UNITED STATES DEPARTMENT OF THE INTERIOR
RAY LYMAN WILBUR, Secretary

GEOLOGICAL SURVEY
GEORGE OTIS SMITH, Director

Water-Supply Paper 672

SURFACE WATER SUPPLY *of the* UNITED STATES

1928

PART XII

NORTH PACIFIC SLOPE DRAINAGE BASINS

A. PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN

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Prepared in cooperation with the States of
WASHINGTON, MONTANA, and IDAHO

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SURFACE WATER SUPPLY OF PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN, 1928

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, 1928.

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, 1895–1929

1895	$12,500.00	1918	$175,000.00
1896	24,500.00	1919	148,244.10
1897–1899	50,000.00	1920	175,000.00
1900	70,000.00	1921–1923	180,000.00
1901–2	100,000.00	1924–25	170,000.00
1903–1906	200,000.00	1926	165,000.00
1907	150,000.00	1927	151,000.00
1908–1910	100,000.00	1928	147,000.00
1911–1917	150,000.00	1929	270,500.00

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 9.

Measurements of stream flow have been made at about 5,480 points in the United States and also at many points in Alaska and the Hawaiian Islands. In July, 1928, 1,830 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 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, acre-feet, and millions of cubic 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, 1927, and ending September 30, 1928. 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 supplement the gage heights and discharge measurements in determining the daily flow. The records of stage are obtained either from

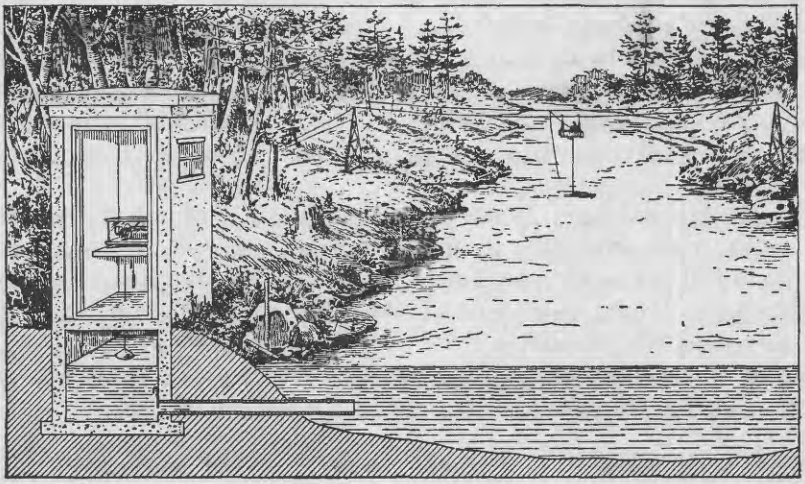

FIGURE 1.—Typical gaging station

direct readings on a staff 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 heights 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 and a table showing the daily discharge of the stream and the 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 on the permanency of the stage-discharge relation and 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, within 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 situated 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 investigation 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. Upper Mississippi River and Hudson Bay Basins.
VI. Missouri River Basin.
VII. Lower Mississippi River Basin.
VIII. Western Gulf of Mexico basins.
IX. Colorado River Basin.
X. The Great Basin.
XI. Pacific slope basins in California.
XII. North Pacific slope 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., 60 Washington Street.
Albany, N. Y., 506 Broadway-Arcade Building.
Trenton, N. J., 710 Trenton Trust Building.
Charlottesville, Va., Brooks Museum, University of Virginia.
South Charleston, W. Va., Naval Ordnance Plant.
Asheville, N. C., 210 Post Office Building.
Columbia, S. C., 801 National Loan & Exchange Bank Building.
Ocala, Fla., Post Office Building.
Chattanooga, Tenn., 630 Power Building.
Tuscaloosa, Ala., Post Office Building.
Columbus, Ohio, Engineering Experiment Station, Ohio State University.
Indianapolis, Ind., 319 Federal Building.
Lansing, Mich., M9 State Office 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.
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 5,480 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.

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

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

Report	Character of data	Year
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 and 1908.
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.

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 1928. 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 from 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, 1899–1928

[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	33	38	38
1900 [a]	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

[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 Kerns 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. Tables 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

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.

Work in Montana was carried on in cooperation with J. S. James, State engineer.

Work in Idaho was carried on in cooperation with the department of reclamation, G. N. Carter, commissioner.

Acknowledgments are due also to the Corps of Engineers, United States Army, for financial assistance in collecting records published herein, and to the United States Department of State, Bureau of Reclamation, Forest Service, Indian Service, and Weather Bureau, for assistance, suggestions, and the freest use of data gathered exclusively for them and paid for by them.

The Dominion Water Power and Reclamation Service of Canada furnished records of the Columbia River at Trail, British Columbia, and of three stations on the Kootenai River.

The following municipalities, corporations, and individuals have aided in the collection of records by paying the expense of all or part of the work: Inter-County River Improvement Commission of King and Pierce Counties; Skagit County; the cities of Aberdeen, Seattle, and Tacoma, Wash.; Chelan Electric Co.; E. M. Chandler; Hugh L. Cooper Co.; Interurban Land Co.; Methow-Okanogan Irrigation District; Mount Baker Development Co.; Northwestern Power & Light Co.; Oroville-Tonasket Irrigation District; Puget Sound Power & Light Co.; Royal Development Co.; Sanderson-Porter; Spokane Valley Farms Co.; Stevens County Power & Light Co.; Stone-Webster Engineering Corporation; Washington Water Power Co.; Washington Irrigation & Development Co.; Western Washington Electric Light & Power Co.; and Rocky Mountain Power Co.

DIVISION OF WORK

The data for stations in Washington and Idaho, except as noted below, were collected and prepared for publication under the direction of G. L. Parker, district engineer, assisted by D. J. F Calkins, R. B. Kilgore, J. S. Gatewood, A. Johnson, G. M. Thayer, J. R. Gatewood, L. T. Gabrielsen, and L. I. Meyer.

The data for stations in Montana were collected and prepared for publication under the direction of W. A. Lamb, district engineer, assisted by A. H. Tuttle, C. S. Heidel, G. C. Sanders, and Mrs. G. Thompson.

The data for stations in Idaho in the Kootenai and Priest River Basins 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, K. K. Hoyt, and Miss E. H. Haugse.

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

Records were reviewed and manuscript assembled by Otto Lauterhahn.

GAGING-STATION RECORDS

DRAINAGE BASINS BETWEEN COLUMBIA RIVER AND PUGET SOUND

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, 1928.

EXTREMES.—Maximum discharge during year, 8,610 second-feet November 24 (gage height, 7.8 feet); minimum, 16 second-feet August 16 (gage height, 0.27 foot; result of regulation).

1927–28: Maximum discharge, that of November 24, 1927; minimum discharge, that of August 16, 1928.

REMARKS.—Records poor for October, fair for November, and excellent thereafter. Discharge estimated October 3, July 30, 31, August 30 and 31. Splash dam 800 feet above gage operated at irregular intervals for logging.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	538	766	3,100	1,120	796	431	4,600	1,800	315	140	74	54
2	590	822	3,600	1,800	2,230	407	3,260	1,850	287	136	74	53
3	1,640	920	3,600	3,600	1,530	391	2,490	1,580	265	136	74	52
4	2,690	1,000	3,100	3,600	1,340	387	2,090	1,340	249	146	72	51
5	1,860	934	2,560	3,260	1,340	590	1,850	1,160	240	161	70	50
6	1,140	1,340	2,030	2,940	1,300	745	1,580	1,040	228	189	68	49
7	900	1,380	1,340	2,490	1,200	364	891	928	222	175	68	69
8	735	1,580	1,340	2,420	630	686	1,300	843	216	152	65	62
9	635	1,910	1,530	2,160	1,210	1,100	1,160	773	214	136	65	50
10	590	1,680	1,630	1,850	1,430	2,820	1,080	710	202	130	65	47
11	635	1,430	1,530	2,090	1,580	4,130	1,080	656	200	122	66	49
12	635	1,340	1,800	3,950	829	3,770	1,160	608	197	117	62	60
13	431	1,520	1,850	5,260	1,680	2,860	1,250	568	194	115	60	95
14	350	2,700	1,680	3,950	1,080	2,420	1,160	540	194	111	58	144
15	498	3,520	1,530	2,490	382	1,910	1,080	510	192	109	58	124
16	586	4,040	1,530	1,850	720	1,580	1,000	475	189	107	31	117
17	612	3,950	1,430	1,530	1,590	1,300	1,120	440	182	104	28	90
18	1,140	3,260	1,300	1,300	1,050	1,020	2,400	419	175	93	37	75
19	2,120	2,940	1,160	1,160	622	593	2,940	399	170	101	39	65
20	2,620	2,420	1,080	1,040	213	1,120	2,490	379	157	101	40	62
21	1,340	2,350	984	984	1,060	1,160	1,850	359	138	101	41	53
22	1,120	2,160	396	960	562	1,340	1,530	340	150	98	62	33
23	595	2,030	989	885	510	1,580	1,380	325	150	95	78	38
24	1,040	6,760	885	843	485	2,220	1,530	315	148	101	73	41
25	776	8,170	787	885	525	2,560	1,530	294	144	62	68	44
26	540	7,090	745	857	562	2,350	1,340	274	142	75	65	46
27	1,060	4,520	892	787	557	2,280	1,200	284	140	81	63	47
28	766	3,430	1,250	857	505	3,930	1,250	333	140	81	58	48
29	780	3,180	1,580	1,340	460	3,950	1,200	407	140	82	60	49
30	836	2,940	1,430	1,480	-------	3,340	1,340	450	140	79	58	50
31	815	-------	1,200	1,340	-------	4,130	-------	387	-------	77	56	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,690	350	987	60,700
November	8,170	766	2,740	163,000
December	3,600	396	1,610	99,000
January	5,260	787	1,970	121,000
February	2,230	213	965	55,500
March	4,130	364	1,850	114,000
April	4,600	891	1,670	99,400
May	1,850	274	671	41,300
June	315	138	191	11,400
July	189	62	113	6,950
August	78	28	59.9	3,680
September	144	33	62.2	3,700
The year	8,170	28	1,070	780,000

CHEHALIS RIVER BASIN

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, 1928.

EXTREMES.—Maximum discharge during year, 9,910 second-feet January 12 (gage height, 21.9 feet); minimum, 114 second-feet September 9–11 (gage height, 2.15 feet).

1925–1928: Maximum discharge, that of January 12, 1928; minimum, 80 second-feet October 23 and 24, 1925 (gage height, 0.27 foot).

REMARKS.—Records excellent. Discharge estimated November 28 to December 5 and September 23–30. No diversions above station.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	284	588	1,500	552	1,130	351	1,370	1,340	573	214	149	120
2	269	649	2,000	1,580	1,430	342	1,160	1,100	53[illegible]	208	144	120
3	639	600	1,600	5,710	1,160	334	994	944	48[illegible]	227	144	117
4	718	674	1,250	3,740	994	326	919	819	46[illegible]	294	144	117
5	518	749	1,050	3,670	1,090	369	819	769	43[illegible]	286	140	117
6	414	699	900	2,630	1,340	351	744	769	42[illegible]	248	140	117
7	360	649	799	1,800	1,130	656	694	744	39[illegible]	227	140	117
8	326	649	874	3,650	969	884	645	744	37[illegible]	214	140	117
9	317	624	874	2,390	844	1,720	645	719	360	208	140	114
10	334	576	749	1,770	794	2,620	645	719	361	201	136	114
11	377	588	699	4,060	769	1,920	645	694	360	195	136	120
12	529	699	699	6,940	694	1,280	669	645	342	189	136	124
13	474	2,130	624	2,960	645	1,250	669	609	33[illegible]	184	136	248
14	405	3,270	576	1,880	585	969	645	621	32[illegible]	178	136	567
15	657	1,760	636	1,490	538	869	769	645	310	178	132	264
16	1,330	3,100	799	1,190	505	869	994	609	302	173	132	189
17	971	3,060	674	1,020	484	794	1,130	538	29[illegible]	168	132	168
18	2,860	2,170	600	894	464	769	1,310	527	283	168	128	154
19	2,800	2,330	588	819	444	744	1,160	562	283	168	128	144
20	1,270	2,050	564	769	424	972	969	585	273	163	128	140
21	952	1,630	529	744	414	2,910	944	585	273	163	128	136
22	979	1,300	518	719	396	2,960	944	516	271	158	128	132
23	1,030	1,600	540	669	378	2,090	1,210	464	26[illegible]	158	124	
24	849	4,210	518	621	369	1,910	1,400	464	25[illegible]	158	124	
25	699	3,740	507	669	396	1,520	1,070	484	253	158	124	
26	624	1,950	540	645	424	1,310	919	454	24[illegible]	154	124	120
27	552	1,600	624	621	396	1,640	953	474	23[illegible]	154	124	
28	849	2,000	588	621	378	1,630	1,190	1,030	227	154	124	
29	850	1,450	529	870	360	1,520	969	1,300	227	149	120	
30	699	1,500	485	2,140	-------	1,660	1,430	869	227	149	120	
31	588	-------	454	1,520	-------	1,700	-------	669	-------	149	120	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,860	269	791	48,600
November	4,210	576	1,620	96,400
December	2,000	454	771	47,400
January	6,940	552	1,910	117,000
February	1,430	360	688	39,600
March	2,960	326	1,270	78,100
April	1,430	645	954	56,800
May	1,340	454	710	43,700
June	573	227	334	19,900
July	294	149	187	11,500
August	149	120	132	8,120
September	567	114	151	8,980
The year	6,940	114	794	576,000

WYNOOCHEE RIVER NEAR MONTESANO, WASH.

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

DRAINAGE AREA.—105 square miles.

RECORDS AVAILABLE.—February, 1923, to September, 1928.

EXTREMES.—Maximum discharge during year, 12,800 second-feet January 12 (gage height, 11.1 feet); minimum, 118 second-feet September 6–11 (gage height, 1.38 feet).

1923–1928: Maximum discharge, about 25,000 second-feet February 11, 1924 (gage height, 17.0 feet); minimum, 106 second-feet September 17, 1924.

REMARKS.—Records excellent. No diversions above station.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	394	820	2,310	820	1,700	462	2,530	2,000	665	255	172	122
2	332	960	3,010	2,100	2,100	438	2,000	1,900	632	255	166	122
3	755	890	2,420	7,710	1,800	438	1,700	1,340	572	288	160	122
4	1,030	1,110	1,900	5,280	1,520	414	1,430	1,180	540	346	160	122
5	755	1,030	1,610	4,530	1,700	438	1,340	1,100	514	306	160	122
6	598	1,030	1,350	3,680	1,900	462	1,180	1,100	487	288	157	120
7	540	1,030	1,190	2,530	1,610	698	980	980	487	271	154	118
8	513	1,030	1,350	4,100	1,430	1,180	940	980	438	255	154	118
9	462	960	1,350	3,270	1,180	2,310	870	940	414	239	148	118
10	462	890	1,110	2,530	1,180	3,820	905	905	414	239	148	118
11	488	890	1,110	4,240	1,180	3,820	905	870	414	224	148	138
12	788	960	1,110	11,100	980	2,000	1,020	835	414	224	148	163
13	690	1,520	1,030	4,680	905	2,000	940	730	390	224	148	193
14	598	4,530	890	2,890	800	1,520	905	730	368	224	143	698
15	598	2,420	960	2,200	730	1,180	940	800	368	208	143	390
16	1,900	3,960	1,350	1,800	665	1,340	1,340	730	346	208	143	271
17	1,270	3,820	1,030	1,520	665	1,180	1,520	665	346	208	143	205
18	2,650	3,010	960	1,430	600	1,020	1,900	632	326	202	138	175
19	4,100	3,010	890	1,260	600	1,020	2,000	632	326	202	138	172
20	2,000	2,890	890	1,100	572	1,020	1,520	730	326	196	138	157
21	1,520	2,420	820	1,020	514	3,140	1,430	698	306	190	135	151
22	1,350	1,900	820	1,020	514	3,820	1,340	632	306	190	132	140
23	1,520	2,310	820	940	487	2,770	1,520	540	306	190	132	138
24	1,190	6,720	755	905	462	2,770	1,900	540	288	184	132	138
25	1,030	5,600	722	940	514	2,310	1,610	540	288	181	132	138
26	890	3,010	755	905	632	1,900	1,340	514	288	178	132	135
27	788	2,310	1,110	870	540	2,310	1,180	540	271	175	132	132
28	890	3,010	960	870	487	2,770	1,610	800	271	172	130	132
29	1,350	2,200	890	1,180	462	2,310	1,340	1,700	271	172	127	130
30	1,030	2,310	755	2,770	-------	2,530	2,000	1,340	255	172	127	130
31	855	-------	690	2,310	-------	2,770	-------	698	-------	172	122	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	4,100	332	1,080	66,400
November	6,720	820	2,280	136,000
December	3,010	690	1,190	73,200
January	11,100	820	2,660	164,000
February	2,100	462	980	56,400
March	3,820	414	1,810	111,000
April	2,530	870	1,400	83,300
May	2,000	514	914	56,200
June	665	255	388	23,100
July	346	172	221	13,600
August	172	122	143	8,790
September	698	118	171	10,200
The year	11,100	118	1,100	802,000

QUINAULT RIVER BASIN

QUINAULT RIVER AT QUINALT LAKE, WASH.

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

DRAINAGE AREA.—264 square miles.

RECORDS AVAILABLE.—October, 1911, to December, 1922; July to November, 1924; and September, 1925, to September, 1928.

EXTREMES.—Maximum discharge during year, 17,100 second-feet January 12 or 13 (gage height, 9.87 feet); minimum, 305 second-feet September 11 (gage height, 0.79 foot).

1911–1922, 1924–1928: Maximum discharge, 37,000 second-feet December 12, 1921 (gage height, 16.3 feet); minimum, 285 second-feet September 20, 1924.

REMARKS.—Records excellent. Discharge estimated January 9–18. No diversions above station. Slight regulation caused by natural storage in lake.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,340	2,550	4,820	1,680	3,180	1,000	4,550	4,200	3,400	1,510	668	366
2	1,220	2,550	5,960	2,880	3,260	949	3,950	3,950	3,040	1,310	646	366
3	1,420	2,620	6,550	8,960	3,260	916	3,340	3,480	2,830	1,310	623	361
4	2,160	2,620	5,390	12,900	3,040	867	2,970	3,040	2,620	1,410	596	357
5	2,280	2,830	4,460	11,600	3,040	875	2,690	2,760	2,480	1,560	584	352
6	2,090	2,760	3,790	10,800	3,560	867	2,350	2,690	2,420	1,510	562	348
7	1,850	2,690	3,330	8,000	3,560	1,040	2,160	2,690	2,280	1,410	552	343
8	1,620	2,620	3,180	9,360	3,330	1,560	1,970	2,760	2,090	1,310	541	335
9	1,560	2,420	3,110	9,600	2,970	2,000	1,910	2,830	1,970	1,270	530	330
10	1,680	2,220	2,830	7,150	2,690	4,190	1,910	2,900	1,910	1,210	525	318
11	1,730	2,090	2,620	8,440	2,620	5,580	1,850	2,970	2,090	1,160	514	318
12	2,090	2,160	2,620	15,100	2,420	4,820	1,850	3,040	2,030	1,160	503	330
13	2,280	2,670	2,420	15,100	2,220	4,110	1,850	2,900	1,970	1,110	487	400
14	2,160	5,390	2,220	9,840	2,030	3,480	1,850	2,900	1,910	1,070	482	743
15	2,160	5,960	2,160	6,350	1,910	2,970	1,910	3,040	1,790	1,010	466	908
16	3,710	8,020	2,420	4,820	1,730	2,760	2,220	3,180	1,790	958	450	824
17	4,110	10,800	2,350	3,950	1,620	2,550	2,620	3,040	1,620	899	440	751
18	6,130	10,100	2,160	3,480	1,560	2,480	3,180	2,900	1,560	891	430	680
19	9,840	9,360	2,030	3,040	1,460	2,550	3,370	2,970	1,560	859	424	623
20	7,860	8,900	1,970	2,690	1,410	2,760	3,110	3,180	1,620	845	414	574
21	5,390	7,150	1,850	2,480	1,360	4,940	2,760	3,560	1,790	838	404	530
22	4,550	5,770	1,730	2,420	1,270	9,360	2,620	3,560	1,850	824	399	498
23	4,370	5,200	1,730	2,220	1,210	8,440	2,760	3,260	1,850	831	399	471
24	3,950	7,540	1,680	2,030	1,160	7,150	3,560	3,040	1,850	831	394	445
25	3,330	12,100	1,620	1,970	1,160	5,960	3,630	2,970	1,910	831	394	430
26	2,900	9,360	1,620	1,850	1,180	5,010	3,330	3,260	1,850	817	394	419
27	2,550	6,950	1,790	1,730	1,160	4,820	3,180	3,110	1,730	803	390	394
28	2,620	6,350	1,910	1,680	1,100	5,010	3,480	3,330	1,620	783	385	390
29	3,260	5,580	1,850	1,730	1,030	4,640	3,380	4,820	1,560	758	380	376
30	3,110	5,010	1,730	2,560	-------	4,640	3,630	4,820	1,460	726	376	371
31	2,760	-------	1,620	3,480	-------	5,010	-------	4,030	-------	697	371	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	9,840	1,220	3,150	11.9	13.72	194,000
November	12,100	2,090	5,410	20.5	22.87	322,000
December	6,550	1,620	2,760	10.5	12.11	170,000
January	15,100	1,680	5,800	22.0	25.36	357,000
February	3,560	1,030	2,120	8.03	8.66	122,000
March	9,360	867	3,650	13.8	15.91	224,000
April	4,550	1,850	2,800	10.6	11.83	167,000
May	4,820	2,690	3,260	12.3	14.18	200,000
June	3,400	1,460	2,010	7.61	8.49	120,000
July	1,560	697	1,050	3.98	4.59	64,600
August	668	371	475	1.80	2.08	29,200
September	908	318	465	1.76	1.96	27,700
The year	15,100	318	2,750	10.4	141.76	2,000,000

HOH RIVER BASIN

HOH RIVER NEAR SPRUCE, WASH.

LOCATION.—Water-stage recorder in sec. 34, T. 27 N., R. 11 W., 2 miles below Owl Creek and 2¼ miles below Spruce.

DRAINAGE AREA.—193 square miles.

RECORDS AVAILABLE.—August, 1926, to September, 1928.

EXTREMES.—Maximum discharge during year, 16,800 second-feet January 12 (gage height, 13.13 feet); minimum, 462 second-feet September 20 (gage height, 1.85 feet).

1926–1928: Maximum discharge, that of January 12, 1928; minimum, 356 second-feet September 25, 1926 (gage height, 1.57 feet).

REMARKS.—Records excellent. Discharge estimated June 8–14. No diversions above station.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,060	2,180	3,800	1,700	1,540	691	2,760	2,980	1,660	1,300	985	985
2	1,010	2,560	5,950	4,000	1,700	670	2,320	2,460	1,890	1,300	915	1,010
3	1,950	2,320	4,450	11,100	1,540	648	2,010	2,050	1,740	1,420	915	1,010
4	2,090	2,660	3,560	7,910	1,510	648	1,770	1,810	1,700	1,970	960	915
5	1,600	2,440	3,200	8,920	2,050	648	1,630	1,810	1,740	1,570	938	892
6	1,300	2,050	2,870	6,020	2,190	626	1,480	1,850	1,660	1,330	915	735
7	1,160	2,090	2,560	4,320	2,090	1,100	1,360	1,850	1,450	1,330	1,040	648
8	1,140	1,850	2,760	8,300	1,770	1,270	1,300	1,770	1,250	1,330	1,140	563
9	1,900	1,700	2,660	5,620	1,570	2,360	1,330	1,810	1,200	1,300	1,160	542
10	1,850	1,600	2,320	4,580	1,570	3,710	1,390	1,850	1,250	1,240	1,300	563
11	1,700	1,600	2,320	8,130	1,700	3,340	1,330	1,970	1,300	1,480	1,140	563
12	2,270	1,700	2,360	12,800	1,450	2,510	1,450	1,850	1,700	1,540	892	542
13	2,240	2,360	2,140	6,940	1,360	2,360	1,450	1,740	1,600	1,300	938	1,230
14	1,630	3,440	1,970	4,720	1,240	1,810	1,390	1,890	1,500	1,160	825	2,380
15	3,750	3,230	2,230	3,560	1,160	1,700	1,560	2,090	1,420	1,140	780	1,020
16	5,600	7,260	2,320	2,980	1,110	1,770	1,810	2,010	1,330	1,160	825	780
17	4,930	7,260	1,660	2,560	1,060	1,700	2,140	1,740	1,180	1,240	825	758
18	8,320	5,150	1,570	2,220	1,010	1,740	2,460	1,770	1,210	1,210	825	825
19	7,520	6,750	1,510	1,970	960	1,770	2,270	2,090	1,390	1,180	802	605
20	4,580	5,150	1,450	1,810	938	2,260	1,850	2,460	1,600	1,300	780	514
21	3,930	3,930	1,360	1,660	892	5,930	1,660	2,760	1,700	1,420	802	584
22	3,680	3,320	1,300	1,570	870	8,080	1,630	2,600	1,740	1,600	802	691
23	4,150	3,680	1,330	1,450	825	4,860	2,150	2,090	1,770	1,770	938	802
24	3,200	8,420	1,210	1,360	825	4,190	2,560	2,010	1,890	1,770	1,040	735
25	2,660	8,780	1,180	1,270	848	3,320	2,010	2,560	1,890	1,740	1,040	626
26	2,270	5,000	1,360	1,210	848	3,090	1,770	2,360	1,740	1,810	985	584
27	2,220	4,190	1,420	1,160	802	3,800	2,140	2,140	1,510	1,740	892	691
28	3,760	4,320	1,420	1,160	758	3,320	2,360	3,030	1,390	1,450	802	691
29	3,270	3,680	1,240	1,330	735	3,090	2,010	3,440	1,330	1,270	825	626
30	2,660	3,440	1,110	2,380	-------	3,200	3,110	2,490	1,360	1,140	870	605
31	2,270	-------	1,060	1,770	-------	3,200	-------	1,850	-------	1,040	938	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	8,320	1,010	2,960	15.3	17.64	182,000
November	8,780	1,600	3,800	19.7	21.98	226,000
December	5,950	1,060	2,180	11.3	13.03	134,000
January	12,800	1,160	4,080	21.1	24.33	251,000
February	2,190	735	1,270	6.58	7.10	73,000
March	8,080	626	2,560	13.3	15.33	157,000
April	3,110	1,300	1,880	9.74	10.87	112,000
May	3,440	1,740	2,170	11.2	12.91	133,000
June	1,890	1,180	1,540	7.98	8.90	91,600
July	1,970	1,040	1,400	7.25	8.36	86,100
August	1,300	780	930	4.82	5.56	57,200
September	2,380	514	790	4.09	4.56	47,000
The year	12,800	514	2,140	11.1	150.57	1,550,000

QUILLAYUTE RIVER BASIN

SOLEDUCK RIVER AT SNIDER RANGER STATION, NEAR BEAVER, WASH.

LOCATION.—Staff gage in sec. 28, T. 30 N., R. 11 W., at Snider ranger station, 11 miles above Beaver.

DRAINAGE AREA.—111 square miles.

RECORDS AVAILABLE.—November, 1921, to October, 1928; discontinued.

EXTREMES.—Maximum discharge during year, 5,500 second-feet January 5 and 11 (gage height, 7.4 feet); minimum, 45 second-feet September 8–10, 27, and 28 (gage height, 1.2 feet; stage may have been lower on September 29 or 30 when gage was not read).

1921–1928: Maximum discharge, 23,500 second-feet December 12, 1921 (gage height, 14.7 feet); minimum, 28 second-feet September 14, 1926 (gage height, 1.10 feet).

REMARKS.—Records good. No diversions above station.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
1	a 444	608	1,410	558	535	260	975	1,250	583	276	113	55	85
2	a 513	740	a 2,100	1,250	608	244	855	975	633	260	108	53	260
3	583	633	1,490	5,320	535	244	740	855	535	276	106	53	a 400
4	a 650	633	1,110	2,510	535	228	659	740	535	276	102	51	535
5	509	608	1,040	5,500	633	228	608	740	535	276	98	51	------
6	a 411	608	855	2,510	685	228	559	795	535	244	96	50	------
7	313	558	a 817	1,670	740	a 477	512	740	445	244	94	48	------
8	276	509	a 778	3,740	633	a 726	489	740	424	228	92	45	------
9	a 450	509	740	1,960	583	975	512	740	404	228	90	45	------
10	a 425	485	685	1,580	559	1,760	535	740	404	212	90	45	------
11	a 400	417	a 672	5,500	583	1,110	535	795	445	212	88	48	------
12	a 500	533	659	4,970	535	855	559	712	445	212	a 86	55	------
13	a 500	659	608	2,400	489	795	583	659	424	197	a 84	a 100	------
14	374	975	533	1,580	467	633	583	740	404	197	a 83	a 200	------
15	a 750	1,110	608	1,250	424	633	633	740	404	177	a 81	98	------
16	a 1,100	3,600	712	1,040	404	633	685	685	384	174	a 79	a 83	------
17	915	3,470	a 652	915	404	685	a 722	608	328	168	a 78	68	------
18	2,850	a 2,400	a 593	795	384	740	a 758	608	346	165	a 76	a 64	------
19	1,760	3,090	533	740	365	740	795	685	346	158	74	61	------
20	1,040	2,180	485	659	346	855	685	740	365	158	72	a 58	------
21	855	1,410	462	633	346	2,510	633	740	384	155	70	56	------
22	a 800	1,180	417	583	328	3,880	659	740	384	152	68	53	------
23	915	1,250	439	535	310	1,860	915	633	384	147	65	50	------
24	740	a 2,900	395	489	310	633	975	583	365	145	63	a 49	------
25	659	3,090	395	559	293	1,180	795	685	346	142	65	a 49	------
26	558	1,760	439	445	310	975	712	583	346	135	a 62	48	------
27	533	1,410	485	445	293	1,410	795	583	310	133	58	45	------
28	a 850	1,580	395	445	276	1,180	855	740	310	135	58	45	------
29	740	1,250	395	467	260	1,180	a 1,410	1,040	293	124	56	a 45	------
30	740	1,110	374	855	------	1,250	1,960	795	293	119	55	a 45	------
31	633	------	353	633	------	1,250	------	633	------	115	55	------	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	2,850	276	735	6.62	7.63	45,200
November	3,600	417	1,380	12.4	13.83	82,100
December	2,100	353	698	6.29	7.25	42,900
January	5,500	445	1,690	15.2	17.52	104,000
February	740	260	454	4.09	4.41	26,100
March	3,880	228	979	8.82	10.17	60,200
April	1,960	489	756	6.81	7.60	45,000
May	1,250	583	743	6.69	7.71	45,700
June	633	293	411	3.70	4.13	24,500
July	276	115	188	1.69	1.95	11,600
August	113	55	79.5	.715	.83	4,890
September	200	45	60.5	.545	.61	3,600
The year	5,500	45	683	6.15	83.64	496,000

a Estimated.

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 is 206.29 feet above mean sea level.

DRAINAGE AREA.—262 square miles.

RECORDS AVAILABLE.—October, 1897, to December, 1901; October, 1918, to September, 1928.

EXTREMES.—Maximum discharge during year, 8,600 second-feet January 12 (gage height, 6.9 feet); minimum, 8 second-feet October 9 (gage height, −0.07 foot).

1897–1901, 1918–1928: Maximum discharge, 23,800 second-feet November 27, 1901 (gage height, 10.6 feet); minimum discharge, that of October 9, 1927.

REMARKS.—Records good. Flow regulated by operation of Glines Canyon Reservoir for power. Flow that is diverted through power house is returned to river above gage. Some discharge measurements furnished by Northwestern Power & Manufacturing Co.

Daily discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	576	1,200	2,100	762	1,330	855	1,650	1,650	1,920	1,170	751	660
2	619	1,160	3,250	800	1,630	868	1,640	1,540	1,960	1,190	712	512
3	789	1,200	2,800	4,170	1,180	908	1,410	1,560	1,830	1,200	620	38
4	910	1,710	1,840	4,300	1,440	426	1,360	1,430	1,940	1,470	592	293
5	788	1,590	1,950	4,720	1,370	606	1,390	1,380	2,060	966	591	548
6	746	1,040	1,160	3,960	1,720	985	1,370	1,720	1,800	1,220	636	437
7	690	1,290	1,810	2,920	1,230	942	1,370	1,690	1,580	1,220	634	309
8	583	1,840	1,680	5,120	1,610	868	1,090	1,820	1,390	848	628	421
9	548		1,550	3,980	1,230	918	1,110	2,000	1,500	1,120	616	271
10	907		1,030	3,600	1,230	942	1,350	1,980	1,580	1,170	640	292
11	948	1,100	1,160	4,600	1,280	850	1,430	2,130	1,840	1,200	586	334
12	891		1,780	7,100	1,150	1,250	1,380	2,280	1,650	1,200	540	344
13	830		1,120	4,740	1,450	1,170	1,370	2,130	1,880	1,210	742	312
14	974		1,060	3,560	1,190	1,120	1,440	2,300	1,880	1,220	670	392
15	929	1,750	1,060	3,230	1,050	1,030	1,020	2,610	1,390	1,200	587	360
16	1,690	3,980	1,050	2,610	1,130	1,140	1,200	2,660	1,370	1,020	634	443
17	1,830	3,650	1,300	2,460	1,130	1,180	1,330	2,330	1,350	1,210	645	476
18	3,130	3,000	1,040	2,240	1,130	824	1,370	2,390	1,320	1,210	665	511
19	3,930	4,090	1,040	1,950	790	1,390	1,440	2,700	1,460	1,210	532	542
20	2,150	3,040	1,100	2,170	946	1,760	1,430	3,350	1,750	1,210	622	560
21	1,810	2,730	1,030	1,600	1,040	2,980	1,420	3,180	1,890	996	636	562
22	1,710	2,000	986	1,550	980	3,940	938	3,170	1,650	756	576	540
23	1,930	2,160	1,120	1,760	980	3,070	1,170	2,800	1,890	856	522	564
24	1,110	3,170	560	1,280	996	2,590	1,440	2,660	1,950	847	604	572
25	1,150	4,650	373	1,640	980	2,200	1,410	3,200	1,840	838	622	542
26	1,160	2,620	804	1,220	484	2,080	1,370	3,040	1,810	814	592	524
27	1,120	2,640	1,060	1,210	598	2,160	1,330	2,770	1,520	838	551	490
28	1,920	2,200	1,040	1,240	985	2,010	1,250	2,670	1,340	842	636	483
29	1,580	2,190	892	1,580	904	1,760	1,530	3,000	1,400	673	609	436
30	1,160	1,960	761	1,620	-------	1,880	1,890	2,040	1,250	806	558	258
31	1,180	-------	721	1,420	-------	1,820	-------	1,980	-------	724	658	------

Monthly discharge of Elwha River at McDonald Bridge, near Port Angeles, Wash., 1917–28

Month	Observed				Gain or loss in storage in Glines Canyon Reservoir (acre-feet)	Corrected for storage			
	Discharge in second-feet			Run-off in acre-feet		Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October	3,930	548	1,300	79,900	+1,220	81,100	1,320	5.04	5.81
November	4,650	-------	2,120	126,000	−294	126,000	2,120	8.09	9.03
December	3,250	373	1,300	79,900	−1,260	78,600	1,280	4.89	5.64
January	7,100	762	2,750	169,000	+2,160	171,000	2,780	10 6	12.22
February	1,720	484	1,140	65,600	−1,650	64,000	1,110	4.24	4.57
March	3,940	426	1,500	92,200	+1,780	94,000	1,530	5.84	6.73
April	1,890	938	1,360	80,900	−86	80,800	1,360	5.19	5.79
May	3,350	1,380	2,330	143,000	+86	143,000	2,330	8.89	10.25
June	2,060	1,250	1,670	99,400	−129	99,300	1,670	6.37	7.11
July	1,470	673	1,050	64,600	−2,580	62,000	1,010	3.85	4.44
August	751	522	620	38,100	−4,190	33,900	551	2.10	2.42
September	660	38	434	25,800	−520	25,300	425	1.62	1.81
The year	7,100	38	1,470	1,060,000	−5,460	1,060,000	1,460	5.57	75.82

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, 1928; July, 1897, to July, 1898, at station 1½ miles downstream.

EXTREMES.—Maximum discharge during year, 1,400 second-feet January 12 (gage height, 3.1 feet); minimum, 77 second-feet September 10.

1897–98, 1923–1928: Maximum discharge, 5,140 second-feet February 12, 1924 (gage height, 6.0 feet); minimum discharge, that of September 10, 1928.

