharge during flood of June, 1894, estimated at 760,000 second-feet.

REMARKS.—Records to May, 1928, good except those for periods of rapidly changing stage, for which periods the effect of channel storage has not been determined. From June, 1928, records good except those for estimated periods. Diversions for irrigation above station small in comparison with flow past gage. Some diurnal fluctuation, owing to operation of power plants on Spokane River.

Daily discharge, in second-feet, 1928–29

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1928					1928				
1	490,000	305,000	200,000	96,900	16	331,000	264,000	146,000	79,000
2	479,000	310,000	196,000	94,800	17	329,000	258,000	141,000	77,800
3	467,000	310,000	192,000	92,000	18	326,000	253,000	137,000	76,000
4	455,000	308,000	189,000	91,300	19	322,000	248,000	131,000	74,800
5	443,000	310,000	184,000	90,600	20	313,000	241,000	127,000	72,400
6	431,000	310,000	179,000	91,300	21	305,000	234,000	123,000	70,000
7	419,000	307,000	174,000	92,000	22	298,000	228,000	119,000	68,800
8	407,000	305,000	170,000	92,000	23	290,000	223,000	116,000	67,600
9	395,000	300,000	164,000	90,600	24	287,000	218,000	113,000	65,800
10	383,000	293,000	159,000	89,200	25	286,000	214,000	111,000	64,600
11	371,000	288,000	157,000	87,800	26	286,000	212,000	109,000	63,400
12	359,000	281,000	156,000	85,000	27	288,000	210,000	107,000	61,600
13	349,000	277,000	153,000	83,800	28	290,000	208,000	105,000	60,400
14	336,000	270,000	153,000	81,400	29	294,000	207,000	103,000	58,800
15	334,000	266,000	149,000	79,600	30	298,000	204,000	101,000	57,700
					31		202,000	99,000	

Daily discharge, in second-feet, of Columbia River at Grand Coulee, near Nespelem, Wash., 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1928–29												
1	56,600	47,800	36,500	29,100			35,500	60,400	213,000	223,000	128,000	86,400
2	56,600	47,200	36,000	28,200		21,500	35,500	61,600	220,000	220,000	125,000	85,700
3	56,000	46,700	35,500	28,600			36,000	65,800	227,000	217,000	124,000	85,000
4	55,500	45,000	35,000	29,100		21,200	36,000	68,800	229,000	212,000	123,000	85,000
5	54,400	44,000	35,000	28,600		21,600	34,500	70,000	230,000	208,000	122,000	85,000
6	53,300	43,500	34,500	27,800	21,000	24,600	34,500	73,600	239,000	205,000	122,000	83,200
7	53,300	42,500	34,000	27,300		26,000	34,500	75,400	251,000	200,000	122,000	82,600
8	52,200	42,500	34,000	27,300		25,500	37,500	76,600	259,000	193,000	121,000	79,600
9	52,200	42,500	33,200	27,800		24,600	36,000	78,400	270,000	189,000	120,000	77,200
10	52,800	42,500	32,200	27,800		25,000	34,000	79,600	281,000	184,000	119,000	74,800
11	54,400	42,000	32,700	26,800		25,000	35,000	80,800	288,000	181,000	117,000	72,400
12	53,300	41,500	33,200	26,800		25,500	34,500	82,600	293,000	176,000	116,000	70,600
13	53,300	42,000	33,200	26,800		26,000	33,600	86,400	300,000	172,000	115,000	68,200
14	53,300	42,000	33,200	25,500		25,500	33,200	93,400	305,000	166,000	115,000	67,600
15	52,200	42,000	33,200	26,000	21,000	25,000	34,000	98,300	310,000	162,000	115,000	65,200
16	52,200	41,500	32,700	25,500		25,500	35,500	101,000	312,000	158,000	114,000	63,400
17	52,200	41,000	31,400	25,000		26,000	35,500	106,000	318,000	155,000	113,000	63,400
18	51,600	41,000	31,800	24,600		25,000	36,000	109,000	318,000	153,000	112,000	62,800
19	51,600	39,500	31,400			26,000	35,000	112,000	312,000	151,000	110,000	62,800
20	51,100	39,500	30,900	24,000		26,000	34,500	119,000	308,000	149,000	108,000	61,600
21	50,600	39,500	30,400			26,800	35,500	124,000	301,000	148,000	107,000	61,600
22	50,000	39,500	30,900	23,700		26,800	39,000	132,000	295,000	148,000	105,000	62,200
23	50,000	39,000	30,000	23,700		27,300	40,500	143,000	285,000	149,000	103,000	61,000
24	50,000	38,500	29,100			26,800	43,500	153,000	274,000	148,000	101,000	62,200
25	50,000	38,500	28,600		22,000	26,400	45,000	167,000	263,000	145,000	99,000	62,200
26	49,400	37,500	29,100			27,300	46,200	176,000	255,000	141,000	98,200	61,600
27	49,400	38,500	29,600	21,500		27,800	47,800	183,000	247,000	138,000	94,100	60,400
28	49,400	38,000	29,600			27,300	52,200	191,000	240,000	136,000	92,700	58,800
29	48,900	37,500	29,600			27,300	56,000	199,000	234,000	134,000	90,600	57,700
30	48,900	36,000	28,600			28,200	58,800	205,000	231,000	130,000	87,800	55,000
31	48,400		28,600			34,000		209,000		129,000	87,100	

Monthly discharge, in second-feet, of Columbia River at Grand Coulee, near Nespelem, Wash., 1923–1929

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1923–24						
October	62,000	39,500	48,200	0.650	0.75	2,960,000
November	39,000	29,200	32,800	.443	.49	1,950,000
December	31,000	25,800	28,300	.382	.44	1,740,000
January	32,000		23,200	.313	.36	1,430,000
February	47,000	33,000	40,200	.543	.59	2,310,000
March	45,000	33,000	38,600	.521	.60	2,370,000
April	59,000	31,000	44,500	.601	.67	2,650,000
May	305,000	62,000	191,000	2.58	2.97	11,700,000
June	269,000	182,000	225,000	3.04	3.39	13,400,000
July	212,000	126,000	166,000	2.24	2.58	10,200,000
August	130,000	106,000	115,000	1.55	1.79	7,070,000
September	107,000	61,000	81,200	1.10	1.23	4,830,000
The year	305,000		86,200	1.16	15.86	62,600,000
1924–25						
October	59,000	41,400	47,000	.634	.73	2,890,000
November	52,000	40,000	46,000	.621	.69	2,740,000
December	50,000	35,000	40,600	.548	.63	2,500,000
January	56,000	40,000	41,900	.565	.65	2,580,000
February	75,000	53,000	62,700	.846	.88	3,480,000
March	60,000	51,000	55,100	.744	.86	3,390,000
April	191,000	60,000	143,000	1.93	2.15	8,510,000
May	395,000	182,000	285,000	3.85	4.44	17,500,000
June	387,000	306,000	330,000	4.45	4.96	19,600,000
July	340,000	175,000	244,000	3.29	3.79	15,000,000
August	174,000	102,000	136,000	1.84	2.12	8,360,000
September	99,000	66,000	75,300	1.02	1.14	4,480,000
The year	395,000	35,000	126,000	1.70	23.04	91,000,000

Monthly discharge, in second-feet, of Columbia River at Grand Coulee, near Nespelem, Wash., 1923–1929—Continued

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1925–26						
October	64,000	38,000	46,200	0.623	0.72	2,840,000
November	37,000	29,000	32,300	.436	.49	1,920,000
December	30,000	28,000	28,700	.387	.45	1,760,000
January	29,000	25,000	26,000	.351	.40	1,600,000
February	34,000	26,000	30,600	.413	.43	1,700,000
March	40,000	31,000	34,200	.462	.53	2,100,000
April	130,000	39,000	70,700	.954	1.06	4,210,000
May	183,000	142,000	169,000	2.28	2.63	10,400,000
June	150,000	133,000	140,000	1.89	2.11	8,330,000
July	162,000	113,000	141,000	1.90	2.19	8,670,000
August	110,000	81,000	89,400	1.21	1.40	5,500,000
September	87,000	54,000	70,400	.950	1.06	4,190,000
The year	183,000	25,000	73,500	.992	13.47	53,200,000
1926–27						
October	78,000	49,000	60,300	.814	.94	3,710,000
November	76,000	54,000	61,700	.833	.93	3,670,000
December	73,000	47,000	59,400	.802	.92	3,650,000
January	51,000	----------	40,900	.552	.64	2,510,000
February	49,000	35,000	39,400	.532	.55	2,190,000
March	46,000	41,000	42,800	.578	.67	2,630,000
April	114,000	44,000	64,500	.870	.97	3,840,000
May	253,000	118,000	190,000	2.56	2.95	11,700,000
June	434,000	251,000	372,000	5.02	5.60	22,100,000
July	410,000	228,000	296,000	3.99	4.60	18,200,000
August	222,000	122,000	159,000	2.15	2.48	9,780,000
September	143,000	114,000	124,000	1.67	1.86	7,380,000
The year	434,000	----------	126,000	1.70	23.11	91,400,000
1927–28						
October	120,000	102,000	107,000	1.44	1.66	6,580,000
November	116,000	104,000	107,000	1.44	1.61	6,370,000
December	114,000	66,000	89,700	1.21	1.40	5,520,000
January	66,000	54,000	59,800	.807	.93	3,680,000
February	58,000	43,000	50,600	.683	.74	2,910,000
March	88,000	40,000	59,700	.806	.93	3,670,000
April	125,000	85,000	94,900	1.28	1.43	5,650,000
May	490,000	126,000	286,000	3.86	4.45	17,600,000
June	490,000	286,000	355,000	4.79	5.34	21,100,000
July	310,000	202,000	260,000	3.51	4.05	16,000,000
August	200,000	99,000	144,000	1.94	2.24	8,850,000
September	96,900	57,700	78,600	1.06	1.18	4,680,000
The year	490,000	40,000	141,000	1.90	25.96	103,000,000
1928–29						
October	56,600	48,400	52,000	.702	.81	3,200,000
November	47,800	36,000	41,300	.557	.62	2,460,000
December	36,500	28,600	32,100	.433	.50	1,970,000
January	29,100	----------	25,200	.340	.39	1,550,000
February	----------	----------	21,300	.287	.30	1,180,000
March	34,000	21,200	25,600	.345	.40	1,570,000
April	58,800	33,200	38,800	.524	.58	2,310,000
May	209,000	60,400	116,000	1.57	1.81	7,130,000
June	318,000	213,000	270,000	3.64	4.06	16,100,000
July	223,000	129,000	168,000	2.27	2.62	10,300,000
August	128,000	87,100	111,000	1.50	1.73	6,820,000
September	86,400	55,000	69,500	.938	1.05	4,140,000
The year	318,000	----------	81,100	1.09	14.87	58,700,000

NOTE.—Monthly discharge October, 1923, to May, 1928, determined from records of Columbia River at Kettle Falls, Spokane River below Little Falls, Wash., and estimated yield from the remaining drainage area.

COLUMBIA RIVER AT VERNITA, WASH.

LOCATION.—Staff gage in sec. 11, T. 13 N., R. 24 E., at Richmond Ferry, half a mile north of Vernita. Zero of gage, 388.7 feet above mean sea level.

DRAINAGE AREA.—95,500 square miles.

RECORDS AVAILABLE.—January, 1917, to September, 1929. January to December, 1910 (gage heights only), and May, 1913, to December, 1916, at Wenatchee, and January, 1917, at Beverly.

EXTREMES.—Maximum discharge during year, 347,000 second-feet June 18 and 19 (gage height, 25.2 feet); minimum, 25,000 second-feet Mar. 6 and 7 (gage height, −0.30 foot); discharge probably less during period Jan. 23 to Mar. 5, when stage-discharge relation was affected by ice.

1913–1929: Maximum discharge, 528,000 second-feet June 15 and 16, 1913 (gage height, 45.7 feet at Wenatchee); minimum, 23,900 second-feet (current-meter measurements) Jan. 31, 1917, and Dec. 14, 1919.

Maximum discharge during the 1894 flood, 740,000 second-feet[2] on June 7, 1894, based upon information obtained at other points.

REMARKS.—Records excellent. Considerable water diverted for irrigation above gage but amount very small in proportion to flow past gage. Natural storage in the numerous lakes upstream.

Daily discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	63,400	53,200	40,800	33,200			32,600	61,000	225,000	246,000	135,000	91,600
2	62,600	53,200	40,800	33,800			37,000	61,800	230,000	239,000	133,000	90,700
3	61,800	53,200	40,800	33,200	25,600	25,600	37,600	71,900	237,000	234,000	131,000	89,800
4	61,000	52,400	40,200	33,200			38,200	71,900	244,000	228,000	129,000	89,800
5	60,200	51,000	40,200	33,200			38,200	72,800	247,000	225,000	128,000	89,800
6	59,400	50,200	39,600	32,600		25,600	37,600	76,200	251,000	220,000	128,000	89,800
7	58,600	48,800	39,600	32,600	25,200	25,600	36,300	79,000	262,000	217,000	127,000	88,800
8	59,400	48,800	39,600	32,600		29,000	37,000	80,800	275,000	214,000	127,000	88,000
9	57,800	48,200	38,900	32,000		27,800	38,200	82,600	287,000	211,000	126,000	86,200
10	58,600	48,200	38,900	32,000		27,200	39,600	83,400	299,000	204,000	124,000	83,400
11	59,400	47,400	38,200	32,000		27,800	38,200	85,200	312,000	198,000	123,000	80,800
12	60,200	46,800	37,600	32,000	25,000	27,800	37,600	88,000	320,000	192,000	122,000	79,000
13	60,200	46,800	37,600	31,400		27,800	37,600	91,600	322,000	188,000	121,000	76,200
14	58,600	46,800	37,600	30,800		28,400	36,300	95,400	331,000	183,000	120,000	73,600
15	58,600	47,400	37,600	30,200		28,400	37,600	102,000	335,000	179,000	120,000	71,900
16	57,800	46,800	37,600	30,200		28,400	37,600	109,000	340,000	176,000	119,000	70,200
17	58,600	46,800	37,600	30,200		28,400	38,200	112,000	342,000	170,000	119,000	68,500
18	57,800	46,800	36,300	30,200	25,100	28,400	38,900	118,000	347,000	165,000	118,000	67,600
19	57,800	46,000	36,300	30,200		28,400	38,900	121,000	347,000	162,000	116,000	67,600
20	57,000	45,400	36,300	30,800		27,800	38,200	127,000	340,000	159,000	114,000	66,800
21	57,000	44,800	35,600	29,600		28,400	37,600	134,000	333,000	158,000	113,000	66,000
22	56,200	44,800	34,400	29,000		29,600	37,600	144,000	324,000	155,000	111,000	66,000
23	55,400	44,800	35,000			29,600	38,900	154,000	318,000	154,000	110,000	66,000
24	55,400	44,100	35,000			29,600	42,200	162,000	310,000	154,000	107,000	65,100
25	54,600	43,400	34,400		25,600	30,200	44,100	179,000	299,000	154,000	105,000	65,100
26	54,600	43,400	33,200	26,900		29,600	46,800	188,000	287,000	151,000	103,000	66,000
27	54,600	42,800	33,800			29,600	48,800	194,000	279,000	150,000	100,000	65,100
28	53,900	42,200	33,800			30,200	51,000	200,000	268,000	149,000	98,300	64,200
29	53,900	42,800	34,400		-------	30,800	53,200	207,000	260,000	145,000	97,400	63,400
30	53,900	42,800	33,800	25,600	-------	30,200	57,000	214,000	253,000	141,000	95,400	61,800
31	53,900	-------	33,800	25,600	-------	30,200	-------	220,000	-------	137,000	93,600	-------

[2] Report of Chief of Engineers, United States Army, 1895, pt. 5, page 3542.

Monthly discharge, in second-feet, of Columbia River at Vernita, Wash., 1928–29

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	63,400	53,900	57,800	0.605	0.70	3,550,000
November	53,200	42,200	47,000	.492	.55	2,800,000
December	40,800	33,200	37,100	.388	.45	2,280,000
January	33,800		30,100	.315	.36	1,850,000
February			25,300	.265	.28	1,410,000
March	30,800		28,200	.295	.34	1,730,000
April	57,000	32,600	40,300	.422	.47	2,400,000
May	220,000	61,000	122,000	1.28	1.48	7,500,000
June	347,000	225,000	294,000	3.08	3.44	17,500,000
July	246,000	137,000	183,000	1.92	2.21	11,300,000
August	135,000	93,600	117,000	1.23	1.42	7,190,000
September	91,600	61,800	75,300	.788	.88	4,480,000
The year	347,000		88,300	.925	12.58	64,000,000

KOOTENAI RIVER BASIN

KOOTENAI RIVER NEAR REXFORD, MONT.

LOCATION.—Staff gage in sec. 21, T. 36 N., R. 28 W., at highway bridge 300 feet below Sullivan Creek and 1.1 miles southwest of Rexford.

DRAINAGE AREA.—8,420 square miles.

RECORDS AVAILABLE.—March to September, 1929.

EXTREMES.—Maximum discharge during year, 52,900 second-feet June 3 and 4 (gage height, 12.4 feet); minimum, 2,750 second-feet Apr. 9–14 (gage height, 1.5 feet).

REMARKS.—Records good. No regulation or diversions above station. Result of one discharge measurement furnished by Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	3,330	8,580	33,400	19,600	9 130	5,910
2	------	3,180	8,580	43,400	19,100	9 130	6,130
3	------	3,180	8,580	52,900	19,100	9 130	6,350
4	------	3,180	8,850	50,400	18,600	8 850	6,130
5	------	3,030	8,850	44,100	17,700	8 850	5,700
6	------	3,030	8,310	41,800	16,800	8 850	5,490
7	------	2,890	7,540	42,600	16,000	8 310	5,090
8	------	2,890	7,540	43,400	15,600	8 050	4,900
9	------	2,750	7,290	44,900	14,800	7,790	4,520
10	------	2,750	7,050	44,100	14,400	7.790	4,710
11	------	2,750	7,050	43,400	14,000	7.540	4,520
12	------	2,750	8,050	42,600	13,600	7.540	4,340
13	------	2,750	10,300	41,800	11,600	7.540	4,340
14	------	2,750	15,200	41,800	12,600	7,290	4,340
15	------	2,890	17,700	41,800	12,600	7,290	4,340
16	------	3,030	16,400	39,600	12,200	7.050	4,340
17	------	3,030	15,200	36,800	12,600	7.290	4,340
18	------	3,030	14,400	33,400	12,200	6,580	4,340
19	------	3,030	14,800	29,500	12,200	6,580	4,340
20	------	3,180	17,300	25,900	12,200	6,810	4,520
21	------	3,330	21,600	23,700	12,200	6,580	4,520
22	------	3,490	24,800	21,600	11,600	6,350	4,340
23	------	3,990	34,000	20,100	10,900	5,910	4,520
24	2,890	4,160	41,800	19,100	10,300	5,700	4,340
25	3,030	4,160	45,700	18,600	9,990	5,700	4,340
26	2,890	4,520	38,900	19,600	9,990	5,910	4,340
27	2,890	5,090	30,800	21,600	9,990	5,910	4,340
28	2,890	6,350	25,900	21,600	9,990	5,490	3,990
29	4,160	7,790	22,600	20,600	9,130	5,490	3,990
30	3,990	8,580	22,100	20,100	8,850	5,700	3,820
31	3,650	------	23,700	------	8,850	5,700	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
March 24–31	4,160	2,890	3,300	0.392	0.12	52,400
April	8,580	2,750	3,700	.439	.49	220,000
May	45,700	7,050	17,700	2.10	2.42	1,090,000
June	52,900	18,600	34,100	4.05	4.52	2,030,000
July	19,600	8,850	13,200	1.57	1.81	812,000
August	9,130	5,490	7,160	.850	.98	440,000
September	6,350	3,820	4,710	.559	.62	280,000
The period	------	------	------	------	------	4,920,000

KOOTENAI RIVER AT LIBBY, MONT.

LOCATION.—Chain gage in sec. 3, T. 30 N., R. 31 W., at highway bridge opposite Great Northern Railway station at Libby.

DRAINAGE AREA.—11,000 square miles.

RECORDS AVAILABLE.—October, 1910, to September, 1929.

EXTREMES.—Maximum discharge during year, 57,400 second-feet June 4 (gage height, 12.25 feet); minimum, 2,160 second-feet Mar. 1.

1910–1929: Maximum discharge, 130,000 second-feet June 21, 1916 (gage height, 19.17 feet); minimum, 1,480 second-feet Feb. 7, 1914, (gage height, 1.4 feet).

REMARKS.—Records good except those for Dec. 25 to Jan. 4, Jan. 14–20, and Jan. 22 to Mar. 7, which are fair. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,250	4,600	3,270			2,160	3,750	10,900	29,600	20,800	9,560	6,460
2	4,250	4,510	3,050	2,500		2,220	3,510	10,900	42,300	20,800	9,560	6,710
3	4,510	4,250	2,830			2,320	3,270	10,900	55,900	19,800	9,970	6,960
4	4,510	4,120	2,710		2,500	2,620	3,270	13,500	56,600	19,800	9,970	6,960
5	4,510	4,000	2,590	2,420		3,010	3,270	12,000	51,400	19,700	9,970	6,620
6	4,510	4,000	2,480	2,300		2,900	3,050	10,400	47,900	18,300	9,560	5,960
7	4,250	4,000	2,670	2,600	3,150	3,320	3,050	10,000	47,900	17,800	9,160	5,960
8	4,250	4,000	2,870	2,600	2,700	3,270	3,050	9,200	47,900	17,400	8,960	5,310
9	5,640	4,000	3,070	2,900	2,700	3,050	2,620	9,200	48,400	16,000	8,760	5,000
10	11,300	4,250	3,270	2,900	2,790	3,270	2,620	9,200	48,800	15,600	8,380	5,000
11	14,900	4,330	3,750	3,000	2,890	2,830	2,620	9,200	49,300	15,600	8,380	4,690
12	12,200	4,420	3,510	2,420	2,990	2,830	2,620	10,900	48,600	15,600	8,380	4,690
13	10,000	4,510	3,270	2,420	3,090	2,830	2,620	12,600	47,200	15,600	8,380	4,690
14	8,430	4,380	3,270		3,140	2,830	2,720	17,800	47,200	14,400	8,010	4,390
15	7,680	4,250	3,270		3,100	2,830	2,830	22,100	47,200	13,300	8,010	4,390
16	7,310	4,250	2,940		3,050	2,830	3,050	21,000	45,800	13,300	7,650	4,390
17	6,600	4,000	2,600	2,400	3,020	2,830	3,270	18,800	43,000	13,800	7,650	4,690
18	6,600	3,750	2,440		2,980	2,830	3,270	18,300	39,500	13,800	7,450	4,390
19	6,600	3,510	2,640		2,770	3,050	3,270	19,100	35,300	13,300	7,300	4,390
20	6,600	3,510	2,850		2,560	2,830	3,510	19,900	30,700	13,300	6,960	4,690
21	6,270	3,510	3,060	2,400	2,610	3,050	3,750	18,800	26,800	13,300	6,960	4,690
22	5,950	3,510	3,270		2,660	3,050	4,510	30,300	24,200	13,300	6,960	4,690
23	5,640	3,510	3,000	2,400	2,580	2,620	4,780	37,300	22,500	12,500	6,620	4,690
24	5,640	3,510	3,000		2,620	2,830	5,050	46,000	21,400	11,600	6,290	4,690
25	5,340	3,510			2,660	2,720	5,340	52,800	20,300	11,200	6,290	4,690
26	5,340	3,510			2,560	2,620	5,640	48,900	20,800	10,800	6,290	4,690
27	4,780	3,510			2,440	2,620	6,950	38,000	22,500	10,400	6,290	4,390
28	4,920	3,450	2,800	2,300	2,300	3,270	8,080	31,000	23,600	9,970	6,290	4,390
29	5,050	3,390			-------	4,000	9,200	27,000	22,500	9,970	5,960	4,240
30	4,780	3,330			-------	4,780	11,300	25,100	21,600	9,970	5,960	4,090
31	4,690	-------			-------	4,000	--------	26,400	--------	9,560	6,210	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	14,900	4,250	6,360	0.578	0.67	391,000
November	4,600	3,330	3,910	.355	.40	233,000
December	3,750	2,440	2,940	.267	.31	181,000
January	3,000	2,300	2,460	.224	.26	151,000
February	3,150	2,300	2,730	.248	.26	152,000
March	4,780	2,160	2,970	.270	.31	183,000
April	11,300	2,620	4,190	.381	.42	249,000
May	52,800	9,200	21,200	1.93	2.22	1,300,000
June	56,600	20,300	37,900	3.45	3.84	2,260,000
July	20,800	9,560	14,500	1.32	1.52	892,000
August	9,970	5,960	7,810	.709	.82	480,000
September	6,960	4,090	5,050	.458	.51	301,000
The year	56,600	2,160	9,330	.847	11.54	6,770,000

KOOTENAI RIVER AT LEONIA, IDAHO

LOCATION.—Water-stage recorder in SW. ¼ sec. 17, T. 33 N., R. 34 W., at Leonia, 450 feet east of Montana-Idaho State line and half a mile above mouth of Boulder Creek. Recorder reads mean sea level elevation, United States Coast and Geodetic Survey datum. Prior to Nov. 13, 1928, a chain gage at site 200 feet upstream was used.

DRAINAGE AREA.—11,740 square miles.

RECORDS AVAILABLE.—March, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 61,000 second-feet June 4 (gage height, 1,813.36 feet); minimum (estimated), 2,500 second-feet Jan. 26–31; minimum gage height, 1,798.76 feet Jan. 20.

1928–29: Maximum discharge, 76,700 second-feet May 24, 25, and 27, 1928 (gage height, 1,815.98 feet); minimum, that of Jan. 26–31, 1929.

Floods of June, 1894, and 1916, reached stages of 1,824.6 and 1,821.6 feet, respectively, United States Coast and Geodetic Survey datum, according to information furnished by the Great Northern Railway Co.

REMARKS.—Records excellent May to September; others good except those for estimated periods, Nov. 11 and Dec. 5 to Mar. 18, which are poor. No regulation or diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,780	5,570	4,520	3,500			5,390	15,800	33,200	21,600	9,410	6,190
2	6,000	5,570	4,420			2,700	5,060	15,100	42,500	21,300	9,670	6,420
3	6,000	5,360	4,210	3,000	2,800		4,840	15,800	57,000	20,500	9,670	6,660
4	6,000	5,160	3,810			3,200	4,740	16,100	59,700	20,500	9,670	6,660
5	5,780	5,160	3,100			3,500	4,740	15,800	55,100	20,200	9,540	6,660
6	5,780	5,160	2,700	2,800		3,500	4,520	14,800	50,700	18,800	9,410	6,190
7	6,000	5,160	2,900			3,700	4,420	13,900	49,500	18,100	9,150	5,840
8	6,220	5,160	3,200		3,000	3,700	4,320	13,300	50,700	17,400	8,890	5,620
9	6,450	5,160	3,500			3,500	4,210	13,000	53,200	16,700	8,630	5,500
10	8,980	5,570	3,800	3,500		3,500	4,010	13,000	53,800	15,800	8,630	5,280
11	15,200	6,000	4,200		3,400		3,910	13,600	51,900	15,100	8,380	5,170
12	12,900	5,780	4,000		3,400		3,910	15,400	50,100	15,100	8,130	5,060
13	10,700	5,730		3,000		3,300	3,910	18,800	48,800	14,500	8,130	4,840
14	7,920	5,730	3,800		3,500		3,910	23,100	48,800	13,600	8,130	4,740
15	8,180	5,620					4,210	27,900	48,800	12,700	7,880	4,630
16	7,920	5,390	3,500			3,500	4,420	27,900	48,800	13,000	7,880	4,740
17	7,920	5,390	3,200		3,400	3,700	4,740	26,300	44,700	13,300	7,880	4,740
18	7,660	5,060	3,000			3,800	4,840	25,100	41,400	13,300	7,630	4,740
19	7,410	4,950	3,000			3,910	4,950	25,100	36,600	13,000	7,380	4,770
20	7,410	4,740	2,900	2,800		3,910	5,280	27,100	33,200	12,700	7,140	4,810
21	6,920	4,740	3,400			4,110	5,730	31,400	29,600	12,700	7,140	4,840
22	6,920	4,740	3,700			4,210	6,420	37,600	26,700	12,700	6,900	4,840
23	6,680	4,740	3,900		3,100	4,110	7,140	45,300	24,700	12,100	6,660	4,840
24	6,450	4,840	3,700			3,910	7,630	53,200	23,100	11,300	6,420	4,840
25	6,450	4,740	3,400			3,810	7,880	59,000	22,000	10,800	6,190	4,740
26	6,220	4,630	3,600			3,810	8,380	55,100	21,600	10,500	6,420	4,630
27	6,220	4,630	3,700		2,900	3,910	9,940	44,200	23,100	10,500	6,420	4,630
28	6,000	4,520		2,500	2,900	4,840	12,700	36,100	24,700	10,500	6,190	4,420
29	6,000	4,520	3,900		-------	6,190	15,100	31,400	23,100	10,200	6,190	4,320
30	5,890	4,520			-------	6,660	16,100	29,600	22,400	9,670	6,190	4,210
31	5,780	-------			-------	5,960	--------	29,600	--------	9,410	6,190	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	15,200	5,780	7,280	0.620	0.71	448,000
November	6,000	4,520	5,130	.437	.49	305,000
December	4,520	----------	3,620	.308	.36	223,000
January	----------	----------	2,900	.247	.28	178,000
February	----------	----------	3,120	.266	.28	173,000
March	6,660	----------	3,860	.329	.38	237,000
April	16,100	3,910	6,240	.532	.59	371,000
May	59,000	13,000	26,800	2.28	2.63	1,650,000
June	59,700	21,600	40,000	3.41	3.80	2,380,000
July	21,600	9,410	14,400	1.23	1.42	885,000
August	9,670	6,190	7,810	.665	.77	480,000
September	6,660	4,210	5,190	.442	.49	309,000
The year	59,700	----------	10,500	.894	12.20	7,650,000

KOOTENAI RIVER AT KATKA, IDAHO

LOCATION.—Staff gage in NE. ¼ sec. 25, T. 62 N., R. 2 E., at Katka, 3,000 feet downstream from Great Northern Railway station and 3¼ miles above Moyie River. Gage readings adjusted to mean sea-level elevation. United States Coast and Geodetic Survey datum.

DRAINAGE AREA.—11,860 square miles.

RECORDS AVAILABLE.—April, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 60,300 second-feet June 4 (gage height, 1,790.0 feet); minimum (estimated), 2,500 second-feet Jan. 26–31; minimum gage height, 1,774.20 feet Dec. 6.

1928–29: Maximum discharge, 77,800 second-feet May 25 and 27, 1928 (gage height, 1,793.5 feet); minimum discharge that of Jan. 26–31, 1929; minimum stage, that of Dec. 6, 1928.

REMARKS.—Records excellent except those for estimated period, Dec. 7 to Mar. 19, which are poor.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,380	5,840	4,590	3,200	2,800	2,700	5,720	15,900	32,800	22,200	9,490	6,180
2	5,720	5,720	4,480				5,260	15,300	41,500	21,500	9,490	6,300
3	5,610	5,380	4,480				5,040	15,600	56,900	20,800	9,750	6,540
4	5,840	5,260	4,040				4,920	15,900	59,800	20,800	9,750	6,540
5	5,840	5,150	3,110			3,400	4,920	15,900	55,400	20,500	9,490	6,540
6	5,720	5,150	2,720	2,800			4,810	15,000	50,500	19,500	9,490	6,180
7	5,840	5,260	2,900				4,700	13,800	49,500	18,500	9,240	5,840
8	6,070	5,150	3,200		3,000	3,600	4,480	13,300	50,000	18,100	8,990	5,500
9	6,540	5,260	3,600				4,480	13,300	52,900	17,500	8,490	5,380
10	8,490	5,840	3,800	3,600			4,260	13,300	53,400	16,200	8,490	5,260
11	15,600	6,300	4,200	3,100	3,500	3,300	4,260	13,600	51,500	15,600	8,240	5,040
12	14,400	6,070	4,100				4,150	15,000	50,000	15,600	8,240	4,920
13	11,900	5,960	3,900				4,150	18,500	48,600	15,000	7,990	4,810
14	10,300	5,720					4,150	22,200	48,600	14,100	7,990	4,700
15	9,240	5,610					4,480	27,100	48,600	13,300	7,740	4,700
16	8,490	5,500	3,200	2,800	3,400	3,600	4,700	27,500	48,600	13,300	7,740	4,700
17	8,490	5,380				3,800	4,920	25,600	44,800	13,600	7,740	4,700
18	8,240	5,040				3,900	5,040	24,400	41,100	13,800	7,500	4,700
19	8,240	4,920				4,000	5,260	24,400	37,500	13,600	7,020	4,810
20	7,990	4,700				4,040	5,500	25,900	33,200	13,300	7,020	4,810
21	7,740	4,700	3,700		3,100	4,260	5,960	29,900	29,500	13,000	7,020	4,810
22	7,500	4,700				4,370	6,780	36,200	26,300	13,300	6,780	4,920
23	7,260	4,810				4,370	7,500	44,300	24,400	12,700	6,540	4,810
24	7,020	4,920				4,150	7,990	52,400	23,000	11,600	6,180	4,920
25	6,780	4,700				4,040	7,990	58,800	21,900	11,100	6,070	4,810
26	6,540	4,700	4,000	2,500		3,940	8,490	55,900	21,900	10,800	6,180	4,810
27	6,420	4,700				4,040	10,300	45,200	23,000	10,500	6,300	4,700
28	6,300	4,700				4,810	13,000	36,600	24,800	10,500	6,070	4,590
29	6,180	4,590			-------	6,540	15,300	32,000	23,700	10,500	5,960	4,480
30	5,960	4,590			-------	7,260	16,200	29,500	23,000	9,750	5,960	4,480
31	5,960	-------			-------	6,420	-------	29,900	-------	9,490	6,070	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	15,600	5,380	7,660	0.646	0.74	471,000
November	6,300	4,590	5,210	.439	.49	310,000
December	----------	----------	3,700	.312	.36	228,000
January	----------	----------	2,940	.248	.29	181,000
February	----------	----------	3,150	.266	.28	175,000
March	7,260	----------	3,960	.334	.39	243,000
April	16,200	4,150	6,490	.547	.61	386,000
May	58,800	13,300	26,500	2.23	2.57	1,630,000
June	59,800	21,900	39,900	3.36	3.75	2,370,000
July	22,200	9,490	14,800	1.25	1.44	910,000
August	9,750	5,960	7,710	.650	.75	474,000
September	6,540	4,480	5,180	.437	.49	308,000
The year	59,800	----------	10,600	.894	12.16	7,690,000

KOOTENAI RIVER AT BOOM CAMP, NEAR BONNERS FERRY, IDAHO

LOCATION.—Staff gage in NW. ¼ sec. 29, T. 62 N., R. 2 E., 600 feet east of Boom Camp, 3.5 miles upstream from Bonners Ferry, and 4 miles downstream from Moyie River. Gage readings adjusted to mean sea level elevation, United States Coast and Geodetic Survey datum.

RECORDS AVAILABLE.—October, 1927, to September, 1929. From April, 1925, to September, 1927, records were collected by Dominion Water Power and Hydrometric Bureau of Canada.

EXTREMES.—Maximum water-surface elevation during year, 1,769.74 feet June 4; minimum, 1,757.08 feet Dec. 18–22.

1927–1929: Maximum water-surface elevation, 1,774.75 feet May 28, 1928; minimum, that of Dec. 18–22, 1928.

REMARKS.—Records are good. Elevations are affected by backwater from Kootenai Lake. Records furnished by Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily elevation, in feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	57.56	58.06	57.56	------	------	57.58	58.04	61.38	64.93	62.63	59.25	------
2	57.60	57.98	------	57.18	------	57.52	57.86	61.13	------	62.53	59.38	------
3	57.64	57.92	57.48	------	------	------	57.76	61.28	67.64	62.33	59.38	58.23
4	57.78	------	57.44	------	58.52	57.58	57.73	61.38	69.74	------	59.28	58.30
5	57.90	57.82	57.42	------	58.52	57.63	57.72	------	69.34	62.28	59.28	58.28
6	57.96	57.84	57.34	------	58.52	57.67	57.66	61.13	68.54	62.03	59.28	58.08
7	------	57.88	57.34	57.58	58.52	57.67	------	60.88	68.14	------	59.08	58.00
8	58.18	57.88	57.22	------	58.51	57.62	57.53	60.68	68.34	61.68	58.98	------
9	58.30	57.90	------	------	58.51	57.49	57.52	60.58	------	61.48	58.98	57.93
10	58.84	58.02	57.28	------	------	------	57.37	60.63	69.14	61.23	------	57.78
11	61.02	------	57.58	------	58.45	57.32	57.34	60.68	68.84	61.08	58.88	57.70
12	60.83	58.14	57.72	------	58.44	57.29	57.32	------	68.54	61.03	58.78	57.62
13	60.13	58.14	57.72	------	58.44	57.30	57.30	61.98	68.34	60.88	58.78	57.56
14	------	58.08	57.72	57.58	58.44	57.30	------	62.88	68.44	------	58.78	57.52
15	59.28	58.00	57.72	57.58	58.32	57.28	57.50	63.78	68.54	60.48	58.68	------
16	59.08	57.96	------	57.58	58.32	57.26	57.56	63.93	------	60.38	58.68	57.48
17	59.04	57.90	57.48	57.58	------	------	57.73	63.63	67.94	60.48	58.68	57.50
18	58.96	------	57.08	57.58	------	57.23	57.78	63.33	67.24	60.58	------	57.50
19	58.90	57.70	57.08	57.58	------	57.28	57.87	------	66.54	60.48	58.53	57.50
20	58.88	57.64	57.08	------	58.26	57.32	57.99	63.68	65.68	60.38	58.46	57.52
21	------	57.62	57.08	57.58	58.20	57.38	------	64.38	64.78	------	58.40	57.58
22	58.73	57.62	57.08	57.58	------	57.38	58.46	65.48	64.08	60.38	58.36	------
23	58.58	57.64	------	57.58	57.69	57.38	58.77	66.94	------	60.28	58.30	57.60
24	58.50	57.68	57.18	57.58	------	------	58.95	68.04	63.08	60.08	58.26	57.63
25	58.48	------	------	57.58	57.64	57.23	59.05	69.19	62.83	59.80	------	57.58
26	58.36	57.62	57.18	57.58	57.72	57.23	59.25	------	62.68	59.73	58.13	57.56
27	58.30	57.62	------	------	57.70	57.23	59.73	67.54	62.83	59.65	58.18	57.53
28	------	57.60	------	------	57.64	57.64	------	65.88	63.23	------	58.08	57.48
29	58.20	------	------	------	------	58.46	61.23	64.98	62.98	59.53	58.07	------
30	58.14	57.58	------	------	------	58.59	61.48	------	------	59.42	58.04	57.40
31	58.12	------	------	------	------	------	------	64.43	------	59.33	58.04	------

NOTE.—Add 1,700.00 feet to obtain elevation above mean sea level, U. S. Coast and Geodetic Survey datum.

KOOTENAI RIVER AT BONNERS FERRY, IDAHO

LOCATION.—Staff gage in NE. ¼ sec. 27, T. 62 N., R. 1 E., on highway bridge at Bonners Ferry. Gage readings adjusted to mean sea level elevation, United States Coast and Geodetic Survey datum.

DRAINAGE AREA.—13,000 square miles.

RECORDS AVAILABLE.—October, 1927, to September, 1929. Gage heights collected by the United States Weather Bureau are available from May, 1904, to September, 1927. Records were also collected from May to October, 1904, by the Geological Survey at a point three-fourths of a mile downstream.

EXTREMES.—Maximum discharge during year, 62,700 second-feet May 25; maximum water-surface elevation, 1,766.36 feet June 4; minimum discharge, 2,590 second-feet Jan. 26–31; minimum water-surface elevation, 1,741.89 feet Mar. 26.

1927–1929: Maximum discharge, 82,800 second-feet May 25, 1928; maximum water-surface elevation, 1,772.78 feet May 28 and 29, 1928; minimum discharge and minimum water-surface elevation occurred in 1929.

Maximum elevation known, 1,777.2 feet in June, 1894, determined in 1916 by J. H. Cave by leveling to two high-water marks.

REMARKS.—Records of elevations are reliable except those for Dec. 4 to Feb. 13, which may be in error, owing to datum uncertainties. Discharge records are good. River partly frozen over Dec. 4 to Mar. 25. Because backwater from Kootenai Lake made it impossible to rate the station by results of current-meter measurements, the discharge was obtained by combining the records collected on Kootenai River at Katka, Moyie River at Eileen, Cow Creek near Bonners Ferry, and a small amount of estimated unmeasured intervening inflow. No allowance was made for time interval below Katka, which varies from about 2 to 5 hours, depending upon the stage and slope of river. No diversions or artificial regulation above station. Results of several discharge measurements furnished by Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily elevation, in feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	44.11	44.31	43.11	42.81	44.44	42.89	43.29	49.59	59.57	56.48	48.37	45.29
2	44.16	44.15	43.01	42.91	44.66	42.89	42.94	49.34	61.26	56.13	48.37	45.44
3	44.21	43.99	43.01	42.71	44.68	42.77	42.81	49.67	64.66	55.76	48.29	45.44
4	44.20	43.91	43.31	42.71	44.76	42.59	42.79	49.89	66.36	55.48	48.17	45.47
5	44.21	43.81	43.61	42.76	44.68	42.67	42.94	49.99	66.16	55.33	48.11	45.59
6	44.13	43.81	43.11	42.61	44.60	42.67	42.79	49.79	65.26	54.88	48.07	45.19
7	44.16	43.81	42.71	42.51	44.58	42.59	42.64	49.39	64.86	54.49	47.94	44.94
8	44.21	43.81	42.71	42.51	44.60	42.57	42.61	49.19	65.04	54.04	47.79	44.79
9	44.55	43.76	42.81	42.41	44.62	42.41	42.59	48.99	65.74	53.67	47.57	44.67
10	45.26	43.91	42.91	42.31	44.60	42.37	42.44	49.07	66.01	53.14	47.47	44.44
11	48.21	44.31	43.16	42.26	44.47	42.29	42.41	49.34	65.81	52.84	47.34	44.34
12	48.81	44.11	43.26	42.26	44.49	42.27	42.31	49.89	65.56	52.59	47.24	44.25
13	47.71	44.01	43.11	42.21	44.52	42.19	42.31	51.34	65.36	52.29	47.14	44.14
14	46.96	43.91	42.81	42.31	44.39	42.27	42.34	53.14	65.46	51.89	46.99	44.09
15	46.31	43.91	42.71	42.31	44.36	42.17	42.59	54.78	65.61	51.39	46.94	44.04
16	45.96	43.81	42.61	42.16	44.17	42.01	42.59	55.68	65.71	51.19	46.87	43.97
17	45.86	43.80	42.46	42.11	44.09	42.07	42.81	55.46	65.11	51.19	46.77	43.87
18	45.81	43.66	42.41	42.03	44.00	41.99	42.99	55.08	64.36	51.19	46.59	43.87
19	45.73	43.49	42.41	42.58	43.84	42.04	43.09	55.08	63.56	50.99	46.39	43.84
20	45.71	43.41	42.36	42.76	43.76	42.09	43.19	55.58	62.46	50.67	46.29	43.79
21	45.51	43.31	42.31	42.63	43.77	42.17	43.49	57.12	61.26	50.67	46.19	43.77
22	45.40	43.31	42.43	43.05	43.59	42.24	43.97	59.12	60.24	50.59	46.04	43.77
23	45.31	43.31	42.31	43.28	43.46	42.21	44.47	61.36	59.32	50.39	45.87	43.79
24	45.11	43.35	42.31	43.45	43.36	42.09	44.79	63.44	58.55	49.89	45.79	43.84
25	45.05	43.29	42.31	43.47	43.27	41.99	44.99	65.21	57.87	49.59	45.69	43.84
26	44.83	43.21	42.36	43.40	43.19	41.89	45.29	65.46	57.47	49.29	45.57	43.79
27	44.81	43.21	42.56	43.52	43.17	42.04	46.09	63.74	57.34	49.21	45.57	43.69
28	44.63	43.13	42.71	43.64	42.99	42.34	47.39	61.51	57.59	49.09	45.47	43.49
29	44.55	43.11	43.61	43.97	-------	43.67	48.79	59.96	57.25	48.97	45.39	43.44
30	44.43	43.11	43.46	44.04	-------	43.89	49.61	59.15	56.77	48.69	45.39	43.39
31	44.32	-------	43.26	44.21	-------	43.69	-------	58.92	-------	48.37	45.29	-------

NOTE.—Add 1,700.00 feet to obtain elevation above mean sea level, U. S. Coast and Geodetic Survey datum.

Daily and monthly discharge, in second-feet, of Kootenai River at Bonners Ferry, Idaho, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,520	6,040	4,750	3,310	2,900	2,820	6,060	17,300	35,300	22,900	9,670	6,280
2	5,890	5,900	4,640	3,310	2,900	2,820	5,590	16,700	44,000	22,200	9,670	6,400
3	5,810	5,560	4,640	3,310	2,900	2,820	5,360	17,300	59,400	21,400	9,930	6,660
4	6,020	5,450	4,160	3,310	2,900	3,520	5,240	17,600	62,200	21,400	9,930	6,660
5	6,030	5,340	3,230	2,910	2,900	3,520	5,240	17,500	57,700	21,100	9,660	6,660
6	5,900	5,340	2,840	2,900	3,100	3,520	5,120	16,500	52,700	20,000	9,650	6,300
7	6,040	5,440	3,040	2,900	3,100	3,720	5,000	15,200	51,600	19,000	9,400	5,950
8	6,290	5,330	3,340	3,700	3,100	3,720	4,780	14,600	52,100	18,600	9,140	5,610
9	6,780	5,460	3,740	3,700	3,100	3,730	4,760	14,600	55,500	18,000	8,650	5,490
10	8,810	6,080	3,940	3,700	3,100	3,750	4,540	14,600	55,700	16,600	8,640	5,370
11	15,900	6,550	4,340	3,700	3,600	3,470	4,530	15,100	53,700	16,000	8,390	5,140
12	14,700	6,310	4,240	3,200	3,600	3,470	4,420	16,900	52,000	16,000	8,380	5,020
13	12,200	6,200	4,040	3,200	3,600	3,470	4,420	20,900	50,500	15,400	8,130	4,910
14	10,600	5,950	4,040	3,200	3,600	3,470	4,460	25,200	51,000	14,500	8,120	4,800
15	9,500	5,840	4,040	3,200	3,600	3,470	4,830	29,900	50,800	13,700	7,870	4,800
16	8,750	5,720	3,340	2,900	3,510	3,770	5,060	30,300	50,800	13,600	7,870	4,800
17	8,750	5,590	3,340	2,900	3,510	3,960	5,290	28,300	46,900	13,900	7,870	4,800
18	8,540	5,230	3,340	2,900	3,510	4,060	5,410	27,100	43,000	14,100	7,620	4,800
19	8,520	5,100	3,320	2,900	3,510	4,160	5,670	27,300	39,500	13,900	7,140	4,910
20	8,250	4,900	3,320	2,900	3,510	4,210	5,970	29,100	35,100	13,600	7,140	4,910
21	7,990	4,900	3,820	2,900	3,210	4,460	6,500	33,700	31,200	13,300	7,130	4,910
22	7,740	4,880	3,820	2,900	3,210	4,580	7,390	40,400	27,900	13,500	6,890	5,020
23	7,500	4,990	3,820	2,900	3,210	4,560	8,200	48,800	25,800	12,900	6,650	4,920
24	7,250	5,100	3,820	2,890	3,210	4,340	8,700	56,900	24,300	11,800	6,290	5,040
25	7,010	4,870	3,820	2,890	3,210	4,230	8,780	62,700	23,100	11,300	6,180	4,930
26	6,760	4,870	3,820	2,590	3,210	4,130	9,470	59,300	23,000	11,000	6,290	4,920
27	6,640	4,870	3,820	2,590	3,210	4,240	11,500	48,200	24,000	10,700	6,410	4,810
28	6,510	4,870	4,120	2,590	3,210	5,110	14,600	39,200	25,700	10,700	6,180	4,700
29	6,390	4,760	4,120	2,590	-------	7,050	17,100	34,400	24,600	10,700	6,070	4,580
30	6,160	4,760	4,120	2,590	-------	7,700	17,800	31,800	23,800	9,940	6,060	4,580
31	6,160	-------	4,120	2,590	-------	6,790	-------	32,300	-------	9,670	6,170	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	15,900	5,520	7,900	486,000
November	6,550	4,760	5,410	322,000
December	4,750	2,840	3,840	236,000
January	3,700	2,590	3,030	186,000
February	3,600	2,900	3,260	181,000
March	7,700	2,820	4,150	255,000
April	17,800	4,420	7,060	420,000
May	62,700	14,600	29,000	1,780,000
June	62,200	23,000	41,800	2,490,000
July	22,900	9,670	15,200	935,000
August	9,930	6,060	7,840	482,000
September	6,660	4,580	5,290	315,000
The year	62,700	2,590	11,200	8,090,000

KOOTENAI RIVER NEAR BONNERS FERRY, IDAHO

LOCATION.—Water-stage recorder in NW. ¼ sec. 28, T. 62 N., R. 1 E., 1.6 miles downstream from highway bridge at Bonners Ferry. Recorder reads mean sea-level elevation, United States Coast and Geodetic Survey datum.

DRAINAGE AREA.—13,000 square miles.

RECORDS AVAILABLE.—May, 1928, to September, 1929.

EXTREMES.—Maximum water-surface elevation during year, 1,765.78 feet June 4; minimum, 1,741.00 feet Jan. 20.

1928–29: Maximum water-surface elevation, 1,772.22 feet May 28, 1928; minimum, that of Jan. 20, 1929.

REMARKS.—Records excellent except those for period Dec. 28 to Feb. 11, which may be slightly in error. Elevations Oct. 13–22, Dec. 28 to Mar. 27, Apr. 13 and 14 are based on staff gage readings. Elevations affected by back-water from Kootenai Lake.

Daily elevation, in feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	43.77	42.49	------	------	------	42.66	49.03	59.08	56.12	48.06	44.98
2	------	43.66	42.41	------	------	------	42.34	48.82	60.74	55.75	48.00	45.12
3	------	43.52	42.39	------	------	41.52	42.21	49.08	63.83	55.41	47.97	45.08
4	------	43.43	42.03	------	------	41.51	42.16	49.39	65.61	55.18	47.86	45.09
5	------	43.36	------	------	41.80	------	42.31	49.48	65.54	54.98	47.80	45.02
6	------	43.33	------	41.73	------	------	42.16	49.26	64.74	54.58	47.74	44.84
7	------	43.32	------	------	------	------	42.03	48.86	64.37	54.16	47.63	44.63
8	------	43.26	------	------	------	------	42.03	48.58	64.47	53.72	47.49	44.43
9	------	43.20	------	------	------	------	42.03	48.47	65.10	53.32	47.27	44.30
10	------	43.35	42.13	------	------	41.60	------	48.49	65.49	52.81	47.14	44.12
11	------	43.67	42.38	------	41.70	------	------	48.67	65.33	52.54	47.02	44.01
12	------	43.56	42.47	------	------	------	------	49.37	65.07	52.29	46.90	43.91
13	47.76	43.51	42.39	41.71	------	------	41.73	50.80	64.85	52.01	46.80	43.81
14	------	43.43	42.20	------	41.72	------	41.78	52.50	64.98	51.55	46.68	43.74
15	45.76	43.34	42.07	------	------	------	------	54.16	65.12	51.04	46.62	43.67
16	------	43.24	------	------	------	------	42.06	55.04	65.17	50.89	46.54	43.59
17	------	43.20	------	------	------	41.33	42.26	54.86	64.67	50.85	46.43	43.56
18	------	43.06	------	------	41.63	------	42.40	54.50	63.94	50.82	46.26	43.53
19	------	42.94	------	------	------	------	42.47	54.53	63.11	50.62	46.07	43.49
20	------	42.89	------	41.00	------	------	42.54	55.13	62.06	50.33	46.00	43.41
21	------	42.83	------	------	------	------	42.83	56.42	60.94	50.27	45.90	43.35
22	44.86	42.78	------	------	41.46	------	43.28	58.35	59.96	50.18	45.74	43.34
23	------	42.78	------	------	------	------	43.80	60.63	59.09	50.00	45.55	43.40
24	------	42.80	------	------	------	------	44.08	62.75	58.32	49.62	45.49	43.40
25	------	42.72	------	------	41.47	41.30	44.27	64.46	57.63	49.27	45.33	43.39
26	------	42.69	------	------	------	------	44.61	64.77	57.20	48.99	45.24	43.35
27	------	42.66	------	41.16	------	41.35	45.42	63.22	57.06	48.91	45.23	43.23
28	44.15	42.61	41.70	------	------	------	46.74	61.06	57.26	48.80	45.13	43.11
29	44.11	42.53	------	------	------	42.86	48.17	59.56	56.95	48.62	45.08	43.01
30	43.99	42.49	------	------	------	43.15	48.99	58.70	56.51	48.37	45.01	42.94
31	43.88	------	------	------	------	43.04	------	58.50	------	48.16	44.93	------

NOTE.—Add 1,700.00 feet to obtain elevation above mean sea level, U. S. Coast and Geodetic Survey datum.

KOOTENAI RIVER AT DEEP CREEK, NEAR BONNERS FERRY, IDAHO

LOCATION.—Staff gage in S. ½ sec. 19, T. 62 N., R. 1 E., on bridge across Deep Creek 150 feet above mouth of creek and 3.8 miles downstream from Bonners Ferry. Gage readings adjusted to mean sea level elevation, United States Coast and Geodetic Survey datum.

RECORDS AVAILABLE.—May, 1928, to September, 1929.

EXTREMES.—Maximum water-surface elevation during year, 1,765.48 feet June 4; minimum, 1,740.85 feet Jan. 24 and 25.

1928–29: Maximum water-surface elevation, 1,771.86 feet May 28, 1928; minimum, that of Jan. 24 and 25, 1929.

REMARKS.—Records excellent. Elevations affected by backwater from Kootenai Lake. Because of small fall in Deep Creek below gage at low river levels, elevations from Nov. 1 to Apr. 20 are slightly higher than true river levels. Elevations were affected by ice from Dec. 12 to Mar. 25.

Daily elevation, in feet, of Kootenai River at Deep Creek, near Bonners Ferry, Idaho, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43.60	43.69	42.50	41.85	------	41.32	------	48.79	59.00	55.97	47.99	44.89
2	43.74	43.57	42.41	41.80	41.16	------	42.21	48.59	60.58	55.61	47.90	45.01
3	43.64	43.46	42.30	41.78	41.18	41.57	------	48.87	63.63	55.27	47.87	44.97
4	43.58	43.41	42.14	41.76	------	------	42.07	49.18	65.33	55.05	47.76	44.96
5	43.63	43.31	41.83	41.75	41.26	41.87	------	49.27	65.23	54.84	47.69	44.90
6	43.59	43.30	41.74	41.70	------	------	42.05	49.01	64.48	54.48	47.64	44.70
7	43.60	43.26	41.69	41.65	41.21	41.92	42.03	48.64	64.11	54.01	47.52	44.50
8	43.67	43.22	41.65	41.61	------	------	41.97	48.38	64.23	53.55	47.38	44.34
9	44.00	43.21	41.67	41.55	41.16	41.87	41.95	48.25	64.86	53.21	47.15	44.18
10	44.70	43.40	41.93	41.47	------	41.57	------	48.33	65.23	52.69	47.05	44.05
11	47.73	43.65	42.36	41.43	41.26	------	41.81	48.54	65.05	52.41	46.94	43.92
12	47.83	43.50	42.37	41.41	------	41.57	------	49.18	64.80	52.18	46.79	43.83
13	46.87	43.44	42.42	41.40	41.26	------	41.70	50.68	64.59	51.83	46.70	43.73
14	46.07	43.38	42.30	41.40	------	41.52	------	52.33	64.76	51.33	46.61	43.63
15	45.56	43.29	42.20	------	41.27	------	42.09	54.02	64.86	51.01	46.52	43.56
16	45.24	43.18	42.13	41.43	------	41.47	------	54.87	64.92	50.81	46.44	43.50
17	45.15	43.13	42.05	------	41.22	------	42.17	54.66	64.43	50.76	46.35	43.45
18	45.11	43.01	42.00	41.45	------	41.42	------	54.33	63.66	50.71	46.20	43.43
19	45.06	42.90	41.95	------	41.23	------	42.41	54.40	62.87	50.43	45.99	43.39
20	45.01	42.85	41.85	41.15	------	41.47	42.47	54.99	61.85	50.23	45.90	43.32
21	44.87	42.79	41.65	41.05	41.20	------	42.75	56.37	60.73	50.17	45.81	43.27
22	44.72	42.75	41.55	40.95	------	41.62	43.17	58.24	59.77	50.08	45.67	43.23
23	44.61	42.76	41.50	------	41.19	------	43.64	60.43	59.13	49.89	45.51	43.29
24	44.48	42.77	41.50	40.85	------	------	43.94	62.42	58.09	49.51	45.42	43.30
25	44.37	42.69	41.60	40.85	41.20	41.52	44.12	64.14	57.47	49.17	45.24	43.28
26	44.28	42.65	41.70	40.86	------	------	44.52	64.44	57.10	48.90	45.15	43.27
27	44.21	42.63	41.80	40.86	41.21	------	45.27	62.90	56.94	48.82	45.13	43.15
28	44.07	42.60	41.85	------	------	------	46.54	60.81	57.16	48.73	45.05	43.05
29	43.97	42.55	41.95	40.96	------	41.81	48.02	59.32	56.80	48.55	44.96	42.93
30	43.87	42.53	42.00	------	------	41.97	48.78	58.50	56.35	48.27	44.92	42.86
31	43.79	------	41.91	41.06	------	42.85	------	58.34	------	48.08	44.86	------

NOTE.—Add 1,700.00 feet to obtain elevation above mean sea level, U. S. Coast and Geodetic Survey datum.

KOOTENAI RIVER AT MYRTLE CREEK, NEAR BONNERS FERRY, IDAHO

LOCATION.—Reference point in N. ½ SW. ¼ sec. 12, T. 62 N., R. 1 W., or highway bridge crossing mouth of Myrtle Creek 5.4 miles northwest of Bonners Ferry. Elevation of reference point, 1,768.636 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS AVAILABLE.—April to September, 1929.

REMARKS.—Elevations determined by measuring to river water surface from reference point. Occasional observations made to define river profiles at different stages between the Deep Creek and Klockmann Ranch stations. Elevations affected by backwater from Kootenai Lake.

Daily elevations, in feet, 1928

Day	Apr.	May	June	July	Sept.	Day	Apr.	May	June	July	Sept.
1	------	------	------	------	------	16	------	------	------	------	------
2	------	------	------	------	------	17	------	------	------	------	------
3	------	------	------	------	------	18	------	53.87	------	------	------
4	------	------	------	------	------	19	42.13	------	------	------	------
5	------	------	64.15	------	------	20	------	------	------	------	------
6	------	------	------	------	------	21	------	------	60.50	------	------
7	------	------	------	------	------	22	42.87	57.47	------	------	------
8	------	------	------	------	------	23	------	------	------	------	------
9	------	------	------	52.97	------	24	------	------	------	------	------
10	------	47.93	64.66	------	------	25	------	------	------	------	------
11	------	48.07	------	------	------	26	------	------	------	66.59	------
12	------	------	------	------	43.73	27	44.96	------	56.69	66.55	------
13	------	------	------	------	------	28	------	------	------	------	------
14	------	------	------	------	------	29	------	59.06	------	66.32	------
15	------	------	------	------	------	30	------	------	------	66.06	------
						31	------	------	------	65.89	------

NOTE.—Add 1,700.00 feet to obtain elevation above mean sea level, U. S. Coast and Geodetic Survey datum.

KOOTENAI RIVER AT KLOCKMANN RANCH, NEAR BONNERS FERRY, IDAHO

LOCATION.—Water-stage recorder in SE. ¼ sec. 19, T. 63 N., R. 1 E., at Klockmann Ranch, 800 feet south of viaduct on Kootenai Valley Branch of Great Northern Railway and 8 miles north of Bonners Ferry. Recorder reads mean sea level elevation, United States Coast and Geodetic Survey datum.

RECORDS AVAILABLE.—May, 1928, to September, 1929.

EXTREMES.—Maximum water-surface elevation during year, 1,763.57 feet June 10; minimum, occurred during period of no record.

1928–29: Maximum water-surface elevation occurred on May 28, 1928, when gage was not read; minimum occurred during a period of no record.

REMARKS.—Records good. No records obtained Oct. 11, 12, Nov. 17 to Apr. 22 and Sept. 16–30. Elevations affected by backwater from Kootenai Lake.

Daily elevation, in feet, 1928–29

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	43.32	43.15	-------	47.36	57.81	55.20	47.52	44.51
2	43.28	43.05	-------	47.24	59 18	54.82	47.43	44.59
3	43.26	42.93	-------	47.49	61.75	54.51	47.39	45.55
4	43.23	42.85	-------	47.80	63.24	54.27	47.28	44.51
5	43.20	42.77	-------	47.94	63.32	54.08	47.20	44.46
6	43.16	42.75	-------	47.81	62.78	53.72	47.12	44.33
7	43.10	42.71	-------	47.50	62.53	53.34	47.03	44.18
8	43.19	42.66	-------	47.28	62.65	52.92	46.90	43.99
9	43.42	42.65	-------	47.18	63 17	52.54	46.72	43.87
10	43.78	42.75	-------	47.25	63.52	52.09	46.60	43.71
11	-------	42.95	-------	47.42	63.45	51.80	46.49	43.60
12	-------	42.90	-------	47.98	63.29	51.54	46.38	43.50
13	45.85	42.89	-------	49.28	63.12	51.25	46.28	43.41
14	45.21	42.84	-------	50.82	63.25	50.86	46.19	43.31
15	44.76	42.78	-------	52.43	63.38	50.45	46.10	43.26
16	44.51	42.70	-------	53.36	63.44	50.22	46.02	------
17	44.46	-------	-------	53.20	63.07	50.16	45.92	------
18	44.42	-------	-------	52.94	62.46	50.09	45.77	------
19	44.37	-------	-------	52.98	61.77	49.90	45.60	------
20	44.36	-------	-------	53.57	60.89	49.65	45.53	------
21	44.23	-------	-------	54.81	59.91	49.58	45.49	------
22	44.10	-------	-------	56.65	59.00	49.48	45.38	------
23	44.01	-------	42.77	58.58	58.18	49.30	45.19	------
24	43.93	-------	42.99	60.52	57.45	48.97	45.11	------
25	43.81	-------	43.15	62.04	56.84	48.65	44.99	------
26	43.72	-------	43.43	62.45	56.40	48.41	44.87	------
27	43.63	-------	44.06	61.31	56.21	48.31	44.79	------
28	43.55	-------	45.15	59.59	56.28	48.19	44.72	------
29	43.45	-------	46.45	58.25	55.97	48.02	44.64	------
30	43.36	-------	47.27	57.50	55.54	47.80	44.58	------
31	43.23	-------	-------	57.29	-------	47.61	44.52	------

NOTE.—Add 1,700.00 feet to obtain elevation above mean sea level, U. S. Coast and Geodetic Survey datum.

KOOTENAI RIVER AT SPURLING RANCH, NEAR COPELAND, IDAHO

LOCATION.—Staff gage in W. T sec. 6, T. 63 N., R. 1 E., at Spurling ranch house, 5 miles south of Copeland and 10.2 miles above Mission Creek. Gage readings adjusted to mean sea level elevation, United States Coast and Geodetic Survey datum.

RECORDS AVAILABLE.—May, 1928, to September, 1929.

EXTREMES.—Maximum water-surface elevation during year, 1,762.68 feet June 16; minimum occurred during period of no record.

1928–29: Maximum water-surface elevation, 1,769.00 feet May 28, 1928; minimum occurred during period of no record.

REMARKS.—Records fair Apr. 1 to July 17; others good. No records obtained Oct. 1 to Mar. 26 and July 18–28. Elevations affected by backwater from Kootenai Lake.

Daily elevation, in feet, of Kootenai River at Spurling Ranch, near Copeland, Idaho, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	41.70	46.81	57.09	54.82	47.34	44.44
2	------	41.51	46.72	58.56	54.47	47.26	44.59
3	------	41.52	47.03	60.76	54.13	47.25	44.51
4	------	41.44	47.26	62.20	53.96	47.17	44.48
5	------	41.56	47.46	62.30	53.67	47.06	44.40
6	------	41.46	47.31	61.88	53.28	46.97	44.25
7	------	41.34	47.10	61.62	52.93	46.88	44.03
8	------	41.35	46.89	61.71	52.56	46.75	43.87
9	------	41.34	46.81	62.26	52.14	46.57	43.80
10	------	41.33	46.83	62.61	51.74	46.48	43.68
11	------	41.29	47.04	62.58	51.46	46.36	43.60
12	------	41.21	47.56	62.51	51.22	46.28	43.50
13	------	41.19	48.76	62.32	50.98	46.18	43.41
14	------	41.22	50.30	62.45	50.52	46.09	43.29
15	------	41.30	51.70	62.59	50.22	45.99	43.24
16	------	41.39	52.56	62.68	49.99	45.91	43.19
17	------	41.55	52.56	62.36	49.69	45.80	43.15
18	------	41.60	52.17	61.76	------	45.65	43.13
19	------	41.68	52.32	61.12	------	45.52	43.09
20	------	41.75	52.80	60.15	------	45.49	43.03
21	------	41.90	53.98	59.39	------	45.36	42.95
22	------	42.18	55.80	58.51	------	45.20	42.88
23	------	42.50	57.79	57.73	------	45.08	42.85
24	------	42.62	59.61	57.01	------	45.05	42.83
25	------	42.87	61.01	56.49	------	44.83	42.88
26	------	43.16	61.41	56.08	------	44.76	42.89
27	40.86	43.74	60.32	55.85	------	44.71	42.80
28	41.15	44.77	58.64	55.78	------	44.64	42.68
29	41.64	45.96	57.41	55.57	47.81	44.58	42.57
30	41.90	46.60	56.80	55.12	47.66	44.53	42.53
31	41.89	------	56.70	------	47.50	44.45	------

NOTE.—Add 1,700.00 feet to obtain elevation above mean sea level, U. S. Coast and Geodetic Survey datum.

KOOTENAI RIVER AT DES VOIGNE RANCH, NEAR COPELAND, IDAHO

LOCATION.—Reference point in NW. ¼ NW. ¼ SW. ¼ sec. 31, T. 64 N., R. 1 E., at Des Voigne ranch house, 3.4 miles south of Copeland and 7.1 miles above Mission Creek. Reference point, 1,769.61 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS AVAILABLE.—April to September, 1929.

REMARKS.—Water-surface elevations determined by leveling from reference point. Occasional observations made to define river profiles at different stages between the Spurling ranch and Krause ranch stations. Elevations affected by backwater from Kootenai Lake.

Daily elevation, in feet, 1929

Date	Elevation	Date	Elevation	Date	Elevation
Apr. 20	1,741.53	June 10	1,762.01	June 27	1,755.56
June 5	1,761.63	June 21	1,759.09	July 9	1,751.98

KOOTENAI RIVER AT KRAUSE RANCH, NEAR COPELAND, IDAHO

LOCATION.—Staff gage in N. ½ NE. ¼ NW. ¼ sec. 25, T. 64 N., R. 1 W., at Krause ranch house, 2 miles southwest of Copeland and 5.3 miles above Mission Creek. Gage readings adjusted to mean sea level elevation, United States Coast and Geodetic Survey datum.

RECORDS AVAILABLE.—April to September, 1929.

EXTREMES.—Maximum water-surface elevation during year, 1,761.90 feet June 16; minimum occurred prior to time record started.

REMARKS.—Records good. Elevations estimated Apr. 21–24, May 21, June 3, 5, 27, July 30, and Aug. 4. No records obtained Oct. 1 to Apr. 18. Elevations affected by backwater from Kootenai Lake.

Daily elevation, in feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	------	46.19	56.43	54.42	47.10	44.26	16	------	51.78	61.88	49.74	45.70	43.04
2	------	46.10	58.00	54.08	47.02	44.38	17	------	51.75	61.68	49.64	45.58	43 00
3	------	46.40	59.64	53.83	46.95	44.34	18	------	51 58	61.12	49.54	45.45	42.97
4	------	46.69	61.13	53.58	46.89	44.25	19	41.44	51.66	60.54	49.36	45.32	42.94
5	------	46.82	61.31	53.33	46.79	44.17	20	41.46	52.35	59.76	49.14	45.24	42.86
6	------	46.74	61.00	53.02	46.72	44.06	21	41.63	53.32	58.90	49.02	45.14	42.76
7	------	46.54	60.80	52.67	46.64	43.96	22	41.84	54.93	58.08	48.92	44.98	42.73
8	------	46.36	60.90	52.26	46.48	43.82	23	42.15	56.70	57.38	48.77	44.84	42.77
9	------	46.31	61.38	51.91	46.34	43.66	24	42.37	58.42	56.72	48.48	44.79	42.76
10	------	46.37	61.74	51.52	46.24	43.52	25	42.54	59.84	56.14	48.14	44.65	42.76
11	------	46.54	61.76	51.24	46.14	43.43	26	42.78	60.29	55.74	47.98	44.58	42.71
12	------	47.02	61.65	50.97	46.04	43.36	27	43.29	59.56	55.49	47.87	44.50	42 64
13	------	48.08	61.55	50.68	45.93	43.28	28	44.12	57.98	55.47	47.74	44.39	42.52
14	------	49.46	61.66	50.35	45.84	43.20	29	45.28	56.87	55.22	47.60	44.36	42.44
15	------	50.91	61.80	49.96	45.78	43.11	30	46.07	56.20	54.76	47.42	44.33	42.36
							31	------	56.01	------	47.23	44.29	------

NOTE.—Add 1,700.00 feet to obtain elevation above mean sea level, U. S. Coast and Geodetic Survey datum.

KOOTENAI RIVER AT ASHBY RANCH, NEAR COPELAND, IDAHO

LOCATION.—Reference point in NE. ¼ NW. ¼ SE. ¼ sec. 24, T. 64 N., R. 1 W., 100 feet above Ashby ranch house, 1.6 miles southwest of Copeland, and 3.1 miles above Mission Creek. Reference point, 1,765.045 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS AVAILABLE.—April to September, 1929.

REMARKS.—Water-surface elevations determined by leveling from reference point. Occasional observations made to define river profiles at different stages between the Krause Ranch and Copeland stations. Elevations affected by backwater from Kootenai Lake.

Daily elevation, in feet, 1929

Date	Elevation	Date	Elevation	Date	Elevation
Apr. 19	1741.36	June 10	1761.32	June 27	1755.26
June 5	1760.84	June 21	1758.68	July 9	1751.74

KOOTENAI RIVER AT COPELAND, IDAHO

LOCATION.—Water-stage recorder in SE. ¼ sec. 12, T. 64 N., R. 1 W., at mouth of Mission Creek and three quarters of a mile northwest of Copeland. Recorder reads mean sea level elevation, United States Coast and Geodetic Survey datum.

DRAINAGE AREA.—13,400 square miles.

RECORDS AVAILABLE.—October, 1927, to September, 1929. Gage-height records collected at the same site by the Dominion Water Power and Hydrometric Bureau of Canada are available from April, 1925, to September, 1927.

EXTREMES.—Maximum discharge during year, 58,400 second-feet June 5; maximum water-surface elevation, 1,761.08 feet June 16; minimum discharge not determined; minimum water-surface elevation, 1,740.01 feet Feb. 26.

1927–1929: Maximum and minimum discharges not determined; maximum water-surface elevation, 1,766.70 feet May 29, 1928; minimum, 1,740.01 feet Feb. 26, 1929.

Maximum elevation known, about 1,774.5 feet June, 1894.

REMARKS.—Discharge records May to July 4, excellent; others good. The "normal" slope method using fall between Copeland and Port Hill was used in determining daily discharges except for periods July 12, 13, 24, Aug. 8, 13–16, 19, 21, 23, 27, Sept. 2, 5, 6, 8, 9, 26, which were estimated. Water-surface elevations excellent Apr. 25 to Aug. 5, when water-stage recorder was in operation; others are based on daily staff readings except those for Dec. 5–9, which were estimated. Elevations affected by backwater from Kootenai Lake.

Daily elevation, in feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	42.75	42.72	41.64	40.87	40.13	40.07	41.32	45.68	55.83	54.09	46.99	------
2	42.67	42.64	41.57	40.82	40.17	40.17	41.21	45.66	56.81	53.73	46.86	44.31
3	42.69	42.57	41.56	40.80	40.19	40.17	41.21	45.90	58.68	53.45	46.84	44.21
4	42.59	42.50	41.42	40.77	40.22	40.17	41.13	46.20	59.97	53.19	46.73	44.16
5	42.59	42.43	41.33	40.75	40.20	40.19	41.26	46.36	60.26	52.99	46.67	44.09
6	42.52	42.41	41.22	40.70	40.17	40.22	41.14	46.32	60.04	52.69	46.56	43.94
7	42.57	42.37	41.10	40.69	40.12	40.22	41.06	46.16	59.89	52.35	46.45	43.82
8	42.65	42.30	41.12	40.67	40.07	40.25	41.08	46.02	60.01	51.95	46.38	43.66
9	42.87	42.27	41.15	40.65	40.07	40.29	41.12	45.98	60.43	51.61	46.23	43.56
10	43.24	42.32	41.17	40.65	40.07	40.37	41.01	46.03	60.78	51.23	46.13	43.46
11	44.47	42.45	41.25	40.65	40.09	40.47	40.98	46.20	60.83	50.97	46.02	43.36
12	44.99	42.37	41.30	40.65	40.07	40.49	40.97	46.63	60.77	50.68	45.92	43.26
13	44.62	42.35	41.24	40.65	40.05	40.52	40.96	47.62	60.70	50.42	45.85	43.17
14	44.19	42.34	41.23	40.62	40.04	40.52	40.94	48.84	60.83	50.07	45.72	43.12
15	43.95	42.27	41.17	40.61	40.04	40.52	40.98	50.13	60.97	49.73	45.65	43.06
16	43.75	42.20	41.12	40.59	40.04	40.51	41.11	51.01	61.05	49.51	45.61	42.98
17	43.75	------	41.07	40.57	40.04	40.50	41.21	51.04	60.83	49.38	45.49	42.94
18	43.69	42.12	41.05	40.52	40.04	40.49	41.28	50.89	60.39	49.28	45.34	42.89
19	43.64	42.04	41.03	40.47	40.04	40.49	41.30	51.00	59.89	49.11	45.22	42.86
20	43.62	42.02	41.03	40.42	40.04	40.49	41.32	51.51	59.21	48.90	45.14	42.79
21	43.55	41.99	40.97	40.37	40.04	40.57	41.46	52.54	58.41	48.83	45.04	------
22	43.45	41.94	40.94	40.34	40.04	40.59	41.66	54.03	57.68	48.70	44.90	42.66
23	43.39	41.92	40.91	40.31	40.04	40.61	41.96	55.71	56.99	48.54	44.80	42.71
24	43.32	41.91	40.86	40.29	40.03	40.66	42.26	57.34	56.34	48.29	44.72	42.68
25	43.24	41.85	40.86	40.27	40.02	40.62	42.30	58.61	55.79	48.02	44.60	42.68
26	43.19	41.83	40.89	40.22	40.01	40.58	42.52	59.13	55.40	47.82	44.50	42.66
27	43.11	41.80	40.96	40.17	40.03	40.66	43.00	58.51	55.13	47.70	44.40	42.56
28	43.04	41.74	40.87	40.14	40.07	40.86	43.76	57.28	55.07	47.57	44.36	42.46
29	42.95	41.69	40.86	40.13	------	41.16	44.82	56.25	54.80	47.43	44.31	42.38
30	42.85	41.67	40.90	40.12	------	41.42	45.50	55.65	54.41	47.25	44.26	42.31
31	42.77	------	40.87	40.11	------	41.42	------	55.47	------	47.10	44.21	------

NOTE.—Add 1,700.00 feet to obtain elevation above mean sea level, U. S. Coast and Geodetic Survey datum.

Daily and monthly discharge, in second-feet, of Kootenai River at Copeland, Idaho, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	16,000	35,300	25,000	10,400	6,300	16	30,900	53,200	14,100	8,100	4,850
2	15,500	40,900	23,800	10,100	6,500	17	29,800	51,200	14,200	8,050	4,880
3	15,600	51,600	23,000	10,500	6,410	18	28,400	48,000	14,400	7,690	4,680
4	16,400	58,100	22,600	10,200	6,410	19	28,100	45,100	14,300	7,450	4,770
5	16,700	58,400	22,400	10,200	6,400	20	29,500	41,200	13,900	7,240	4,800
6	16,000	55,500	21,100	9,660	6,200	21	33,300	36,700	13,500	7,200	4,680
7	15,100	53,400	20,500	9,240	5,770	22	38,800	33,400	13,800	7,120	4,630
8	14,000	53,200	19,500	9,200	5,600	23	45,400	30,400	13,300	7,000	4,810
9	13,800	54,700	18,600	9,170	5,500	24	52,400	28,100	12,600	6,670	4,530
10	13,600	55,800	17,400	8,990	5,510	25	57,200	26,200	12,000	6,740	4,720
11	14,200	55,200	16,800	8,640	5,360	26	58,100	25,400	11,700	6,680	4,700
12	15,600	54,100	16,400	8,520	5,100	27	53,000	25,700	11,400	6,400	4,650
13	19,100	52,900	16,200	8,300	4,780	28	44,700	27,200	11,400	6,460	4,480
14	23,100	53,000	15,300	8,200	4,800	29	38,000	26,900	11,200	6,460	4,410
15	28,200	53,300	14,500	8,100	4,900	30	34,700	25,800	10,700	6,240	4,330
						31	33,700	-------	10,400	6,180	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May	58,100	13,600	28,700	1,760,000
June	58,400	25,400	43,700	2,600,000
July	25,000	10,400	16,000	984,000
August	10,400	6,180	8,100	498,000
September	6,500	4,330	5,180	308,000
The period	----------	----------	----------	6,150,000

KOOTENAI RIVER AT JEROME SLOUGH, NEAR COPELAND, IDAHO

LOCATION.—Staff gage in SW. ¼ NE. ¼ sec. 3, T. 64 N., R. 1 W., 200 feet upstream from Jerome Slough, 3.2 miles northwest of Copeland, and 4.7 miles below Mission Creek. Gage readings adjusted to mean sea level elevation, United States Coast and Geodetic Survey datum.

RECORDS AVAILABLE.—April to September, 1929.

REMARKS.—Occasional observations made to define river profiles at different stages between the Copeland and Lucas Creek stations. Elevations affected by backwater from Kootenai Lake.

Daily elevation, in feet, 1929

Day	Apr.	May	June	July	Aug.	Day	Apr.	May	June	July	Aug.
1	------	------	------	------	------	16	------	------	------	------	------
2	------	------	------	------	------	17	------	50.61	------	------	------
3	------	------	------	------	46.75	18	41.30	------	------	------	------
4	------	------	------	------	------	19	------	------	------	------	------
5	------	------	59.52	------	------	20	41.34	------	------	------	------
6	------	------	------	------	------	21	------	------	58.05	------	------
7	------	------	------	------	------	22	------	------	------	------	------
8	------	------	------	------	------	23	------	------	------	------	44.75
9	------	------	------	51.45	------	24	------	------	------	------	44.65
10	------	------	60.16	------	------	25	42.24	------	------	------	------
11	------	------	------	------	------	26	------	------	------	------	44.49
12	------	------	------	------	------	27	------	------	54.90	------	------
13	------	------	------	------	------	28	------	56.60	------	------	------
14	------	------	------	------	------	29	------	------	------	------	------
15	------	------	------	------	------	30	------	------	------	------	------
						31	------	------	------	------	------

NOTE.—Add 1,700 feet to obtain elevation above mean sea level, U. S. Coast and Geodetic Survey datum.

KOOTENAI RIVER AT LUCAS CREEK, NEAR PORT HILL, IDAHO

LOCATION.—Staff gage in sec. 28, T. 65 N., R. 1 W., at mouth of Lucas Creek and 3 miles southeast of Port Hill. Gage readings adjusted to mean sea level elevation, United States Coast and Geodetic Survey datum.

RECORDS AVAILABLE.—May, 1928, to September, 1929.

EXTREMES.—Maximum water-surface elevation during year, 1,759.58 feet June 16; minimum occurred during period of no record.

1928–29: Maximum water-surface elevation, 1,764.69 feet May 30, 1928; minimum occurred during period of no record.

REMARKS.—Records excellent. No records Oct. 4 to Apr. 17, Apr. 19, Apr. 21–28, and Sept. 5–30. Elevations affected by backwater from Kootenai Lake.

Daily elevation, in feet, 1928–29

Day	Oct.	Apr.	May	June	July	Aug.	Sept.
1	42.91	------	44.84	54.82	53.45	46.76	44.13
2	42.88	------	44.95	55.66	53.11	46.63	44.13
3	42.90	------	45.16	56.96	52.88	46.58	44.05
4	------	------	45.40	58.09	52.62	46.48	43.98
5	------	------	45.51	58.41	52.40	46.40	------
6	------	------	45.60	58.36	52.13	46.32	------
7	------	------	45.51	58.29	51.84	46.25	------
8	------	------	45.46	58.47	51.49	46.14	------
9	------	------	45.46	58.86	51.21	45.99	------
10	------	------	45.48	59.17	50.86	45.89	------
11	------	------	45.63	59.28	50.57	45.80	------
12	------	------	45.98	59.27	50.31	45.73	------
13	------	------	46.71	59.23	50.05	45.63	------
14	------	------	47.73	59.36	49.73	45.55	------
15	------	------	48.71	59.52	49.42	45.49	------
16	------	------	49.67	59.57	49.22	45.39	------
17	------	------	49.88	59.46	49.09	45.29	------
18	------	41.11	49.84	59.11	48.95	45.15	------
19	------	------	49.97	58.76	48.76	45.04	------
20	------	41.15	50.43	58.20	48.59	44.95	------
21	------	------	51.41	57.56	48.49	44.85	------
22	------	------	52.63	56.90	48.39	44.74	------
23	------	------	54.02	56.32	48.22	44.64	------
24	------	------	55.41	55.59	47.98	44.52	------
25	------	------	56.57	55.16	47.75	44.39	------
26	------	------	57.05	54.84	47.53	44.33	------
27	------	------	56.72	54.55	47.43	44.29	------
28	------	------	55.92	54.41	47.29	44.22	------
29	------	44.11	55.07	54.12	47.16	44.16	------
30	------	44.64	54.67	53.75	46.98	44.11	------
31	------	------	54.45	------	46.86	44.07	------

NOTE.—Add 1,700 feet to obtain elevation above mean sea level, U. S. Coast and Geodetic Survey datum.

KOOTENAI RIVER AT PORT HILL, IDAHO

LOCATION.—Water-stage recorder in SW. ¼ sec. 8, T. 65 N., R. 1 W., 300 feet south of international boundary at Port Hill. Recorder reads mean sea level elevation, United States Coast and Geodetic Survey datum. Datum of Geodetic Survey of Canada, 1928 adjustment, is 0.20 foot higher (to correct published records to agree with Canadian datum, 0.20 foot should be subtracted).

DRAINAGE AREA.—13,700 square miles.

RECORDS AVAILABLE.—May to July, 1904; October, 1927, to September, 1929. Gage-height records were collected by the Dominion Water Power and Hydrometic Bureau of Canada from October, 1924, to September, 1927, at the same site.

EXTREMES.—Maximum discharge during year, 59,500 second-feet June 5; maximum water-surface elevation, 1,758.62 feet June 16; minimum discharge, 2,400 second-feet Jan. 27–31; minimum water-surface elevation, 1,739.75 feet Feb. 19, 21, 22, and Mar. 1.

1927–1929: Maximum discharge, 83,000 second-feet May 27 and 28, 1928; maximum water-surface elevation, 1,763.32 feet May 30, 1928; minimum discharge and water-surface elevation occurred in 1929.

Maximum elevation known, 1,772.7 feet June, 1894.

REMARKS.—Discharge records are fair. From Nov. 17 to Mar. 18 staff gage was used. The record of flow represents approximately the entire flow passing the international boundary, which includes considerable unmeasurable overflow together with the outflow of Kootenai River through the artificial channel of Boundary Creek during flood stages. The flow of Boundary Creek is also included. Elevations affected by backwater from Kootenai Lake. Results of several discharge measurements furnished by Dominion Water Power and Hydrometic Bureau, Department of the Interior, Canada.

Daily elevation, in feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	42.55	42.58	41.51	40.65	39.81	39.75	40.94	44.38	54.12	53.08	46.56	43.96
2	42.54	42.51	41.46	40.71	39.86	39.92	40.87	44.44	54.72	52.78	46.45	43.99
3	42.49	42.44	41.43	40.66	39.91	39.86	40.87	44.69	55.87	52.54	46.39	43.91
4	42.41	42.38	41.29	40.66	39.94	39.89	40.88	44.96	56.79	52.29	46.29	43.86
5	42.41	42.31	41.20	40.65	39.86	39.87	40.91	45.12	57.13	52.09	46.23	43.77
6	42.35	42.28	41.09	40.61	39.80	39.91	40.83	45.15	57.14	51.86	46.16	43.66
7	42.38	42.23	40.94	40.60	39.83	39.90	40.79	45.10	57.13	51.55	46.07	43.55
8	42.47	42.15	40.98	40.56	39.80	39.95	40.82	45.07	57.35	51.19	45.96	43.42
9	42.68	42.11	41.02	40.51	39.79	40.00	40.83	45.06	57.71	50.89	45.84	43.32
10	42.92	42.13	41.03	40.49	39.77	40.10	40.81	45.14	58.04	50.57	45.75	43.19
11	43.53	42.20	41.06	40.48	39.81	40.16	40.77	45.27	58.15	50.34	45.66	43.10
12	44.00	42.16	41.16	40.53	39.83	40.14	40.73	45.59	58.27	50.07	45.56	43.02
13	43.82	42.14	41.11	40.46	39.81	40.18	40.72	46.31	58.22	49.78	45.47	42.95
14	43.57	42.11	41.11	40.40	39.79	40.20	40.74	47.26	58.36	49.49	45.40	42.89
15	43.44	42.06	41.02	40.45	39.79	40.22	40.81	48.16	58.51	49.18	45.33	42.82
16	43.33	42.02	41.01	40.39	39.79	40.18	40.83	48.89	58.60	48.98	45.24	42.74
17	43.35	42.04	40.94	40.41	39.78	40.19	40.92	49.07	58.53	48.84	45.14	42.69
18	43.33	41.95	40.92	40.35	39.76	40.21	40.95	49.08	58.23	48.71	45.01	42.66
19	43.30	41.86	40.93	40.25	39.75	40.22	40.98	49.25	57.95	48.53	44.91	42.62
20	43.32	41.86	40.89	40.18	39.81	40.22	41.00	49.68	57.51	48.34	44.83	42.54
21	43.24	41.82	40.84	40.18	39.75	40.26	41.10	50.45	56.95	48.29	44.75	42.46
22	43.17	41.80	40.83	40.10	39.75	40.29	41.28	51.58	56.49	48.13	44.59	42.42
23	43.13	41.77	40.77	40.01	39.79	40.28	41.45	52.86	55.86	47.99	44.47	42.45
24	43.08	41.78	40.75	40.01	39.80	40.30	41.58	54.08	55.31	47.70	44.43	42.45
25	43.02	41.69	40.74	40.01	39.84	40.27	41.72	55.14	54.85	47.54	44.30	42.43
26	42.97	41.68	40.69	39.91	39.78	40.25	41.93	55.69	54.48	47.35	44.20	42.39
27	42.92	41.64	40.82	39.93	39.80	40.33	42.29	55.51	54.13	47.24	44.14	42.31
28	42.86	41.61	40.73	39.89	39.83	40.45	42.83	54.90	53.98	47.10	44.07	42.22
29	42.79	41.55	40.70	39.89	-------	40.77	43.58	54.35	53.71	46.97	44.01	42.14
30	42.73	41.49	40.76	39.84	-------	40.95	44.15	53.97	53.37	46.81	43.98	42.07
31	42.63	-------	40.72	39.83	-------	41.00	-------	53.86	-------	46.68	43.93	-------

NOTE.—Add 1,700.00 feet to obtain elevation above mean sea level, U. S. Coast and Geodetic Survey datum.

Daily and monthly discharge, in second-feet, of Kootenai River at Port Hill, Idaho, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,350	5,400	4,150	3,600	2,500	2,600	6,600	16,100	37,000	25,000	10,500	6,200
2	5,500	5,200	4,100	3,200	2,800	2,600	6,100	15,600	43,000	24,000	10,200	6,300
3	5,500	5,000	4,100	3,000	2,900	2,600	5,700	15,700	54,000	23,500	10,500	6,400
4	5,600	4,900	3,800	2,900	2,900	3,000	5,500	16,500	59,000	22,800	10,200	6,500
5	5,650	4,850	3,400	2,800	2,900	3,300	5,400	16,800	59,500	22,600	10,200	6,500
6	5,600	4,800	3,300	2,800	3,000	3,600	5,300	16,100	57,000	21,500	9,700	6,300
7	5,700	4,900	3,000	2,800	3,000	3,800	5,200	15,200	54,500	20,800	9,500	6,000
8	5,900	4,950	3,000	3,000	3,000	3,800	5,000	14,300	54,500	19,800	9,200	5,600
9	6,200	4,900	3,400	3,300	3,000	3,700	4,900	13,900	56,000	18,700	8,800	5,400
10	8,000	5,200	3,700	3,400	3,000	3,600	4,800	13,700	57,000	17,600	8,700	5,300
11	13,200	5,800	3,900	3,400	3,100	3,500	4,700	14,300	56,500	17,000	8,500	5,100
12	15,000	5,900	3,900	3,200	3,200	3,500	5,600	15,700	55,000	16,500	8,400	4,900
13	12,500	5,900	3,900	3,000	3,300	3,500	4,500	19,200	53,500	16,400	8,200	4,800
14	10,800	5,800	3,800	2,900	3,400	3,600	4,500	23,300	54,000	15,400	8,100	4,700
15	9,600	5,500	3,700	2,800	3,400	3,700	4,600	28,500	54,000	14,700	8,000	4,700
16	8,500	5,300	3,400	2,700	3,300	3,900	4,900	31,200	54,000	14,500	7,900	4,700
17	8,500	5,050	3,200	2,700	3,300	4,100	5,100	30,100	52,500	14,400	7,800	4,600
18	8,200	4,800	2,900	2,700	3,200	4,200	5,300	28,700	49,000	14,500	7,500	4,600
19	8,000	4,700	2,900	2,700	3,200	4,300	5,500	28,400	46,000	14,400	7,200	4,700
20	7,800	4,500	2,900	2,700	3,000	4,400	5,800	29,800	41,200	14,000	7,000	4,700
21	7,500	4,500	3,200	2,700	2,900	4,600	6,300	33,600	37,000	13,600	6,900	4,700
22	7,200	4,500	3,500	2,700	2,900	4,700	6,800	40,200	34,000	13,800	6,700	4,800
23	7,000	4,500	3,700	2,700	2,900	4,700	7,800	45,800	31,000	13,500	6,600	4,800
24	6,800	4,500	3,800	2,700	2,900	4,600	8,400	54,000	28,500	13,000	6,400	4,800
25	6,500	4,450	3,500	2,700	2,900	4,400	8,700	58,000	26,500	12,000	6,200	4,800
26	6,300	4,350	3,500	2,500	2,850	4,300	9,100	59,000	26,000	11,800	6,200	4,700
27	6,200	4,300	3,600	2,400	2,800	4,300	9,800	55,000	26,500	11,500	6,300	4,600
28	6,100	4,250	3,700	2,400	2,700	5,500	12,000	47,000	27,200	11,500	6,300	4,500
29	6,000	4,200	3,800	2,400	-------	7,000	15,100	40,000	27,000	11,200	6,200	4,400
30	5,900	4,200	3,800	2,400	-------	7,300	15,800	36,000	26,000	10,800	6,100	4,300
31	5,700	-------	3,800	2,400	-------	7,500	--------	35,000	--------	10,500	6,100	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	15,000	5,350	7,490	461,000
November	5,900	4,200	4,900	292,000
December	4,150	2,900	3,560	219,000
January	3,600	2,400	2,830	174,000
February	3,400	2,500	3,010	167,000
March	7,500	2,600	4,200	258,000
April	15,800	4,500	6,790	404,000
May	59,000	13,700	29,200	1,800,000
June	59,500	26,000	44,600	2,650,000
July	25,000	10,500	16,200	996,000
August	10,500	6,100	7,940	488,000
September	6,500	4,300	5,150	306,000
The year	59,500	2,400	11,300	8,220,000

BOULDER CREEK NEAR LEONIA, IDAHO

LOCATION.—Water-stage recorder in NW. ¼ sec. 32, T. 61 N., R. 3 E., half a mile below McGinty Creek, 1 mile above buildings of the Idamont Lead-Zinc Mines Co., 3 miles above mouth, and 3 miles southwest of Leonia.

DRAINAGE AREA.—53 square miles.

RECORDS AVAILABLE.—April, 1928, to September, 1929; prior to November, 1928, records at staff gage site 1¼ miles downstream.

EXTREMES.—Maximum discharge during year, 880 second-feet May 12 (gage height, 4.10 feet); minimum, 4.3 second-feet Aug. 31 and Sept. 1 (gage height, 1.13 feet).

1928–29: Maximum discharge (estimated), 1,200 second-feet May 15, 1928 (at staff gage site); minimum, that of Aug. 31 and Sept. 1, 1929.

REMARKS.—Records good except those for Dec. 5–11 and Jan. 4 to Feb. 21, which are fair. No records Oct. 1 to Nov. 19. From April to September an average flow of about 2 second-feet, diverted for mining purposes upstream, returns to the creek below present gage.

Daily and monthly discharge, in second-feet, 1928–29

Day	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	19	14		7.9	73	286	215	31	10	5.1
2	------	19	14		7.1	70	342	203	30	13	6.7
3	------	10	14	10	7.5	75	342	178	27	13	8.8
4	------	9.2			9.2	73	303	165	27	11	7.1
5	------	8			11	72	292	173	26	12	8.8
6	------	10			9.6	64	289	171	24	13	7.9
7	------	14			8.4	60	317	163	28	15	6.3
8	------	18			8.4	56	299	155	26	15	5.7
9	------	18			9.2	50	282	158	24	19	6.3
10	------	18	11		14	48	324	135	22	17	6.3
11	------	18		9	19	48	463	121	22	16	6.3
12	------	18			15	45	608	103	21	16	6.0
13	------	16			14	40	641	103	20	16	5.7
14	------	12			16	54	505	148	18	16	5.7
15	------	17			18	68	463	125	17	15	5.4
16	------	16			21	75	488	123	16	15	6.7
17	------	14			21	77	467	105	15	16	7.1
18	------	16	10		21	88	480	114	14	14	8.4
19	------	15		10	25	112	501	121	13	15	9.2
20	27	14			30	128	527	92	12	16	8.8
21	24	14			36	158	532	77	11	15	8.8
22	24	14		12	32	206	536	72	9.6	15	9.6
23	23	14	9	12	28	215	527	62	8.8	14	14
24	19	14		11	28	198	451	56	8.4	13	14
25	21	14		9.6	28	250	320	50	7.5	11	13
26	23	14		8.4	30	320	250	44	6.7	11	12
27	22	14		8.4	43	395	234	40	6.7	10	11
28	20	14		7.9	226	488	218	37	6.7	8.8	10
29	19	14	8	------	209	463	221	34	7.5	7.9	10
30	19	14		------	123	320	237	31	8.4	7.1	10
31	------	14		------	90	------	246	------	8.8	6.0	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
November 20-30	27	19	21.9	478
December	19	8	14.6	898
January	------	------	10.2	627
February	------	------	9.62	534
March	226	7.1	37.6	2,310
April	488	40	146	8,690
May	641	218	387	23,800
June	215	31	112	6,660
July	31	6.7	16.9	1,040
August	19	6.0	13.3	818
September	14	5.1	8.36	497
The period	------	------	------	46,400

MOYIE RIVER AT EILEEN, IDAHO

LOCATION.—Water-stage recorder in NE. ¼ sec. 35, T. 63 N., R. 2 E., one-eighth mile downstream from Skin Creek, a quarter of a mile southeast of Eileen, and 4 miles above junction with Kootenai River.

DRAINAGE AREA.—755 square miles.

RECORDS AVAILABLE.—October, 1925, to September, 1929.

EXTREMES.—Maximum discharge during year, 4,820 second-feet May 24 (gage height, 4.33 feet); minimum (estimated), 60 second-feet Dec. 5; minimum gage height, 0.85 foot Jan. 19, during period of ice effect.

1925–1929: Maximum discharge, 5,910 second-feet May 17, June 10, and 11, 1927, and May 13 and 17–19, 1928 (gage height, 4.8 feet); minimum, that of Dec. 5, 1928; minimum gage height, 0.82 foot Jan. 3, 1926.

REMARKS.—Records excellent except those for Nov. 26 to Mar. 8, which are poor. No regulation or diversions above station. Services of observer furnished by Cyanide Gold Mining Co.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	136	188					325	1,380	2,470	708	174	94
2	166	174	150				315	1,400	2,470	665	174	98
3	188	177		100			305	1,690	2,470	617	170	110
4	177	185					305	1,680	2,380	585	170	110
5	177	185	110			115	305	1,600	2,300	555	159	110
6	174	177					295	1,460	2,210	525	152	110
7	192	174					285	1,360	2,130	518	152	105
8	213	170			90		285	1,310	2,050	497	146	102
9	234	188				124	271	1,300	2,560	464	149	100
10	315	230				143	266	1,310	2,300	439	146	100
11	295	239				159	262	1,480	2,210	415	143	98
12	275	230				162	262	1,880	1,980	391	133	98
13	266	230	130			166	262	2,380	1,870	380	133	98
14	266	221				159	295	2,980	2,380	363	127	96
15	257	217		90		159	336	2,760	2,210	346	122	94
16	252	213				159	346	2,760	2,210	325	119	94
17	285	205				152	358	2,660	2,050	310	119	94
18	290	181				152	358	2,660	1,900	295	117	96
19	271	177				149	397	2,870	1,980	280	114	96
20	252	192				166	458	3,210	1,840	266	110	96
21	239	188				196	525	3,730	1,650	252	107	96
22	234	177			100	200	593	4,180	1,540	243	105	96
23	230	174				188	690	4,500	1,410	230	102	102
24	226	170				185	699	4,500	1,280	221	102	112
25	221	162	110			181	777	3,880	1,150	213	105	110
26	217					185	964	3,340	1,070	205	107	102
27	213			80		196	1,230	2,980	982	200	105	100
28	205	160				290	1,620	2,560	916	192	105	100
29	200				-------	504	1,810	2,380	840	188	100	96
30	196				-------	427	1,600	2,300	759	181	96	96
31	196	-------			-------	363	-------	2,380	-------	177	94	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	315	136	228	0.302	0.35	14,000
November	239	----------	187	.248	.28	11,100
December	----------	----------	122	.162	.19	7,500
January	----------	----------	89.0	.118	.14	5,470
February	----------	----------	94.6	.125	.13	5,250
March	504	----------	183	.242	.28	11,300
April	1,810	262	560	.742	.83	33,300
May	4,500	1,300	2,480	3.28	3.78	152,000
June	2,560	759	1,850	2.45	2.73	110,000
July	708	177	363	.481	.55	22,300
August	174	94	128	.170	.20	7,870
September	112	94	100	.132	.15	5,950
The year	4,500	----------	534	.707	9.61	386,000

COW CREEK NEAR BONNERS FERRY, IDAHO

LOCATION.—Staff gage in SW. ¼ sec. 31, T. 62 N., R. 2 E., at footbridge on Goldbeck ranch 3 miles southeast of Bonners Ferry.

RECORDS AVAILABLE.—May, 1928, to August, 1929, (except winter).

EXTREMES.—Maximum discharge during year, 22 second-feet May 23; minimum, 1.0 second-foot Aug. 27–31.

1928–29: Maximum discharge, 56 second-feet May 23, 1928; minimum, that of Aug. 27–31, 1929.

REMARKS.—Records good except those for May, July, and August, which are fair. No records Oct. 7 to Mar. 16. No regulation or diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Mar.	Apr.	May	June	July	Aug.
1	2.3	-------	2.0	4.4	12	4.7	1.2
2	3.0	-------	2.0	4.3	12	4.6	1.2
3	2.8	-------	1.8	4.6	12	4.4	1.2
4	3.0	-------	1.8	5.2	11	3.3	1.2
5	3.3	-------	1.7	6.1	9.4	2.9	1.2
6	3.0	-------	1.6	5.7	8.2	2.6	1.2
7	-------	-------	1.6	5.2	8.2	2.3	1.1
8	-------	-------	1.7	5.2	8.7	2.1	1.2
9	-------	-------	1.7	5.1	10	1.9	1.4
10	-------	-------	1.8	5.4	9.0	1.7	1.2
11	-------	-------	1.7	5.4	8.7	1.7	1.2
12	-------	-------	1.7	4.9	8.2	1.6	1.2
13	-------	-------	1.7	12	7.1	1.6	1.1
14	-------	-------	2.0	16	11	1.5	1.1
15	-------	-------	2.5	15	7.1	1.4	1.1
16	-------	-------	2.4	16	7.3	1.4	1.1
17	-------	1.6	2.2	17	6.9	1.3	1.2
18	-------	1.7	2.1	17	6.1	1.3	1.1
19	-------	1.6	2.2	18	6.3	1.4	1.1
20	-------	1.7	2.2	19	5.7	1.3	1.1
21	-------	2.1	2.5	20	5.5	1.3	1.1
22	-------	2.1	2.6	21	5.4	1.2	1.1
23	-------	1.8	2.8	22	5.4	1.3	1.1
24	-------	1.7	2.7	21	5.2	1.3	1.1
25	-------	1.6	2.8	19	5.1	1.4	1.1
26	-------	1.6	2.9	17	4.7	1.3	1.1
27	-------	1.7	3.2	14	4.6	1.4	1.0
28	-------	3.1	3.7	13	4.4	1.4	1.0
29	-------	3.7	4.4	10	4.3	1.3	1.0
30	-------	3.7	4.6	11	5.1	1.3	1.0
31	-------	2.2	-------	11	-------	1.2	1.0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October 1–6	3.3	2.3	2.90	35
March 17–31	3.7	1.6	2.13	63
April	4.6	1.6	2.35	140
May	22	4.3	12.0	738
June	12	4.3	7.49	446
July	4.7	1.2	1.92	118
August	1.4	1.0	1.13	69

DEEP CREEK AT MORAVIA, IDAHO

LOCATION.—Staff gage in sec. 18, T. 61 N., R. 1 E., at concrete highway bridge 1 mile below Ruby Creek and 1 mile southwest of Moravia.

DRAINAGE AREA.—133 square miles.

RECORDS AVAILABLE.—May, 1928, to August, 1929 (chiefly summer records).

EXTREMES.—Maximum discharge during year, 390 second-feet May 23 (gage height, 2.05 feet); minimum, 8 second-feet Aug. 17–24 and 28–31 (gage height, 0.98 foot).

1928–29: Maximum discharge, 612 second-feet May 8 and 20, 1928 (gage height, 2.60 feet); minimum, that of Aug. 17–24 and 28–31, 1929.