REMARKS.—Records fair. Discharge December 31 and January 1 estimated because of ice effect. No diversions above station.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	164	182	374	147	326	201	312	374	408	312	173	105
2	156	192	650	222	326	201	297	357	512	312	173	105
3	312	201	530	1,040	326	201	284	312	495	357	164	105
4	284	312	442	960	312	212	284	326	512	374	173	99
5	234	312	408	1,080	312	212	258	342	512	374	164	99
6	201	312	357	845	312	212	258	357	530	342	173	99
7	192	284	342	620	326	212	245	390	460	312	182	93
8	182	245	326	1,080	297	212	258	442	408	297	192	88
9	192	234	284	1,080	297	222	270	495	357	297	182	82
10	212	222	245	845	284	222	284	495	425	312	182	77
11	212	212	245	740	284	222	284	512	530	312	182	82
12	222	212	258	1,400	270	222	270	530	495	342	164	88
13	222	234	258	1,040	270	212	284	550	478	297	156	93
14	192	297	245	775	258	201	284	550	442	258	140	164
15	182	245	234	620	258	192	284	595	408	258	132	125
16	284	460	234	550	258	234	284	680	390	270	132	99
17	342	442	222	530	258	222	326	620	357	270	125	93
18	312	390	212	495	245	234	297	595	357	270	125	99
19	595	595	212	460	245	270	284	650	390	284	125	93
20	357	478	201	442	245	326	284	710	425	258	125	82
21	284	390	201	425	245	374	270	880	442	284	125	82
22	258	342	192	390	234	650	284	920	460	284	118	82
23	245	312	192	390	234	478	342	710	460	297	118	88
24	234	374	192	357	234	425	425	650	460	312	125	88
25	212	620	182	357	234	374	408	810	460	297	125	88
26	212	512	182	342	222	374	390	880	478	284	118	88
27	192	408	182	326	222	374	442	680	425	284	112	82
28	212	357	173	326	212	342	425	530	390	258	112	82
29	234	312	164	342	212	326	408	550	357	234	105	82
30	201	297	125	342	-------	326	408	478	326	212	99	82
31	192	-------	125	326	-------	312	-------	425	-------	201	99	-------

Month	Maximum	Minimum	Mean	Per square miles	Run-off: Inches	Run-off: Acre-feet
October	595	156	243	1.62	1.87	14,900
November	620	182	333	2.22	2.48	19,800
December	650	125	264	1.76	2.03	16,200
January	1,400	147	609	4.06	4.68	37,400
February	326	212	268	1.79	1.93	15,400
March	650	192	284	1.89	2.18	17,500
April	442	245	314	2.09	2.33	18,700
May	920	312	561	3.74	4.31	34,500
June	530	326	438	2.92	3.26	26,100
July	374	201	292	1.95	2.25	18,000
August	192	99	143	.953	1.10	8,790
September	164	77	93.8	.625	.70	5,580
The year	1,400	77	321	2.14	29.12	233,000

PUGET SOUND BASINS

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 mile above mouth and 11 miles northeast of Hoodsport.

DRAINAGE AREA.—75 square miles.

RECORDS AVAILABLE.—February, 1926, to September, 1928.

EXTREMES.—Maximum discharge during year, 3,840 second-feet January 3 (gage height, 6.55 feet); minimum, 36 second-feet September 23 and 30 (gage height, 1.40 feet).

1926–1928: Maximum discharge, 5,080 second-feet December 2, 1926 (gage height, 7.7 feet); minimum 31 second-feet September 13 and 14, 1926 (gage height, 1.38 feet).

REMARKS.—Records fair. Discharge October 7, November 15, 16, 25, December 18, 19, May 24, 31, and June 2–6 estimated. No diversions above station.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	171	323	900	211	835	174	970	640	580	233	108	50
2	152	318	1,250	460	835	168	970	580	550	218	104	50
3	148	347	1,180	3,840	835	157	640	520	520	218	102	46
4	347	430	900	2,000	900	157	580	520	490	218	95	50
5	318	401	705	2,090	900	163	520	520	461	211	91	53
6	290	401	640	1,490	900	185	460	520	431	211	91	50
7	250	347	580	1,040	900	192	401	520	401	205	89	43
8	211	401	520	1,330	738	192	347	550	374	198	87	43
9	198	347	460	1,250	640	1,570	347	520	347	185	87	39
10	185	374	430	1,040	256	770	401	550	337	185	87	39
11	211	318	401	2,980	520	705	401	580	374	179	87	46
12	218	347	374	2,380	520	640	347	580	374	185	87	53
13	211	900	337	1,410	550	460	374	550	347	174	83	71
14	185	2,000	309	1,040	520	401	374	580	328	168	81	69
15	157	1,680	337	900	490	347	401	610	309	157	79	71
16	155	1,360	299	835	430	342	401	640	290	152	71	60
17	299	1,040	640	705	401	318	580	640	282	148	71	57
18	323	900	512	640	401	299	610	580	273	152	67	53
19	347	2,090	384	640	299	323	610	640	273	141	67	50
20	430	1,410	256	550	256	401	580	705	282	139	67	50
21	520	1,040	248	490	241	640	580	738	282	134	67	50
22	550	900	252	460	233	672	460	705	282	134	67	46
23	490	970	245	401	218	1,330	520	640	290	130	67	36
24	401	1,650	252	347	211	1,490	580	656	290	130	60	50
25	347	1,380	256	374	215	1,110	640	672	290	125	57	43
26	318	1,110	256	460	211	1,250	640	738	299	121	57	43
27	328	970	318	520	205	1,410	640	835	265	121	57	43
28	401	900	290	640	185	1,330	490	900	265	119	53	50
29	460	900	265	770	179	970	401	970	256	116	53	39
30	347	835	233	770	------	970	430	738	248	112	53	36
31	347	------	226	770	------	900	------	659	------	112	53	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	550	148	300	4.01	4.61	18,400
November	2,090	318	880	11.7	13.05	52,400
December	1,250	226	460	6.13	7.07	28,300
January	3,840	211	1,060	14.1	16.26	65,200
February	900	179	484	6.45	6.96	27,800
March	1,570	157	646	8.61	9.93	39,700
April	970	347	523	6.97	7.78	31,100
May	970	520	639	8.52	9.82	39,300
June	580	248	346	4.61	5.14	20,600
July	233	112	162	2.19	2.49	9,960
August	108	53	75.6	1.01	1.16	4,650
September	71	36	49.3	.657	.73	2,930
The year	3,840	36	469	6.25	85.00	340,000

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, 1928.

EXTREMES.—Maximum discharge during year, 4,100 second-feet January 3 and 12 (gage height, 6.7 feet); minimum, 37 second-feet September 8 (gage height, 1.40 feet).

1924–1928: Maximum discharge, 5,350 second-feet December 1, 1926 (gage height, 7.5 feet); minimum, 28 second-feet September 14 and 15, 1926 (gage height, 1.25 feet).

REMARKS.—Records good except those for January to March, which are fair. No diversions above station.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	165	333	718	197	705	248	433	626	572	250	95	49
2	154	388	1,070	549	922	245	361	506	572	241	93	48
3	465	343	775	3,100	795	242	328	426	552	250	92	48
4	373	409	610	1,770	705	242	315	418	552	278	90	48
5	275	406	536	1,950	898	260	302	454	552	244	90	47
6	221	398	448	1,300	870	257	287	511	508	224	86	45
7	192	371	411	930	728	508	277	565	444	216	84	41
8	174	343	408	1,960	561	479	277	638	397	210	83	38
9	190	320	376	1,270	496	685	284	668	390	208	81	38
10	197	301	336	965	479	909	280	656	429	197	79	38
11	210	291	326	1,580	467	705	280	716	500	197	77	39
12	241	366	319	2,780	437	496	280	662	448	192	74	44
13	210	1,070	297	1,360	422	452	290	605	390	177	73	115
14	180	1,400	284	978	401	419	290	698	376	163	69	196
15	575	911	303	795	387	408	318	782	356	158	66	82
16	489	1,630	313	660	373	408	403	722	342	154	62	62
17	623	1,440	278	570	366	422	449	605	339	154	62	55
18	2,040	1,070	256	504	356	460	382	638	336	154	62	52
19	1,520	1,980	256	475	342	521	344	770	352	143	62	48
20	725	1,230	247	456	332	940	328	898	376	138	60	48
21	540	865	230	444	322	2,410	331	898	369	140	59	46
22	482	665	227	433	309	2,090	364	746	366	140	59	45
23	475	640	221	412	300	1,190	744	626	373	140	57	46
24	402	1,360	219	404	290	898	854	650	380	138	57	46
25	350	1,620	216	398	287	692	650	806	366	134	57	45
26	317	898	238	380	281	600	590	704	332	128	56	46
27	301	745	233	380	272	610	620	644	300	124	53	48
28	598	775	221	398	263	535	555	1,240	284	116	52	46
29	482	640	210	549	257	506	445	1,100	284	110	52	48
30	398	565	190	1,230	------	535	704	750	262	106	50	48
31	343	------	187	845	------	525	------	614	------	99	50	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	2,040	154	449	7.48	8.62	27,600
November	1,980	291	792	13.2	14.7[illegible]	47,100
December	1,070	187	354	5.90	6.8[illegible]	21,800
January	3,100	197	968	16.1	18.5[illegible]	59,500
February	922	257	470	7.83	8.4[illegible]	27,000
March	2,410	242	642	10.7	12.3[illegible]	39,500
April	854	277	412	6.87	7.6[illegible]	24,500
May	1,240	418	688	11.5	13.2[illegible]	42,300
June	572	262	403	6.72	7.5[illegible]	24,000
July	278	99	172	2.87	3.3[illegible]	10,600
August	95	50	69.1	1.15	1.3[illegible]	4,250
September	196	38	54.8	.913	1.0[illegible]	3,260
The year	3,100	38	457	7.62	103.57	331,000

NORTH FORK OF SKOKOMISH RIVER NEAR HOODSPORT, WASH.

LOCATION.—Water-stage recorder 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, 1928; August, 1910, to September, 1911, and February, 1913, to September, 1923, at site of dam, 1 mile above.

EXTREMES.—Maximum discharge during year, 3,640 second-feet November 25 (gage height, 10.2 feet); practically dry during several periods in August and September when operating gates in power plant at dam were closed.

1913–1928: Maximum discharge (estimated), 14,000 second-feet January 6, 1914 (gage height, about 23.5 feet); no flow when gates in dam are closed during summer.

REMARKS.—Records excellent. Discharge estimated October 25, 30, 31, November 1–10, 23–30, and December 1. No diversions that are not returned to river above gage. Flow is controlled by storage in Cushman Reservoir and by release for power.

Daily discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	393	400	2,400	438	1,280	694	810	633	1,070	612	262	291
2	176	350	2,410	432	1,290	674	1,270	643	1,030	427	254	22
3	654	350	2,020	884	1,260	590	1,250	654	706	769	216	22
4	716	500	1,080	546	1,200	222	1,300	1,050	904	7	144	584
5	509	600	1,380	981	1,060	560	1,220	1,070	887	200	3	555
6	412	1,100	1,360	1,300	1,290	626	780	248	412	214	237	607
7	417	1,000	1,380	1,290	1,250	568	390	1,020	439	172	190	740
8	339	1,100	1,390	919	1,270	552	78	936	476	4	222	816
9	218	1,100	1,460	1,230	1,180	640	502	1,070	394	218	200	328
10	512	1,100	1,420	1,330	1,160	683	506	1,070	238	224	194	772
11	454	1,060	1,090	1,340	1,180	274	568	988	608	302	130	832
12	388	1,070	1,400	1,230	821	642	490	1,030	538	179	32	809
13	446	1,020	1,460	1,430	816	622	465	356	538	166	264	738
14	461	1,730	1,490	1,420	638	586	400	909	550	146	396	538
15	346	2,050	1,460	1,070	624	611	137	946	533	3	411	401
16	148	2,590	1,180	1,460	556	546	523	1,090	595	196	326	122
17	445	2,630	1,180	1,460	617	413	616	1,030	194	212	280	498
18	500	2,640	705	1,450	560	150	511	1,020	502	176	216	536
19	707	2,630	1,160	1,430	240	442	422	920	493	190	2	953
20	832	2,350	982	1,410	680	598	312	315	580	261	256	1,050
21	824	2,650	1,010	1,340	674	590	660	849	449	130	342	949
22	587	2,750	1,060	980	382	1,150	712	918	223	3	436	548
23	255	2,700	1,020	1,320	612	1,270	910	1,020	774	175	237	40
24	482	2,400	762	1,240	684	1,190	472	972	457	198	218	605
25	400	2,700	227	1,360	579	1,060	277	799	300	190	192	768
26	357	2,800	320	1,370	194	1,230	234	950	234	460	46	928
27	304	2,200	934	1,310	652	1,260	442	218	406	212	416	1,000
28	354	2,500	982	1,300	750	1,230	240	1,050	416	190	585	880
29	318	2,300	1,120	970	680	1,210	39	1,090	334	4	580	810
30	200	2,100	1,320	1,280	-------	1,230	333	799	278	212	455	796
31	350	-------	1,340	1,290	-------	1,180	-------	916	-------	219	397	------

Monthly discharge of North Fork of Skokomish River near Hoodsport, Wash., 1927–28

Month	Observed				Gain or loss in storage in Lake Cushman Reservoir (acre-feet)	Corrected for storage			
	Discharge in second-feet			Run-off in acre-feet		Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October	832	148	436	26,800	+17,400	44,200	719	7.82	9.02
November	2,800	350	1,750	104,000	−29,500	74,500	1,250	13.6	15.17
December	2,410	227	1,240	76,200	−39,500	36,700	597	6.49	7.48
January	1,460	432	1,190	73,200	+19,500	92,700	1,510	16.4	18.91
February	1,290	194	834	48,000	−9,840	38,200	664	7.22	7.79
March	1,270	150	751	46,200	+23,300	69,500	1,130	12.3	14.18
April	1,300	39	562	33,400	+14,000	47,400	797	8.66	9.66
May	1,090	218	857	52,700	+6,120	58,800	956	10.4	11.99
June	1,070	194	524	31,200	−1,880	29,300	492	5.35	5.97
July	769	3	215	13,200	+1,080	14,300	233	2.53	2.92
August	585	2	263	16,200	−10,500	5,700	92.7	1.01	1.16
September	1,050	22	618	36,800	−30,100	6,700	113	1.23	1.37
The year	2,800	2	768	558,000	−39,900	518,000	713	7.75	105.62

SOUTH FORK OF SKOKOMISH RIVER NEAR POTLATCH, WASH.

LOCATION.—Water-stage recorder 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, 1928.

EXTREMES.—Maximum discharge during year, 5,070 second-feet January 12, (gage height, 9.6 feet); minimum, 72 second-feet September 30 (gage height, 1.61 feet).

1923–1928: Maximum discharge, about 9,950 second-feet January 31, 1924 (gage height, 14.86 feet); minimum, 38 second-feet September 15, 1926 (gage height, 1.22 feet).

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

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	164	432	1,080	365	1,060	229	1,140	965	505	170	95	79
2	160	446	1,330	956	1,450	223	942	832	460	166	93	78
3	497	418	1,110	3,680	1,160	216	788	656	418	164	91	78
4	566	475	898	2,540	942	214	722	556	404	185	88	78
5	365	538	766	2,440	1,070	254	635	522	378	181	90	76
6	282	556	678	1,860	1,210	256	556	538	365	170	87	76
7	240	538	594	1,390	1,040	547	505	538	340	162	85	74
8	212	505	594	2,220	854	744	490	556	316	156	85	76
9	199	475	556	1,680	722	1,550	490	538	304	154	87	76
10	196	432	505	1,300	635	2,000	505	522	304	150	84	76
11	205	418	490	2,200	594	1,640	505	522	304	147	84	76
12	252	605	475	3,840	505	1,110	505	490	293	141	82	79
13	240	1,810	432	1,880	460	1,010	522	446	270	137	85	142
14	212	2,460	404	1,330	418	788	505	460	283	135	82	338
15	338	1,450	432	1,040	391	700	575	475	259	131	80	156
16	682	2,000	505	854	365	656	766	460	240	129	80	115
17	690	1,930	460	722	340	614	920	404	229	123	82	98
18	2,120	1,480	418	635	328	614	988	404	273	121	80	87
19	2,100	1,930	418	556	316	614	898	432	221	117	80	82
20	1,070	1,680	404	522	293	839	700	460	221	115	80	78
21	788	1,330	391	490	293	2,350	656	475	218	112	80	78
22	744	1,060	378	460	270	2,450	722	418	212	110	79	76
23	700	1,110	378	418	263	2,000	971	365	207	108	79	74
24	575	2,220	378	418	256	1,860	1,110	365	205	108	78	74
25	475	2,170	378	418	263	1,420	876	391	199	105	78	74
26	418	1,360	418	418	268	1,160	722	365	194	103	74	74
27	391	1,160	475	432	261	1,270	744	391	185	99	74	74
28	612	1,360	432	475	249	1,180	810	855	185	99	73	73
29	635	1,110	391	893	238	1,140	678	1,180	181	96	74	74
30	522	988	365	1,800	------	1,270	981	832	177	95	79	73
31	446	------	340	1,320	------	1,360	------	614	------	95	79	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	2,120	160	551	8.10	9.34	33,900
November	2,460	418	1,150	16.9	18.86	68,400
December	1,330	340	544	8.00	9.22	33,400
January	3,840	365	1,280	18.8	21.67	78,700
February	1,450	238	569	8.37	9.03	32,700
March	2,450	214	1,040	15.3	17.64	64,000
April	1,140	490	731	10.8	12.05	43,500
May	1,180	365	549	8.07	9.30	33,800
June	505	117	276	4.06	4.53	16,400
July	185	95	132	1.94	2.24	8,120
August	95	73	82.2	1.21	1.40	5,050
September	338	73	92.1	1.35	1.51	5,480
The year	3,840	73	583	8.57	116.79	423,000

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, 1928; September, 1906, to October, 1911, fragmentary.

EXTREMES.—Maximum combined daily discharge of river and power conduit during year, 11,300 second-feet November 25; minimum, 322 second-feet September 20.

1919–1928: Maximum combined discharge, 19,500 second-feet December 12, 1921; minimum combined daily discharge, 184 second-feet on November 5, 1925.

REMARKS.—Records for October, November, and March to June, excellent; for July to September, good; and for December to February, fair. Discharge is combined flow in river and in conduit. (See p. 28 for discharge in conduit.) Slight regulation caused by use of flashboards on dam. Some discharge measurements furnished by city of Tacoma.

Combined daily discharge, in second-feet, of Nisqually River and Tacoma power conduit near La Grande, Wash., 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,230	1,140	3,280	*1,000	894	*480	3,180	3,470	923	700	604	574
2	1,200	*1,360	4,220	3,020	808	*480	2,330	2,740	960	712	556	529
3	4,690	*1,570	3,700	5,740	870	*500	1,940	2,210	884	753	578	602
4	5,130	1,790	2,880	6,350	838	*520	1,650	1,880	901	1,080	595	609
5	3,100	2,050	2,410	4,170	764	749	1,480	1,670	986	1,160	547	542
6	2,200	2,550	2,040	4,450	1,160	776	1,340	1,840	1,000	958	632	504
7	1,760	2,280	1,770	3,620	1,120	755	1,200	1,970	817	866	607	422
8	1,510	2,090	1,650	3,090	877	850	1,080	2,130	718	843	678	341
9	1,420	1,750	1,680	3,010	883	1,740	1,060	1,960	711	814	654	382
10	1,670	1,500	1,490	2,760	869	3,450	1,090	1,900	731	818	650	411
11	1,720	1,340	1,300	3,040	922	3,820	1,080	1,970	826	*959	606	378
12	1,640	1,310	1,190	4,350	904	2,580	1,420	1,960	829	1,100	432	383
13	1,680	1,580	1,110	5,730		2,020	1,780	1,810	810	872	635	432
14	1,860	2,810	1,440	3,810		1,640	1,680	1,730	794	802	494	554
15	1,500	2,960	1,040	2,800	*800	1,380	1,570	1,790	810	728	473	576
16	1,270	4,420	1,780	2,220		1,420	1,520	1,750	754	756	432	418
17	1,170	5,210		1,850		1,350	1,750	1,490	701	770	536	451
18	1,450	5,130		1,580		1,400	1,890	1,420	672	738	557	480
19	1,340	4,430		1,380		1,560	1,700	1,470	735	695	495	352
20	1,210	3,740	*1,150	1,240		1,800	1,520	1,660	848	674	579	322
21	1,090	3,060		1,120	*650	2,330	1,390	1,900	955	731	540	413
22	1,010	2,390		1,100		2,950	1,390	1,870	863	840	476	528
23	947	2,150		1,050		2,780	1,620	1,640	915	992	579	489
24	964	4,950		969		2,740	2,210	1,560	*1,000	952	672	494
25	866	11,300		882		2,210	1,950	1,750	*1,200	986	672	400
26	833	5,820		772		1,920	1,790	1,710	*1,100	1,040	492	356
27	776	4,020	*750	862	*500	1,890	1,860	1,560	960	1,080	572	360
28	790	4,660		787		2,580	2,100	1,280	819	973	448	408
29	1,020	3,850		892		2,320	1,910	1,330	852	818	454	418
30	971	3,280		1,090	-------	3,310	3,070	1,170	714	768	518	366
31	1,180	-------		1,050	-------	4,700	-------	973	-------	711	559	------

* Estimated.

Combined monthly discharge, in second-feet, of Nisqually River and Tacoma power conduit near La Grande, Wash., 1927–28

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	5,130	776	1,590	5.54	6.39	97,800
November	11,300	1,140	3,220	11.2	12.50	192,000
December	4,220		1,520	5.30	6.11	93,500
January	6,350	772	2,440	8.50	9.80	150,000
February	1,160		757	2.64	2.85	43,500
March	4,700	480	1,900	6.62	7.63	117,000
April	3,180	1,060	1,720	5.99	6.68	102,000
May	3,470	973	1,790	6.24	7.19	110,000
June	1,200	672	860	3.00	3.35	51,200
July	1,160	674	861	3.00	3.46	52,900
August	668	448	553	1.93	2.22	34,000
September	609	322	450	1.57	1.75	26,800
The year	11,300	322	1,470	5.12	69.93	1,070,000

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 Tacoma's municipal power plant, and 1½ miles southwest of Alder.

DRAINAGE AREA.—28.5 square miles.

RECORDS AVAILABLE.—August, 1920, to September, 1928.

EXTREMES.—Maximum discharge during year, 1,680 second-feet November 24 (gage height, 5.45 feet); minimum, probably less than 3 second-feet at times during July to September.

1920–1928: Maximum discharge, 2,220 second-feet January 7, 1923 (gage height, 6.4 feet); minimum, 0.9 second-foot July 17, 1926 (gage height, 0.58 foot).

REMARKS.—Records fair. No diversions above station. Effect of operation of splash dam for flushing logs down the river is noticeable at gage during extremely low flow. Some discharge measurements furnished by city of Tacoma.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	79	82	293	114	89	28	463	459	42	22	18	10
2	67	86	309	501	89	27	309	333	40	21	15	5
3	615	89	284	1,110	84	26	238	253	37	21	12	8
4	510	94	220	838	79	25	189	197	35	36	10	12
5	277	112	178	560	86	89	163	176	33	47	10	5
6	178	208	143	580	118	89	138	165	32	48	13	8
7	123	203	121	401	110	82	123	158	31	42	11	6
8	92	194	121	343	102	96	112	146	29	39	10	8
9	82	168	123	326	89	321	108	118	30	34	10	5
10	86	138	118	265	82	720	116	121	29	33	12	9
11	102	116	108	316	87	640	125	118	29	30	12	10
12	89	134	100	501	80	381	202	114	28	28	10	10
13	91	234	92	482	77	277	235	102	28	24	10	12
14	98	630	84	296	72	203	203	96	28	16	12	12
15	87	540	75	200	63	168	189	94	29	20	12	12
16	75	600	82	153	58	143	194	89	28	21	10	7
17	74	540	82	118	54	141	274	84	27	18	8	9
18	116	540	82	100	50	141	290	74	23	16	8	13
19	118	580	80	86	46	136	256	86	21	18	9	10
20	100	600	75	80	42	148	214	100	26	16	8	10
21	86	471	72	75	39	283	194	91	36	15	8	12
22	75	320	69	74	36	391	192	74	23	18	5	10
23	77	277	64	66	34	367	244	54	25	14	9	10
24	75	983	61	63	33	374	277	46	22	16	6	10
25	71	1,210	58	58	32	287	226	40	21	15	6	11
26	63	600	63	54	30	241	192	32	21	16	5	11
27	57	405	86	50	28	247	192	35	22	15	10	10
28	66	540	89	50	29	388	226	48	22	12	5	10
29	84	412	79	61	29	371	194	54	23	14	8	8
30	87	337	66	89	------	617	441	53	23	16	11	10
31	82	------	79	98	------	769	------	45	------	14	8	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	615	57	125	4.39	5.06	7,690
November	1,210	82	381	13.4	14.95	22,700
December	309	58	115	4.04	4.66	7,070
January	1,110	50	262	9.19	10.60	16,100
February	118	28	63.7	2.24	2.42	3,660
March	769	25	265	9.30	10.72	16,300
April	463	108	217	7.61	8.49	12,900
May	459	32	118	4.14	4.77	7,260
June	42	21	28.1	.986	1.10	1,670
July	48	12	23.1	.811	.94	1,420
August	18	5	9.71	.341	.39	597
September	13	5	9.43	.331	.37	561
The year	1,210	5	135	4.74	64.47	97,900

TACOMA POWER CONDUIT NEAR LA GRANDE, WASH.

LOCATION.—Water-stage recorder in sec. 9, T. 15 N., R. 4 E., 750 feet below head gate at diversion dam of Tacoma's municipal power plant and 2½ miles southeast of La Grande.

RECORDS AVAILABLE.—October, 1919, to September, 1928; discontinued.

EXTREMES.—Maximum discharge during year, 868 second-feet April 23 (gage height, 10.3 feet); no flow when operating gates are closed or waste gates are opened wide.

1919–1928: Maximum discharge, 920 second-feet May 14, 1925 (gage height, 10.6 feet); no flow when operating gates are closed or waste gates are opened wide.

REMARKS.—Records excellent. Flow regulated at head gate. Canal diverts water from Nisqually River for power plant of city of Tacoma.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	526	658	84	588	164	455	165	452	71	22	560	567
2	478	641	106	602	116	448	126	436	68	438	542	504
3	451	637	93	652	101	434	95	388	0	252	566	496
4	410	592	54	690	104	440	107	116	77	442	564	549
5	486	487	120	348	22	505	105	80	134	532	425	534
6	510	93	135	107	94	506	409	358	481	548	554	497
7	506	287	171	99	160	531	538	70	465	544	583	416
8	514	193	123	74	97	516	464	176	408	406	574	334
9	406	191	152	106	209	524	524	65	453	558	566	372
10	480	206	132	99	181	430	538	96	260	548	574	402
11	525	178	59	134	148	482	540	129	333	500	568	370
12	532	188	131	212	200	502	534	74	359	566	430	376
13	505	124	133	114	454	503	540	242	370	574	546	425
14	530	117	200	112	596	524	539	152	386	536	477	548
15	526	100	228	97	584	522	466	152	372	403	462	536
16	452	97	356	156	593	524	517	66	310	568	474	414
17	520	100	348	134	577	522	533	76	279	587	526	446
18	555	100	352	122	567	442	606	71	378	582	547	474
19	386	90	409	126	603	508	637	70	373	569	468	346
20	280	101	524	126	544	497	676	235	330	524	546	315
21	268	94	525	105	551	451	402	195	430	554	530	395
22	410	98	545	81	574	123	67	158	511	376	470	513
23	392	98	534	137	552	140	282	85	144	572	572	483
24	548	78	524	201	524	84	602	95	128	558	586	469
25	620	92	505	148	514	78	647	206	536	554	576	394
26	647	99	492	110	504	99	656	72	550	398	482	350
27	628	70	526	132	496	108	562	343	476	579	491	354
28	636	91	538	98	474	106	656	92	471	551	441	402
29	642	84	530	0	470	119	548	72	488	436	448	412
30	466	204	541	94	------	128	657	64	482	568	500	360
31	647	------	550	140	------	115	------	152	------	574	552	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	647	268	499	30,700
November	658	70	206	12,300
December	550	54	314	19,300
January	690	0	192	11,800
February	603	22	371	21,300
March	531	78	367	22,600
April	676	67	458	27,300
May	452	64	163	10,000
June	550	0	338	20,100
July	587	22	497	30,600
August	586	425	523	32,200
September	567	315	435	25,900
The year	690	0	364	264,000

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 from Eatonville. Zero of gage is 521.58 feet above mean sea level.

RECORDS AVAILABLE.—June, 1927, to September, 1928.

EXTREMES.—Maximum discharge during year, 511 second-feet January 3 (gage height, 2.97 feet); minimum, 7.0 second-feet September 10 and 11 (gage height, 0.52 foot).

1927–28: Maximum discharge, that of January 3, 1928; minimum, 6.3 second-feet August 18–23, 1927 (gage height, 0.50 foot).

REMARKS.—Records excellent. Discharge estimated August 27 to September 10. Natural regulation in Ohop Lake. No diversions. Many discharge measurements furnished by city of Tacoma.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	77	43	230	99	60	28	272	192	28	19	8.6	7.5
2	74	48	228	277	54	28	211	172	30	18	8.6	7.4
3	315	46	199	459	53	27	177	147	29	19	8.3	7.4
4	381	91	163	433	53	28	168	124	27	40	8.3	7.4
5	254	180	147	317	48	122	154	104	26	46	8.3	7.3
6	177	317	129	270	46	102	131	90	25	33	8.3	7.2
7	126	280	111	213	45	82	111	80	24	28	8.3	7.2
8	92	300	106	180	43	77	96	72	23	25	8.5	7.2
9	77	225	120	154	40	94	88	64	22	23	8.5	7.1
10	74	168	109	129	39	192	84	60	22	22	8.5	7.0
11	77	133	94	161	43	317	86	56	22	20	8.5	7.0
12	62	120	90	301	42	254	224	52	21	20	8.2	9.6
13	93	104	80	433	40	194	272	48	21	18	8.2	9.6
14	120	104	72	317	42	154	216	46	21	17	8.2	11
15	90	142	67	228	40	126	170	43	23	17	7.8	11
16	72	154	124	172	39	120	145	40	21	16	7.8	9.3
17	60	154	113	140	38	102	133	38	21	15	7.8	8.9
18	53	189	98	115	37	86	131	36	20	15	7.8	8.9
19	48	192	90	98	36	79	120	35	18	14	7.8	9.3
20	43	187	84	86	35	80	109	34	21	14	7.4	8.9
21	38	187	75	79	34	84	102	33	25	13	7.8	8.9
22	36	156	68	72	34	92	98	31	21	12	7.8	8.9
23	39	138	64	64	33	94	98	30	20	12	7.8	8.9
24	49	200	59	59	32	122	158	29	20	12	7.8	8.9
25	43	472	56	54	31	124	133	28	18	11	7.8	8.9
26	39	368	53	52	31	120	113	27	18	11	7.8	8.9
27	36	272	54	50	30	115	100	26	18	11	7.8	8.9
28	35	274	58	52	30	255	96	27	20	10	7.7	8.9
29	39	250	58	58	29	262	90	31	22	9.6	7.6	8.9
30	52	228	46	58	-------	297	140	33	20	9.6	7.6	8.9
31	45	-------	46	60	-------	330	-------	30	-------	9.6	7.6	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	381	35	90.8	5,580
November	472	43	191	11,400
December	230	46	99.7	6,130
January	459	50	169	10,400
February	60	29	39.9	2,300
March	330	27	135	8,300
April	272	84	141	8,390
May	192	26	59.9	3,680
June	30	18	22.2	1,320
July	46	9.6	18.1	1,110
August	9.6	7.4	8.25	507
September	11	7.0	8.51	506
The year	472	7.0	82.1	59,600

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, 1928.

EXTREMES.—Maximum discharge during year, 25,400 second-feet November 25 (gage height, 13.55 feet); minimum, 1,440 second-feet September 30 (gage height, 2.41 feet).

1914–1928: Maximum discharge, 40,500 second-feet December 18, 1917 (gage height, 34.15 feet [1]); minimum, 726 second-feet November 18, 1917 (gage height, 17.36 feet [1]).

REMARKS.—Records good. All diversions returned to river above gage.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,040	2,270	7,350	2,620	2,190	2,350	6,660	5,970		2,620		1,890
2	3,280	2,620	11,200	4,870	2,190	2,190	5,970	4,650		2,620		1,820
3	7,020	3,160	9,750	11,700	2,190	2,030	5,090	3,700		2,820		1,750
4	15,300	4,870	7,350	15,200	2,110	1,630	3,860	3,410		3,700		1,820
5	7,810	10,200	5,750	8,050	1,890	2,440	3,550	3,280		4,870		1,960
6	4,650	11,800	7,350	8,050	2,440	2,930	3,280	4,650		3,700	2,200	1,890
7	3,550	9,010	4,030	6,430	2,190	2,720	3,040	5,750		3,280		1,820
8	3,040	7,120	3,860	5,530	2,190	2,620	2,530	4,430		3,160		1,690
9	2,720	5,530	3,860	6,430	2,270	2,720	2,930	4,650		3,040		1,570
10	3,860	4,220	3,550	6,430	2,190	3,700	2,930	6,200	2,890	2,930		1,690
11	3,700	3,550	3,280	6,430	2,270	6,200	2,930	6,430		2,820		1,750
12	3,280	3,550	3,550	11,300	1,960	5,090	3,410	5,970		2,930	2,720	1,750
13	4,030	4,030	3,280	18,800	2,190	4,430	4,870	4,030			2,530	1,750
14	5,970	4,030	3,040	10,500	2,110	3,550	5,090	4,030			2,270	1,890
15	4,220	4,870	2,820	6,660	2,190	3,040	4,030	4,430			2,110	1,820
16	2,820	8,290	3,160	5,090	2,110	3,280	5,090	5,750			1,960	1,570
17	2,720	10,800	3,280	4,030	2,110	3,280	5,090	5,090			2,030	1,750
18	2,930	11,800	3,040	2,930	2,190	2,720	3,700	4,650			2,030	1,690
19	3,160	9,250	3,040	2,530	1,960	3,700	3,550	4,650	2,930		1,750	1,690
20	3,040	7,580	2,820	2,350	2,190	4,650	3,160	5,310	2,930		1,960	1,690
21	2,820	6,660	2,820	2,190	2,270	5,090	2,930	7,580	3,270	3,000	1,960	1,630
22	2,620	5,310	2,720	2,030	2,030	5,970	2,620	8,290	3,190		1,890	1,630
23	2,530	4,870	2,620	2,440	2,190	5,970	3,550	7,580	4,030		1,960	1,570
24	2,820	6,520	2,440	2,110	2,270	5,750	6,430	6,890	3,030		2,030	1,750
25	2,440	22,100	2,030	2,110	2,110	4,650	5,970	5,750	4,030		2,030	1,750
26	2,350	14,200	2,030	2,110	1,890	5,090	5,530	5,750	3,700		1,890	1,690
27	2,270	9,010	2,440	2,030	2,110	5,090	5,750	4,870	3,570		1,960	1,570
28	2,270	11,800	2,720	1,960	2,530	5,530	5,530	4,220	3,270		1,820	1,630
29	2,270	10,200	2,720	1,890	2,530	5,970	4,030	4,430	3,030		1,820	1,570
30	2,110	7,350	2,440	2,350	-------	6,430	4,030	4,220	2,830		1,820	1,460
31	2,270	-------	2,530	2,110	-------	8,050	-------	3,280	-------		1,890	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	15,300	2,110	3,770	----------	----------	232,000
November	22,100	2,270	7,550	----------	----------	449,000
December	11,200	2,030	3,960	----------	----------	243,000
January	18,800	1,890	5,460	----------	----------	336,000
February	2,530	1,890	2,170	----------	----------	125,000
March	8,050	1,630	4,160	----------	----------	256,000
April	6,660	2,530	4,240	----------	----------	252,000
May	8,290	3,280	5,160	----------	----------	317,000
June	----------	----------	3,010	----------	----------	179,000
July	4,870	----------	3,080	----------	----------	189,000
August	----------	1,750	2,080	----------	----------	128,000
September	1,960	1,460	1,720	----------	----------	102,000
The year	22,100	1,460	3,870	4.23	57.58	2,810,000

NOTE.—Monthly discharge in second-feet per square mile and run-off in inches not computed, owing to regulation. Yearly figures closely represent natural flow.

[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 is 564.23 feet above mean sea level.

RECORDS AVAILABLE.—June, 1927, to September, 1928.

EXTREMES.—Maximum discharge during year, 302 second-feet January 4 (gage height, 3.31 feet); minimum, 2.5 second-feet September 10 (gage height, 0.82 foot).