REMARKS.—Records good. No records Oct. 1 to Mar. 16. Diurnal fluctuations affect flow at high stages. No diversions above station.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Day	Mar.	Apr.	May	June	July	Aug.
1	-------	74	276	218	65	14	16	-------	112	276	164	28	9
2	-------	66	258	254	52	14	17	60	81	267	164	28	8
3	-------	63	276	213	46	14	18	60	81	276	164	28	8
4	-------	60	258	193	46	14	19	60	81	276	155	26	8
5	-------	60	231	184	39	11	20	60	81	321	145	25	8
6	-------	60	227	184	39	11	21	112	129	344	126	25	8
7	-------	60	222	164	39	11	22	74	141	367	104	21	8
8	-------	60	214	164	39	11	23	74	162	390	96	21	8
9	-------	60	214	164	35	11	24	60	162	367	90	19	8
10	-------	54	214	155	35	11	25	63	171	321	81	19	9
11	-------	54	231	136	35	11	26	60	188	231	72	19	9
12	-------	48	276	136	32	9	27	63	231	222	65	16	9
13	-------	48	367	126	32	9	28	205	276	188	65	16	8
14	-------	54	321	126	32	9	29	192	276	196	65	16	8
15	-------	129	276	136	32	9	30	112	276	205	65	16	8
							31	81	-------	223	-------	16	8

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
March 17–31	205	60	89.1	0.670	0.37	2,650
April	276	48	113	.850	.95	6,720
May	390	188	269	2.02	2.33	16,500
June	254	65	139	1.05	1.17	8,270
July	65	16	30.2	.227	.26	1,860
August	14	8	9.7	.073	.08	596
The period						36,600

SNOW CREEK NEAR MORAVIA, IDAHO

LOCATION.—Staff gage in SW. ¼ sec. 1, T. 61 N., R. 1 W., 2 miles northwest of Moravia and 5 miles southwest of Bonners Ferry.

DRAINAGE AREA.—19.5 square miles.

RECORDS AVAILABLE.—May, 1928, to September, 1929 (chiefly summer records).

EXTREMES.—Maximum discharge during year, 269 second-feet May 23 (gage height, 1.82 feet); minimum (estimated), 2 second-feet Sept. 1–15.

1928–29: Maximum discharge, 352 second-feet May 20 and 26, 1928 (gage height, 1.96 feet); minimum, 2 second-feet Sept. 9–12, 16–30, 1928, and Sept. 1–15, 1929.

REMARKS.—Records fair. No records Oct. 1 to Mar. 16. No diversions above station. Discharge interpolated almost every other day from Mar. 17 to Aug. 14; estimated Aug. 15 to Sept. 22 and Sept. 28–30.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	20	54	122	20	5	
2	------	20	55	94	18	5	
3	------	18	55	84	17	4	
4	------	17	55	75	16	4	
5	------	16	53	91	15	4	
6	------	16	51	107	16	4	
7	------	14	50	102	17	4	
8	------	12	49	98	15	4	2
9	------	12	50	100	13	4	
10	------	13	51	89	12	4	
11	------	12	88	77	11	4	
12	------	11	124	65	10	4	
13	------	20	116	82	10	4	
14	------	28	107	98	10	3	
15	------	24	116	86	9		
16	------	21	124	75	9		
17	5	20	136	69	8		
18	6	20	149	63	8		
19	7	22	202	58	7		3
20	8	24	142	53	7		
21	9	26	190	48	7		
22	8	29	230	44	6	3	
23	8	28	269	40	6		4
24	8	30	210	36	6		4
25	8	38	162	34	6		4
26	10	45	128	32	6		4
27	13	62	94	28	5		4
28	29	78	104	24	5		
29	45	66	113	22	5		3
30	32	53	131	21	5		
31	20	------	149	------	5		------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
March 17–31	45	5	14.4	0.738	0.41	428
April	78	11	27.2	1.39	1.55	1,620
May	269	49	116	5.95	6.86	7,130
June	122	21	67.2	3.45	3.85	4,000
July	20	5	10.0	.513	.59	615
August	5	------	3.4	.174	.20	209
September	4	------	2.7	.138	.15	161
The period	------	------	------	------	------	14,200

CARIBOU CREEK NEAR MORAVIA, IDAHO

LOCATION.—Staff gage in NW. ¼ sec. 11, T. 61 N., R. 1 W., 1 mile above road following edge of the valley and 2 miles northwest of Moravia.

DRAINAGE AREA.—14 square miles.

RECORDS AVAILABLE.—May, 1928, to September, 1929 (chiefly summer records).

EXTREMES.—Maximum discharge during year, 143 second-feet May 23; minimum, 1 second-foot July 31 to Aug. 31 and Sept. 6–10.

1928–29: Maximum discharge, 234 second-feet May 20 and 26, 1928; minimum occurred in 1929.

REMARKS.—Records fair. No records Oct. 1 to Mar. 16. Flow at high stages affected by diurnal fluctuations. After July 1 water was diverted above gage. During 1929 records were based on readings obtained on a staff gage three-quarters of a mile below permanent gage.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	19	66	64	14	1	
2	------	18	69	60	10	1	
3	------	18	64	56	9	1	2
4	------	18	60	50	8	1	
5	------	17	58	54	7	1	
6	------	16	52	58	8	1	
7	------	16	51	62	8	1	
8	------	15	50	66	7	1	1
9	------	14	52	66	6	1	
10	------	14	52	55	6	1	
11	------	13	72	48	6	1	2
12	------	12	91	40	6	1	2
13	------	24	84	52	6	1	2
14	------	36	78	63	5	1	2
15	------	28	78	58	5		2
16	------	21	78	53	5		2
17	6	20	80	50	5		2
18	7	20	81	47	4		2
19	8	23	88	42	2		2
20	10	26	91	38	2		2
21	12	30	120	36	2		2
22	11	34	127	33	2	1	2
23	10	38	143	30	2		3
24	10	38	116	27	2		3
25	10	45	88	26	2		3
26	14	52	76	24	2		2
27	18	72	63	22	2		2
28	34	91	63	20	2		
29	49	78	63	18	2		2
30	34	63	66	17	2		
31	20	------	69	------	1		------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March 17–31	49	6	16.9	503
April	91	12	31.0	1,840
May	143	50	77.1	4,740
June	66	17	44.5	2,650
July	14	1	4.8	295
August	----------	----------	1.0	61
September	----------	----------	1.9	113
The period	----------	----------	----------	10,200

MYRTLE CREEK NEAR BONNERS FERRY, IDAHO

LOCATION.—Staff gage in sec. 23, T. 62 N., R. 1 W., 80 feet upstream from power plant of Bonners Ferry Light & Water Co. and 5½ miles west of Bonners Ferry.

DRAINAGE AREA.—37 square miles.

RECORDS AVAILABLE.—May, 1928, to September, 1929 (chiefly summer records).

EXTREMES.—Maximum discharge during year, 725 second-feet May 21 and 23 (gage height, 3.85 feet); minimum, 0.4 second-foot Sept. 6–22 and 30.

1928–29: Maximum discharge, 830 second-feet May 21 and 24–27, 1928 (gage height, 4.0 feet); minimum, that of Sept. 1929.

REMARKS.—Records good. No records obtained Oct. 1 to Mar. 16. Flow diverted above gage at diversion dam of Bonners Ferry Light & Water Co. for power-plant use not included in tables of discharge. (See footnote.)

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	29	86	266	51	11	5.4
2	------	32	88	220	48	11	4.4
3	------	23	100	179	43	11	1.6
4	------	21	97	179	42	10	2.3
5	------	20	95	206	39	9.5	1.4
6	------	18	90	192	35	9.5	.4
7	------	17	97	220	34	8.9	.4
8	------	17	93	206	33	9.2	.4
9	------	17	86	282	32	9.5	.4
10	------	16	90	250	31	8.9	.4
11	------	16	116	220	29	6.9	.4
12	------	16	179	147	27	8.1	.4
13	------	16	235	166	26	7.3	.4
14	------	22	266	373	25	4.8	.4
15	------	23	220	266	23	4.4	.4
16	------	25	266	235	21	6.7	.4
17	6.7	27	266	192	20	6.7	.4
18	7.3	29	299	156	20	6.7	.4
19	8.4	32	334	152	19	6.3	.4
20	10	35	353	138	18	6.5	.4
21	12	40	525	124	16	6.7	.4
22	10	46	525	120	16	6.3	.4
23	10	48	548	108	15	6.3	2.8
24	12	45	480	97	15	6.3	2.8
25	11	52	250	88	14	3.5	2.2
26	12	71	250	80	14	6.3	.9
27	12	92	250	76	13	6.3	.7
28	55	138	220	71	13	5.8	.6
29	70	144	220	60	13	5.8	.5
30	37	90	250	58	12	5.4	.4
31	33	------	282	------	11	5.4	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
March 17–31	70	6.7	20.4	0.551	0.31	607
April	144	16	40.6	1.10	1.23	2,420
May	548	86	234	6.32	7.29	14,400
June	373	58	171	4.62	5.16	10,200
July	51	11	24.8	.670	.772	1,520
August	11	4.4	7.32	------	------	450
September	5.4	.4	1.09	------	------	64.9
The period	------	------	------	------	------	29,700

NOTE.—There was a discharge through power plant and around gage on Aug. 11, 14, 15, 25, and Sept. 2–30, amounting to 18 acre-feet in August and 263 acre-feet in September.

BALL CREEK NEAR BONNERS FERRY, IDAHO

LOCATION.—Staff gage in SW. ¼ sec. 24, T. 63 N., R. 1 W. Boise meridian, three-fourths of a mile above mouth of creek and 8.2 miles northwest of Bonners Ferry.

DRAINAGE AREA.—27 square miles.

RECORDS AVAILABLE.—May, 1928, to August, 1929 (chiefly summer records).

EXTREMES.—Maximum discharge during year, 393 second-feet May 22 and 23 (gage height, 3.90 feet); minimum, 4 second-feet Oct. 1 and Aug. 21–31 (minimum gage height, 1.97 feet Aug. 31).

1928–29: Maximum discharge, 418 second-feet May 21 and 26; minimum, 4 second-feet Sept. 13, Sept. 22 to Oct. 1, 1928, and Aug. 20–31, 1929.

REMARKS.—Records good except those for May, which are fair, and for August, which are poor, owing to variable seepage losses in vicinity of gage. No records obtained Oct. 3 to Mar. 16. Diversions for irrigation above station negligible.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Mar.	Apr.	May	June	July	Aug.
1	4	------	9	41	177	36	6
2	15	------	8	43	155	32	6
3	------	------	7	49	134	31	6
4	------	------	7	48	134	29	6
5	------	------	6	46	134	27	6
6	------	------	6	43	132	25	6
7	------	------	6	41	139	26	6
8	------	------	6	40	139	22	6
9	------	------	6	41	196	21	6
10	------	------	6	42	152	19	6
11	------	------	6	54	129	17	6
12	------	------	6	98	124	17	5
13	------	------	6	139	124	15	5
14	------	------	7	147	210	14	5
15	------	------	7	137	142	14	5
16	------	------	8	147	137	13	5
17	------	5	8	152	127	12	5
18	------	5	9	160	119	12	5
19	------	5	10	182	122	11	5
20	------	5	11	254	107	11	4
21	------	5	12	299	91	10	4
22	------	5	13	330	80	9	4
23	------	5	14	361	72	9	4
24	------	5	14	314	64	9	4
25	------	5	15	239	59	9	4
26	------	5	23	171	54	9	4
27	------	6	42	145	49	8	4
28	------	13	68	134	46	8	4
29	------	14	59	150	42	8	4
30	------	14	43	168	38	7	4
31	------	13	------	196	------	7	4

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October 1-2	15	4	9.5	0.352	0.03	37
March 17-31	14	5	7.3	.270	.15	217
April	68	6	14.9	.552	.62	887
May	361	40	142	5.26	6.06	8,730
June	210	38	114	4.22	4.7[illegible]	6,780
July	36	7	16.0	.593	.68	984
August	6	4	5.0	.185	.2[illegible]	307

TROUT CREEK NEAR COPELAND, IDAHO

LOCATION.—Staff gage in NE. ¼ sec. 10, T. 63 N., R. 1 W. Boise meridian, 2¼ miles above mouth of creek and 5½ miles southwest of Copeland.

DRAINAGE AREA.—20 square miles.

RECORDS AVAILABLE.—May, 1928, to August, 1929 (summer records).

EXTREMES.—Maximum discharge during year (estimated), 270 second-feet May 23; minimum, 5 second-feet Aug. 1–3.

1928–29: Maximum discharge, that of May 23, 1929; minimum, 2 second-feet Sept. 19–30, 1928.

REMARKS.—Records fair. No records Oct. 1 to Apr. 26 and Aug. 4–31. No diversions above station.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Day	Apr.	May	June	July	Aug.
1	------	*51	131	*26	*5	16	------	113	89	12	------
2	------	52	113	24	*5	17	------	153	76	*11	------
3	------	*50	97	23	5	18	------	150	68	*10	------
4	------	*47	83	*22	------	19	------	182	73	*10	------
5	------	45	*80	*21	------	20	------	*195	*68	*9	------
6	------	42	76	20	------	21	------	*208	63	8	------
7	------	*41	73	*22	------	22	------	221	56	*8	------
8	------	*40	65	19	------	23	------	*270	50	*8	------
9	------	39	104	*18	------	24	------	201	47	*7	------
10	------	44	83	17	------	25	------	188	*44	*7	------
11	------	63	70	*16	------	26	------	170	41	*7	------
12	------	122	65	*15	------	27	47	136	36	*6	------
13	------	108	*76	*14	------	28	*70	108	33	6	------
14	------	*110	86	*13	------	29	*60	*119	31	*6	------
15	------	*111	93	12	------	30	*50	*131	*29	*6	------
						31	------	142	------	*6	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
April 27–30	------	------	56.8	2.84	0.42	451
May	270	39	118	5.90	6.80	7,260
June	131	29	70.0	3.50	3.90	4,170
July	26	6	13.2	.660	.76	812
August 1–3	------	------	5.0	.250	.03	30
The period	------	------	------	------	------	12,700

* Estimated.

MISSION CREEK AT COPELAND, IDAHO

LOCATION.—Staff gage in SE. ¼ sec. 18, T. 64 N., R. 1 E., 400 feet upstream from Kootenai Valley Railroad trestle and 0.8 mile south of Copeland.

DRAINAGE AREA.—31 square miles.

RECORDS AVAILABLE.—May, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 192 second-feet May 14 (gage height, 2.21 feet); minimum, 3.1 second-feet Sept. 1 and 15-18 (gage height, 0.65 foot).

1928–29: Maximum discharge, 256 second-feet May 12, 1928 (gage height, 3.35 feet); minimum, that of September, 1929.

REMARKS.—Records good. No records obtained Oct. 4 to Mar. 16. No regulation or diversions above station except where Round Prairie Creek, which flows into Moyie River Basin, taps Mission Creek at divide 5 miles above gage and diverts a variable flow dependent upon amount of drift that collects at junction of these creeks.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9	-------	9.5	83	82	29	6.0	3.1
2	11	-------	7.7	89	89	26	6.0	3.3
3	11	-------	8.9	104	98	25	5.5	4.0
4	-------	-------	8.6	91	89	23	5.5	3.6
5	-------	-------	8.9	91	82	21	5.0	3.6
6	-------	-------	8.3	80	78	20	5.0	3.8
7	-------	-------	8.6	72	78	20	5.0	3.6
8	-------	-------	9.5	72	78	18	5.0	3.6
9	-------	-------	7.7	75	96	17	5.0	3.6
10	-------	-------	8.9	78	85	16	5.0	3.6
11	-------	-------	8.3	96	82	15	4.5	3.5
12	-------	-------	8.3	117	75	15	4.2	3.5
13	-------	-------	8.3	149	78	14	4.0	3.3
14	-------	-------	11	179	96	13	4.0	3.3
15	-------	-------	13	144	89	12	4.0	3.1
16	-------	-------	13	139	100	11	4.0	3.1
17	-------	4.5	12	130	85	11	3.8	3.1
18	-------	4.5	12	126	98	10	3.8	3.1
19	-------	4.5	15	139	96	10	3.8	3.3
20	-------	5.0	20	139	85	9.8	3.6	3.3
21	-------	6.0	23	149	78	9.5	3.6	3.3
22	-------	6.0	28	156	72	8.9	3.6	3.3
23	-------	5.5	38	158	62	8.3	3.6	4.5
24	-------	5.5	45	151	58	7.7	3.6	7.7
25	-------	5.5	52	124	54	7.7	3.6	5.0
26	-------	5.5	72	92	49	7.1	3.6	4.0
27	-------	5.8	83	78	45	7.1	3.6	3.8
28	-------	12	111	78	40	6.8	3.5	3.6
29	-------	16	117	78	36	6.5	3.3	3.6
30	-------	12	96	73	34	6.2	3.3	3.6
31	-------	10	-------	68	-------	6.0	3.3	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October 1-3	11	9	10.3	59.5
March 17-31	16	4.5	7.22	215
April	117	7.7	29.1	1,730
May	179	68	110	6,760
June	100	34	75.6	4,500
July	29	6.0	13.5	830
August	6.0	3.3	4.24	261
September	7.7	3.1	3.69	220

ROCK CREEK NEAR COPELAND, IDAHO

LOCATION.—Staff gage in NW. ¼ sec. 5, T. 63 N., R. 1 E., at trestle on Kootenai Valley Branch of Great Northern Railway and 4.7 miles south of Copeland.

DRAINAGE AREA.—14.3 square miles.

RECORDS AVAILABLE.—May, 1928, to July, 1929 (chiefly summer records).

EXTREMES.—Maximum discharge during year, 37 second-feet Apr. 27 (gage height, 1.93 feet); minimum, 0.3 second-foot July 16 (gage height, 0.79 foot).

1928–29: Maximum discharge, that of Apr. 27, 1929; minimum, 0.2 second-foot Aug. 20, 1928 (gage height, 0.78 foot).

REMARKS.—Records fair. No records obtained Oct. 1 to Mar. 16 and July 17–31. Discharge estimated July 1–15. No diversions above station.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Day	Mar.	Apr.	May	June	July
1	------	4.0	15	3.1	1.0	16	------	8.0	8.0	12	0.3
2	------	1.9	15	3.6		17	0.7	8.0	6.0	13	------
3	------	3.4	15	4.0		18	.7	8.5	4.9	14	------
4	------	4.5	16	4.9		19	1.9	9.2	4.9	11	------
5	------	4.5	16	3.4		20	2.5	13	4.7	8.0	------
6	------	3.4	15	3.4		21	6.3	15	3.5	6.0	------
7	------	3.4	15	2.8		22	2.8	15	3.4	4.9	------
8	------	3.4	14	3.4		23	1.9	20	1.4	4.5	------
9	------	2.3	11	6.3		24	1.9	34	1.4	4.0	------
10	------	2.8	11	6.3		25	1.9	25	.7	4.0	------
11	------	2.8	9.9	6.8		26	1.9	29	.7	.7	------
12	------	3.4	8.5	6.8		27	2.6	37	.7	3.4	------
13	------	6.3	9.2	7.4		28	4.0	34	.7	1.9	------
14	------	6.8	9.2	8.0		29	9.5	20	.4	1.9	------
15	------	7.4	8.0	8.8		30	9.2	19	1.9	1.5	------
						31	3.4	------	1.9	------	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
March 17–31	9.5	0.[illegible]	3.41	0.238	0.13	101
April	37	1.9	11.8	.825	.92	702
May	16	.4	7.52	.526	.61	462
June	14	.7	5.66	.396	.44	337
July 1–16	------	------	.956	.067	.04	30
The period	------	------	------	------	------	1,630

BRUSH CREEK NEAR COPELAND, IDAHO

LOCATION.—Staff gage in SE. ¼ sec. 19, T. 64 N., R. 1 E., at wooden bridge on valley road paralleling the Kootenai Valley branch of Great Northern Railway 1.8 miles south of Copeland.

DRAINAGE AREA.—7.2 square miles.

RECORDS AVAILABLE.—May, 1928, to July, 1929 (chiefly summer records).

EXTREMES.—Maximum discharge during year, 28 second-feet May 1 (gage height, 2.04 feet); channel dry on June 2.

1928–29: Maximum and minimum discharge occurred in 1929.

REMARKS.—Records poor. No records obtained Oct. 1 to Mar. 30. Discharge estimated Apr. 25–28, May 12–14, 16, 18–29, 31, June 1, and June 30 to July 15. A small amount of water is diverted for irrigation from Brush Lake, about 2 miles above gage; some regulation at outlet of Brush Lake.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Day	Mar.	Apr.	May	June	July
1	------	7.1	28	0.1		16	------	4.8	0.4	6.7	0.5
2	------	6.4	22	0		17	------	9.6	.4	8.7	------
3	------	6.4	18	1.4		18	------	9.6		5.6	------
4	------	7.1	17	1.6		19	------	11.7		5.6	------
5	------	7.1	17	1.6	1.0	20	------	9.6		5.0	------
6	------	5.3	16	1.4		21	------	11.7		3.9	------
7	------	5.3	14	1.0		22	------	11.7		3.0	------
8	------	5.8	14	1.4		23	------	2.8		2.2	------
9	------	7.1	13	1.9		24	------	.6	.5	2.2	------
10	------	2.8	13	1.6		25	------	.5		2.2	------
11	------	2.8	9.6	1.6		26	------	.5		1.4	------
12	------	2.8	.3	1.6	.5	27	------	.5		1.9	------
13	------	3.2	.3	1.6		28	------	1.0		1.6	------
14	------	3.2	.3	3.9		29	------	2.8		1.6	------
15	------	3.2	.3	4.5		30	------	2.8	.9	1.5	------
						31	7.1	------	.5	------	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
March 31	7.1	7.1	7.10	0.986	0.0[illegible]	14
April	11.7	----------	5.19	.721	.8[illegible]	309
May	28	----------	6.16	.856	.9[illegible]	379
June	8.7	0	2.61	.362	.4[illegible]	155
July 1–16	----------	----------	.75	.104	.0[illegible]	24
The period	----------	----------	----------	----------	----------	881

PARKER CREEK NEAR COPELAND, IDAHO

LOCATION.—Staff gage in SW. ¼ sec. 8, T. 64 N., R. 1 W. Boise meridian, at Forest Service bridge 4¼ miles west of Copeland.

DRAINAGE AREA.—16.5 square miles.

RECORDS AVAILABLE.—May, 1928, to September, 1929 (summer records).

EXTREMES.—Maximum discharge during year (estimated), 150 second-feet May 19–24; minimum (estimated), 2 second-feet Aug. 7 to Sept. 30.

1928–29: Maximum discharge, 162 second-feet May 24, 1928 (gage height, 1.65 feet); minimum, that of Aug. 7 to Sept. 30, 1929.

REMARKS.—Records poor. No records obtained Oct. 1 to Mar. 31. No diversions above station. Discharge determined from gage readings made on Apr. 27, May 13, 18, 29, 30, June 7, 8, 10–13, 15, 17, 21, 28, 29, July 11, 12, and Aug. 3; others estimated by comparison with flow of Long Canyon Creek, Smith Creek, and other near-by creeks.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.
1				19	3	
2				18	3	
3				17	3	
4			80	16		
5		40		15	3	
6				15		
7			70	14		
8			70	13		
9			70	12		
10			70	11		
11	5	60	59	10		
12			53	9		
13		87	59	9		
14			90	9		
15		70	76	8		
16			70	8		
17			59	8		
18		87		7		
19			50	7	2	
20				7		
21		150	41	6		
22			38	6		
23			36	6		
24	15		33	6		
25			30	5		
26		80	27	5		
27	52		25	5		
28			22	4		
29	80	76	21	4		
30		81	20	4		
31	------	95	------	4		------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
April	------	------	16.1	0.976	1.09	958
May	------	------	78.9	4.78	5.51	4,850
June	90	20	55.6	3.37	3.76	3,310
July	19	4	9.26	.561	.65	569
August	3	------	2.2	.133	.15	135
September	------	------	2.0	.121	.14	119
The period	------	------	------	------	------	9,940

LONG CANYON CREEK NEAR PORT HILL, IDAHO

LOCATION.—Staff gage in NW. ¼ sec. 36, T. 65 N., R. 2 W., on Forest Service bridge at mouth of canyon, 4 miles southwest of Port Hill.

DRAINAGE AREA.—29 square miles.

RECORDS AVAILABLE.—May, 1928, to September, 1929 (summer records).

EXTREMES.—Maximum discharge during year, 580 second-feet May 23 (gage height, 3.00 feet); minimum (estimated), 5 second-feet Sept. 13–21.

1928–29: Maximum and minimum discharges occurred in 1929.

REMARKS.—Records fair. No records obtained Oct. 1 to Mar. 31. Discharge determined from actual gage readings Apr. 5, 10, 17, 25, May 13, 18, 23, 24, 29, 30, June 7, 8, 10–15, 17, 19, 21, 28, 29, July 11, 12, 17, Aug. 2 and 26; others estimated by comparison with flow of Smith Creek, Boundary Creek, and other near-by creeks. No diversions above gage.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.
1	12	50	225	65	13	6
2				62	12	
3				59	12	
4				56	12	
5	9		175	53	12	
6	9			50	12	
7	8		176	47	12	
8	8		166	44	11	
9	7		174	41	11	
10	7		182	38	11	
11	8	100	163	35	11	
12	9		141	32	10	
13	10	195	163	30	10	5
14	11	203	258	29	10	
15	12	211	189	27	10	
16	13	218	170	26	10	
17	14	226	150	24	9	
18	16	234	148	23	9	
19	18	303	145	22	9	
20	20	372	136	22	9	
21	22	442	127	21	9	8
22	24	511	118	20	8	
23	26	580	110	20	8	
24	28	348	101	19	8	
25	30	250	92	18	8	
26	100	200	83	17	8	6
27			75	16	7	
28			66	16		
29		202	71	15		
30		195	68	14		
31	------	250	------	14		------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
April	------	7	28.6	0.986	1.10	1,700
May	580	------	195	6.72	7.75	12,000
June	258	66	149	5.14	5.74	8,870
July	65	14	31.5	1.09	1.26	1,940
August	13	------	9.65	.333	.38	593
September	------	------	6.10	.210	.23	363
The period	------	------	------	------	------	25,500

SMITH CREEK NEAR PORT HILL, IDAHO

LOCATION.—Water-stage recorder in NE. ¼ sec. 26, T. 65 N., R. 2 W., at Forest Service bridge 1 mile south of Smith Creek ranger station and 4 miles southwest of Port Hill.

DRAINAGE AREA.—70 square miles.

RECORDS AVAILABLE.—May, 1928, to September, 1929 (chiefly summer records).

EXTREMES.—Maximum discharge during year, 1,480 second-feet May 22 (gage height, 5.35 feet); minimum, 5.5 second-feet Sept. 15–18 (gage height, 0.80 foot).

1928–29: Maximum and minimum discharges occurred in 1929.

REMARKS.—Records good except those for Mar. 17 to Apr. 4, Apr. 6–9, 11–14, 16, May 2–6, Aug. 24–26, and Sept. 20–30, which were estimated. No records obtained Oct. 1 to Mar. 15. Prior to Apr. 20 records were collected from staff gage 40 feet below present water-stage recorder site and at a datum 2.67 feet lower. No diversions above gage.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	60	255	708	107	16	6.3
2	------		325	591	98	17	6.7
3	------			500	90	17	8.1
4	------		275	495	84	15	7.8
5	------	47	250	532	79	14	7.1
6	------	45		532	75	13	6.9
7	------	43	227	561	77	13	6.7
8	------	41	239	537	68	12	6.7
9	------	39	249	714	64	12	6.7
10	------	37	263	518	58	12	6.5
11	------	37	373	439	55	12	6.5
12	------	38	596	359	50	11	6.3
13	------	38	800	384	48	10	5.9
14	------	39	800	771	45	9.6	5.7
15	------	39	632	527	42	9.3	5.5
16	19	42	692	542	38	9.3	5.5
17		46	686	411	36	9.0	5.5
18		51	742	392	34	9.0	5.5
19		57	890	427	33	8.7	5.7
20		68	1,010	342	31	8.4	6.0
21		83	1,140	294	29	8.1	
22	20	97	1,240	263	28	7.8	
23		105	1,240	234	26	7.5	10
24		102	1,140	211	25	9.0	
25		128	771	192	23		
26		196	561	173	21		
27		313	486	157	20	8.4	7.0
28		464	473	142	20	7.8	
29		407	532	129	19	7.3	
30	100	286	591	116	17	6.9	
31		------	736	------	17	6.5	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
March 16–31	------	------	39.9	0.570	0.34	1,270
April	464	37	104	1.49	1.66	6,190
May	1,240	------	606	8.66	9.98	37,300
June	771	116	406	5.80	6.47	24,200
July	107	17	47.0	.671	.77	2,890
August	17	6.5	10.5	.150	.17	646
September	------	5.5	6.82	.097	.11	406
The period	------	------	------	------	------	72,900

BOUNDARY CREEK NEAR PORT HILL, IDAHO

LOCATION.—Water-stage recorder in SW. ¼ sec. 11, T. 65 N., R. 2 W. Boise meridian, 140 feet below bridge at mouth of canyon, one-fifth mile south of the international boundary, and 3 miles west of Port Hill.

DRAINAGE AREA.—97 square miles.

RECORDS AVAILABLE.—May, 1928, to September, 1929 (summer records). Prior to March, 1929, records were collected at staff-gage site 140 feet upstream.

EXTREMES.—Maximum discharge during year, 1,300 second-feet May 23 (gage height, 4.02 feet); minimum, 14 second-feet Sept. 13–21; minimum gage height, 0.53 foot Sept. 15–21.

1928–29: Maximum discharge, 1,600 second-feet May 20, 1928 (gage height, about 4.4 feet present gage or 5.2 feet former gage); minimum, that of Sept. 13–21, 1929.

REMARKS.—Records good. No records Oct. 1 to Mar. 14 and Mar. 16 to Apr. 17. Discharge estimated Apr. 19–23, May 20–22, and Aug. 8. No diversions above gage.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	------	196	711	116	25	15
2	------	------	231	604	109	24	15
3	------	------	292	522	103	28	17
4	------	------	250	502	96	25	16
5	------	------	231	532	92	23	16
6	------	------	211	522	86	23	15
7	------	------	208	562	84	22	15
8	------	------	208	537	81	22	15
9	------	------	228	662	73	23	15
10	------	------	244	527	69	22	15
11	------	------	322	474	63	22	15
12	------	------	459	396	61	20	15
13	------	------	667	392	57	20	14
14	------	------	778	522	55	20	14
15	20	------	598	427	51	19	14
16	------	------	625	474	48	18	14
17	------	------	619	396	44	18	14
18	------	32	651	383	42	18	14
19	------	44	750	418	41	18	14
20	------	56	832	354	39	17	14
21	------	68	915	310	38	16	14
22	------	80	998	274	36	16	15
23	------	92	1,080	244	34	16	19
24	------	104	1,020	222	33	18	20
25	------	113	806	202	32	17	18
26	------	170	614	183	29	17	18
27	------	222	522	167	29	18	16
28	------	295	474	150	28	16	16
29	------	292	512	138	27	16	15
30	------	216	567	127	26	15	15
31	------	------	689	------	25	15	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 18–30	295	32	137	3,530
May	1,080	196	542	33,300
June	711	127	398	23,700
July	116	25	56.4	3,470
August	28	15	19.6	1,210
September	20	14	15.4	916
The period	------	------	------	67,100

CLARK FORK BASIN

CLARK FORK ABOVE MISSOULA, MONT.

LOCATION.—Water-stage recorder in SE. ¼ sec. 19, T. 13 N., R. 18 W., 1½ miles below mouth of Blackfoot River and 4 miles east of Missoula.

RECORDS AVAILABLE.—March to September, 1929.

EXTREMES.—Maximum discharge, 10,600 second-feet May 28 (gage height, 7.08 feet); minimum, 808 second-feet Sept. 2 (gage height, 1.98 feet).

REMARKS.—Records good except those for estimated periods (May 22–27, June 23–27, July 7–18, Aug. 5, 19–23, 25, Aug. 27 to Sept. 1, Sept. 3, 4, 7–10, and 15), which are fair. Several small diversions for irrigation.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	2,290	3,860	7,560	3,770	1,210	821
2	------	2,080	3,430	9,170	3,350	1,330	808
3	------	2,360	3,860	9,730	3,190	1,400	850
4	------	2,880	3,770	8,620	3,030	1,950	892
5	------	2,880	3,680	7,820	2,950	1,540	934
6	------	2,580	3,520	7,560	2,880	1,140	897
7	------	2,290	3,030	8,080	2,800	1,120	916
8	------	2,080	3,350	8,890	2,720	1,060	934
9	------	2,290	3,430	9,450	2,640	1,040	953
10	------	1,760	3,190	9,730	2,570	962	972
11	------	1,880	3,270	9,730	2,490	991	991
12	------	1,760	3,860	9,730	2,410	1,050	924
13	------	1,760	3,940	9,450	2,330	944	944
14	------	1,820	4,760	9,450	2,260	1,090	897
15	------	1,950	5,680	8,890	2,180	1,090	948
16	1,880	2,220	5,060	8,890	2,100	1,160	1,000
17	1,820	2,880	5,470	9,450	2,020	962	934
18	1,880	2,800	5,900	9,170	1,940	962	1,040
19	1,880	2,720	6,350	8,350	1,880	947	953
20	1,950	2,800	7,060	7,560	1,880	931	843
21	2,150	3,030	7,560	6,580	1,820	916	953
22	2,080	3,190	7,870	6,120	1,880	900	1,090
23	1,950	3,110	8,180	5,770	1,880	885	982
24	1,880	2,880	8,490	5,420	1,820	870	1,040
25	1,760	2,800	8,800	5,080	1,690	884	982
26	1,630	2,650	9,110	4,730	1,570	897	1,010
27	2,080	3,030	9,420	4,380	1,450	884	1,010
28	2,290	3,350	9,730	4,030	1,450	872	1,190
29	4,670	3,770	8,620	4,210	1,510	859	1,290
30	3,680	3,600	7,560	3,860	1,410	847	1,080
31	2,880	------	7,310	------	1,320	834	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March 16–31	4,670	1,630	2,280	72,400
April	3,770	1,760	2,580	154,000
May	9,730	3,030	5,780	355,000
June	9,730	3,860	7,580	451,000
July	3,770	1,320	2,230	137,000
August	1,950	834	1,050	64,600
September	1,290	808	969	57,700
The year	----------	----------	----------	1,290,000

CLARK FORK AT ST. REGIS, MONT.

LOCATION.—Staff gage in sec. 19, T. 18 N., R. 27 W., at St. Regis, half a mile below mouth of St. Regis River.

DRAINAGE AREA.—10,500 square miles.

RECORDS AVAILABLE.—October, 1910, to September, 1923; February to September, 1929.

EXTREMES.—Maximum discharge during year, 31,700 second-feet May 26 (gage height, 13.5 feet); minimum, 1,050 second-feet Feb. 19–22.

1910–1923 and 1929: Maximum discharge, 62,800 second-feet May 30 and 31, 1913 (gage height, 19.1 feet); minimum, that of Feb. 19–22, 1929.

REMARKS.—Records good except those for Feb. 18 to Mar. 8, which are fair. Numerous diversions from tributaries above station.

Daily and monthly discharge, in second-feet, 1929

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	1,580	3,170	8,450	17,300	11,400	2,880	1,880
2	------	1,680	2,610	8,700	18,000	10,500	2,880	1,970
3	------	2,220	2,380	8,200	18,000	9,700	2,880	1,880
4	------	2,100	2,610	8,450	18,400	8,700	2,880	1,880
5	------	2,100	2,880	8,450	18,000	8,200	2,880	1,880
6	------	2,340	2,880	8,200	18,000	8,200	2,880	1,780
7	------	2,100	2,610	7,240	19,500	7,480	2,880	1,780
8	------	2,100	2,380	7,720	21,400	7,240	2,740	1,780
9	------	2,170	2,380	7,720	23,400	7,000	2,740	1,880
10	------	2,170	2,270	7,720	22,600	6,780	2,740	1,880
11	------	2,270	2,170	7,720	23,400	6,780	2,740	1,970
12	------	3,170	2,170	7,960	23,400	6,120	2,610	1,970
13	------	2,740	2,170	9,700	22,600	5,680	2,610	1,970
14	------	2,380	2,170	10,800	22,200	5,240	2,270	1,880
15	------	2,380	2,170	12,300	21,400	4,230	2,210	1,880
16	------	2,270	2,270	12,900	21,800	4,230	2,150	1,970
17	------	2,170	2,490	13,200	22,200	4,230	2,090	1,970
18	1,120	2,170	3,170	13,200	21,000	4,420	2,030	1,970
19	1,050	2,170	3,170	13,800	20,300	4,620	1,970	1,970
20	1,050	2,380	3,330	15,900	19,200	4,420	1,970	1,880
21	1,050	2,380	5,460	17,700	18,000	4,230	1,880	1,880
22	1,050	2,270	5,680	20,600	17,000	3,850	1,970	1,880
23	1,200	2,220	5,030	24,200	14,800	3,850	2,070	1,970
24	1,120	2,170	4,230	28,000	14,200	3,670	1,970	1,970
25	1,120	2,070	4,040	29,300	13,800	3,500	2,170	1,970
26	1,300	1,970	4,040	30,200	13,200	3,330	1,970	1,970
27	1,540	1,970	4,620	25,000	12,900	3,330	1,880	2,070
28	1,680	2,170	5,030	21,400	12,300	3,330	1,880	2,070
29	------	2,610	5,900	19,200	12,000	3,170	1,970	1,970
30	------	4,420	6,340	17,300	11,700	3,170	1,970	1,970
31	------	3,170	------	16,600	--------	3,020	1,970	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
February 18–28	1,680	1,050	1,21[illegible]	26,400
March	4,420	1,560	2,3[illegible]	143,000
April	6,340	2,170	3,3[illegible]	202,000
May	30,200	7,240	14,4[illegible]	885,000
June	23,400	11,700	18,4[illegible]	1,090,000
July	11,400	3,020	5,6[illegible]	344,000
August	2,880	1,880	2,350	144,000
September	2,070	1,780	1,9[illegible]	114,000
The period	----------	----------	----------	2,950,000

CLARK FORK NEAR PLAINS, MONT.

LOCATION.—Water-stage recorder on lot 7, sec. 7, T. 19 N., R. 26 W., 3 miles above Plains and 7 miles below mouth of Flathead River.

DRAINAGE AREA.—19,900 square miles.

RECORDS AVAILABLE.—October, 1910, to September, 1929.

EXTREMES.—Maximum discharge during year, about 67,400 second-feet June 11 (gage height, 12.95 feet); minimum (estimated), 4,370 second-feet Feb. 7 1910–1929: Maximum discharge, 126,000 second-feet May 28, 1928; minimum, that of Feb. 7, 1929.

REMARKS.—Records good except those for Oct. 1–19, Nov. 21 to Mar. 11, Mar. 13, 14, May 11–21, and July 21 to Aug. 6, which are fair. Numerous diversions for irrigation above station. Flow somewhat regulated by natural storage in Flathead Lake.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8,770	9,120	8,300	6,470	4,750	5,690	7,810	15,000	55,200	39,800	13,200	6,640
2	8,670	8,900	8,210	6,470	4,750	5,790	7,200	16,100	57,000	38,200	12,900	6,640
3	8,740	8,900	8,110	6,140	4,750	5,890	6,820	16,100	59,800	36,000	12,500	6,470
4	8,800	8,670	8,020	5,990	4,750	5,990	6,820	17,200	59,800	35,200	12,200	6,470
5	8,870	8,670	7,960	5,990	4,620	6,140	7,200	17,800	58,800	33,700	11,800	6,300
6	8,930	8,670	7,900	5,990	4,490	6,300	7,810	18,400	57,900	32,300	11,500	6,300
7	8,990	8,450	7,840	5,990	4,370	6,300	7,600	18,400	58,800	30,800	11,200	6,300
8	9,060	8,450	7,780	5,840	4,420	6,470	7,200	18,400	61,600	30,100	11,000	6,300
9	9,120	8,450	7,720	5,990	4,460	6,640	7,010	18,400	63,500	29,400	10,500	6,140
10	9,190	8,450	7,660	5,690	4,500	7,010	7,200	18,900	65,400	28,000	10,300	5,990
11	9,250	8,450	7,600	5,840	4,550	7,010	6,820	20,400	66,400	27,400	10,000	5,990
12	9,320	8,450	7,570	5,840	4,650	7,010	6,820	21,900	66,400	26,700	9,580	5,990
13	9,380	8,450	7,540	5,990	4,750	6,890	6,640	23,400	65,400	26,000	9,350	5,840
14	9,450	8,450	7,510	5,840	4,860	6,760	6,640	25,000	65,400	25,300	9,120	5,840
15	9,510	8,450	7,480	5,690	4,960	6,640	6,640	26,500	65,400	24,700	9,120	5,690
16	9,580	8,670	7,460	5,560	4,980	6,470	6,640	28,000	65,400	23,300	8,670	5,690
17	9,470	8,670	7,430	5,560	5,000	6,300	7,010	30,800	64,400	22,700	8,450	5,690
18	9,350	8,670	7,400	5,560	5,100	6,300	7,400	33,600	63,500	22,000	8,230	5,690
19	9,240	8,670	7,200	5,510	5,200	6,300	8,230	36,300	62,600	21,400	8,230	5,560
20	9,120	8,670	7,200	5,460	5,300	6,300	8,230	39,100	58,800	20,100	7,810	5,420
21	9,350	8,230	7,200	5,420	5,360	6,300	8,670	41,900	57,000	19,400	8,020	5,420
22	9,580	8,300	7,010	5,240	5,420	6,640	9,120	44,700	54,300	18,600	7,810	5,420
23	9,580	8,370	7,010	5,070	5,460	6,640	9,810	50,800	51,600	17,900	7,600	5,420
24	9,580	8,450	7,010	4,810	5,510	6,470	10,500	57,000	49,900	17,200	7,600	5,420
25	9,580	8,520	6,820	4,550	5,560	6,140	10,500	61,600	48,100	16,700	7,400	5,420
26	9,350	8,590	6,640	4,580	5,560	5,990	10,500	64,400	46,400	16,200	7,400	5,560
27	9,350	8,670	6,640	4,610	5,560	5,990	10,700	64,400	44,700	15,600	7,200	5,690
28	9,350	8,580	6,640	4,650	5,560	5,990	11,700	60,700	43,900	15,100	7,200	5,690
29	9,580	8,480	6,640	4,560	------	6,640	13,000	58,800	42,200	14,600	7,010	5,690
30	9,350	8,390	6,640	4,460	------	7,810	14,500	56,100	40,600	14,000	7,010	5,560
31	9,120	------	6,640	4,550	------	8,230	------	55,200	------	13,500	6,820	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	9,580	8,670	9,240	568,000
November	9,120	8,230	8,560	509,000
December	8,300	6,640	7,380	454,000
January	6,470	4,460	5,480	337,000
February	5,560	4,370	4,970	276,000
March	8,230	5,690	6,490	399,000
April	14,500	6,640	8,420	501,000
May	64,400	15,000	34,700	2,130,000
June	66,400	40,600	57,300	3,410,000
July	39,800	13,500	24,300	1,490,000
August	13,200	6,820	9,250	569,000
September	6,640	5,420	5,870	349,000
The year	66,400	4,370	15,200	11,000,000

CLARK FORK NEAR HERON, MONT.

LOCATION.—Water-stage recorder in sec. 28, T. 27 N., R. 34 W. Montana meridian, 600 feet above Dead Horse Creek and 1½ miles northwest of Heron.

RECORDS AVAILABLE.—September, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period, 72,600 second-feet May 27 (gage height, 21.5 feet); minimum, about 4,420 second-feet Mar. 1 (gage height, 0.09 foot).

Maximum stage known, 49.1 feet June, 1894.

REMARKS.—Records good except those for estimated periods, which are fair. Water-stage recorder was installed Oct. 30, 1928, prior to which staff gage was read twice daily. Staff-gage readings were also used Feb. 3 to Mar. 20. Diurnal fluctuation during low water caused by power-plant operation at Thompson Falls. Considerable water diverted from tributaries for irrigation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	8,100	8,920	8,300	8,100			9,770	[a]22,000	59,700	42,600	14,700	7,510
2	------	8,500	8,500	8,300	6,580		[a]6,000	10,200		60,100	41,100	14,500	7,320
3	------	9,130	9,130	8,300	7,900			10,200	21,300	62,200	39,700	14,000	6,940
4	------	8,100	9,550	8,100	6,580			9,990	21,900	63,400	37,900	13,700	7,130
5	------	8,710	8,920	9,130	5,880		6,050	9,770	21,900	63,000	36,800	13,500	7,510
6	------	8,500	9,130	5,540	6,580		7,130	9,340	22,500	61,800	35,100	13,000	7,900
7	------	8,710	8,920	5,540	5,200		7,700	8,300	23,000	61,800	33,100	12,800	7,320
8	------	8,710	9,130	6,220		[a]5,300	8,100	8,100	23,900	63,900	32,200	12,500	6,940
9	------	8,920	9,340	6,580			8,300	9,130	23,300	66,900	30,900	12,300	[a]5,500
10	------	8,920	10,900	7,130			7,700	9,770	23,600		30,200	12,000	7,130
11	------	9,130	11,300	7,700			6,220	8,710	23,600	[a]69,000	29,300	11,800	6,940
12	------	9,130	8,920	7,900			6,940	8,300	24,800		28,100	11,300	6,760
13	------	9,770	[a]9,000	7,900			7,320	8,710	27,400		27,200	11,100	6,400
14	------	9,130	9,130	7,510	[a]6,000		8,920	7,900	29,900	67,700	26,000	10,600	7,130
15	------	8,920	9,130	7,700			8,500	6,580	31,800	68,200	25,600	10,400	6,580
16	------	9,340	9,130	6,940			8,300	7,900	34,800	68,200	24,500	9,770	[a]4,800
17	------	9,550	9,340	6,760			6,940	8,500	37,900	68,600	23,900	10,200	6,220
18	------	9,550	9,340	[a]7,300			4,890	8,710	39,000	67,700	22,700	9,550	6,220
19	------	9,550	8,920	[a]6,800			6,940	9,340	40,400	66,000	21,900	9,550	6,220
20	------	9,770	9,340	7,510			7,130	10,600	43,000	63,400	21,600	9,550	6,580
21	9,990	9,990	8,100	7,130			7,700	10,400	46,000	60,500	21,100	8,710	6,760
22	9,990		8,300	6,940	[a]5,500	[a]5,500	8,500		50,300	58,000	20,200	9,130	6,220
23	9,990	[a]10,000	8,500	6,940			9,340		55,500	55,100	19,700	8,920	[a]4,900
24	10,600		8,710	6,050			8,300	[a]12,800	61,800	53,100	19,100	8,920	6,220
25	9,770	10,200	8,920	6,940			5,540		67,700	51,500	18,600	8,100	5,710
26	9,770	10,600	7,900	6,050			7,320		71,200	49,500	17,800	7,900	6,220
27	9,550	10,600	8,710	6,940	[a]5,200		8,920	15,200	72,100	47,900	17,300	8,300	6,220
28	9,550	11,100	8,710	6,940			8,500		68,600	46,800	16,500	7,900	6,760
29	9,340	11,100	8,300	7,320		-------	8,500	[a]19,500	65,200	45,600	16,000	8,100	6,580
30	8,920	10,900	8,100	7,700		-------	8,500		62,600	[a]45,000	15,500	7,700	5,210
31	------	8,300	------	6,580		-------	8,710	--------	60,500	--------	15,200	7,700	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1928				
September 21–30	10,600	8,920	9,750	193,000
1928–29				
October	11,100	8,100	9,450	581,000
November	11,300	7,900	9,010	536,000
December	9,130	5,540	7,180	441,000
January	----------	----------	5,900	363,000
February	----------	----------	5,390	299,000
March	9,340	----------	7,450	458,000
April	----------	6,580	10,900	649,000
May	72,100	21,300	40,000	2,460,000
June	----------	45,000	60,700	3,610,000
July	42,600	15,200	26,000	1,600,000
August	14,700	7,700	10,600	652,000
September	7,900	4,800	6,530	389,000
The year	72,100	----------	16,600	12,000,000

[a] Estimated.

PEND OREILLE LAKE AT HOPE, IDAHO

LOCATION.—Staff gage in lot 2, sec. 35, T. 57 N., R. 1 E., at floating dock near Northern Pacific Railway station at Hope. Zero of gage, 2,045.67 feet above mean sea level, referred to adjusted datum of United States Coast and Geodetic Survey, to which published gage heights have been reduced except that 2,000 feet must be added to read actual mean sea level elevations. Elevation of zero of gage was 2,048.88 feet, referred to bench marks according to original datum as published in Bulletin 567, United States Geological Survey.

DRAINAGE AREA.—22,900 square miles.

RECORDS AVAILABLE.—September, 1921, to September, 1929; March, 1914, to September, 1922, at Sandpoint.

EXTREMES.—Maximum water-surface elevation during year, 2,059.37 feet June 18; minimum, 2,047.05 feet Feb. 18.

1921–1929: Maximum water-surface elevation, 2,068.67 feet May 31 and June 1, 1928; minimum, that of Feb. 18, 1929.

Maximum known water-surface elevation, 2,076.06 feet [3] June, 1894.

REMARKS.—Records good. Considerable water diverted from tributaries of Clark Fork for irrigation.

Daily elevation, in feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	48.09	47.87	47.53	47.17	47.13	48.01	49.57	------	57.02	50.62	------
2	------	48.07	------	47.55	47.17	47.13	48.07	49.77	------	------	50.47	------
3	------	48.05	47.85	47.55	------	------	48.11	49.92	58.12	56.52	50.32	47.91
4	------	------	47.83	47.55	47.17	47.13	48.15	50.08	58.22	56.22	------	47.87
5	------	48.05	47.81	47.53	47.17	------	48.17	------	58.27	56.02	50.12	47.81
6	48.12	48.03	47.77	------	47.17	------	------	50.37	58.37	------	50.02	47.77
7	------	48.01	47.75	47.47	47.17	47.17	------	50.52	58.42	------	49.92	47.75
8	48.11	48.01	------	47.43	47.15	47.21	48.15	50.62	58.47	55.17	49.82	------
9	48.11	48.01	------	47.37	47.15	47.23	48.15	50.77	------	54.87	49.70	47.71
10	48.09	48.01	47.67	47.35	------	------	48.15	50.87	58.72	54.67	49.62	47.67
11	48.09	48.15	47.67	47.35	47.15	47.35	48.15	50.97	58.87	54.42	------	47.63
12	48.07	48.13	47.67	47.35	47.15	47.37	48.15	------	58.97	54.17	49.42	47.59
13	48.05	48.15	47.67	------	47.13	47.37	48.15	51.32	59.12	53.92	49.32	47.57
14	------	48.15	47.67	47.29	47.11	47.39	------	51.57	------	------	49.27	47.55
15	48.07	48.15	47.67	47.27	47.07	47.45	48.15	51.77	59.32	------	49.17	------
16	48.07	48.15	------	47.29	47.07	47.49	48.15	52.19	------	53.27	49.02	47.51
17	------	48.15	------	47.29	------	------	------	52.37	59.32	53.12	48.92	47.47
18	48.09	------	47.61	47.29	47.05	47.51	48.13	52.77	59.37	52.92	------	47.45
19	48.09	48.11	47.59	47.29	47.07	47.51	48.13	------	------	52.72	------	47.43
20	48.11	48.09	47.57	------	47.09	47.51	48.13	53.42	59.32	------	48.72	------
21	------	48.07	47.55	47.29	47.07	------	------	53.82	59.22	------	------	------
22	48.11	48.03	47.53	47.29	47.07	47.65	48.27	54.17	59.02	52.17	48.57	------
23	48.13	48.01	------	47.27	47.11	47.65	48.37	54.72	------	51.97	48.52	47.37
24	48.13	47.99	47.53	47.19	------	------	48.45	------	58.67	51.82	48.47	47.35
25	48.13	------	------	47.17	47.13	------	48.57	------	58.37	51.67	------	47.33
26	48.13	47.97	------	------	47.13	------	48.69	------	------	------	48.37	47.27
27	48.13	47.95	47.53	------	47.11	47.73	48.77	56.82	57.92	51.32	48.27	47.27
28	------	47.92	47.53	47.19	47.13	------	------	57.32	57.72	------	48.21	47.27
29	48.13	47.91	------	47.17	------	------	------	57.52	57.47	51.07	48.17	------
30	48.13	47.89	------	47.17	------	------	49.42	57.77	------	50.87	48.13	47.27
31	48.11	------	47.53	47.17	------	------	------	------	------	50.72	48.09	------

[3] Elevation 2,079.29 feet previously published for this flood is referred to the original datum.

CLARK FORK AT PRIEST RIVER, IDAHO

LOCATION.—Water-stage recorder in lot 4, sec. 26, T. 56 N., R. 5 W., at Priest River.

DRAINAGE AREA.—24,200 square miles.

RECORDS AVAILABLE.—June, 1903, to April 1905; October, 1921, to September, 1929. June, 1903, to September, 1921, comparable records at Newport, Wash., 6 miles below present station.

EXTREMES.—Maximum discharge during period September, 1928, to September, 1929, 73,200 second-feet June 18 (gage height, 15.36 feet); minimum (estimated), less than 4,500 second-feet on Jan. 29.

1903–1929: Maximum discharge, 136,000 second-feet June 15, 1913; minimum, 2,200 second-feet Dec. 12, 1919. Flood at Newport during June, 1894 (estimated), 217,000 second-feet (gage height, 38.9 feet, from high-water marks referred to Newport gage).

REMARKS.—Records excellent except those for Sept. 30, Oct. 7, 14, 21, Nov. 4 and 11, 1928, and Jan. 11 to Mar. 1, which were estimated. Monthly discharge October, 1921, to September, 1928, estimated. Numerous small diversions from upper tributaries for irrigation. Flow subject to natural regulation in several lakes and to slight regulation during log-driving seasons, owing to operation of flash dam on tributary of Priest River.

Daily discharge, in second-feet, 1928–29

Day	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	10,800	10,800	9,880	8,450		6,850	10,500	17,600	62,000	56,000	20,800	9,670
2	-------	10,500	10,500	9,880	8,450		6,880	10,500	18,100	63,600	53,800	20,800	9,670
3	-------	10,500	10,500	10,100	8,080		7,040	10,800	18,700	63,600	52,400	20,200	9,670
4	-------	10,800	10,500	9,670	8,450		7,040	11,200	19,700	65,200	51,000	19,200	9,250
5	-------	10,300	10,500	9,670	8,450		6,720	11,700	20,200	65,200	48,900	19,200	9,460
						6,000							
6	-------	10,800	10,300	9,670	8,260		7,040	11,200	20,800	65,200	47,500	18,100	8,840
7	-------	10,600	10,300	9,040	8,260		7,200	11,400	21,300	66,000	46,100	18,100	8,840
8	-------	10,300	10,300	8,840	8,080		7,370	11,400	21,900	66,000	44,000	17,600	8,640
9	-------	10,300	10,500	8,640	7,900		7,720	11,200	22,400	66,800	42,600	17,100	8,640
10	-------	10,300	10,800	8,840	7,720		7,900	11,200	23,000	67,600	40,500	16,600	8,260
11	-------	10,800	10,900	9,040			7,900	11,400	23,500	68,400	39,800	16,100	8,080
12	-------	10,800	11,000	9,250			7,900	11,400	23,500	70,000	38,600	15,600	7,900
13	-------	10,300	11,000	9,040			8,080	11,400	24,600	70,000	37,200	15,600	7,900
14	-------	10,300	11,000	9,040			8,080	11,200	25,800	70,800	36,000	14,600	7,900
15	-------	10,300	10,800	8,840	7,300		8,450	11,700	27,400	71,600	34,600	14,600	7,900
						6,550							
16	-------	10,300	10,500	8,840			8,450	11,200	28,000	72,400	34,000	14,100	7,720
17	-------	10,300	10,500	8,640			8,640	11,200	30,400	72,400	32,800	13,600	7,720
18	-------	10,500	10,800	8,640			8,640	11,400	31,600	72,400	31,600	13,100	7,540
19	-------	10,500	10,800	8,450			8,450	11,700	33,400	72,400	31,000	12,600	7,540
20	-------	10,500	10,500	8,450			8,640	11,700	35,300	71,600	29,200	12,600	7,370
21	-------	10,500	10,800	8,450			8,840	11,900	36,600	71,600	29,200	12,200	7,200
22	12,600	10,500	10,500	8,640			9,250	12,200	39,200	70,000	28,000	11,900	7,370
23	12,200	10,500	10,500	8,450			9,460	13,100	41,200	69,200	26,900	11,200	7,200
24	11,900	11,000	10,800	8,450			9,250	13,100	44,000	67,600	26,300	11,400	7,200
25	11,700	10,800	10,300	8,080	4,800	6,700	9,250	13,100	48,200	66,000	25,800	11,200	7,370
26	11,900	10,800	10,100	8,260			8,840	13,600	51,700	64,400	24,600	11,000	7,370
27	11,400	11,200	10,100	8,450			9,460	14,100	54,500	62,800	24,100	11,000	7,040
28	11,000	11,200	10,100	8,450			9,670	14,600	57,500	60,500	23,500	10,800	7,040
29	10,800	11,400	9,880	8,450		-------	10,100	15,100	59,800	59,000	23,000	10,300	6,880
30	10,800	11,700	9,880	8,450		-------	10,500	16,600	60,500	57,500	22,400	10,300	6,880
31	-------	11,200	-------	8,450		-------	10,500	-------	62,000	-------	21,300	9,880	-----

Monthly discharge, in second-feet, of Clark Fork at Priest River, Idaho, 1921–1929

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1921–22						
October	9,880	8,650	9,150	0.378	0.44	563,000
November	9,330	8,490	8,880	.367	.41	528,000
December	14,300	9,650	11,300	.467	.54	695,000
January	12,400	8,680	10,800	.446	.51	664,000
February	10,100	7,020	9,160	.379	.39	509,000
March	9,940	7,730	8,510	.352	.41	523,000
April	20,800	10,100	15,100	.624	.70	898,000
May	81,700	21,100	43,100	1.78	2.05	2,650,000
June	106,000	82,800	96,200	3.98	4.44	5,720,000
July	80,200	26,800	47,500	1.96	2.26	2,920,000
August	26,100	13,400	18,200	.752	.87	1,120,000
September	13,200	9,320	11,100	.459	.51	660,000
The year	106,000	7,020	24,100	.996	13.53	17,400,000
1922–23						
October	9,160	8,070	8,530	.352	.41	524,000
November	8,470	7,440	7,890	.326	.36	469,000
December	9,420	3,460	6,880	.284	.33	423,000
January	12,700	8,860	11,600	.479	.55	713,000
February	9,320	4,710	8,090	.334	.35	449,000
March	10,500	8,550	9,090	.376	.43	559,000
April	27,600	11,000	19,300	.798	.89	1,150,000
May	76,000	28,800	49,800	2.06	2.38	3,060,000
June	90,700	77,200	84,100	3.48	3.88	5,000,000
July	79,000	32,700	54,500	2.25	2.59	3,350,000
August	31,500	15,600	21,800	.901	1.04	1,340,000
September	15,100	9,100	11,600	.479	.53	690,000
The year	90,700	3,460	24,500	1.01	13.74	17,700,000
1923–24						
October	8,960	8,130	8,520	.352	.41	524,000
November	8,400	7,700	8,050	.333	.37	479,000
December	8,450	7,400	8,100	.335	.39	498,000
January	7,360	3,820	6,240	.258	.30	384,000
February	13,800	8,310	11,500	.475	.51	662,000
March	13,600	10,700	12,000	.496	.57	738,000
April	17,400	10,200	12,900	.533	.59	768,000
May	80,300	17,900	50,300	2.08	2.40	3,090,000
June	78,600	47,400	61,400	2.54	2.83	3,650,000
July	46,700	21,800	32,500	1.34	1.54	2,000,000
August	20,900	11,000	15,000	.620	.71	922,000
September	11,100	7,780	9,100	.376	.42	541,000
The year	80,300	3,820	19,600	.810	11.04	14,300,000
1924–25						
October	8,170	7,460	7,700	.318	.37	473,000
November	9,300	8,080	8,880	.367	.41	528,000
December	10,500	6,380	8,780	.363	.42	540,000
January	13,700	10,300	11,800	.488	.56	726,000
February	21,900	12,600	18,500	.764	.80	1,030,000
March	18,600	15,600	17,000	.702	.81	1,050,000
April	62,700	18,300	41,500	1.71	1.91	2,470,000
May	112,000	61,900	81,600	3.37	3.88	5,020,000
June	112,000	77,500	93,200	3.85	4.30	5,550,000
July	76,000	29,900	52,500	2.17	2.50	3,230,000
August	29,400	15,000	20,700	.855	.99	1,270,000
September	14,700	11,800	12,900	.533	.59	768,000
The year	112,000	6,380	31,300	1.29	17.54	22,700,000

Monthly discharge, in second-feet, of Clark Fork at Priest River, Idaho, 1921–1929—Continued

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1925–26						
October	11,400	9,300	10,300	.426	.49	633,000
November	9,500	8,500	9,110	.376	.42	542,000
December	9,520	8,510	8,950	.370	.43	550,000
January	9,230	8,270	8,650	.357	.41	532,000
February	9,880	8,080	9,160	.379	.39	509,000
March	12,200	9,480	10,400	.430	.50	640,000
April	34,900	11,900	17,900	.740	.83	1,070,000
May	49,400	35,500	45,300	1.87	2.16	2,790,000
June	46,100	24,900	33,800	1.40	1.56	2,010,000
July	24,500	12,900	17,600	.727	.84	1,080,000
August	12,500	7,900	9,500	.393	.45	584,000
September	9,570	8,310	8,750	.362	.40	521,000
The year	49,400	7,900	15,800	.653	8.88	11,500,000
1926–27						
October	15,000	9,470	12,000	.496	.57	738,000
November	16,000	14,100	15,200	.628	.70	904,000
December	20,200	15,700	17,900	.740	.85	1,100,000
January	16,700	11,600	14,300	.591	.68	879,000
February	14,300	10,800	12,300	.508	.53	683,000
March	14,900	13,900	14,300	.591	.68	879,000
April	29,400	15,100	18,400	.760	.85	1,090,000
May	83,500	33,400	59,500	2.46	2.84	3,660,000
June	131,000	84,800	113,000	4.67	5.21	6,720,000
July	122,000	47,500	82,200	3.40	3.92	5,050,000
August	45,500	19,900	29,800	1.23	1.42	1,830,000
September	20,700	18,100	19,400	.802	.89	1,150,000
The year	131,000	9,470	34,100	1.41	19.14	24,700,000
1927–28						
October	22,000	18,700	20,500	.847	.98	1,260,000
November	32,900	21,700	27,900	1.15	1.28	1,660,000
December	34,700	22,600	29,900	1.24	1.43	1,840,000
January	21,800	19,400	20,600	.851	.98	1,270,000
February	20,000	15,000	17,800	.736	.79	1,020,000
March	26,300	14,100	18,300	.756	.87	1,130,000
April	32,000	27,000	27,900	1.15	1.28	1,660,000
May	130,000	34,800	80,600	3.33	3.84	4,960,000
June	135,000	74,200	104,000	4.30	4.80	6,190,000
July	73,500	40,600	59,200	2.45	2.82	3,640,000
August	39,600	18,300	27,200	1.12	1.29	1,670,000
September	18,100	10,800	14,400	.595	.66	857,000
The year	135,000	10,800	37,400	1.55	21.02	27,200,000
1928–29						
October	11,700	10,300	10,700	.442	.51	658,000
November	11,000	9,880	10,500	.434	.48	625,000
December	10,100	8,080	8,870	.367	.42	545,000
January	8,450	----------	6,550	.271	.31	403,000
February	----------	----------	6,400	.264	.27	355,000
March	10,500	----------	8,390	.347	.40	516,000
April	16,600	10,500	12,100	.500	.55	720,000
May	62,000	17,600	33,600	1.39	1.60	2,070,000
June	72,400	57,500	67,100	2.77	3.09	3,990,000
July	56,000	21,300	35,600	1.47	1.70	2,190,000
August	20,800	9,880	14,600	.603	.70	898,000
September	9,670	6,880	8,000	.331	.37	476,000
The year	72,400	----------	18,600	.769	10.41	13,400,000

NOTE.—Monthly discharge, October, 1921, to September, 1928, determined from records of Clark Fork at Metaline Falls, Wash.

CLARK FORK BELOW Z CANYON, NEAR METALINE FALLS, WASH.

LOCATION.—Water-stage recorder in lot 2, sec. 11, T. 40 N., R. 43 E., three fourths of a mile below Z Canyon and 10 miles below Metaline Falls. Zero of gage, 1,720 feet United States Coast and Geodetic Survey datum.

DRAINAGE AREA.—25,200 square miles.

RECORDS AVAILABLE.—October, 1928, to September, 1929; November, 1908, to September, 1910, and October, 1912, to September, 1928, for a station at Metaline Falls.

EXTREMES.—Maximum discharge during year, 74,500 second-feet June 19 (gage height, 32.32 feet); minimum, not determined, occurred during period of ice effect.

1912–1929: Maximum discharge, 139,000 second-feet June 16, 1913 (gage height, 41.2 feet, Metaline Falls gage); minimum, 2,500 second-feet Dec. 12, 1919 (gage height, −2.4 feet, Metaline Falls gage).

REMARKS.—Records excellent. Discharge estimated because of ice Jan. 22–29. Numerous small diversions from upper tributaries for irrigation. No artificial regulation of any consequence.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11,400	11,600	10,200	8,350	5,470	7,190	10,900	17,200	63,200	59,300	23,600	10,600
2	11,200	11,200	9,980	8,550	5,630	7,190	10,900	18,300	63,800	57,500	22,800	10,000
3	11,200	10,800	9,980	8,550	5,950	7,190	11,200	19,000	64,900	55,700	22,000	9,800
4	11,200	10,800	9,980	8,550	6,110	7,370	11,200	19,400	65,600	54,200	21,600	10,000
5	11,600	10,800	9,980	8,350	6,470	7,370	10,900	20,400	66,300	52,700	20,400	9,550
6	11,000	10,600	9,780	8,350	6,650	7,550	11,500	21,200	67,000	50,900	20,000	9,530
7	11,200	10,400	9,580	8,150	6,470	7,750	11,800	22,000	67,400	49,400	19,400	9,300
8	11,000	10,600	9,580	8,150	6,470	7,950	11,500	22,400	67,400	48,200	19,000	9,050
9	10,800	10,800	9,380	7,950	6,470	8,150	11,800	23,200	68,000	47,000	18,600	9,050
10	10,600	11,200	9,180	7,750	6,650	8,350	11,800	24,000	68,800	45,200	18,300	8,800
11	10,400	11,200	9,580	7,750	6,650	8,350	11,500	24,400	69,800	43,400	17,600	8,550
12	10,800	11,600	9,580	7,750	6,830	8,350	11,800	25,100	70,500	42,200	16,900	8,350
13	11,200	11,600	9,580	7,750	6,830	8,150	11,500	25,800	71,200	41,000	16,600	8,150
14	10,800	11,600	9,380	7,550	6,650	8,150	11,800	26,200	72,600	40,000	16,200	8,150
15	10,800	11,600	9,180	7,550	6,650	8,350	12,400	27,600	73,000	39,000	15,800	7,950
16	10,800	11,400	9,180	7,370	6,650	8,550	12,100	28,600	73,700	37,900	15,200	7,950
17	10,800	11,200	8,990	7,950	6,650	8,800	12,100	30,000	74,100	37,000	14,800	7,750
18	10,800	11,200	8,800	7,550	6,830	9,050	11,800	31,800	74,100	35,800	14,500	7,750
19	11,000	11,000	8,550	7,190	6,830	9,050	11,800	33,700	74,500	34,900	14,200	7,750
20	10,800	11,000	8,550	5,790	6,830	9,050	12,400	35,200	74,100	34,000	13,600	7,550
21	10,800	10,800	8,550	5,000	6,830	9,050	12,400	37,000	74,100	32,400	13,300	7,370
22	10,800	10,800	8,550		6,830	9,300	12,700	39,000	73,300	31,800	13,000	7,370
23	10,800	10,800	8,550		7,010	9,300	13,000	40,800	72,200	30,700	12,700	7,370
24	10,800	10,800	8,550		7,010	9,800	13,300	43,100	71,200	29,600	12,400	7,370
25	11,000	11,200	8,550	4,900	7,010	9,800	13,600	44,900	69,800	29,000	12,100	7,370
26	11,200	10,800	8,350		7,010	9,550	13,900	48,200	68,000	28,200	12,100	7,370
27	11,000	10,400	8,350		7,190	9,300	14,500	51,800	66,300	26,800	11,800	7,370
28	11,200	10,400	8,350		7,010	9,550	14,800	55,100	64,600	26,500	11,800	7,190
29	11,400	10,200	8,550		-------	10,000	15,500	57,800	62,800	25,800	11,500	7,010
30	11,600	10,200	8,550	4,700	-------	10,000	16,200	60,000	60,700	25,100	11,200	7,010
31	11,600	--------	8,350	5,000	-------	10,600	--------	62,100	--------	24,400	10,900	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	11,600	10,400	11,000	0.437	0.50	676,000
November	11,600	10,200	11,000	.437	.49	655,000
December	10,200	8,350	9,100	.361	.42	560,000
January	8,550	----------	6,800	.270	.31	418,000
February	7,190	5,470	6,630	.263	.27	368,000
March	10,600	7,190	8,650	.343	.40	532,000
April	16,200	10,900	12,400	.492	.55	738,000
May	62,100	17,200	33,400	1.33	1.53	2,050,000
June	74,500	60,700	69,100	2.74	3.06	4,110,000
July	59,300	24,400	39,200	1.56	1.80	2,410,000
August	23,600	10,900	15,900	.631	.73	978,000
September	10,600	7,010	8,280	.329	.37	493,000
The year	74,500	----------	19,300	.766	10.43	14,000,000

FLATHEAD RIVER NEAR TRAIL CREEK, MONT.

LOCATION.—Staff gage at highway bridge 500 feet north of international boundary, about 1,000 feet northwest of intersection of international boundary with line between secs. 4 and 5, T. 37 N., R. 22 W., and 7 miles northwest of Trail Creek post office.

DRAINAGE AREA.—450 square miles.

RECORDS AVAILABLE.—March to September, 1929.

EXTREMES.—Maximum discharge during period, 7,750 second-feet May 24 (gage height, 6.1 feet); minimum, 65 second-feet Apr. 9 (gage height, 0.76 foot).

REMARKS.—Records good. Station maintained jointly with the Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	144	925	4,970	1,120	370	219
2	------	137	972	6,300	1,070	381	253
3	------	130	972	4,970	1,020	392	263
4	------	130	925	4,160	972	392	249
5	------	127	835	3,780	925	370	240
6	------	127	750	3,970	880	359	240
7	------	124	710	4,360	925	342	231
8	------	112	670	4,160	880	337	223
9	------	109	750	4,360	835	327	223
10	------	115	710	3,970	792	316	223
11	------	118	710	3,600	792	306	219
12	------	127	1,020	3,600	710	306	219
13	------	124	1,980	3,420	670	301	219
14	------	127	2,900	3,600	632	296	215
15	------	144	2,740	3,240	595	296	206
16	------	150	2,740	2,900	595	296	202
17	------	157	2,580	2,580	560	296	198
18	------	164	2,270	2,270	560	291	198
19	------	194	2,580	2,120	524	286	198
20	------	231	3,600	1,980	524	277	191
21	------	272	4,360	1,710	524	268	191
22	------	306	5,400	1,710	492	258	202
23	100	332	7,010	1,580	492	249	206
24	121	306	7,750	1,520	459	240	215
25	118	364	6,530	1,520	459	240	215
26	118	492	4,160	1,400	428	240	206
27	118	595	3,420	1,400	428	240	198
28	183	792	3,070	1,400	428	231	194
29	187	1,070	2,900	1,280	428	227	194
30	172	925	3,070	1,230	398	223	191
31	164	------	3,600	------	387	223	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
March 23-31	187	100	142	0.316	0.11	2,540
April	1,070	109	275	.611	.68	16,400
May	7,750	670	2,660	5.91	6.81	164,000
June	6,300	1,230	2,970	6.60	7.36	177,000
July	1,120	387	661	1.47	1.70	40,600
August	392	223	296	.658	.76	18,200
September	263	191	215	.478	.53	12,800
The period	------	------	------	------	------	432,000

FLATHEAD RIVER NEAR COLUMBIA FALLS, MONT.

LOCATION.—Staff gage in sec. 7, T. 31 N., R. 19 W., at Potter's ranch, three-fourths of a mile above junction with Middle Fork of Flathead River and 10 miles northeast of Columbia Falls.

DRAINAGE AREA.—1,620 square miles.

RECORDS AVAILABLE.—September, 1910, to September, 1917; April to August, 1929. Prior to 1915 published as North Fork of Flathead River near Columbia Falls, Mont.

EXTREMES.—Maximum discharge during period April to August, 1929, 19,900 second-feet May 25 (gage height, 10.1 feet); minimum, 630 second-feet at times in April (gage height, 2.10 feet).

1910–1917, 1929: Maximum discharge, 29,500 second-feet June 20, 1916 (gage height, 9.8 feet); minimum, 350 second-feet Nov. 10, 1911, and Feb. 5–16, 1914 (gage height, 0.70 foot).

REMARKS.—Records good. No diversions or regulation.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Day	Apr.	May	June	July	Aug.
1	------	4,420	12,500	4,420	1,520	16	1,060	8,110	9,900	2,540	------
2	------	4,420	14,700	4,240	1,520	17	1,250	7,560	9,300	2,540	------
3	------	4,810	15,400	4,070	1,520	18	1,150	7,300	8,110	2,400	------
4	------	4,420	13,200	3,740	1,300	19	1,400	7,830	7,560	2,400	------
5	------	4,240	14,500	3,740	1,300	20	1,750	9,600	7,050	2,260	------
6	------	3,740	11,200	3,580	1,300	21	2,000	11,800	6,090	2,260	------
7	------	3,740	12,500	3,580	1,300	22	2,400	14,300	5,420	2,260	------
8	------	3,740	13,200	3,420	1,300	23	2,680	15,800	5,210	2,130	------
9	680	3,740	13,200	3,420	1,300	24	2,540	18,200	5,000	2,000	------
10	655	3,900	12,500	3,110	1,200	25	2,540	19,400	5,000	1,880	------
11	655	4,070	11,800	3,110	------	26	2,820	15,400	4,800	1,750	------
12	680	4,070	11,500	2,820	------	27	3,260	11,800	4,800	1,750	------
13	708	6,090	11,200	2,680	------	28	3,900	9,900	4,800	1,630	------
14	680	9,000	10,500	2,540	------	29	4,800	8,700	4,800	1,630	------
15	898	9,600	11,200	2,540	------	30	4,800	8,700	4,420	1,520	------
						31	------	9,300	------	1,520	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
April 9–30	4,800	655	1,970	1.22	1.00	86,000
May	19,400	3,740	8,310	5.13	5.91	511,000
June	15,400	4,420	9,380	5.79	6.46	558,000
July	4,420	1,520	2,690	1.66	1.91	165,000
August 1–10	1,520	1,200	1,360	.840	.31	27,000

FLATHEAD RIVER AT COLUMBIA FALLS, MONT.

LOCATION.—Water-stage recorder in SW. ¼ sec. 17, T. 30 N., R. 20 W., about 200 feet below highway bridge on Roosevelt Highway at Columbia Falls. Chain gage used prior to Nov. 12, 1928.

RECORDS AVAILABLE.—May to August, 1922; April to September, 1923 (fragmentary); June, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 69,700 second-feet May 24 (gage height, 14.42 feet; minimum, 1,410 second-feet Jan. 31 to Feb. 2.

1922–23, 1928–29: Maximum discharge, 102,000 second-feet June 5, 1923 (gage height, 17.3 feet); minimum, 1,410 second-feet Jan. 31 to Feb. 2, 1929.

REMARKS.—Records excellent except those for estimated periods (Nov. 10, 11, Dec. 7–14 and Jan. 19 to Mar. 12), which are good. No diversions or regulation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,250	2,830	2,540	1,890	1,410	1,660	2,760	15,000	41,100	14,700	4,270	2,470
2	2,250	2,830	2,400	1,890	1,410	1,660	2,610	13,900	47,300	13,600	4,270	2,400
3	2,520	2,620	2,140	1,950	1,460	1,660	2,610	15,000	43,400	13,200	4,180	2,540
4	2,520	2,720	1,830	1,890	1,460	1,660	2,680	15,000	34,500	12,500	4,080	2,470
5	2,520	2,830	1,610	1,720	1,460	1,660	2,680	13,900	30,600	11,400	4,080	2,330
6	2,520	2,830	1,610	1,660	1,460	1,720	2,610	12,800	33,200	10,800	3,900	2,330
7	2,720	2,720	1,660	1,720	1,460	1,720	2,540	12,500	37,300	10,500	3,810	2,200
8	3,080	2,620	1,720	1,890	1,460	1,720	2,470	12,800	40,300	10,500	3,720	2,200
9	3,220	2,620	1,780	2,010	1,510	1,720	2,330	14,300	42,600	9,840	3,640	2,070
10	4,660	3,020	1,830	1,950	1,510	1,780	2,260	14,300	41,100	9,230	3,550	2,070
11	5,680	3,420	1,890	1,950	1,510	1,780	2,260	14,700	38,000	8,640	3,380	2,010
12	5,680	3,810	1,950	1,950	1,510	1,830	2,260	17,400	35,200	8,350	3,300	1,950
13	5,050	3,550	2,010	1,830	1,510	1,830	2,260	26,400	33,800	7,790	3,220	1,890
14	4,660	3,380	2,070	1,830	1,510	1,830	2,330	35,900	35,200	7,520	3,140	1,830
15	4,310	3,300	2,140	1,830	1,510	1,830	2,760	31,800	34,500	7,520	3,060	1,830
16	4,310	3,220	2,140	1,780	1,560	1,830	3,060	27,000	31,800	7,250	3,060	1,830
17	4,480	3,140	2,200	1,720	1,560	1,830	3,220	25,400	30,000	6,990	2,910	1,830
18	5,050	2,980	2,260	1,660	1,560	1,830	3,380	27,000	25,900	6,730	2,910	1,780
19	5,460	2,840	2,200	1,650	1,560	1,890	3,720	30,000	23,300	6,730	2,910	1,780
20	5,250	2,760	2,140	1,640	1,560	1,950	4,760	35,900	20,500	6,480	2,760	1,780
21	4,660	2,840	2,070	1,620	1,560	2,010	5,750	43,400	18,300	6,230	2,680	1,780
22	4,310	2,760	2,200	1,610	1,560	2,010	6,990	53,200	17,000	5,870	2,610	1,720
23	4,310	2,760	2,070	1,610	1,610	1,890	8,350	62,300	17,000	5,640	2,540	1,780
24	4,140	2,680	1,780	1,610	1,610	1,830	8,350	67,800	16,600	5,290	2,470	1,780
25	3,980	2,540	1,830	1,560	1,600	1,780	8,350	65,000	17,000	5,290	2,470	1,830
26	3,820	2,610	2,010	1,510	1,610	1,830	9,230	48,200	17,400	5,070	2,470	1,780
27	3,820	2,610	2,070	1,510	1,610	1,890	11,800	35,900	17,000	4,960	2,470	1,780
28	3,360	2,610	2,070	1,510	1,610	2,070	14,700	30,000	16,600	4,860	2,470	1,720
29	3,360	2,540	2,070	1,460	------	2,910	17,400	26,400	16,200	4,660	2,470	1,660
30	3,220	2,470	2,070	1,460	------	3,140	17,000	25,900	15,800	4,460	2,400	1,660
31	3,080	------	2,070	1,410	------	2,980	------	29,300	------	4,360	2,400	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	5,680	2,250	3,880	239,000
November	3,810	2,470	2,880	171,000
December	2,540	1,610	2,010	124,000
January	2,010	1,410	1,720	106,000
February	1,610	1,410	1,530	85,000
March	3,140	1,660	1,930	119,000
April	17,400	2,260	5,450	324,000
May	67,800	12,500	29,000	1,780,000
June	47,300	15,800	29,000	1,730,000
July	14,700	4,360	7,970	490,000
August	4,270	2,400	3,150	194,000
September	2,540	1,660	1,970	117,000
The year	67,800	1,410	7,560	5,480,000

FLATHEAD RIVER NEAR KALISPELL, MONT.

LOCATION.—Chain gage in NE. ¼ sec. 10, T. 28 N., R. 21 W., at highway bridge 3 miles east of Kalispell.

RECORDS AVAILABLE.—May, 1928, to September, 1929.

EXTREMES.—Maximum stage reported during year, 2,911.58 feet May 24; minimum, 2,903.38 feet Sept. 30.

1928–29; Maximum stage, 2,913.95 feet May 27, 1928; minimum, 2,903.38 feet Sept. 30, 1929.

REMARKS.—Records fragmentary but reliable. Records collected for river profile study.

Daily elevation, in feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	5.50	6.52	9.38	7.18	4.78	3.90	16	5.39	9.00	9.18	5.82	4.28	3.52
2	5.60	6.48	------	7.08	4.78	3.88	17	5.40	8.40	9.08	5.80	4.20	3.52
3	5.60	6.45	10.13	7.03	4.75	3.88	18	5.36	------	8.48	5.78	4.14	3.51
4	5.50	6.41	9.38	6.98	------	3.86	19	5.42	------	8.23	5.72	4.12	3.50
5	5.34	6.39	9.33	6.88	4.68	3.86	20	5.48	------	7.91	------	4.08	3.48
6	5.32	6.38	9.30	6.78	4.65	3.85	21	5.55	9.98	7.83	------	4.06	3.48
7	5.40	6.38	9.42	6.68	4.62	3.68	22	5.90	10.53	7.78	5.38	4.01	3.49
8	5.36	6.35	9.50	6.63	4.58	3.66	23	5.95	10.88	7.74	5.32	3.98	3.50
9	5.34	6.32	9.78	6.48	4.56	3.63	24	5.98	11.58	7.68	5.28	3.94	3.50
10	5.35	6.29	9.83	6.40	------	3.61	25	6.02	11.48	7.68	------	3.92	3.51
11	5.40	6.39	9.63	6.33	4.48	3.61	26	6.08	10.63	7.68	5.18	3.91	3.52
12	5.38	------	9.53	6.18	4.43	3.58	27	6.09	9.58	7.72	5.08	3.88	3.46
13	5.40	8.90	9.44	6.06	4.38	3.55	28	6.20	9.56	7.68	------	3.86	3.43
14	5.34	9.20	9.38	5.88	4.34	3.53	29	6.38	8.88	7.62	4.98	------	3.41
15	5.38	------	9.33	5.86	------	3.53	30	6.59	8.78	7.48	4.88	3.89	3.38
							31	------	9.27	------	4.78	3.88	------

NOTE.—Add 2,900.00 feet to obtain elevation above mean sea level.

FLATHEAD RIVER AT DEMERSVILLE, NEAR KALISPELL, MONT.

LOCATION.—Staff gage in NE. ¼ sec. 28, T. 28 N., R. 21 W., at Demersville, 3 miles southeast of Kalispell.

RECORDS AVAILABLE.—April, 1909, to July, 1912; April, 1928, to September, 1929.

EXTREMES.—Maximum water-surface elevation reported during year, 2,899.10 feet May 25; minimum, 2,882.6 feet Feb. 5–28 (ice).

1909–1912, 1928–29: Maximum water-surface elevation, 2,904.4 feet May 27, 1928; minimum, 2,882.6 feet Oct. 1, 1910.

REMARKS.—Records good. Records for profile study of Flathead River between Kalispell and Flathead Lake.

Daily elevation, in feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	83.1	83.3	83.1	82.9	82.7	82.7	83.0	87.0	94.2	89.6	84.6	83.0
2	83.1	83.3	83.0	82.9	82.7	82.7	83.0	86.7	95.7	89.2	84.5	83.0
3	83.1	83.2	83.0	82.9	82.7	82.7	83.0	86.8	96.0	89.0	84.5	83.0
4	83.1	83.2	83.0	82.9	82.7	82.7	83.0	87.2	94.8	88.9	84.4	83.0
5	83.1	83.2	83.0	82.9	82.6	82.7	83.0	87.0	93.9	88.6	84.3	83.0
6	83.1	83.2	83.0	82.9	82.6	82.7	83.0	86.7	93.7	88.4	84.3	83.0
7	83.1	83.1	83.0	82.8	82.6	82.7	83.0	86.7	94.6	88.0	84.2	82.9
8	83.1	83.1	83.0	82.8	82.6	82.7	83.0	86.7	95.0	87.9	84.2	82.9
9	83.1	83.1	83.0	82.8	82.6	82.7	83.0	86.9	95.5	87.8	84.0	82.9
10	83.2	83.2	83.0	82.8	82.6	82.8	82.9	87.2	95.5	87.6	84.0	82.9
11	83.6	83.2	83.0	82.8	82.6	82.8	82.9	87.3	95.2	87.3	83.9	82.9
12	83.9	83.3	83.0	82.8	82.6	82.8	82.9	87.8	94.8	87.0	83.9	82.8
13	83.7	83.3	83.0	82.8	82.6	82.8	82.9	89.3	94.5	86.9	83.8	82.8
14	83.5	83.3	83.0	82.8	82.6	82.9	82.9	91.9	94.5	86.8	83.8	82.8
15	83.5	83.3	83.0	82.8	82.6	82.9	82.9	92.6	94.8	86.7	83.7	82.8
16	83.5	83.3	83.0	82.8	82.6	82.9	82.8	91.2	94.1	86.5	83.7	82.8
17	83.7	83.3	83.0	82.8	82.6	82.9	82.6	90.8	93.9	86.3	83.6	82.8
18	83.8	83.3	82.9	82.8	82.6	82.9	82.6	90.9	93.1	86.2	83.5	82.8
19	83.9	83.3	82.9	82.8	82.6	82.9	82.7	91.4	92.8	86.2	83.5	82.8
20	83.9	83.3	82.9	82.8	82.6	82.9	82.9	92.5	92.0	86.0	83.4	82.8
21	83.8	83.2	82.9	82.7	82.6	82.9	83.0	93.7	91.7	85.9	83.4	82.8
22	83.8	83.2	82.9	82.7	82.6	82.9	83.5	95.3	91.3	85.8	83.3	82.8
23	83.7	83.1	82.9	82.7	82.6	82.9	83.7	96.9	91.0	85.6	83.3	82.8
24	83.7	83.1	82.9	82.7	82.6	82.9	83.8	98.1	90.9	85.5	83.2	82.8
25	83.7	83.1	82.9	82.7	82.6	82.9	84.0	99.1	90.7	85.4	83.2	82.8
26	83.6	83.1	82.9	82.7	82.6	82.9	84.2	97.6	90.5	85.3	83.2	82.8
27	83.6	83.1	82.9	82.7	82.6	82.9	85.3	95.0	90.3	85.1	83.1	82.8
28	83.5	83.1	82.9	82.7	82.6	83.0	86.0	93.8	90.2	85.0	83.1	82.8
29	83.4	83.1	82.9	82.7	-------	83.0	86.9	93.1	90.1	84.9	83.1	82.8
30	83.4	83.1	82.9	82.7	-------	83.0	87.5	92.8	89.9	84.8	83.0	82.8
31	83.4	-------	82.9	82.7	-------	83.0	-------	92.9	-------	84.7	83.0	-------

NOTE.—Add 2,800.00 feet to obtain elevation above mean sea level.

FLATHEAD RIVER AT DAMON RANCH, NEAR KALISPELL, MONT.

LOCATION.—Staff gage in NW. ¼ sec. 32, T. 28 N., R. 20 W., at Damon ranch, 7 miles below Kalispell.

RECORDS AVAILABLE.—April, 1909, to July, 1912; May, 1928, to September, 1929.

EXTREMES.—Maximum water-surface elevation, 2,894.82 feet, May 25; minimum, 2,881.90 feet Mar. 23–24.

1909–1912, 1928–29: Maximum water-surface elevation, 2,899.6 feet, determined from floodmark, May 26–27, 1928; minimum, 2,881.90 feet Mar. 23–24, 1929.

REMARKS.—Records good. Records used for river profile studies on Flathead River above Flathead Lake.

Daily elevation, in feet, 1928–29

Day	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	83.0	83.3	82.9	-------	-------	82.1	85.51	92.96	88.84	84.68	83.01
2	83.1	83.3	82.9	-------	-------	82.1	85.44	93.00	88.63	84.58	82.97
3	82.9	83.3	82.9	-------	-------	82.2	85.47	93.13	88.44	84.48	82.92
4	83.0	83.25	82.9	-------	-------	82.2	85.58	92.43	88.32	84.37	82.87
5	82.9	83.3	82.9	-------	-------	82.2	85.57	92.06	88.10	84.28	82.82
6	82.9	83.25	82.9	-------	-------	82.2	85.52	92.11	87.83	84.26	82.78
7	82.9	83.2	82.9	-------	-------	82.2	85.54	92.55	87.64	84.21	82.73
8	83.0	83.2	82.9	-------	-------	82.2	85.63	92.80	87.51	84.19	82.71
9	83.0	83.2	82.9	-------	-------	82.2	85.84	92.95	87.35	84.06	82.70
10	83.1	83.2	82.9	-------	-------	82.2	86.04	92.86	87.21	84.01	82.68
11	83.1	83.15	82.9	-------	-------	82.2	86.23	92.77	87.05	83.95	82.67
12	83.1	83.2	82.9	-------	-------	82.18	86.60	92.72	86.85	83.89	82.65
13	83.1	83.2	82.9	-------	-------	82.16	87.60	92.62	86.78	83.85	82.62
14	83.2	83.2	82.9	-------	-------	82.25	89.06	92.62	86.60	83.80	82.59
15	83.2	83.25	82.9	-------	-------	82.27	89.27	92.64	86.41	83.75	82.55
16	83.3	83.1	82.9	-------	-------	82.26	88.89	92.40	86.34	83.68	82.50
17	83.3	83.0	82.9	-------	-------	82.29	88.70	92.25	86.23	83.63	82.46
18	83.3	83.1	82.9	-------	-------	82.30	88.87	91.88	86.14	83.61	82.46
19	83.3	83.1	82.9	-------	-------	82.47	89.29	91.64	86.00	83.56	82.43
20	83.35	83.05	82.9	-------	-------	82.54	90.07	91.18	85.87	83.49	82.41
21	83.4	83.05	82.9	-------	81.95	82.66	90.95	90.73	85.75	83.45	82.43
22	83.4	83.0	82.9	-------	81.95	82.82	91.96	90.45	85.66	83.41	82.50
23	83.4	83.0	82.9	82.7	81.9	83.05	93.10	90.22	85.52	83.37	82.40
24	83.4	83.0	82.9	-------	81.9	83.23	94.15	90.08	85.39	83.33	82.38
25	83.4	83.0	82.9	-------	82.0	83.39	94.82	89.98	85.32	83.29	82.31
26	83.4	83.0	82.9	-------	82.0	83.51	93.58	-------	85.24	83.25	82.28
27	83.25	82.9	82.9	-------	82.0	83.99	92.46	-------	85.07	83.21	82.30
28	83.3	82.9	82.9	-------	82.0	84.63	91.83	-------	85.94	83.16	82.23
29	83.3	82.9	82.9	-------	82.0	85.12	91.47	-------	84.85	83.11	82.23
30	83.3	82.9	82.9	-------	82.1	85.39	91.31	-------	84.79	83.07	82.25
31	83.3	-------	82.9	-------	82.1	-------	91.39	-------	84.74	83.03	-------

NOTE.—Add 2,800.00 feet to obtain elevation above mean sea level.

FLATHEAD LAKE AT SOMERS, MONT.

LOCATION.—Water-stage recorder in NE. ¼ sec. 26, T. 27 N., R. 21 W., at steamboat dock at Somers.

RECORDS AVAILABLE.—April, 1922, to September, 1929.

EXTREMES.—Maximum water-surface elevation during year, 2,890.56 feet June 12; minimum, 2,881.77 feet Feb. 21.

1922–1929: Maximum water-surface elevation, 2,895.92 feet May 31, 1928; minimum, 2,881.77 feet Feb. 21, 1929.

REMARKS.—Records good.

Daily elevation, in feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	82.85	82.98	82.67	-------	81.91	81.85	82.06	83.63	89.88	88.08	84.35	82.79
2	82.90	82.96	82.62	-------	81.90	81.84	82.08	83.80	89.93	87.90	84.25	82.75
3	82.80	82.96	82.51	-------	81.90	81.85	82.08	84.05	90.09	87.76	84.19	82.66
4	82.79	82.97	82.50	-------	81.89	81.85	82.08	84.21	90.22	87.60	84.13	82.63
5	82.76	82.93	82.49	-------	81.89	81.85	82.05	84.32	90.20	87.46	84.07	82.60
6	82.72	82.90	82.49	-------	81.85	81.85	82.10	84.44	90.16	87.28	83.99	82.55
7	82.74	82.88	82.49	-------	81.86	81.86	82.12	84.52	90.16	87.09	85.92	82.52
8	82.75	82.86	82.49	-------	81.87	81.86	82.08	84.61	90.22	86.94	83.91	82.50
9	82.77	82.88	82.48	-------	81.87	81.88	82.10	84.70	90.32	86.80	83.86	82.47
10	82.72	82.90	82.47	-------	81.85	81.89	82.10	84.82	90.45	86.69	83.80	82.44
11	82.71	82.86	82.45	-------	81.84	81.88	82.12	84.91	90.52	86.55	83.76	82.41
12	82.78	82.88	82.44	-------	81.85	81.83	82.10	84.98	90.56	86.37	83.70	82.40
13	82.84	82.89	82.42	82.08	81.85	81.83	82.12	85.16	90.53	86.24	83.63	82.38
14	82.91	82.88	82.44	82.12	81.84	81.84	82.14	85.45	90.50	86.10	83.59	82.35
15	82.89	82.90	82.44	82.05	81.84	81.86	82.15	85.83	90.50	86.00	83.55	82.32
16	82.92	82.92	-------	82.05	81.83	81.87	82.17	86.15	90.50	85.87	83.55	82.32
17	82.97	82.87	-------	82.04	81.84	81.88	82.19	86.34	90.44	85.75	83.43	82.30
18	82.94	82.86	-------	82.00	81.83	81.87	82.19	86.52	90.34	85.65	83.37	82.29
19	82.98	82.83	-------	82.03	81.82	81.87	82.19	86.74	90.24	85.60	83.36	82.27
20	83.00	82.87	-------	82.03	81.80	81.89	82.26	86.94	90.03	85.50	83.28	82.25
21	83.04	82.83	-------	82.00	81.79	81.93	82.31	87.23	89.83	85.38	83.24	82.24
22	83.03	82.82	-------	81.95	81.81	81.97	82.36	87.65	89.60	85.26	83.19	82.23
23	83.02	82.80	-------	81.95	81.81	81.93	82.45	88.08	89.39	85.15	83.10	82.21
24	83.02	82.80	-------	81.93	81.81	81.97	82.56	88.64	89.19	85.06	83.08	82.17
25	83.02	82.78	-------	81.95	81.82	81.98	82.67	89.32	89.00	84.94	83.00	82.12
26	83.02	82.78	-------	81.90	81.82	81.96	82.77	89.72	88.82	84.87	82.99	82.09
27	83.01	82.73	-------	81.90	81.83	81.97	82.89	89.92	88.67	84.77	82.95	82.10
28	83.02	82.70	-------	81.95	81.83	81.99	83.03	90.00	88.50	84.65	82.93	82.06
29	83.03	82.70	-------	81.92	-------	82.01	83.23	89.94	88.36	84.57	82.88	82.04
30	83.00	82.67	-------	81.87	-------	82.03	83.45	89.85	88.21	84.48	82.82	82.03
31	82.97	-------	-------	81.93	-------	82.05	-------	89.87	-------	84.41	82.80	-------

NOTE.—Add 2,800.00 feet to obtain elevation above mean sea level.

FLATHEAD RIVER AT KELLER RANCH, NEAR HOLT, MONT.

LOCATION.—Staff gage in NE. ¼ sec. 22, T. 27 N., R. 20 W., at Keller ranch, near Holt, Mont.

RECORDS AVAILABLE.—April, 1909, to July, 1912; June, 1928, to September, 1929.

EXTREMES.—Maximum water-surface elevation during year, 2,891.12 feet June 11; minimum, 2,881.93 feet Mar. 21.

1909–1912, 1928–29: Maximum water-surface elevation, 2,897.35 feet (determined from floodmark) May 29 and 30, 1928; minimum, 2,881.93 feet Mar. 21, 1929.

REMARKS.—Records good. Records used for profile study of river between Kalispell and Flathead Lake.

Daily elevation, in feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	------	------	82.5	82.2	82.0	82.05	84.20	90.30	88.26	84.42	82.86
2	------	83.06	------	82.5	82.2	82.0	82.1	84.24	90.72	88.12	84.32	82.80
3	82.80	------	------	82.5	82.2	82.1	82.1	84.40	90.96	87.98	84.20	82.74
4	------	------	------	82.5	82.2	82.1	82.15	84.60	90.82	87.80	84.10	82.68
5	------	------	------	82.5	82.2	82.1	82.1	84.64	90.68	87.64	84.02	82.62
6	------	------	------	82.5	82.2	82.1	82.1	84.74	90.66	87.50	83.96	82.58
7	------	------	------	82.5	82.2	82.1	82.1	84.80	90.72	87.28	83.90	82.56
8	------	------	------	82.5	82.2	82.15	82.1	84.86	90.82	87.16	83.84	82.54
9	------	------	------	82.5	82.2	82.15	82.1	84.96	91.00	87.04	83.80	82.50
10	------	------	------	82.5	82.2	82.2	82.1	85.16	91.10	86.92	83.76	82.46
11	------	------	------	82.5	82.2	82.2	82.1	85.26	91.12	86.74	83.74	82.42
12	------	------	------	82.5	82.2	82.2	82.1	85.40	91.08	86.56	83.70	82.38
13	------	------	------	82.4	82.2	82.2	82.1	85.94	91.00	86.38	83.66	82.34
14	------	------	------	82.4	82.2	82.25	82.1	86.52	91.02	86.28	83.62	82.30
15	------	------	82.47	82.4	82.1	82.25	82.20	87.00	90.98	86.18	83.58	82.26
16	------	------	------	82.4	82.1	82.25	82.18	87.00	90.98	86.06	83.54	82.24
17	------	------	------	82.4	82.1	82.25	82.18	87.04	90.88	85.94	83.50	82.22
18	------	------	------	82.4	82.1	82.25	82.20	87.16	90.76	85.82	83.46	82.22
19	------	------	------	82.4	82.1	82.3	82.24	87.40	90.52	85.70	83.42	82.22
20	------	------	------	82.4	82.1	82.3	82.28	87.88	90.28	85.60	83.34	82.22
21	------	------	------	82.4	82.1	81.93	82.36	88.40	90.04	85.50	83.28	82.22
22	------	------	------	82.4	82.1	81.95	82.50	88.82	89.80	85.38	83.20	82.20
23	------	82.85	------	82.4	82.1	81.95	82.62	89.62	89.60	85.26	83.12	82.18
24	------	------	------	82.4	82.1	81.95	82.74	90.40	89.40	85.14	83.06	82.16
25	------	------	------	82.4	82.0	81.95	82.82	91.00	89.20	85.06	83.02	82.14
26	------	------	------	82.4	82.0	82.0	82.90	90.90	89.10	84.98	83.00	82.12
27	------	------	------	82.4	82.0	82.0	83.20	90.68	88.80	84.90	82.96	82.10
28	------	------	------	82.3	82.0	82.0	83.40	90.50	88.60	84.80	82.92	82.08
29	------	------	------	82.3	------	82.0	83.80	90.36	88.40	84.70	82.92	82.06
30	------	------	------	82.3	------	82.05	84.10	90.22	88.20	84.60	82.90	82.04
31	------	------	------	82.3	------	82.05	------	90.10	------	84.52	82.88	------

NOTE.—Add 2,800.00 feet to obtain elevation above mean sea level.

FLATHEAD RIVER NEAR POLSON, MONT.

LOCATION.—Water-stage recorder in sec. 19, T. 22 N., R. 21 W., on highway bridge 12 miles below Polson.

DRAINAGE AREA.—7,010 square miles.

RECORDS AVAILABLE.—July, 1907, to September, 1929.

EXTREMES.—Maximum discharge during year, 45,500 second-feet June 13 (gage height, 11.7 feet); minimum, 2,660 second-feet Feb. 15–26 and Mar. 1–4. 1907–1929: Maximum discharge, 82,100 second-feet May 29 and 30, 1928 (gage height, 17.1 feet); minimum, 1,360 second-feet Dec. 9–14, 1919, and Mar. 14, 1920 (gage height, −0.1 foot).

REMARKS.—Records good. Several diversions from tributaries above Flathead Lake. Flow somewhat regulated by natural storage in Flathead Lake.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,800	5,160	4,020	3,290	2,860	2,660	3,070	7,060	38,600	27,500	9,460	4,290
2	4,940	4,910	4,150	3,290	2,860	2,660	3,070	7,810	39,400	26,200	9,460	4,430
3	4,670	4,830	4,290	3,290	2,860	2,660	3,070	8,070	41,100	25,600	9,170	4,430
4	4,640	4,640	4,020	3,290	2,860	2,660	3,070	9,170	43,700	24,300	8,890	4,150
5	4,570	4,640	3,980	3,290	2,760	2,760	3,400	9,750	42,800	23,700	8,610	4,290
6	4,460	4,640	3,950	3,290	2,760	2,760	3,180	10,000	42,000	22,500	8,340	4,150
7	4,510	4,590	3,920	3,180	2,760	2,760	3,070	10,400	42,000	22,000	8,070	4,020
8	4,540	4,590	3,890	3,180	2,760	2,760	3,290	10,700	42,000	22,000	7,810	4,020
9	4,590	4,490	3,760	3,180	2,760	2,760	3,290	10,700	42,800	20,300	7,810	3,890
10	4,460	4,440	3,760	3,180	2,760	2,760	3,180	11,400	43,700	19,200	7,550	7,760
11	4,440	4,640	3,760	3,180	2,760	2,760	3,290	11,700	44,600	18,700	7,060	3,640
12	4,620	4,670	3,760	3,070	2,760	2,760	3,180	12,100	44,600	18,200	6,830	3,640
13	4,770	4,720	3,640	3,070	2,760	2,760	3,290	12,800	44,600	17,700	6,830	3,640
14	4,970	4,750	3,640	3,070	2,760	2,860	3,180	13,600	44,600	16,700	6,610	3,520
15	4,910	4,700	3,640	3,070	2,660	2,860	3,070	15,300	44,600	16,200	6,180	3,640
16	5,000	4,620	3,520	3,070	2,660	2,860	3,290	16,700	44,600	15,800	6,180	3,520
17	5,140	4,670	3,520	3,070	2,660	2,860	3,290	18,200	43,700	15,300	6,180	3,520
18	5,050	4,590	3,520	3,180	2,660	2,860	3,400	18,700	42,800	14,900	5,970	3,520
19	5,160	4,590	3,520	3,070	2,660	2,860	3,400	19,700	42,000	14,400	5,570	3,400
20	5,220	4,490	3,400	2,960	2,660	2,860	3,520	20,800	41,100	13,600	5,380	3,400
21	5,330	4,570	3,400	2,960	2,660	2,860	3,520	22,500	39,400	13,200	5,380	3,290
22	5,300	4,590	3,400	2,960	2,660	2,860	3,640	25,000	37,800	12,800	5,200	3,070
23	5,280	4,590	3,400	3,070	2,660	3,070	4,020	27,500	36,200	12,400	5,200	3,180
24	5,280	4,290	3,290	3,070	2,660	2,960	4,020	31,000	35,400	12,100	4,870	3,290
25	5,280	4,290	3,290	2,960	2,660	2,860	4,290	34,700	33,200	11,700	5,070	3,400
26	5,280	4,150	3,290	2,960	2,660	2,860	4,430	37,800	31,700	11,000	4,870	3,290
27	5,250	4,290	3,400	2,960	2,760	2,960	4,570	40,300	31,000	11,000	4,870	3,180
28	5,280	4,290	3,400	2,860	2,760	2,960	4,870	41,100	30,300	10,700	4,720	3,180
29	5,300	4,150	3,290	2,860	-------	2,860	5,380	40,300	28,900	10,400	4,720	3,070
30	5,220	4,150	3,290	2,960	-------	2,960	6,180	39,400	28,200	10,000	4,570	3,070
31	5,140	-------	3,290	2,860	-------	2,960	-------	38,600	-------	9,750	4,570	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	5,330	4,440	4,950	0.706	0.81	304,000
November	5,160	4,150	4,560	.650	.73	271,000
December	4,290	3,290	3,630	.518	.60	223,000
January	3,290	2,860	3,090	.441	.51	190,000
February	2,860	2,660	2,730	.389	.41	152,000
March	3,070	2,660	2,830	.404	.47	174,000
April	6,180	3,070	3,650	.521	.58	217,000
May	41,100	7,060	20,400	2.91	3.36	1,250,000
June	44,600	28,200	39,600	5.65	6.30	2,360,000
July	27,500	9,750	16,800	2.40	2.77	1,030,000
August	9,460	4,570	6,520	.930	1.07	401,000
September	4,430	3,070	3,630	.518	.58	216,000
The year	44,600	2,660	9,380	1.34	18.19	6,790,000

FLATHEAD LAKE AT POLSON MONT.