1927–28: Maximum discharge, that of January 4, 1928; minimum, that of September 10, 1928.

REMARKS.—Records excellent, except those for December, which are good. Discharge estimated October 7–22 and August 26 to September 9. Flow subject to natural regulation in Kapowsin Lake. Many discharge measurements furnished by city of Tacoma.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36	43	208	58	61	33	257	126	27	13	7.0	3.1
2	39	44	193	94	58	32	222	137	27	13	7.0	3.0
3	57	45	176	208	56	31	199	132	27	13	7.0	3.0
4	118	50	157	293	54	31	185	124	26	17	7.0	2.9
5	139	68	142	266	52	38	169	114	25	22	6.7	2.8
6	125	104	129	231	52	45	153	104	24	24	6.4	2.8
7		137	118	200	52	49	137	94	22	24	6.4	2.7
8		155	108	175	51	51	124	87	20	24	6.1	2.6
9		156	110	158	49	57	112	80	20	23	5.6	2.6
10		140	105	142	48	84	104	74	20	22	5.4	2.5
11	70	126	98	137	49	159	98	68	18	21	5.4	2.8
12		117	94	154	49	190	112	62	18	20	5.4	3.0
13		111	90	206	49	178	142	58	18	19	5.2	3.0
14		105	85	214	49	159	146	55	17	18	5.2	3.6
15		108	79	187	48	142	142	51	17	17	5.2	3.8
16		114	82	164	46	129	135	48	17	16	5.0	3.8
17		117	87	148	44	116	128	45	17	14	5.0	3.8
18		134	87	132	43	104	123	43	16	14	5.0	4.0
19	60	138	85	118	41	95	116	41	16	13	5.0	3.6
20		142	82	108	40	92	108	39	16	13	4.8	3.6
21		143	76	99	39	92	101	38	16	12	4.6	3.6
22		138	71	94	38	95	95	37	16	11	4.6	3.6
23	45	130	66	87	38	96	92	34	15	11	4.4	3.8
24	43	138	64	80	38	105	102	33	14	10	4.2	3.8
25	41	223	58	75	37	116	104	31	14	9.5	3.6	3.8
26	42	266	57	71	36	114	98	30	14	9.1	3.5	3.8
27	43	230	57	67	36	108	95	28	14	8.1	3.5	3.8
28	40	239	60	65	35	130	92	28	14	7.8	3.4	3.8
29	41	239	61	63	34	174	91	28	14	7.5	3.3	3.8
30	43	222	57	65	------	200	99	29	14	7.2	3.3	4.0
31	43	------	53	62	------	248	------	28	------	7.0	3.2	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	139	36	62.4	3,840
November	266	43	137	8,150
December	208	53	96.6	5,940
January	293	58	136	8,360
February	61	34	45.6	2,620
March	248	31	106	6,520
April	257	91	129	7,680
May	137	28	62.1	3,820
June	27	14	18.4	1,090
July	24	7.0	14.8	910
August	7.0	3.2	5.08	312
September	4.0	2.5	3.36	200
The year	293	2.5	68.2	49,400

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, 1928.

EXTREMES.—Maximum discharge during year, 3,430 second-feet January 13 (gage height, 9.33 feet); minimum, 2.5 second-feet September 9 and 10 (gage height, 3.80 feet).

1914–1928: Maximum discharge, 6,290 second-feet December 19, 1917 (gage height, 11.4 feet); no flow November 25, 1917, and August 18, 1923.

REMARKS.—Records excellent except those for January, which are good. Discharge estimated from power-plant output April 2–16 and August 25 to September 4. All diversions returned to river above station. Flow partly controlled by storage and release of water in Cedar Lake Reservoir for use of power plant. Some discharge measurements furnished by city of Seattle.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	89	304	1,370	477	187	378	392	213	119	205	111	20
2	76	276	1,590	397	186	379	268	388	139	119	103	20
3	197	316	1,810	509	200	292	263	524	189	109	86	19
4	143	325	1,600	334	257	218	235	466	114	195	81	19
5	128	330	1,390	314	370	392	174	458	130	98	60	20
6	170	426	1,180	305	255	382	201	443	129	92	96	16
7	164	366	1,010	289	269	359	170	399	119	87	113	18
8	116	338	824	266	290	302	354	458	117	218	56	18
9	65	345	744	300	286	252	189	456	106	88	48	14
10	138	349	586	342	266	188	170	460	190	86	48	16
11	174	337	457	489	264	432	225	446	124	80	46	20
12	216	351	468	1,420	336	224	213	475	128	81	43	22
13	244	618	424	3,100	278	207	216	474	120	84	42	21
14	252	393	244	2,690	289	204	166	476	152	68	42	32
15	268	359	146	2,060	299	214	251	481	129	214	42	30
16	234	360	175	1,660	265	176	209	487	154	95	42	148
17	252	384	171	1,260	300	172	238	484	111	85	43	198
18	258	400	154	1,010	340	262	217	462	124	80	42	178
19	248	423	138	823	402	108	206	452	119	74	36	86
20	242	766	129	652	346	98	202	380	112	75	35	49
21	245	518	110	538	375	100	212	454	112	71	35	45
22	262	534	94	413	246	176	134	435	109	202	34	51
23	229	500	86	388	354	230	180	472	108	52	33	54
24	257	540	84	351	354	112	128	464	124	40	32	49
25	260	1,340	86	346	338	198	139	451	138	40	35	49
26	273	1,680	80	390	366	134	138	446	119	46	34	41
27	270	1,500	80	382	345	130	123	422	132	68	135	44
28	272	1,600	80	372	331	130	126	422	125	66	46	42
29	317	1,660	82	343	358	118	206	212	104	66	19	40
30	246	1,480	202	390	------	184	157	350	98	70	19	44
31	258	------	485	329	------	156	------	187	------	102	19	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	317	65	212	------	------	13,000
November	1,680	276	637	------	------	37,900
December	1,810	80	519	------	------	31,900
January	3,100	266	740	------	------	45,500
February	402	186	302	------	------	17,400
March	432	98	223	------	------	13,700
April	392	123	203	------	------	12,100
May	524	187	427	------	------	26,300
June	190	98	126	------	------	7,500
July	218	40	98.6	------	------	6,060
August	135	19	53.4	------	------	3,280
September	193	14	47.1	------	------	2,800
The year	3,100	14	299	3.60	48.87	217,000

NOTE.—Monthly discharge in second-feet per square mile and run-off in inches not computed, owing to regulation. Yearly figures closely represent natural flow.

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 30, 1928.

EXTREMES.—Maximum discharge during year, 4,860 second-feet January 13 (gage height, 10.95 feet); minimum, 231 second-feet September 27 (gage height, 4.39 feet).

1914–1928: Maximum discharge, 7,500 second-feet December 20, 1917 (gage height, 13.55 feet); minimum, 162 second-feet October 15, 1914. Discharge may have been lower sometime October 15–26, 1925, when water was below intake to stilling well.

REMARKS.—Records excellent. No diversions that are not returned to river above station. Flow partly controlled by storage and release of water in Cedar Lake Reservoir.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	378	692	2,470	965	713	710	1,060	870	496	505	391	277
2	364	705	2,740	912	710	703	954	962	511	418	391	277
3	734	785	3,010	1,440	698	624	875	1,130	553	434	373	280
4	836	1,100	2,650	1,400	740	560	791	1,040	480	559	362	277
5	602	1,180	2,470	1,260	824	857	716	1,020	486	469	346	277
6	564	1,310	2,140	1,250	746	802	689	986	480	436	370	277
7	517	1,110	1,890	1,130	749	772	680	922	468	416	386	272
8	462	1,040	1,700	1,100	776	728	858	972	466	522	348	272
9	429	970	1,570	1,110	807	746	648	966	452	408	334	270
10	412	940	1,330	1,100	720	733	637	958	506	403	329	267
11	584	914	1,160	1,320	730	1,150	682	934	466	390	328	264
12	594	908	1,150	2,860	776	846	774	954	466	390	326	274
13	665	1,210	1,050	4,560	722	782	747	944	451	387	325	267
14	677	1,160	853	4,000	724	712	697	942	472	382	323	277
15	662	1,040	723	3,230	734	698	773	920	470	478	322	274
16	615	1,230	812	2,600	728	676	712	929	474	399	317	328
17	610	1,230	762	2,180	746	654	750	917	441	394	316	400
18	630	1,180	732	1,820	768	732	728	890	444	395	310	386
19	624	1,170	712	1,590	800	586	725	866	444	400	308	326
20	598	1,580	687	1,380	748	560	721	817	431	394	310	274
21	594	1,290	658	1,220	758	574	716	826	430	387	306	262
22	608	1,240	626	1,070	706	672	648	876	422	488	304	260
23	582	1,200	608	1,030	766	738	702	872	415	386	300	267
24	604	1,320	604	961	734	651	721	855	420	356	297	260
25	593	2,060	598	935	718	716	677	836	432	349	290	255
26	615	2,380	591	949	718	642	666	822	425	346	282	247
27	606	2,430	604	931	672	623	645	792	428	358	312	238
28	620	2,650	612	926	666	675	670	790	434	362	346	240
29	686	2,740	598	886	680	668	718	654	420	360	282	240
30	619	2,560	626	908	------	877	790	676	406	358	278	252
31	618	------	922	875	------	1,000	------	607	------	386	277	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	836	364	590	----------	----------	36,300
November	2,740	692	1,380	----------	----------	82,100
December	3,010	591	1,210	----------	----------	74,400
January	4,560	875	1,550	----------	----------	95,300
February	824	666	737	----------	----------	42,400
March	1,150	560	726	----------	----------	44,600
April	1,060	637	739	----------	----------	44,000
May	1,130	607	889	----------	----------	54,700
June	553	406	456	----------	----------	27,100
July	559	346	410	----------	----------	25,200
August	391	277	325	----------	----------	20,000
September	400	238	278	----------	----------	16,500
The year	4,560	238	775	5.74	78.12	563,000

NOTE.—Monthly discharge in second-feet per square mile and run-off in inches not computed, owing to regulation. Yearly figures closely represent natural flow.

SNOHOMISH RIVER BASIN

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, and 2 miles southeast of Index.

DRAINAGE AREA.—355 square miles.

RECORDS AVAILABLE.—October, 1902, to September, 1905; April, 1911, to September, 1928.

EXTREMES.—Maximum discharge during year, 29,400 second-feet January 12 (gage height, 17.5 feet); minimum, 304 second-feet September 11 (gage height, 0.84 foot).

1902–1905, 1911–1928: Maximum discharge, 47,000 second-feet December 18, 1917 (gage height, 22.6 feet); minimum, 214 second-feet October 15–21 and 23, 1925.

REMARKS.—Records good. No diversions above gage.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,390	2,390	10,100	830	1,420	605	2,760	3,700	2,960	1,880	650	374
2	1,880	4,170	19,200	880	1,420	605	2,210	3,160	3,810	1,880	610	374
3	3,590	5,620	9,490	6,360	1,420	605	1,960	2,570	3,160	1,960	575	374
4	4,540	11,800	5,480	6,510	1,420	605	1,720	2,390	3,160	2,210	575	374
5	3,810	7,820	4,670	5,480	1,420	1,280	1,800	2,860	3,260	2,300	575	350
6	2,960	6,210	3,590	5,340	1,720	1,100	1,560	4,050	3,810	1,880	540	350
7	2,480	4,540	3,160	3,810	1,720	1,880	1,420	4,670	2,960	1,800	540	350
8	2,390	3,590	2,960	6,830	1,490	2,760	1,350	4,800	2,570	1,720	540	327
9	7,480	2,960	2,760	5,760	1,350	3,590	1,420	4,670	2,660	1,640	510	327
10	5,760	2,570	2,210	5,200	1,280	5,340	1,490	4,800	2,960	1,560	510	327
11	4,050	2,390	2,040	10,900	1,420	4,540	1,420	5,480	3,480	1,560	540	304
12	4,540	2,040	1,960	28,200	1,220	3,060	1,880	5,200	3,060	1,560	480	350
13	5,910	2,040	1,720	14,400	1,160	2,390	1,800	4,540	2,760	1,420	510	452
14	4,050	4,670	1,560	6,990	1,040	2,210	1,720	5,480	2,960	1,350	480	1,280
15	2,760	4,540	1,420	4,930	980	1,960	1,880	6,210	3,160	1,160	452	650
16	2,300	12,600	1,880	3,810	980	1,880	1,880	5,760	2,760	1,160	452	480
17	2,660	10,300	1,560	3,060	930	2,040	2,210	4,540	2,480	1,100	452	425
18	3,810	8,910	1,350	2,570	930	2,210	2,040	4,800	2,300	1,100	425	425
19	3,480	7,820	1,280	2,210	880	2,660	1,880	6,360	2,660	1,040	425	425
20	2,760	6,060	1,220	1,880	880	3,590	1,720	8,720	3,160	930	425	399
21	2,300	4,540	1,100	1,720	880	4,290	1,640	8,530	3,480	930	425	374
22	2,040	3,480	1,040	1,560	880	5,760	1,720	7,480	3,160	980	425	374
23	2,480	3,160	980	1,560	780	4,540	2,570	6,060	3,480	980	425	374
24	2,210	9,690	930	1,420	735	4,290	3,480	5,910	3,500	930	425	350
25	1,880	13,100	930	1,350	735	3,370	3,060	7,310	3,160	930	425	350
26	1,720	6,060	880	1,220	735	2,760	2,960	6,360	2,960	880	399	350
27	1,420	5,200	980	1,220	690	2,390	3,810	5,340	2,570	830	399	327
28	1,720	6,210	930	1,160	690	2,210	3,700	4,290	2,300	780	374	327
29	1,880	4,290	880	1,280	645	2,480	3,060	4,670	2,090	735	374	327
30	1,880	3,480	830	1,560	-------	3,370	4,540	3,590	1,960	735	374	327
31	1,720	-------	780	1,560	-------	3,370	-------	3,060	-------	690	374	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	7,480	1,420	3,060	8.62	9.94	188,000
November	13,100	2,040	5,740	16.2	18.07	342,000
December	19,200	780	2,900	8.17	9.42	178,000
January	28,200	830	4,570	12.9	14.87	281,000
February	1,720	645	1,100	3.10	3.34	63,300
March	5,760	605	2,700	7.61	8.77	166,000
April	4,540	1,350	2,220	6.25	6.97	132,000
May	8,720	2,390	5,080	14.3	16.49	312,000
June	3,810	1,960	2,960	8.34	9.30	176,000
July	2,300	690	1,310	3.69	4.25	80,600
August	650	374	474	1.34	1.54	29,100
September	1,280	304	407	1.15	1.28	24,200
The year	28,200	304	2,720	7.66	104.24	1,970,000

STILLAGUAMISH RIVER BASIN

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, 1928.

EXTREMES.—Maximum discharge during year, 7,290 second-feet January 12 (gage height, 9.4 feet); minimum, 22 second-feet September 9 and 10 (gage height, 0.21 foot).

1917–1928: Maximum discharge, 10,400 second-feet December 12, 1921 (gage height, 11.7 feet; from high-water mark); minimum, 18.5 second-feet August 15–17, 1926 (gage height, 0.25 foot).

REMARKS.—Records good. Discharge estimated November 7 to December 7 and December 31 to January 2. No diversions above station.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	293	422		148	435	162	600	1,300	265	106	44	25
2	218	1,550	2,000	237	573	158	435	925	672	99	42	25
3	904	1,760		3,950	500	155	366	642	363	103	40	25
4	1,970	980	760	2,940	540	155	375	560	320	221	39	24
5	1,030	735	682	2,590	642	168	482	642	293	195	38	24
6	665	898	605	2,000	808	175	372	735	339	142	36	23
7	465		528	1,080	560	266	345	665	288	117	36	23
8	435		450	2,160	435	334	320	642	222	102	35	23
9	1,340		420	1,460	357	1,110	317	580	210	92	33	22
10	1,160		351	1,380	360	1,950	371	600	250	82	33	22
11	880		348	4,340	592	1,200	375	642	364	78	36	23
12	1,260		345	5,080	388	612	450	540	231	75	35	30
13	984	1,100	266	1,660	354	756	390	465	197	71	36	44
14	560		230	870	339	444	363	566	238	67	40	181
15	420		237	580	301	405	420	580	500	66	33	62
16	798		250	450	263	540	450	482	345	65	33	40
17	420		204	375	256	482	540	390	235	58	32	33
18	1,510		181	348	251	600	500	487	203	56	30	35
19	1,620	1,600	168	312	233	688	420	580	212	56	30	43
20	665		162	278	224	870	360	580	278	54	30	33
21	450		156	263	216	1,440	354	560	249	50	30	30
22	390		141	238	214	2,430	500	465	197	48	29	29
23	1,050		137	224	193	1,070	713	375	175	47	29	29
24	698		132	212	175	925	870	390	164	46	28	28
25	435	1,200	130	216	181	642	580	420	147	46	28	29
26	345		175	224	199	500	580	348	147	45	28	30
27	298		309	222	193	482	870	298	140	46	27	31
28	566		220	260	175	500	870	245	128	45	27	31
29	759		150	368	166	822	620	435	120	46	26	31
30	786		102	1,170	-------	1,530	2,270	450	109	45	26	29
31	450	-------	82	724	-------	1,100	-------	306	-------	45	25	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,970	218	769	9.15	10.55	47,300
November	-------	-------	1,140	13.6	15.17	67,800
December	-------	82	449	5.35	6.17	27,600
January	5,080	148	1,170	13.9	16.03	71,900
February	808	166	349	4.15	4.48	20,100
March	2,430	155	731	8.70	10.03	44,900
April	2,270	317	549	6.54	7.30	32,700
May	1,300	245	545	6.49	7.48	33,500
June	672	109	253	3.01	3.36	15,100
July	221	45	77.9	.927	1.07	4,790
August	44	25	32.7	.389	.45	2,010
September	181	22	35.2	.419	.47	2,090
The year	5,080	22	510	6.07	82.56	370,000

SKAGIT RIVER BASIN

SKAGIT RIVER BELOW RUBY CREEK, NEAR MARBLEMOUNT, WASH.

LOCATION.—Water-stage recorder in Whatcom County, three-fourths 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, 1928.

EXTREMES.—Maximum discharge during year, 22,200 second-feet May 22 (gage height, 11.4 feet); minimum, 782 second-feet September 30 (gage height, 3.66 feet).

1919–1928: Maximum discharge, 45,700 second-feet December 12, 1921 (gage height, 16.1 feet); minimum, 450 second-feet October 13, 1925 (gage height, 3.0 feet).

REMARKS.—Records excellent. No diversions above gage.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,960	2,350	3,300		1,830	1,180	2,490	4,090	6,440	4,180	1,960	1,380
2	1,830	2,350	6,310	1,600	1,770	1,160	2,350	3,680	6,690	4,180	1,890	1,430
3	1,770	2,490	7,200		1,770	1,150	2,280	3,450	6,440	4,850	1,890	1,330
4	1,770	2,920	5,960	2,490	1,770	1,150	2,150	3,300	6,440	4,750	1,830	1,290
5	1,770	2,920	5,280	2,890	1,650	1,160	2,020	3,450	6,690	4,360	1,770	1,210
6	1,650	2,920	4,560	3,680	1,650	1,140	1,960	4,550	6,440	3,920	1,710	1,160
7	1,600	2,780	4,000		1,650	1,200	1,890	6,200	5,730	3,840	1,770	1,010
8	1,650	2,630	3,840		1,600	1,290	1,830	7,460	5,170	3,920	1,830	936
9	3,580	2,420	3,450		1,540	1,380	1,830	8,300	5,280	3,760	1,830	896
10	4,180	2,280	2,920		1,540	1,540	1,830	8,600	6,080	3,680	1,890	896
11	3,600	2,220	2,700	7,200	1,600	1,770	1,770	9,200	6,690	3,840	1,960	880
12	3,600	2,150	2,700		1,540	1,710	1,710	10,200	7,200	4,090	1,650	859
13	4,750	2,080	2,630		1,540	1,650	1,710	9,550	6,440	3,760	1,710	969
14	4,090	2,020	2,490		1,540	1,540	1,650	10,200	5,960	3,450	1,430	2,260
15	3,600	1,890	2,350	5,620	1,480	1,540	1,710	11,300	5,500	3,150	1,330	1,330
16	3,760	2,150	2,280	4,850	1,430	1,480	1,710	12,400	4,960	3,150	1,330	1,080
17	3,680	3,450	2,150	4,270	1,430	1,540	1,770	11,600	4,460	3,150	1,330	1,020
18	4,560	4,000	2,020	3,840	1,430	1,600	1,770	12,000	4,270	3,220	1,330	1,100
19	6,690	4,270	1,960	3,450	1,430	1,830	1,770	13,600	5,060	3,080	1,290	992
20	4,960	4,270	1,890	3,220	1,430	2,350	1,710	16,300	6,080	2,920	1,240	866
21	4,270	3,760	1,770	3,000	1,430	2,850	1,710	19,200	6,080	3,080	1,260	845
22	3,920	3,380	1,710	2,850	1,380	3,840	1,770	21,200	6,440	3,380	1,320	896
23	4,000	3,150	1,650	2,630	1,310	4,000	2,280	16,800	6,940	3,380	1,380	1,000
24	3,600	3,400	1,600	2,420	1,260	3,840	3,380	15,000	7,460	3,300	1,380	984
25	3,220	5,850	1,540	2,350	1,330	3,450	3,840	16,300	7,200	3,150	1,380	888
26	3,000	5,170	1,540	2,220	1,310	3,150	4,180	16,800	7,200	3,080	1,260	866
27	2,850	4,460	1,480	2,150	1,270	3,000	5,170	15,000	6,200	3,080	1,170	880
28	2,780	4,000	1,430	2,020	1,240	2,780	5,280	11,300	5,390	2,920	1,140	838
29	2,850	3,600	1,320	2,020	1,210	2,560	4,560	10,200	5,170	2,630	1,150	824
30	2,630	3,300	1,210	1,960	-------	2,560	4,460	8,300	4,460	2,420	1,200	803
31	2,490	-------	1,210	1,890	-------	2,560	-------	6,940	-------	2,150	1,290	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	6,690	1,600	3,250	3.32	3.83	200,000
November	5,850	1,890	3,150	3.22	3.59	187,000
December	7,200	1,210	2,790	2.85	3.29	172,000
January			3,940	4.03	4.65	242,000
February	1,830	1,210	1,500	1.53	1.65	86,300
March	4,000	1,140	2,060	2.11	2.43	127,000
April	5,280	1,650	2,480	2.54	2.83	148,000
May	21,200	3,300	10,500	10.7	12.34	646,000
June	7,460	4,270	6,020	6.16	6.87	358,000
July	4,850	2,150	3,480	3.56	4.10	214,000
August	1,960	1,140	1,510	1.54	1.78	92,800
September	2,260	803	1,060	1.08	1.20	63,100
The year	21,200	803	3,500	3.58	48.56	2,540,000

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 camp, one-fourth mile above Newhalem Creek and 16 miles above Marblemount. Zero of gage is 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; October, 1920, to September, 1928.

EXTREMES.—Maximum discharge during year, 27,200 second-feet May 21 (gage height, 89.75 feet); minimum, 465 second-feet September 11 (gage height, 79.70 feet).

1908–1914, 1920–1928: Maximum discharge, 60,000 second-feet December 12, 1921 (gage height, 94.2 feet); minimum, 400 second-feet January 31, 1926 (gage height, 79.50 feet).

REMARKS.—Records excellent. Discharge estimated March 22 and 23. Seattle municipal power plant diverts water through pressure tunnel 3 miles above gage and returns it to river at plant just above gage. The entire low-water flow may be carried through plant. Flow partly controlled by storage and release of water at tunnel intake.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,740	2,910	4,450	1,780	2,230	1,530	3,170	5,040	7,550	5,720	3,030	2,640
2	2,500	3,130	9,590	1,690	2,240	1,480	3,020	4,560	8,150	5,790	2,880	2,700
3	2,480	3,630	9,400	2,570	2,200	1,470	2,840	4,210	7,680	7,150	2,970	2,490
4	2,570	4,300	7,670	4,420	2,180	1,440	2,660	3,980	7,830	7,010	2,980	2,330
5	2,420	4,100	6,760	4,930	2,200	1,470	2,520	4,330	8,180	6,290	2,840	2,360
6	2,320	4,090	5,890	5,960	2,280	1,410	2,350	5,850	7,930	5,550	2,750	2,050
7	2,210	3,660	5,120	4,690	2,220	1,480	2,330	7,840	6,860	5,520	3,070	1,640
8	2,390	3,380	4,790	6,510	2,130	1,680	2,250	9,140	6,200	5,670	3,230	1,420
9	6,180	3,130	4,270	8,310	2,080	1,830	2,240	10,000	6,550	5,410	3,380	1,330
10	6,240	2,940	3,630	8,100	2,040	2,080	2,250	10,100	7,580	5,350	3,470	1,390
11	4,950	2,730	3,380	9,720	2,130	2,510	2,170	10,800	8,450	5,840	3,580	1,360
12	5,200	2,640	3,420	18,000	2,060	2,320	2,140	11,600	8,880	6,440	2,740	1,270
13	7,180	2,580	3,210	13,200	2,040	2,220	2,100	10,900	8,150	5,800	2,930	1,760
14	5,620	2,630	3,000	9,680	2,000	2,060	2,070	11,700	7,430	5,100	2,260	4,190
15	4,860	2,470	2,810	7,400	1,920	1,980	2,060	13,100	6,910	4,660	2,130	2,200
16	5,120	3,500	2,730	6,170	1,890	1,970	2,080	13,800	5,990	4,900	2,210	1,660
17	5,020	5,890	2,570	5,340	1,860	1,940	2,190	13,000	5,390	4,960	2,270	1,670
18	7,000	6,090	2,440	4,740	1,830	2,040	2,150	13,500	5,280	4,890	2,240	1,820
19	9,940	6,390	2,320	4,220	1,810	2,370	2,110	16,000	6,700	4,530	2,170	1,470
20	7,030	6,140	2,250	3,830	1,840	3,120	2,080	19,300	7,970	4,430	2,080	1,190
21	5,840	5,170	2,140	3,530	1,800	3,760	2,070	23,000	8,070	4,890	2,190	1,240
22	5,470	4,460	2,070	3,320	1,820	5,380	2,160	24,800	8,650	5,640	2,390	1,450
23	5,600	4,030	2,000	3,080	1,650	5,070	2,760	20,400	9,510	5,810	2,620	1,770
24	4,780	4,650	1,930	2,910	1,630	4,750	4,260	17,200	10,200	5,680	2,690	1,730
25	4,120	8,520	1,860	2,770	1,700	4,440	4,760	19,300	9,940	5,370	2,610	1,470
26	3,740	6,930	1,830	2,620	1,680	4,010	5,160	20,200	9,880	5,170	2,250	1,420
27	3,550	5,850	1,850	2,500	1,660	3,710	6,580	17,700	8,320	5,290	2,020	1,470
28	3,630	5,270	1,760	2,450	1,590	3,440	6,470	13,000	7,240	4,960	1,910	1,410
29	3,810	4,620	1,620	2,350	1,530	3,280	5,550	11,800	6,660	4,430	1,960	1,360
30	3,360	4,110	1,520	2,400	-------	3,290	5,470	9,520	6,090	3,910	2,120	1,300
31	3,110	-------	1,760	2,330	-------	3,360	-------	8,080	-------	3,410	2,350	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	9,940	2,210	4,550	3.92	4.52	280,000
November	8,520	2,470	4,330	3.73	4.16	258,000
December	9,590	1,520	3,550	3.06	3.53	218,000
January	18,000	1,690	5,210	4.49	5.18	320,000
February	2,280	1,530	1,940	1.67	1.80	112,000
March	5,380	1,410	2,670	2.30	2.65	164,000
April	6,580	2,060	3,070	2.65	2.96	183,000
May	24,800	3,980	12,400	10.7	12.34	762,000
June	10,200	5,280	7,670	6.61	7.38	456,000
July	7,150	3,410	5,340	4.60	5.30	328,000
August	3,580	1,910	2,590	2.23	2.57	159,000
September	4,190	1,190	1,790	1.54	1.72	107,000
The year	24,800	1,190	4,610	3.97	54.11	3,350,000

SKAGIT RIVER NEAR CONCRETE, WASH.

LOCATION.—Water-stage recorder in sec. 16, T. 35 N., R. 8 E., at the dalles 2 miles below Baker River and 2½ miles southwest of Concrete. Zero of gage is 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, 1928.

EXTREMES.—Maximum discharge during year, 95,500 second-feet January 12 (gage height, 20.2 feet); minimum, not determined.

1924–1928: Maximum discharge, that of January 12, 1928; minimum, probably less than 2,160 second-feet October 1–24, 1925, when recorder was not operating and gates in Baker River Dam were closed for the first time.

High-water marks at gage height 56.6 feet indicate flood of 500,000 second-feet about 1815. Records of other floods prior to establishment of station are given in Water-Supply Paper 612.

REMARKS.—Records October to January and May to August, excellent; February to April, good; September and estimated periods, fair. Discharge estimated October 1–11, November 14–18, April 6–14, September 7–13, and 16–30. Water that is diverted for operation of power plants upstream is returned to river above station. At very low stages flow of upper river partly controlled by storage and release of water at power plants.

Daily discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		10,500	41,100	6,150	9,600	6,590	12,400	18,000	20,400	16,300	10,000	7,060
2		12,000	47,500	6,520	9,560	6,600	11,400	15,400	23,000	16,700	9,520	7,060
3	9,500	17,600	43,200	16,900	9,490	6,640	10,800	13,800	23,700	20,300	9,380	6,590
4		21,000	29,100	35,200	10,600	6,520	10,300	13,000	22,800	21,500	9,660	6,970
5		21,500	25,300	28,000	8,560	6,440	10,200	13,300	23,400	22,300	9,080	6,970
6		18,800	20,800	32,000	10,000	6,760	9,950	15,400	24,000	18,200	8,880	6,760
7		16,800	18,200	24,400	10,200	7,100	9,700	21,700	20,900	17,300	9,490	5,650
8		14,800	16,800	29,400	9,360	8,720	9,700	24,700	17,400	17,000	9,880	4,800
9	15,000	12,800	15,400	40,600	8,880	9,100	9,550	26,500	18,000	17,500	10,100	4,750
10		11,800	13,100	31,200	8,770	11,800	9,450	27,200	22,100	17,200	10,500	4,650
11		11,000	11,900	40,800	10,600	13,300	9,300	29,200	25,500	17,800	10,600	4,500
12	20,600	10,600	12,300	81,200	8,140	11,900	9,200	31,100	24,800	19,800	9,420	4,450
13	27,800	10,800	11,300	58,200	8,640	10,900	9,200	28,800	23,300	18,100	9,180	6,150
14	22,500		10,700	37,800	8,800	9,960	9,000	29,600	21,600	16,000	8,480	11,200
15	16,800		10,200	28,200	8,360	9,350	9,000	33,200	21,000	13,700	7,760	8,420
16	18,300	20,000	9,880	23,100	8,230	9,580	9,010	35,700	18,500	14,200	7,340	
17	18,500		9,420	19,500	7,960	9,360	9,530	32,700	15,200	14,100	7,560	
18	22,800		8,300	16,700	7,820	8,920	9,420	32,200	14,300	14,800	7,380	5,400
19	39,000	35,200	8,620	15,100	6,840	10,900	9,110	36,200	18,300	13,100	6,580	
20	25,600	29,700	8,400	13,900	7,660	13,100	8,790	43,900	23,200	12,700	6,730	
21	19,700	22,300	7,740	12,900	7,690	15,200	8,490	54,000	26,200	13,300	6,860	
22	18,200	18,100	7,320	11,600	7,370	22,200	7,420	57,000	24,800	15,000	6,820	
23	18,500	16,900	7,280	11,700	7,340	21,300	10,000	49,400	26,800	17,000	7,580	5,000
24	18,400	20,500	7,000	11,100	7,220	18,600	13,500	42,800	30,800	16,700	7,860	
25	13,800	44,900	6,360	10,600	7,130	15,600	14,000	47,200	30,700	16,000	7,790	
26	12,300	31,900	6,380	10,200	6,560	15,100	14,300	50,500	30,400	14,600	6,620	
27	11,600	24,600	7,040	9,840	6,830	14,100	17,700	46,100	25,300	15,200	6,620	
28	12,000	24,400	7,080	9,680	6,880	12,800	18,000	36,200	21,500	14,700	6,480	4,700
29	15,700	20,100	6,690	8,740	6,680	11,800	14,800	33,200	20,100	12,500	6,400	
30	12,400	17,700	6,240	9,530	-------	12,500	16,800	28,500	18,400	11,700	6,590	
31	11,400	-------	6,250	10,600	-------	14,900	-------	23,600	-------	10,900	6,780	-------

Monthly discharge, in second-feet, of Skagit River near Concrete, Wash., 1927–28

Month	Maximum	Minimum	Mean	Per-square mile	Run-off	
					Inches	Acre-feet
October	39,000		16,600			1,020,000
November	44,900		19,900			1,180,000
December	47,500	6,240	14,400			885,000
January	81,200	6,150	22,600			1,390,000
February	10,600	6,560	8,340			480,000
March	22,200	6,440	11,500			707,000
April	18,000	7,420	11,000			655,000
May	57,000	13,000	3,900			1,960,000
June	30,800	14,300	22,500			1,340,000
July	22,300	10,900	16,000			984,000
August	10,600	6,400	8,190			504,000
September	11,200		5,710			340,000
The year	81,200		15,800	5.85	79.45	1,400,000

THUNDER CREEK NEAR MARBLEMOUNT, WASH.

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

DRAINAGE AREA.—111 square miles.

RECORDS AVAILABLE.—February, 1919, to September, 1928.

EXTREMES.—Maximum discharge during year, 3,130 second-feet May 22 (gage height, 8.95 feet); minimum, 150 second-feet February 2[illegible] (gage height, 3.65 feet).

1919–1928: Maximum discharge, 9,720 second-feet December 12, 1921 (gage height, 15.5 feet); minimum, 71 second-feet March 14–17, 1922 (gage height, 2.88 feet). Discharge may have been less in January and February, 1922, when stage-discharge relation was affected by ice.

REMARKS.—Records fair. No diversions above station.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
1	575	390	615		229	157	286	439	762	1,120	1,010	1,230
2	503	503	1,580	300	229	155	273	401	955	1,290	955	1,180
3	470	615	1,150		227	157	260	369	855	1,710	1,060	1,120
4	438	735	855	735	227	159	248	359	955	1,590	1,060	955
5	406	655	775	735	231	161	238	404	1,060	1,350	1,010	1,010
6	390	575	655	735	234	161	229	555	1,010	1,180	1,010	718
7	375	503	538	615	227	173	222	750	808	1,290	1,230	551
8	448	470	503	1,110	220	187	215	865	675	1,350	1,350	475
9	1,490	438	470	1,410	218	198	218	940	808	1,290	1,350	475
10	1,000	406	406	1,200	215	229	222	915	1,060	1,290	1,410	475
11	695	390	390	1,340	218	278	213	990	1,230	1,650	1,410	440
12	899	375	375	2,440	207	248	213	1,040	1,290	1,840	955	390
13	1,580	360	375	1,520	204	236	209	965	1,180	1,530	1,060	785
14	900	360	345	915	200	222	207	1,100	1,060	1,350	718	1,470
15	815	345	330	690	196	218	209	1,340	955	1,230	718	675
16	900	566	316	572	194	211	209	1,400	762	1,470	762	551
17	855	855	288	520	192	215	222	1,310	633	1,470	808	633
18	1,290	815	288	455	190	222	218	1,430	675	1,350	808	633
19	1,980	815	275	423	187	258	215	1,650	1,120	1,230	718	374
20	1,300	735	262	388	187	327	215	2,070	1,470	1,290	718	328
21	950	655	250	365	185	378	218	2,670	1,470	1,590	808	424
22	900	575	238	337	181	504	231	2,680	1,590	1,910	955	592
23	815	503	238	321	171	471	303	2,050	1,840	1,980	1,060	762
24	655	615	238	294	173	423	439	1,910	2,050	2,050	1,120	633
25	575	1,250	227	281	175	378	455	2,400	2,050	1,840	1,060	512
26	503	900	216	268	173	349	487	2,470	2,050	1,840	808	512
27	503	735	216	255	165	330	572	2,050	1,650	1,980	718	551
28	538	655	216	250	161	306	520	1,470	1,470	1,710	178	512
29	538	575	196	248	157	294	455	1,350	1,350	1,470	762	512
30	438	538	178	245	------	294	455	955	1,180	1,350	905	475
31	406	------	178	240	------	297	------	762	------	1,060	1,060	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,980	375	778	7.01	8.08	47,800
November	1,250	345	597	5.38	6.00	35,500
December	1,580	178	425	3.83	4.42	26,100
January	2,440	----------	639	5.76	6.64	39,300
February	234	157	199	1.79	1.93	11,400
March	504	155	264	2.38	2.74	16,200
April	572	207	289	2.60	2.90	17,200
May	2,680	359	1,290	11.6	13.37	79,300
June	2,050	633	1,200	10.8	12.05	71,400
July	2,050	1,060	1,500	13.5	15.56	92,200
August	1,410	718	971	8.75	10.09	59,700
September	1,470	328	665	5.99	6.68	39,600
The year	2,680	155	739	6.66	90.46	536,000

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, 1928.

EXTREMES.—Maximum mean daily discharge during year, 306,000 second-feet May 30; minimum, 18,100 second-feet March 9.

1913–1928: Maximum discharge, 312,000 second-feet June 14 and 15, 1913 (gage height, 41.6 feet); minimum, 9,600 second-feet March 28, 1917 (gage height, 7.40 feet).

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

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	87,000	77,400	46,800	29,500	24,100	19,400	32,800	52,300	295,000	218,000	155,000	75,800
2	85,800	76,200	46,400	29,100	24,000	19,200	33,400	54,400	286,000	219,000	153,000	75,000
3	85,000	74,900	45,500	28,600	23,800	19,000	34,000	56,200	277,000	219,000	149,000	74,400
4	84,100	73,800	44,800	28,200	23,800	18,800	34,600	58,200	268,000	218,000	145,000	73,900
5	82,800	72,800	44,200	28,000	23,600	18,600	35,100	60,800	262,000	218,000	140,000	73,200
6	81,400	71,500	43,500	27,900	23,500	18,400	35,600	64,400	254,000	217,000	137,000	72,400
7	79,600	70,100	42,900	27,800	23,400	18,300	36,000	68,800	247,000	215,000	134,000	72,000
8	78,200	68,600	42,400	27,600	23,300	18,200	36,400	74,000	240,000	213,000	130,000	71,400
9	76,900	67,000	41,800	27,600	23,100	18,100	36,700	79,600	232,000	210,000	128,000	70,700
10	75,500	65,600	41,100	27,400	23,000	18,200	37,100	85,800	224,000	206,000	126,000	70,000
11	74,400	64,300	40,400	27,200	22,800	18,500	37,500	91,000	219,000	202,000	124,000	69,800
12	73,000	63,000	39,700	27,100	22,700	18,700	38,000	96,600	216,000	198,000	124,000	69,200
13	71,800	61,800	39,100	27,200	22,600	19,000	38,500	104,000	213,000	195,000	123,000	68,300
14	70,500	60,500	38,300	27,000	22,500	19,200	38,900	114,000	210,000	194,000	120,000	66,600
15	69,200	59,300	37,700	26,900	22,400	19,300	39,400	123,000	210,000	192,000	117,000	63,800
16	68,000	58,200	37,000	26,800	22,300	19,500	40,000	132,000	210,000	191,000	113,000	62,000
17	67,600	57,200	36,400	26,700	22,100	19,800	40,600	143,000	209,000	185,000	110,000	58,700
18	68,400	56,500	35,800	26,500	22,000	20,000	41,200	153,000	206,000	180,000	106,000	57,200
19	69,300	55,800	35,200	26,400	21,900	20,600	41,900	162,000	203,000	176,000	103,000	55,400
20	70,200	55,100	34,600	26,200	21,700	22,300	42,700	171,000	197,000	171,000	101,000	53,800
21	70,800	54,300	34,000	26,100	21,500	23,900	43,500	180,000	195,000	167,000	98,000	52,300
22	72,300	53,400	33,500	25,900	21,300	26,200	44,200	195,000	193,000	163,000	95,000	51,100
23	74,800	52,700	33,100	25,700	21,000	26,800	45,100	211,000	192,000	160,000	92,200	49,800
24	77,600	52,000	32,800	25,600	20,800	27,300	45,900	225,000	192,000	159,000	89,400	48,500
25	80,700	51,200	32,300	25,400	20,600	27,700	46,700	241,000	196,000	160,000	86,800	47,000
26	81,800	50,300	31,900	25,300	20,300	28,500	47,400	256,000	198,000	159,000	84,100	45,800
27	82,300	49,600	31,600	25,000	20,100	29,200	48,100	273,000	203,000	159,000	81,400	44,700
28	81,800	48,900	31,100	24,800	19,800	30,100	48,800	288,000	209,000	158,000	79,800	43,900
29	80,900	48,100	30,700	24,600	19,600	30,700	49,500	300,000	213,000	158,000	78,200	43,000
30	78,900	47,400	30,300	24,400	------	31,400	50,600	306,000	217,000	158,000	76,900	42,500
31	78,200	------	29,900	24,200	------	32,100	------	302,000	--------	158,000	76,400	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	87,000	67,600	76,700	2.26	2.61	4,720,000
November	77,400	47,400	60,600	1.78	1.99	3,610,000
December	46,800	29,900	37,600	1.11	1.28	2,310,000
January	29,500	24,200	26,700	.79	.91	1,640,000
February	24,100	19,600	22,200	.65	.70	1,280,000
March	32,100	18,100	22,500	.66	.76	1,380,000
April	50,500	32,800	40,700	1.20	1.34	2,420,000
May	306,000	52,300	152,000	4.47	5.15	9,350,000
June	295,000	191,000	223,000	6.56	7.32	13,300,000
July	219,000	158,000	187,000	5.50	6.34	11,500,000
August	155,000	76,400	112,000	3.29	3.79	6,890,000
September	75,800	42,500	60,700	1.79	2.00	3,610,000
The year	306,000	18,100	85,400	2.51	34.16	62,000,000

COLUMBIA RIVER AT KETTLE FALLS, WASH.

LOCATION.—Staff gage in SW. ¼ sec. 23, T. 36 N., R. 37 E., 150 feet above ferry at Kettle Falls. Gage datum is mean sea level.

DRAINAGE AREA.—64,500 square miles.

RECORDS AVAILABLE.—April, 1913, to September, 1928.

EXTREMES.—Maximum discharge during year, 466,000 second-feet, May 30 and 31 (gage height, 1,194.6 feet); minimum, 33,300 second-feet March 7 and 8 (gage height, 1,166.9 feet).

1913–1928: 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, February 16, 1923.

The Weather Bureau reports stage of 44.7 feet on the Marcus gage probably June 7, 1894 (discharge, about 735,000 second-feet).

REMARKS.—Records excellent. Considerable water diverted for irrigation above gage, but amount very small in proportion to flow past gage. No regulation, except effect of natural storage in numerous lakes above gage.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	110,000	105,000	83,200	51,300	45,600	35,100	68,500	107,000	456,000	302,000	194,000	89,000
2	105,000	104,000	83,200	49,100	44,900	35,100	69,300	111,000	449,000	307,000	189,000	87,000
3	105,000	101,000	84,200	45,600	44,900	35,100	70,200	115,000	439,000	307,000	186,000	86,100
4	102,000	101,000	83,200	44,900	44,900	34,500	70,200	117,000	429,000	304,000	181,000	85,100
5	101,000	100,000	83,200	46,300	44,900	33,900	70,200	120,000	420,000	302,000	177,000	86,100
6	98,800	98,800	84,200	49,100	44,900	33,900	70,200	124,000	410,000	302,000	172,000	86,100
7	96,500	97,600	84,200	48,400	44,900	33,300	70,200	133,000	401,000	300,000	164,000	86,100
8	94,300	96,500	83,200	48,400	44,200	33,300	70,200	145,000	387,000	296,000	163,000	85,100
9	92,100	95,400	82,200	48,400	44,200	33,900	70,200	154,000	373,000	291,000	158,000	84,200
10	93,200	95,400	80,300	48,400	43,500	34,500	70,200	164,000	362,000	285,000	156,000	83,200
11	95,400	94,300	77,500	48,400	43,500	35,100	68,500	175,000	355,000	276,000	151,000	80,300
12	94,300	94,300	76,600	47,700	42,800	35,600	68,500	189,000	346,000	270,000	150,000	78,500
13	93,200	94,300	74,700	47,700	42,100	36,200	68,500	199,000	336,000	264,000	148,000	76,600
14	94,300	93,200	72,900	48,400	42,100	37,400	68,500	215,000	332,000	260,000	145,000	74,700
15	95,400	92,100	72,000	48,400	42,100	38,000	67,700	224,000	325,000	256,000	141,000	73,800
16	94,300	90,000	71,100	48,400	41,400	38,700	68,500	240,000	304,000	253,000	137,000	72,000
17	94,800	89,000	69,300	48,400	40,700	39,300	68,500	256,000	320,000	246,000	134,000	71,100
18	95,400	88,000	68,500	49,100	40,700	39,300	69,300	268,000	313,000	239,000	130,000	68,500
19	96,500	88,000	67,700	49,100	40,000	40,700	69,300	283,000	304,000	235,000	124,000	66,800
20	97,600	87,000	66,800	49,100	40,000	41,400	70,200	291,000	300,000	229,000	118,000	65,200
21	97,600	86,100	65,200	49,100	39,300	42,800	70,200	313,000	291,000	224,000	113,000	63,600
22	100,000	85,100	63,600	48,400	39,300	46,300	70,200	327,000	285,000	217,000	110,000	62,000
23	100,000	85,100	62,800	48,400	38,700	53,600	70,200	348,000	281,000	213,000	107,000	60,400
24	102,000	83,200	61,200	47,700	38,000	57,300	72,900	368,000	278,000	212,000	105,000	58,900
25	105,000	83,200	60,400	47,700	37,400	59,600	78,500	382,000	278,000	209,000	101,000	58,100
26	106,000	83,200	59,600	47,000	36,200	60,400	85,100	401,000	281,000	207,000	100,000	56,600
27	107,000	82,200	58,900	47,000	35,200	62,000	89,000	422,000	283,000	202,000	98,800	55,100
28	108,000	83,200	58,100	46,300	35,600	63,600	97,600	444,000	287,000	199,000	96,500	54,300
29	108,000	83,200	57,300	46,300	35,600	63,600	104,000	458,000	293,000	197,000	94,300	52,800
30	107,000	83,200	55,100	45,600	-------	64,400	105,000	466,000	298,000	197,000	92,100	52,000
31	106,000	-------	53,600	45,600	-------	65,200	-------	466,000	-------	197,000	90,000	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	110,000	92,100	99,900	1.55	1.79	6,140,000
November	105,000	82,200	91,400	1.42	1.58	5,440,000
December	84,200	53,600	71,100	1.10	1.27	4,370,000
January	51,300	44,900	47,900	.743	.86	2,950,000
February	45,600	35,600	41,300	.640	.69	2,380,000
March	65,200	33,300	44,000	.682	.79	2,710,000
April	105,000	67,700	74,300	1.15	1.28	4,420,000
May	466,000	107,000	259,000	4.02	4.64	15,900,000
June	456,000	278,000	341,000	5.29	5.90	20,300,000
July	307,000	197,000	252,000	3.91	4.51	15,500,000
August	194,000	90,000	136,000	2.11	2.43	8,360,000
September	89,000	52,000	72,000	1.12	1.25	4,280,000
The year	466,000	33,300	128,000	1.98	26.99	92,800,000

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 is 388.7 feet above mean sea level.

DRAINAGE AREA.—95,500 square miles.

RECORDS AVAILABLE.—January, 1917, to September, 1928; January to December 1910, and May, 1913, to December, 1916, at Wenatchee; January, 1917, at Beverly.

EXTREMES.—Maximum discharge during year, 523,000 second-feet May 31 and June 1 (gage height, 32.6 feet); minimum, 48,800 second-feet March 5–8 (gage height, 3.5 feet).

1913–1928: 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) January 31, 1917, and December 14, 1919.

Maximum stage recorded at Wenatchee by United States Weather Bureau and Great Northern Railway Co., 58.0 feet June 7, 1894 (estimated discharge, 710,000 second-feet). The Chief of Engineers, United States Army,[2] indicates that the gage height of this flood was 59.8 feet at Wenatchee (estimated discharge, 740,000 second-feet).

REMARKS.—Records excellent. Considerable water diverted for irrigation above gage, but amount very small in proportion to flow past gage. No regulation, except the effect of natural storage in the numerous lakes upstream.

Daily discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	124,000	123,000	121,000	73,600	67,600	51,600	96,400	140,000	523,000	327,000	212,000	104,000
2	124,000	123,000	120,000	72,800	66,800	51,000	97,400	141,000	513,000	331,000	211,000	102,000
3	121,000	122,000	124,000	70,200	66,000	50,200	99,300	144,000	503,000	338,000	209,000	99,300
4	120,000	121,000	127,000	67,600	66,000	49,600	103,000	149,000	496,000	338,000	204,000	97,400
5	119,000	120,000	127,000	66,000	65,100	48,800	104,000	151,000	488,000	338,000	200,000	96,400
6	118,000	121,000	126,000	65,100	66,800	48,800	104,000	154,000	478,000	338,000	195,000	96,400
7	124,000	121,000	124,000	65,100	66,800	48,800	104,000	158,000	464,000	335,000	189,000	95,400
8	120,000	122,000	123,000	70,200	66,800	48,800	103,000	167,000	452,000	335,000	183,000	95,400
9	116,000	123,000	122,000	67,600	66,000	53,200	101,000	183,000	442,000	333,000	179,000	96,400
10	114,000	122,000	120,000	68,500	65,100	56,200	101,000	198,000	428,000	324,000	174,000	96,400
11	114,000	122,000	117,000	68,500	65,100	57,800	100,000	211,000	418,000	320,000	169,000	94,500
12	116,000	121,000	113,000	70,200	64,200	58,600	99,300	227,000	406,000	314,000	165,000	93,600
13	116,000	121,000	108,000	75,400	63,400	59,400	97,400	235,000	400,000	307,000	162,000	91,600
14	116,000	120,000	106,000	78,000	62,600	61,000	96,400	249,000	388,000	299,000	159,000	89,800
15	118,000	120,000	105,000	79,000	61,800	63,400	96,400	266,000	374,000	293,000	160,000	88,000
16	117,000	119,000	102,000	79,000	61,000	63,400	96,400	281,000	367,000	287,000	158,000	86,200
17	114,000	119,000	99,300	79,000	60,200	64,200	95,400	303,000	363,000	283,000	153,000	85,200
18	116,000	119,000	97,400	77,200	60,200	64,200	95,400	318,000	360,000	279,000	150,000	84,400
19	116,000	118,000	95,400	76,200	59,400	64,200	95,400	340,000	356,000	273,000	145,000	82,600
20	116,000	118,000	93,600	76,200	59,400	64,200	96,400	358,000	354,000	266,000	139,000	80,800
21	114,000	116,000	91,600	75,400	58,600	66,000	95,400	374,000	351,000	256,000	134,000	79,000
22	118,000	114,000	89,800	75,400	57,800	67,600	96,400	393,000	340,000	251,000	130,000	77,200
23	121,000	113,000	89,800	74,400	57,000	69,400	95,400	411,000	333,000	246,000	127,000	75,400
24	121,000	112,000	88,000	73,600	56,200	71,900	96,400	428,000	331,000	239,000	122,000	72,800
25	122,000	112,000	86,200	73,600	55,400	79,000	98,300	447,000	329,000	235,000	120,000	71,900
26	124,000	114,000	85,200	71,900	53,900	88,000	106,000	464,000	322,000	228,000	117,000	70,200
27	126,000	116,000	83,400	70,200	52,400	89,800	109,000	478,000	324,000	225,000	114,000	68,500
28	127,000	116,000	80,800	70,200	51,600	91,600	118,000	493,000	327,000	222,000	112,000	67,600
29	128,000	117,000	79,000	69,400	51,600	93,600	127,000	506,000	324,000	219,000	110,000	66,000
30	127,000	120,000	78,000	68,500	-------	95,400	135,000	518,000	322,000	217,000	108,000	65,100
31	127,000	-------	73,600	68,500	-------	96,400	-------	523,000	-------	214,000	106,000	-------

[2] Chief of Engrs., U. S. Army, Rept., 1895, pt. 5, p. 3542.

Monthly discharge, in second-feet, of Columbia River at Vernita, Wash., 1927–28

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	128,000	114,000	120,000	1.26	1.45	7,380,000
November	123,000	112,000	119,000	1.25	1.40	7,080,000
December	127,000	73,600	103,000	1.08	1.24	6,330,000
January	79,000	65,100	72,100	.755	.87	4,430,000
February	67,600	51,600	61,200	.641	.69	3,520,000
March	96,400	48,800	65,700	.688	.79	4,040,000
April	135,000	95,400	102,000	1.07	1.19	6,070,000
May	523,000	140,000	303,000	3.17	3.66	18,600,000
June	523,000	322,000	396,000	4.15	4.63	23,600,000
July	338,000	214,000	284,000	2.97	3.42	17,500,000
August	212,000	106,000	155,000	1.62	1.87	9,530,000
September	104,000	65,100	85,600	.896	1.00	5,090,000
The year	523,000	48,800	156,000	1.63	22.21	113,000,000

KOOTENAI RIVER BASIN

KOOTENAI RIVER AT LIBBY, MONT.

LOCATION.—Chain gage on highway bridge in sec. 3, T. 30 N., R. 31 W., at Libby.
DRAINAGE AREA.—11,000 square miles.
RECORDS AVAILABLE.—October, 1910, to September, 1928.
EXTREMES.—Maximum discharge during year, 70,200 second-feet May 27–29 (gage height, 13.8 feet); minimum, 3,550 second-feet February 27.
1910–1928: Maximum discharge, 130,000 second-feet June 21, 1916 (gage height 19.17 feet); minimum, 1,480 second-feet February 7, 1914.
REMARKS.—Records after March 31, good; prior to that date, poor. Discharge interpolated April 11, May 6, September 5–11, 20, 21, and 23.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		12,400					8,230	22,100	42,300	38,000	14,000	6,600
2			9,280				7,890	19,900	36,600	41,600	13,500	6,600
3		11,600		5,670			7,890	17,800	33,100	42,300	13,100	6,600
4							7,560	16,400	31,700	40,900	12,600	6,600
5			9,280				6,910	15,400	31,700	39,400	11,700	6,480
6						3,780	6,590	19,000	32,400	38,000	11,300	6,360
7	10,000						6,590	22,700	31,700	35,800	10,900	6,240
8			7,890		4,800		6,590	29,600	31,700	34,400	10,400	6,120
9							5,970	38,000	29,600	32,400	10,000	6,000
10							6,280	42,300	29,600	31,000	10,000	5,880
11				4,800			6,280	41,600	30,300	29,000	10,000	5,760
12	11,600		7,890				6,280	42,300	30,300	27,000	10,000	5,640
13						5,080	5,970	46,700	31,700	25,800	10,000	5,340
14	12,400						5,970	48,200	34,400	25,100	9,600	5,340
15			6,910				5,370	46,000	35,800	24,500	9,200	5,340
16		8,230			4,270		6,280	47,400	36,600	23,300	8,810	5,340
17	13,300			4,800			6,910	52,000	29,600	22,100	8,430	5,640
18							7,230	55,900	31,700	19,900	7,680	5,340
19	13,700						6,910	56,600	29,600	18,800	7,310	5,340
20			7,230		4,270	4,800	6,910	55,900	29,000	18,800	7,310	5,150
21	15,400						6,590	56,600	27,700	18,300	7,310	4,960
22							6,590	59,600	27,000	17,300	7,310	4,780
23			7,230				7,230	66,200	29,600	17,300	7,310	4,640
24							8,230	68,600	32,400	16,800	7,310	4,510
25	15,900			4,530			10,000	69,400	33,800	16,800	7,310	4,510
26							13,300	68,600	35,200	16,800	7,680	4,510
27					3,550		17,300	70,200	35,800	16,300	7,680	4,510
28			6,590				24,500	70,200	35,800	15,800	7,680	4,510
29		9,280				7,890	24,500	70,200	36,600	15,800	7,310	4,250
30				4,800		7,560	22,700	64,000	36,600	14,900	6,950	4,250
31						7,560		52,800		14,400	6,600	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
April	24,500	5,370	9,180	0.835	0.93	546,000
May	70,200	15,400	46,800	4.25	4.90	2,880,000
June	42,300	27,000	32,700	2.97	3.31	1,950,000
July	42,300	14,400	25,400	2.31	2.66	1,560,000
August	14,000	6,600	9,240	.840	.97	568,000
September	6,600	4,250	5,440	.495	.55	324,000
The year						7,830,000

KOOTENAI RIVER AT LEONIA, IDAHO

LOCATION.—Chain gage on highway bridge in SW. ¼ sec. 17, T. 33 N., R. 34 W., Montana principal meridian, at Leonia, 400 feet east of Montana-Idaho State line and half a mile above mouth of Boulder Creek. Zero of gage is 1,799.58 feet above mean sea level, United States Coast and Geodetic Survey datum.

DRAINAGE AREA.—11,740 square miles.

RECORDS AVAILABLE.—March to September, 1928.

EXTREMES.—Maximum discharge during period, 76,700 second-feet May 24, 25, and 27 (gage height, 16.4 feet); minimum, 5,360 second-feet September 25 (gage height, 1.34 feet).

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

REMARKS.—Records good. No regulation or diversions above station.

Daily and monthly discharge, in second-feet, 1928

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1		11,600	28,300	48,100	39,500	16,200	7,660
2		11,300	25,400	41,200	44,000	14,800	7,660
3		11,000	22,600	37,400	44,000	14,200	7,660
4		10,400	21,500	35,300	43,400	13,800	7,660
5		9,810	21,100	35,300	41,200	13,200	7,660
6		9,530	23,800	35,300	39,500	12,900	7,660
7		8,980	31,000	34,800	37,400	12,200	7,660
8		8,710	39,000	34,300	36,300	11,600	7,410
9		8,710	47,500	33,300	34,800	11,300	7,410
10		8,440	52,300	32,800	33,300	11,000	7,160
11		8,440	52,300	32,800	31,000	10,700	6,920
12		8,440	53,600	32,800	29,200	11,000	6,920
13		8,440	56,700	33,300	27,900	11,000	7,160
14		8,180	58,700	35,300	27,400	11,000	6,680
15		8,440	56,100	38,400	27,000	10,700	6,450
16		8,710	57,400	38,400	25,800	10,100	6,450
17		9,250	60,600	36,800	24,200	9,530	6,680
18		10,100	64,700	33,800	22,600	9,250	6,450
19		9,810	65,300	31,900	20,800	8,440	6,450
20		9,810	64,700	31,400	20,400	8,440	6,220
21		9,530	65,300	30,100	20,000	8,440	6,220
22		9,530	69,500	29,600	19,700	8,440	6,220
23		9,530	73,100	31,400	18,600	8,710	6,000
24		11,300	76,700	34,300	18,600	8,440	5,780
25	13,800	14,800	76,700	35,300	18,600	8,440	5,570
26	12,600	18,600	75,300	36,800	18,200	8,440	5,570
27	11,600	24,600	76,000	37,900	17,900	8,710	5,780
28	10,700	31,400	75,300	37,400	17,600	8,180	5,780
29	10,400	32,800	73,800	37,900	17,600	8,180	5,570
30	9,810	30,100	69,500	39,000	17,200	7,920	5,780
31	11,000		58,000		16,900	7,660	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
March 25–31	13,800	9,810	11,400	0.971	0.25	158,000
April	32,800	8,180	12,700	1.08	1.20	756,000
May	76,700	21,100	54,600	4.65	5.36	3,360,000
June	48,100	29,600	35,400	3.02	3.37	2,110,000
July	44,000	16,900	27,400	2.33	2.69	1,680,000
August	16,200	7,660	10,400	.886	1.02	640,000
September	7,660	5,570	6,680	.569	.63	397,000
The period						9,100,000

KOOTENAI RIVER AT KATKA, IDAHO

LOCATION.—Staff gage in NE. ¼ sec. 25, T. 62 N., R. 2 E., 3,000 feet downstream from Great Northern Railway station at Katka and 3¼ miles above Moyie River. Zero of gage is 1,700.00 feet above mean sea level, United States Coast and Geodetic Survey datum.

DRAINAGE AREA.—11,860 square miles.

RECORDS AVAILABLE.—April to September, 1928.

EXTREMES.—Maximum discharge during period, 77,800 second-feet May 25 and 27 (gage height, 93.5 feet); minimum, 5,380 second-feet September 30 (gage height, 75.5 feet).

REMARKS.—Records May to September, good; for April, fair. Discharge estimated April 3, 4, and May 18. No regulation or diversions above station.

Daily and monthly discharge, in second-feet, 1928

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	29,100	49,500	39,700	15,900	7,740	16	8,990	57,800	39,700	26,300	10,500	6,540
2	11,600	26,700	42,000	44,300	15,600	7,740	17	9,240	61,300	37,900	24,800	9,750	6,780
3	11,100	24,000	38,400	44,800	14,700	7,740	18	10,000	65,000	34,900	23,000	9,240	6,780
4	10,500	21,900	36,600	43,800	14,400	7,740	19	10,000	66,300	32,800	21,500	8,990	6,420
5	10,000	21,200	36,200	42,400	13,800	7,990	20	10,000	65,300	32,000	21,200	8,490	6,180
6	9,750	23,700	36,600	40,600	13,300	7,990	21	9,750	65,800	31,100	20,800	8,490	6,180
7	9,240	31,100	35,800	38,400	12,700	7,740	22	9,750	69,300	30,300	20,100	8,490	6,070
8	8,990	38,800	35,800	37,500	12,100	7,740	23	9,750	73,800	31,500	19,500	8,490	5,960
9	8,740	46,600	34,000	35,800	11,600	7,500	24	11,300	77,300	34,500	19,100	8,740	5,720
10	8,490	53,400	33,600	33,600	11,300	7,260	25	14,400	77,800	35,600	18,800	8,740	5,720
11	8,490	53,400	33,600	32,000	11,300	7,020	26	17,800	76,800	37,100	18,500	8,990	5,610
12	8,490	54,400	33,600	29,500	11,100	6,780	27	25,600	77,800	38,400	18,100	9,240	5,500
13	8,240	57,400	34,000	28,300	11,100	6,540	28	31,500	76,800	38,400	17,800	8,990	5,500
14	8,240	59,300	37,900	27,900	11,100	6,540	29	33,600	74,300	38,400	17,200	8,740	5,500
15	8,490	57,400	38,400	27,500	10,800	6,540	30	31,100	71,300	39,300	16,900	8,490	5,500
							31	-------	61,300	-------	16,200	7,990	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	A cre-feet
April 2–30	33,600	8,240	12,900	1.09	1.13	742,000
May	77,800	21,200	55,400	4.67	5.38	3,410,000
June	49,500	30,300	36,300	3.06	3.41	2,160,000
July	44,800	16,200	27,900	2.35	2.71	1,720,000
August	15,900	7,990	10,700	.902	1.04	658,000
September	7,990	5,500	6,690	.564	.63	398,000
The period						9,090,000

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. Zero of gage is 1,754.08 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS AVAILABLE.—October, 1927, to September, 1928. From April, 1925, to September, 1927, records were collected by Dominion Water Power and Reclamation Service of Canada.

EXTREMES.—Maximum water-surface elevation during year, 1,774.75 feet May 28; minimum, 1,757.58 feet February 21.

REMARKS.—Records are good. Elevations are affected by backwater from Kootenai Lake. Channel frozen below gage December 8 to March 7. Gage-height records furnished by Dominion Water Power and Reclamation Service of Canada.

Daily elevation, in feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	60.60	61.74	60.18			57.84		64.26	71.35		61.08	58.74
2		60.88	60.88			57.84	60.38	63.84	69.55	66.75	60.93	
3	60.53	60.73	60.93			57.84	60.18	63.33		66.95	60.73	
4	60.48	60.63					60.08	62.93	67.55		60.68	58.72
5	60.48	60.58	61.08			57.81	59.88	62.73	67.15	66.65		58.74
6	60.38		60.78			57.79	59.73		66.85	66.35	60.33	58.74
7	60.18	60.63	60.28			57.77	59.58	64.56	66.75	66.08	60.18	58.72
8	60.08	60.68	60.08			57.78		65.88	66.45		60.08	58.64
9		60.58	59.68		59.58	58.07	59.38	67.45	66.08	65.58	59.98	
10	60.48	60.33	63.46			58.40	59.34	68.30		65.18	59.88	58.56
11	60.88	60.23					59.31	68.60	65.63	64.83	59.86	58.44
12	60.78	60.08				58.74	59.27	68.85	65.58	64.38		58.36
13	60.78			62.08		58.62	59.18		65.53	64.03	59.78	58.28
14	61.28	59.78				58.48	59.24	70.05	65.75	63.88	59.74	58.26
15	61.58	59.66				58.25		69.85	66.15		59.68	58.22
16		59.58				58.23	59.43	70.00	66.35	63.53	59.60	
17	61.61	59.68				58.14	59.58	70.85		63.18	59.44	58.28
18	61.53	59.92			58.08		59.84	71.40	65.58	62.88	59.18	58.38
19	61.50	60.08				58.20	59.85	71.81	65.08	62.48		58.28
20	61.43					58.47	59.78	71.87	64.88	62.28	59.04	58.18
21	61.55	60.36			57.58	58.96	59.73	72.15	64.63	62.18	58.98	58.16
22	62.03	60.23				59.84		72.65	64.38		58.96	58.14
23		60.08				60.93	59.78	73.35	64.58	61.93	58.98	
24	61.96					61.38	60.23	74.05		61.78	59.02	58.10
25	61.93	60.46					61.13	74.45	65.38	61.78	59.06	58.06
26	61.83	61.48				60.68	62.13	74.55	65.53	61.73		58.02
27	61.61					60.43	63.31		65.78	61.68	59.20	57.88
28	61.44	60.98				60.23	64.14	74.75	65.88	61.58	59.18	57.82
29	61.35	60.68			57.88	60.03		74.65	65.88		59.06	57.68
30		60.40				59.95	64.58		66.03	61.48	58.92	
31	61.18					59.88		73.05		61.28	58.80	

NOTE.—Add 1,700 feet to obtain mean sea level elevations (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 in Bonners Ferry. Zero of gage is 1,742.77 feet above mean sea level, United States Coast and Geodetic Survey datum.

DRAINAGE AREA.—13,000 square miles.

RECORDS AVAILABLE.—October, 1927, to September, 1928; May to October, 1904, at a point 0.75 mile downstream. Gage heights collected by United States Weather Bureau, May, 1904, to September, 1927.

EXTREMES.—Maximum discharge during year, 82,800 second-feet May 25 and 27; minimum, 5,630 second-feet September 29 and 30; maximum water-surface elevation, 1,772.78 feet May 28 and 29; minimum, 1,743.31 feet March 8. 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. Discharge records are fair. River partly frozen over December 8 to March 5. Owing to backwater from Kootenai Lake, making 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, and Cow Creek near Bonners Ferry, including a small amount of estimated unmeasured intervening inflow. No allowance was made for time interval below Katka, which varies from about two to five hours, depending upon the stage and slope of river. No diversions or artificial regulation above station.

Daily elevation, in feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	50.41	50.91	49.31	47.81	46.36	43.51	48.31	56.58	69.86	62.13	52.86	46.60
2	50.19	50.69	48.61	47.81	46.21	43.51	48.41	56.02	68.00	62.89	52.40	46.51
3	50.11	50.39	49.73	47.81	46.16	43.53	48.20	55.14	66.76	63.23	52.09	46.45
4	50.11	50.21	50.41	47.06	46.16	43.56	47.86	54.36	65.99	63.29	51.73	46.39
5	50.11	50.11	50.26	46.86	46.19	43.61	47.61	53.91	65.28	63.09	51.36	46.39
6	49.86	50.11	49.71	47.01	46.21	43.63	47.43	54.40	64.87	62.79	51.11	46.31
7	49.51	50.11	48.96	46.81	46.11	43.41	47.23	56.55	64.52	62.41	50.79	46.31
8	49.30	50.11	50.49	47.41	46.01	43.33	47.00	59.34	64.12	62.09	50.47	46.21
9	49.13	49.86	50.51	47.51	45.81	43.46	46.81	61.81	63.63	61.69	50.21	46.11
10	49.61	49.60	49.81	47.41	45.73	43.86	46.81	63.39	63.16	61.19	49.91	46.00
11	50.19	49.36	49.31	47.31	45.51	44.31	46.66	64.19	62.86	60.59	49.81	45.80
12	50.33	49.06	49.31	47.51	46.61	44.76	46.55	64.74	62.52	59.96	49.68	45.71
13	50.51	48.81	49.21	47.81	46.11	44.51	46.46	65.69	62.34	59.36	49.58	45.50
14	50.86	48.51	49.21	48.51	45.06	44.33	46.46	66.57	62.42	58.91	49.48	45.40
15	51.46	48.39	49.21	48.81	44.71	44.23	46.51	66.69	62.74	58.66	49.28	45.40
16	51.66	48.19	49.21	48.41	44.56	44.23	46.73	66.91	62.96	58.27	49.09	45.32
17	51.55	48.13	49.21	47.81	44.56	44.19	46.86	67.56	62.72	57.74	48.76	45.32
18	51.46	48.36	48.81	47.61	44.59	44.06	47.26	68.36	62.12	57.01	48.36	45.21
19	51.43	48.65	48.81	47.19	44.61	44.20	47.41	68.93	61.44	56.47	48.06	45.09
20	51.43	48.96	48.81	47.01	44.31	44.36	47.41	69.31	60.94	56.05	47.81	45.01
21	51.46	49.13	48.81	47.01	44.36	44.66	47.21	69.61	60.53	55.73	47.71	44.91
22	52.16	48.91	48.81	47.01	44.19	45.91	47.21	70.10	60.16	55.40	47.51	44.81
23	52.21	48.53	48.81	47.01	44.26	47.96	47.26	71.00	60.18	55.03	47.43	44.71
24	52.26	48.33	48.41	46.66	43.56	49.11	47.76	71.68	60.63	54.69	47.42	44.61
25	52.31	48.76	48.41	46.61	43.56	49.20	49.09	72.15	60.96	54.49	47.41	44.51
26	52.21	50.61	48.41	46.51	43.71	48.76	50.91	72.38	61.19	54.36	47.43	44.43
27	51.91	50.71	48.41	46.41	43.71	48.26	53.01	72.65	61.49	54.18	47.41	44.41
28	51.61	50.16	48.41	46.41	43.61	47.99	55.80	72.78	61.67	53.88	47.36	44.31
29	51.41	49.66	48.41	46.41	43.56	47.56	57.34	72.70	61.74	53.67	47.13	44.21
30	51.32	49.19	48.41	46.43	-------	47.41	57.08	72.35	61.89	53.41	46.91	44.21
31	51.21	-------	47.81	46.43	-------	47.68	-------	71.33	-------	53.14	46.71	------

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

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

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	31,700	52,500	40,600	16,800	7,940	16	9,900	63,400	40,900	27,000	10,800	6,700
2	12,900	29,100	44,800	45,400	16,000	7,930	17	10,200	67,300	39,000	25,500	9,990	6,930
3	12,300	26,300	41,000	45,900	15,100	7,930	18	11,100	71,000	36,000	23,700	9,470	6,930
4	11,600	24,000	39,000	44,800	14,800	7,920	19	11,000	72,300	33,800	22,200	9,220	6,570
5	11,000	23,300	38,400	43,400	14,200	8,170	20	11,000	71,000	33,000	21,900	8,710	6,330
6	10,800	26,500	38,700	41,600	13,600	8,160	21	10,800	71,500	32,000	21,500	8,710	6,330
7	10,100	34,900	37,700	39,600	13,000	7,910	22	10,800	75,000	31,200	20,700	8,710	6,220
8	9,900	43,400	37,700	38,700	12,400	7,910	23	10,900	79,100	32,400	20,100	8,710	6,110
9	9,600	51,900	35,700	36,900	11,900	7,670	24	12,800	82,600	35,300	19,700	8,960	5,870
10	9,400	58,700	35,200	34,600	11,600	7,430	25	16,500	82,800	36,400	19,300	8,980	5,860
11	9,360	58,700	35,100	33,000	11,600	7,180	26	20,200	81,500	37,000	19,000	9,240	5,750
12	9,310	60,000	35,000	30,400	11,400	6,940	27	28,800	82,800	39,200	18,600	9,480	5,640
13	9,060	63,400	35,300	29,100	11,400	6,700	28	35,000	81,500	39,200	18,300	9,220	5,640
14	9,100	64,900	39,200	28,700	11,400	6,700	29	36,600	78,700	39,200	17,600	8,950	5,630
15	9,400	63,000	39,600	28,200	11,100	6,700	30	33,700	75,400	40,100	17,300	8,700	5,630
							31	-------	64,900	-------	16,600	8,190	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
April 2–30	36,600	9,060	14,200	1.07	1.18	817,000
May	82,800	23,300	60,000	4.62	5.33	3,690,000
June	52,500	31,200	37,700	2.90	3.24	2,240,000
July	45,900	16,600	28,700	2.21	2.55	1,760,000
August	16,300	8,190	11,000	.846	.98	676,000
September	8,170	5,630	6,840	.526	.59	407,000
The period						9,590,000

KOOTENAI RIVER NEAR BONNERS FERRY, IDAHO

LOCATION.—Water-stage recorded in NW. ¼ sec. 28, T. 62 N., R. 1 E., 1.6 miles downstream from highway bridge at Bonners Ferry. Zero of gage is 1,700.00 feet above mean sea level, datum of United States Coast and Geodetic Survey.