LOCATION.—Water-stage recorder in SW. ¼ sec. 4, T. 22 N., R. 20 W., at south end of lake at Polson.

RECORDS AVAILABLE.—August, 1908, to December, 1926; June, 1928, to September, 1929.

EXTREMES.—Maximum water-surface elevation recorded during year, 2,890.80 feet June 13; minimum, 2,881.86 feet Feb. 23.

1908–1926, 1928–29: Maximum water-surface elevation recorded, 2,895.85 feet May 29, 1928; minimum, 2,881.5 feet Feb. 16–22, 1913, and Nov. 24, 1923.

REMARKS.—Records reliable.

Daily elevation, in feet, 1928–29

Day	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	-------	82.28	82.10	-------	82.18	83.84	89.91	88.28	84.48	82.98
2	83.04	-------	82.27	82.10	-------	82.15	83.98	90.06	88.06	84.38	82.91
3	83.01	-------	82.25	82.10	-------	82.17	84.11	90.30	87.91	84.38	82.95
4	82.94	-------	-------	82.10	-------	82.22	84.33	90.42	87.76	84.22	82.83
5	82.94	-------	-------	82.10	-------	82.41	84.50	90.35	87.62	84.20	82.84
6	82.94	-------	-------	82.09	-------	82.30	84.60	90.30	87.48	84.18	82.77
7	82.92	-------	-------	82.07	-------	82.22	84.70	90.30	87.36	84.11	82.73
8	82.92	-------	82.25	82.06	-------	82.35	84.78	90.32	87.18	84.08	82.69
9	82.88	-------	82.28	82.05	82.02	82.33	84.85	90.33	87.01	84.05	82.68
10	82.86	-------	82.27	82.03	82.00	82.29	84.94	90.42	86.84	83.99	82.68
11	82.94	-------	82.24	82.00	81.99	82.29	85.03	90.54	86.71	83.92	82.64
12	82.95	82.56	82.22	81.99	82.01	82.30	85.13	90.59	86.60	83.87	82.59
13	82.97	82.55	82.21	81.99	82.02	82.29	85.26	90.60	86.48	83.86	82.59
14	82.98	82.53	82.18	81.99	82.00	82.19	85.58	90.59	86.31	83.76	82.53
15	82,96	82.53	82.18	81.99	81.99	82.24	85.96	90.61	86.20	83.59	82.51
16	82.93	82.51	82.17	81.96	82.00	82.30	86.38	90.55	86.10	83.59	82.48
17	82.95	82.48	82.18	81.94	82.00	82.29	86.62	90.50	86.00	83.57	82.50
18	82.92	82.46	-------	81.90	81.98	82.35	86.80	90.41	85.86	83.48	82.50
19	82.92	82.45	82.10	81.90	82.00	82.37	-------	90.25	85.76	83.38	82.48
20	82.88	82.42	82.08	81.87	82.02	82.41	-------	90.11	85.55	83.36	82.45
21	82.91	82.41	82.02	81.89	82.04	82.46	87.38	89.93	85.48	83.27	82.34
22	82.92	82.38	81.99	81.87	82.05	82.55	87.78	89.74	85.38	83.24	82.25
23	82.92	82.37	-------	81.95	82.07	82.82	88.20	89.65	85.30	83.20	82.27
24	82.91	82.34	-------	82.07	82.07	82.86	88.70	89.42	85.18	83.14	82.33
25	82.89	82.32	-------	-------	82.07	82.89	89.23	89.21	85.06	83.13	82.36
26	82.87	82.31	82.13	-------	82.06	82.95	89.78	88.94	84.91	83.07	82.35
27	82.89	82.35	82.16	-------	82.08	83.04	90.02	88.82	84.88	83.12	82.24
28	82.87	82.38	82.14	-------	82.10	83.12	90.07	88.65	84.80	83.06	82.24
29	82.82	82.35	82.14	-------	-------	83.31	90.08	88.48	84.70	83.02	82.19
30	82.82	82.32	82.12	-------	-------	83.56	89.96	88.42	84.66	83.01	82.17
31	-------	82.29	82.11	-------	82.17	-------	89.88	-------	84.56	82.96	-------

NOTE.—Add 2,800.00 feet to obtain elevation above mean sea level.

MIDDLE FORK OF FLATHEAD RIVER AT BELTON, MONT.

LOCATION.—Staff gage in NW. ¼ sec. 36, T. 32 N., R. 19 W., at Belton.
DRAINAGE AREA.—900 square miles.
RECORDS AVAILABLE.—October, 1910, to September, 1923; February to September, 1929.
EXTREMES.—Maximum discharge during year, 17,600 second-feet May 24 (gage height, 10.6 feet); minimum (estimated), 115 second-feet Mar. 1.
1910–1923, 1929: Maximum discharge, 49,000 second-feet June 21, 1916 (gage height, 20.0 feet); minimum, 115 second-feet Mar. 1, 1929.
REMARKS.—Records good. No diversions or regulation.

Daily and monthly discharge, in second-feet, 1929

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	115	795	4,030	13,300	3,030	880	547
2	------	130	660	5,300	13,300	2,900	818	547
3	------	160	630	4,030	8,630	2,640	818	547
4	------	193	630	4,030	6,800	2,640	818	524
5	------	225	660	3,730	6,210	2,400	818	477
6	------	260	660	3,450	7,660	2,170	701	454
7	------	260	600	3,170	10,000	2,060	674	432
8	------	225	600	3,310	8,630	2,060	647	410
9	------	242	540	3,880	8,890	1,950	647	389
10	------	242	540	3,880	8,630	1,750	622	389
11	------	260	485	4,030	7,890	1,750	622	389
12	------	260	485	5,470	7,660	1,650	674	368
13	------	260	485	8,890	7,010	1,300	701	368
14	------	260	512	11,600	7,890	1,560	674	368
15	------	260	600	8,630	6,800	1,560	674	368
16	------	298	660	7,220	6,210	1,560	674	368
17	------	338	725	6,400	5,650	1,560	674	389
18	------	338	760	7,440	4,800	1,380	647	389
19	------	360	870	8,890	3,730	1,380	622	389
20	------	383	1,110	10,000	3,310	1,300	596	368
21	------	383	1,460	11,200	3,310	1,220	572	368
22	------	408	1,740	13,600	3,170	1,150	547	368
23	------	383	2,520	16,400	3,310	1,080	547	368
24	165	338	2,520	17,600	3,310	1,080	524	348
25	160	338	2,400	13,600	3,590	1,080	524	348
26	150	338	2,640	9,710	3,730	1,080	524	348
27	130	338	3,590	7,660	3,450	1,010	524	328
28	120	408	4,480	5,830	3,450	945	547	328
29	------	870	5,470	5,650	3,450	945	524	328
30	------	950	4,180	5,650	3,310	945	524	309
31	------	950	------	7,220	------	880	547	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
Feb. 24–28	165	120	145	0.161	0.27	1,440
March	950	115	348	.387	.45	21,400
April	5,470	485	1,470	1.63	1.82	87,500
May	17,600	3,170	7,470	8.30	9.57	459,000
June	13,300	3,170	6,240	6.93	7.73	371,000
July	3,030	880	1,610	1.79	2.06	99,000
August	880	524	642	.713	.82	39,500
September	547	309	397	.442	.49	23,600
The period	------	------	------	------	------	1,100,000

SOUTH FORK OF FLATHEAD RIVER NEAR COLUMBIA FALLS, MONT.

LOCATION.—Water-stage recorder in NE. ¼ sec. 17, T. 30 N., R. 19 W., 2 miles above mouth of river and 9 miles east of Columbia Falls.

DRAINAGE AREA.—1,640 square miles.

RECORDS AVAILABLE.—September, 1910, to September, 1916; April, 1923, to September, 1929.

EXTREMES.—Maximum discharge during year, 24,400 second-feet May 24 (gage height, 13.6 feet); minimum (estimated), 375 second-feet Jan. 20.

1910–1916, 1923–1929: Maximum discharge, about 46,200 second-feet June 19, 1916 (gage height, 16.6 feet, bridge gage); minimum, 340 second-feet Oct. 6, 1924 (gage height, 2.08 feet).

REMARKS.—Records fair. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	614	702	666		440	455	936	5,560	15,300	5,400	1,170	549
2	684	666			440	470	894	5,240	16,500	4,940	1,130	559
3	690	642			470	470	936	5,720	13,900	4,630	1,130	597
4	684	690			470	490	936	5,720	11,400	4,330	1,130	570
5	690	696		480	470	470	936	5,240	10,300	3,900	1,090	559
6	734	672			440	490	899	4,940	11,800	3,620	1,050	554
7	830	648			440	470	864	4,940	13,700	3,360	1,050	549
8	976	636			425	470	828	5,090	14,800	3,230	1,010	533
9	888	702	505		425	470	767	5,560	15,500	2,990	973	518
10	1,040	1,010		510	440	455	747	5,560	14,800	2,810	936	514
11	1,170	1,090		490	440	510	734	6,060	13,900	2,640	899	504
12	1,120	973		455	425	510	734	7,800	12,800	2,520	899	494
13	1,040	899		490	440	530	728	12,000	12,400	2,360	871	480
14	973	864		510	425	550	794	14,400	13,300	2,310	842	467
15	973	821		490	400	530	973	11,800	12,800	2,160	828	462
16	982	808		470	425	600	1,090	10,100	12,200	2,160	808	462
17	992	767		470	390	575	1,130	9,940	11,600	1,960	754	458
18	1,000	732		455	390	570	1,170	11,200	9,740	1,960	709	458
19	1,010	690		455	400	600	1,420	12,400	8,560	1,960	690	453
20	1,020	672		375	400	630	1,870	14,600	7,260	1,820	666	448
21	1,030	690		400	400	630	2,310	17,200	6,560	1,780	654	448
22	1,040	696		380	425	630	2,810	20,000	6,220	1,680	619	453
23	1,050	702		415	425	630	3,490	22,700	6,390	1,640	608	458
24	1,010	690	540	390	425	630	3,230	23,800	6,560	1,550	597	462
25	970	660		425	425	655	3,360	21,600	6,900	1,460	608	467
26	940	678		440	455	655	3,900	16,000	7,080	1,420	602	462
27	907	702		400	440	655	5,090	12,400	6,900	1,380	592	462
28	864	684		400	455	815	6,220	10,500	6,560	1,340	570	467
29	828	660		415	------	1,030	6,900	9,540	6,390	1,290	559	467
30	821	654		425	------	1,130	6,560	9,340	6,060	1,250	554	467
31	794	------		425	------	1,010	------	11,200	------	1,210	554	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,170	614	915	0.558	0.64	56,300
November	1,090	636	740	.451	.50	44,000
December	------	------	528	.322	.37	32,500
January	510	375	453	.276	.32	27,900
February	470	390	430	.262	.27	23,900
March	1,130	455	606	.369	.42	37,300
April	6,900	728	2,110	1.29	1.44	126,000
May	23,800	4,940	10,900	6.65	7.67	670,000
June	16,500	6,060	10,600	6.46	7.21	631,000
July	5,400	1,210	2,490	1.52	1.75	153,000
August	1,170	554	811	.494	.57	49,900
September	597	448	493	.301	.34	29,300
The year	23,800	375	2,600	1.58	21.50	1,880,000

STILLWATER RIVER NEAR KALISPELL, MONT.

LOCATION.—Staff gage in NE. ¼ sec. 14, T. 29 N., R. 22 W., on highway bridge 5 miles north of Kalispell.

RECORDS AVAILABLE.—September, 1906, to June, 1907; April to August, 1922; June, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,190 second-feet May 26 (gage height, 5.80 feet); minimum, 34 second-feet Sept. 15 (gage height, 0.34 foot).

1922, 1928–29: Maximum recorded discharge, 2,750 second-feet May 22, 1922 (gage height, 10.50 feet); minimum, 34 second-feet Sept. 15, 1929 (gage height, 0.34 foot).

REMARKS.—Records fair. No records Dec. 4 to Mar. 19. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	128	95	95	------	130	493	743	449	123	105
2	108	89	89	------	123	559	625	427	104	102
3	102	73	45	------	130	515	767	384	98	104
4	95	89	------	------	138	493	990	427	92	108
5	95	95	------	------	138	471	990	405	87	105
6	95	73	------	------	138	471	965	342	106	99
7	95	55	------	------	138	603	940	261	116	90
8	102	55	------	------	130	581	890	154	105	82
9	108	60	------	------	130	515	915	138	105	72
10	108	238	------	------	123	671	890	130	92	57
11	108	176	------	------	123	719	890	123	87	44
12	102	142	------	------	116	767	890	300	85	38
13	73	128	------	------	116	815	1,040	581	123	36
14	68	121	------	------	116	767	1,040	493	242	36
15	73	114	------	------	123	695	965	405	261	35
16	78	114	------	------	138	940	915	342	223	73
17	83	114	------	------	162	1,090	840	300	205	75
18	95	121	------	------	162	940	815	261	178	48
19	102	108	------	------	162	1,090	791	214	162	42
20	102	128	------	94	154	1,140	603	130	146	42
21	95	158	------	94	162	1,090	719	146	146	44
22	95	167	------	94	178	1,060	791	146	138	45
23	95	158	------	94	178	1,020	840	123	130	50
24	95	135	------	94	187	1,040	743	116	123	55
25	89	121	------	94	187	1,160	671	104	116	57
26	89	121	------	90	196	1,160	648	102	116	60
27	83	114	------	96	471	1,060	603	196	116	58
28	83	108	------	100	449	1,020	559	280	116	60
29	83	95	------	130	471	990	449	261	116	60
30	83	95	------	146	405	915	405	196	108	58
31	89	------	------	138	------	791	------	146	108	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	128	68	93.5	5,750
November	238	55	115	6,840
March 20–31	146	90	105	2,500
April	471	116	186	11,100
May	1,160	471	827	50,800
June	1,040	465	798	47,500
July	581	102	261	16,000
August	261	85	131	8,060
September	108	35	64.7	3,850

WHITEFISH RIVER NEAR KALISPELL, MONT.

LOCATION—Staff gage near N. ¼ corner of sec. 4, T. 29 N., R. 21 W., about 8 miles north of Kalispell.

RECORDS AVAILABLE.—November to December, 1906; July, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 684 second-feet June 4 (gage height, 12.52 feet); minimum, 22 second-feet at times during August and September (gage height, 10.70 feet).

1906, 1928–29: Maximum discharge, that on June 4, 1929; minimum, 14.8 second-feet Oct. 22, 1906 (discharge measurement).

REMARKS.—Records good. No records Dec. 1 to Mar. 14. Some regulation at Whitefish Lake. No diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	95	93	------	63	185	637	368	102	33
2	90	93	------	63	178	637	368	88	33
3	90	93	------	80	181	684	368	88	37
4	84	93	------	76	185	684	368	63	41
5	84	93	------	68	178	684	347	59	52
6	84	84	------	68	195	637	326	52	56
7	79	84	------	68	198	637	286	48	63
8	79	84	------	68	202	637	286	41	63
9	79	84	------	76	212	637	267	32	63
10	57	79	------	80	248	637	248	32	59
11	57	79	------	80	347	637	248	32	59
12	49	79	------	68	347	637	230	32	54
13	49	79	------	63	347	637	212	32	52
14	49	84	------	63	433	637	212	32	52
15	49	84	116	68	433	637	212	32	52
16	53	84	116	68	433	637	205	33	54
17	53	84	102	73	433	591	195	37	54
18	57	84	102	73	411	212	178	32	63
19	57	84	88	76	411	165	195	32	63
20	57	79	73	76	433	165	146	22	76
21	57	79	80	88	455	637	146	22	76
22	68	79	68	99	500	637	146	26	76
23	102	79	68	105	522	591	131	22	76
24	102	79	76	105	522	591	116	22	76
25	102	79	68	102	545	545	116	22	76
26	97	79	63	119	591	522	108	32	63
27	97	79	63	140	637	500	116	32	41
28	97	70	68	156	637	478	116	32	22
29	97	70	76	159	637	433	116	33	22
30	93	70	80	178	637	478	116	32	22
31	93	------	76	------	637	------	105	33	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	102	49	76.0	46,700
November	93	70	82.1	48,900
March 15–31	116	63	81.4	27,400
April	178	63	89.0	53,000
May	637	178	397	244,000
June	684	165	563	335,000
July	368	105	213	131,000
August	102	22	39.7	24,400
September	76	22	54.3	32,300

SWAN RIVER NEAR BIG FORK, MONT.

LOCATION.—Staff gage in NW. ¼ sec. 14, T. 26 N., R. 19 W., at outlet of Swan Lake and 7 miles southeast of Big Fork.

DRAINAGE AREA.—647 square miles.

RECORDS AVAILABLE.—April, 1922, to September, 1929.

EXTREMES.—Maximum discharge during year, 5,300 second-feet May 26 (gage height, 4.40 feet); minimum, 267 second-feet Feb. 23–24 (gage height, 0.44 foot).

1922–1929: Maximum discharge, 7,820 second-feet May 28, 1928 (gage height, 5.90 feet); minimum, that of Feb. 23–24, 1929.

REMARKS.—Records good. Natural storage in Swan Lake. No diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	560	640	560	522	329	300	600	2,370	2,920	2,500	815	454
2	560	640	560	487	329	300	600	2,370	3,360	2,500	770	454
3	560	600	560	487	329	329	600	2,240	3,670	2,370	770	454
4	640	600	522	487	329	300	600	2,240	3,820	2,240	770	454
5	560	600	487	487	329	300	640	2,240	3,520	2,240	725	420
6	640	560	454	420	329	329	682	2,100	3,220	2,100	725	420
7	640	560	454	454	329	358	640	1,970	3,220	1,970	682	420
8	682	560	454	487	300	358	640	1,970	3,360	1,840	682	420
9	725	560	454	454	300	358	600	1,840	3,670	1,710	640	420
10	770	600	487	454	300	358	600	1,840	3,980	1,710	640	420
11	815	640	487	454	300	358	600	1,840	4,140	1,710	640	389
12	815	682	522	454	300	358	600	1,840	4,310	1,460	640	389
13	815	682	522	454	300	389	560	1,970	4,310	1,460	600	389
14	815	682	487	454	300	389	560	2,240	4,140	1,340	600	389
15	815	682	487	454	300	389	640	2,640	4,140	1,340	560	389
16	815	682	487	454	300	389	725	2,640	4,140	1,340	560	389
17	770	640	487	454	300	389	725	2,640	4,140	1,280	560	389
18	815	640	487	487	300	389	770	2,640	3,820	1,220	487	358
19	815	640	487	454	273	420	815	2,640	3,820	1,220	487	358
20	815	640	454	389	273	420	910	2,780	3,520	1,170	487	358
21	815	600	454	389	273	454	1,060	3,070	3,220	1,120	487	358
22	770	600	420	358	273	487	1,220	3,360	2,920	1,120	487	358
23	770	560	420	358	273	487	1,220	3,820	2,640	1,060	487	358
24	770	560	454	358	273	487	1,400	4,480	2,500	1,060	454	358
25	770	560	454	358	273	454	1,460	4,970	2,500	1,010	487	358
26	725	560	420	358	300	454	1,460	5,300	2,500	960	454	358
27	725	560	420	329	300	454	1,580	4,970	2,500	910	487	358
28	725	560	454	329	300	487	1,710	4,480	2,640	910	487	358
29	682	560	487	358	-------	522	1,840	3,820	2,640	862	487	358
30	682	560	487	329	-------	560	2,100	3,360	2,640	862	454	358
31	640	-------	487	329	-------	600	-------	3,360	-------	815	454	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	815	560	726	1.12	1.29	44,600
November	682	560	607	.938	1.05	36,100
December	560	420	479	.740	.85	29,500
January	522	329	423	.654	.75	26,000
February	329	273	300	.464	.48	16,700
March	600	300	407	.629	.73	25,000
April	2,100	560	938	1.45	1.62	55,800
May	5,300	1,840	2,900	4.48	5.16	178,000
June	4,310	2,500	3,400	5.26	5.87	202,000
July	2,500	815	1,460	2.26	2.61	89,800
August	815	454	583	.901	1.04	35,800
September	454	358	390	.603	.67	23,200
The year	5,300	273	1,050	1.62	22.12	762,000

BIG CREEK NEAR POLSON, MONT.

LOCATION.—Water-stage recorder in NW. ¼ sec. 4, T. 22 N., R. 19 W., just below power house of Mission Range Power Co., three-fourths of a mile above mouth of creek, and 7 miles east of Polson.

RECORDS AVAILABLE.—June, 1917, to September, 1929.

EXTREMES.—Maximum discharge during year, 33.3 second-feet May 25 (flow in pipe line and canal has been included) (gage height, 2.01 feet); minimum, 2.9 second-feet Mar. 17.

1917–1929: Maximum discharge, 104 second-feet June 9, 1917; no flow at short intervals during November and December, 1922, when power plant was shut down.

REMARKS.—Records fair Oct. 1 to Apr. 27 and July 8 to Sept. 30; others good. Daily discharge is flow past gage plus water diverted between power house and gage to canal of United States Indian Irrigation Service and to Polson pipe line. Flow is regulated by operation of power plant.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.4	5.1	5.3	4.0	3.8	3.8	3.2	16.6	19.5	15.6	4.7	4.9
2	4.8	4.2	4.4	4.6	3.8	3.8	3.2	18.6	20.3	15.1	4.7	4.2
3	4.8	4.4	4.5	4.8	3.6	3.2	3.3	18.4	21.1	14.6	4.7	4.8
4	4.9	3.0	5.1	4.7	3.6	3.6	3.3	19.1	21.4	13.5	3.6	5.0
5	4.9	4.2	6.3	4.5	3.8	3.8	3.4	17.0	16.1	13.7	4.3	4.6
6	4.9	4.4	6.1	3.9	4.3	3.7	3.4	17.8	16.3	12.5	4.7	4.8
7	3.9	4.4	6.5	4.3	4.4	3.3	3.0	17.8	19.3	10.7	4.6	4.8
8	3.9	4.3	6.3	4.8	4.4	3.6	3.1	19.1	21.6	7.8	4.4	3.8
9	4.6	4.5	4.3	4.7	3.9	3.6	3.4	18.0	23.5	4.6	4.1	4.3
10	4.7	4.5	5.5	4.8	3.7	3.1	3.4	17.0	24.8	3.9	4.0	4.2
11	5.4	3.6	6.0	4.7	3.6	3.5	3.2	18.0	25.7	3.7	4.2	4.8
12	5.4	4.0	5.0	4.6	3.9	4.1	3.3	19.6	22.1	3.8	4.6	4.7
13	5.3	5.0	5.4	4.4	4.2	3.8	3.2	22.7	21.6	3.7	4.3	4.7
14	3.9	4.2	5.1	3.6	4.2	3.7	3.1	23.5	21.9	4.0	4.3	4.9
15	3.9	4.4	6.3	4.8	4.1	3.7	3.4	21.4	21.9	3.8	4.5	4.4
16	4.3	4.4	4.7	4.7	4.1	3.9	3.5	18.6	23.4	4.2	4.3	4.8
17	4.4	4.6	4.8	4.6	3.7	2.9	3.4	16.6	24.8	4.0	4.3	4.6
18	4.1	3.9	6.4	4.4	4.0	3.6	3.3	18.8	24.0	4.0	3.8	4.8
19	4.2	4.0	5.4	4.4	4.1	3.8	3.4	20.1	19.8	4.3	3.8	4.5
20	4.1	4.7	5.1	4.1	4.0	3.8	3.4	22.2	17.3	4.3	4.1	4.5
21	3.6	5.2	6.4	4.4	3.8	3.6	3.0	22.7	17.3	3.2	4.1	4.5
22	4.0	5.6	5.9	4.5	3.4	3.7	3.1	21.9	17.3	4.1	4.2	3.8
23	4.5	5.8	4.5	3.7	3.5	3.7	3.3	17.0	17.1	4.5	4.4	4.3
24	4.3	5.9	6.2	4.2	3.0	3.1	3.4	23.0	17.1	4.4	4.3	4.3
25	4.2	4.2	4.5	3.9	3.6	3.5	3.7	26.8	17.1	4.4	4.2	4.5
26	4.5	5.6	4.6	3.9	3.7	3.8	3.2	24.6	16.8	4.7	4.1	4.2
27	4.4	6.1	5.0	3.7	3.7	3.4	3.5	18.1	16.8	4.4	4.6	4.1
28	3.4	6.1	5.1	3.8	3.7	3.5	9.8	20.3	16.6	3.7	4.7	4.1
29	5.0	4.1	5.0	3.8	-------	3.5	20.0	19.8	16.8	4.2	5.0	4.1
30	5.4	4.7	4.0	4.1	-------	3.5	17.2	18.1	16.6	4.8	5.0	4.0
31	5.4	-------	4.6	4.0	-------	3.1	-------	15.6	-------	4.2	4.9	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	5.4	3.4	4.50	277
November	6.1	3.0	4.64	276
December	6.5	4.0	5.30	326
January	4.8	3.6	4.30	264
February	4.4	3.0	3.84	213
March	4.1	2.9	3.57	220
April	20.0	3.0	4.54	270
May	26.8	15.6	19.60	1,210
June	25.7	16.1	19.90	1,180
July	15.6	3.2	6.40	394
August	5.0	3.6	4.37	269
September	5.0	3.8	4.47	266
The year	26.8	2.9	7.13	5,160

PRIEST LAKE AT OUTLET, NEAR COOLIN, IDAHO

LOCATION.—Staff gage in W. ½ sec. 5, T. 59 N., R. 4 W., 400 feet north of lake outlet and 2 miles northwest of Coolin. Zero of gage, 2,435.06 feet above mean sea level, United States Coast and Geodetic Survey datum, or 2,437.99 feet, United States Geological Survey datum (Bull. 567).

DRAINAGE AREA.—572 square miles.

RECORDS AVAILABLE.—April, 1928, to September, 1929. Fragmentary gage-height records at Coolin from June, 1911, to September, 1913, are published in connection with the station on Priest River at outlet of Priest Lake, at Coolin.

EXTREMES.—Maximum gage height during year, 4.45 feet May 26; minimum, 0.82 foot Sept. 29 and 30.

1928–29: Maximum gage height, 5.68 feet May 28, 1928; minimum, 0.82 foot Sept. 29 and 30, 1929.

REMARKS.—Records good. No records for days for which no gage heights are shown.

Daily gage height, in feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			1.26		1.11					3.31	1.99	1.19
2							1.67	3.25		3.29	1.99	1.17
3								3.31		3.25	1.93	1.15
4		1.16						3.57	3.84	3.23	1.89	1.11
5									3.77	3.21	1.87	1.11
6	1.20						1.73		3.75	3.13	1.85	1.07
7				1.36				3.61	3.69	3.09	1.83	1.03
8			1.16						3.67	2.99	1.81	1.01
9					1.41			3.73	3.67	2.95	1.77	.99
10		1.21					1.79	3.76	3.69	2.81	1.77	.97
11						1.39			3.69	2.79	1.73	.95
12				1.34				3.97	3.65	2.77	1.71	.93
13	1.24							4.09	3.67	2.77	1.68	.93
14									3.61	2.63	1.67	.93
15			1.34				1.95	4.27	3.67	2.63	1.67	.91
16								4.27	3.69	2.59	1.59	.91
17					1.39	1.33		4.27	3.71	2.57	1.57	.89
18								4.18	3.77	2.53	1.49	.89
19									3.81	2.47	1.46	.91
20	1.26			1.38			2.04	4.17	3.85	2.37	1.44	.88
21									3.85	2.37	1.42	.86
22		1.30							3.87	2.37	1.41	.86
23			1.28						3.81	2.31	1.39	.88
24					1.39				3.79	2.23	1.37	.88
25		1.30				1.47			3.64	2.19	1.33	.88
26								4.45	3.67	2.17	1.31	.86
27	1.23			1.39			2.53		3.63	2.17	1.31	.84
28									3.61	2.13	1.29	.84
29						1.60			3.53	2.11	1.27	.82
30			1.38						3.53	2.07	1.25	.82
31										2.03	1.23	

PRIEST RIVER AT OUTLET OF PRIEST LAKE, NEAR COOLIN, IDAHO

LOCATION.—Water-stage recorder in SW. ¼ sec. 5, T. 59 N., R. 4 W., at Southwest end of Priest Lake and 2 miles northwest of Coolin. Zero of gage, 2,435.06 feet above mean sea level, United States Coast and Geodetic Survey datum, or 2,437.99 feet, United States Geological Survey datum (Bull. 567).

DRAINAGE AREA.—572 square miles.

RECORDS AVAILABLE.—June, 1911, to September, 1918 (fragmentary); May, 1919, to September, 1929.

EXTREMES.—Maximum discharge during year, 3,660 second-feet May 23–27; maximum gage height, 4.12 feet May 15; minimum discharge, 190 second-feet Sept. 30 (gage height, 0.65 foot).

1911–1929: Maximum discharge, 7,290 second-feet May 30, 1917 (gage height, 6.83 feet); minimum, 133 second-feet Nov. 18–20, 1925 (gage height, 0.03 foot).

REMARKS.—Records good July to September; others fair. Discharge interpolated Nov. 2, 3, and Dec. 20–22. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	234	262	276	240	230	220	342	868	3,140	1,680	603	295
2	244	261	272	240	230	217	342	890	3,080	1,620	593	295
3	251	259	272	240	230	217	342	930	3,080	1,570	571	287
4	258	258	268	237	230	217	346	978	3,010	1,520	551	280
5	258	258	265	240	227	217	342	1,030	2,820	1,470	537	283
6	254	258	262	237	227	217	346	1,060	2,760	1,420	527	272
7	248	254	262	230	227	217	354	1,070	2,640	1,370	513	265
8	248	254	254	230	227	217	362	1,040	2,580	1,320	499	258
9	251	272	262	230	224	217	366	1,020	2,580	1,280	485	254
10	265	283	280	230	220	230	366	1,010	2,520	1,230	476	251
11	268	287	287	230	220	230	366	1,180	2,400	1,180	476	244
12	258	295	287	224	217	230	358	1,420	2,340	1,180	467	240
13	258	299	287	220	217	230	346	1,620	2,220	1,140	454	237
14	254	302	283	220	217	230	346	2,220	2,220	1,100	436	230
15	254	299	280	217	217	234	350	2,880	2,170	1,050	424	227
16	258	299	280	214	220	234	342	3,400	2,170	1,030	436	224
17	265	291	272	214	220	230	338	3,400	2,170	1,000	441	224
18	268	291	268	214	217	230	334	3,400	2,120	970	419	220
19	265	283	268	214	217	234	338	3,400	2,060	938	398	217
20	272	268	254	217	214	244	346	3,400	2,060	868	398	211
21	272	268	241	220	214	254	362	3,530	2,000	824	390	204
22	272	268	228	220	214	262	382	3,530	1,950	789	382	204
23	276	268	214	217	217	265	407	3,660	1,950	769	362	214
24	276	268	201	217	220	265	424	3,660	1,950	742	354	217
25	276	265	207	217	224	268	467	3,660	1,900	748	346	217
26	276	268	220	217	224	272	517	3,660	1,840	722	342	211
27	276	272	227	220	220	280	566	3,660	1,840	703	310	204
28	272	272	227	224	220	302	643	3,530	1,780	678	314	198
29	272	268	237	224	------	322	722	3,400	1,730	654	326	192
30	276	268	237	224	------	330	796	3,200	1,730	637	318	190
31	276	------	237	227	------	338	------	3,140	------	620	302	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	276	234	263	0.460	0.53	16,200
November	302	254	274	.479	.53	16,300
December	287	201	255	.446	.51	15,700
January	240	214	225	.393	.45	13,800
February	230	214	221	.386	40	12,300
March	338	217	247	.432	.50	15,200
April	796	334	409	.715	.80	24,300
May	3,660	868	2,410	4.21	4.85	148,000
June	3,140	1,730	2,290	4.00	4.46	136,000
July	1,680	620	1,060	1.85	2.13	65,200
August	603	302	434	.759	.88	26,700
September	295	190	236	.413	.46	14,000
The year	3,660	190	697	1.22	16.50	504,000

PRIEST RIVER AT PRIEST RIVER, IDAHO

LOCATION.—Staff gage in sec. 24, T. 56 N., R. 5 W., at highway bridge three-quarters of a mile northeast of Priest River and 1½ miles above mouth of river. Zero of gage, 2,052.24 feet above mean sea level.

DRAINAGE AREA.—904 square miles.

RECORDS AVAILABLE.—June, 1903, to April, 1905; November, 1910, to April, 1911; May to December, 1923; February to September, 1929.

EXTREMES.—Maximum discharge during year (estimated), 4,200 second-feet May 22–28; minimum, 301 second-feet Sept. 30 (gage height, 0.60 foot).

1903–1905, 1910–11, 1923, 1929: Maximum discharge, 6,300 second-feet Apr. 30, 1904 (gage height, 6.07 feet, present gage datum); minimum, 301 second-feet Sept. 30, 1929; minimum gage height, 0.45 foot Nov. 16 and 17, 1923 (present gage datum).

REMARKS.—Records for Mar. 10–31 and July 15 to Sept. 30 are good; others fair. No diversions above station. Some regulation, owing to operation of flash dam on West Branch of Priest River. Record obtained from gage 500 feet below Saddler Creek and 3 miles upstream June 4 to Sept. 17, where flow is the same as that passing lower gage.

Daily and monthly discharge, in second-feet, 1929

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	[a] 390	660	1,300	[a] 3,750	2,130	758	431
2	------	[a] 400	[a] 690	1,380		[a] 2,050	726	431
3	------	[a] 410	721	1,900		[a] 2,000	726	431
4	------	[a] 420	660	2,360	3,610	[a] 1,950	726	404
5	------	[a] 430	[a] 620	1,900	3,480	[a] 1,900	726	404
6	------	[a] 420	572	1,380	[a] 3,500	[a] 1,850	694	404
7	------	[a] 430	601	1,380	[a] 3,500	[a] 1,750	663	404
8	------	[a] 440	572	1,460	3,500	[a] 1,650	663	378
9	------	459	630	1,560	3,500	1,560	663	378
10	------	490	630	1,460	[a] 3,200	1,500	632	378
11	------	517	660	1,460	[a] 3,000	1,420	632	378
12	------	517	[a] 750	1,820	[a] 2,900	[a] 1,400	632	378
13	------	517	817	[a] 2,250	[a] 2,800	[a] 1,350	601	353
14	------	544	817	2,700	[a] 2,700	[a] 1,300	602	353
15	------	544	1,460	2,700	[a] 2,700	1,180	543	353
16	------	572	988	[a] 3,900	[a] 2,700	1,110	514	329
17	------	572	784		[a] 2,700	1,110	572	329
18	------	572	721		[a] 2,700	1,110	602	330
19	------	572	[a] 750		[a] 2,530	1,040	572	330
20	------	601	1,020		[a] 2,500	962	572	318
21	------	752	784		[a] 2,450	1,040	543	330
22	------	690	850	[a] 4,200	2,430	1,020	490	326
23	------	630	1,640		2,360	962	514	330
24	------	601	1,220		[a] 2,320	962	[a] 514	330
25	------	572	1,140		2,290	892	514	335
26	------	572	1,140		[a] 2,180	824	514	326
27	[a] 380	630	1,820		2,130	824	486	326
28	[a] 383	918	1,980		2,130	824	431	318
29	------	1,020	1,820	[a] 4,000	2,230	791	458	309
30	------	752	1,220		2,130	791	458	301
31	------	752	------		--------	791	458	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
Feb. 27-28	383	380	382	1,520
March	1,020	390	571	35,100
April	1,980	572	958	57,000
May	----------	1,300	2,960	182,000
June	----------	2,130	2,850	170,000
July	2,130	791	1,290	79,300
August	758	431	587	36,100
September	431	301	358	21,300
The period	----------	----------	----------	582,000

[a] Estimated.

KETTLE RIVER BASIN

KETTLE RIVER NEAR FERRY, WASH.

LOCATION.—Water-stage recorder in lot 7, sec. 10, T. 40 N., R. 32 E., 1¼ miles south of international boundary and Ferry. Zero of gage, 1,840.00 feet above mean sea level.

DRAINAGE AREA.—2,220 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period of record, 7,420 second-feet May 24 (gage height, 15.15 feet); minimum, not determined, occurred during period Jan. 1 to Feb. 20, when stage-discharge relation was affected by ice.

REMARKS.—Records excellent except those for Sept. 27 to Nov. 22 and Dec. 30 to Feb. 20, which are poor. Numerous small diversions above station for regulation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Aug.	Sept.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	293		170			104	116	1,180	4,680	1,260	199	94
2	-------	280		158	109		96	114	1,220	6,200	1,180	196	89
3	-------	266		86		84	102	114	1,410	5,050	1,070	188	89
4	-------	257		91			106	114	1,510	4,320	984	184	88
5	-------	257		100			110	114	1,460	4,410	930	166	88
6	-------	249		104		79	110	114	1,360	5,050	857	160	88
7	-------	240		112			110	121	1,310	4,680	829	154	88
8	-------	228		116	88		112	121	1,310	4,860	796	154	86
9	-------	223		131			114	126	1,360	5,050	744	142	89
10	-------	223		141		82	123	123	1,360	5,240	692	131	92
11	-------	219		154			125	126	1,510	5,430	662	128	88
12	-------	215	190	157			123	126	1,780	4,680	631	131	83
13	-------	219		154			122	128	2,330	3,880	607	118	84
14	-------	215		134			118	131	2,800	4,680	566	114	83
15	-------	207		128			118	141	2,940	4,680	526	102	80
16	-------	207		139		88	128	147	2,800	5,050	498	108	81
17	-------	207		131	85		131	157	2,870	5,430	470	104	80
18	-------	199		131			126	166	2,730	4,680	438	92	83
19	-------	199		126			118	173	2,940	4,230	412	94	82
20	-------	196		128			118	188	3,630	3,800	386	92	82
21	-------	192		128		94	123	215	4,500	3,380	365	92	81
22	-------	188		126		94	128	275	5,620	2,940	355	92	82
23	-------	184	173	126		94	131	340	6,200	2,660	345	92	88
24	-------	184	176	121		92	128	406	6,800	2,330	321	97	89
25	-------	184	163	123		90	123	476	6,400	2,140	307	92	88
26	-------	184	157	118	76	90	118	560	4,860	2,020	284	98	89
27	340		157	118		92	118	731	3,880	1,840	262	98	92
28	336	180	157	114		102	116	938	3,300	1,680	249	104	92
29	331		160	112		-------	116	1,130	3,080	1,510	236	96	88
30	321		170	108		-------	121	1,260	3,220	1,360	223	95	94
31	302	-------	-------	106		-------	118	-------	3,800	-------	207	92	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1928				
August 27-31	340	302	326	3,230
September	293	----------	214	12,700
The period	----------	----------	----------	15,900
1928-29				
October	----------	----------	220	13,500
November	----------	157	183	10,900
December	170	86	126	7,750
January	----------	----------	85.3	5,240
February	102	----------	87.2	4,840
March	131	96	118	7,260
April	1,260	114	300	17,900
May	6,800	1,180	2,950	181,000
June	6,200	1,360	3,930	234,000
July	1,260	207	571	35,100
August	199	92	123	7,560
September	94	80	86.7	5,160
The year	6,800	----------	733	530,000

COLVILLE RIVER BASIN

COLVILLE RIVER AT MEYERS FALLS, WASH.

LOCATION.—Staff gage in sec. 29, T. 36 N., R. 38 E., at Stevens County Light & Power Co.'s plant at Meyers Falls.

RECORDS AVAILABLE.—October, 1922, to September, 1929.

EXTREMES.—Maximum discharge during year, 356 second-feet Mar. 13 and 14 (gage height, 2.55 feet); minimum, 14 second-feet Sept. 28 (gage height, 0.66 foot).

1922–1929: Maximum discharge, 1,290 second-feet Apr. 19, 1925; minimum, 12 second-feet July 27, 1926.

REMARKS.—Records good except those for Dec. 6, 7, 12, 13, 15, 16, 30, 31, Jan. 1–5, and Jan. 7 to Feb. 25, which are poor. Several small ditches divert water for irrigation above station. Small reservoir above falls, effect of regulation probably slight.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	84	158	149			132	212	324	132	100	34	28
2	89	132	149			132	200	324	123	84	30	30
3	95	123	123	135		158	189	308	132	82	32	29
4	101	132	89			149	168	308	132	77	37	30
5	102	132	82		45	178	178	293	132	70	24	28
6	132	132	85	132		178	178	278	123	70	29	33
7	132	132	90			212	200	264	115	61	30	30
8	115	132	101	130		200	178	264	115	61	34	36
9	107	140	132			237	178	264	115	59	31	37
10	115	158	149			278	168	250	115	54	27	37
11	123	168	212			340	178	250	132	56	32	49
12	115	178	200			340	189	250	132	59	27	49
13	132	178	190			356	168	237	123	54	28	41
14	115	158	178			356	189	237	123	49	32	43
15	123	158	170	105	65	340	237	224	123	59	36	36
16	123	158	160			308	293	224	132	55	25	38
17	115	158	149			293	308	212	140	48	30	38
18	115	158	158			278	324	189	158	40	28	42
19	123	158	158			250	308	149	178	47	28	40
20	123	149	149			237	293	158	178	46	27	44
21	123	149	149			250	308	189	168	38	28	41
22	123	149	140			250	324	178	149	42	28	42
23	123	140	140		110	237	340	168	140	42	25	44
24	115	149	123			250	324	149	149	44	30	41
25	115	140	123			224	324	149	132	34	28	44
26	115	140	123	45	140	200	308	140	123	32	30	51
27	123	140	149		140	200	293	132	115	33	28	41
28	123	149	132		132	212	368	115	123	32	27	23
29	115	140	104		-------	200	308	149	115	30	29	38
30	107	149	105		-------	224	308	123	101	32	27	42
31	107	-------	125		-------	224	-------	123	-------	28	27	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	132	84	115	7,070
November	178	123	148	8,810
December	212	82	138	8,480
January	-------	-------	92.6	5,690
February	140	-------	73.6	4,090
March	356	132	239	14,700
April	340	168	249	14,800
May	324	115	214	13,200
June	178	101	132	7,860
July	100	28	52.2	3,210
August	37	24	29.3	1,800
September	51	23	38.2	2,270
The year	356	23	127	92,000

HALL CREEK BASIN

HALL CREEK AT INCHELIUM, WASH.

LOCATION.—Water-stage recorder in NE. ¼ sec. 6, T. 32 N., R. 37 E., three-fourths of a mile above mouth of creek and three-fourths of a mile northwest of Inchelium.

DRAINAGE AREA.—163 square miles.

RECORDS AVAILABLE.—December, 1912, to September, 1929, when records were discontinued.

EXTREMES.—Maximum discharge during year, 171 second-feet May 6 (gage height, 2.66 feet); minimum, 5.4 second-feet Sept. 1 (gage height, 1.24 feet).

1912–1929: Maximum discharge, 965 second-feet Apr. 16, 1914; minimum (estimated), 4 second-feet Jan. 1, 1919, when stage-discharge relation was affected by ice.

REMARKS.—Records fair. No records Oct. 1 to Mar. 31. Discharge estimated Apr. 2–5, 24–30, May 15–22, July 12, Aug. 10–15, 20–28, and Sept. 4–15 and 25–30. No diversions above station. Storage in mill pond above.

Daily and monthly discharge, in second-feet, 1928–29

Day	Nov.	Apr.	May	June	July	Aug.	Sept.
1	------	23	80	39	17	7.4	5.6
2	------	23	88	44	17	7.7	5.6
3	------	23	87	42	17	7.7	5.6
4	------	22	82	41	18	8.0	5.6
5	------	22	81	38	17	8.0	5.6
6	------	22	84	36	17	8.0	5.6
7	------	31	77	33	17	8.0	5.6
8	------	17	76	34	15	8.0	5.7
9	------	23	74	39	15	8.0	5.7
10	------	25	72	31	14		5.7
11	------	43	71	39	14		5.7
12	------	70	74	36	12	7.0	5.8
13	------	54	77	37	10		5.8
14	------	50	76	33	9.2		5.8
15	------	49		37	7.8		5.8
16	16	53	80	53	8.3	6.1	5.8
17	------	63		43	8.0	5.8	5.8
18	------	76		38	12	5.6	6.6
19	------	78		47	8.6	5.6	6.6
20	------	81	50	42	15	5.6	6.6
21	------	81		36	9.6	5.6	6.3
22	------	84		33	8.6	5.6	6.3
23	------	81	46	30	11	5.7	6.6
24	------		46	26	8.9	5.7	6.6
25	------		47	25	7.3	5.7	
26	------		48	24	7.7	5.8	
27	------	80	42	22	7.4	5.8	6.6
28	------		42	20	7.1	5.8	
29	------		42	20	6.8	5.8	
30	------		40	20	6.8	5.8	
31	------	------	39	------	6.8	5.6	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April	----------	17	55.1	3,280
May	----------	----------	64.9	3,990
June	53	20	34.6	2,060
July	18	6.8	11.5	707
August	8.0	5.6	6.59	405
September	6.6	5.6	6.07	361
The period	----------	----------	----------	10,800

STRANGER CREEK BASIN

STRANGER CREEK AT METEOR, WASH.

LOCATION.—Staff gage in sec. 21, T. 32 N., R. 36 E., at highway bridge at Meteor, 8 miles southwest of Inchelium.

RECORDS AVAILABLE.—August, 1916, to September, 1929, when records were discontinued.

EXTREMES.—Maximum discharge during year, 7.2 second-feet Apr. 14 (gage height, 0.46 foot); no flow July 29 and 30 and Sept. 12–14.

1916–1929: Maximum discharge, 180 second-feet Apr. 19 and 20, 1925 (gage height, 1.8 feet); no flow during periods in 1919, 1924, 1926, and 1929.

REMARKS.—Records fair. No records Oct. 1 to Nov. 16 and Nov. 18 to Mar. 31. Large percentage of flow during year diverted above gage for irrigation. Discharge measurement shows diversions of following amounts: May 4, 1.9 second-feet; May 23, 1.5 second-feet; and Aug. 30, 0.2 second-foot.

Daily and monthly discharge, in second-feet, 1928–29

Day	Nov.	Apr.	May	June	July	Aug.	Sept.
1	------	3.1	4.2	2.9	2.2	0.2	0.1
2	------	3.1	4.0	3.1	2.2	.1	.2
3	------	2.9	3.7	3.1	2.1	1.4	.2
4	------	2.9	3.7	2.9	1.9	1.0	.2
5	------	2.9	3.7	2.9	1.9	.9	.2
6	------	2.9	3.7	2.9	1.8	1.1	.2
7	------	2.9	3.7	2.9	1.6	.7	.2
8	------	2.9	3.7	2.9	1.5	.6	.1
9	------	2.9	3.7	3.1	2.7	.8	.1
10	------	2.9	3.7	3.1	2.2	1.1	.1
11	------	2.9	3.7	3.3	2.1	.8	.1
12	------	2.9	3.7	3.1	2.1	.4	0
13	------	2.9	3.7	2.9	1.9	.4	0
14	------	5.9	3.7	3.1	1.8	.4	0
15	------	4.5	4.5	3.7	1.8	.6	.1
16	------	4.2	4.2	3.7	1.6	.5	.2
17	0.4	4.0	4.2	3.1	1.5	.5	.1
18	------	3.7	4.2	3.3	1.3	.4	.2
19	------	3.7	4.2	3.1	1.1	.3	.1
20	------	3.7	4.2	2.9	1.1	.3	.1
21	------	4.2	3.7	2.9	.8	.2	.1
22	------	4.2	3.7	2.9	.7	.2	.1
23	------	4.2	3.7	2.9	.4	.2	.1
24	------	4.0	3.3	2.7	.3	.2	.1
25	------	3.7	3.3	2.6	.2	.1	1
26	------	3.7	3.3	2.6	.2	.1	.1
27	------	4.2	3.1	2.6	.2	.1	.1
28	------	4.2	3.1	2.6	.2	.1	.1
29	------	4.2	3.1	2.6	.1	.1	.1
30	------	4.2	3.1	2.4	.1	.1	.1
31	------	------	2.9	------	.2	.1	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April	5.9	2.9	3.62	215
May	4.5	2.9	3.69	227
June	3.7	2.4	2.96	176
July	2.7	.1	1.28	78.7
August	1.4	.1	.45	27.7
September	.2	0	.12	7.1
The period	------	------	------	732

SPOKANE RIVER BASIN

COEUR D'ALENE RIVER NEAR CATALDO, IDAHO

LOCATION.—Water-stage recorder in sec. 26, T. 49 N., R. 1 E., 1½ miles above Cataldo and 3 miles below South Fork of Coeur d'Alene River. Gage records elevation above mean sea level.

DRAINAGE AREA.—1,220 square miles.

RECORDS AVAILABLE.—April, 1911, to December, 1912; July, 1920, to September, 1929.

EXTREMES.—Maximum discharge during year, 11,400 second-feet Apr. 29 (gage height, 2,145.58 feet); minimum, 197 second-feet Dec. 6; minimum gage height, 2,137.12 feet Sept. 5.

1911–12, 1920–1929: Maximum discharge, 27,600 second-feet Feb. 5, 1925 (gage height, 2,151.3 feet); minimum, that of Dec. 6, 1928.