DRAINAGE AREA.—13,000 square miles.

RECORDS AVAILABLE.—May to September, 1928.

EXTREMES.—Maximum water-surface elevation during period, 1,772.22 feet May 28; minimum, September 29 and 30, when gage was not read.

REMARKS.—Records excellent. Elevations July 25 to September 18 based on twice-daily staff-gage readings. Elevations affected by backwater from Kootenai Lake.

Daily elevation, in feet, 1928

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	-------	69.35	61.63	-------	46.24	16	-------	62.51	57.98	48.64	-------
2	-------	67.71	62.33	52.01	-------	17	66.84	62.34	57.47	48.40	44.94
3	-------	66.43	62.70	-------	46.06	18	67.63	61.78	56.88	48.00	44.89
4	-------	65.51	62.76	51.38	46.06	19	68.27	61.10	56.27	-------	-------
5	-------	64.90	62.61	-------	46.05	20	68.65	60.63	55.85	47.42	-------
6	-------	64.52	62.34	50.74	45.93	21	69.00	60.20	-------	47.36	-------
7	-------	64.15	61.96	-------	45.96	22	69.59	59.84	-------	47.24	-------
8	-------	63.74	61.64	-------	45.80	23	70.33	59.83	-------	47.15	-------
9	-------	63.26	61.24	-------	45.72	24	71.06	60.21	-------	47.10	-------
10	-------	62.87	60.76	49.71	45.58	25	71.52	60.57	54.20	47.10	-------
11	-------	62.54	60.22	49.51	45.42	26	71.78	60.73	54.02	-------	-------
12	-------	62.24	59.61	-------	45.20	27	72.02	61.03	53.83	47.10	-------
13	-------	62.06	59.00	49.27	45.01	28	72.19	61.25	-------	46.99	-------
14	-------	62.08	58.58	49.17	44.95	29	72.08	61.33	-------	46.80	-------
15	-------	62.33	58.35	48.93	45.04	30	71.81	61.47	-------	46.62	-------
						31	70.87	-------	-------	46.36	-------

NOTE.—Add 1,700 feet to obtain mean sea level elevations (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 its mouth, and 3.8 miles downstream from Bonners Ferry. Zero of gage is 1,700.00 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS AVAILABLE.—May to September, 1928.

EXTREMES.—Maximum water-surface elevation during year, 1,771.86 feet May 28; minimum, 1,743.63 feet September 30.

REMARKS.—Records excellent. Elevations affected by backwater from Kootenai Lake. Elevation for June 22 estimated.

Daily elevation, in feet, 1928

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	-------	69.10	61.29	52.32	46.11	16	65.80	62.32	57.64	48.54	44.82
2	-------	67.50	62.06	51.95	46.01	17	66.48	62.14	57.14	48.20	44.80
3	-------	66.29	62.46	51.63	45.93	18	67.24	61.54	56.55	47.92	44.75
4	-------	65.34	62.54	51.28	45.91	19	67.88	60.89	56.06	47.66	44.63
5	-------	64.79	62.39	50.97	45.90	20	68.29	60.44	55.63	47.51	44.50
6	-------	64.41	62.09	50.61	45.79	21	68.64	60.04	55.32	47.22	44.35
7	-------	63.99	61.74	50.39	45.82	22	69.20	59.67	54.95	47.12	44.27
8	-------	63.64	61.42	50.12	45.67	23	69.96	59.63	54.58	47.02	44.17
9	61.22	63.16	61.14	49.84	45.55	24	70.66	60.04	54.25	46.97	44.05
10	62.34	62.69	60.64	49.59	45.45	25	71.15	60.34	54.03	46.96	43.96
11	63.08	62.29	60.04	49.35	45.27	26	71.40	60.59	53.91	46.95	43.88
12	63.67	62.04	59.42	49.20	45.05	27	71.66	60.84	53.64	46.95	43.81
13	64.66	61.86	58.74	49.12	44.90	28	71.85	61.04	53.36	46.84	43.76
14	65.42	61.88	58.34	49.05	44.83	29	71.78	61.09	53.12	46.65	43.70
15	65.62	62.12	58.04	48.79	44.89	30	71.47	61.24	52.86	46.43	43.64
						31	70.59	-------	52.58	46.25	-------

NOTE.—Add 1,700 feet to obtain mean sea level elevations (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. Zero of gage is 1,700.00 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS AVAILABLE.—May to September, 1928.

EXTREMES.—Maximum water-surface elevation during period May 28, when gage was not read; minimum, 1,743.40 feet September 30.

REMARKS.—Records good. Prior to September 12 readings were obtained from staff gage. Elevations affected by backwater from Kootenai Lake.

Daily elevation, in feet, 1928

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	-------	-------	59.95	-------	-------	16	-------	61.05	-------	-------	44.38
2	-------	-------	60.45	-------	-------	17	-------	61.05	-------	-------	44.35
3	-------	-------	60.85	-------	-------	18	-------	60.65	-------	-------	44.29
4	-------	-------	61.15	-------	-------	19	-------	60.05	-------	-------	44.25
5	-------	-------	61.05	-------	-------	20	-------	59.47	-------	-------	44.13
6	-------	-------	60.85	-------	-------	21	-------	59.05	-------	-------	44.03
7	-------	-------	60.55	-------	-------	22	-------	58.75	-------	-------	43.96
8	-------	-------	60.25	-------	-------	23	67.98	58.60	-------	-------	43.88
9	-------	-------	59.95	-------	-------	24	-------	58.60	-------	-------	43.79
10	-------	-------	59.55	-------	-------	25	-------	58.75	-------	-------	43.71
11	-------	-------	58.95	-------	-------	26	-------	59.25	-------	-------	43.65
12	-------	-------	58.55	-------	44.53	27	-------	59.45	-------	-------	43.60
13	-------	60.85	57.75	-------	44.43	28	-------	59.45	-------	-------	43.53
14	-------	60.65	57.15	-------	44.39	29	-------	59.75	-------	-------	43.46
15	-------	60.85	-------	-------	44.43	30	-------	59.85	-------	-------	43.40
						31	-------	-------	-------	-------	-------

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

KOOTENAI RIVER AT SPURLING RANCH, NEAR COPELAND, IDAHO

LOCATION.—Staff gage in W. ½ sec. 6, T. 63 N., R. 1 E., at Spurling ranch, 5 miles south or 9 miles upstream by river from Copeland. Zero of gage is 1,700.00 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS AVAILABLE.—May to September, 1928.

EXTREMES.—Maximum water-surface elevation during period of record, 1,769.00 feet May 28; minimum, September 30 when gage was not read.

REMARKS.—Records May 10 to June 9, good; others fair. Elevations affected by backwater from Kootenai Lake.

Daily elevation, in feet, 1928

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	-------	67.36	59.40	51.28	45.53	16	62.83	-------	55.92	47.69	-------
2	-------	65.81	59.80	51.07	45.40	17	63.41	-------	55.86	47.46	-------
3	-------	64.69	60.25	-------	45.36	18	64.13	-------	55.32	47.26	-------
4	-------	63.97	60.32	-------	45.33	19	64.79	59.11	54.82	47.00	-------
5	-------	63.42	60.18	-------	45.28	20	65.23	58.85	54.44	46.87	-------
6	-------	62.17	60.04	-------	45.23	21	65.65	58.54	53.99	46.75	-------
7	-------	62.84	59.74	-------	45.12	22	66.18	58.15	53.74	46.57	-------
8	-------	62.12	59.44	-------	44.92	23	66.88	58.03	53.29	46.46	-------
9	-------	61.79	59.17	49.00	-------	24	67.54	58.23	53.10	46.38	-------
10	59.52	-------	58.73	48.88	-------	25	68.03	58.41	52.87	46.30	-------
11	60.02	-------	58.31	48.72	-------	26	68.41	58.59	52.77	46.28	-------
12	60.65	-------	57.72	48.54	-------	27	68.75	58.83	52.47	46.20	-------
13	61.52	-------	57.23	48.47	-------	28	68.97	59.05	52.23	46.09	-------
14	62.31	-------	56.72	48.34	-------	29	68.93	59.13	51.87	45.93	-------
15	62.57	-------	56.46	48.01	-------	30	68.78	59.23	51.67	-------	-------
						31	68.10	-------	51.55	45.62	-------

Note.—Add 1,700 feet to obtain mean sea level elevations (U. S. Coast and Geodetic Survey datum).

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, three-fourths mile northwest of Copeland. Zero of gage is 1,700.00 feet above mean sea level, United States Coast and Geodetic Survey datum.

DRAINAGE AREA.—13,400 square miles.

RECORDS AVAILABLE.—October, 1927, to September, 1928. Gage-height records collected at same site by Dominion Water Power and Reclamation Service of Canada April, 1925, to September, 1927.

EXTREMES.—Maximum water-surface elevation during year, 1,766.70 feet May 29; minimum, 1,741.67 feet March 3 and 4.

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

REMARKS.—Records excellent May 18 to August 23, when water-stage recorder was in operation; others are based on daily readings of the Canadian staff gage and are good. Elevations affected by backwater from Kootenai Lake. Gage-height record to April, 1928, furnished by Dominion Water Power and Reclamation Service of Canada.

Daily elevation, in feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	48.22	48.37	46.45	43.37	42.97	41.75	45.27	51.77	65.50	58.05	50.76	45.12
2	48.12	48.22	46.47	43.22	42.95	41.73	45.42	51.57	64.57	58.44	50.45	44.99
3	47.97	48.04	46.82	43.20	42.95	41.67	45.40	51.02	63.70	58.76	50.16	44.96
4	47.92	47.97	47.27	43.19	42.95	41.67	45.25	50.47	62.96	58.85	49.91	44.89
5	47.79	47.92	47.21	43.22	42.95	41.70	45.07	50.47	62.43	58.81	49.62	44.86
6	47.62	47.77	46.97	43.32	42.92	41.72	45.07	50.52	62.04	58.67	49.35	44.83
7	47.44	47.72	46.47	43.37	42.91	41.72	44.92	52.02	61.65	58.43	49.10	44.79
8	47.25	47.62	45.97	43.44	42.85	41.79	44.77	54.02	61.23	58.22	48.85	44.69
9	47.14	47.52	45.82	43.50	41.81	41.92	44.69	55.87	60.80	57.96	48.61	44.57
10	47.37	47.32	45.47	43.52	42.75	42.02	44.62	57.09	60.33	57.61	48.40	44.45
11	47.62	47.15	45.09	43.52	42.70	42.12	44.57	57.77	59.95	57.22	48.20	44.32
12	47.69	46.97	44.99	43.60	42.62	42.32	44.52	58.37	59.57	56.77	48.03	44.23
13	47.57	46.79	45.07	43.77	42.53	42.27	44.47	59.17	59.32	56.32	47.95	44.02
14	47.97	46.67	45.05	44.13	42.51	42.29	44.45	59.97	59.20	55.96	47.81	43.94
15	48.35	46.42	44.72	44.17	42.45	42.26	44.47	60.32	59.25	55.71	47.57	43.92
16	48.49	46.32	44.59	44.07	42.39	42.21	44.52	60.67	59.26	55.40	47.34	43.89
17	48.47	46.27	44.49	43.87	42.37	42.20	44.49	61.12	59.14	55.01	47.10	43.85
18	48.47	46.32	44.39	43.72	42.34	42.20	44.57	61.79	58.78	54.55	46.86	43.72
19	48.47	46.42	44.36	43.59	42.30	42.21	44.87	62.43	58.28	54.10	46.60	43.65
20	48.47	46.47	44.35	43.39	42.27	42.26	44.87	62.91	57.86	53.72	46.42	43.57
21	48.52	46.62	44.29	43.29	42.25	42.37	44.82	63.22	57.48	53.45	46.28	43.47
22	48.97	46.57	44.17	43.27	42.12	43.07	44.82	63.71	57.15	53.12	46.14	43.37
23	49.02	46.42	44.07	43.23	41.97	44.27	44.87	64.31	57.01	52.80	46.06	43.27
24	49.12	46.22	44.07	43.19	41.89	45.27	45.12	65.09	57.15	52.51	45.87	43.17
25	49.17	46.27	44.09	43.15	41.82	45.52	45.77	65.53	57.33	52.28	45.85	43.09
26	49.17	47.27	44.12	43.07	41.82	45.32	47.02	65.92	57.43	52.08	45.79	42.99
27	49.12	47.27	44.52	42.99	41.78	45.07	48.62	66.31	57.62	51.87	45.75	42.95
28	48.87	47.20	44.27	42.92	41.77	44.97	50.77	66.58	57.77	51.62	45.62	42.89
29	48.77	47.17	44.42	42.92	41.77	44.77	52.07	66.64	57.82	51.39	45.49	42.82
30	48.67	46.77	44.09	42.95	------	44.72	52.07	66.61	57.93	51.17	45.34	42.80
31	48.52	------	43.62	42.97	------	44.87	------	66.25	------	50.92	45.22	------

NOTE.—Add 1,700 feet to obtain mean sea level elevations (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. Zero of gage is 1,700.00 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS AVAILABLE.—May to September, 1928.

EXTREMES.—Maximum water-surface elevation during period, 1,764.69 feet May 30; minimum, occurred on September 30 when gage was not read.

REMARKS.—Records excellent. Elevations July 18 and August 1–9 estimated. Elevations are affected by backwater from Kootenai Lake.

Daily elevation, in feet, 1928

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	------	63.78	56.93	50.22	44.89	16	58.65	58.14	54.62	47.03	------
2	------	63.12	57.12	50.02	44.80	17	59.00	58.00	54.37	46.81	------
3	------	62.41	57.38	49.75	44.74	18	59.65	57.70	54.00	46.58	------
4	------	61.88	57.57	49.50	44.70	19	60.30	57.23	53.57	46.37	------
5	------	61.44	57.52	49.25	44.66	20	60.70	56.88	53.16	46.16	------
6	------	61.05	57.45	49.00	44.55	21	61.15	56.56	52.86	45.02	------
7	------	60.66	57.28	48.80	44.52	22	61.65	56.28	52.44	45.88	------
8	------	60.16	57.10	48.52	44.46	23	62.30	56.16	52.22	45.78	------
9	54.10	59.69	56.87	48.24	44.34	24	62.92	56.08	51.98	45.68	------
10	55.20	59.38	56.60	48.08	44.24	25	63.42	56.18	51.68	45.60	------
11	55.70	58.98	56.26	47.92	44.15	26	63.86	56.28	51.52	45.58	------
12	56.35	58.66	55.85	47.79	44.03	27	64.17	56.40	51.33	45.49	------
13	57.00	58.28	55.50	47.63	43.84	28	64.50	56.68	51.18	45.37	------
14	57.65	58.16	55.22	47.46	43.80	29	64.61	56.74	50.92	45.23	------
15	58.30	58.30	54.88	47.26	43.82	30	64.62	56.82	50.68	45.12	------
						31	64.21	------	50.44	44.98	------

NOTE.—Add 1,700 feet to obtain mean sea level elevations (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. Zero of gage is 1,700.00 feet above mean sea level, United States Coast and Geodetic Survey datum, which corresponds to 1,699.80 feet, datum of Geodetic Survey of Canada, 1928 adjustment. (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, 1928. Gage-height records collected by Dominion Water Power and Reclamation Service of Canda at same site October, 1924, to September, 1927.

EXTREMES.—Maximum discharge during year, 83,000 second-feet May 27 and 28; minimum not determined; maximum water-surface elevation, 1,763.32 feet May 30; minimum, 1,741.40 feet March 7.

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

REMARKS.—Discharge records are fair. Prior to May 17 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 and the flow of Boundary Creek. Elevations affected by backwater from Kootenai Lake. Elevation record and current-meter measurements made prior to April furnished by Dominion Water Power and Reclamation Service of Canada.

Daily elevation, in feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	47.52	47.55	45.74	43.07	42.54	41.53	44.44	49.54	62.83	56.17	50.06	44.78
2	47.43	47.40	45.68	42.95	42.51	41.51	44.56	49.44	62.34	56.37	49.77	44.70
3	47.28	47.28	45.88	42.93	42.52	41.50	44.56	49.21	61.83	56.59	49.52	44.63
4	47.18	47.17	46.19	42.89	42.54	41.49	44.46	48.96	61.33	56.69	49.26	44.60
5	47.10	47.07	46.29	42.88	42.49	41.46	44.44	48.79	60.89	56.71	49.00	44.54
6	46.95	47.02	46.02	42.92	42.49	41.44	44.44	49.04	60.50	56.63	48.76	44.43
7	46.77	46.96	45.69	42.95	42.49	41.40	44.34	50.04	60.11	56.48	48.53	44.46
8	46.59	46.89	45.39	42.99	42.48	41.44	44.22	51.47	59.67	56.33	48.30	44.33
9	46.53	46.77	45.24	43.00	42.44	41.52	44.19	52.86	59.25	56.17	48.08	44.25
10	46.67	46.59	44.92	43.02	42.37	41.59	44.12	53.82	58.82	55.93	47.88	44.15
11	46.81	46.45	44.71	43.01	42.28	41.77	44.09	54.39	58.43	55.65	47.66	44.03
12	46.76	46.32	44.65	43.11	42.28	41.89	44.09	55.02	58.08	55.33	47.52	43.92
13	47.06	46.17	44.69	43.24	42.22	41.89	43.99	55.69	57.81	55.00	47.44	43.74
14	47.16	46.04	44.59	43.44	42.20	41.94	43.99	56.31	57.64	54.70	47.27	43.72
15	47.24	45.99	44.36	43.52	42.13	41.87	43.95	56.75	57.58	54.50	47.06	43.75
16	47.35	45.84	44.26	43.41	42.07	41.86	43.95	57.14	57.51	54.23	46.86	43.67
17	47.37	45.77	44.16	43.29	42.07	41.87	43.94	57.65	57.38	53.92	46.63	43.59
18	47.38	45.74	44.04	43.22	42.06	41.92	44.15	53.19	57.11	53.54	46.42	43.50
19	47.44	45.82	43.97	43.09	42.04	41.95	44.24	58.79	56.75	53.18	46.19	43.44
20	47.47	45.88	43.94	42.97	41.98	42.02	44.24	59.29	56.39	52.81	46.01	43.33
21	47.54	45.91	43.88	42.89	41.97	42.19	44.19	59.73	56.08	52.50	45.87	43.23
22	47.78	45.79	43.75	42.85	41.87	42.54	44.19	60.21	55.80	52.20	45.73	43.14
23	47.85	45.67	43.66	42.81	41.77	43.49	44.24	60.82	55.63	51.90	45.63	43.07
24	47.97	45.57	43.64	42.76	41.73	44.13	44.37	61.39	55.64	51.67	45.54	42.96
25	48.00	45.67	43.64	42.74	41.66	44.37	44.69	61.89	55.71	51.46	45.50	42.91
26	48.04	46.27	43.64	42.67	41.65	44.27	45.69	62.35	55.75	51.28	45.44	42.81
27	47.99	46.37	43.66	42.64	41.65	44.17	46.92	62.76	55.86	51.08	45.35	42.77
28	47.86	46.21	43.69	42.56	41.58	44.13	48.66	63.10	55.96	50.89	45.24	42.72
29	47.79	46.03	43.86	42.57	41.56	44.03	49.47	63.25	56.00	50.66	45.11	42.65
30	47.72	45.88	43.54	42.57	-------	44.02	49.59	63.29	56.08	50.45	44.99	42.62
31	47.67	-------	43.24	42.56	-------	44.13	-------	63.17	-------	50.23	44.87	------

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

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

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	14,500	33,000	70,000	40,300	16,200	7,750	16	12,500	63,000	39,500	28,000	10,500	6,400
2	15,500	31,000	62,000	42,000	16,000	7,650	17	13,000	67,000	40,000	26,000	9,750	6,500
3	15,500	28,000	47,000	44,000	15,100	7,650	18	13,500	70,000	37,000	24,500	9,250	6,600
4	14,500	26,000	45,000	45,000	14,600	7,650	19	13,500	71,000	35,000	23,000	9,000	6,500
5	13,500	25,500	43,500	44,000	14,200	7,750	20	13,000	72,000	33,000	22,100	8,500	6,200
6	13,000	27,000	42,500	42,300	13,600	7,850	21	13,000	72,500	32,500	21,800	8,500	6,100
7	12,500	31,000	42,000	40,000	12,800	7,800	22	13,000	75,000	32,500	21,200	8,500	5,950
8	12,000	40,000	40,500	39,000	12,000	7,600	23	13,000	79,000	33,000	20,300	8,500	5,800
9	11,500	48,000	39,500	37,500	11,600	7,300	24	13,500	81,000	35,500	19,900	8,750	5,600
10	11,500	54,000	38,500	35,500	11,300	7,000	25	15,500	81,500	37,000	19,600	8,750	5,550
11	11,000	58,000	38,000	33,500	11,300	6,800	26	19,500	82,500	38,200	19,200	9,000	5,450
12	11,000	59,500	38,000	31,800	11,100	6,600	27	26,000	83,000	38,800	18,900	9,250	5,400
13	11,000	61,500	37,500	30,800	11,100	6,400	28	32,000	83,000	39,000	18,400	9,000	5,400
14	11,500	62,000	38,500	29,700	11,100	6,400	29	33,500	81,000	39,100	17,900	8,750	5,400
15	12,000	62,500	39,000	29,000	10,800	6,400	30	34,500	77,000	39,200	17,400	8,500	5,400
							31	------	74,000	------	16,900	8,000	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
April	34,500	11,000	15,600	1.14	1.27	928,000
May	83,000	25,500	60,000	4.38	5.05	3,690,000
June	70,000	32,500	40,400	2.95	3.29	2,400,000
July	45,000	16,900	29,000	2.12	2.44	1,780,000
August	16,200	8,000	10,800	.788	.91	664,000
September	7,850	5,400	6,560	.479	.53	390,000
The period						9,850,000

BOULDER CREEK NEAR LEONIA, IDAHO

LOCATION.—Staff gage in SE. ¼ sec. 28, T. 61 N., R. 3 E., at buildings of the Idamont Lead-Zinc Mines Co., 1¾ miles below McGinty Creek, 2 miles above mouth, and 2 miles southwest of Leonia.

DRAINAGE AREA.—58 square miles.

RECORDS AVAILABLE.—April to September, 1928.

EXTREMES.—Maximum discharge during period (estimated), 1,200 second-feet May 15; minimum, 9 second-feet August 18–22, 24, 31, and September 1.

REMARKS.—Records May 28 to June 10 good; others poor. Discharge estimated April 6, May 1, 15, 19, 20, and June 28. From April to September an average flow of about 2 second-feet is diverted for mining several miles upstream, which returns to the creek above the present gage.

Daily and monthly discharge, in second-feet, 1928

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	250	263	102	14	9	16	-------	-------	112	41	10	------
2	-------	-------	250	98	17	-------	17	167	-------	105	34	10	------
3	-------	-------	238	88	15	-------	18	-------	-------	95	36	9	------
4	-------	-------	225	84	14	-------	19	-------	800	84	43	9	------
5	-------	-------	213	84	14	-------	20	-------	840	81	36	9	------
6	100	-------	201	81	13	-------	21	-------	880	78	31	9	------
7	-------	-------	168	68	12	-------	22	-------	824	81	29	9	------
8	-------	-------	157	57	11	-------	23	-------	717	71	25	10	------
9	-------	-------	157	54	11	-------	24	-------	640	65	22	9	------
10	-------	-------	157	51	11	-------	25	-------	615	57	21	13	------
11	-------	-------	146	46	10	-------	26	-------	640	57	19	12	------
12	-------	-------	124	43	10	-------	27	-------	567	54	18	11	------
13	-------	-------	120	41	10	-------	28	-------	420	58	17	11	------
14	-------	-------	105	36	10	-------	29	-------	420	62	15	10	------
15	-------	1,200	120	34	11	-------	30	-------	334	78	14	10	------
							31	-------	276	-------	14	9	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
May 19–31	880	276	613	10.6	5.13	15,800
June	263	54	126	2.17	2.42	7,500
July	102	14	44.6	.769	.89	2,740
August	17	9	11.1	.191	.22	682
September 1	9	9	9.0	.155	.01	18
The period						26,700

MOYIE RIVER AT EILEEN, IDAHO

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

DRAINAGE AREA.—755 square miles.

RECORDS AVAILABLE.—October, 1925, to September, 1928.

EXTREMES.—Maximum discharge during year, 5,910 second-feet May 13 and 17–19 (gage height, 4.8 feet); minimum, 127 second-feet September 29 and 30 (gage height, 1.01 feet).

1925–1928: 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, 78 second-feet January 3, 1926 (gage height, 0.82 foot).

REMARKS.—Records based on staff-gage readings made twice daily prior to June, fair; others good. Discharge estimated because of ice effect December 31 and January 1–3. No regulation or diversions above station.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	705	1,020	975	500	385	287	1,340	2,570	2,940	920	374	188
2	705	975	975		385	287	1,240	2,390	2,740	1,100	368	185
3	705	928	1,520		385	287	1,180	2,220	2,550	1,050	363	181
4	835	928	1,400	665	385	269	1,080	2,060	2,380	1,000	352	177
5	835	928	1,340	705	385	296	1,020	2,060	2,210	1,000	346	174
6	835	928	1,180	665	415	287	975	2,770	2,060	990	325	166
7	790	880	1,080	515	415	292	880	3,700	1,910	1,150	310	162
8	790	880	1,020	515	415	330	880	4,570	1,840	1,180	300	159
9	880	835	975	448	385	355	835	5,220	1,710	1,070	295	159
10	1,520	835	835	448	385	385	880	5,220	1,600	980	285	159
11	1,340	790	835	448	385	400	835	5,220	1,500	935	275	155
12	1,240	748	928	550	355	415	790	5,560	1,400	878	262	152
13	1,240	705	880	588	355	415	790	5,910	1,330	822	257	149
14	1,520	705	790	550	385	415	835	5,560	1,280	768	252	149
15	1,520	748	748	480	330	385	880	5,560	1,330	746	248	149
16	1,520	705	748	515	355	385	880	5,560	1,210	708	243	149
17	1,520	705	748	480	330	415	975	5,910	1,140	716	230	146
18	1,460	748	705	480	330	448	1,080	5,910	1,070	682	226	146
19	1,400	835	790	480	330	480	1,020	5,910	1,000	724	226	143
20	1,340	928	665	415	330	550	975	5,580	970	690	217	140
21	1,240	928	665	480	330	748	975	5,580	901	641	213	140
22	1,180	880	665	480	330	1,240	975	5,580	833	617	209	140
23	1,130	835	665	448	300	1,770	1,130	5,250	874	585	217	140
24	1,290	835	705	415	330	1,640	1,460	5,250	830	555	217	140
25	1,240	1,130	705	415	330	1,400	2,060	4,930	778	525	230	136
26	1,180	1,290	705	385	330	1,240	2,390	4,620	735	497	239	133
27	1,130	1,180	625	415	330	1,180	3,200	4,930	772	478	234	130
28	1,130	1,180	588	385	296	1,080	3,440	4,620	830	464	226	130
29	1,130	1,080	588	415	296	1,020	2,980	4,320	760	433	205	127
30	1,130	1,020	515	385	------	1,020	2,570	4,030	812	409	200	127
31	1,080	------	450	385	------	1,290	------	3,500	------	385	192	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,520	705	1,150	1.52	1.75	70,700
November	1,290	705	904	1.20	1.34	53,800
December	1,520	----------	839	1.11	1.28	51,600
January	705	385	486	.644	.74	29,900
February	415	296	355	.470	.51	20,400
March	1,770	269	678	.898	1.04	41,700
April	3,440	790	1,350	1.79	2.00	80,300
May	5,910	2,060	4,580	6.07	7.00	282,000
June	2,940	735	1,410	1.87	2.09	83,900
July	1,180	385	763	1.01	1.16	46,900
August	374	192	262	.347	.40	16,100
September	188	127	151	.200	.22	8,980
The year	5,910	127	1,080	1.43	19.53	786,000

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 to September, 1928.
EXTREMES.—Maximum discharge during period, 56 second-feet May 23; minimum, 2.3 second-feet August 7, 11, 19, and September 3–30.
REMARKS.—Records good except those for May, which are fair. No regulation or diversions above station.

Daily and monthly discharge, in second-feet, 1928

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1		24	8.9	3.6	2.5	16	45	11	5.7	2.8	2.3
2		22	8.6	3.6	2.7	17	52	12	5.7	2.8	2.3
3		20	8.6	3.8	2.5	18	52	11	5.7	2.8	2.3
4		19	8.6	3.6	2.4	19	49	8.6	5.4	2.5	2.3
5		19	8.2	3.5	2.4	20	47	8.2	5.2	2.5	2.3
6		18	8.2	3.0	2.4	21	47	8.6	5.0	2.5	2.3
7		16	7.7	2.5	2.3	22	54	8.9	5.0	2.5	2.3
8		16	7.3	2.8	2.3	23	56	8.9	4.8	2.7	2.3
9		14	6.8	2.7	2.3	24	49	8.9	4.6	2.7	2.3
10		14	6.6	2.7	2.3	25	45	7.5	4.4	2.5	2.3
11		13	6.4	2.5	2.3	26	45	7.7	4.4	3.5	2.3
12		13	6.1	2.7	2.3	27	43	8.2	4.1	3.1	2.3
13		13	5.9	2.5	2.3	28	39	9.7	4.1	2.8	2.3
14		13	5.7	2.8	2.3	29	35	8.6	3.8	2.7	2.3
15		12	5.7	2.8	2.3	30	31	8.6	3.6	2.7	2.3
						31	27		3.6	2.7	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 16–31	56	27	44.8	1,420
June	24	7.5	12.7	756
July	8.9	3.6	5.95	366
August	3.8	2.5	2.87	176
September	2.7	2.3	2.34	139
The period				2,860

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 to September, 1928.
EXTREMES.—Maximum discharge during period, 612 second-feet May 8 and 20 (gage height, 2.60 feet); minimum, 9 second-feet September 10–13 (gage height, 1.08 feet September 11 and 12).
REMARKS.—Records good except those for May and June, which are fair. Discharge estimated May 9–17, 19, June 3–5, 7–9, August 21, 29, 31, September 4, 6, 17, 19, and 21. Diurnal fluctuations affect the flow at high stages. No diversion above station.

Daily and monthly discharge, in second-feet, 1928

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1		234	80	22	10	16	550	114	59	9	13
2		243	93	20	10	17		122	54	9	13
3			86	23	10	18	536	10[illegible]	59	10	13
4		220	93	23	10	19	574	10[illegible]	54	9	14
5			86	20	10	20	612	110	48	10	15
6		185	80	18	10	21	586	110	48	10	15
7			80	18	10	22	586	10[illegible]	43	10	15
8	612	165	73	18	10	23	510	10[illegible]	41	10	15
9			73	15	10	24	485	9[illegible]	39	13	15
10		160	70	15	9	25	510	8[illegible]	35	18	18
11	550	160	65	15	9	26	536	77	31	15	15
12		148	70	13	9	27	485	8[illegible]	27	13	15
13		136	59	13	9	28	411	9[illegible]	27	10	18
14		129	65	15	10	29	340	9[illegible]	23	10	18
15		125	59	10	11	30	284	77	23	10	15
						31	256	-------	23	10	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
May 8–31	----------	256	511	3.84	3.43	24,300
June	----------	77	138	1.04	1.16	8,210
July	93	23	57.0	.429	.49	3,500
August	23	9	14.0	.105	.12	861
September	18	9	12.5	.094	.10	744
The period	----------	----------	----------	----------	----------	37,600

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 to September, 1928.
EXTREMES.—Maximum discharge during period, 352 second-feet May 20 and 26 (gage height, 1.96 feet); minimum, 2 second-feet September 9–12, 16–30.
REMARKS.—Records fair. No diversions above station.

Daily and monthly discharge, in second-feet, 1928

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1		107	45	10	4	16	210	63	e 21	e 4	e 2
2		e 107	e 45	7	e 4	17	e 206	55	2[illegible]	e 4	2
3		107	45	e 7	4	18	202	e 50	e 20	4	e 2
4		e 107	e 42	7	e 4	19	303	45	1[illegible]	e 4	2
5		107	40	e 6	4	20	352	e 45	e 17	4	e 2
6		103	e 38	6	e 4	21	e 333	45	15	e 4	2
7		85	35	e 6	4	22	e 314	e 47	e 14	4	e 2
8	132	e 85	e 31	5	e 3	23	314	49	13	e 4	2
9	166	85	27	e 5	2	24	314	e 47	e 12	4	e 2
10	185	e 80	e 24	5	e 2	25	e 333	45	11	e 4	2
11	e 200	75	22	e 4	2	26	352	e 46	e 10	5	e 2
12	215	e 73	21	4	e 2	27	340	48	10	e 5	2
13	194	71	20	e 4	3	28	194	e 46	e 10	4	e 2
14	194	e 70	e 19	4	e 3	29	e 164	43	9	e 4	2
15	206	68	18	4	3	30	135	e 44	e 8	4	e 2
						31	e 121		7	e 4	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
May 8–31	352	121	237	12.2	10.89	11,300
June	107	43	68.3	3.50	3.90	4,060
July	45	7	22.2	1.14	1.31	1,360
August	10	4	4.8	.246	.28	295
September	4	2	2.6	.133	.15	155
The period						17,200

e Discharge estimated or interpolated.

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 valley and 2 miles northwest of Moravia.
DRAINAGE AREA.—14 square miles.
RECORDS AVAILABLE.—May to September, 1928.
EXTREMES.—Maximum discharge during year, 234 second-feet May 20 and 26 (gage height, 2.5 feet); minimum, 3 second-feet September 5–11 and 17–30; minimum gage height, 0.32 foot September 29.
REMARKS.—Records fair. Flow at high stages affected by diurnal fluctuations. No diversions above station, but a short distance below the gage water is diverted for irrigation.

Daily and monthly discharge, in second-feet, 1928

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	------	85	24	6	4	16	203	41	a 13	4	a 4
2	------	a 85	26	6	a 4	17	a 175	34	13	a 4	3
3	------	85	24	a 6	4	18	147	a 31	a 12	4	a 3
4	------	a 85	a 22	6	a 4	19	a 190	28	10	a 4	3
5	------	85	20	a 6	3	20	234	a 26	a 10	4	a 3
6	------	69	a 20	5	a 3	21	a 218	24	10	a 4	3
7	------	71	20	a 5	3	22	203	a 26	a 10	4	a 3
8	------	a 60	a 18	5	a 3	23	a 203	29	9	a 4	3
9	135	49	16	a 4	3	24	203	a 26	a 8	4	a 3
10	123	a 49	a 16	4	a 3	25	a 218	24	8	a 5	3
11	123	49	16	a 4	3	26	234	a 25	a 7	5	a 3
12	123	a 49	14	4	a 4	27	a 200	26	6	a 5	3
13	123	49	14	a 4	4	28	123	a 23	a 6	4	a 3
14	123	a 49	a 14	4	a 4	29	a 112	20	6	a 4	3
15	a 163	49	13	a 4	4	30	102	a 22	a 6	4	a 3
						31	a 94	------	6	a 4	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 9–31	234	94	164	7,480
June	85	20	45.8	2,730
July	26	6	13.5	830
August	6	4	4.5	277
September	4	3	3.3	196
The period				11,500

a Discharge estimated or interpolated.

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 to September, 1928.

EXTREMES.—Maximum discharge during period, 830 second-feet May 21 and 24–27 (gage height, 4.0 feet); minimum, 8 second-feet September 11–13 and 19–29.

REMARKS.—Records good except those for May and June, which were affected by diurnal fluctuations and are fair. Flow diverted above gage at diversion dam of Bonners Ferry Light & Water Co. for power-plant use not included in table of discharge.

Daily and monthly discharge, in second-feet, 1928

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	-------	266	98	18	10	16	580	145	38	12	9
2	-------	266	95	18	10	17	630	129	37	12	9
3	-------	283	91	20	10	18	630	118	36	12	9
4	-------	266	98	17	10	19	680	102	37	12	8
5	-------	249	84	17	10	20	680	95	34	11	8
6	-------	218	78	17	9	21	730	98	32	11	8
7	-------	190	69	17	9	22	730	122	31	11	8
8	249	164	63	15	9	23	680	108	28	11	8
9	340	164	56	14	9	24	730	108	26	12	8
10	381	177	51	13	9	25	730	98	26	15	8
11	402	152	50	13	8	26	730	90	24	15	8
12	468	190	46	13	8	27	780	98	23	13	8
13	490	140	42	13	8	28	512	106	22	12	8
14	490	114	39	13	10	29	468	95	20	12	8
15	490	118	36	13	10	30	360	98	19	11	8
						31	266	-------	18	11	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 8–31	780	249	551	26,200
June	283	90	152	9,040
July	98	18	46.7	2,870
August	20	11	13.7	842
September	10	8	8.7	518
The period	----------	----------	----------	39,500

NOTE.—Discharge diverted around gage for power use estimated at 200 acre-feet in May, 200 acre-feet in June, 50 acre-feet in July; no diversion during August and September.

BALL CREEK NEAR BONNERS FERRY, IDAHO

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

DRAINAGE AREA.—27 square miles.

RECORDS AVAILABLE.—May to September, 1928.

EXTREMES.—Maximum discharge during period, 418 second-feet May 21 and 26 (gage height, 4.1 feet); minimum, 4 second-feet September 13 and 22–30; minimum gage height, 1.97 feet September 27–29.

REMARKS.—Records June 20 to July 31, good; others fair, except those estimated June 3–19, which are poor. Diversions for irrigation above station negligible. Channel losses occur in vicinity of gage.

Daily and monthly discharge, in second-feet, 1928

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1		144	56	9	6	16	300		21	6	5
2		149	52	10	6	17	344	75	21	6	5
3			51	10	6	18	344		20	6	5
4		150	51	10	5	19	344		18	6	5
5			46	9	5	20	358	62	17	6	5
6			43	9	5	21	373	62	17	6	5
7		120	38	9	5	22	388	62	17	6	4
8			35	8	5	23	344	62	15	6	4
9			34	7	5	24	344	62	14	6	4
10	244	95	31	7	5	25	358	59	13	8	4
11	244		27	6	5	26	373	55	12	10	4
12	272		25	6	5	27	373	53	12	8	4
13	272		23	6	4	28	272	51	11	7	4
14	272	85	21	6	5	29	244	55	11	6	4
15	286		21	6	5	30	217	53	10	6	4
						31	164		9	6	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
May 10–31	388	164	306	11.3	9.25	13,400
June		51	88.0	3.26	3.64	5,240
July	56	9	25.5	.944	1.09	1,570
August	10	6	7.2	.267	.31	443
September	6	4	4.8	.178	.20	286
The period						20,900

TROUT CREEK NEAR COPELAND, IDAHO

LOCATION.—Staff gage in NE. ¼ sec. 10, T. 63 N., R. 1 W., 2¼ miles above mouth and 5½ miles southwest of Copeland.
DRAINAGE AREA.—20 square miles.
RECORDS AVAILABLE.—May to September, 1928.
EXTREMES.—Maximum discharge during period, 208 second-feet May 2[illegible] (gage height, 2.16 feet); minimum, 2 second-feet September 19–30.
REMARKS.—Records fair. No diversions above station.

Daily and monthly discharge, in second-feet, 1928

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1		a 124	35	a 6	4	16		48	a 16	a 4	3
2		117	a 36	6	3	17		a 45	14	4	a 3
3		97	36	a 6	a 3	18		42	a 14	a 4	3
4		a 95	a 35	6	3	19		41	14	4	a 2
5		93	34	5	a 3	20		a 38	15	a 4	2
6		a 90	a 32	a 5	3	21		35	13	4	a 2
7		86	31	5	a 3	22		a 34	13	a 4	2
8		79	a 29	a 5	3	23		34	a 12	4	2
9		70	27	5	a 3	24		a 34	12	a 4	a 2
10		a 66	a 26	a 5	3	25		35	a 11	4	2
11		63	24	5	a 3	26		a 35	10	5	a 2
12		58	a 22	4	3	27		34	a 9	a 5	2
13		56	20	4	a 3	28	204	a 34	8	4	a 2
14		a 54	a 18	a 4	3	29	208	34	7	a 4	2
15		53	17	4	a 3	30	a 169	a 34	a 7	4	a 2
						31	131		7	a 4	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
May 28–31	208	131	178	8.90	1.32	1,410
June	124	34	58.6	2.93	3.27	3,490
July	36	7	19.5	.975	1.12	1,200
August	6	4	4.5	.225	.26	277
September	4	2	2.6	.130	.14	155
The period						6,530

a Estimated or interpolated.

MISSION CREEK AT COPELAND, IDAHO

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

DRAINAGE AREA.—31 square miles.

RECORDS AVAILABLE.—May to September, 1928.

EXTREMES.—Maximum discharge during period, 256 second-feet May 12 (gage height, 3.35 feet); minimum 6 second-feet September 24–30.

REMARKS.—Records fair. No regulation or diversions above station, except as Round Prairie Creek, which flows into Moyie River, taps Mission Creek at divide 5 miles above gage and diverts a variable flow dependent upon the amount of drift which collects at the junction of these creeks.

Daily and monthly discharge, in second-feet, 1928

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	-------	100	31	12	8	16	230	40	26	9	7
2	-------	90	38	12	8	17	243	36	24	8	7
3	-------	90	36	12	8	18	230	36	24	8	7
4	-------	80	40	11	8	19	230	35	24	8	7
5	-------	70	42	11	8	20	204	30	22	8	7
6	-------	65	45	11	8	21	192	28	20	8	7
7	-------	65	41	10	8	22	192	28	19	8	7
8	-------	61	38	10	7	23	168	28	18	10	7
9	217	56	36	10	7	24	168	22	17	10	6
10	230	52	34	10	7	25	156	22	16	10	6
11	230	50	33	10	7	26	144	21	15	10	6
12	256	44	31	9	7	27	156	20	15	10	6
13	230	42	29	9	7	28	144	37	14	9	6
14	230	40	28	9	7	29	133	28	13	8	6
15	230	36	27	9	8	30	133	31	13	8	7
						31	116	-------	12	8	-------

Month	Maximum	Minimum	Mean	Month	Maximum	Minimum	Mean
May 9–31	256	116	194	August	12	8	9.5
June	100	20	46.1	September	8	6	7.1
July	45	12	26.5				

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, 4.7 miles south of Copeland.

DRAINAGE AREA.—14.3 square miles.

RECORDS AVAILABLE.—May to August, 1928.

EXTREMES.—Maximum discharge during period, 21 second-feet May 8 (gage height, 1.70 feet); minimum, 0.2 second-foot August 20 (gage height, 0.78 foot).

REMARKS.—Records good. Discharge estimated May 12, July 1, 4, 5, 7–16, 18–29, 31, and August 1–19. No record August 21 to September 30. No diversions above station.

Daily and monthly discharge, in second-feet, 1928

Day	May	June	July	Aug.	Day	May	June	July	Aug.
1		5.6	5.8		16	8.6	3.1	3.0	
2		5.6	8.6		17	7.5	3.1	1.8	
3		5.6	6.1		18	6.8	3.1		0.4
4		5.2	5.7		19	5.8	3.5		
5		5.2	5.3		20	5.6	3.1		.2
6		5.1	4.9		21	6.1	3.1		
7		5.1			22	4.7	3.1		
8	21	4.7		0.4	23	4.3	2.6	1.0	
9	19	3.8			24	4.2	2.3		
10	15	3.8			25	4.0	2.3		
11	14	3.8	3.0		26	3.5	2.3		
12	13	3.8			27	3.5	2.3		
13	12	3.5			28	3.8	4.3		
14	11	3.1			29	5.6	2.6		
15	9.7	3.1			30	8.0	3.1	.6	
					31	8.0		.5	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
May 8–31	21	3.5	8.53	0.597	0.53	406
June	5.6	2.3	3.70	.259	.29	220
July	8.6		2.62	.183	.21	161
August 1–20			.39	.027	.02	15
The period						802

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 Kootenai Valley branch of Great Northern Railway, 1.8 miles south of Copeland.

DRAINAGE AREA.—7.2 square miles.

RECORDS AVAILABLE.—May to September, 1928.

EXTREMES.—Maximum discharge during period, 9.1 second-feet May 14 (gage height, 1.58 feet); minimum, 0.04 second-foot July 30 (gage height, 0.73 foot).

REMARKS.—Records fair. Discharge estimated July 1, 4, 5, 7–16, 18–29, 31, and August 1–19. A small amount of water is diverted for irrigation from Brush Lake several miles above gage; some regulation at outlet of Brush Lake.

Daily and monthly discharge, in second-feet, 1928

Day	May	June	July	Aug.	Day	May	June	July	Aug.
1		4.3	1.9		16	5.0	1.5	1.0	
2		3.8	2.3		17	4.3	1.5	.4	
3		4.0	2.4		18	3.6	1.5		0.06
4		3.6	2.2		19	3.6	1.5		
5		2.8	2.0		20	2.8	1.4		.07
6		2.8	1.8		21	2.8	1.1		
7		2.8			22	2.7	1.1		
8		2.8		0.06	23	2.5	1.1		
9		2.8			24	2.4	1.1	.2	
10		2.8			25	2.3	.6		
11		2.7	1.0		26	1.5	.6		
12		2.3			27	1.9	.5		
13		2.3			28	3.6	1.2		
14	9.1	1.5			29	4.0	1.3		
15	5.8	1.5			30	4.0	1.5	.04	
					31	4.0		.05	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
May 14–31	9.1	1.5	3.66	0.508	0.34	131
June	4.3	.5	2.01	.279	.31	120
July	2.4		.822	.114	.13	51
August 1–20			.060	.0083	.006	2.4
The period						304

NOTE.—Channel practically dry Aug. 21 to Sept. 30.

PARKER CREEK NEAR COPELAND, IDAHO

LOCATION.—Staff gage in SW. ¼ sec. 8, T. 64 N., R. 1 W., at Forest Service bridge, 4¼ miles west of Copeland.
DRAINAGE AREA.—16.5 square miles.
RECORDS AVAILABLE.—May to August, 1928.
EXTREMES.—Maximum discharge during period, 162 second-feet May 24 (gage height, 1.65 feet); minimum, 5 second-feet August 7–10 (gage height, −0.22 foot).
REMARKS.—Records fair. No diversions above station.

Daily and monthly discharge, in second-feet, 1928

Day	May	June	July	Aug.	Day	May	June	July	Aug.
1		a 88	37		16		50	a 15	
2		a 88	36		17		48	14	
3			a 35		18	140	45	13	
4		85	a 39	6	19		43	13	
5		a 94	a 33		20		a 41	12	
6		86	33		21		36	a 11	
7		78	34		22	160	a 30	a 10	
8		a 70	34	5	23		28	9	
9		68	a 34		24	a 162	27	9	
10		65	33	a 5	25		a 25	a 8	
11		62	32		26	160	a 24		
12	a 126	a 60	a 32		27		a 36	8	
13		57	24		28		a 40		
14	140	a 54	a 16		29		39		
15		52	16		30	125	38	7	
					31				

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
May 12–31			144	8.73	6.49	5,710
June		24	54.7	3.32	3.70	3,250
July	39		20.2	1.22	1.41	1,240
August 1–10			5.6	.339	.13	111
The period						10,300

a Discharge determined from gage readings made on these days; estimated at other times.

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 to September, 1928.

EXTREMES.—Maximum discharge during period, 448 second-feet May 18 (gage height, 2.87 feet); minimum, 8 second-feet August 21, 22, and September 4–6.

REMARKS.—Records fair except those for May, which may be poor, owing to infrequent readings and diurnal fluctuations. No diversions above gage.

Daily and monthly discharge, in second-feet, 1928

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1		a 225	b 77	b 19	b 10	16		b 112	46	b 10	
2			b 76	b 18	9	17		b 106	b 40	10	
3		205	74	17	b 9	18	448	b 101	35	9	
4		202	87	17	b 8	19	b 430	b 96	b 34	9	
5		208	74	15	8	20	412	90	33	b 9	
6		b 203	b 70	15	8	21	b 398	b 94	32	b 8	
7		b 197	b 67	14		22	385	97	29	8	
8		192	b 64	b 14		23	b 333	b 94	29	9	
9		b 178	60	b 13		24	281	b 90	29	8	
10		163	a 54	b 12		25		87	27	b 10	
11		b 148	48	b 11		26	a 325	84	b 26	13	
12		134	48	b 10		27		80	b 25	b 12	
13		127	b 48	10		28		82	b 24	b 12	
14		123	b 47	11		29		b 80	b 23	11	
15		b 118	b 46	b 11		30	a 275	b 79	b 21	b 10	
						31			b 20	10	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
May 18–31	448		340	11.7	6.09	9,440
June		79	134	4.62	5.16	7,970
July	87	20	45.6	1.57	1.81	2,800
August	19	8	11.8	.407	.47	726
September 1–6	10	8	8.67	.299	.07	103
The period						21,000

a Estimated. b Interpolated.

SMITH CREEK NEAR PORT HILL, IDAHO

LOCATION.—Staff gage 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 to September, 1928.

EXTREMES.—Maximum discharge during period, 1,340 second-feet May 18 (gage height, 8.46 feet); minimum, 9.5 second-feet September 8 (gage height, 3.65 feet).

REMARKS.—Records fair except those estimated, which are poor. No diversions above gage.

Daily and monthly discharge, in second-feet, 1928

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1		573	a 257	a 38	a 14	16	b 1,100	a 282	a 84	a 18	
2		a 586	a 252	35	13	17		276	76	17	
3		a 600	a 247	34	13	18	1,340	a 285	76	15	
4		613	a 242	34	a 12	19	a 1,230	a 295	a 79	a 14	
5		534	237	a 32	10	20	1,120	304	a 83	14	
6		a 490	214	30	a 10	21	1,260		86	13	
7		a 446	174	a 29	a 10	22	a 1,280		81	14	
8		402	174	a 27	9.5	23	1,300		a 72	13	
9		a 346	a 154	a 25		24	1,260		62	14	
10		289	135	a 23		25	a 1,260	b 225	58	14	
11		a 296	122	a 22		26	1,260		53	30	
12	1,030	304	a 116	a 20		27	1,300		50	a 26	
13	b 1,100	a 298	109	19		28	a 1,260		47	a 23	
14		a 293	a 100	a 19		29	1,210		44	19	
15		a 287	92	18		30	a 1,000	262	a 42	16	
						31	a 790		41	14	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
May 12–31	1,340	790	1,170	16.7	12.42	46,400
June	613	336	4.80	5.36	20,000	
July	257	41	118	1.69	1.95	7,260
August	38	13	21.9	.313	.36	1,350
September	14	9.5	11.4	.163	.05	181
The period						75,200

a Interpolated. b Estimated.

BOUNDARY CREEK NEAR PORT HILL, IDAHO

LOCATION.—Staff gage in SW. ¼ sec. 11, T. 65 N., R. 2 W., at 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 to September, 1928.

EXTREMES.—Maximum discharge during period, 1,600 second-feet May 20 (gage height, 5.2 feet); minimum, 21 second-feet September 8 (gage height, 1.55 feet).

REMARKS.—Records fair. No diversions above gage.

Daily and monthly discharge, in second-feet, 1928

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1		1,200	232	50	31	16		294	156	30	
2			a 196	a 46	a 30	17	a 1,240	281	152	a 28	
3			a 234	a 45	30	18	1,280	a 269	a 149	28	
4			221	44	29	19	a 1,310	a 234	a 115	28	
5		a 1,180	208	42	a 29	20	a 1,600	a 234	108	28	
6		1,180	194	41	26	21	1,450	a 234	102	28	
7		a 1,180	a 181	39	24	22		a 212	a 96	a 28	
8		750	a 196	38	a 21	23	a 1,310	212	85	28	
9			183	37		24	1,400	a 212	74	a 28	
10		a 365	a 170	35		25		a 181	a 63	34	
11		353	171	34		26		181	62	a 41	
12		341	172	32		27	a 1,530	181	61	39	
13		330	a 173	a 31		28	1,400	181	60	36	
14		318	166	31		29		a 181	a 60	a 34	
15		a 306	a 159	a 31		30		a 269	56	33	
						31			53	32	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
May 17-31	1,600	1,240	1,400	14.4	8.04	41,700
June		181	507	5.23	5.84	30,200
July	234	53	139	1.43	1.65	8,550
August	50	28	34.8	.359	.41	2,140
September 1-8	31	21	27.5	.283	.08	436
The period						82,900

a Discharge determined by means of daily gage height; other discharge estimated.

CLARK FORK BASIN

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, 1928.

EXTREMES.—Maximum discharge during year, about 126,000 second-feet May 28 (gage height, 18.4 feet); minimum (estimated), 8,120 second-feet September 28–30.

1910–1928: Maximum discharge, that of May 28, 1928; minimum, 4,890 second-feet several times during October and November, 1919; lower flow probably occurred during ice periods.

REMARKS.—Records good, except those indicated by braced figures, which were estimated and are fair. Numerous diversions for irrigation above station. Flow regulated by natural storage in Flathead Lake and by controlled storage in several small irrigation reservoirs upstream.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14,000	16,400				9,520	18,400	44,100	111,000	63,800	26,400	13,600
2	14,000	15,900			13,200		18,900	44,100	104,000	61,700	25,800	13,600
3	14,000	15,900					18,900	45,000	99,000	60,600	25,100	13,200
4	14,000	16,400	22,200				18,900	45,000	95,800	59,600	24,500	13,200
5	14,000	20,000					18,400	44,100	91,500	59,600	24,500	13,200
6	14,500	27,000				9,110	18,400	45,000	91,500	59,600	23,300	13,200
7	14,000	29,600			12,000		18,400	51,600	87,300	57,500	23,300	12,700
8	14,000	27,000					17,900	61,700	85,100	56,500	22,200	12,700
9	13,600	24,500					17,400	72,300	83,000	54,500	22,200	12,300
10	13,200	23,300					16,900	81,900	78,700	52,500	21,100	12,300
11	13,600	22,800					17,400	88,300	75,500	51,600	20,500	12,300
12	13,600	22,200					17,400	91,500	73,400	49,600	20,000	10,600
13	14,000	21,600				14,000	17,400	95,800	71,200	47,800	18,900	
14	14,000	21,100			11,400		17,400	100,000	69,100	45,900	18,900	
15	14,000	20,500	18,900				17,400	99,000	68,000	44,100	18,900	10,600
16	14,500	20,000					17,400	95,800	66,900	42,300	17,900	
17	15,000	20,000					17,400	93,700	65,900	41,400	17,900	
18	15,500	20,000					17,400	94,800	63,800	40,500	16,900	
19	15,900	20,000				13,600	18,400	98,000	62,700	39,600	16,900	
20	15,900	20,000					18,400	100,000	61,700	38,800	16,900	
21	16,400	20,500			10,600		18,400	103,000	59,600	37,100	15,900	10,100
22	16,400	20,500				15,900	17,900	107,000	58,600	36,300	15,500	
23	16,400	20,500				17,900	18,400	112,000	59,600	34,700	15,500	
24	16,400	19,500				20,000	19,500	115,000	61,700	33,900	15,000	
25	16,900	19,500				20,000	21,100	120,000	63,800	32,400	15,000	
26	16,900	21,600	13,400		9,520	20,000	23,900	122,000	62,700	31,000	15,000	9,310
27	16,900	22,200				18,900	27,600	124,000	61,700	30,300	15,000	
28	16,900	22,200				18,900	33,200	126,000	62,700	29,600	14,000	
29	16,900	22,200				18,900	40,500	124,000	61,700	28,300	14,000	8,120
30	16,400	22,200				17,900	43,200	122,000	61,700	28,300	14,000	
31	16,400			13,200		17,900		116,000		27,000	14,000	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	16,900	13,200	15,100	928,000
November	29,600	15,900	21,200	1,260,000
December			17,900	1,110,000
February			11,200	644,000
March			14,000	861,000
April	43,200	16,900	20,700	1,230,000
May	126,000	44,100	89,800	5,520,000
June	111,000	58,600	74,000	4,400,000
July	63,800	27,000	44,400	2,730,000
August	26,400	14,000	18,900	1,160,000
September			10,900	649,000

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.

DRAINAGE AREA.—22,900 square miles.

RECORDS AVAILABLE.—September, 1921, to September, 1928; March, 1914, to September, 1922, at Sandpoint.

EXTREMES.—Maximum water-surface elevation during year, 2,068.67 feet May 31 and June 1; minimum, 2,048.21 feet September 29.

1921–1928: Maximum water-surface elevation, that of May 31 and June 1, 1928; minimum, 2,047.13 feet, January 9, 1924.

Crest elevation during flood of June, 1894, was 2,076.08 feet [3] as determined by William Ashley.

REMARKS.—Gage read to hundredths once on each day for which gage height is shown. Considerable water diverted from tributaries of Clark Fork for irrigation.

Daily elevation, in feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	50.02	50.67	52.97	------	50.12	48.92	------	53.92	68.67	------	------	49.57
2	------	50.67	------	50.52	50.12	48.87	------	54.17	68.47	59.22	53.57	------
3	50.02	50.72	53.02	50.47	50.12	48.82	------	54.57	------	59.12	53.37	49.47
4	50.07	50.72	------	50.37	50.07	------	------	54.87	------	59.07	53.17	49.42
5	------	50.72	53.07	50.27	------	48.77	------	55.17	67.47	------	------	49.37
6	------	------	------	50.22	------	48.77	51.82	------	------	58.87	52.77	------
7	50.07	------	53.07	50.17	49.97	48.77	51.82	55.72	66.67	58.77	52.62	49.22
8	50.07	51.57	53.12	------	49.92	48.77	------	56.27	66.27	------	52.52	49.17
9	------	51.77	------	50.17	49.92	------	------	56.87	65.67	58.52	52.32	------
10	------	------	52.92	50.17	49.87	48.92	------	57.72	------	58.32	52.17	49.02
11	50.12	52.07	------	50.17	------	------	51.67	58.52	64.87	58.17	52.02	48.92
12	50.07	52.12	52.72	50.22	------	49.17	------	59.47	64.37	57.97	------	------
13	50.07	------	52.62	50.22	49.72	49.27	51.57	------	63.97	57.82	51.77	48.82
14	50.07	52.17	52.47	50.32	49.67	49.47	51.52	61.12	63.47	57.62	51.52	48.79
15	50.12	52.27	52.32	------	49.67	49.52	------	62.02	------	------	51.37	48.77
16	------	52.32	52.27	50.52	49.57	49.57	51.52	62.62	62.67	57.17	51.22	------
17	50.27	------	52.12	50.57	49.52	49.62	51.47	63.17	------	56.92	51.12	48.67
18	50.37	------	------	50.62	49.47	------	51.47	63.57	61.97	56.77	50.97	------
19	50.42	------	51.87	50.62	------	49.67	51.52	63.97	61.52	56.52	------	48.63
20	50.42	------	51.77	50.57	49.42	49.72	51.52	------	61.22	56.37	50.77	48.57
21	50.47	------	51.67	50.52	49.37	49.77	51.52	64.77	60.87	56.12	50.62	48.53
22	50.47	------	51.52	------	49.32	49.82	------	65.22	60.62	------	50.52	48.51
23	------	------	51.37	------	49.27	------	51.57	65.67	60.37	55.77	50.37	------
24	50.52	------	51.27	50.37	49.22	------	51.57	66.17	------	55.52	50.27	48.41
25	50.57	------	------	50.37	49.17	------	51.67	66.57	59.92	55.32	50.17	48.39
26	50.62	52.57	51.07	50.32	------	50.72	51.77	66.97	59.77	55.07	------	48.35
27	50.62	------	50.97	50.27	49.02	------	------	------	59.62	54.92	49.97	48.29
28	50.67	------	50.92	50.27	49.02	51.12	------	67.87	------	54.72	49.87	48.27
29	------	------	------	------	48.97	51.17	------	68.27	59.37	------	49.82	48.21
30	------	52.92	50.77	50.17	------	51.27	------	68.57	59.32	54.37	49.77	------
31	------	------	50.67	50.17	------	------	------	68.67	------	54.02	49.67	------

NOTE.—Add 2,000 feet to obtain mean sea-level elevations (U. S. Coast and Geodetic Survey datum).

[3] U. S. Coast and Geodetic Survey datum. Elevation 2,079.29 feet, previously published for this flood, referred to U. S. Geological Survey bench mark at Hope, described in U. S. Geol. Survey Bull. 567, p. 94, 1915.

CLARK FORK AT METALINE FALLS, WASH.

LOCATION.—Staff gage in SE. ¼ sec. 21, T. 39 N., R. 43 E., three-eighths mile above Metaline Falls and 11 miles south of international boundary.

DRAINAGE AREA.—25,100 square miles.

RECORDS AVAILABLE.—November, 1908, to September, 1910; October, 1912, to September, 1928.

EXTREMES.—Maximum discharge during year, 137,000 second-feet June 3 and 4 (gage height, 37.88 feet); minimum, 12,100 second-feet September 27, 29, and 30 (gage height, 4.4 feet).

1912–1928: Maximum discharge, 139,000 second-feet June 16, 1913 (gage height, 41.2 feet); minimum, 2,500 second-feet December 12, 1919 (gage height, −2.4 feet).

Maximum stage, 38.9 feet June, 1894 (discharge, about 217,000 second-feet) at Newport (drainage area, 900 square miles less).

REMARKS.—Records excellent. Discharge estimated November 6 and 7. Numerous small diversions from upper tributaries for irrigation; no artificial regulation.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19,600	22,500	34,300	22,000	20,400	15,500	27,600	35,600	134,000	74,400	40,100	18,400
2	19,600	22,500	34,300	20,700	20,400	15,300	28,000	37,500	134,000	74,000	38,800	18,200
3	19,300	22,500	34,300	20,200	20,200	15,100	28,300	39,600	135,000	74,000	37,800	18,000
4	20,200	22,700	34,300	20,000	20,200	15,100	28,800	41,500	137,000	73,000	37,100	17,500
5	20,400	22,700	34,900	20,400	20,200	14,900	28,800	43,500	135,000	72,600	36,400	17,100
6	20,200	23,300	34,900	20,900	20,200	14,700	28,800	45,000	134,000	71,700	35,400	16,900
7	20,200	23,800	35,600	21,100	20,000	14,500	29,000	47,000	131,000	70,800	33,800	16,500
8	20,000	24,400	35,400	21,100	19,800	14,700	29,300	48,600	129,000	70,400	33,100	16,300
9	20,200	25,800	35,400	21,300	19,600	14,900	29,300	51,300	126,000	69,400	32,400	16,100
10	20,200	27,300	35,600	21,600	19,300	15,100	28,800	54,800	123,000	68,600	31,600	15,800
11	20,200	28,000	33,800	21,100	19,300	15,500	27,800	60,600	121,000	67,200	30,600	15,400
12	20,200	28,600	34,100	20,700	18,900	16,000	28,000	64,200	117,000	66,300	29,600	15,200
13	20,200	29,800	33,300	20,200	18,700	16,600	27,800	69,100	114,000	65,000	28,800	14,800
14	20,400	30,800	32,300	20,700	18,700	17,000	27,800	75,000	111,000	64,000	27,800	14,600
15	20,400	30,600	31,800	20,700	18,500	17,400	27,600	80,200	108,000	62,700	27,600	14,400
16	20,700	31,000	31,300	21,100	18,300	18,100	27,600	85,200	104,000	60,400	26,600	14,200
17	21,100	31,000	31,000	21,600	18,100	18,300	27,600	88,900	101,000	59,600	25,100	14,200
18	20,900	31,000	30,600	22,000	18,100	18,500	27,800	94,300	97,800	58,000	25,100	14,000
19	20,400	31,000	30,000	22,000	17,600	18,700	27,800	97,800	94,800	56,400	24,400	13,800
20	21,300	31,300	29,800	22,000	17,600	18,900	27,600	101,000	91,800	55,200	23,700	13,100
21	21,600	31,600	29,000	22,200	17,200	19,100	27,800	104,000	89,800	54,000	23,200	13,100
22	21,600	31,300	28,800	22,200	17,000	19,600	27,800	107,000	87,300	52,400	22,800	12,900
23	21,800	31,000	27,600	22,000	17,200	20,400	27,800	110,000	84,800	50,900	22,100	12,900
24	22,000	30,800	26,800	21,300	16,800	21,300	28,300	112,000	82,800	49,800	21,800	12,900
25	22,200	31,300	26,300	21,100	16,000	22,000	28,300	115,000	80,800	48,800	21,200	12,900
26	22,500	31,300	25,800	21,100	16,200	22,900	28,600	118,000	79,300	47,400	21,000	12,500
27	22,500	32,300	25,100	20,900	15,800	24,400	29,300	121,000	77,800	46,000	20,500	12,100
28	22,500	32,800	24,600	20,900	15,800	25,300	30,000	124,000	76,800	44,600	19,800	12,500
29	22,500	33,300	23,600	20,700	15,500	25,800	30,800	128,000	75,800	43,700	19,400	12,100
30	22,500	33,800	23,400	20,700	-------	26,300	32,800	131,000	75,300	42,200	19,000	12,100
31	22,200	-------	24,400	20,700	-------	26,800	-------	133,000	-------	41,100	18,800	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	22,500	19,300	21,000	0.837	0.96	1,290,000
November	33,800	22,500	28,700	1.14	1.27	1,710,000
December	35,600	23,400	30,700	1.22	1.41	1,890,000
January	22,200	20,000	21,100	.841	.97	1,300,000
February	20,400	15,500	18,300	.729	.79	1,050,000
March	26,800	14,500	18,700	.745	.86	1,150,000
April	32,800	27,600	28,500	1.14	1.27	1,700,000
May	133,000	35,600	82,700	3.29	3.79	5,080,000
June	137,000	75,300	106,000	4.22	4.71	6,310,000
July	74,400	41,100	59,800	2.38	2.74	3,680,000
August	40,100	18,800	27,600	1.10	1.27	1,700,000
September	18,400	12,100	14,700	.586	.65	875,000
The year	137,000	12,100	38,200	1.52	20.69	27,700,000

FLATHEAD RIVER AT COLUMBIA FALLS, MONT.

LOCATION.—Wire gage in NW. ¼ sec. 17, T. 30 N., R. 20 W., at highway bridge at Columbia Falls.

RECORDS AVAILABLE.—May, 1922, to September, 1923 (fragmentary); June to September, 1928.

EXTREMES.—Maximum discharge during year, 39,700 second-feet July 1 (gage height, 11.40 feet); minimum, 2,170 second-feet September 29.

1922–23, 1928: Maximum discharge, 102,000 second-feet June 5, 1923, (gage height, 17.3 feet); minimum, 2,170 second-feet September 21–29, 1923, and September 29, 1928.

REMARKS.—Records good. No diversions above station.

Daily and monthly discharge, in second-feet, 1928

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1		39,700	8,210	3,360	16		16,800	4,310	2,620
2		36,800	7,920	3,360	17		16,800	4,310	2,620
3		32,800	7,370	3,360	18		15,900	4,140	2,620
4		32,800	6,860	3,220	19		15,900	4,140	2,620
5		29,700	6,860	3,220	20		14,700	3,980	2,620
6		26,900	6,370	3,220	21		13,200	3,980	2,620
7		25,800	6,130	3,220	22		12,000	3,820	2,620
8		23,800	5,680	3,080	23		12,000	3,820	2,620
9		22,800	5,460	3,080	24		11,200	3,820	2,620
10		22,800	5,460	2,950	25	35,400	11,200	3,820	2,520
11		20,100	5,460	2,950	26	34,700	10,500	4,140	2,430
12		19,300	5,250	2,830	27	34,000	10,200	3,820	2,430
13		18,800	5,050	2,720	28	34,700	9,810	3,820	2,430
14		18,000	4,850	2,720	29	36,800	9,810	3,660	2,170
15		16,800	4,660	2,620	30	38,200	9,140	3,660	2,430
					31		8,820	3,510	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
June 25–30	38,200	34,000	35,600	427,000
July	39,700	8,820	18,900	1,160,000
August	8,210	3,510	4,980	306,000
September	3,360	2,170	2,800	167,000
The period				2,060,000

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. Zero of gage, is 2,900.00 feet above mean sea level.
RECORDS AVAILABLE.—May to September, 1928.
EXTREMES.—Maximum water-surface elevation during period, 2,913.95 feet May 27; minimum, 2,903.92 feet September 30.
REMARKS.—Records collected for river profile study.

Daily elevation, in feet, 1928

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	8.20	11.00	10.00	6.32	4.54	16	10.80	9.50	------	5.49	------
2	8.00	10.50	------	------	------	17	11.60	9.10	7.65	------	4.23
3	7.65	10.10	9.80	6.30	------	18	12.30	8.85	------	5.43	4.19
4	7.58	------	------	------	4.50	19	12.20	8.80	------	------	------
5	7.95	------	9.60	6.25	4.48	20	12.60	------	7.45	4.80	4.13
6	8.65	------	------	------	4.45	21	12.85	------	7.23	------	4.08
7	10.02	------	9.55	6.18	4.43	22	13.40	9.20	------	4.75	4.05
8	11.55	9.60	9.30	------	4.39	23	13.90	9.65	7.00	------	4.00
9	12.40	9.20	------	------	------	24	13.70	9.55	------	4.69	3.97
10	12.15	9.30	------	6.08	4.38	25	13.22	------	------	------	------
11	11.90	------	8.00	------	4.36	26	13.60	9.45	6.83	4.59	3.95
12	11.55	9.40	7.83	5.95	4.34	27	13.92	------	------	------	3.95
13	12.25	------	------	------	------	28	13.05	9.80	6.56	4.58	------
14	11.70	------	7.85	5.80	4.30	29	12.30	9.60	6.40	------	3.94
15	10.80	9.60	7.78	------	4.28	30	11.65	10.10	------	4.57	3.92
						31	11.00	------	------	------	------

NOTE.—Add 2,900 feet to obtain mean sea-level elevations.

FLATHEAD RIVER AT DEMERSVILLE, NEAR KALISPELL, MONT.

LOCATION.—Vertical staff gage in NE. ¼ sec. 28, T. 28 N., R. 21 W., at Demersville. Zero of gage is 2,800.00 feet above mean sea level.

RECORDS AVAILABLE.—April, 1909, to July, 1912; April to September, 1928.

EXTREMES.—Maximum water-surface elevation during period April 7 to September 30, 1928, 2,904.4 feet May 27; minimum, 2,883.1 feet September 25–30.

1909–1912, 1928: Maximum water-surface elevation, that of May 27, 1928; minimum, 2,882.6 feet October 1, 1910.

REMARKS.—Records for profile study of Flathead River between Kalispell and Flathead Lake.

Daily elevation, in feet, 1928

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	90.5	98.8	95.0	87.3	84.1	16	84.3	98.4	94.6	90.4	85.2	83.4
2	-------	90.5	98.7	94.9	87.1	84.0	17	84.6	99.0	94.0	90.3	85.1	83.4
3	-------	90.0	97.4	94.6	87.0	84.0	18	84.7	100.1	93.6	90.0	85.0	83.4
4	-------	89.7	97.0	94.2	86.8	83.9	19	84.7	100.9	93.6	90.0	84.9	83.4
5	-------	89.7	96.7	94.0	86.7	83.9	20	84.6	100.8	93.5	89.5	84.8	83.3
6	-------	90.7	96.7	93.5	86.6	83.8	21	84.6	101.1	93.2	89.3	84.7	83.3
7	84.4	92.9	96.6	93.3	86.4	83.8	22	84.7	101.9	93.2	89.1	84.6	83.2
8	84.4	96.7	96.2	92.8	86.1	83.7	23	84.7	103.1	94.3	88.9	84.5	83.2
9	84.3	98.7	95.4	92.5	86.0	83.7	24	85.0	103.6	94.6	88.7	84.4	83.2
10	84.4	99.6	95.1	92.2	85.9	83.7	25	85.9	104.2	94.4	88.4	84.3	83.1
11	84.3	99.5	94.7	92.0	85.8	83.6	26	87.2	103.6	94.5	88.3	84.3	83.1
12	84.2	99.1	94.5	91.4	85.8	83.6	27	89.5	104.4	94.4	88.1	84.3	83.1
13	84.2	100.0	94.4	91.1	85.6	83.6	28	91.5	104.3	94.3	88.0	84.3	83.1
14	84.2	100.4	94.4	91.0	85.3	83.5	29	92.5	102.7	94.2	87.8	84.3	83.1
15	84.2	98.9	94.6	90.7	85.3	83.5	30	91.0	101.5	94.9	87.6	84.2	83.1
							31	-------	99.0	-------	87.4	84.2	----

NOTE.—Add 2,800 feet to obtain mean sea-level elevations.

FLATHEAD RIVER AT DAMON RANCH, NEAR KALISPELL, MONT.

LOCATION.—Vertical staff in NW. ¼ sec. 32, T. 28 N., R. 20 W., at Damon ranch, 7 miles below Kalispell. Zero of gage is 2,800 feet above mean sea level.

RECORDS AVAILABLE.—April, 1909, to July, 1912; May to September, 1928.