REMARKS.—Records fair for October to March, excellent for April and May, and good for June to September. Discharge estimated Nov. 15–20, Jan. 19–31, Feb. 1–25, Aug. 6–10, 14–16, 21, and 22. No diversions or regulation above station. Gage-height record and results of four discharge measurements furnished by Washington Water Power Co.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	347	313	391	400	310	274	2,800	8,090	2,280	882	446	307
2	413	306	375	431	310	328	2,460	6,660	2,330	824	446	295
3	470	336	387	400	310	375	2,560	7,460	2,150	768	438	301
4	495	347	375	383	310	445	2,950	7,670	1,980	768	426	295
5	545	395	271	336	310	590	2,950	6,660	1,860	741	414	295
6	565	431	197	317	280	728	2,650	5,900	1,820	741	409	298
7	560	490	257	310	280	810	2,460	5,340	1,860	768	404	301
8	640	540	325	288	280	840	2,200	5,170	1,900	741	398	295
9	596	656	328	317	280	900	1,970	5,520	2,060	741	393	311
10	618	870	379	328	280	1,100	1,770	5,710	1,940	714	388	320
11	590	1,060	475	321	280	1,300	1,690	5,520	1,820	687	383	314
12	545	1,240	565	292	280	1,380	1,690	6,280	1,660	666	354	304
13	515	1,160	565	274	280	1,380	1,650	7,880	1,540	651	348	320
14	475	1,020	391	328	280	1,270	1,970	8,510	1,460	640	347	334
15	465	900	344	359	280	1,300	3,230	7,260	1,500	615	346	337
16	445	800	328	359	255	1,410	3,920	6,470	1,660	590	345	340
17	436	700	336	359	255	1,570	3,780	6,090	1,620	576	344	337
18	426	600	332	351	255	1,570	3,920	5,710	1,460	566	330	340
19	413	500	328	255	255	1,530	4,520	5,520	1,460	557	324	340
20	400	450	321	255	255	1,650	4,680	5,520	1,430	538	314	344
21	395	431	281	255	255	1,930	5,340	5,900	1,360	534	315	337
22	391	418	278	255	355	2,330	6,660	5,900	1,320	534	316	348
23	371	395	299	255	255	2,100	7,670	5,710	1,260	472	317	365
24	367	363	306	255	255	1,810	7,260	5,170	1,220	506	311	387
25	367	347	336	255	255	1,690	6,660	4,520	1,150	498	311	402
26	359	344	359	255	281	1,610	7,460	3,640	1,120	493	324	399
27	347	367	418	255	274	2,150	8,730	3,000	1,060	476	324	383
28	347	363	460	255	267	4,070	9,830	2,650	1,030	472	324	372
29	344	375	422	255	-------	7,060	10,700	2,460	970	454	324	358
30	332	371	505	255	-------	5,520	10,500	2,330	940	454	317	354
31	328	-------	530	255	-------	3,640	-------	2,240	-------	446	307	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	640	328	449	0.368	0.42	27,600
November	1,240	306	563	.461	.51	33,500
December	565	197	370	.303	.35	22,800
January	431	----------	305	.250	.29	18,900
February	----------	----------	276	.226	.24	15,300
March	7,060	274	1,760	1.44	1.66	108,000
April	10,700	1,650	4,550	3.73	4.16	271,000
May	8,510	2,240	5,560	4.56	5.26	342,000
June	2,330	940	1,570	1.29	1.44	93,400
July	882	446	617	.506	.58	37,900
August	446	307	358	.293	.34	22,000
September	402	295	334	.274	.31	19,900
The year	10,700	197	1,400	1.15	15.56	1,010,000

COEUR D'ALENE LAKE AT COEUR D'ALENE, IDAHO

LOCATION.—Water-stage recorder in SW. ¼ sec. 13, T. 50 N., R. 4 W., at Johnson Wharf, 800 feet southeast of railroad station in Coeur d'Alene.

DRAINAGE AREA.—3,750 square miles.

RECORDS AVAILABLE.—February, 1905, to September, 1929; April, 1903, to February, 1905, at St. Joe Boom Co.'s gage at mouth of St. Joe River.

EXTREMES.—Maximum stage recorded during year, 28.15 feet (peak of 0.15-foot seiche) on May 24; minimum, 21.42 feet Mar. 2.

1903–1929: Maximum stage, 36.0 feet Jan. 3, 1918; minimum, 19.9 feet Oct. 10–12, 1904, Sept. 24 and 25, 1905, and Oct. 14 to Nov. 3, 1906.

The maximum stage known to early settlers, 37.6 feet as determined from high-water marks, occurred May 31, 1894.

REMARKS.—Records excellent, estimated Jan. 22 and 23. Considerable storage used by Washington Water Power Co. Regulation is affected by Taintor gates and bear-trap dam at Post Falls. Gage-height record furnished by the Washington Water Power Co. Add 2,100 feet to stages in the following table to refer them to the originally accepted elevation (2,157.404 feet) of the United States Geological Survey bench mark in southeast corner of the Merriam Building. (See Water-Supply Paper 672.)

Daily elevation, in feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24.15	23.60	23.45	22.81	22.04	21.46	25.35	27.72	26.67	26.51	26.26	24.79
2	24.13	23.53	23.42	22.83	22.02	21.46	25.18	27.80	26.51	26.51	26.24	24.72
3	24.11	23.50	23.40	22.84	22.00	21.47	25.04	27.79	26.33	26.48	26.22	24.63
4	24.11	23.48	23.35	22.84	21.99	21.45	24.97	27.81	26.32	26.46	26.21	24.57
5	24.06	23.43	23.32	22.82	21.99	21.47	24.90	27.83	26.41	26.45	26.18	24.46
6	24.04	23.41	23.26	22.81	21.95	21.50	24.85	27.81	26.43	26.45	26.15	24.38
7	24.06	23.40	23.22	22.78	21.93	21.53	24.77	27.70	26.43	26.44	26.13	24.33
8	24.09	23.38	23.21	22.74	21.92	21.56	24.64	27.53	26.47	26.47	26.11	24.26
9	24.13	23.44	23.16	22.69	21.89	21.59	24.52	27.46	26.43	26.50	26.07	24.24
10	24.11	23.51	23.17	22.65	21.86	21.70	24.39	27.43	26.36	26.51	26.05	24.20
11	24.07	23.55	23.16	22.60	21.83	21.87	24.29	27.40	26.42	26.49	26.03	24.15
12	24.05	23.61	23.13	22.59	21.80	22.01	24.21	27.37	26.43	26.48	26.00	24.10
13	24.03	23.64	23.12	22.55	21.77	22.15	24.18	27.44	26.43	26.48	25.97	24.04
14	24.00	23.65	23.10	22.52	21.74	22.26	24.22	27.62	26.42	26.49	25.93	23.99
15	23.98	23.68	23.07	22.49	21.71	22.40	24.35	27.80	26.49	26.51	25.89	23.93
16	23.97	23.70	23.03	22.47	21.72	22.56	24.60	27.89	26.47	26.50	25.82	23.87
17	23.95	23.72	22.99	22.46	21.70	22.68	24.80	27.90	26.43	26.48	25.78	23.83
18	23.94	23.72	22.93	22.42	21.68	22.81	24.95	27.92	26.42	26.48	25.75	23.79
19	23.92	23.72	22.88	22.40	21.65	22.96	25.25	27.91	26.49	26.48	25.70	23.74
20	23.87	23.72	22.82	22.29	21.64	23.14	25.51	27.90	26.49	26.48	25.63	23.70
21	23.86	23.71	22.77	22.29	21.60	23.36	25.73	27.92	26.47	26.46	25.57	23.64
22	23.85	23.69	22.71	22.27	21.59	23.67	25.93	27.96	26.47	26.44	25.49	23.59
23	23.81	23.67	22.67	22.25	21.60	23.87	26.17	28.01	26.47	26.42	25.42	23.57
24	23.78	23.64	22.66	22.20	21.56	24.06	26.39	28.07	26.48	26.41	25.32	23.53
25	23.76	23.61	22.72	22.19	21.55	24.17	26.50	28.05	26.49	26.40	25.22	23.49
26	23.76	23.60	22.69	22.15	21.54	24.30	26.62	27.95	26.48	26.39	25.17	23.45
27	23.74	23.55	22.71	22.11	21.51	24.37	26.76	27.80	26.47	26.35	25.08	23.43
28	23.71	23.53	22.73	22.10	21.49	24.62	26.99	27.56	26.50	26.33	25.02	23.39
29	23.69	23.50	22.79	22.10	-------	25.08	27.29	27.34	26.50	26.32	24.97	23.35
30	23.66	23.47	22.80	22.07	-------	25.40	27.52	27.08	26.52	26.30	24.91	23.32
31	23.65	-------	22.80	22.03	-------	25.43	-------	26.84	-------	26.28	24.84	-------

SPOKANE RIVER AT POST FALLS, IDAHO

LOCATION.—Water-stage recorder in sec. 4, T. 50 N., R. 5 W., a quarter of a mile below power plant of Washington Water Power Co. and 1 mile west of Post Falls. Zero of gage, 2,000 feet above mean sea level.

DRAINAGE AREA.—3,880 square miles.

RECORDS AVAILABLE.—January, 1913, to September, 1929.

EXTREMES.—Maximum discharge during year, 14,400 second-feet May 23 and 24 (gage height, 71.75 feet); minimum, 652 second-feet July 28 (gage height, 65.55 feet).

1913–1929: Maximum discharge, 39,800 second-feet May 18, 1917 (gage height, 79.20 feet); minimum, 540 second-feet Sept. 5, 1926 (gage height, 65.3 feet).

REMARKS.—Records excellent. Discharge estimated Jan. 27 to Feb. 11 and Feb. 13–25. Spokane Valley Farms Co.'s canal diverts three-fourths of a mile above gage for irrigation. (See records for canal, p. 160.) Flow regulated by storage at Coeur d'Alene Lake. Gage-height record and results of some discharge measurements furnished by Washington Water Power Co.

Daily discharge, in second-feet, of Spokane River at Post Falls, Idaho, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,040	1,320	1,280	900		1,110	7,720	13,100	10,700	2,240	770	1,150
2	1,070	1,280	1,280	965		1,070	7,450	13,200	10,400	2,450	845	1,110
3	1,190	1,280	1,280	965		1,070	7,180	13,400	7,660	2,310	870	1,480
4	1,320	1,230	1,190	965		1,070	7,180	13,400	4,000	1,980	870	1,530
5	1,320	1,110	1,110	965	1,050	1,070	6,910	13,400	4,320	1,590	845	1,370
6	1,190	1,110	1,190	1,150		1,070	6,910	13,400	5,250	1,190	845	1,370
7	1,110	1,070	1,320	1,280		1,040	6,910	13,100	5,820	1,040	820	1,370
8	1,070	1,040	1,420	1,280	1,020	1,040	6,390	12,800	6,890	1,040	845	1,370
9	1,070	1,070	1,370	1,320	1,010	1,070	6,260	12,600	8,180	1,230	845	1,320
10	1,190	1,040	1,280	1,420	1,010	1,070	5,500	12,500	6,490	1,320	870	1,280
11	1,280	1,000	1,190	1,190	1,040	1,110	5,120	12,500	4,950	1,280	870	1,150
12	1,280	965	1,110	1,110	1,040	1,110	4,650	12,200	5,760	1,070	900	1,110
13	1,230	1,070	1,110	1,040		1,070	4,000	12,400	5,720	1,040	930	1,150
14	1,280	965	1,230	1,070		1,110	4,100	12,900	5,000	1,040	900	1,280
15	1,150	1,000	1,280	1,040		1,110	4,210	13,300	5,370	1,070	965	1,280
16	1,110	1,000	1,280	1,040		1,070	4,320	13,600	6,650	1,110	1,000	1,230
17	1,070	1,000	1,530	1,000		1,110	4,650	13,600	6,000	1,070	1,190	1,280
18	1,070	1,000	1,650	900		1,110	3,400	13,600	4,430	1,000	1,150	1,320
19	1,070	1,000	1,650	900	1,000	1,110	3,500	13,600	3,590	1,000	1,040	1,280
20	1,070	1,070	1,420	930		1,110	5,000	13,500	4,210	1,000	1,110	1,230
21	1,110	1,190	1,420	1,000		1,110	6,390	13,500	4,320	930	1,280	1,280
22	1,070	1,280	1,280	1,150		1,280	7,450	13,600	4,210	900	1,480	1,280
23	1,070	1,230	1,070	1,420		1,370	9,550	13,900	3,500	930	1,590	1,280
24	1,040	1,280	900	1,370		1,420	10,200	13,900	3,400	845	1,530	1,150
25	930	1,280	820	1,110		1,590	10,200	14,000	3,400	795	1,320	1,070
26	930	1,320	900	1,070	1,040	1,720	10,500	13,600	3,310	845	1,590	1,110
27	845	1,320	1,000		1,110	1,910	10,700	13,400	2,520	870	1,590	1,110
28	820	1,320	870		1,070	1,980	11,200	12,800	2,040	870	1,480	1,110
29	820	1,320	820	1,030	-------	4,210	11,800	12,200	1,780	930	1,370	1,110
30	1,040	1,320	820		-------	8,000	12,600	11,600	1,910	965	1,420	1,110
31	1,150	-------	795		-------	8,000	--------	11,300	--------	845	1,370	------

Monthly discharge of Spokane River and Spokane Valley Farms Co.'s Canal at Post Falls, Idaho, 1928–29

Month	Discharge in second-feet						Combined run-off	
	River mean	Canal mean	Combined				Inches	Acre-feet
			Maximum	Minimum	Mean	Per square mile		
October	1,100	--------	1,320	820	1,100	--------	--------	67,600
November	1,150	--------	1,320	965	1,150	--------	--------	68,400
December	1,190	--------	1,650	795	1,190	--------	--------	73,200
January	1,090	--------	1,420	900	1,090	--------	--------	67,000
February	1,020	--------	1,110	--------	1,020	--------	--------	56,600
March	1,750	--------	8,000	1,040	1,750	--------	--------	108,000
April	7,060	22.0	12,700	3,420	7,080	--------	--------	421,000
May	13,100	152	14,200	11,500	13,300	--------	--------	818,000
June	5,060	208	10,900	1,990	5,270	--------	--------	314,000
July	1,190	209	2,660	1,000	1,400	--------	--------	86,100
August	1,110	221	1,810	979	1,330	--------	--------	81,800
September	1,240	188	1,720	1,070	1,430	--------	--------	85,100
The year	3,010	--------	14,200	795	3,110	0.802	10.89	2,250,000

NOTE.—Monthly figures showing discharge in second-feet per square mile and run-off in inches are not published, owing to regulation by Coeur d'Alene Lake; the yearly figures represent more nearly the natural discharge and run-off.

SPOKANE RIVER AT SPOKANE, WASH.

LOCATION.—Water-stage recorder in sec. 13, T. 25 N., R. 42 E., at Cochran Street, Spokane. Zero of gage, about 1,700 feet above mean sea level.

DRAINAGE AREA.—4,350 square miles.

RECORDS AVAILABLE.—April, 1891, to September, 1929.

EXTREMES.—Maximum discharge during year, 14,700 second-feet May 25 (gage height, 22.80 feet); minimum, 1,000 second-feet Aug. 13 (gage height, 17.23 feet).

1891–1929: Maximum discharge, 49,000 second-feet May 31, 1894; minimum, 500 second-feet Oct. 21, 1922 (gage height, 16.70 feet).

REMARKS.—Records excellent. Discharge estimated July 28. Water diverted above station for irrigation by Spokane Valley Farms Co. Flow regulated by storage at Coeur d'Alene Lake. Gage-height record and results of some discharge measurements furnished by Washington Water Power Co.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,560	1,880	1,870	1,290	1,500	1,540	7,340	13,200	11,500	2,780	1,320	1,720
2	1,620	1,970	1,860	1,460	1,470	1,550	7,340	13,400	11,100	3,030	1,340	1,580
3	1,660	1,880	1,890	1,460	1,500	1,560	7,240	13,600	9,430	2,950	1,300	1,730
4	1,820	1,940	1,840	1,450	1,500	1,560	7,100	13,600	5,630	2,830	1,430	1,940
5	1,910	1,780	1,690	1,420	1,540	1,560	6,980	13,800	4,910	2,480	1,400	1,840
6	1,790	1,760	1,700	1,410	1,530	1,560	6,890	13,800	5,620	2,110	1,350	1,820
7	1,660	1,670	1,820	1,720	1,540	1,520	6,710	13,300	6,260	1,810	1,310	1,800
8	1,660	1,690	1,930	1,720	1,530	1,520	6,460	13,200	6,920	1,810	1,320	1,780
9	1,680	1,660	1,900	1,760	1,460	1,480	6,240	13,000	8,340	1,760	1,370	1,830
10	1,700	1,740	1,880	1,820	1,480	1,500	5,930	12,900	8,280	1,980	1,340	1,860
11	1,810	1,600	1,800	1,820	1,420	1,500	5,200	12,900	4,980	2,000	1,370	1,760
12	1,830	1,580	1,720	1,570	1,500	1,530	5,060	12,800	6,060	1,820	1,370	1,640
13	1,840	1,640	1,700	1,600	1,500	1,500	4,470	12,800	6,130	1,700	1,400	1,700
14	1,820	1,620	1,700	1,590	1,490	1,500	4,420	13,300	5,820	1,700	1,380	1,720
15	1,820	1,600	1,870	1,580	1,480	1,520	4,520	13,600	5,250	1,670	1,420	1,840
16	1,640	1,600	1,840	1,560	1,520	1,520	4,640	14,100	6,920	1,700	1,440	1,760
17	1,660	1,640	1,900	1,580	1,470	1,520	4,850	14,000	6,550	1,770	1,480	1,780
18	1,680	1,550	2,100	1,470	1,450	1,530	4,320	14,000	5,530	1,680	1,600	1,740
19	1,660	1,620	2,130	1,360	1,480	1,560	3,630	13,900	4,290	1,700	1,580	1,800
20	1,660	1,660	2,040	1,440	1,460	1,550	4,990	13,800	4,440	1,720	1,480	1,710
21	1,660	1,740	1,970	1,520	1,480	1,560	6,120	13,700	4,840	1,700	1,540	1,700
22	1,660	1,860	1,950	1,590	1,460	1,560	7,230	14,000	4,820	1,620	1,740	1,720
23	1,690	1,870	1,720	1,760	1,440	1,760	8,640	14,300	4,430	1,650	1,820	1,770
24	1,840	1,880	1,580	1,850	1,470	1,750	10,400	14,200	4,140	1,580	1,920	1,700
25	1,660	1,910	1,420	1,680	1,460	1,810	10,500	14,200	4,010	1,440	1,720	1,560
26	1,550	1,860	1,410	1,500	1,480	2,020	10,600	14,200	4,010	1,370	1,820	1,570
27	1,570	1,880	1,520	1,480	1,530	2,040	11,000	13,800	3,580	1,540	1,980	1,560
28	1,510	1,900	1,520	1,440	1,550	2,220	11,400	13,300	2,920	1,540	1,880	1,550
29	1,500	1,870	1,420	1,460	------	2,890	12,000	13,000	2,680	1,550	1,800	1,600
30	1,500	1,880	1,360	1,470	------	7,140	12,600	12,400	2,400	1,440	1,800	1,590
31	1,750	------	1,330	1,490	------	8,120	------	11,900	------	1,460	1,820	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,910	1,500	1,690	------	------	104,000
November	1,970	1,550	1,760	------	------	105,000
December	2,130	1,330	1,750	------	------	108,000
January	1,850	1,290	1,560	------	------	95,900
February	1,550	1,420	1,490	------	------	82,800
March	8,120	1,480	2,050	------	------	126,000
April	12,600	3,630	7,160	------	------	426,000
May	14,300	11,900	13,500	------	------	830,000
June	11,500	2,400	5,730	------	------	341,000
July	3,030	1,370	1,870	------	------	115,000
August	1,980	1,300	1,540	------	------	94,700
September	1,940	1,550	1,720	------	------	102,000
The year	14,300	1,290	3,490	0.802	10.89	2,530,000

NOTE.—Monthly discharge in second-feet per square mile and run-off in inches not computed, owing to regulation. Yearly figures closely represent the natural flow and run-off.

SPOKANE RIVER BELOW LITTLE FALLS, NEAR LONG LAKE, WASH.

LOCATION.—Water-stage recorder in NW. ¼ sec. 19, T. 27 N., R. 39 E., 1½ miles below Little Falls power plant of Washington Water Power Co. and 5 miles below Long Lake. Zero of gage, 1,200 feet above mean sea level.

DRAINAGE AREA.—6,380 square miles.

RECORDS AVAILABLE.—November, 1912, to September, 1929.

EXTREMES.—Maximum discharge during year, 18,200 second-feet May 2 (gage height, 83.59 feet); minimum, from plant output, 200 second-feet Sept. 29. 1912–1929: Maximum discharge, 41,300 second-feet May 18, 1917 (gage height, 90.32 feet); minimum, that of Sept. 29, 1929.

REMARKS.—Records excellent. Discharge estimated from plant output Jan. 23–29 and Feb. 7–14. Spokane Valley Farms Co. diverts above station. Flow regulated by Coeur d'Alene Lake. Gage-height record and some discharge measurements furnished by Washington Water Power Co.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,590	2,420	2,640	2,240	2,720	2,150	9,430	13,800	11,200	3,470	2,000	1,980
2	2,520	2,500	2,340	2,420	2,640	2,000	9,000	15,300	11,200	3,660	2,170	1,880
3	2,710	2,580	2,580	2,690	1,960	1,320	8,230	14,800	11,200	3,400	1,990	2,480
4	2,540	1,790	2,920	2,760	2,440	1,680	7,130	14,000	6,460	3,760	1,760	2,620
5	2,380	2,460	2,940	2,750	2,440	2,770	6,840	14,600	4,220	3,140	2,070	2,700
6	2,470	2,450	3,080	2,020	2,200	6,280	7,230	15,300	6,800	3,590	2,300	2,760
7	2,450	2,570	2,880	2,400	2,420	3,890	8,000	14,300	7,020	2,350	2,260	2,800
8	2,700	2,680	2,580	2,720	2,390	3,720	9,010	14,200	7,470	2,260	2,240	1,860
9	2,580	2,660	2,070	2,760	1,980	3,740	6,680	14,200	9,200	2,150	2,320	2,340
10	2,620	2,360	2,480	2,560	1,790	3,050	7,250	14,000	10,300	2,150	2,240	2,280
11	2,400	1,970	2,640	2,440	2,140	3,420	6,680	13,200	5,470	3,200	1,680	2,670
12	2,290	2,940	2,570	2,470	2,860	3,820	5,820	13,600	6,440	2,620	2,300	2,780
13	2,340	2,540	3,080	1,880	3,230	3,690	5,620	14,300	7,330	2,710	2,500	2,740
14	2,050	2,580	3,210	2,710	3,360	3,580	5,480	14,400	6,830	1,830	2,380	2,720
15	2,500	2,560	3,080	2,480	3,480	3,540	6,590	13,600	6,480	2,060	2,260	1,850
16	2,500	2,470	1,940	2,380	3,390	3,510	6,750	15,000	7,360	2,260	2,340	2,440
17	2,520	2,520	3,070	2,240	1,760	3,060	5,800	15,200	8,640	2,960	2,040	2,580
18	2,600	1,800	3,060	2,320	2,260	3,520	5,860	14,400	6,470	2,430	1,270	2,680
19	2,640	2,740	2,740	2,470	2,940	3,430	5,260	14,500	5,540	2,350	2,210	2,430
20	2,580	2,620	2,710	2,000	3,240	3,580	4,730	15,600	4,860	2,050	2,520	2,590
21	1,980	2,600	3,430	2,480	3,190	3,510	7,560	14,600	6,180	1,940	2,840	2,510
22	2,540	2,520	2,530	2,740	3,180	3,500	8,360	14,600	5,420	2,520	2,670	1,850
23	2,380	2,410	1,960	2,500	3,020	3,300	9,860	14,600	4,700	2,180	2,680	2,300
24	2,240	2,600	2,330	2,280	1,640	2,720	11,600	15,800	4,360	2,400	2,380	2,420
25	2,540	1,900	1,810	2,500	2,380	3,080	11,000	15,600	5,120	2,490	1,480	2,500
26	2,590	3,100	2,340	2,460	2,990	3,020	11,200	14,700	3,850	2,490	2,020	2,440
27	2,440	3,000	2,430	1,690	3,110	3,000	12,500	15,400	4,860	2,340	2,520	2,500
28	2,050	3,040	2,680	2,390	2,900	2,990	12,600	14,100	4,120	1,820	2,640	2,570
29	2,760	1,920	2,420	2,460	-------	2,900	13,200	14,100	3,540	2,180	2,680	1,680
30	2,760	2,840	2,120	2,640	-------	6,240	13,600	13,900	3,130	2,090	2,760	2,320
31	2,720	-------	2,620	2,890	-------	9,000	--------	12,200	--------	2,160	2,830	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	2,760	1,980	2,480	--------	--------	152,000
November	3,100	1,790	2,500	--------	--------	149,000
December	3,430	1,810	2,620	--------	--------	161,000
January	2,890	1,690	2,440	--------	--------	150,000
February	3,480	1,640	2,640	--------	--------	147,000
March	9,000	1,320	3,520	--------	--------	216,000
April	13,600	4,730	8,300	--------	--------	494,000
May	15,800	12,200	14,400	--------	--------	885,000
June	11,200	3,130	6,510	--------	--------	387,000
July	3,760	1,820	2,550	--------	--------	157,000
August	2,840	1,270	2,270	--------	--------	140,000
September	2,800	1,680	2,410	--------	--------	143,000
The year	15,800	1,270	4,400	0.690	9.37	3,180,000

NOTE.—Monthly discharge in second-feet per square mile and run-off in inches not computed, owing to regulation. Yearly figures closely represent the natural discharge and run-off.

ST. JOE RIVER AT CALDER, IDAHO

LOCATION.—Water-stage recorder in sec. 3, T. 45 N., R. 2 E., 150 feet southwest of Chicago, Milwaukee & St. Paul Railway station at Calder. Zero of gage about 2,100 feet above mean sea level.

DRAINAGE AREA.—1,080 square miles.

RECORDS AVAILABLE.—July, 1920, to September, 1929. April, 1911, to September, 1912, at station 2½ miles downstream.

EXTREMES.—Maximum discharge during year, 9,360 second-feet May 23 (gage height, 85.2 feet); minimum, 96 second-feet Dec. 5 (gage height, 78.43 feet).

1911–12, 1920–1929: Maximum discharge, 18,000 second-feet May 16, 1927 (gage height, 87.95 feet); minimum, that of Dec. 5, 1928.

REMARKS.—Records good except those for Dec. 1 to Mar. 13 and Aug. 1 to Sept. 30, which are fair. No diversions above gage. Gage-height record and results of some discharge measurements furnished by Washington Water Power Co.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	354	305	296	281			1,210	4,750	4,280	[a] 1,630	659	403
2	415	284	287	275			1,210	[a] 4,750	4,010	[a] 1,560	654	381
3	456	263	269	248	[a] 250	[a] 350	1,600	[a] 4,750	[a] 3,700	[a] 1,500	638	392
4	495	354	181	232			1,740	[a] 4,750	[a] 3,400	[a] 1,440	643	399
5	565	375	147	195			1,600	4,750	[a] 3,300	[a] 1,380	597	384
6	505	354	169				1,370	4,370	[a] 3,300	[a] 1,310	607	384
7	526	336	183				1,250	4,100	[a] 3,600	1,250	612	384
8	890	319	728	[a] 200		[a] 500	1,140	4,460	[a] 3,800	[a] 1,200	568	411
9	554	505	560				1,020	5,050	[a] 4,500	[a] 1,160	563	384
10	500	800	411				956	4,750	[a] 4,400	[a] 1,110	549	415
11	442	758	387		[a] 200		990	4,750	4,010	[a] 1,070	558	392
12	375	465	290			[a] 700	990	6,240	[a] 3,000	1,020	544	377
13	361	391	260				990	7,970	[a] 3,000	1,020	526	373
14	368	383	230			826	1,170	7,710	3,350	1,020	516	356
15	399	372	187	[a] 220		890	1,890	6,950	3,350	[a] 990	512	356
16	411	379	212			990	2,220	6,710	3,590	[a] 965	508	342
17	391	403	220			922	2,160	6,950	3,200	[a] 940	508	338
18	391	358	215			956	2,510	6,950	3,050	[a] 910	477	334
19	379	326	222			1,020	3,120	6,950	3,200	[a] 885	481	334
20	372	312	240		[a] 260	1,170	2,980	7,450	[a] 3,030	[a] 855	456	342
21	364	340	254			1,460	3,350	7,970	[a] 2,850	826	481	338
22	368	333	260			1,290	4,280	8,510	[a] 2,680	857	456	342
23	364	308	272			1,020	4,950	8,510	2,510	857	447	345
24	312	266	266			990	3,920	8,240	[a] 2,390	857	443	373
25	312	266	330	[a] 180		922	4,010	6,710	[a] 2,280	789	439	373
26	319	302	330			890	4,950	5,570	[a] 2,160	777	460	334
27	330	361	312		[a] 280	1,600	6,010	4,660	[a] 2,040	754	460	325
28	326	358	312			2,640	7,200	4,190	[a] 1,920	719	431	321
29	326	312	330		-------	3,120	7,450	3,920	[a] 1,810	702	443	331
30	319	287	347	-------	-------	2,050	6,470	3,840	1,690	702	427	321
31	305	-------	302		-------	1,460	-------	4,100	-------	691	411	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	890	305	413	0.382	0.44	25,400
November	800	263	372	.344	.38	22,100
December	728	147	291	.269	.31	17,900
January	281	----------	204	.189	.22	12,500
February	----------	----------	239	.221	.23	13,300
March	3,120	----------	986	.913	1.05	60,600
April	7,450	956	2,820	2.61	2.91	168,000
May	8,510	3,840	5,850	5.42	6.25	360,000
June	4,500	1,690	3,110	2.88	3.21	185,000
July	1,630	691	1,020	.944	1.09	62,700
August	659	411	519	.481	.55	31,900
September	415	321	363	.336	.37	21,600
The year	8,510	147	1,360	1.26	17.01	981,000

[a] Estimated.

ST. MARIES RIVER AT LOTUS, IDAHO

LOCATION.—Staff gage in sec. 20, T. 45 N., R. 2 W., just below Lotus.

DRAINAGE AREA.—420 square miles.

RECORDS AVAILABLE.—July, 1911, to October, 1912, and July, 1920, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,500 second feet Apr. 15 (gage height, 4.95 feet); minimum (estimated), 23 second-feet Dec. 4.

1911–12, 1920–1929: Maximum discharge, 8,660 second-feet Mar. 18, 1921; minimum, that of Dec. 4, 1928.

REMARKS.—Records good except those for Nov. 18–26 and Dec. 2 to Mar. 21, which were estimated. No diversions above gage. Gage-height record and results of some discharge measurements furnished by Washington Water Power Co.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	53	62	66	101	44	60	274	745	224	134	45	34
2	55	64	59	107	51	87	268	700	251	117	45	31
3	60	66	37	95	46	101	517	745	237	108	45	30
4	80	66	23	76	43	85	532	657	230	105	43	30
5	95	66	24	55	39	132	470	614	209	105	43	30
6	87	69	33	59	32	115	336	614	194	102	41	30
7	87	64	46	51	27	140	219	532	262	102	39	30
8	93	51	71	59	24	171	102	478	217	99	39	29
9	118	71	95	60	26	216	230	573	274	90	39	34
10	87	245	109	57	27	206	235	657	317	86	38	38
11	82	202	101	50	29	251	256	614	338	86	38	36
12	71	115	93	44	25	283	274	657	289	83	38	38
13	66	98	85	51	26	206	343	745	217	83	38	38
14	66	93	78	62	25	202	478	835	217	80	38	34
15	66	109	69	62	29	251	1,500	700	230	78	38	32
16	71	132	66	60	29	344	1,030	657	478	76	38	30
17	87	115	64	59	28	333	835	614	389	70	38	30
18	76	73	64	51	26	386	835	573	336	66	36	30
19	71	64	63	27	32	510	790	573	353	66	34	30
20	69	60	55	30	34	475	930	532	329	68	32	30
21	64	69	46	33	32	545	930	532	329	64	31	30
22	64	87	53	26	35	573	930	573	298	58	31	33
23	64	66	48	24	43	433	835	532	230	58	31	38
24	64	64	43	26	44	363	790	494	209	57	30	36
25	64	60	46	29	43	336	745	463	209	55	30	33
26	64	78	57	29	32	343	745	412	190	55	36	33
27	64	82	71	27	33	441	835	350	172	53	38	39
28	64	87	73	26	33	1,030	980	323	145	53	39	45
29	64	76	82	29	-------	1,030	1,190	274	148	51	36	42
30	64	69	107	26	-------	835	1,250	240	141	48	36	41
31	64	-------	126	34	-------	478	-------	230	-------	46	36	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	118	53	72.4	0.172	0.20	4,450
November	245	51	87.4	.208	.23	5,200
December	126	23	66.2	.158	.18	4,070
January	107	24	49.2	.117	.13	3,030
February	51	24	33.5	.080	.08	1,860
March	1,030	60	354	.843	.97	21,800
April	1,500	102	656	1.56	1.74	39,000
May	835	230	556	1.32	1.52	34,200
June	478	141	254	.605	.68	15,100
July	134	46	77.5	.185	.21	4,770
August	45	30	37.4	.089	.10	2,300
September	45	29	33.8	.080	.09	2,010
The year	1,500	23	190	.452	6.13	138,000

HAYDEN LAKE AT HAYDEN LAKE, IDAHO

LOCATION.—Staff gage in sec. 18, T. 51 N., R. 3 W., at Avondale and Hayden Lake pumping plants at Hayden Lake, about a quarter of a mile north of the Bozanta Tavern. Gage readings adjusted to give elevation above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS AVAILABLE.—May, 1920, to September, 1929.

EXTREMES.—Maximum water-surface elevation during year, 2,231.76 feet May 16–19; minimum, 2,226.25 feet Sept. 30.

1920–1929: Maximum water-surface elevation, 2,240.41 feet Apr. 30 to May 18, 1921; minimum, 2,226.25 feet Sept. 30, 1929.

REMARKS.—Records excellent. Water is pumped from lake for irrigation and domestic use.

Daily elevation, in feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	31.65	31.10	30.87	30.69	30.47	30.32	30.23	31.04	31.66	31.02	29.01	27.12
2	31.62	31.09	30.86	30.69	30.47	30.32	30.24	31.12	31.65	30.94	28.94	27.07
3	31.60	31.07	30.84	30.69	30.47	30.31	30.27	31.18	31.64	30.88	28.86	27.02
4	31.58	31.06	30.82	30.68	30.47	30.31	30.30	31.25	31.64	30.82	28.80	26.98
5	31.57	31.06	30.80	30.68	30.47	30.30	30.33	31.31	31.63	30.76	28.76	26.94
6	31.55	31.05	30.79	30.67	30.47	30.30	30.36	31.38	31.61	30.70	28.70	26.89
7	31.53	31.04	30.78	30.66	30.47	30.30	30.38	31.45	31.59	30.65	28.63	26.84
8	31.51	31.04	30.78	30.65	30.47	30.30	30.40	31.50	31.57	30.60	28.56	26.79
9	31.49	31.03	30.78	30.65	30.47	30.30	30.42	31.55	31.56	30.55	28.48	26.74
10	31.48	31.03	30.78	30.64	30.47	30.29	30.44	31.59	31.54	30.48	28.42	26.69
11	31.47	31.02	30.77	30.63	30.47	30.29	30.46	31.63	31.52	30.32	28.35	26.66
12	31.46	31.01	30.77	30.62	30.47	30.28	30.48	31.66	31.50	30.25	28.32	26.63
13	31.45	31.01	30.76	30.61	30.47	30.28	30.49	31.69	31.48	30.19	28.26	26.60
14	31.45	31.00	30.76	30.60	30.47	30.27	30.50	31.71	31.46	30.13	28.21	26.57
15	31.44	31.01	30.76	30.59	30.47	30.26	30.51	31.73	31.44	30.07	28.15	26.54
16	31.43	31.01	30.75	30.59	30.47	30.25	30.52	31.76	31.44	30.02	28.10	26.52
17	31.42	31.01	30.75	30.58	30.47	30.25	30.54	31.76	31.43	29.96	28.04	26.50
18	31.41	31.02	30.74	30.58	30.47	30.25	30.56	31.76	31.42	29.88	27.97	26.48
19	31.39	31.02	30.74	30.57	30.47	30.24	30.59	31.76	31.40	29.80	27.90	26.46
20	31.38	31.01	30.74	30.55	30.47	30.24	30.62	31.75	31.39	29.74	27.82	26.44
21	31.36	31.01	30.74	30.53	30.47	30.23	30.65	31.74	31.36	29.68	27.76	26.42
22	31.34	31.00	30.75	30.51	30.47	30.22	30.68	31.72	31.35	29.62	27.68	26.40
23	31.32	30.99	30.75	30.49	30.47	30.22	30.71	31.72	31.33	29.56	27.61	26.38
24	31.30	30.98	30.75	30.48	30.42	30.22	30.74	31.71	31.31	29.50	27.54	26.36
25	31.29	30.97	30.74	30.48	30.40	30.22	30.77	31.71	31.29	29.44	27.48	26.34
26	31.27	30.96	30.74	30.47	30.37	30.22	30.81	31.70	31.26	29.38	27.42	26.32
27	31.24	30.95	30.73	30.47	30.36	30.22	30.84	31.70	31.24	29.32	27.36	26.31
28	31.21	30.93	30.72	30.47	30.35	30.23	30.87	31.69	31.21	29.27	27.30	26.29
29	31.19	30.91	30.71	30.47	-------	30.23	30.91	31.68	31.16	29.21	27.25	26.27
30	31.16	30.89	30.70	30.47	-------	30.23	30.97	31.66	31.11	29.14	27.21	26.25
31	31.13	-------	30.70	30.47	-------	30.24	-------	31.66	-------	29.08	27.16	-------

NOTE.—Add 2,200.00 feet to obtain elevation above mean sea level, U. S. Coast and Geodetic Survey datum.

SPOKANE VALLEY FARMS CO.'S CANAL AT POST FALLS, IDAHO

LOCATION.—Staff gage in NE. ¼ sec. 4, T. 50 N., R. 5 W., 1,200 feet below head gates and half a mile west of Post Falls.

RECORDS AVAILABLE.—May, 1911, to September, 1917; September, 1919, to September, 1929.

EXTREMES.—Maximum discharge during year, 236 second-feet Aug. 14 (gage height, 4.55 feet); no flow Oct. 1 to Mar. 31.

1911–1917, 1919–1929: Maximum discharge, 286 second-feet July 18, 1927 (gage height, 4.95 feet); no flow during nonirrigation seasons.

REMARKS.—Records fair. No records Oct. 1 to Mar. 31 and Sept. 16–30. Canal diverts water for irrigation from Spokane River in SE. ¼ sec. 3, T. 50 N., R. 5 W. Gage-height record furnished by Spokane Valley Farms Co.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.
1		84	191	209	209	200
2		90	183	209	227	191
3		96	209	209	227	191
4		96	209	209	227	191
5		96	209	209	227	191
6	5	102	209	209	227	191
7		108	209	209	227	191
8		108	191	209	227	191
9		120	191	209	227	191
10		127	209	209	227	183
11		134	227	209	227	183
12	12	134	227	209	227	183
13		148	227	209	227	183
14		155	218	209	227	183
15		155	218	209	227	176
16		169	200	209	227	------
17	15	169	209	209	227	------
18		169	209	209	227	------
19		169	209	209	227	------
20		169	209	209	227	------
21		169	209	209	227	------
22		183	209	209	227	------
23		183	209	209	218	------
24		200	209	209	209	------
25		209	209	209	209	------
26	50	209	209	209	209	------
27		200	209	200	209	------
28		209	209	209	209	------
29	72	191	209	209	209	------
30	72	176	209	209	200	------
31	------	200	------	209	200	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April	72	----------	22.0	1,310
May	209	84	152	9,350
June	227	183	208	12,400
July	209	200	209	12,900
August	227	200	221	13,600
September 1–15	200	176	188	5,590
The period	----------	----------	----------	55,200

LITTLE SPOKANE RIVER AT DARTFORD, WASH.

LOCATION.—Staff gage in sec. 6, T. 26 N., R. 43 E., 50 feet below highway bridge at Dartford and 6 miles above mouth of river.
DRAINAGE AREA.—600 square miles.
RECORDS AVAILABLE.—April to September, 1929.
EXTREMES.—Maximum discharge during period, 439 second-feet Apr. 25 (gage height, 2.04 feet); minimum, 87 second-feet Sept. 2 (gage height, 1.19 feet).
REMARKS.—Records fair. No diversions of any size above station.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	307	137	124	105	94	16	-------	174	184	103	114	103
2	-------	328	152	119	117	87	17	-------	167	170	117	110	112
3	-------	350	155	119	112	103	18	-------	161	158	140	105	105
4	-------	328	146	127	107	105	19	-------	161	161	158	96	112
5	-------	328	135	122	105	101	20	-------	161	155	146	103	105
6	-------	248	137	114	112	99	21	-------	155	149	140	101	110
7	-------	231	135	119	117	94	22	408	146	152	127	105	105
8	-------	277	135	124	114	105	23	391	149	155	119	105	110
9	-------	272	140	140	114	94	24	408	143	143	114	96	105
10	-------	272	135	164	117	90	25	439	143	127	110	99	107
11	-------	206	135	152	110	99	26	408	158	135	110	94	105
12	-------	192	140	135	101	114	27	396	143	132	107	96	99
13	-------	188	158	119	110	103	28	379	140	130	110	99	94
14	-------	188	164	119	101	107	29	373	135	132	107	110	99
15	-------	177	167	105	110	99	30	385	132	130	105	101	94
							31	-------	135	-------	114	88	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
April 22-30	439	373	399	0.665	0.22	7,120
May	350	132	203	.338	.39	12,500
June	184	127	146	.243	.27	8,690
July	164	103	124	.207	.23	7,620
August	117	88	106	.177	.20	6,520
September	114	87	102	.170	.19	6,070
The period						48,500

NESPELEM RIVER BASIN

NESPELEM RIVER AT NESPELEM, WASH.

LOCATION.—Staff gage in SE. ¼ sec. 24, T. 31 N., R. 30 E., half a mile above Nespelem.
DRAINAGE AREA.—122 square miles.
RECORDS AVAILABLE.—May, 1911, to September, 1929, when records were discontinued.
EXTREMES.—Maximum discharge during year, 40 second-feet Mar. 10 (gage height, 1.25 feet); minimum, 3.8 second-feet Aug. 30 (gage height, 0.70 foot).
1911–1929: Maximum discharge, 483 second-feet Apr. 5, 1919 (gage height, 4.9 feet); minimum, 2.7 second-feet July 26 to Aug. 1, 1926.
REMARKS.—Records good. Discharge estimated Nov. 15–17, May 19, July 21, 28, Aug. 4, 18, and Sept. 1 and 2. Nespelem Canal diverts water above gage for irrigation. See records for Nespelem Canal.

Daily discharge, in second-feet, of Nespelem River at Nespelem, Wash., 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.4	4.4	4.7	8.2	7.2	6.3	10	34	16	8.2	4.0	4.0
2	4.4	4.4	8.8	8.2	6.7	6.7	10	33	16	8.2	4.0	4.0
3	4.4	4.4	8.8	8.2	6.7	7.2	10	33	16	7.7	4.0	4.0
4	4.4	4.4	8.2	7.7	6.7	7.7	10	34	15	7.7	4.0	4.0
5	4.4	4.4	7.7	7.7	6.7	8.2	10	32	14	7.2	4.0	4.0
6	4.4	4.4	7.7	7.7	6.7	8.8	11	32	13	7.2	4.0	4.0
7	4.4	4.4	7.7	7.7	6.7	8.8	11	31	12	6.7	4.2	4.0
8	4.4	4.4	7.7	7.7	6.7	8.8	11	30	11	6.3	4.2	4.2
9	4.4	4.7	7.7	7.7	6.7	9.4	11	30	11	6.3	4.0	4.2
10	4.2	4.7	7.7	7.7	6.3	40	11	29	11	5.9	4.0	4.2
11	4.2	4.7	8.2	7.7	5.9	26	11	29	11	5.9	4.0	4.2
12	4.2	4.7	8.2	7.7	5.9	11	11	29	11	5.9	4.0	4.2
13	4.2	4.7	8.2	7.7	5.9	10	11	29	11	5.9	4.0	4.2
14	4.2	4.7	8.2	7.7	5.6	9.4	11	29	11	5.9	4.0	4.2
15	4.2	4.6	8.2	7.7	5.6	9.4	11	28	14	5.9	4.0	4.2
16	4.2	4.4	8.2	7.7	5.3	10	20	27	17	5.9	4.2	4.2
17	4.2	4.3	8.2	7.7	5.3	10	20	25	18	5.0	4.2	4.2
18	4.2	4.2	8.2	7.7	5.3	10	18	23	18	4.2	4.2	4.2
19	4.2	4.4	8.2	7.7	5.3	10	19	22	18	4.2	4.2	4.4
20	4.2	4.4	8.2	7.7	5.3	10	20	22	18	4.2	4.4	4.4
21	4.2	4.4	8.2	7.7	5.3	10	22	22	16	4.1	4.4	4.4
22	4.2	4.4	8.2	7.7	5.3	11	24	21	14	4.0	4.4	4.4
23	4.2	4.4	8.2	7.7	5.3	11	26	20	12	4.0	4.4	4.4
24	4.2	4.4	8.2	7.7	5.3	11	28	18	11	4.0	4.4	4.4
25	4.2	4.4	8.2	7.7	5.6	11	28	18	11	4.0	4.4	4.7
26	4.2	4.4	8.2	7.7	5.9	11	29	18	10	4.0	4.4	4.7
27	4.2	4.4	8.2	7.7	5.9	11	30	18	10	4.0	4.4	4.2
28	4.2	4.4	8.2	7.7	6.3	11	33	16	9.4	4.0	4.4	4.0
29	4.4	4.4	8.2	7.2	-------	11	33	16	8.8	4.0	4.2	4.0
30	4.4	4.4	8.2	7.2	-------	11	34	16	8.8	4.0	4.0	4.0
31	4.4	-------	8.2	7.2	-------	11	-------	15	-------	4.0	4.0	-------

Combined monthly discharge of Nespelem River and Nespelem Canal at Nespelem, Wash., 1928–29

Month	Discharge in second-feet					Combined run-off in acre-feet
	River, mean	Canal, mean	Combined			
			Maximum	Minimum	Mean	
October	4.28	5.37	9.9	9.4	9.65	593
November	4.46	4.89	11	8.7	9.35	556
December	8.03	.15	9.4	7.7	8.18	503
January	7.70	----------	8.2	7.2	7.70	473
February	5.98	----------	7.2	5.3	5.98	332
March	11.2	----------	40	6.3	11.2	689
April	18.1	.94	38	10	19.0	1,130
May	25.1	8.11	40	27	33.2	2,040
June	13.1	11.7	32	16	24.8	1,480
July	5.44	4.58	16	7.6	10.0	615
August	4.16	3.12	7.7	6.9	7.28	448
September	4.21	3.07	7.9	6.8	7.28	433
The year	9.34	3.50	40	5.3	12.8	9,290

NESPELEM CANAL AT NESPELEM, WASH.

LOCATION.—Staff gage in sec. 24, T. 31 N., R. 30 E., three-fourths of a mile below intake and three-fourths of a mile northwest of Nespelem.

RECORDS AVAILABLE.—April, 1921, to September, 1929, when records were discontinued.

EXTREMES.—Maximum discharge during year, 13.9 second-feet June 16–18 (gage height, 1.85 feet); canal dry Dec. 2 to Apr. 17.

1921–1929: Maximum discharge, that of June 16–18, 1929; no flow in canal during winter.

REMARKS.—Records fair. Discharge estimated Nov. 15–17, May 19, July 21, 28, Aug. 4, 18, and Sept. 1, 2. Canal diverts water from Nespelem River about on line between sec. 24 and 13, T. 31 N., R. 30 E.; water used for irrigation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Apr.	May	June	July	Aug.	Sept.
1	5.3	5.0	4.7	0	4.4	11.7	7.5	3.6	2.9
2	5.3	5.0	0	0	4.9	11.8	7.3	3.6	2.9
3	5.3	4.9	0	0	5.6	12.0	6.2	3.7	2.9
4	5.5	4.9	0	0	5.6	11.6	5.7	3.6	2.8
5	5.5	4.9	0	0	6.1	11.0	5.5	3.6	2.8
6	5.5	4.9	0	0	6.1	10.6	5.3	3.5	2.8
7	5.5	4.9	0	0	6.0	11.0	5.0	3.2	2.9
8	5.5	5.0	0	0	6.0	11.6	4.8	3.2	2.9
9	5.5	6.0	0	0	5.8	11.6	4.6	3.2	2.9
10	5.4	6.1	0	0	5.8	11.8	4.5	3.2	2.9
11	5.4	5.7	0	0	5.8	12.0	4.4	3.2	2.9
12	5.4	5.5	0	0	5.8	11.7	4.2	3.2	2.9
13	5.4	5.3	0	0	5.8	11.7	4.0	3.2	2.9
14	5.4	5.1	0	0	5.8	11.7	3.8	3.2	2.9
15	5.4	5.0	0	0	6.7	13.2	3.5	3.1	2.9
16	5.4	4.8	0	0	8.2	13.9	3.4	3.1	2.9
17	5.5	4.6	0	0	9.2	13.9	4.2	3.2	2.9
18	5.5	4.5	0	1.4	9.6	13.9	4.9	3.2	3.0
19	5.4	4.5	0	1.0	9.5	13.5	4.7	3.1	3.1
20	5.4	4.5	0	1.0	9.4	13.5	4.5	2.9	3.1
21	5.4	4.5	0	1.0	9.4	13.1	4.4	2.9	3.1
22	5.4	4.5	0	1.0	9.2	12.6	4.4	2.9	3.1
23	5.4	4.5	0	1.2	9.9	11.8	4.3	2.9	3.1
24	5.3	4.5	0	1.2	10.6	11.4	4.2	2.8	3.1
25	5.3	4.5	0	1.1	10.5	10.8	4.1	2.8	3.2
26	5.3	4.5	0	2.5	10.5	10.5	4.1	2.7	3.2
27	5.2	4.6	0	4.0	11.4	10.0	3.9	2.7	3.6
28	5.2	4.6	0	4.2	12.2	9.5	3.8	2.7	3.8
29	5.2	4.6	0	4.3	12.1	9.0	3.7	2.8	3.8
30	5.1	4.7	0	4.4	11.8	7.7	3.6	2.9	3.8
31	5.1	------	0	------	11.6	------	3.6	2.9	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	5.5	5.1	5.37	330
November	6.1	4.5	4.89	291
December	4.7	0	.15	9.22
April	4.4	0	.94	55.9
May	12.2	4.4	8.11	499
June	13.9	7.7	11.7	696
July	7.5	3.4	4.58	282
August	3.7	2.7	3.12	192
September	3.8	2.8	3.07	183
The year	13.9	0	3.50	2,540

OKANOGAN RIVER BASIN

OSOYOOS LAKE NEAR OROVILLE, WASH.

LOCATION.—Water-stage recorder in lot 2, sec. 5, T. 40 N., R. 27 E., 100 feet south of international boundary and 4 miles north of Oroville. Gage set to mean sea level datum.

DRAINAGE AREA.—3,250 square miles.

RECORDS AVAILABLE.—July, 1928, to September, 1929.

EXTREMES.—Maximum water-surface elevation recorded during period of record, 916.01 feet July 28, 1928; minimum, not determined, occurred during period Dec. 7 to May 6, when station was not in operation.

REMARKS.—Records good. No records Aug. 22 to Sept. 1, 1929, and Dec. 7 to May 6. Diversion in Canada for irrigation. Okanogan River subject to natural regulation in several lakes and, in the interest of navigation, to artificial regulation in Okanogan Lake.