EXTREMES.—Maximum water-surface elevation for period May to September, 1928, 2,899.6 feet (determined from floodmark) May 26–27; minimum, 2,883.0 feet September 30.

1909–1912, 1928: Maximum water-surface elevation, that of May 26–27, 1928; minimum, 2,882.55 feet September 26–29, 1910.

REMARKS.—Records good. Records used for river profile studies on Flathead River above Flathead Lake.

Daily elevation, in feet, 1928

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	-------	97.2	92.8	86.9	84.0	16	95.2	93.0	89.6	85.0	83.6
2	88.4	96.4	92.8	86.8	84.0	17	95.8	92.5	89.6	84.9	83.5
3	88.3	96.0	92.6	86.6	84.0	18	96.6	92.3	89.2	84.9	83.5
4	88.2	95.6	92.4	86.5	83.9	19	97.0	92.2	89.1	84.8	83.4
5	88.3	95.4	92.2	86.4	83.9	20	97.2	92.0	89.0	84.8	83.4
6	89.3	95.3	91.9	86.2	83.8	21	97.5	91.8	88.7	84.7	83.4
7	90.8	94.8	91.7	86.2	83.8	22	98.2	91.8	88.5	84.6	83.4
8	92.8	94.4	91.4	86.1	83.8	23	98.8	92.4	88.4	84.5	83.3
9	94.4	93.8	91.2	86.0	83.7	24	-------	92.4	88.2	84.4	83.2
10	95.1	93.4	91.0	85.8	83.7	25	-------	92.4	88.0	84.4	83.2
11	95.1	93.3	90.8	85.6	83.7	26	-------	92.4	87.8	84.3	83.2
12	95.1	93.2	90.6	85.4	83.6	27	-------	92.4	87.6	84.3	83.2
13	95.9	93.1	90.4	85.3	83.6	28	-------	92.4	87.5	84.3	83.1
14	96.0	93.1	90.2	85.2	83.6	29	-------	92.4	87.3	84.2	83.1
15	95.3	93.1	89.8	85.1	83.6	30	98.7	92.8	87.2	84.2	83.0
						31	97.8	-------	87.1	84.1	-------

NOTE.—Add 2,800 feet to obtain mean sea-level elevations.

FLATHEAD RIVER AT KELLER RANCH, NEAR HOLT, MONT.

LOCATION.—Wire and staff gage in SW. ¼ sec. 23, T. 27 N., R. 20 W., at Keller ranch, near Holt. Zero of gage 2,800 feet above mean sea level.
RECORDS AVAILABLE.—April, 1909, to July, 1912; June to September, 1928.
EXTREMES.—Maximum water-surface elevation during 1928, 2,897.35 feet May 29–30 (determined from floodmark); minimum, 2,883.5 feet September 8–9. 1909–1912, 1928: Maximum water-surface elevation, that of May 29–30, 1928; minimum, 2,882.7 feet September 25–27, 1910.
REMARKS.—Records good. Records used for profile study of river between Kalispell and Flathead Lake.

Daily elevation, in feet, 1928

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1		91.2	86.6	84.0	16		88.9	84.9	
2		91.1	86.5	83.9	17		88.8	84.7	
3		91.0	86.3	83.9	18		88.6	84.6	
4		90.8	86.2	83.8	19		88.4	84.5	
5		90.8	86.0	83.7	20		88.2	84.5	
6		90.7	85.9	83.7	21		88.0	84.4	
7		90.6	85.9	83.6	22		87.8	84.4	
8		90.6	85.6	83.5	23		87.8	84.3	
9		90.4	85.6	83.5	24	90.3	87.6	84.3	
10		90.2	85.4		25	90.5	87.4	84.3	
11		90.0	85.3		26	90.8	87.3	84.2	
12		89.7	85.3		27	90.8	87.2	84.2	
13		89.6	85.2		28	90.9	87.2	84.1	
14		89.2	85.0		29	91.0	87.0	84.1	
15		89.0	85.0		30	91.2	86.9	84.0	
					31		86.8	84.0	

NOTE.—Add 2,800 feet to obtain mean sea-level elevations.

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. Zero of gage is 2,800.00 feet above mean sea level.
RECORDS AVAILABLE.—April, 1922, to September, 1928.
EXTREMES.—Maximum water-surface elevation during year, 2,895.92 feet May 31; minimum, 2,882.84 feet September 29.
1922–1928: Maximum water-surface elevation, that of May 31, 1928; minimum, 2,882.0 feet December 6–12, 1923.
REMARKS.—Records good.

Daily elevation, in feet, 1927–28

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	84.30	85.04			85.97	95.52	90.44	86.46	83.88
2	84.30	84.98			86.28	95.10	90.45	86.36	83.81
3	84.25	84.95			86.45	94.76	90.46	86.31	83.79
4	84.30	85.00			86.67	94.36	90.47	86.27	83.77
5	84.30	85.00			86.69	94.03	90.40	86.12	83.72
6	84.30				86.82	93.72	90.34	86.01	83.71
7	84.25			83.84	87.06	93.47	90.22	85.87	83.63
8	84.25			83.84	87.54	93.40	90.12	85.70	83.60
9	84.20			83.84	88.17	92.92	89.94	85.58	83.61
10	84.25			83.85	88.82	92.70	89.77	85.42	83.52
11	84.25			83.86	89.45	92.29	89.61	85.36	83.45
12	84.25			83.83	90.02	92.02	89.47	85.29	83.48
13	84.25			83.84	90.53	91.75	89.30	85.15	83.46
14	84.30			83.84	91.02	91.54	89.14	84.98	83.37
15	84.32			83.82	91.42	91.40	88.95	84.89	83.30
16	84.47			83.83	91.70	91.26	88.78	84.82	83.27
17	84.60			83.85	91.94	91.08	88.65	84.74	83.23
18	84.85			83.87	92.22	90.90	88.52	84.65	83.22
19	84.88			83.92	92.52	90.71	88.35	84.59	83.18
20	84.94			83.93	92.82	90.60	88.20	84.51	83.14
21	84.98			83.97	93.12	90.45	88.06	84.42	83.10
22	84.97			83.98	93.42	90.36	87.87	84.32	83.07
23	85.02			84.02	93.77	90.30	87.72	84.29	83.01
24	85.04		83.30	84.07	94.20	90.29	87.52	84.24	83.00
25	85.04			84.15	94.62	90.29	87.41	84.15	82.94
26	85.02			84.30	94.99	90.29	87.30	84.08	82.90
27	85.00			84.57	95.29	90.30	87.22	84.02	82.89
28	84.97			84.97	95.62	90.34	87.15	84.01	82.88
29	85.00			85.37	95.82	90.37	86.87	83.98	82.90
30	84.95			85.67	95.85	90.42	86.75	83.96	82.86
31	85.02				95.80		86.62	83.94	

NOTE.—Add 2,800 feet to obtain mean sea-level elevations.

FLATHEAD LAKE AT POLSON, MONT.

LOCATION.—Water-stage recorder in SW. ¼ sec. 4, T. 22 N., R. 20 W., at steamboat dock at south end of lake at Polson. Zero of gage is 2,800 feet above mean sea level.

RECORDS AVAILABLE.—August, 1908, to December, 1926; June to September, 1928.

EXTREMES.—Maximum water-surface elevation during 1928, 2,895.85 feet (from high-water mark) May 29; minimum, 2,882.89 feet September 30.

1908–1926, 1928: Maximum water-surface elevation, that of May 29, 1928; minimum, 2,881.5 feet February 16–23, 1913, and November 24, 1923.

REMARKS.—Record reliable.

Daily elevation, in feet, 1928

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1		90.48	86.54	83.90	16		88.78	84.82	83.32
2		90.53	86.48	83.84	17		88.69	84.74	83.28
3		90.50	86.33	83.78	18		88.53	84.69	83.23
4		90.47	86.23	83.76	19		88.36	84.64	83.22
5		90.40	86.09	83.74	20		88.20	84.53	83.15
6		90.35	85.88	83.68	21		88.05	84.42	83.18
7		90.21	85.73	83.75	22		87.88	84.37	83.15
8		90.11	85.69	83.70	23		87.72	84.32	83.08
9		89.93	85.64	83.63	24		87.55	84.37	83.05
10		89.72	85.41	83.55	25		87.40	84.39	83.02
11		89.58	85.29	83.49	26		87.29	84.15	83.05
12		89.43	85.18	83.44	27		87.20	84.08	82.98
13		89.37	85.14	83.38	28		86.97	84.02	82.95
14		89.04	84.98	83.30	29	90.38	86.84	84.02	83.00
15		88.92	84.89	83.33	30	90.45	86.67	83.98	82.90
					31		86.54	83.94	

NOTE.—Add 2,800 feet to obtain mean sea-level elevations.

FLATHEAD RIVER NEAR POLSON, MONT.

LOCATION.—Chain gage in sec. 19, T. 22 N., R. 21 W., on highway bridge at Norrisvale, 5 miles below Newell Tunnel and 12 miles below Polson.

DRAINAGE AREA.—7,010 square miles.

RECORDS AVAILABLE.—July, 1907, to September, 1928.

EXTREMES.—Maximum discharge during year, 82,100 second-feet May 29 and 30 (gage height, 17.1 feet); minimum, 4,540 second-feet September 30.

1907–1928: Maximum discharge, that of May 29 and 30, 1928; minimum, 1,360 second-feet December 9–14, 1919, and March 14, 1920.

REMARKS.—Records fair. Discharge interpolated October 15, 16, April 1, 2, 30, May 1, 2, and 5. Discharge based on water-surface elevations in Flathead Lake April 12–25, July 3–31, August 1–8, 24–31, September 1–6, and 23–30. Several diversions above gage. Flow regulated by natural storage in Flathead Lake.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8,760	11,600			7,000	16,600	79,200	43,200	19,500	7,640
2	8,760	11,300			7,220	18,200	76,400	42,500	19,200	7,420
3	9,050	11,300			7,460	19,000	72,800	41,900	18,400	7,210
4	8,760				7,460	20,600	71,300	41,700	18,000	7,140
5	8,760				7,460	21,800	70,600	41,300	17,200	7,080
6	8,760				7,950	22,900	65,600	41,000	16,200	6,870
7	8,760				7,700	24,000	65,600	40,100	15,400	7,460
8	8,760				7,950	25,100	62,000	39,500	15,200	7,220
9	8,760				8,210	30,300	59,900	38,400	14,500	6,990
10	8,760				7,460	32,700	57,800	37,100	13,600	6,770
11	8,760				7,460	35,100	55,000	36,300	13,200	6,990
12	9,050				7,390	41,300	53,700	35,400	12,800	6,550
13	9,050				7,420	42,500	51,700	35,000	12,800	6,550
14	9,050				7,420	43,800	50,400	33,000	13,200	6,140
15	9,350				7,350	49,000	48,400		12,400	6,140
16	9,660				7,390	50,400	47,700	31,500	12,000	6,140
17	9,960				7,460	52,300	46,400	30,900	11,600	6,140
18	10,300		10,600		7,530	54,400	45,100	30,000	11,600	5,550
19	10,900		13,200		7,710	55,700	43,800	29,000	10,900	5,360
20	11,300		14,500		7,750	59,200	42,500	28,000	10,900	5,720
21	11,300		14,200		7,890	59,900	42,500	27,100	10,600	5,550
22	11,600		13,900		7,930	62,000	41,900	26,200	9,900	5,550
23	11,600		13,600	4,990	8,080	64,800	41,900	25,400	9,350	5,020
24	12,400				8,280	71,300	41,900	24,600	9,480	4,940
25	12,000				8,600	71,300	41,900	23,800	9,560	4,860
26	12,000				9,350	74,200	42,500	23,200	8,600	4,940
27	11,600				9,650	75,600	42,500	22,800	8,320	4,750
28	11,600				10,900	78,500	43,200	21,600	8,080	4,670
29	11,600				13,600	82,100	43,200	21,000	8,080	4,800
30	11,600				15,200	82,100	43,200	20,200	7,930	4,540
31	11,600					80,000		19,500	7,780	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	12,400	8,760	10,100	1.44	1.66	621,000
November			[a] 8,600	1.23	1.37	512,000
December			[a] 7,900	1.13	1.30	486,000
January			[a] 6,000	.856	.99	369,000
February			[a] 5,300	.756	.82	305,000
March			[a] 5,700	.813	.94	350,000
April	15,200	7,000	8,340	1.19	1.33	496,000
May	82,100	16,600	48,900	6.98	8.05	3,010,000
June	79,200	41,900	53,000	7.56	8.44	3,150,000
July	43,200	19,500	31,700	4.52	5.21	1,950,000
August	19,500	7,780	12,500	1.78	2.05	769,000
September	7,640	4,540	6,090	.869	.97	362,000
The year	82,100		17,100	2.44	33.13	12,400,000

[a] Estimated.

SOUTH FORK OF FLATHEAD RIVER NEAR COLUMBIA FALLS, MONT.

LOCATION.—Water-stage recorder in NW. ¼ sec. 7, T. 30 N., R. 19 W., at highway bridge, half a mile above mouth and 7 miles east of Columbia Falls.
DRAINAGE AREA.—1,640 square miles.
RECORDS AVAILABLE.—September, 1910, to September, 1916; April, 1923, to September, 1928.
EXTREMES.—Maximum discharge during year, 34,100 second-feet May 25 (gage height, 14.2 feet); minimum, 534 second-feet September 26.
1910–1916, 1923–1928: Maximum discharge, about 46,200 second-feet June 19, 1916 (gage height, 16.6 feet); minimum, 340 second-feet October 6, 1924.
REMARKS.—Records good. No diversions above gage.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,220	2,620	3,010			10,700	15,700	11,900	2,350	965
2	3,220	2,530	3,540			10,100	13,200	10,400	2,350	943
3	3,220	2,530	6,010			9,450	13,800	9,150	2,350	900
4	3,220	2,720	5,750			8,850	13,800	8,850	2,180	890
5	3,110	3,320	5,100			9,150	14,200	8,850	2,060	890
6	3,110	3,660	4,480			11,300	15,100	8,260	2,010	860
7	3,110	4,600				15,800	14,500	7,680	1,910	820
8	2,910	4,600				22,500	12,600	6,830	1,850	800
9	2,820	4,240				26,700	11,300	6,550	1,740	800
10	2,800	3,880				27,400	10,400	6,280	1,670	791
11	2,770	3,540				27,400	10,100	6,010	1,640	782
12	2,750	3,320				25,300	10,100	5,640	1,540	772
13	2,720	3,220				25,300	11,000	5,490	1,480	753
14	3,430	3,010				27,400	11,100	5,230	1,440	744
15	4,360	2,910				25,000	11,200	4,980	1,420	706
16	4,600	2,820				21,100	11,300	4,860	1,320	681
17	4,730	3,010				20,800	11,300	5,360	1,240	664
18	4,730	3,220				22,500	11,400	5,100	1,190	616
19	4,480	3,220				25,300	11,500	4,980	1,170	609
20	4,120	3,430				27,100	11,600	4,600	1,140	609
21	3,880	3,540				26,400	11,600	4,120	1,120	595
22	3,660	3,320				26,700	11,700	3,880	1,080	588
23	3,430	3,220				28,500	11,800	3,770	1,040	574
24	3,320	3,110				31,400	11,900	3,660	1,060	574
25	3,320	3,320		3,110		32,900	11,900	3,430	1,070	581
26	3,220	4,000		3,430		30,500	11,900	3,110	1,120	567
27	3,110	3,880				28,000	11,900	3,010	1,150	588
28	3,010	3,770				25,600	11,900	2,910	1,170	595
29	2,910	3,540				23,100	11,900	2,820	1,130	602
30	2,820	3,220			10,100	20,600	13,200	2,720	1,100	602
31	2,720					18,100		2,530	1,000	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	4,730	2,720	3,380	2.06	2.38	208,000
November	4,600	2,530	3,380	2.06	2.30	201,000
December 1–6	6,010	3,010	4,650	2.48	.65	55,300
May	32,900	8,850	22,300	13.6	15.68	1,370,000
June	15,700	10,100	12,200	7.44	8.30	726,000
July	11,900	2,530	5,580	3.40	3.92	343,000
August	2,350	1,000	1,490	.909	1.05	91,600
September	965	567	715	.436	.49	42,500

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 May, 1907; April to August, 1922; June to September, 1928.

EXTREMES.—Maximum discharge during period June 25 to September 30, 1928, 1,600 second-feet June 25 (gage height, 6.50 feet); minimum, 52 second-feet September 25 (gage height, 0.82 foot).

1922, 1928: Maximum discharge, 2,750 second-feet May 22, 1922 (gage height 10.50 feet); minimum, 52 second-feet September 25, 1928 (gage height, 0.82 foot).

REMARKS.—Records fair. No diversions above station.

Daily and monthly discharge, in second-feet, 1928

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1		908	362	142	16		695	227	112
2		970	349	142	17		665	227	111
3		1,030	349	135	18		545	216	109
4		1,060	349	135	19		402	205	108
5		1,090	349	135	20		336	205	107
6		1,060	336	135	21		323	195	105
7		1,000	323	128	22		402	195	104
8		1,190	310	121	23		430	185	56
9		1,190	297	121	24		486	185	53
10		1,030	272	120	25	1,600	515	185	52
11		1,000	272	118	26	1,510	515	185	53
12		908	260	117	27	1,310	458	205	59
13		846	249	116	28	1,060	238	195	60
14		785	249	114	29	1,030	349	167	249
15		725	238	113	30	908	402	150	155
					31		362	142	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
June 25–30	1,600	908	1,240	14,800
July	1,190	238	707	43,500
August	362	142	246	15,100
September	249	52	113	6,720
The period				80,100

WHITEFISH RIVER NEAR KALISPELL, MONT.

LOCATION.—Staff gage on highway bridge at north quarter corner of sec. 4, T. 29 N., R. 21 W., 10 miles north of Kalispell.

RECORDS AVAILABLE.—November and December, 1906; July to September, 1928.

EXTREMES.—Maximum discharge during year, 460 second-feet July 15 (gage height, 12.15 feet); minimum, 84 second-feet September 25–30.

REMARKS.—Records good. Flow partly controlled by dam at outlet of Whitefish River.

Daily and monthly discharge, in second-feet, 1928

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1	------	250	126	11	------	142	107	21	362	116	90
2	------	236	126	12	------	142	107	22	344	116	90
3	------	236	114	13	------	142	107	23	327	116	90
4	------	179	114	14	421	142	107	24	327	116	90
5	------	166	114	15	460	129	107	25	327	116	84
6	------	166	114	16	440	129	102	26	311	126	84
7	------	152	114	17	421	126	102	27	295	126	84
8	------	152	114	18	402	126	102	28	280	126	84
9	------	152	114	19	402	126	90	29	280	126	84
10	------	152	114	20	362	126	90	30	280	126	84
								31	265	126	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
July 14–31	460	265	350	12,500
August	250	116	145	8,920
September	126	84	102	6,070
The period	----------	----------	----------	17,500

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, 7 miles southeast of Big Fork.

DRAINAGE AREA.—647 square miles.

RECORDS AVAILABLE.—April, 1922, to September, 1928.

EXTREMES.—Maximum discharge during year, 7,820 second-feet May 28 (gage height, 5.90 feet); minimum, 560 second-feet September 27–30.

1922–1928: Maximum discharge, that of May 28, 1928; minimum, 268 second-feet February 25 to March 24, 1923.

REMARKS.—Records good. No diversions above station. Flow regulated by natural storage in Swan Lake.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	762	980	1,670	720	------	1,840	3,980	5,460	4,604	1,580	910
2	805	980	1,670	------	------	1,970	3,980	4,970	4,480	1,580	910
3	805	890	1,670	------	------	2,100	3,820	4,480	4,140	1,580	862
4	935	980	2,000	------	640	1,970	3,520	4,310	3,980	1,580	862
5	980	1,160	2,000	------	640	1,970	3,220	4,140	3,670	1,460	815
6	980	1,460	1,780	------	640	1,840	3,070	4,140	3,670	1,460	815
7	980	1,780	1,560	------	682	1,840	3,360	3,980	3,520	1,340	815
8	935	1,890	1,560	------	682	1,710	3,980	4,140	3,520	1,340	815
9	935	1,890	1,560	------	682	1,580	4,640	4,140	3,220	1,280	770
10	890	1,890	1,360	------	725	1,460	5,300	3,820	3,220	1,220	770
11	890	1,780	1,360	------	815	1,460	5,630	3,520	3,070	1,220	725
12	890	1,780	1,360	------	862	1,460	5,800	3,220	3,070	1,170	725
13	890	1,560	1,360	------	960	1,460	5,800	3,220	2,920	1,120	725
14	890	1,460	1,310	------	960	1,460	5,960	3,220	2,920	1,120	725
15	890	1,460	1,260	------	960	1,580	5,800	3,360	2,780	1,120	725
16	980	1,360	1,260	------	960	1,580	5,460	3,520	2,780	1,060	682
17	980	1,360	1,210	------	910	1,580	5,140	3,520	2,780	1,060	682
18	1,070	1,360	1,160	------	960	1,840	5,140	3,520	2,780	1,010	682
19	1,160	1,460	1,120	------	960	1,970	5,300	3,220	2,640	1,010	640
20	1,160	1,460	1,070	------	1,010	1,970	5,460	3,360	2,500	960	640
21	1,160	1,560	980	------	1,060	1,970	5,630	3,220	2,370	960	640
22	1,160	1,670	980	------	1,220	1,970	5,960	3,220	2,240	910	640
23	1,160	1,560	980	------	1,280	1,970	6,460	3,360	2,100	910	640
24	1,070	1,560	935	------	1,460	2,100	6,460	4,140	2,100	910	640
25	1,120	1,560	935	------	1,580	2,240	7,310	4,480	1,970	910	640
26	1,120	1,670	890	------	1,710	2,500	7,310	4,640	1,970	960	640
27	1,120	1,670	935	------	1,710	2,920	7,650	4,640	1,840	960	560
28	1,070	1,780	980	------	1,710	3,220	7,820	4,640	1,840	1,010	560
29	1,070	1,780	935	------	1,710	3,980	7,480	4,640	1,710	1,010	560
30	1,070	1,670	890	------	1,580	4,140	6,970	4,640	1,710	960	560
31	1,020	------	805	------	1,710	------	6,120	------	1,710	960	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,160	762	998	61,400
November	1,890	890	1,510	89,800
December	2,000	805	1,280	78,700
March 4–31	1,710	640	1,100	61,100
April	4,140	1,460	2,060	123,000
May	7,820	3,070	5,470	336,000
June	5,460	3,220	3,960	236,000
July	4,640	1,710	2,830	174,000
August	1,580	910	1,150	70,700
September	910	560	712	42,400

BIG CREEK NEAR POLSON, MONT.

LOCATION.—Water-stage recorder in NW. ¼ sec. 4, T. 22 N., R. 19 W., just below Mission Range Power Co.'s power house, three-fourths mile above mouth and 7 miles east of Polson.

RECORDS AVAILABLE.—June, 1917, to September, 1928.

EXTREMES.—Maximum total discharge during the year, 39.5 second-feet May 23 (gage height, 2.15 feet), including the flow in pipe line and canal, 5.0 second-feet; minimum, 2.9 second-feet March 18.

1917–1928: Maximum discharge, about 104 second-feet June 9, 1917 (gage height, 2.4 feet); no flow when power plant was shut down for short periods during November and December, 1922.

REMARKS.—Records fair. Daily discharge is flow past gage plus water diverted between power house and gage to canal of United States Indian Service and to Polson pipe line. Flow is regulated by operation of power plant. Daily discharge October 1 to April 15 determined from kilowatt output of plant.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.9	5.6	5.9	4.1	4.1	4.5	3.1	25.6	25.6	25.9	4.1	6.8
2	3.8	5.8	6.0	3.7	4.1	3.3	3.0	25.1	30.1	27.0	4.1	5.1
3	3.8	4.7	5.2	3.9	4.3	3.4	3.3	23.7	27.0	26.2	5.4	5.4
4	4.1	4.8	3.6	3.9	4.3	3.0	3.4	22.4	25.3	20.8	7.6	6.2
5	4.0	4.6	4.1	3.9	3.4	3.1	3.4	23.2	25.6	19.3	7.4	6.1
6	4.0	4.0	5.0	4.0	3.6	3.6	3.5	27.8	28.4	21.1	7.9	5.7
7	4.0	4.1	5.3	4.3	3.9	3.7	3.3	32.6	28.4	23.2	7.7	5.4
8	4.2	5.5	4.4	3.6	4.1	3.8	3.0	32.3	26.7	22.1	6.8	5.6
9	3.8	5.7	3.9	4.1	3.9	3.6	3.2	34.3	25.3	23.4	5.2	5.0
10	4.8	5.4	3.5	4.3	4.0	3.7	4.6	32.8	24.2	24.2	5.3	5.0
11	3.9	5.3	5.3	5.5	4.2	3.1	5.1	29.1	24.8	23.4	5.2	4.9
12	4.4	5.3	5.7	4.5	3.6	3.2	5.2	32.5	24.5	22.6	5.0	5.0
13	5.7	4.8	5.9	5.4	3.9	3.4	4.4	33.0	24.0	21.3	5.4	4.8
14	5.4	3.8	5.2	5.4	4.2	3.3	4.1	33.0	23.4	20.3	5.3	4.6
15	3.6	5.0	4.3	3.5	4.1	3.4	3.0	32.5	24.5	18.8	5.4	4.3
16	3.5	5.5	5.0	5.0	4.3	3.4	4.6	32.5	24.8	20.0	6.1	4.0
17	4.0	5.2	4.3	5.6	4.2	3.3	13.9	34.2	22.6	20.0	6.2	4.4
18	4.6	5.2	3.5	5.6	4.2	2.9	16.6	35.3	23.7	19.8	6.3	4.6
19	4.3	5.3	4.3	5.5	3.4	3.0	18.0	34.7	24.8	19.3	6.6	4.6
20	4.4	4.0	5.0	5.4	3.7	3.2	18.3	35.0	24.2	19.3	6.5	4.8
21	4.8	4.8	4.3	5.4	4.1	3.2	17.0	35.6	22.4	18.0	6.3	4.8
22	4.3	5.4	4.8	3.6	5.2	3.3	16.3	34.7	24.5	16.8	6.3	4.5
23	3.4	5.2	4.6	5.0	5.1	3.1	19.3	37.4	27.6	16.6	6.2	3.9
24	4.1	3.7	4.6	5.1	5.1	3.4	19.0	37.4	26.2	12.3	6.3	4.6
25	4.3	4.8	3.8	5.0	5.1	3.1	19.3	36.8	26.7	11.4	6.3	4.0
26	4.2	5.1	3.2	5.1	3.5	3.2	14.5	37.1	27.3	10.6	5.2	3.5
27	5.5	3.5	4.4	4.6	4.7	3.4	16.1	36.8	26.2	10.3	6.5	3.4
28	4.6	5.2	4.6	3.8	5.0	3.3	15.2	34.7	25.9	9.0	6.9	3.4
29	5.5	5.7	4.8	3.3	5.0	3.3	14.2	28.0	25.3	7.2	7.2	3.2
30	3.9	5.7	4.6	4.0	------	3.3	19.3	32.2	25.9	6.8	7.4	3.0
31	5.1	------	4.7	4.4	------	3.3	------	30.0	------	5.4	7.1	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	5.7	3.4	4.32	266
November	5.8	3.5	4.96	295
December	6.0	3.2	4.64	285
January	5.6	3.3	4.53	279
February	5.2	3.4	4.22	243
March	4.5	2.9	3.35	206
April	19.3	3.0	9.91	590
May	37.4	22.4	32.0	1,970
June	30.1	22.4	25.5	1,520
July	27.0	5.4	18.1	1,110
August	7.9	4.1	6.17	379
September	6.8	3.0	4.69	279
The year	37.4	2.9	10.2	7,420

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 is 2,435.06 feet above mean sea level, United States Coast and Geodetic Survey datum.

DRAINAGE AREA.—572 square miles.

RECORDS AVAILABLE.—April to September, 1928. 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 period (estimated), 5.68 feet May 28; minimum (estimated), 1.04 feet September 30.

REMARKS.—Records good.

Daily gage height, in feet, 1928

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1							16			3.74			
2		4.03					17						
3			5.28			1.44	18				2.69		
4		3.92			2.23		19		5.37			1.65	
5							20						
6							21	3.32		3.38	2.66		
7				2.78			22						1.16
8						1.38	23	3.29					
9			4.36				24	3.31					
10							25		5.66	3.08		1.66	
11		4.56					26	3.45	5.64				
12		4.67			1.84		27						
13							28	3.86	5.68		2.52		
14				2.68			29			2.90		1.53	1.06
15						1.28	30			2.90			1.04
							31					1.51	

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, 2 miles northwest of Coolin. Zero of gage is 2,435.06 feet above mean sea level, United States Coast and Geodetic Survey datum.

DRAINAGE AREA.—572 square miles.

RECORDS AVAILABLE.—June, 1911, to September, 1918 (fragmentary); May, 1919, to September, 1928.

EXTREMES.—Maximum discharge during year, 5,250 second-feet May 24–28 (gage height, 5.2 feet); minimum, 237 second-feet September 30 (gage height, 1.00 foot).

1911–1928: Maximum discharge, 7,290 second-feet May 30, 1917 (gage height, 6.83 feet); minimum, 133 second-feet November 18–20, 1925 (gage height, 0.03 foot).

REMARKS.—Records for October 25 to January 15, May 24 to June 30, and July 18 to September 30, good; others poor. Discharge interpolated December 23 and January 8–13. No diversions above station.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,100	1,420	1,280	824	571	527	1,680	2,280	4,500	1,840	769	370
2	1,090	1,420	1,320	817	566	522	1,730	2,400	4,360	1,780	762	370
3	1,100	1,370	1,370	832	566	517	1,730	2,340	4,220	1,780	748	362
4	1,140	1,370	1,320	832	566	513	1,730	2,280	3,940	1,780	722	358
5	1,180	1,320	1,320	810	561	522	1,680	2,220	3,940	1,780	703	354
6	1,180	1,370	1,320	796	556	527	1,680	2,220	3,660	1,780	678	338
7	1,180	1,370	1,280	762	551	527	1,680	2,340	3,660	1,780	660	334
8	1,180	1,370	1,280	756	542	527	1,680	2,520	3,520	1,730	637	342
9	1,180	1,320	1,280	751	537	542	1,620	2,760	3,490	1,680	620	326
10	1,230	1,320	1,230	745	532	546	1,620	2,940	3,270	1,730	609	318
11	1,230	1,280	1,230	739	537	556	1,620	3,140	3,270	1,620	576	306
12	1,280	1,280	1,280	733	542	561	1,620	3,400	3,080	1,570	556	295
13	1,320	1,230	1,230	728	546	571	1,570	3,530	2,940	1,470	542	295
14	1,370	1,280	1,180	722	546	566	1,570	3,660	2,880	1,370	532	295
15	1,420	1,280	1,180	710	542	571	1,620	3,940	2,760	1,280	522	291
16	1,470	1,280	1,140	643	542	566	1,620	4,080	2,640	1,230	504	283
17	1,520	1,230	1,130	576	537	571	1,620	4,220	2,520	1,110	494	280
18	1,520	1,230	1,100	654	537	576	1,570	4,360	2,520	1,050	481	272
19	1,520	1,230	1,080	587	542	582	1,520	4,500	2,490	1,050	472	268
20	1,520	1,230	1,050	598	542	598	1,520	4,650	2,310	1,040	463	265
21	1,520	1,230	1,020	593	546	614	1,470	4,800	2,220	1,030	445	265
22	1,520	1,230	1,010	593	556	660	1,420	4,950	2,220	1,010	441	262
23	1,570	1,180	998	593	551	735	1,420	5,100	2,170	994	436	262
24	1,570	1,180	986	582	551	824	1,420	5,250	2,120	962	428	265
25	1,520	1,180	962	587	546	898	1,520	5,250	2,070	938	432	262
26	1,520	1,180	930	587	546	994	1,520	5,250	2,070	898	428	262
27	1,520	1,180	914	576	542	1,130	1,730	5,250	1,970	922	411	254
28	1,470	1,230	906	576	537	1,230	1,900	5,250	1,900	898	394	248
29	1,470	1,230	875	571	527	1,320	2,170	5,100	1,900	861	390	244
30	1,470	1,280	858	571	------	1,420	2,220	5,100	1,810	832	382	237
31	1,470	------	841	571	------	1,570	------	4,800	------	803	374	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,570	1,090	1,370	2.40	2.77	84,200
November	1,420	1,180	1,280	2.24	2.50	76,200
December	1,370	841	1,130	1.98	2.28	69,500
January	832	571	678	1.19	1.37	41,700
February	571	527	547	.956	1.03	31,500
March	1,570	513	722	1.26	1.45	44,400
April	2,220	1,420	1,650	2.88	3.21	98,200
May	5,250	2,220	3,870	6.77	7.80	238,000
June	4,500	1,840	2,880	5.03	5.61	171,000
July	1,840	803	1,310	2.29	2.64	80,600
August	769	374	536	.937	1.08	33,000
September	370	237	296	.517	.58	17,600
The year	5,250	237	1,360	2.38	32.32	986,000

COLVILLE RIVER BASIN

COLVILLE RIVER AT MEYERS FALLS, WASH.

LOCATION.—Staff gage in sec. 29, T. 36 N., R. 38 E., at foot of Meyers Falls at town of Meyers Falls.

RECORDS AVAILABLE.—October, 1922, to September, 1928.

EXTREMES.—Maximum discharge during year, 1,260 second-feet April 3, 4, May 1, and 2 (gage height, 4.55 feet); minimum, 21 second-feet September 3 (gage height, 0.78 foot).

1922–1928: Maximum discharge, 1,290 second-feet April 19, 1925; minimum, 12 second-feet July 27, 1926 (gage height, 0.76 foot).

REMARKS.—Records good except those represented by flat estimates, which are poor. Several small ditches divert water for irrigation above station. Small reservoir above the falls; effect of regulation probably slight.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	258	272	555		356	313	1,010	1,210	500	250	115	100
2	245	272	555		371	299	1,050	1,260	500	250	107	102
3	245	258	625		371	327	1,260	1,210	500	250	123	46
4	272	258	625		386	327	1,260	1,210	480	293	115	95
5	313	272	625	350	402	342	1,210	1,160	461	324	123	92
6	356	299	625		417	356	1,210	1,110	424	308	132	96
7	356	327	625		485	371	1,160	1,110	424	308	123	88
8	356	356	590		485	402	1,160	1,110	424	278	123	89
9	342	356		402	485	450	1,110	1,060	406	278	123	92
10	342	371		402	450	485	1,060	1,060	389	264	107	88
11	327	356		402	450	520	1,060	1,010	372	250	107	88
12	327	356		417	450	555	1,060	1,010	356	237	107	101
13	327	356	340	417	417	555	1,010	913	356	224	107	98
14	327	356		417	386	555	1,010	913	340	212	107	98
15	327	371			386	555	960	866	324	200	106	92
16	327	386			386	555	1,010	866	324	189	107	98
17	313	402			386	590	1,010	820	324	189	107	98
18	299	417		330	371	625	1,010	775	308	178	106	96
19	299	417			371	625	1,060	730	308	189	101	95
20	299	450			371	625	1,010	686	293	178	98	92
21	286	485	300		371	625	1,060	643	293	168	98	95
22	286	485			371	695	1,010	643	278	158	107	95
23	272	485			386	770	1,010	601	278	168	101	92
24	272	485			299	890	1,010	601	264	158	98	94
25	272	485		330	258	930	1,010	560	264	158	92	88
26	272	520			286	970	1,060	560	250	149	101	74
27	286	520	320		342	930	1,110	520	250	140	96	74
28	299	555			299	970	1,160	520	250	149	101	77
29	286	555		342	327	970	1,160	560	250	132	101	75
30	286	555		371	------	970	1,210	520	250	132	100	72
31	272	------		371	------	970	------	520	------	115	102	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	356	245	301	18,500
November	555	258	401	23,900
December	625	----------	394	24,200
January	417	----------	354	21,800
February	485	258	383	22,000
March	970	299	617	37,900
April	1,260	960	1,080	64,300
May	1,260	520	850	52,300
June	500	250	348	20,700
July	324	115	209	12,900
August	132	92	108	6,640
September	102	46	89.4	5,320
The year	1,260	46	428	310,000

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 mile above mouth and three-fourths mile northwest of Inchelium.

DRAINAGE AREA.—163 square miles.

RECORDS AVAILABLE.—December, 1912, to September, 1928.

EXTREMES.—Maximum discharge during year, 425 second-feet April 28 (gage height, 3.32 feet); minimum, 14 second-feet September 2 (gage height, 1.48 feet); may have been lower during period when recorder was not operating.

1912–1928: Maximum discharge, 965 second-feet April 16, 1914; minimum (estimated), 4 second-feet January 1, 1919, when stage-discharge relation was affected by ice.