Daily elevation, in feet, 1928–29

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	May	June	July	Aug.	Sept.
1	------	15.80	------	14.20	13.81	13.63	------	13.48	12.88	11.71	11.50
2	------	15.75	14.85	14.19	13.80	13.62	------	13.52	12.82	11.71	11.49
3	------	15.71	14.84	14.17	13.79	13.61	------	13.58	12.75	11.70	11.48
4	------	15.69	14.80	14.16	13.79	13.60	------	13.61	12.70	11.69	11.48
5	------	------	14.78	14.14	13.79	13.58	------	13.61	12.65	11.68	11.48
6	------	15.61	14.73	14.11	13.79	13.59	------	13.61	12.60	11.66	11.48
7	------	15.58	14.67	14.09	13.78	------	12.13	13.62	12.55	11.66	11.47
8	------	15.55	14.60	14.09	13.78	------	12.19	13.60	12.50	11.65	11.48
9	------	15.51	14.56	14.09	13.80	------	12.21	13.60	12.46	11.64	11.49
10	------	15.49	14.54	14.09	13.81	------	12.27	13.60	12.42	11.62	11.49
11	------	15.43	14.51	14.07	13.81	------	12.33	13.59	12.37	11.62	11.50
12	------	15.41	14.50	14.04	13.81	------	12.40	13.56	12.32	11.60	11.50
13	------	------	14.47	14.02	13.81	------	12.46	13.54	12.30	11.61	11.50
14	------	15.29	14.45	14.01	13.82	------	12.52	13.52	12.25	11.60	11.50
15	------	15.27	14.41	14.01	13.81	------	12.56	13.51	12.22	11.59	11.49
16	------	15.24	14.39	14.01	13.80	------	12.62	13.53	12.20	11.57	11.49
17	------	15.22	14.37	14.01	13.80	------	12.65	13.53	12.15	11.57	11.49
18	------	15.19	14.36	14.00	13.79	------	12.71	13.53	12.12	11.53	11.47
19	------	15.16	14.32	14.00	13.78	------	12.76	13.53	12.09	11.51	11.47
20	------	15.11	14.31	13.99	13.75	------	12.82	13.52	12.05	11.50	11.46
21	------	15.10	14.30	13.98	13.74	------	12.88	13.48	12.02	11.49	11.43
22	------	15.05	14.29	13.97	13.72	------	12.94	13.44	12.01	11.48	11.43
23	------	------	14.27	13.97	13.71	------	13.01	13.37	11.98	11.48	11.41
24	------	------	14.26	13.96	13.70	------	13.07	13.33	11.95	11.48	11.39
25	------	------	14.25	13.93	13.68	------	13.13	13.27	11.91	11.48	11.37
26	------	------	14.24	13.91	13.67	------	13.17	13.19	11.88	11.49	11.37
27	------	------	14.23	13.89	13.66	------	13.21	13.13	11.84	11.49	11.35
28	16.01	------	14.22	13.87	13.65	------	13.23	13.05	11.82	11.49	11.35
29	15.95	------	14.21	13.86	13.64	------	13.30	12.97	11.81	11.50	11.35
30	15.90	------	14.20	13.84	13.63	------	13.36	12.92	11.81	11.50	11.35
31	15.83	------	------	13.83	------	------	13.41	------	11.79	11.50	------

NOTE.—Add 900.00 feet to obtain elevation above mean sea level.

OKANOGAN RIVER NEAR TONASKET, WASH.

LOCATION.—Water-stage recorder in lot 3, sec. 8, T. 36 N., R. 27 E., 1,000 feet above Chewiliken Creek and 5½ miles south of Tonasket.

DRAINAGE AREA.—7,250 square miles.

RECORDS AVAILABLE.—April to September, 1929.

EXTREMES.—Maximum discharge during period, 8,500 second-feet June 10 (gage height, 10.16 feet); minimum, 236 second-feet Sept. 5 (gage height, 3.59 feet).

REMARKS.—Records good. Discharge estimated Apr. 21, 28, and May 17. Numerous diversions above station for irrigation. Flow subject to natural regulation in several lakes and, in the interest of navigation, to artificial regulation in Okanogan Lake. Operation of power plant with pondage on Similkameen River affects low-water flow slightly.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	1,190	5,580	2,500	537	288	16	-------	4,080	6,460	1,230	383	257
2	-------	1,070	6,640	2,390	554	283	17	335	4,080	6,280	1,190	378	257
3	-------	1,040	6,280	2,240	526	274	18	330	4,080	5,750	1,110	362	262
4	-------	1,270	5,750	2,140	531	262	19	330	4,240	5,240	1,040	346	262
5	-------	1,430	5,750	2,040	583	253	20	335	4,900	4,900	1,000	335	262
6	-------	1,390	6,280	1,940	548	283	21	340	5,750	4,560	930	316	257
7	-------	1,390	6,820	1,840	478	288	22	346	6,820	4,080	909	311	257
8	-------	1,390	7,550	1,790	441	288	23	362	7,740	3,840	860	311	257
9	-------	1,550	8,120	1,740	436	283	24	362	8,120	3,620	839	330	257
10	-------	1,690	8,310	1,640	441	283	25	394	8,120	3,480	783	457	257
11	-------	2,150	7,740	1,550	441	283	26	462	7,000	3,410	748	362	266
12	-------	2,600	7,360	1,470	420	274	27	521	6,100	3,270	708	325	274
13	-------	3,060	6,640	1,430	410	274	28	780	5,410	3,130	708	306	279
14	-------	3,920	6,640	1,350	410	274	29	1,040	4,900	2,920	642	311	279
15	-------	4,240	6,640	1,270	394	262	30	1,150	4,900	2,730	618	306	274
							31	-------	5,070	-------	577	288	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 17–30	1,150	330	506	14,000
May	8,120	1,040	3,890	239,000
June	8,310	2,730	5,530	329,000
July	2,550	577	1,330	81,800
August	583	288	406	25,000
September	288	253	270	16,100
The period	----------	----------	----------	705,000

SIMILKAMEEN RIVER NEAR NIGHTHAWK, WASH.

LOCATION.—Water-stage recorder in NW. ¼ sec. 7, T. 40 N., R. 26 E., about 1¼ miles below Nighthawk.

DRAINAGE AREA.—3,420 square miles.

RECORDS AVAILABLE.—September, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period of record, 8,500 second-feet May 23 (gage height, 9.14 feet); minimum, not determined, occurred during the period Jan. 15 to Feb. 15, when stage-discharge relation was affected by ice.

High-water marks indicate a stage of about 13.0 feet some time in May, 1928.

REMARKS.—Records excellent except those for periods of ice effect, Dec. 30 to Jan. 1 and Jan. 3 to Mar. 8, which are poor. Some regulation caused by natural diversion into Palmer Lake on rising stage which is returned to river as stage recedes. Small diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	346	612	455	350			336	1,130	5,980	2,340	534	285
2	-------	346	600	475	358			336	1,090	6,550	2,120	518	282
3	-------	350	576	413				326	1,250	5,790	2,010	490	282
4	-------	378	564	382		210		318	1,510	5,420	1,960	475	285
5	-------	390	552	315			350	318	1,460	5,600	1,800	465	297
6	-------	390	540	294				315	1,380	6,360	1,700	450	294
7	-------	390	534	282				309	1,420	6,930	1,650	440	285
8	-------	394	534	279				309	1,510	7,500	1,600	435	285
9	-------	430	512	315			374	306	1,700	7,900	1,560	426	285
10	-------	1,130	529	509			378	309	1,750	7,900	1,460	412	279
11	370	1,190	534	475	280		374	306	2,010	7,310	1,380	404	274
12	370	923	534	465		170	362	306	2,720	6,930	1,290	390	274
13	366	783	524	450			358	300	3,700	6,360	1,250	382	265
14	358	708	518	455			346	303	4,350	6,360	1,170	362	260
15	350	684	502	426			346	297	4,260	6,360	1,090	358	254
16	358	678	480	382			350	300	4,260	6,170	1,090	350	254
17	374	755	480	336			354	300	4,260	5,790	1,050	343	254
18	370	846	480	332			350	300	4,100	5,240	978	340	252
19	362	867	470	332			343	300	4,520	4,700	923	332	252
20	358	783	435	336			340	303	5,240	4,350	874	326	254
21	366	734	430	340			329	312	6,360	4,020	853	318	257
22	374	702	496	329		260	326	329	7,310	3,620	825	318	254
23	366	678	564	322			346	346	7,900	3,400	790	326	257
24	362	720	558	340			343	382	8,100	3,250	741	322	257
25	358	748	524	346	190		336	465	7,500	3,110	708	315	260
26	350	720	496	366			326	564	6,550	3,040	672	315	268
27	350	690	470	366			318	734	5,600	2,900	642	318	271
28	350	672	485	354			318	1,050	5,060	2,780	618	312	265
29	350	654	512	340		-------	318	1,170	4,700	2,580	606	306	265
30	346	642	455	340		-------	332	1,250	4,880	2,460	588	297	263
31	-------	630	-------	350		-------	340	-------	5,060	-------	552	291	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1928				
September 11–30	374	346	360	14,300
1928–29				
October	1,190	346	656	40,300
November	612	430	517	30,800
December	509	279	371	22,800
January	358	----------	247	15,200
February	----------	----------	217	12,100
March	378	----------	345	21,200
April	1,250	297	427	25,400
May	8,100	1,090	3,960	243,000
June	7,900	2,460	5,220	311,000
July	2,340	552	1,190	73,200
August	534	291	376	23,100
September	297	252	269	16,000
The year	8,100	----------	1,150	834,000

SINLAHEKIN CREEK ABOVE BLUE LAKE, NEAR LOOMIS, WASH.

LOCATION.—Water-stage recorder in NE. ¼ sec. 20, T. 37 N., R. 25 E., 1,800 feet above Blue Lake diversion dam and 9½ miles southwest of Loomis.

DRAINAGE AREA.—41.7 square miles.

RECORDS AVAILABLE.—April, 1924, to September, 1929; June, 1903, to March, 1905, at a station 3 miles above Loomis; June to October, 1920, half a mile downstream; May, 1921, to September, 1923, at Twin Bridges, 4 miles downstream.

EXTREMES.—Maximum discharge during year, 37 second-feet June 10 (gage height, 1.22 feet); minimum, 1.2 second-feet Aug. 30 (gage height, 0.45 foot).

1920–1929: Maximum discharge, 363 second-feet May 18, 1922 (gage height, 2.6 feet, on Twin Bridges gage); minimum, 0.6 second-foot or lower Aug. 6–10, 1926, and perhaps other days in same year when recorder was not operating.

REMARKS.—Records good. Discharge not determined Dec. 4 to Apr. 15. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Apr.	May	June	July	Aug.	Sept.
1	3.7	3.1	3.1	------	6.8	24	9.6	2.5	1.6
2	4.1	2.5	3.3	------	8.8	19	9.6	2.5	1.5
3	4.3	4.3	3.1	------	8.4	17	8.8	2.7	1.5
4	4.5	3.7	------	------	6.9	15	8.8	2.5	1.5
5	4.5	3.2	------	------	6.9	14	8.1	2.3	1.7
6	4.5	1.8	------	------	6.9	14	8.1	2.1	1.7
7	4.7	2.6	------	------	6.6	14	7.8	2.1	1.6
8	4.5	3.5	------	------	7.2	14	7.5	2.3	1.6
9	5.1	3.9	------	------	7.8	22	7.2	2.1	1.7
10	4.7	4.1	------	------	9.3	26	6.9	1.9	1.6
11	4.5	3.9	------	------	13	28	6.9	1.8	1.5
12	4.2	3.9	------	------	16	22	6.6	1.7	1.4
13	4.3	3.7	------	------	18	21	6.3	1.6	1.4
14	4.1	3.9	------	------	15	19	6.0	1.6	1.4
15	4.3	3.2	------	------	14	24	5.4	1.6	1.3
16	4.3	4.1	------	2.7	14	28	5.1	1.6	1.3
17	4.1	2.5	------	2.5	13	23	4.9	1.7	1.4
18	4.1	2.9	------	2.3	14	22	4.7	1.6	1.4
19	3.7	3.5	------	2.7	15	20	4.5	1.6	1.4
20	3.5	3.9	------	3.1	17	19	4.3	1.5	1.4
21	3.2	3.7	------	3.7	17	18	4.1	1.5	1.5
22	3.9	3.5	------	3.9	17	16	4.1	1.5	1.7
23	3.9	2.9	------	4.1	16	16	3.9	1.6	2.1
24	3.9	2.7	------	4.5	14	14	3.7	1.9	2.0
25	3.9	2.9	------	5.7	12	14	3.7	1.7	2.0
26	3.9	3.1	------	7.5	11	12	3.5	1.6	2.0
27	3.9	2.9	------	9.2	11	12	3.3	1.6	2.0
28	3.9	2.7	------	8.4	10	12	3.3	1.4	2.0
29	3.9	3.3	------	7.8	10	11	3.1	1.4	2.0
30	3.9	3.1	------	6.0	10	10	2.9	1.2	2.0
31	3.9	------	------	------	15	------	2.7	1.3	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	5.1	3.2	4.13	254
November	4.3	1.8	3.30	196
December 1-3	3.3	3.1	3.17	18.9
April 16-30	9.2	2.3	4.94	147
May	18	6.6	11.9	732
June	28	10	18.0	1,070
July	9.6	2.7	5.63	348
August	2.7	1.2	1.8	111
September	2.1	1.3	1.6	97.6

METHOW RIVER BASIN

METHOW RIVER AT TWISP, WASH.

LOCATION.—Chain gage in sec. 17, T. 33 N., R. 22 E., at highway bridge at Twisp, one-fourth of a mile below Twisp River.

DRAINAGE AREA.—1,330 square miles.

RECORDS AVAILABLE.—June, 1919, to September, 1929, when records were discontinued.

EXTREMES.—Maximum discharge during year, 5,010 second-feet May 23 (gage height, 6.24 feet); minimum, 134 second-feet Sept. 9 and 10 (gage height, 1.42 feet).

1919–1929: Maximum discharge, 13,400 second-feet June 5, 1921 (gage height, 10.4 feet); minimum, 134 second-feet Sept. 4 and 5, 1926, and Sept. 9 and 10, 1929 (gage height, 1.42 feet).

REMARKS.—Records good. Discharge Jan. 4–7 and Jan. 11 to Feb. 25 estimated because of ice. Numerous diversions above station for irrigation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	195	326	245	228		195	180	245	2,480	1,200	228	144
2	195	326	265	228		195	180	265	2,480	1,120	228	144
3	210	306	265	228		210	195	368	2,610	1,120	228	144
4	210	306	265			228	195	433	2,750	1,040	210	144
5	210	306	285	220		228	180	455	3,050	960	210	144
6	210	285	265			228	180	478	3,980	920	210	144
7	210	285	265			210	180	500	4,660	880	210	144
8	210	285	265	210		210	180	500	4,830	800	210	144
9	210	285	265	210		210	180	525	4,660	765	210	134
10	245	285	265	210	180	210	180	525	4,490	730	228	134
11	285	285	265			210	168	698	4,320	698	210	210
12	285	285	265			210	180	920	3,820	605	195	144
13	306	285	265			210	168	1,560	3,660	605	195	144
14	306	285	265			210	168	1,880	3,500	578	180	144
15	285	285	265	210		210	168	1,990	3,500	550	180	144
16	285	285	265			210	180	2,110	3,350	500	180	144
17	285	285	265			210	180	2,110	2,750	478	168	144
18	285	265	245			210	180	2,350	2,610	455	168	144
19	285	265	245			210	168	2,750	2,230	433	168	144
20	285	265	245			210	168	3,350	1,990	411	168	144
21	285	245	245			210	168	4,150	1,770	390	168	144
22	306	245	228			210	155	4,830	1,660	368	168	144
23	285	245	228		190	210	155	5,010	1,660	347	168	144
24	285	245	228			195	155	4,660	1,770	326	155	144
25	285	245	228			195	144	4,150	1,770	326	155	155
26	285	245	228	170	195	195	155	3,500	1,660	306	155	155
27	285	245	245		195	195	180	2,750	1,560	265	155	155
28	306	245	245		195	195	228	2,350	1,370	265	155	155
29	326	245	245		-------	180	245	2,480	1,370	265	155	155
30	326	245	245		-------	180	245	2,350	1,280	265	155	168
31	326	-------	245		-------	180	-------	2,480	-------	245	155	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	326	195	268	16,500
November	326	245	274	16,300
December	285	228	253	15,600
January	----------	----------	199	12,200
February	----------	----------	183	10,200
March	228	180	205	12,600
April	245	144	180	10,700
May	5,010	245	2,020	124,000
June	4,830	1,280	2,790	166,000
July	1,200	245	588	36,200
August	228	155	185	11,400
September	210	134	148	8,810
The year	5,010	134	609	441,000

CHELAN RIVER BASIN

STEHEKIN RIVER AT STEHEKIN, WASH.

LOCATION.—Water-stage recorder in SE. ¼ sec. 26, T. 33 N., R. 17 E., 1,200 feet above Boulder Creek and 2 miles above Chelan Lake and Stehekin. Flow of Boulder Creek included in records of discharge.

DRAINAGE AREA.—372 square miles.

RECORDS AVAILABLE.—December, 1910, to October, 1915; January, 1927, to September, 1929.

EXTREMES.—Maximum discharge during year, 6,050 second-feet May 23 (gage height, 24.13 feet); minimum, 118 second-feet Feb. 26 (gage height, 18.76 feet).

1910–1915, 1927–1929: Maximum discharge, 11,400 second-feet June 12, 1911, and May 22 ,1928; minimum, that of Feb. 26, 1929.

REMARKS.—Records good. At very high stages a small percentage of flow is diverted above gage by natural sloughs; amount diverted included in daily discharge. Gage-height record and results of many discharge measurements furnished by Washington Water Power Co.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	425	379	286	192	134	130	403	1,550	2,840	2,310	1,220	655
2	525	368	251	192	137	152	391	1,800	2,370	2,370	1,260	610
3	399	358	216	186	142	192	375	1,910	2,130	2,190	1,310	495
4	375	358	216	180	132	210	368	1,800	2,440	2,130	1,130	489
5	379	344	254	177	137	216	358	1,700	3,200	2,130	1,020	501
6	396	330	251	177	127	204	350	1,600	4,440	2,190	1,080	455
7	460	316	251	172	122	198	340	1,550	5,090	1,960	1,180	415
8	1,430	323	260	172	125	192	333	1,650	5,280	2,020	1,220	425
9	4,020	337	263	172	132	195	326	1,600	4,900	2,020	1,220	483
10	1,580	358	267	169	130	201	316	1,700	4,440	1,910	1,180	501
11	1,030	344	260	169	132	201	309	2,080	4,000	1,550	1,110	558
12	785	337	251	169	132	198	303	2,700	3,670	1,400	1,030	610
13	642	330	238	166	134	201	306	3,200	4,170	1,600	968	669
14	584	323	232	166	132	204	350	3,280	4,260	1,910	944	717
15	776	313	226	166	132	213	361	3,050	4,530	1,860	888	611
16	1,010	306	222	155	137	222	368	3,050	3,830	1,600	832	617
17	1,220	293	207	166	132	229	354	2,980	2,910	1,650	856	635
18	856	283	210	158	122	235	368	2,910	2,560	1,700	876	578
19	725	276	210	127	122	260	387	3,280	2,310	1,700	816	515
20	648	283	198	130	127	299	411	3,920	2,080	1,500	676	447
21	610	330	201	155	127	354	501	4,800	2,020	1,220	669	367
22	669	330	201	144	125	340	577	5,470	2,190	1,220	655	327
23	711	330	195	125	122	330	697	5,660	2,440	1,220	861	312
24	596	330	195	142	120	330	824	5,280	2,840	1,260	697	283
25	544	326	198	142	120	326	1,010	3,670	3,120	1,130	622	266
26	495	326	201	142	118	361	1,310	2,840	2,770	1,220	676	249
27	465	313	201	132	120	395	1,650	2,440	2,440	1,030	805	240
28	440	299	198	127	120	501	1,750	2,250	2,500	1,100	880	230
29	425	303	198	130	------	477	1,750	2,440	2,440	1,260	824	224
30	407	296	195	125	------	435	1,600	2,700	2,310	1,360	762	218
31	407	------	186	127	------	415	------	2,700	------	1,310	770	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	4,020	375	775	2.08	2.40	47,700
November	379	276	325	.874	.98	19,300
December	286	186	224	.602	.69	13,800
January	192	125	157	.422	.49	9,650
February	142	118	128	.344	.36	7,110
March	501	130	271	.728	.84	16,700
April	1,750	303	625	1.68	1.87	37,200
May	5,660	1,550	2,820	7.58	8.74	173,000
June	5,280	2,020	3,220	8.66	9.66	192,000
July	2,370	1,030	1,650	4.44	5.12	101,000
August	1,310	622	937	2.52	2.90	57,600
September	717	218	457	1.23	1.37	27,200
The year	5,660	118	970	2.61	35.42	702,000

LAKE CHELAN AT CHELAN, WASH.

LOCATION.—Water-stage recorder in lot 3, sec. 15, T. 27 N., R. 22 E., 2 miles west of Chelan. Gage set to mean sea level datum.

DRAINAGE AREA.—950 square miles.

RECORDS AVAILABLE.—September, 1897, to December, 1899; January to June, 1905; December, 1910, to September, 1929.

EXTREMES.—Maximum water-surface elevation during year, 1,099.77 feet July 14; minimum, 1,083.76 feet Mar. 22.

1897–1899, 1905, 1910–1929: Maximum water-surface elevation, that of July 14, 1929; minimum, 1,076.78 feet Jan. 27, 28, Dec. 2 and 3, 1898.

REMARKS.—Records excellent. Lake level regulated under stipulation of Federal Power Commission for power and for scenic effect during tourist season. Gage-height record furnished by Washington Water Power Co.

Daily elevation, in feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	96.73	96.05	94.04	91.40	87.65	84.28	83.89	84.66	91.58	99.08	99.53	97.67
2	96.65	95.95	93.99	91.30	87.52	84.18	83.87	84.78	91.77	99.26	99.52	97.56
3	96.58	95.90	93.89	91.21	87.42	84.07	83.85	84.90	91.93	99.36	99.50	97.41
4	96.48	95.87	93.78	91.06	87.30	83.94	83.85	85.06	92.11	99.48	99.50	97.28
5	96.43	95.79	93.67	90.92	87.15	83.88	83.86	85.22	92.33	99.57	99.46	97.17
6	96.39	95.67	93.57	90.82	87.03	83.83	83.85	85.33	92.66	99.63	99.41	97.07
7	96.35	95.59	93.46	90.70	86.92	83.82	83.83	85.44	93.03	99.61	99.40	96.96
8	96.35	95.48	93.40	90.59	86.78	83.82	83.82	85.53	93.47	99.66	99.38	96.86
9	96.49	95.45	93.35	90.46	86.65	83.82	83.81	85.70	93.90	99.71	99.33	96.76
10	96.60	95.42	93.33	90.35	86.53	83.84	83.80	85.79	94.30	99.69	99.29	96.66
11	96.58	95.33	93.25	90.23	86.41	83.86	83.81	85.92	94.68	99.59	99.28	96.57
12	96.56	95.28	93.16	90.11	86.29	83.82	83.79	86.10	94.95	99.58	99.22	96.49
13	96.55	95.22	93.12	89.96	86.16	83.82	83.81	86.33	95.28	99.61	99.16	96.38
14	96.51	95.17	93.04	89.85	86.03	83.81	83.85	86.56	95.61	99.77	99.14	96.33
15	96.50	95.08	92.98	89.75	85.88	83.80	83.85	86.77	95.95	99.75	99.07	96.24
16	96.50	95.03	92.90	89.65	85.81	83.80	83.87	87.01	96.30	99.61	98.96	96.11
17	96.51	94.96	92.80	89.52	85.69	83.80	83.87	87.24	96.60	99.61	98.88	96.03
18	96.51	94.85	92.73	89.39	85.58	83.80	83.86	87.47	96.81	99.66	98.87	95.94
19	96.51	94.78	92.62	89.25	85.45	83.80	83.87	87.72	97.01	99.73	98.78	95.84
20	96.49	94.70	92.51	89.11	85.34	83.81	83.88	88.02	97.17	99.72	98.67	95.79
21	96.44	94.63	92.43	89.00	85.21	83.83	83.89	88.37	97.31	99.68	98.58	95.63
22	96.41	94.55	92.32	88.88	85.10	83.81	83.92	88.79	97.44	99.69	98.48	95.50
23	96.40	94.47	92.21	88.75	84.98	83.80	83.93	89.22	97.58	99.67	98.40	95.40
24	96.37	94.41	92.09	88.63	84.87	83.82	83.98	89.66	97.78	99.68	98.30	95.25
25	96.33	94.35	92.03	88.52	84.78	83.80	84.07	90.02	98.03	99.67	98.20	95.12
26	96.31	94.30	91.97	88.40	84.62	83.83	84.15	90.28	98.24	99.66	98.08	95.02
27	96.29	94.25	91.87	88.25	84.51	83.83	84.27	90.50	98.41	99.64	98.00	94.90
28	96.25	94.20	91.77	88.14	84.38	83.85	84.36	90.67	98.58	99.59	97.94	94.78
29	96.22	94.15	91.70	88.02	-------	83.86	84.50	90.86	98.79	99.57	97.87	94.68
30	96.19	94.07	91.60	87.89	-------	83.88	84.58	91.08	98.92	99.57	97.78	94.55
31	96.13	-------	91.49	87.77	-------	83.89	-------	91.32	-------	99.58	97.73	------

NOTE.—Add 1,000 feet to obtain elevation above mean sea level.

CHELAN RIVER AT CHELAN, WASH.

LOCATION.—Water-stage recorder in NE. ¼ sec. 30, T. 27 N., R. 23 E., half a mile above mouth and 2 miles from Chelan. Gage set to mean sea level datum.

DRAINAGE AREA.—950 square miles.

RECORDS AVAILABLE.—November, 1903, to September, 1929.

EXTREMES.—Maximum mean daily discharge during year, 3,790 second-feet July 15; minimum, 131 second-feet Apr. 30.

1903–1929: Maximum discharge, 11,600 second-feet June 8, 1921; no flow during winter, owing to artificial regulation.

REMARKS.—Records good. Unmeasured diversion for irrigation above station is small proportion of run-off. Chelan Electric Co. diverts water from a point in town of Chelan for power and for irrigation of small acreage, such diversion included in daily discharge. Flow regulated by operation of power plant. Records of diversion, gage-height record, and discharge measurements furnished by Chelan Electric Co.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,630	1,820	1,330	2,260	2,360	2,310	419	151	157	273	1,760	2,430
2	1,600	1,720	999	2,260	2,310	2,300	420	152	152	668	1,780	2,430
3	1,680	1,540	1,550	2,390	2,400	1,950	418	147	167	888	1,790	2,440
4	1,720	1,690	1,510	2,360	2,320	1,890	425	157	167	773	1,490	2,430
5	1,430	1,600	1,970	2,350	2,340	1,140	419	162	147	1,700	1,520	2,320
6	1,260	1,740	2,100	2,360	2,320	816	418	162	152	1,990	1,830	2,500
7	804	1,870	1,920	2,350	2,330	412	419	162	182	1,730	1,970	2,390
8	1,080	1,910	1,900	2,360	2,310	351	418	167	217	1,400	1,890	2,280
9	1,000	1,760	1,440	2,360	2,240	351	438	162	172	2,420	1,790	2,450
10	1,060	1,710	1,580	2,350	2,180	261	420	162	187	3,240	1,890	2,420
11	1,130	1,220	1,360	2,380	2,330	372	427	162	227	1,980	1,850	2,440
12	1,100	1,020	1,700	2,380	2,290	356	417	162	187	1,010	1,900	2,450
13	1,160	1,520	1,330	2,310	2,340	358	455	162	187	1,010	1,930	2,440
14	949	1,560	1,400	2,100	2,340	357	430	182	162	1,840	2,090	2,350
15	1,160	1,660	1,410	2,370	2,290	371	430	156	257	3,790	2,140	2,390
16	1,180	1,630	1,880	2,380	2,340	426	433	161	242	2,640	2,160	2,450
17	1,200	1,550	1,390	2,370	2,180	416	467	156	292	919	2,140	2,410
18	1,190	1,400	1,540	2,340	2,310	406	472	161	252	1,260	2,000	2,350
19	1,170	1,380	1,960	2,340	2,310	406	417	161	287	1,340	2,170	2,410
20	1,300	1,730	2,380	2,260	2,310	407	414	161	292	1,640	2,370	2,410
21	1,040	1,680	1,520	2,340	2,360	427	414	171	307	1,260	2,490	2,390
22	1,100	1,680	2,370	2,360	2,320	407	415	186	312	1,360	2,480	2,390
23	1,130	1,550	2,380	2,360	2,290	407	277	151	252	1,570	2,520	2,390
24	1,120	1,220	2,280	2,370	2,260	415	148	216	232	1,450	2,460	2,390
25	1,040	1,190	1,330	2,380	2,320	413	160	201	312	1,500	1,960	2,390
26	2,260	1,420	1,910	2,380	2,320	423	158	166	318	1,620	2,220	2,420
27	1,140	1,180	2,250	2,350	2,280	430	133	176	368	1,560	2,470	2,420
28	994	1,220	2,390	2,380	2,250	430	133	231	338	1,540	2,200	2,400
29	1,180	1,300	2,360	2,330	-------	430	134	192	263	1,740	2,410	2,420
30	1,440	1,160	1,930	2,360	-------	430	131	162	263	1,720	2,590	2,400
31	1,560	-------	2,190	2,370	-------	420	-------	157	-------	1,740	2,490	-------

Month	Observed				Gain or loss in storage in Lake Chelan (acre-feet)	Corrected for storage			
	Maximum	Minimum	Mean	Run-off in acre-feet		Run-off in acre-feet	Mean	Per square mile	Run-off in inches
October	2,260	804	1,250	76,900	−20,200	56,700	922	0.971	1.12
November	1,910	1,020	1,520	90,400	−66,200	24,200	407	.428	.48
December	2,390	999	1,790	110,000	−83,200	26,800	436	.459	.53
January	2,390	2,100	2,340	144,000	−121,000	23,000	374	.394	.45
February	2,400	2,180	2,310	128,000	−109,000	19,000	342	.360	.37
March	2,310	261	654	40,200	−16,500	23,700	385	.405	.47
April	472	131	356	21,200	+22,300	43,500	731	.769	.86
May	231	147	168	10,300	+215,000	225,000	3,660	3.85	4.44
June	368	147	235	14,000	+249,000	263,000	4,420	4.65	5.19
July	3,790	273	1,600	98,400	+20,300	119,000	1,940	2.04	2.35
August	2,590	1,490	2,090	129,000	−58,700	70,300	1,140	1.20	1.38
September	2,500	2,280	2,410	143,000	−104,000	39,000	655	.689	.77
The year	3,790	131	1,390	1,010,000	−72,200	933,000	1,290	1.36	18.41

RAILROAD CREEK AT LUCERNE, WASH.

LOCATION.—Water-stage recorder in sec. 9, T. 31 N., R. 18 E., half a mile above mouth and southwest of Lucerne.

DRAINAGE AREA.—64 square miles.

RECORDS AVAILABLE.—December, 1910, to June, 1913; and January, 1927, to September, 1929.

EXTREMES.—Maximum discharge during year, 981 second-feet May 24 (gage height, 4.30 feet); minimum, 14 second-feet Feb. 22 and 23 (gage height, 2.51 feet); discharge possibly lower during the period Jan.19-31.

1910–1913, 1927–1929: Maximum discharge, 1,910 second-feet June 8, 1927 (gage height, 5.3 feet); minimum, 13 second-feet Feb. 8, 1927; discharge may have been lower during period Jan. 19–31, 1929.

REMARKS.—Records good except those for Dec. 2–8, Dec. 31 to Jan. 3, and Jan. 19 to Feb. 2, which were estimated. No diversions above station. Gage-height record and results of many discharge measurements furnished by Washington Water Power Co.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	48	36		25	18	41	122	445	352	190	129
2	77	48		30		19	40	138	385	363	178	115
3	68	46			29	23	38	151	352	358	194	101
4	66	45		30	28	24	38	155	363	346	194	91
5	66	45	35	29	29	24	37	155	464	330	174	91
6	66	43		30	25	23	37	155	612	352	166	84
7	66	45		28	25	23	36	151	696	315	174	84
8	77	48		30	26	22	36	159	768	305	186	81
9	290	48	38	29	25	23	34	159	795	315	194	84
10	209	48	38	29	24	26	34	174	714	300	194	87
11	126	46	38	29	24	26	34	213	660	240	194	104
12	94	46	38	29	22	25	33	306	596	211	182	118
13	77	45	37	30	22	26	33	370	669	215	178	129
14	71	43	34	30	21	25	38	404	652	254	170	140
15	75	42	33	30	20	27	37	397	723	290	166	132
16	115	41	34	27	20	27	40	410	652	245	162	125
17	143	38	31	31	18	27	37	410	484	232	162	129
18	118	37	33	29	18	29	36	424	415	240	162	115
19	94	37	32		17	29	37	484	358	236	158	104
20	77	37	32		16	32	37	607	320	223	140	91
21	66	42	33		16	38	40	733	295	174	132	76
22	60	45	33		14	34	41	866	305	174	140	64
23	64	45	32		15	34	47	933	346	174	147	54
24	64	43	32		17	33	57	759	415	182	147	49
25	60	41	31	25	17	34	68	580	484	174	132	45
26	59	42	32		17	36	94	464	452	166	129	40
27	54	41	33		17	38	122	403	409	162	150	36
28	54	37	34		17	45	138	358	415	158	174	35
29	49	38	34		-------	41	138	358	403	174	166	32
30	49	38	34		-------	41	126	415	363	190	158	28
31	49	-------	30		-------	40	-------	427	-------	194	154	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	290	49	86.3	1.35	1.56	5,310
November	48	37	42.9	.670	.75	2,550
December	----------	----------	34.1	.533	.61	2,100
January	----------	----------	27.6	.431	.50	1,700
February	29	14	21.0	.328	.34	1,170
March	45	18	29.4	.459	.53	1,810
April	138	33	53.5	.836	.93	3,180
May	933	122	382	5.97	6.88	23,500
June	795	295	500	7.81	8.71	29,800
July	363	158	247	3.86	4.45	15,200
August	194	129	166	2.59	2.99	10,200
September	140	28	86.4	1.35	1.51	5,140
The year	933	14	140	2.19	29.76	102,000

WENATCHEE RIVER BASIN

WENATCHEE RIVER NEAR LEAVENWORTH, WASH.

LOCATION.—Staff gage in SW. ¼ sec. 12, T. 26 N., R. 17 E., half a mile below Beaver Creek and 14 miles north of Leavenworth.

DRAINAGE AREA.—591 square miles.

RECORDS AVAILABLE.—November, 1910, to September, 1929 (discontinued).

EXTREMES.—Maximum discharge during year, 8,460 second-feet May 24 (gage height, 7.35 feet); minimum, not determined, probably below 300 second-feet some time during the period of ice effect Feb. 1–24.

1910–1929: Maximum discharge, 20,800 second-feet Dec. 13, 1921 (gage height, 11.8 feet); minimum, 250 second-feet Oct. 18 and 19, 1925.

REMARKS.—Records excellent except those for Dec. 3–9, Jan. 9–12, Jan. 20 to Feb. 24, and Apr. 13, which were estimated. Wenatchee Park Land & Irrigation Co. diverts a maximum of about 12 second-feet from Chiwawa River during irrigation seasons. No regulation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	391	528	496	377		328	830	2,420	4,230	3,480	982	504
2	544	496	458	370		349	782	2,940	4,040	3,480	982	465
3	496	480		370		384	782	3,300	3,660	3,300	982	435
4	465	480	420	370		420	782	3,300	4,040	3,120	930	420
5	544	480		349	310	442	735	2,940	4,230	2,940	830	420
6	544	465		349		458	690	2,940	4,990	2,940	782	420
7	690	458	430	335		458	690	2,760	5,590	2,590	782	405
8	880	450		322		450	645	2,760	6,020	2,590	830	398
9	2,940	465				442	645	2,590	6,470	2,420	830	391
10	2,260	520	450	310		442	602	2,940	6,020	2,260	830	405
11	1,580	544	458			450	602	3,300	6,020	2,100	782	412
12	1,260	536	458			442	560	4,040	5,380	1,880	735	420
13	1,040	544	472	309		428	602	4,610	5,590	1,800	735	428
14	930	544	442	309		420	645	4,990	5,800	1,950	690	450
15	930	528	405	322		435	645	4,990	6,020	1,950	645	450
16	1,140	536	405	309		450	690	4,990	6,020	1,800	645	435
17	1,320	544	377	322	300	450	690	4,800	4,990	1,720	602	428
18	1,140	560	377	322		450	690	4,800	4,420	1,650	602	420
19	1,090	528	377	322		465	690	4,990	4,610	1,650	602	420
20	930	472	370			520	735	5,590	4,040	1,510	560	405
21	830	496	370	360		690	782	6,940	3,480	1,380	560	398
22	735	528	363			645	830	7,440	3,480	1,200	536	391
23	782	536	363			645	982	7,940	3,660	1,200	520	391
24	735	528	363			645	1,140	8,460	3,850	1,260	536	377
25	690	528	384		316	645	1,440	7,440	4,420	1,090	520	370
26	645	520	391		316	735	1,880	5,590	4,420	1,090	480	363
27	602	504	391	330	316	830	2,420	4,800	3,850	1,040	496	349
28	560	496	391		316	982	2,590	4,040	3,660	982	536	342
29	560	488	391		-------	1,040	1,950	4,040	3,660	1,040	552	342
30	560	480	398		-------	982	2,420	4,040	3,660	1,040	544	335
31	552	-------	384		-------	880	-------	4,230	-------	1,040	536	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	2,940	391	915	1.55	1.79	56,300
November	560	450	509	.861	.96	30,300
December	496	----------	410	.694	.80	25,200
January	377	----------	335	.567	.65	20,600
February	----------	----------	306	.518	.54	17,000
March	1,040	328	561	.949	1.09	34,500
April	2,590	560	1,010	1.71	1.91	60,100
May	8,460	2,420	4,550	7.70	8.88	280,000
June	6,470	3,480	4,680	7.92	8.84	278,000
July	3,480	982	1,920	3.25	3.75	118,000
August	982	480	683	1.16	1.34	42,000
September	504	335	406	.687	.77	24,200
The year	8,460	----------	1,360	2.30	31.32	986,000

WENATCHEE RIVER AT PESHASTIN, WASH.

LOCATION.—Staff gage in NW. ¼ sec. 21, T. 24 N., R. 18 E., 1,000 feet below highway bridge at Peshastin.

DRAINAGE AREA.—1,000 square miles.

RECORDS AVAILABLE.—February to September, 1929.

EXTREMES.—Maximum discharge during period, 11,600 second-feet May 23 and 24 (gage height, 7.1 feet); minimum, 310 second-feet Sept. 29 (gage height, 0.58 foot).

REMARKS.—Records good. Discharge estimated Feb. 28 to Mar. 7. Several diversions for irrigation above station. Slight regulation at mill pond at Leavenworth.

Daily and monthly discharge, in second-feet, 1929

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	600	1,150	3,310	6,270	4,680	1,360	570
2	------		1,150	3,630	5,450	4,680	1,260	570
3	------		1,100	4,680	5,060	4,320	1,310	535
4	------		1,100	4,320	5,250	4,140	1,260	645
5	------		1,050	3,970	6,060	4,140	1,150	468
6	------		1,000	3,800	7,600	4,140	1,100	500
7	------		1,000	3,630	8,310	3,800	1,050	468
8	------	645	950	3,630	9,040	3,630	1,050	435
9	------	645	900	3,630	9,290	3,470	1,050	435
10	------	685	900	3,800	8,790	3,470	1,100	435
11	------	645	855	4,320	8,310	3,000	1,050	435
12	------	645	810	5,450	7,370	2,700	1,000	468
13	------	608	810	6,480	8,790	2,560	950	435
14	------	608	900	7,140	8,790	2,700	900	500
15	------	608	950	6,920	8,790	2,850	810	500
16	------	645	1,000	6,920	8,550	2,560	768	468
17	------	645	1,000	6,920	6,700	2,420	768	468
18	------	645	1,000	6,920	6,270	2,280	725	468
19	------	725	1,050	7,370	6,060	2,280	725	435
20	------	725	1,050	8,550	5,250	2,150	685	435
21	------	900	1,150	9,540	4,870	1,890	645	405
22	------	1,000	1,260	11,100	4,870	1,770	645	405
23	------	1,000	1,420	11,600	5,060	1,650	608	364
24	------	900	1,770	11,600	5,650	1,650	570	375
25	------	900	2,020	10,000	6,480	1,530	608	375
26	------	1,000	2,700	8,070	6,270	1,530	535	364
27	------	1,100	3,310	6,700	5,450	1,420	570	342
28	564	1,310	3,630	5,650	5,650	1,360	570	320
29	------	1,530	3,800	5,650	5,250	1,310	645	310
30	------	1,360	3,470	5,650	4,870	1,420	645	320
31	------	1,310	------	6,060	------	1,360	608	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
February 28	------	------	------	1,120
March	1,530	------	806	49,600
April	3,800	810	1,480	88,100
May	11,600	3,310	6,360	391,000
June	9,290	4,870	6,680	397,000
July	4,680	1,310	2,670	164,000
August	1,360	535	862	53,000
September	645	310	442	26,300
The period	------	------	------	1,170,000

PHELPS CREEK NEAR PLAIN, WASH.

LOCATION.—Staff gage one-fourth mile above mouth of creek and 25 miles northwest of Plain, Chelan County. Zero of gage, 2,772.75 feet above mean sea level.

DRAINAGE AREA.—16.8 square miles.

RECORDS AVAILABLE.—November, 1926, to September, 1929.

EXTREMES.—Maximum discharge during year, 270 second-feet May 22 (gage height, 1.88 feet); minimum, not determined, occurred during period Feb. 1–23, when stage discharge relation was affected by ice.

1926–1929: Maximum discharge, 1,080 second-feet June 7, 1927 (gage height, 3.9 feet); no flow Feb. 20–23 and Mar. 1–12, 1927, because of snowslides into gorge above gage.

REMARKS.—Records fair. Discharge estimated Feb. 1–23, when stage was affected by ice. A few second-feet is diverted 2 miles above gage for operation of mine power plant. (See table of miscellaneous discharge measurements.) Gage height record and results of many discharge measurements furnished by Royal Development Co.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.7	12	7.2	5.1		4.3	6.0	47	145	132	26	7.2
2	12	13	7.1	5.1		4.3	6.2	59	138	121	26	7.2
3	11	12	6.5	5.1	4.5	7.6	6.2	61	138	140	25	6.3
4	12	11	6.9	5.1		6.9	6.2	61	136	121	25	6.0
5	12	11	7.2	5.1		6.7	6.2	55	140	115	23	5.6
6	13	9.6	8.5	5.1		5.8	5.6	53	186	109	21	4.4
7	13	8.5	8.0	5.1		5.7	5.7	51	200	103	21	4.5
8	24	11	7.8	5.1	4.0	5.7	5.7	52	213	97	20	4.5
9	63	10	7.8	5.1		5.6	5.6	51	241	93	20	4.3
10	26	11	7.4	5.1		5.1	5.4	68	227	74	18	4.3
11	20	10	7.4	5.1		4.8	4.4	76	186	63	16	4.3
12	18	11	7.4	5.1		4.5	4.5	105	186	63	14	4.2
13	14	11	6.9	5.7	3.5	4.7	4.5	117	200	74	11	4.8
14	14	10	6.0	6.0		5.0	4.5	130	200	82	11	4.8
15	20	9.9	5.8	5.7		5.1	4.5	132	213	68	10	4.5
16	27	9.6	5.7	6.2		5.2	4.8	136	200	69	10	4.5
17	31	9.0	5.6	6.0		5.2	4.5	134	174	57	11	4.4
18	25	7.4	5.4	6.0	3.0	5.2	5.1	147	154	62	12	4.3
19	20	8.2	5.4	5.7		5.8	5.7	140	123	59	10	4.0
20	16	11	5.4	5.8		8.2	6.2	186	117	52	10	5.4
21	16	14	5.6	5.7	3.0	7.6	7.1	213	115	48	10	5.7
22	15	13	5.2	5.4	3.4	7.2	8.0	256	117	38	9.3	6.0
23	16	13	5.1	5.1	3.9	6.9	13	256	128	35	9.3	5.8
24	15	10	5.4	5.1	4.3	6.9	17	256	138	35	7.8	5.2
25	14	11	6.0	4.8	4.3	6.5	22	186	159	36	8.2	5.2
26	14	10	5.6	4.8	4.3	6.7	33	143	143	36	8.2	4.8
27	13	9.0	5.4	4.8	4.3	7.1	48	138	136	30	8.0	4.7
28	12	8.0	5.4	4.8	4.3	8.8	51	132	134	30	7.8	4.7
29	13	6.7	5.1	4.8	------	7.4	49	136	130	26	7.6	4.4
30	13	7.1	5.2	4.8	------	6.3	40	147	125	29	7.2	4.3
31	12	------	5.4	4.8	------	6.3	------	152	------	26	7.2	-----

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	63	9.7	17.9	1,100
November	14	6.7	10.3	613
December	8.5	5.1	6.28	386
January	6.2	4.8	5.26	323
February	------	------	3.81	212
March	8.8	4.3	6.10	375
April	51	4.4	13.2	786
May	256	47	125	7,690
June	241	115	161	9,580
July	140	26	68.5	4,210
August	26	7.2	13.9	855
September	7.2	4.0	5.01	298
The year	256	------	36.5	26,400

YAKIMA RIVER BASIN

YAKIMA RIVER NEAR MARTIN, WASH.

LOCATION.—Water-stage recorder below dam at outlet of Keechelus Lake and 3½ miles northwest of Martin, Kittitas County.

DRAINAGE AREA.—55 square miles.

RECORDS AVAILABLE.—October, 1903, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,980 second-feet Aug. 13 (gage height, 9.32 feet); minimum, 3 second-feet Mar. 9 to May 7.

1903–1929: Maximum discharge, 7,370 second-feet Mar. 25, 1915, when temporary crib dam was washed out; practically no flow when gates in Keechelus Reservoir Dam are closed.

REMARKS.—Records excellent. No diversions above station. Flow partly controlled by storage and release of water at Keechelus Reservoir. Complete record furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	47	14	15	16	24	31	3	3	4	224	1,770	469
2	46	14	16	16	24	32	3	3	4	275	1,970	469
3	46	14	16	16	24	34	3	3	4	370	1,720	544
4	46	14	16	16	24	34	3	3	4	392	1,520	585
5	46	14	16	16	24	86	3	3	4	426	1,520	585
6	46	14	16	16	24	117	3	3	4	560	1,520	585
7	40	14	16	16	24	56	3	3	4	657	1,520	585
8	26	14	16	16	24	4	3	4	4	657	1,520	585
9	17	14	16	21	24	3	3	4	4	702	1,520	585
10	15	14	16	24	24	3	3	4	5	734	1,800	585
11	15	14	16	24	28	3	3	4	5	817	1,970	642
12	14	14	16	24	31	3	3	4	5	888	1,970	687
13	14	14	16	24	31	3	3	4	5	963	1,970	687
14	14	14	16	24	31	3	3	4	5	1,040	1,820	657
15	14	15	16	24	31	3	3	4	5	1,080	376	642
16	14	14	16	24	31	3	3	4	5	1,120	18	702
17	14	14	16	24	31	3	3	4	5	1,080	17	766
18	14	14	16	24	31	3	3	4	5	1,120	16	783
19	14	14	16	24	31	3	3	4	5	1,210	15	870
20	14	14	16	24	31	3	3	4	5	1,210	14	963
21	14	14	16	24	31	3	3	4	5	1,520	15	1,040
22	14	14	16	24	31	3	3	4	5	1,670	16	963
23	14	14	16	24	31	3	3	4	5	1,720	16	888
24	14	14	16	24	31	3	3	4	272	1,720	271	817
25	14	14	16	24	31	3	3	4	534	1,570	424	718
26	14	14	16	24	31	3	3	4	80	1,480	469	657
27	14	14	16	24	31	3	3	4	78	1,430	469	599
28	14	14	16	24	31	3	3	4	78	1,480	469	544
29	14	14	16	24	------	3	3	4	130	1,480	469	458
30	14	14	16	24	------	3	3	4	220	1,380	469	381
31	14	------	16	24	------	3	------	4	------	1,380	469	------

Month	Observed				Gain or loss in storage in Lake Keechelus (acre-feet)	Corrected for storage			
	Maximum	Minimum	Mean	Run-off in acre-feet		Run-off in acre-feet	Mean	Per square mile	Run-off in inches
October	47	14	21.6	1,330	+16,100	17,400	283	5.15	5.94
November	15	14	14.0	835	+7,710	8,540	144	2.62	2.92
December	16	15	16.0	982	+5,420	6,400	104	1.89	2.18
January	24	16	21.8	1,340	+2,910	4,250	69.1	1.26	1.45
February	31	24	28.4	1,580	+1,610	3,190	57.4	1.04	1.08
March	117	3	14.9	918	+10,400	11,300	184	3.35	3.86
April	3	3	3.00	179	+15,200	15,400	259	4.71	5.26
May	4	3	3.77	232	+49,900	50,100	815	14.8	17.06
June	534	4	49.9	2,970	+35,400	38,400	645	11.7	13.05
July	1,720	224	1,040	64,200	−52,600	11,600	189	3.44	3.97
August	1,970	14	907	55,800	−53,800	2,000	32.5	.591	.68
September	1,040	381	668	39,800	−37,400	2,400	40.3	.733	.82
The year	1,970	3	235	170,000	+850	171,000	236	4.29	58.27

YAKIMA RIVER AT CLE ELUM, WASH.

LOCATION.—Water-stage recorder in sec. 27, T. 20 N., R. 15 E., at highway bridge at Cle Elum, just above Roslyn Creek.

DRAINAGE AREA.—500 square miles.

RECORDS AVAILABLE.—August, 1906, to September, 1929.

EXTREMES.—Maximum discharge during year, 5,530 second-feet May 24 (gage height, 5.15 feet); minimum, 142 second-feet Dec. 29 (gage height, 0.47 foot).

1906–1929: Maximum discharge, about 25,600 second-feet Nov. 14, 1906 (gage height, 12.5 feet; from high-water marks); minimum, that of Dec. 29, 1928.

REMARKS.—Records excellent. No diversions. Flow partly regulated by storage and release of water from several reservoirs upstream. Complete records furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	483	307	265	158	237	265	1,100	2,680	2,760	2,550	3,120	946
2	461	387	269	158	208	325	1,060	2,680	2,620	2,480	3,200	946
3	452	382	281	161	211	407	982	3,270	2,350	2,550	3,270	910
4	452	377	277	164	177	537	946	3,420	2,620	2,550	3,200	946
5	452	377	281	154	180	613	910	3,050	2,830	2,480	3,120	946
6	461	382	285	151	170	655	841	2,760	3,340	2,550	3,120	946
7	501	367	257	158	164	674	834	2,480	3,970	2,760	3,050	910
8	510	363	249	154	170	625	808	2,480	4,050	2,760	3,120	910
9	585	397	249	161	177	577	801	2,550	3,420	2,680	3,120	910
10	711	438	277	164	180	583	982	2,550	3,270	2,680	3,200	910
11	740	448	303	164	187	583	1,020	2,680	3,200	2,620	3,120	910
12	740	443	257	167	194	566	982	3,420	3,050	2,680	3,120	946
13	734	438	253	180	201	554	1,020	4,220	3,050	2,320	3,120	946
14	711	433	245	226	204	566	1,020	4,750	3,270	2,680	3,120	946
15	723	427	245	353	211	583	1,140	4,570	3,200	2,680	2,900	910
16	770	412	241	353	219	583	1,220	4,220	3,200	2,830	1,180	876
17	800	273	241	330	215	589	1,180	4,220	2,830	2,760	982	946
18	800	265	241	367	211	601	1,180	3,970	2,480	2,680	910	982
19	800	261	241	377	211	619	1,220	3,970	2,410	2,760	876	982
20	740	265	234	358	215	724	1,220	4,390	2,160	2,760	876	1,060
21	740	269	230	358	215	1,060	1,270	4,940	1,870	2,760	841	1,140
22	705	281	234	422	222	1,180	1,270	5,330	1,760	3,500	1,020	1,220
23	676	299	190	412	219	1,140	1,310	5,330	2,160	3,650	1,140	1,270
24	644	303	158	397	222	1,060	1,450	5,330	2,280	3,650	1,120	1,270
25	616	273	161	392	215	982	1,500	5,130	2,900	3,490	1,180	1,270
26	579	273	173	412	219	1,020	1,450	4,220	2,900	3,270	1,180	1,180
27	554	281	173	382	230	1,180	1,810	3,270	2,550	3,200	1,180	910
28	519	281	154	382	234	1,310	2,410	2,680	2,350	3,200	1,140	801
29	496	265	151	392	------	1,360	3,120	2,410	2,410	3,270	1,100	699
30	478	265	164	417	------	1,360	3,050	2,480	2,410	3,200	1,020	601
31	461	------	164	273	------	1,270	------	2,620	------	3,120	982	------

Month	Observed				Gain or loss in storage in Lakes Keechelus, Kachess, and Cle Elum (acre-feet)	Corrected for storage			
	Maximum	Minimum	Mean	Run-off in acre-feet		Run-off in acre-feet	Mean	Per square mile	Run-off in inches
October	800	452	616	37,900	+27,100	65,000	1,060	2.12	2.44
November	448	261	341	20,300	+18,500	38,800	652	1.30	1.45
December	303	151	230	14,200	+18,400	32,600	530	1.06	1.22
January	422	151	281	17,300	+5,380	22,700	369	.738	.85
February	237	164	204	11,300	+9,550	20,800	375	.750	.78
March	1,360	265	779	47,900	+24,200	72,100	1,170	2.34	2.70
April	3,120	801	1,300	77,600	+27,900	106,000	1,780	3.56	3.97
May	5,330	2,410	3,620	222,000	+94,000	316,000	5,140	10.3	11.87
June	4,050	1,760	2,790	166,000	+52,300	218,000	3,660	7.32	8.17
July	3,650	2,480	2,880	177,000	−101,000	76,000	1,240	2.48	2.86
August	3,270	841	2,050	126,000	−96,000	30,000	488	.976	1.13
September	1,270	601	972	57,800	−43,600	14,200	239	.478	.53
The year	5,330	151	1,350	976,000	+36,700	1,010,000	1,400	2.80	37.97

YAKIMA RIVER NEAR PROSSER, WASH.

LOCATION.—Water-stage recorder in SE. ¼ sec. 36, T. 9 N., R. 24 E., 1¼ miles northeast of Prosser.

DRAINAGE AREA.—5,340 square miles.

RECORDS AVAILABLE.—June, 1904, to October, 1906; August, 1913, to September, 1922; October, 1926, to September, 1929.

EXTREMES.—Maximum discharge during year, 6,680 second-feet May 25 (gage height, 6.21 feet); minimum, 629 second-feet Apr. 15 (gage height, 1.62 feet).

1904–1906, 1913–1922, 1926–1929: Maximum discharge, about 62,800 second-feet (measured by floats) Nov. 17, 1906; minimum, about 40 second-feet Aug. 19, 26, 30, 31, and Sept. 30, 1906.

REMARKS.—Records excellent. Water diverted above gage for irrigation of about 250,000 acres. Flow partly regulated by diversions and by storage and release of water in several reservoirs upstream. Complete records furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,180	1,780	1,490	1,490	1,310	1,630	2,670	2,480	2,410	1,220	1,220	1,110
2	1,180	1,780	1,490	1,490	1,310	1,680	2,410	1,630	2,540	1,490	1,140	1,180
3	1,220	1,730	1,440	1,490	1,400	1,890	2,170	1,220	2,540	1,220	1,070	1,220
4	1,220	1,730	1,440	1,490	1,400	2,410	2,000	1,400	2,410	1,180	1,030	1,220
5	1,140	1,680	1,400	1,400	1,400	2,810	1,890	1,940	2,290	1,180	1,110	1,180
6	1,140	1,680	1,350	1,350	1,350	2,950	1,730	1,940	2,610	1,070	1,140	1,140
7	1,180	1,730	1,350	1,350	1,310	2,810	1,580	1,630	3,230	958	1,140	1,140
8	1,270	1,680	1,440	1,400	1,270	2,610	1,400	1,440	4,150	958	1,070	1,180
9	1,400	1,730	1,490	1,350	1,220	2,410	1,310	1,180	4,740	1,220	1,030	1,220
10	1,400	1,780	1,580	1,310	1,220	2,350	1,180	1,180	4,740	1,270	993	1,220
11	1,400	1,890	1,630	1,270	1,270	2,350	1,030	1,400	4,400	1,270	1,030	1,220
12	1,490	1,940	1,680	1,220	1,270	2,290	922	1,630	4,150	1,310	1,110	1,270
13	1,580	2,000	1,680	1,220	1,270	2,230	855	2,290	3,910	1,180	1,180	1,270
14	1,580	2,000	1,680	1,220	1,220	2,110	829	3,760	3,910	1,070	1,140	1,270
15	1,680	2,000	1,580	1,220	1,270	2,050	742	4,740	4,240	1,070	1,030	1,310
16	1,730	1,940	1,490	1,310	1,310	1,940	958	4,740	4,570	1,070	993	1,310
17	1,680	1,940	1,530	1,400	1,310	1,890	1,070	4,570	4,570	1,110	993	1,270
18	1,630	1,940	1,530	1,440	1,310	1,830	1,070	4,400	4,070	1,140	1,140	1,220
19	1,680	1,830	1,490	1,490	1,310	1,780	993	4,240	3,450	1,220	1,220	1,220
20	1,680	1,730	1,440	1,350	1,310	1,830	993	4,070	3,300	1,140	1,140	1,310
21	2,000	1,680	1,400	1,270	1,350	1,890	888	4,400	2,950	1,140	1,110	1,270
22	2,480	1,630	1,400	1,070	1,400	2,110	888	5,280	2,410	1,140	1,070	1,310
23	2,480	1,630	1,400	1,310	1,530	2,810	993	5,850	1,940	1,140	1,070	1,310
24	2,480	1,630	1,400	1,400	1,490	2,950	1,070	6,450	1,680	1,350	1,070	1,350
25	2,290	1,630	1,440	1,400	1,490	2,740	1,140	6,660	1,680	1,350	1,140	1,440
26	2,000	1,630	1,440	1,400	1,530	2,540	1,140	6,250	1,730	1,350	1,180	1,400
27	1,890	1,580	1,490	1,440	1,580	2,290	1,110	5,100	1,780	1,440	1,140	1,400
28	1,890	1,580	1,490	1,440	1,580	2,350	2,390	4,070	1,630	1,350	1,070	1,400
29	1,830	1,580	1,530	1,400	------	2,540	2,950	3,160	1,400	1,310	1,110	1,350
30	1,830	1,530	1,530	1,400	------	2,740	2,950	2,610	1,270	1,310	1,110	1,220
31	1,830	------	1,530	1,400	------	2,740	------	2,410	------	1,310	1,140	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,480	1,140	1,660	102,000
November	2,000	1,530	1,750	104,000
December	1,680	1,350	1,490	91,700
January	1,490	1,070	1,360	83,700
February	1,580	1,220	1,360	75,400
March	2,950	1,630	2,310	142,000
April	2,950	742	1,440	85,900
May	6,660	1,180	3,360	207,000
June	4,740	1,270	3,020	180,000
July	1,440	958	1,210	74,300
August	1,220	993	1,100	67,700
September	1,440	1,110	1,260	75,200
The year	6,660	742	1,780	1,290,000

KACHESS RIVER NEAR EASTON, WASH.

LOCATION.—Water-stage recorder in sec. 3, T. 20 N., R. 13 E., three-fourths of a mile below Kachess Lake and 2 miles northwest of Easton.

DRAINAGE AREA.—64 square miles.

RECORDS AVAILABLE.—November, 1903, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,130 second-feet Aug. 9 (gage height, 5.22 feet); no flow from Oct. 13 to Mar. 3.

1903–1929: Maximum discharge, 2,240 second-feet (computed from gate opening) Aug. 27, 1920; practically no flow when gates in dam are closed.

REMARKS.—Records good. Leakage, when gates are closed, estimated on basis of current-meter measurements. No diversions. Flow controlled by storage and release of water in Kachess Lake. Complete records furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3	0	5	5	1	77e	978	10
2	5	0	4	5	1	75e	676	10
3	5	0	4	5	217	77e	776	10
4	5	1	4	5	519	77e	1,040	10
5	5	1	4	4	545	77e	999	10
6	5	1	3	4	671	77e	999	10
7	5	1	3	4	736	77e	1,040	10
8	4	1	3	109	285	77e	1,080	10
9	3	1	3	132	4	77e	1,120	10
10	3	1	3	57	2	77e	978	10
11	2	1	3	4	2	77e	636	10
12	1	1	69	4	2	77e	616	10
13	0	1	88	3	2	77e	636	10
14	0	1	132	3	2	77e	736	10
15	0	2	207	3	2	73e	462	10
16	0	2	222	2	2	77e	2	10
17	0	2	222	2	2	77e	1	10
18	0	2	222	2	2	77e	1	10
19	0	2	234	2	2	77e	1	10
20	0	2	240	2	2	77e	1	10
21	0	3	228	2	2	89e	122	31
22	0	4	198	1	267	1,08e	290	120
23	0	4	144	1	462	1,08e	422	157
24	0	4	136	1	444	1,08e	296	243
25	0	4	64	1	444	1,08e	10	290
26	0	6	34	1	437	1,08e	10	112
27	0	9	6	1	430	1,08e	10	7
28	0	9	5	1	519	1,08e	10	7
29	0	8	5	1	616	1,08e	10	7
30	0	6	5	1	696	1,08e	10	7
31	0	5	------	1	------	1,08e	10	------

Month	Observed				Gain or loss in storage in Lake Kachess (acre-feet)	Corrected for storage			
	Maximum	Minimum	Mean	Run-off in acre-feet		Run-off in acre-feet	Mean	Per square mile	Run-off in inches
October	5	0	1.48	91.2	+10,800	10,900	177	2.77	3.19
November	0	0	0	0	+6,320	6,320	106	1.66	1.85
December	0	0	0	0	+5,660	5,660	92.1	1.44	1.66
January	0	0	0	0	+4,330	4,330	70.4	1.10	1.27
February	0	0	0	0	+3,720	3,720	67.0	1.05	1.09
March	9	0	2.74	169	+11,700	11,900	194	3.03	3.49
April	240	3	83.3	4,960	+11,000	16,000	269	4.20	4.69
May	132	1	11.9	732	+44,100	44,800	729	11.4	13.14
June	736	1	244	14,500	+18,000	32,500	546	8.53	9.52
July	1,080	736	876	53,900	−46,000	7,900	128	2.00	2.31
August	1,120	1	451	27,700	−27,400	300	4.88	.076	.09
September	290	7	39.4	2,340	−2,040	300	5.04	.079	.09
The year	1,120	0	144	104,000	+40,200	145,000	200	3.13	42.39

CLE ELUM RIVER NEAR ROSLYN, WASH.

LOCATION.—Water-stage recorder in sec. 10, T. 20 N., R. 14 E., below Cle Elum Lake and 4 miles northwest of Roslyn.

DRAINAGE AREA.—202 square miles.

RECORDS AVAILABLE.—October, 1903, to September, 1929.

EXTREMES.—Maximum discharge during year, 4,180 second-feet May 24 (gage height, 6.73 feet); minimum, 15 second-feet Sept. 28–30 (gage height, 0.26 foot).

1903–1929: Maximum discharge, 18,700 second-feet Nov. 15, 1906 (gage height, 14.05 feet); practically no flow Sept. 28, 1914.

REMARKS.—Records excellent. No diversions above station. Flow partly controlled by storage and release of water at Cle Elum Lake. Complete records furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	326	152	142	44	36	101	647	1,530	2,000	1,210	358	385
2	305	248	151	44	36	120	602	1,570	1,840	1,150	370	355
3	302	242	157	44	36	124	554	1,960	1,640	1,120	351	326
4	305	236	164	42	36	157	517	2,000	1,570	1,060	336	295
5	319	231	164	42	36	188	494	1,800	1,720	1,030	316	275
6	322	228	138	42	36	231	459	1,610	2,050	1,000	305	263
7	319	222	102	42	36	242	446	1,490	2,510	1,000	295	242
8	341	217	115	44	37	254	417	1,420	2,610	974	279	225
9	485	225	126	46	41	254	473	1,420	2,510	917	279	214
10	597	239	142	50	45	257	673	1,420	2,410	889	279	206
11	673	245	113	58	45	263	726	1,640	2,410	834	282	191
12	689	254	40	71	44	251	673	2,090	2,310	752	272	183
13	678	254	42	82	44	248	647	2,710	2,410	699	266	171
14	657	260	44	209	44	254	647	3,040	2,510	647	254	166
15	642	263	44	272	44	263	642	2,930	2,510	647	370	162
16	652	176	44	260	44	272	647	2,820	2,410	673	673	160
17	657	62	45	242	44	279	647	2,820	2,090	647	699	157
18	663	80	46	282	44	285	647	2,610	1,880	632	699	149
19	657	92	46	302	44	302	647	2,710	1,800	597	699	144
20	642	109	46	275	44	344	647	3,040	1,610	568	726	136
21	622	118	46	272	44	563	647	3,510	1,420	549	699	128
22	602	134	51	298	44	647	647	3,880	1,350	512	699	128
23	583	151	51	295	47	647	647	4,010	1,350	472	699	126
24	554	128	47	298	59	632	673	4,140	1,420	446	699	124
25	531	117	46	298	69	592	647	3,630	1,570	421	699	124
26	494	136	46	298	81	592	597	2,820	1,640	409	699	122
27	468	151	46	298	89	637	875	2,130	1,570	393	673	120
28	430	122	46	288	92	699	1,350	1,800	1,420	385	617	67
29	401	106	46	295	-------	779	1,720	1,640	1,380	377	554	15
30	377	122	44	188	-------	779	1,680	1,720	1,280	362	494	15
31	243	-------	42	36	-------	726	-------	1,880	-------	366	434	-------

Month	Observed				Gain or loss in storage in Cle Elum Lake (acre-feet)	Corrected for storage			
	Maximum	Minimum	Mean	Run-off in acre-feet		Run-off in acre-feet	Mean	Per square mile	Run-off in inches
October	689	243	501	30,800	+190	31,000	504	2.50	2.88
November	263	62	177	10,500	+4,450	15,000	252	1.25	1.40
December	164	40	78.1	4,800	+7,280	12,100	197	.975	1.12
January	302	36	173	10,600	−1,860	8,740	142	.703	.81
February	92	36	47.9	2,660	+4,220	6,880	124	.614	.64
March	779	101	387	23,800	+2,110	25,900	421	2.08	2.40
April	1,720	417	711	42,300	+1,740	44,000	739	3.66	4.08
May	4,140	1,420	2,380	146,000	+30	146,000	2,380	11.8	13.60
June	2,610	1,280	1,910	113,000	−1,070	112,000	1,880	9.31	10.39
July	1,210	362	701	43,100	−2,090	41,000	667	3.30	3.80
August	726	254	486	29,900	−14,800	15,100	246	1.22	1.41
September	385	15	179	10,700	−4,140	6,560	110	.545	.61
The year	4,140	15	648	468,000	−3,940	464,000	641	3.17	43.14

BUMPING RIVER NEAR NILE, WASH.

LOCATION.—Water-stage recorder a quarter of a mile below spillway of Bumping Lake Dam and 19 miles west of Nile, Yakima County.

DRAINAGE AREA.—68 square miles.

RECORDS AVAILABLE.—June to July, 1906; April, 1909, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,000 second-feet June 15 (gage height, 4.17 feet); minimum, 2.4 second-feet Sept. 30 (gage height, 1.00 foot).

1906, 1909–1929: Maximum discharge, 5,180 second-feet Dec. 29, 1917 (gage height, 9.33 feet); practically no flow when gates in outlet conduit are closed.

REMARKS.—Records good. No diversions above stations. Flow partly controlled by storage and release of water at Bumping Lake. Complete records furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	265	4	127	83	48	48	4	12	461	461	272	461
2	6	4	121	82	50	47	4	15	461	415	272	461
3	5	4	115	78	50	39	4	15	461	393	272	378
4	6	4	106	76	50	40	4	15	461	393	272	350
5	6	4	97	74	48	41	4	15	461	371	272	350
6	5	4	85	71	48	41	4	15	461	350	272	350
7	6	4	80	68	47	41	4	15	484	350	272	350
8	6	75	80	63	46	41	5	91	484	371	272	329
9	6	371	85	59	46	41	34	238	608	393	272	350
10	5	438	115	55	46	43	93	238	661	415	272	285
11	5	438	127	55	46	42	102	117	661	415	272	221
12	5	438	125	54	46	42	157	18	661	415	272	221
13	5	438	121	54	46	42	221	19	771	415	272	221
14	5	415	119	54	46	42	221	22	890	415	272	206
15	6	415	113	54	46	42	221	24	954	415	272	183
16	6	393	102	53	46	43	206	25	890	415	393	167
17	6	371	98	52	46	44	206	25	771	415	461	147
18	6	350	93	52	46	44	183	27	715	415	461	123
19	35	329	86	53	46	44	169	28	715	415	461	104
20	86	310	83	53	46	23	164	30	557	415	461	85
21	85	290	78	52	46	6	157	32	461	415	461	72
22	85	254	77	51	46	5	150	36	461	237	461	34
23	85	238	76	48	46	4	147	129	461	137	461	5
24	85	221	74	46	46	4	147	248	484	134	461	4
25	85	206	76	45	46	4	147	371	260	134	461	4
26	85	191	76	46	46	4	152	415	180	101	461	4
27	85	183	80	46	46	4	73	415	371	238	461	3
28	38	167	82	47	46	5	12	415	557	254	461	3
29	4	150	85	47	------	5	12	438	557	254	461	3
30	4	138	83	46	------	5	12	461	508	254	461	3
31	4	------	83	46	------	4	------	461	------	254	461	------

Month	Observed				Gain or loss in storage in Bumping Lake (acre-feet)	Corrected for storage			
	Maximum	Minimum	Mean	Run-off in acre-feet		Run-off in acre-feet	Mean	Per square mile	Run-off in inches
October	265	4	36.3	2,230	+2,480	4,710	76.6	1.13	1.30
November	438	4	228	13,600	−7,340	6,260	105	1.54	1.72
December	127	74	95.1	5,850	−1,170	4,680	76.1	1.12	1.29
January	83	45	56.9	3,500	−250	3,250	52.9	.778	.90
February	50	46	46.7	2,590	−40	2,550	45.9	.675	.70
March	48	4	28.4	1,750	+2,180	3,930	63.9	.940	1.08
April	221	4	101	5,990	+970	6,960	117	1.72	1.92
May	461	12	143	8,780	+28,400	37,200	605	8.90	10.26
June	954	180	563	33,500	+5,220	38,700	650	9.56	10.67
July	461	164	346	21,300	−9,480	11,800	192	2.82	3.25
August	461	272	367	22,600	−17,800	4,800	78.1	1.15	1.33
September	461	3	183	10,900	−8,360	2,540	42.7	.628	.70
The year	954	3	183	133,000	−5,190	127,000	176	2.59	35.12

TIETON RIVER AT TIETON DAM, NEAR NACHES, WASH.

LOCATION.—Water-stage recorder 100 feet above Wild Cat Creek, 2,000 feet below Tieton Dam and 22 miles southwest of Naches.

DRAINAGE AREA.—187 square miles.

RECORDS AVAILABLE.—August, 1908, to September, 1914, fragmentary; October, 1918, to March, 1919; and April, 1925, to September, 1929.

EXTREMES.—Maximum discharge during year, 2,590 second-feet Aug. 17 (gage height, 5.74 feet); minimum, 9 second-feet Mar. 22 to Apr. 5.

1908–1914, 1918–19, 1925–1929: Maximum discharge, 4,380 second-feet June 1, 1928 (gage height, 7.8 feet); minimum, 2 second-feet in 1926.

Gage height, 9.5 feet (present datum) Dec. 18 and 19, 1917 (discharge, 8,400 second-feet) reported by Bureau of Reclamation engineers.

REMARKS.—Records good. Discharge estimated Jan. 1 and 2. No diversions. Flow regulated by storage and release of water at Tieton Reservoir. Complete record furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	543	317	85	170	136	104	9	270	252	306	525	2,110
2	639	310	82	162	136	104	9	283	255	316	531	2,110
3	639	306	81	153	136	108	9	261	261	536	525	2,110
4	645	310	81	153	136	111	9	258	261	642	525	2,160
5	639	306	82	149	136	113	9	264	255	673	520	2,160
6	639	306	85	151	136	118	17	264	258	784	520	2,060
7	645	310	91	153	136	120	33	264	270	967	552	2,010
8	602	306	109	140	136	72	33	261	273	743	568	2,010
9	422	183	136	109	130	39	33	267	276	602	546	2,010
10	430	11	149	101	122	41	33	252	276	724	510	2,010
11	434	11	151	104	118	39	33	238	273	648	520	1,960
12	430	11	189	104	118	43	108	249	276	619	520	1,910
13	430	11	279	104	120	44	184	235	273	770	536	1,910
14	430	11	87	104	122	44	306	230	283	818	584	1,910
15	430	11	109	104	118	28	413	219	292	862	619	1,800
16	300	11	142	106	118	13	533	232	286	891	1,450	1,720
17	273	10	142	109	118	12	579	232	302	898	2,450	1,720
18	289	10	142	111	118	12	703	230	276	960	2,250	1,720
19	289	10	142	88	122	11	940	241	276	1,020	2,200	1,540
20	293	10	142	88	122	10	1,040	249	283	1,020	2,160	1,490
21	293	12	142	117	120	12	1,190	261	286	1,020	2,300	1,310
22	293	34	142	117	118	9	1,270	252	289	791	2,350	1,060
23	296	82	142	106	111	9	1,150	246	289	476	2,350	854
24	296	81	146	106	104	9	859	255	283	471	2,200	619
25	296	82	149	120	104	9	555	230	286	476	1,960	573
26	303	82	142	134	104	9	313	241	296	476	1,860	505
27	296	88	157	132	104	9	243	243	299	491	1,910	471
28	296	91	182	132	104	9	202	241	296	520	1,960	444
29	279	91	195	132	-------	9	206	249	296	525	1,960	426
30	263	93	195	132	-------	9	241	252	296	525	2,010	376
31	286	-------	179	134	-------	9	-------	255	-------	520	2,110	-------

Month	Observed				Gain or loss in storage in Tieton Reservoir (acre-feet)	Corrected for storage			
	Maximum	Minimum	Mean	Run-off in acre-feet		Run-off in acre-feet	Mean	Per square mile	Run-off in inches
October	645	263	408	25,100	−10,000	15,100	243	1.32	1.52
November	317	10	117	6,960	+4,160	11,100	187	1.00	1.12
December	279	81	138	8,480	+1,380	9,860	160	.856	.99
January	170	88	123	7,590	+400	7,990	130	.695	.80
February	136	104	122	6,750	−170	6,580	112	.631	.66
March	120	9	41.5	2,550	+8,340	10,900	177	.947	1.09
April	1,270	9	375	22,300	−7,240	15,100	254	1.36	1.52
May	283	219	249	15,300	+39,200	54,500	883	4.74	5.46
June	302	252	279	16,600	+43,000	59,600	1,000	5.35	5.97
July	1,020	306	680	41,800	−6,660	35,100	571	3.05	3.52
August	2,450	510	1,340	82,500	−63,800	18,700	304	1.63	1.88
September	2,160	376	1,500	89,400	−77,700	11,700	197	1.05	1.17
The year	2,450	9	449	325,000	−69,100	256,000	354	1.89	25.70

TIETON RIVER AT HEADWORKS OF TIETON CANAL, NEAR NACHES, WASH.

LOCATION.—Water-stage recorder in sec. 30, T. 14 N., R. 15 E. (unsurveyed), below intake of Tieton Canal and 16 miles southwest of Naches.

DRAINAGE AREA.—240 square miles.

RECORDS AVAILABLE.—April to September, 1906 (fragmentary gage-height record); July, 1907, to September, 1929.

EXTREMES.—Maximum discharge during year, 2,410 second-feet Aug. 17 (gage height, 5.63 feet); no flow Apr. 9.

1907–1929: Maximum discharge, 6,150 second-feet Dec. 13, 1921 (gage height, 8.15 feet); no flow Mar. 27, 28, Nov. 25–28, 1926, and Apr. 9, 1929.

REMARKS.—Records good. Tieton Canal diverts water above gage. Flow regulated by storage and release of water at Tieton Reservoir, 7 miles above gage. Records furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	426	311	44	188	157	143	32	34	11	18	239	1,830
2	546	294	38	188	157	151	33	38	11	27	247	1,830
3	540	282	65	188	157	157	35	45	15	249	247	1,830
4	540	302	104	188	157	163	33	24	18	362	247	1,880
5	534	324	104	188	157	140	30	22	21	392	243	1,880
6	534	324	104	188	157	146	21	25	21	496	235	1,830
7	527	324	124	188	157	135	9	25	22	666	260	1,730
8	518	338	129	188	157	106	6	24	22	487	277	1,780
9	366	226	172	172	157	30	5	28	22	314	269	1,780
10	320	24	188	157	157	2	1	32	20	437	218	1,730
11	223	24	188	157	157	2	1	22	17	397	235	1,730
12	329	24	188	157	160	2	35	54	18	333	239	1,680
13	320	24	324	129	146	14	123	47	15	501	251	1,680
14	311	24	94	104	129	60	247	36	16	549	314	1,730
15	324	22	129	104	129	59	382	28	26	593	367	1,530
16	242	20	166	104	124	32	495	25	19	619	1,180	1,430
17	212	20	172	104	119	28	555	24	21	632	2,280	1,380
18	242	20	172	104	129	28	666	23	11	666	2,130	1,380
19	242	16	172	104	135	34	946	25	6	736	2,080	1,230
20	242	16	172	109	140	40	1,080	34	6	758	2,030	1,180
21	253	28	172	135	132	59	1,280	42	8	743	2,130	1,040
22	261	24	172	235	143	46	1,330	38	10	532	2,230	780
23	261	81	172	261	137	38	1,230	25	10	180	2,180	612
24	261	69	172	282	132	38	853	32	6	177	2,030	392
25	261	58	172	269	129	35	506	12	5	177	1,800	347
26	261	44	172	195	129	34	214	9	10	177	1,630	300
27	261	44	179	157	132	37	48	12	19	188	1,680	291
28	261	50	206	157	135	45	38	7	18	226	1,730	282
29	253	50	223	157	-------	45	16	4	16	230	1,730	260
30	242	48	223	157	-------	38	19	16	12	343	1,730	210
31	282	-------	206	157	-------	34	-------	18	-------	230	1,830	-------

Month	Observed				Gain or loss in storage in Tieton Reservoir (acre-feet)	Diverted by Tieton Canal (acre-feet)	Corrected for storage and diversions			
	Maximum	Minimum	Mean	Run-off in acre-feet			Run-off in acre-feet	Mean	Per square mile	Run-off in inches
October	546	212	335	20,600	−10,000	9,320	19,900	324	1.35	1.56
November	338	16	115	6,850	+4,160	1,820	12,800	215	.896	1.00
December	324	38	159	9,750	+1,380	56	11,200	182	.758	.87
January	282	104	167	10,300	+400	--------	10,700	174	.725	.84
February	160	119	143	7,950	−170	--------	7,780	140	.583	.61
March	163	2	62.0	3,810	+8,340	821	13,000	211	.879	1.01
April	1,330	1	342	20,400	−7,240	4,900	18,100	304	1.27	1.42
May	54	4	26.8	1,650	+39,200	18,100	59,000	960	4.00	4.61
June	26	5	15.1	897	+43,000	18,300	62,200	1,050	4.38	4.89
July	758	18	398	24,500	−6,660	19,200	37,000	602	2.51	2.89
August	2,280	218	1,110	68,000	−63,800	19,500	23,700	385	1.60	1.84
September	1,880	210	1,250	74,500	−77,700	17,300	14,100	237	.988	1.10
The year	2,280	1	344	249,000	−69,100	109,000	289,000	400	1.67	22.64

TIETON CANAL NEAR NACHES, WASH.

LOCATION.—Float gage in sec. 30, T. 14 N., R. 15 E. (unsurveyed), 500 feet below canal intake and 16 miles southwest of Naches.

RECORDS AVAILABLE.—Irrigation seasons 1910–1929.

EXTREMES.—Maximum discharge during year, 324 second-feet Sept. 8–13 (gage height, 5.52 feet); no flow Nov. 5–22, Dec. 2 to Mar. 5, and Mar. 15 to Apr. 5. 1910–1929: Maximum discharge, 344 second-feet Sept. 9, 1921 (gage height, 5.53 feet); no flow when head gates are closed.

REMARKS.—Records excellent. Canal diverts water from right bank of Tieton River in sec. 30, T. 14 N., R. 15 E., for irrigation. Complete records furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	124	148	28	0	0	274	307	311	317	321
2	124	148	0	0	0	281	307	304	316	321
3	124	148	0	0	0	286	307	310	316	321
4	124	68	0	0	0	288	307	309	316	321
5	124	0	0	0	0	288	306	309	316	321
6	124	0	0	26	18	288	307	309	317	321
7	120	0	0	29	42	288	307	309	317	323
8	130	0	0	52	49	288	307	309	317	324
9	157	0	0	61	52	288	307	309	317	324
10	174	0	0	64	55	288	307	309	317	324
11	202	0	0	64	55	288	307	309	318	324
12	165	0	0	64	55	288	307	310	318	324
13	171	0	0	43	55	288	307	296	318	324
14	190	0	0	11	55	288	307	311	318	318
15	176	0	0	0	64	289	307	311	318	316
16	176	0	0	0	68	294	307	311	316	310
17	171	0	0	0	68	296	307	311	315	307
18	166	0	0	0	68	296	304	312	317	307
19	163	0	0	0	68	296	307	313	317	307
20	160	0	0	0	75	298	307	313	317	307
21	154	0	0	0	86	302	307	313	317	307
22	148	0	0	0	98	304	307	314	317	306
23	148	25	0	0	111	306	307	316	318	291
24	148	38	0	0	129	307	307	317	318	265
25	148	43	0	0	148	307	307	317	316	241
26	148	57	0	0	166	306	307	317	316	219
27	148	61	0	0	189	307	307	317	318	199
28	148	61	0	0	211	307	307	318	319	191
29	148	61	0	0	232	307	308	318	319	191
30	148	61	0	0	254	307	304	317	320	151
31	148	------	0	0	------	307	------	317	321	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	202	120	152	9,350
November	148	0	30.6	1,820
December	28	0	.9	55
March	64	0	13.4	824
April	254	0	82.4	4,900
May	307	274	295	18,100
June	308	304	307	18,300
July	318	296	312	19,200
August	321	315	317	19,500
September	324	151	291	17,300
The year	324	0	151	109,000

NOTE.—No flow during January and February.

MISCELLANEOUS DISCHARGE MEASUREMENTS

In addition to the records of stream flow obtained at gaging stations and reported in the preceding pages, measurements of flow were made at a number of other points, as shown by the following tables:

Miscellaneous discharge measurements in Pacific slope basins in Washington and upper Columbia River Basin during the year ending September 30, 1929

Nisqually River Basin

Date	Stream	Tributary to or diverting from	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
Jan. 21	Nisqually River	Puget Sound	Highway bridge at McKenna, Wash.	2.37	945
Feb. 12	do	do	do	1.83	482
12	do	do	do	2.12	667
Mar. 23	do	do	do	3.76	2,420
Apr. 4	do	do	do	3.24	1,820
May 7	do	do	do	3.86	2,540
June 1	do	do	do	3.38	1,930
July 16	do	do	do	2.47	947

Snohomish River Basin

Sept. 13	Everett water-supply conduit.	Right side of Sultan River.	Mouth of first tunnel above gate, tenders house near Sultan, Wash.	3.94	15.9
June 8	Snoqualmie River	Snohomish River	Former gaging station below Snoqualmie Falls, Wash.	6.74	5,650
26	do	do	do	5.78	3,890
Sept. 26	do	do	do	1.58	443

Stillaguamish River Basin

May 27	Lake Creek	Pilchuck Creek	Half a mile below outlet of Cavenaugh Lake, near Pilchuck, Wash.		19.6
June 29	do	do	do		12.4
Sept. 17	do	do	do		1.4

Skagit River Basin

Feb. 13	Skagit River	Skagit Bay	Former gaging station at Reflector Bar.		[a] 676
15	do	do	do		579
June 6	do	do	do	5.20	11,300
Sept. 19	Colonial Creek	Thunder Creek	Just below trail bridge at mouth near Diablo, Wash.		[a] 28
Feb. 17	Stetattle Creek	Skagit River	One-fourth mile above mouth near Diablo, Wash.		10.6

[a] Results furnished by city of Seattle.

Kootenai River Basin

Apr. 22	Burton Creek	Kootenai River	In W. ½ sec. 25, T. 63 N., R. 1 W., at mouth, 7½ miles northwest of Bonners Ferry, Idaho.		[b] 2.0
May 18	do	do	do		[b] 20
Apr. 27	Farnham Creek	do	In SW. ¼ sec. 36, T. 64 N., R. 1 W., 1,000 feet above mouth and 3¾ miles southwest of Copeland, Idaho.		[b] 1.5

[b] Estimated.

Miscellaneone discharge measurements in Pacific slope basis in Washington and upper Columbia River Basin during the year ending September 30, 1929—Con.

Clark Fork Basin

Date	Stream	Tributary to or diverting from	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
Nov. 14	Sullivan Creek	Clark Fork	400 feet below lower highway bridge at Metaline Falls, Wash.		81
Apr. 27	do	do	do		112
May 31	do	do	1,000 feet below old highway bridge at Metaline Falls, Wash.		333
July 14	do	do	500 feet below old highway bridge at Metaline Falls, Wash.		102
Aug. 7	do	do	do		75

Sheep Creek Basin

Nov. 3	Little Sheep Creek	Sheep Creek	Near old railroad station at Velvet, Wash.		2.0
Aug. 19	do	do	do	0.65	2.2

Kettle River Basin

July 27	Kettle River	Columbia River	At Canadian gaging station at Cascade, B. C.	0.54	379
June 21	Boundary Creek	Kettle River	At highway bridge one-third mile from mouth near Midway, B. C.		175
July 21	do	do	do	1.13	25.0
27	do	do	do	1.03	20.3
Sept. 2	do	do	do	.83	5.4

Spokane River Basin

Aug. 15	Spokane River	Columbia River	Liberty Bridge near Spokane, Wash.	9.36	934

Okanogan River Basin

May 19	Sinlahekin Creek	Palmer Lake	600 feet above Blue Lake, near Loomis, Wash.		9.9
June 29	do	do	3 miles below Loomis, Wash.		5.4
Aug. 24	Palmer Creek	Similkameen River.	500 feet below highway bridge near Nighthawk, Wash.		13.7

Methow River Basin

Nov. 21	Methow Valley Irrigation District Canal.	Left side of Methow River.	Gage opposite mouth of Twisp River at Twisp, Wash.	4.20	15.7
July 1	do	do	do	5.90	60.8
Sept. 3	do	do	do	5.90	69.0
July 2	do	Right side of Twisp River.	Alder mine road crossing at Twisp, Wash.		42.8
Sept. 3	do	do	do		12.9
July 1	Risley ditch	do	At Methow Valley creamery at Twisp, Wash.	3.98	7.6
Sept. 3	do	do	do	4.06	7.3

Wenatchee River Basin

Oct. 14	Tailrace of Royal Development Co.'s power plant.	Right side of Phelps Creek.	200 feet below mill at plant near Plain, Wash.		5.1
Nov. 16	do	do	do		3.7
Feb. 21	do	do	do		7.0
Mar. 28	do	do	do		6.7
Apr. 20	do	do	do		7.5
Sept. 6	do	do	do		9.9
7	do	do	do		10.2

INDEX

A

Page

Aberdeen, Wash., Wynoochee River near 19
Accuracy of data and computed results 4–5
Acre-foot, definition of 2
Alder, Wash., Little Nisqually River near 32
Appropriations, record of 1
Arlington, Wash., North Fork of Stillaguamish River near 63–64
South Fork of Stillaguamish River near 61

B

Baker River below Anderson Creek, near Concrete, Wash 79
Ball Creek near Bonners Ferry, Idaho 111
Barlow Pass, Wash., South Fork of Sauk River near 78
Belton, Mont., Middle Fork of Flathead River at 139
Big Creek near Polson, Mont 144
Big Fork, Mont., Swan River near 143
Bonners Ferry, Idaho, Ball Creek near 111
Cow Creek near 106
Kootenai River at 92–93
Kootenai River near 91, 94–96
Myrtle Creek near 110
Boulder Creek near Leonia, Idaho 104
Boundary Creek, British Columbia, discharge measurements of 186
near Port Hill, Idaho 119
Brinnon, Wash., Dosewallips River at 25–26
Brush Creek near Copeland, Idaho 115
Bryant, Wash., Pilchuck Creek near 66
Buckley, Wash., White River near 38
Bumping River near Nile, Wash 181
Burton Creek, Idaho, discharge measurements of 185

C

Calder, Idaho, St. Joe River at 157
Canyon Creek near Granite Falls, Wash 62
Carbon River near Fairfax, Wash 36
Caribou Creek near Moravia, Idaho 109
Cascade River at Marblemount, Wash 72
Cataldo, Idaho, Coeur d'Alene River near 152
Cedar Falls, Wash., Cedar River at 40
Cedar River at Cedar Falls, Wash 40
near Landsberg, Wash 41
Centralia, Wash., Skookumchuck River near 17
Chehalis, Wash., Newaukum River near 16
Chehalis River near Chehalis, Wash 14
near Grand Mound, Wash 15
Chehalis River Basin, Wash., gaging-station records in 14–20
Chelan, Wash., Lake Chelan at 170
Chelan River at Chelan, Wash 171
Chelan River Basin, Wash., gaging-station records in 169–172

Page

Clark Fork above Missoula, Mont 120
at Priest River, Idaho 125–127
at St. Regis, Mont 121
below Z Canyon, near Metaline Falls, Wash 128
near Heron, Mont 123
near Plains, Mont 122
Clark Fork Basin, Wash.-Mont.-Idaho, discharge measurements in 186
gaging-station records in 120–147
Cle Elum, Wash., Yakima River at 177
Cle Elum River near Roslyn, Wash 180
Coeur d'Alene Lake at Coeur d'Alene Idaho 153
Coeur d'Alene River near Cataldo, Idaho 152
Colonial Creek, Wash., discharge measurement of 185
Columbia Falls, Mont., Flathead River at 131
Flathead River near 130
South Fork of Flathead River near 140
Columbia River at Grand Coulee, near Nespelem, Wash 82–84
at Kettle Falls, Wash 81
at Trail, British Columbia 80
at Vernita, Wash 85–86
Colville River at Meyers Falls, Wash 149
Computations, results of, accuracy of 4–5
Concrete, Wash., Baker River near 79
Skagit River near 69–70
Control, definition of 2
Coolin, Idaho, Priest Lake near 145
Priest River near 146
Cooperation, record of 10
Copeland, Idaho, Brush Creek near 115
Kootenai River at 99–100
Kootenai River near 96–98, 100
Mission Creek at 113
Parker Creek near 116
Rock Creek near 114
Trout Creek near 112
Cow Creek near Bonners Ferry, Idaho 106

D

Darrington, Wash., Sauk River at 74–75
Sauk River near 73–74
Dartford, Wash., Little Spokane River at 161
Data, accuracy of 4–5
explanation of 2–4
Deep Creek at Moravia, Idaho 107
Deer Creek at Oso, Wash 65
Dosewallips River at Brinnon, Wash 25–26
Dungeness River near Sequin, Wash 24

E

Easton, Wash., Kachess River near 179
Eatonville, Wash., Ohio Creek near 33

Page
Eileen, Idaho, Moyie River at 105
Elwha River at McDonald Bridge, near Port Angeles, Wash 23

F

Fairfax, Wash., Carbon River near 36
Farnham Creek, Idaho, discharge measurement of 185
Ferry, Wash., Kettle River near 148
Flathead Lake at Polson, Mont 137
at Somers, Mont 136
Flathead River at Columbia Falls, Mont 131
at Damon ranch, near Kalispell, Mont 134
at Demersville, near Kalispell, Mont 133
at Keller ranch, near Holt, Mont 135
Middle Fork of, at Belton, Mont 139
near Columbia Falls, Mont 130
near Kalispell, Mont 132
near Polson, Mont 138
near Trail Creek, Mont 129
South Fork of, near Columbia Falls, Mont 140

G

Gold Bar, Wash., May Creek near 49
Skykomish River near 44
Wallace River at 47
Grand Mound, Wash., Chehalis River near 15
Granite Falls, Wash., Canyon Creek near 62
South Fork of Stillaguamish River near 59–60
Greenwater, Wash., White River at 37
Greenwater River at Greenwater, Wash 39

H

Hall Creek at Inchelium, Wash 150
Hamma Hamma River near Hoodsport, Wash 27
Hayden Lake at Hayden Lake, Idaho 159
Heron, Mont., Clark Fork near 123
Hoh River near Spruce, Wash 22
Holt, Mont., Flathead River near 135
Hoodsport, Wash., Hamma Hamma River near 27
North Fork of Skokomish River near 28–29
Hope, Idaho, Pend Oreille Lake at 124

I

Inchelium, Wash., Hall Creek at 150
Index, Wash., North Fork of Skykomish River at 46
South Fork of Skykomish River near 43

K

Kachess River near Easton, Wash 179
Kalispell, Mont., Flathead River near 132–134
Stillwater River near 141
Whitefish River near 142
Kapowsin Creek near Kapowsin, Wash 35
Katka, Idaho, Kootenai River at 90
Kettle Falls, Wash., Columbia River at 81
Kettle River, British Columbia, discharge measurements of 186
near Ferry, Wash 148
Kettle River Basin, British Columbia, discharge measurements in 186

Page
Kootenai River at Ashby ranch, near Copeland, Idaho 98
at Bonners Ferry, Idaho 92–93
at Boom Camp, near Bonners Ferry, Idaho 91
at Copeland, Idaho 99–100
at Deep Creek, near Bonners Ferry, Idaho 94–95
at Des Voigne ranch, near Copeland, Idaho 97
at Jerome Slough, near Copeland, Idaho 100
at Katka, Idaho 90
at Klockmann ranch, near Bonners Ferry, Idaho 96
at Krause ranch, near Copeland, Idaho 98
at Leonia, Idaho 89
at Libby, Mont 88
at Lucas Creek, near Port Hill, Idaho 101
at Myrtle Creek, near Bonners Ferry, Idaho 95
at Port Hill, Idaho 102–103
at Spurling ranch, near Copeland, Idaho 96–97
near Bonners Ferry, Idaho 94
near Rexford, Mont 87
Kootenai River Basin, Idaho-Mont., discharge measurements in 185
gaging-station records in 87–119

L

La Grande, Wash., Nisqually River near 31
Lake Chelan at Chelan, Wash 170
Lake Creek, Wash., discharge measurements of 185
Lake Washington Basin, Wash., gaging-station records in 40–41
Landsberg, Wash., Cedar River near 41
Leavenworth, Wash., Wenatchee River near 173
Leonia, Idaho, Boulder Creek near 104
Kootenai River at 89
Libby, Mont., Kootenai River at 88
Little Nisqually River near Alder, Wash 32
Little Sheep Creek, Wash., discharge measurements of 186
Little Spokane River at Dartford, Wash 161
Long Canyon Creek near Port Hill, Idaho 117
Long Lake, Wash., Spokane River near 156
Loomis, Wash., Sinlahekin Creek near 167
Lotus, Idaho, St. Maries River at 158
Lucerne, Wash., Railroad Creek at 172

M

Marblemount, Wash., Cascade River at 72
Skagit River near 67–68
Thunder Creek near 71
Martin, Wash., Yakima River near 176
May Creek near Gold Bar, Wash 49
Metaline Falls, Wash., Clark Fork near 128
Meteor, Wash., Stranger Creek at 151
Methow River at Twisp, Wash 168
Methow River Basin, Wash., discharge measurements in 186
Methow Valley Irrigation District Canal, Wash., discharge measurements of 186
Meyers Falls, Wash., Colville River at 149
Miller Creek at Miller River, Wash 45

Page
Miller River, Wash., Miller Creek at 45
Mission Creek at Copeland, Idaho 113
Missoula, Mont., Clark Fork above 120
Montesano, Wash., Wynoochee River near 20
Moravia, Idaho, Caribou Creek near 109
Deep Creek at 107
Snow Creek near 108
Moyie River at Eileen, Idaho 105
Myrtle Creek near Bonners Ferry, Idaho 110

N

Naches, Wash., Tieton Canal near 184
Tieton River near 182–183
Naselle River near Naselle, Wash 12
Nespelem, Wash., Columbia River near 82–84
Nespelem Canal at Nespelem, Wash 163
Nespelem River at Nespelem, Wash 161–162
Newaukum River near Chehalis, Wash 16
Nighthawk, Wash., Similkameen River near 166
Nile, Wash., Bumping River near 181
Nisqually River, Wash., discharge measurements of 185
near La Grande, Wash 31
Nisqually River Basin, Wash., discharge measurements in 185
gaging-station records in 31–33
North Bend, Wash., Middle Fork of Snoqualmie River near 51
North Fork of Snoqualmie River near 53
South Fork of Snoqualmie River at 54
North River near Raymond, Wash 13

O

Ohop Creek near Eatonville, Wash 33
Okanogan River near Tonasket, Wash 165
Okanogan River Basin, Wash., discharge measurements in 186
gaging-station records in 164–167
Olney Creek near Startup, Wash 48
Oroville, Wash., Osoyoos Lake near 164
Oso, Wash., Deer Creek at 65
Osoyoos Lake near Oroville, Wash 164

P

Palmer Creek, Wash., discharge measurement of 186
near Copeland, Idaho 116
Pend Oreille Lake at Hope, Idaho 124
Peshastin, Wash., Wenatchee River at 174
Phelps Creek near Plain, Wash 175
Pilchuck Creek near Bryant, Wash 66
Plain, Wash., Phelps Creek near 175
Plains, Mont., Clark Fork near 122
Polson, Mont., Big Creek near 144
Flathead Lake at 137
Flathead River near 138
Port Angeles, Wash., Elwha River near 23
Port Hill, Idaho, Boundary Creek near 119
Kootenai River at 102–103
Kootenai River near 101
Long Canyon Creek near 117
Smith Creek near 118
Post Falls, Idaho, Spokane River at 153–154
Spokane Valley Farms Co.'s canal at 160
Potlatch, Wash., South Fork of Skokomish River near 30

Page
Priest Lake at outlet, near Coolin, Idaho 145
Priest River, Idaho, Clark Fork at 125–127
Priest River at outlet of Priest Lake, near Coolin, Idaho 146
at Priest River, Idaho 147
Prosser, Wash., Yakima River near 178
Publications, information concerning 5–9
obtaining or consulting of 6–8
on stream flow, lists of 7, 9
Puyallup River at Puyallup, Wash 34
Puyallup River Basin, Wash., gaging station records in 34–39

Q

Quinault River at Quinault Lake, Wash 21

R

Railroad Creek at Lucerne, Wash 172
Raymond, Wash., North River near 13
Rexford, Mont., Kootenai River near 87
Risley ditch, Wash., discharge measurements of 186
Rock Creek near Copeland, Idaho 114
Roslyn, Wash., Cle Elum River near 180
Run-off in inches, definition of 2

S

St. Joe River at Calder, Idaho 157
St. Maries River at Lotus, Idaho 158
St. Regis, Mont., Clark Fork at 121
Satsop River near Satsop, Wash 18
Sauk River above Whitechuck River, near Darrington, Wash 73–74
at Darrington, Wash 74–75
near Sauk, Wash 76–77
South Fork of, near Barlow Pass, Wash 78
Second-feet per square mile, definition of 2
Second-foot, definition of 2
Sequim, Wash., Dungeness River near 24
Sheep Creek Basin, Wash., discharge measurements in 186
Silverton, Wash., South Fork of Stillaguamish River near 58
Similkameen River near Nighthawk, Wash 166
Sinlahekin Creek above Blue Lake, near Loomis, Wash 167
discharge measurements of 186
Skagit River below Ruby Creek, near Marblemount, Wash 67
discharge measurements of 185
near Concrete, Wash 69–70
near Marblemount, Wash 68
Skagit River Basin, Wash., discharge measurements in 185
gaging-station records in 67
Skokomish River, North Fork of, below Staircase Rapids, near Hoodsport, Wash 28
North Fork of, near Hoodsport, Wash 29
South Fork of, near Potlatch, Wash 30
Skookumchuck River near Centralia, Wash 17
Skykomish, Wash., Tye River near 42
Skykomish River near Gold Bar, Wash 44
North Fork of, at Index, Wash 46
South Fork of, near Index, Wash 43
near Skykomish, Wash 42

Page
Smith Creek near Port Hill, Idaho 118
Snoqualmie, Wash., Tokul Creek near 55
Snoqualmie River, Wash., discharge measurements of 185
Middle Fork of, near North Bend, Wash. 51
near Tolt, Wash 52
North Fork of, near North Bend, Wash. 53
South Fork of, at North Bend, Wash 54
Snow Creek near Moravia, Idaho 108
Somers, Mont., Flathead Lake at 136
Spokane River at Post Falls, Idaho 153–154
at Spokane, Wash 155
below Little Falls, near Long Lake, Wash. 156
discharge measurement of 186
Snohomish River Basin, Wash., discharge measurements in 185
gaging-station records in 42–56
Spokane River Basin, Wash.-Idaho, discharge measurement in 186
gaging-station records in 152–161
Spokane Valley Farms Co.'s canal at Post Falls, Idaho 160
Spruce, Wash., Hoh River near 22
Stage-discharge relation, definition of 2
Startup, Wash., Olney Creek near 48
Stehekin River at Stehekin, Wash 169
Stetattle Creek, Wash., discharge measurement of 185
Stillaguamish River, North Fork of, near Arlington, Wash 63–64
South Fork of, near Arlington, Wash 61
near Granite Falls, Wash 59–60
near Silverton, Wash 58
Stillaguamish River Basin, Wash., discharge measurements in 185
gaging-station records in 58–66
Stillwater River near Kalispell, Mont 141
Stranger Creek at Meteor, Wash 151
Sullivan Creek, Wash., discharge measurements of 186
Sultan River near Sultan, Wash 50
Swan River near Big Fork, Mont 143

T

Terms, definition of 2
Thunder Creek near Marblemount, Wash 71
Tieton Canal near Naches, Wash 184
Tieton River at headworks of Tieton Canal, near Naches, Wash 183
at Tieton Dam, near Naches, Wash 182
Tokul Creek near Snoqualmie, Wash 55
Tolt, Wash., Snoqualmie River near 52
Tolt River near Tolt, Wash 56–57
Tonasket, Wash., Okanogan River near 165
Trail, British Columbia, Columbia River at 80
Trail Creek, Mont., Flathead River near 129
Trout Creek near Copeland, Idaho 112
Twisp, Wash., Methow River at 168
Tye River near Skykomish, Wash 42

U

Upper Columbia River Basin, British Columbia, Wash.-Mont.-Idaho, gaging-station records in 80–184

V

Vernita, Wash., Columbia River at 85–86

W

Wallace River at Gold Bar, Wash 47
Wenatchee River at Peshastin, Wash 174
near Leavenworth, Wash 173
Wenatchee River Basin, Wash., discharge measurements in 186
gaging-station records in 173–175
White River at Greenwater, Wash 37
near Buckley, Wash 38
Whitefish River near Kalispell, Mont 142
Work, authorization of 1
division of 10–11
scope of 1–2
Wynoochee River at Oxbow, near Aberdeen, Wash 19
near Montesano, Wash 20

Y

Yakima River at Cle Elum, Wash 177
near Martin, Wash 176
near Prosser, Wash 178
Yakima River Basin, Wash., gaging-station records in 176–184