REMARKS.—Records for September fair; others good. Discharge estimated July 30, 31, August, 1, 10–14, 20–31, September 1, and 6–30. No diversions above station.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Apr.	May	June	July	Aug.	Sept.
1	43	258	396	12[illegible]	67	24	15
2	42	223	359	12[illegible]	61	24	15
3	44	210	328	11[illegible]	56	23	15
4	54	204	310	11[illegible]	70	22	15
5	57	196	306	105	71	22	16
6	56	184	310	10[illegible]	75	22	
7	55	176	341	10[illegible]	65	21	
8	54	176	364	9[illegible]	59	21	
9	56	176	377	95	57	20	
10	63	171	382	8[illegible]	51	20	
11	62	168	368	8[illegible]	57	20	
12	61	168	354	8[illegible]	42	20	
13	60	168	336	8[illegible]	40	20	
14	60	178	323	8[illegible]	40	20	
15	59	181	306	82	47	20	
16	56	173	284	8[illegible]	39	19	
17	53	204	269	7[illegible]	29	19	
18	52	210	247	7[illegible]	38	18	15
19	52	213	230	74	40	18	
20	51	207	226	71	43	18	
21	48	210	198	7[illegible]	41	18	
22	46	213	190	5[illegible]	37	17	
23	47	217	184	61	34	17	
24	46	262	173	6[illegible]	31	17	
25	46	310	160	5[illegible]	29	17	
26	46	328	146	5[illegible]	29	16	
27	45	359	146	54	26	16	
28	45	415	153	55	25	16	
29	------	401	146	54	25	16	
30	------	387	134	55	25	16	
31	------	------	134	------	24	15	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October 1–28	63	42	52.1	2,890
April	415	168	232	13,800
May	396	134	264	16,200
June	126	54	81.9	4,870
July	75	24	44.3	2,720
August	24	15	19.1	1,170
September	------	------	15.0	893

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, 1928.

EXTREMES.—Maximum discharge during year, 61 second-feet May 1 (gage height, 1.20 feet); minimum, 0.4 second-foot September 13–25 (gage height, 0.10 foot).

1916–1928: Maximum discharge, 180 second-feet April 19 and 20, 1925 (gage height, 1.8 feet); no flow during periods in 1919, 1924, and 1926.

REMARKS.—Records good. Current-meter measurement on October 4 shows flow of 3.6 second-feet. No record obtained October 1 to March 31. No diversions above station.

Daily and monthly discharge, in second-feet, 1928

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	34	60	21	10.2	3.4	1.1	16	33	45	11.8	6.5	1.3	0.4
2	35	59	20.0	9.8	3.8	.9	17	36	43	11.8	6.5	1.3	.4
3	37	59	18.6	9.4	3.4	.8	18	35	40	11.4	6.2	1.3	.4
4	38	56	17.5	9.4	3.4	.8	19	37	39	11.4	5.9	1.2	.4
5	39	57	17.0	9.0	3.4	.7	20	37	36	11.0	5.6	1.1	.4
6	38	54	16.5	9.8	3.2	.6	21	37	34	11.0	5.3	1.1	.4
7	39	54	15.5	9.4	3.0	.6	22	37	34	10.6	5.3	1.1	.4
8	37	53	14.6	9.0	2.8	.6	23	38	30	10.2	5.3	1.1	.4
9	36	51	14.6	8.6	2.6	.6	24	38	29	11.0	5.1	1.2	.5
10	35	53	14.2	8.2	2.6	.6	25	41	27	11.0	4.8	1.1	.5
11	35	51	13.8	7.5	2.6	.6	26	44	27	10.6	4.5	1.1	.7
12	35	51	13.4	7.2	2.4	.6	27	46	25	10.6	4.3	1.1	.6
13	33	49	12.6	7.2	2.2	.5	28	49	24	9.8	4.3	.9	.6
14	32	47	12.6	7.2	2.2	.4	29	50	23	9.4	4.1	.9	.6
15	30	46	12.2	6.9	1.9	.4	30	56	22	10.2	3.6	1.1	.6
							31		21		3.4	1.1	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April	56	30	38.2	2,270
May	60	21	41.9	2,580
June	21	9.4	13.2	786
July	10.2	3.4	6.76	416
August	3.8	.9	1.96	121
September	1.1	.4	.57	33.9
The period				6,210

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. Zero of gage approximately 2,100 feet above mean sea level.

DRAINAGE AREA.—1,220 square miles.

RECORDS AVAILABLE.—April, 1911, to December, 1912; July, 1920, to September, 1928.

EXTREMES.—Maximum discharge during year, 18,500 second-feet November 26 (gage height, 48.37 feet); minimum, 299 second-feet September 27 (gage height, 37.35 feet).

1911–12, 1920–1928: Maximum discharge, 27,600 second-feet February 5, 1925 (gage height, 51.3 feet; from high-water mark); minimum, 215 second-feet August 27, 1923 (gage height, 37.0 feet); discharge probably lower in December, 1922, when gage was not being read.

REMARKS.—Records good. Discharge estimated December 16–23, 31, and January 1–5. No diversions above station. Gage-height record and some discharge measurements furnished by Washington Water Power Co.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr	May	June	July	Aug.	Sept.
1	780	1,590	6,280	1,400	1,730	1,200	10,000	9,390	2,850	1,060	515	367
2	762	1,630	6,960	1,600	1,770	1,200	8,510	9,830	2,700	990	520	355
3	870	1,710	11,000	1,800	1,810	1,200	6,860	8,300	2,700	960	515	347
4	2,520	2,320	10,500	2,000	1,890	1,270	5,710	7,260	2,510	960	500	340
5	3,450	4,780	8,730	2,050	1,970	1,410	5,000	7,060	2,380	960	490	336
6	3,060	6,630	7,060	2,150	2,280	1,650	4,370	9,170	2,280	900	470	336
7	2,620	8,950	5,710	2,280	2,420	1,810	3,920	13,100	2,200	870	470	332
8	2,320	7,880	5,170	2,200	2,420	2,150	3,500	14,600	2,150	870	460	336
9	2,100	6,660	4,520	2,200	2,280	3,230	3,430	13,800	2,060	810	450	340
10	2,470	5,520	3,920	2,200	2,200	5,810	3,430	12,600	2,020	810	431	336
11	2,880	4,520	3,360	2,330	2,200	8,510	3,230	11,400	1,850	782	431	340
12	2,770	3,920	3,500	3,620	2,100	8,730	3,230	11,400	1,770	782	431	344
13	2,470	3,430	3,300	8,440	1,930	6,470	3,110	11,000	1,730	782	422	355
14	2,420	3,500	2,850	8,090	1,930	5,000	3,110	9,830	1,610	755	418	347
15	2,520	6,860	2,510	5,900	1,810	4,070	3,500	9,170	1,530	755	418	351
16	2,520	6,660	2,400	4,680	1,730	3,500	3,780	8,950	1,530	700	404	344
17	2,320	5,900	2,300	3,920	1,730	3,230	4,370	8,510	1,490	700	391	336
18	2,140	6,660	2,200	3,430	1,650	3,230	5,170	8,300	1,410	684	387	328
19	1,920	7,260	2,050	3,060	1,570	3,360	5,170	8,090	1,380	684	383	344
20	1,750	7,260	2,050	2,700	1,570	4,070	4,840	7,880	1,340	700	379	344
21	1,630	7,260	1,900	2,600	1,530	5,710	4,520	7,460	1,300	656	379	344
22	1,510	6,660	1,800	2,510	1,490	6,090	4,220	7,460	1,300	634	371	344
23	1,430	5,900	1,900	2,330	1,300	11,000	4,680	6,860	1,340	606	375	328
24	1,550	5,710	1,970	2,200	1,240	10,700	6,290	5,900	1,270	585	375	336
25	1,630	12,300	1,810	2,060	1,340	9,170	8,090	5,520	1,200	565	387	325
26	1,510	16,900	1,730	1,970	1,450	7,260	8,300	5,520	1,130	555	379	325
27	1,470	12,100	1,770	1,850	1,410	6,280	10,500	5,170	1,100	555	400	317
28	1,430	9,830	1,770	1,770	1,340	5,710	12,600	4,520	1,060	545	400	321
29	1,510	8,510	1,690	1,770	1,270	5,170	11,400	4,070	1,060	540	383	328
30	1,590	7,060	1,450	1,810	------	5,520	9,170	3,640	1,060	525	379	347
31	1,590	------	1,200	1,770	------	8,540	------	3,110	------	515	359	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	3,450	762	1,980	1.62	1.87	122,000
November	16,900	1,590	6,530	5.35	5.97	389,000
December	11,000	1,200	3,720	3.05	3.52	229,000
January	8,440	1,400	2,860	2.34	2.70	176,000
February	2,420	1,240	1,770	1.45	1.56	102,000
March	11,000	1,200	4,910	4.02	4.64	302,000
April	12,600	3,110	5,800	4.75	5.30	345,000
May	14,600	3,110	8,350	6.84	7.89	513,000
June	2,850	1,060	1,710	1.40	1.56	102,000
July	1,060	515	735	.602	.69	45,200
August	520	359	422	.346	.40	25,900
September	367	317	339	.278	.31	20,200
The year	16,900	317	3,270	2.68	36.41	2,370,000

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, Coeur d'Alene.

DRAINAGE AREA.—3,750 square miles.

RECORDS AVAILABLE.—February, 1905, to September 30, 1928; April, 1903, to February, 1905, at mouth of St. Joe River.

EXTREMES.—Maximum stage during year, 32.05 feet May 14; minimum, 23.29 feet March 3.

1903–1928: Maximum stage, 36.00 feet January 3, 1918; minimum, 19.9 feet October 10–12, 1904, September 24, 25, 1905, and October 14 to November 3, 1906.

Maximum stage known, 37.6 feet (from high-water marks) May 31, 1894.

REMARKS.—Records excellent. Elevation of lake surface regulated by Taintor gates and bear-trap dam at Post Falls. Original gage installed by Geological Survey February 11, 1905, was referred to Geological Survey bench mark in southeast corner of Merriam Building, at Sherman and Fourth Streets, Coeur d'Alene. The bench mark is firmly set in a substantial building, which has not been moved, and therefore the elevation of the bench mark should be the same now as when it was set. Levels referred to the bench mark, however, have sometimes been misinterpreted because various adjustments in level nets have resulted in changing its accepted elevation. These accepted elevations are as follows:

	Feet
Original, as published in U. S. Geol. Survey Twenty-first Ann. Rept., pt. 1, p. 518	2,157.404
Second, as published in U. S. Geol. Survey Bull. 487, p. 24, and Bull. 567, p. 79	2,157.909
Third, as determined by adjustment to fit the U. S. Coast and Geodetic Survey precise-level net	2,154.509

Coeur d'Alene Lake stages, published in Water-Supply Paper 272 and subsequent water-supply papers (including this one), refer to the original accepted elevation of the bench mark (2,157.404 feet); to obtain mean sea-level elevation corresponding to the original elevation of the bench mark, add 2,100 feet to published stages. Gage-height record furnished by Washington Water Power Co.

Daily gage height, in feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25.77	24.80	30.82	24.22	24.82	23.36	29.33	29.10	29.80	26.43	26.10	24.97
2	25.79	24.80	30.87	24.08	24.73	23.33	29.69	29.29	29.45	26.42	26.04	24.93
3	25.85	24.78	31.00	23.97	24.66	23.32	29.81	29.43	29.11	26.49	26.01	24.91
4	25.98	24.84	31.20	23.94	24.60	23.37	29.79	29.48	28.80	26.51	26.00	24.88
5	26.04	25.22	31.29	24.00	24.60	23.50	29.62	29.44	28.45	26.51	25.97	24.85
6	25.98	25.83	31.21	24.10	24.64	23.60	29.43	29.48	28.13	26.49	25.93	24.82
7	25.82	26.45	31.05	24.21	24.73	23.72	29.16	29.65	27.81	26.46	25.90	24.78
8	25.64	26.95	30.71	24.31	24.79	23.87	28.88	30.08	27.53	26.43	25.86	24.70
9	25.45	27.28	30.39	24.40	24.80	24.17	28.60	30.59	27.23	26.42	25.82	24.67
10	25.30	27.45	30.05	24.47	24.79	24.81	28.30	31.02	26.96	26.41	25.78	24.63
11	25.22	27.43	29.71	24.55	24.76	25.66	28.04	31.40	26.70	26.40	25.74	24.59
12	25.19	27.35	29.31	24.72	24.71	26.50	27.81	31.63	26.49	26.40	25.70	24.59
13	25.10	27.24	28.96	25.30	24.64	27.08	27.61	31.88	26.42	26.40	25.64	24.56
14	25.03	27.21	28.62	26.22	24.58	27.30	27.41	32.00	26.50	26.40	25.58	24.52
15	25.00	27.25	28.30	26.88	24.48	27.34	27.22	32.02	26.52	26.39	25.53	24.50
16	24.99	27.44	27.92	27.15	24.38	27.27	27.09	32.00	26.52	26.37	25.52	24.46
17	24.95	27.60	27.56	27.21	24.29	27.15	27.01	31.92	26.53	26.34	25.50	24.43
18	24.95	27.68	27.21	27.14	24.20	27.02	27.00	31.88	26.48	26.35	25.48	24.43
19	24.95	27.80	26.93	27.00	24.10	26.92	27.00	31.81	26.41	26.33	25.42	24.41
20	24.92	27.86	26.61	26.85	24.00	26.89	27.00	31.75	26.38	26.33	25.38	24.37
21	24.91	27.95	26.38	26.65	23.92	26.92	26.94	31.69	26.40	26.32	25.33	24.36
22	24.87	28.01	26.10	26.48	23.81	27.19	26.89	31.61	26.50	26.30	25.30	24.33
23	24.82	28.04	25.85	26.29	23.72	27.60	26.82	31.60	26.51	26.30	25.26	24.32
24	24.80	28.05	25.62	26.11	23.60	28.11	26.90	31.50	26.50	26.29	25.22	24.32
25	24.79	28.29	25.45	25.92	23.52	28.51	27.08	31.38	26.49	26.28	25.18	24.31
26	24.76	29.00	25.24	25.74	23.50	28.70	27.30	31.26	26.49	26.27	25.12	24.26
27	24.76	29.80	25.09	25.55	23.46	28.80	27.61	31.14	26.49	26.25	25.10	24.23
28	24.80	30.35	24.95	25.37	23.41	28.85	28.04	30.99	26.41	26.22	25.10	24.21
29	24.85	30.71	24.82	25.18	23.38	28.81	28.51	30.80	26.42	26.20	25.07	24.19
30	24.86	30.82	24.63	25.05	------	28.80	28.90	30.50	26.43	26.18	25.03	24.16
31	24.82	------	24.41	24.93	------	28.96	------	30.17	------	26.13	25.00	------

SPOKANE RIVER AT POST FALLS, IDAHO

LOCATION.—Water-stage recorder in sec. 4, T. 50 N., R. 5 W., one-fourth mile below power plant of Washington Water Power Co. and 1 mile west of Post Falls. Zero of gage is 2,000 feet above mean sea level.

DRAINAGE AREA.—3,880 square miles.

RECORDS AVAILABLE.—January, 1913, to September, 1928.

EXTREMES.—Maximum discharge during year, 26,300 second-feet May 14–16 (gage height, 74.4 feet); minimum, 708 second-feet September 23 (gage height, 65.65 feet).

1913–1928: Maximum discharge, 39,800 second-feet May 18, 1917 (gage height, 79.20 feet); minimum, 540 second-feet September 5, 1926 (gage height, 65.3 feet).

REMARKS.—Records excellent. Discharge estimated December 31, January 1–9, July 31, August 1–7, 13–15, and 17–22. Spokane Valley Farms Co.'s canal diverts three-fourths mile above gage for irrigation; see records for canal, page 104. Flow regulated by operation of power plant and of gates in dam at Post Falls. Gage-height record and some discharge measurements furnished by Washington Water Power Co.

Daily discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,680	4,200	22,400	4,940	7,390	3,420	18,200	18,200	18,900	2,010	1,090	877
2	1,660	4,220	22,400	5,060	7,200	3,380	19,100	18,400	17,900	1,630	1,070	870
3	2,270	4,420	22,400	5,320	7,110	2,750	19,600	18,800	17,200	1,610	981	871
4	6,950	4,480	23,300	5,920	7,020	1,890	19,600	18,900	16,100	2,090	1,010	857
5	9,790	6,540	23,300	6,380	6,970	2,340	19,000	18,800	15,400	2,710	1,030	869
6	9,970	9,690	22,800	6,100	7,050	4,340	18,600	18,700	14,600	2,740	1,040	903
7	9,380	10,900	22,400	6,060	7,180	5,010	17,900	19,100	14,000	2,120	1,010	1,010
8	9,100	12,100	21,400	6,420	7,310	5,940	17,400	20,100	13,200	1,980	1,120	1,010
9	8,760	12,900	20,500	6,640	7,330	6,340	16,600	21,400	12,600	1,680	1,160	1,030
10	7,100	13,300	19,600	6,840	7,300	7,490	16,000	22,500	11,900	1,610	1,150	934
11	6,710	13,400	18,700	6,960	7,300	9,190	15,200	24,000	11,300	1,510	1,190	862
12	6,960	13,200	17,400	7,220	7,230	11,100	14,700	24,800	7,340	1,500	1,040	872
13	7,010	12,900	16,600	8,210	7,110	12,600	14,200	25,800	3,530	1,390	1,010	864
14	6,490	12,800	16,200	10,400	6,960	13,200	13,700	26,300	3,530	1,370	953	1,010
15	6,190	12,900	15,400	12,100	6,710	13,300	13,300	26,300	3,730	1,370	813	878
16	6,130	13,300	14,600	12,700	6,570	13,200	13,000	26,300	4,030	1,360	857	888
17	5,690	13,700	13,800	12,900	6,420	13,000	12,800	25,800	5,420	1,380	813	879
18	4,840	13,900	12,900	12,700	6,190	12,700	12,700	25,300	5,340	1,420	986	877
19	4,500	14,300	12,000	12,400	6,070	12,400	12,800	25,300	4,570	1,450	1,000	865
20	4,430	14,400	11,300	12,100	5,900	12,300	12,700	24,800	4,030	1,400	975	874
21	4,440	14,600	10,800	11,500	5,620	12,400	12,700	24,800	2,480	1,360	997	865
22	4,450	14,700	10,200	11,100	5,490	13,000	12,500	24,300	2,500	1,260	840	867
23	4,410	14,800	9,470	10,600	5,030	14,000	12,400	24,200	3,430	1,230	905	853
24	4,390	14,900	8,960	10,200	4,840	15,100	12,600	24,100	3,440	1,170	1,020	856
25	4,370	15,300	8,600	9,750	4,500	16,200	12,900	23,600	3,540	1,120	1,050	871
26	4,240	17,000	8,280	9,280	4,490	16,800	13,500	23,300	3,420	1,120	1,080	890
27	3,420	19,200	7,970	8,630	4,470	17,000	14,200	22,800	3,250	1,150	952	1,070
28	2,980	21,000	7,720	8,510	4,070	17,100	15,200	22,300	3,090	1,160	1,030	1,120
29	3,060	22,400	7,370	8,190	3,550	17,000	16,400	21,600	2,870	1,130	1,040	984
30	3,700	22,400	7,070	7,910	-------	17,000	17,400	20,800	2,000	1,130	975	905
31	4,180	-------	6,660	7,650	-------	17,400	-------	19,800	-------	1,090	892	------

Monthly discharge of Spokane River and Spokane Valley Farms Co.'s canal, at Post Falls, Idaho, 1927–28

Month	Discharge in second-feet						Run-off (combined)	
	River			Canal (mean)	Combined			
	Maximum	Minimum	Mean		Mean	Per square mile	Inches	Total in acre-feet
October	9,970	1,660	5,460		5,460			336,000
November	22,400	4,200	13,100		13,100			780,000
December	23,300	6,660	14,900		14,900			916,000
January	12,900	4,940	8,730		8,730			537,000
February	7,390	3,550	6,220		6,220			358,000
March	17,400	1,890	10,900	9.35	10,900			670,000
April	19,600	12,400	15,200	67.4	15,300			910,000
May	26,300	18,200	22,600	190	22,800			1,400,000
June	18,900	2,060	7,810	250	8,060			480,000
July	2,740	1,090	1,520	254	1,770			109,000
August	1,190	813	1,000	231	1,230			75,600
September	1,120	853	913	103	1,020			60,700
The year	26,300	813	9,050		9,150	2.36	32.12	6,630,000

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 is about 1,700 feet above sea level.

DRAINAGE AREA.—4,350 square miles.

RECORDS AVAILABLE.—April, 1891, to September, 1928.

EXTREMES.—Maximum discharge during year, 26,600 second-feet May 14–16 (gage height, 25.38 feet); minimum, 1,250 second-feet August 18 (gage height, 17.45 feet).

1891–1928: Maximum discharge, 49,000 second-feet May 31, 1894; minimum, 500 second-feet October 21, 1922 (gage height, 16.70 feet).

REMARKS.—Records excellent. Discharge estimated April 7 and 8. Water diverted above station for irrigation by Spokane Valley Farms Co. Flow partly regulated by storage in Coeur d'Alene Lake. Gage-height record and some discharge measurements furnished by Washington Water Power Co.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,270	4,660	23,000	7,010	8,010	4,360	18,300	17,700	19,900	3,280	1,880	1,640
2	2,270	4,650	23,000	6,820	7,800	4,260	19,100	18,400	18,800	3,130	1,900	1,610
3	2,180	4,730	23,500	6,540	7,670	4,180	19,800	18,800	17,900	2,800	1,870	1,610
4	5,770	4,840	24,000	6,410	7,530	2,960	20,100	19,100	17,000	3,080	1,860	1,550
5	8,860	5,830	24,500	6,510	7,570	2,900	19,600	19,100	16,400	3,750	1,840	1,580
6	9,900	9,010	24,500	6,660	7,430	4,530	19,300	19,100	15,500	3,950	1,860	1,580
7	9,430	10,400	24,000	6,730	7,630	5,300	18,700	19,400	14,900	3,480	1,840	1,600
8	9,130	11,700	23,000	6,880	7,730	5,950	18,000	20,200	14,200	3,170	1,830	1,700
9	8,810	12,600	22,000	7,040	7,860	6,300	17,400	21,500	13,500	2,930	1,870	1,720
10	7,700	13,000	21,000	7,150	7,890	7,180	16,300	23,000	12,800	2,680	1,900	1,740
11	6,710	13,200	20,100	7,300	7,760	8,700	15,800	24,000	12,100	2,510	1,840	1,640
12	6,820	13,200	18,700	7,500	7,730	10,700	15,300	25,000	10,100	2,470	1,860	1,550
13	6,910	12,900	17,800	8,220	7,570	12,200	14,800	25,500	5,520	2,350	1,820	1,560
14	6,570	12,900	16,900	10,100	7,520	13,600	14,300	26,000	5,060	2,310	1,790	1,650
15	6,120	13,000	16,200	11,900	7,240	13,400	14,000	26,000	5,170	2,220	1,710	1,770
16	6,100	13,200	15,300	13,000	7,130	13,200	13,800	26,000	5,230	2,290	1,630	1,570
17	5,840	13,600	14,500	13,200	6,970	13,100	13,500	26,000	6,150	2,190	1,600	1,590
18	5,250	13,800	13,800	13,200	6,660	12,900	13,300	26,000	6,030	2,090	1,610	1,580
19	4,820	14,100	13,200	12,900	6,630	12,700	13,200	25,500	5,830	2,150	1,760	1,550
20	4,750	14,300	12,400	12,500	6,470	12,500	13,200	25,500	5,230	2,170	1,840	1,560
21	4,780	14,500	11,900	12,100	6,250	12,700	13,200	25,500	4,370	2,160	1,770	1,560
22	4,740	14,800	11,200	11,700	6,120	13,000	13,000	25,000	3,510	2,120	1,740	1,560
23	4,680	14,900	10,400	11,200	5,880	13,800	13,000	25,000	4,420	2,040	1,650	1,550
24	4,700	15,000	9,900	10,800	5,610	15,000	12,800	25,100	4,450	2,030	1,630	1,530
25	4,670	15,400	9,480	10,400	5,320	16,000	13,100	24,500	4,580	1,960	1,640	1,530
26	4,650	16,500	9,150	10,100	5,310	16,700	13,700	24,000	4,480	1,950	1,740	1,500
27	4,420	18,500	8,810	9,610	5,200	17,100	14,200	23,500	4,310	1,940	1,840	1,540
28	3,740	21,000	8,340	9,200	5,010	17,100	15,000	23,500	4,270	1,960	1,640	1,740
29	3,740	22,300	8,060	8,820	4,540	17,000	16,100	22,500	3,690	1,970	1,690	1,690
30	3,970	23,000	7,800	8,540	-------	17,000	17,000	22,000	3,320	1,890	1,700	1,580
31	4,630	-------	7,440	8,260	-------	17,400	-------	20,900	-------	1,880	1,680	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	9,900	2,180	5,640	-------	-------	347,000
November	23,000	4,650	13,100	-------	-------	780,000
December	24,500	7,440	15,900	-------	-------	978,000
January	13,200	6,410	9,300	-------	-------	572,000
February	8,010	4,540	6,840	-------	-------	393,000
March	17,400	2,900	11,100	-------	-------	682,000
April	20,100	12,800	15,600	-------	-------	928,000
May	26,000	17,700	23,000	-------	-------	1,410,000
June	19,900	3,320	8,960	-------	-------	533,000
July	3,980	1,880	2,480	-------	-------	152,000
August	1,900	1,600	1,770	-------	-------	109,000
September	1,770	1,500	1,600	-------	-------	95,200
The year	26,000	1,500	9,620	2.21	30.08	6,980,000

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.

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 is 1,200 feet above mean sea level.

DRAINAGE AREA.—6,380 square miles.

RECORDS AVAILABLE.—November, 1912, to September, 1928.

EXTREMES.—Maximum discharge during year, 31,500 second-feet November 30, December 2, and May 15 (gage height, 87.6 feet); minimum, 1,240 second-feet October 1 (gage height, 73.85 feet).

1912–1928: Maximum discharge, 41,300 second-feet May 18, 1917 (gage height, 90.32 feet); minimum, 1,060 second-feet August 22 and October 17, 1926 (gage height, 73.4 feet).

REMARKS.—Records excellent. Water diverted by Spokane Valley Farms Co. for irrigation above station. Flow affected considerably by power regulation and by regulation of storage in Coeur d'Alene Lake. Gage-height record and some discharge measurements furnished by Washington Water Power Co.

Daily discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,590	6,390	27,000	7,460	10,500	5,580	23,500	19,400	22,000	4,280	2,590	2,400
2	2,620	6,450	28,700	8,570	9,780	5,730	24,100	20,900	20,600	3,660	2,890	1,980
3	4,130	5,530	28,500	7,480	10,200	5,480	24,500	20,600	20,500	4,080	2,650	2,290
4	4,540	6,360	28,000	7,540	11,000	5,280	24,400	21,100	18,800	4,040	2,770	2,910
5	16,500	7,250	28,500	7,510	11,100	4,510	22,900	20,800	17,900	4,360	2,530	2,720
6	12,300	10,300	27,600	11,400	10,900	6,810	22,300	20,600	16,200	4,780	2,850	2,440
7	8,500	14,900	26,700	8,010	10,600	10,200	21,500	21,100	15,100	4,940	2,860	2,450
8	9,850	14,100	25,600	8,390	10,700	11,400	20,900	22,500	16,200	3,900	2,640	2,530
9	9,420	14,300	24,100	9,270	10,700	11,700	19,600	24,100	15,000	4,100	2,720	1,970
10	9,640	14,600	22,800	9,620	10,500	13,700	19,100	25,800	13,600	3,830	2,360	2,240
11	7,220	15,400	22,400	9,660	10,300	15,500	18,400	25,700	13,400	3,680	2,620	2,340
12	6,670	14,900	21,600	10,600	10,100	16,700	17,300	27,000	11,700	3,310	2,180	2,690
13	10,800	14,500	20,600	14,500	9,660	18,200	17,600	27,600	5,930	3,150	2,840	2,580
14	8,410	14,800	19,000	16,300	9,410	17,000	17,300	28,700	6,020	2,950	2,600	2,360
15	7,470	14,900	18,100	16,000	9,480	17,000	16,900	28,800	6,740	3,200	2,690	2,190
16	7,010	15,700	17,500	15,300	8,570	16,800	15,400	28,200	6,170	3,130	2,550	2,460
17	7,320	16,800	16,100	15,200	9,180	16,000	15,500	28,100	6,510	2,980	2,680	2,350
18	6,570	16,800	15,300	15,100	9,200	15,300	15,500	27,800	7,890	3,140	2,540	2,330
19	4,500	16,600	13,600	14,800	9,010	15,600	14,800	27,200	7,770	2,860	2,310	2,490
20	5,450	16,200	14,700	14,000	8,240	15,400	14,800	27,500	5,430	2,980	2,590	2,410
21	5,660	16,800	12,800	14,000	8,390	15,300	14,300	27,900	6,030	3,160	2,740	2,410
22	5,470	16,800	13,100	13,500	8,170	14,900	14,600	27,300	5,420	3,030	2,700	2,320
23	5,400	16,700	12,300	13,400	7,400	16,200	14,700	26,800	4,440	2,950	2,600	2,280
24	5,680	17,800	10,900	12,500	6,420	19,000	14,200	26,500	4,670	2,990	2,790	2,310
25	5,740	19,200	11,700	12,000	6,490	19,300	14,100	27,000	5,500	2,940	2,680	2,500
26	5,700	21,600	11,700	11,700	6,560	20,300	15,000	26,300	5,620	2,950	2,040	2,600
27	5,270	22,900	10,500	11,500	6,760	20,000	15,300	25,700	5,480	2,990	2,440	2,650
28	4,570	25,600	10,300	10,900	6,790	22,500	16,000	24,900	5,380	2,870	2,520	2,510
29	3,270	27,900	9,520	11,100	6,000	21,700	17,300	24,400	3,940	2,370	2,430	2,420
30	4,440	28,000	9,440	10,400	-------	20,900	18,900	24,100	3,720	2,840	2,460	2,140
31	5,540	-------	9,190	10,600	-------	21,300	-------	22,600	-------	2,990	2,610	-------

Monthly discharge, in second-feet, of Spokane River below Little Falls, near Long Lake, Wash., 1927–28

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	16,500	2,590	6,720			413,000
November	28,000	5,530	15,700			934,000
December	28,700	9,190	18,300			1,130,000
January	16,300	7,460	11,600			713,000
February	11,100	6,000	9,040			520,000
March	22,500	4,510	14,700			904,000
April	24,500	14,100	18,000			1,070,000
May	28,800	19,400	25,100			1,540,000
June	22,000	3,720	10,100			601,000
July	4,940	2,370	3,400			209,000
August	2,890	2,040	2,600			160,000
September	2,910	1,970	2,410			143,000
The year	28,800	1,970	11,500	1.80	24.50	8,340,000

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 is about 2,100 feet above sea level.

DRAINAGE AREA.—1,080 square miles.

RECORDS AVAILABLE.—July, 1920, to September 30, 1928; April, 1911, to September, 1912, at station 2½ miles downstream.

EXTREMES.—Maximum discharge during year, 16,600 second-feet May 8 (gage height, 87.47 feet); minimum, 316 second-feet September 30 (gage height, 79.42 feet).

1911–12, 1920–1928: Maximum discharge, 18,000 second-feet May 16, 1927 (gage height, 87.95 feet); minimum, 194 second-feet November 25, 1922 (gage height, 78.67 feet); discharge probably less December, 1922, when stage-discharge relation was affected by ice.

REMARKS.—Records good. Discharge estimated December 15 to January 14, August 10, 11, and September 17–22. No diversions above gage. Operation of splash dam at Marble Creek causes diurnal fluctuation at gage of about 1 foot during log-driving season. Gage-height record and some discharge measurements furnished by Washington Water Power Co.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,100	1,380	5,420		1,650	1,190	5,840	9,010	6,020	1,760	722	411
2	1,050	1,420	6,700		1,650	1,240	4,800	8,040	5,790	1,670	734	407
3	1,300	1,800	9,720		1,700	1,280	4,170	6,950	5,560	1,610	716	391
4	2,800	4,710	7,790		1,750	1,320	3,560	6,860	5,270	1,650	692	383
5	2,400	8,060	6,530	2,100	1,800	1,380	3,280	8,050	5,060	1,540	662	379
6	2,100	9,160	5,630		2,060	1,650	2,920	11,500	4,950	1,470	626	375
7	1,790	10,000	4,900		2,010	1,800	2,690	14,600	4,670	1,430	614	379
8	1,620	7,530	4,800		1,960	1,960	2,580	16,300	4,240	1,370	582	375
9	1,590	6,290	4,300		1,800	2,940	2,600	16,000	3,940	1,280	579	368
10	1,870	5,420	3,840		1,750	3,840	2,480	15,300	3,780	1,250	576	379
11	1,860	4,700	3,930	4,200	1,800	4,700	2,360	15,000	3,640	1,180	573	375
12	1,720	4,300	3,660		1,750	4,210	2,420	15,300	3,570	1,150	570	395
13	1,680	4,020	3,400		1,600	3,240	2,370	14,600	3,380	1,110	587	456
14	1,850	4,210	3,160	5,260	1,600	2,680	2,430	13,400	3,290	1,100	587	451
15	2,020	4,800		3,930	1,460	2,300	2,660	13,000	3,240	1,020	543	415
16	1,990	4,700		3,160	1,560	2,180	2,650	13,400	3,030	1,030	521	395
17	1,880	5,100		2,740	1,380	2,180	3,410	13,700	2,830	1,010	516	392
18	1,680	5,840		2,540	1,340	2,360	3,700	13,700	2,640	1,030	516	389
19	1,560	5,840	2,200	2,420	1,300	2,740	3,460	13,400	2,580	1,040	505	386
20	1,480	6,060		2,420	1,340	3,660	3,220	13,700	2,430	1,050	475	384
21	1,380	6,060		2,240	1,370	4,900	3,210	14,300	2,400	1,000	442	381
22	1,300	5,420		2,060	1,320	6,290	3,360	14,600	2,510	976	442	378
23	1,270	4,900		2,010	1,140	7,270	4,440	13,700	2,530	920	433	375
24	1,380	5,000		1,900	1,190	6,530	6,620	12,400	2,300	902	500	364
25	1,420	12,100		1,850	1,270	5,420	6,310	12,400	2,200	848	470	358
26	1,340	12,400		1,800	1,350	4,500	7,410	13,000	2,120	824	451	344
27	1,300	8,880	2,000	1,750	1,310	4,210	10,600	12,700	2,140	794	485	336
28	1,300	7,790		1,700	1,290	3,750	11,800	10,300	2,240	818	543	340
29	1,420	7,020		1,700	1,230	3,580	9,280	8,900	2,000	806	500	333
30	1,420	5,840		1,750	------	3,930	7,680	7,570	1,950	752	456	333
31	1,380	------		1,700	------	5,420	------	6,560	------	746	433	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	2,800	1,050	1,620	1.50	1.73	99,600
November	12,400	1,380	6,020	5.57	6.21	358,000
December	9,720	----------	3,530	3.27	3.77	217,000
January	----------	----------	2,670	2.47	2.85	164,000
February	2,060	1,140	1,540	1.43	1.54	88,600
March	7,270	1,190	3,380	3.13	3.61	208,000
April	11,800	2,360	4,480	4.15	4.63	267,000
May	16,300	6,560	12,220	11.3	13.03	750,000
June	6,020	1,950	3,410	3.16	3.53	203,000
July	1,760	746	1,130	1.05	1.21	69,500
August	734	433	550	.509	.59	33,800
September	456	333	381	.353	.39	22,700
The year	16,300	333	3,420	3.17	43.09	2,480,000

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; July, 1920, to September, 1928.
EXTREMES.—Maximum discharge during year, 6,370 second-feet November 25 (gage height, 7.4 feet); minimum, 44 second-feet August 27 (gage height, 2.88 feet).

1911–12, 1920–1928: Maximum discharge, 8,660 second-feet March 18, 1921; minimum, less than 30 second-feet probably occurred during winter of 1922–23, when stage-discharge relation was affected by ice and logs.

REMARKS.—Records for October and February to September, good; others fair. Discharge estimated December 13 to January 20, February 15 and 16. No diversions above gage. Gage-height record and some discharge measurements furnished by Washington Water Power Co.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	245	304	2,870		700	300	3,990	2,120	442	154	69	59
2	105	287	3,810		745	311	3,370	1,690	442	154	71	53
3	187	415	3,810	420	790	305	2,600	1,500	442	154	71	48
4	1,220	1,060	3,050		880	350	2,120	1,310	404	171	69	48
5	870	2,370	2,530		980	442	1,760	1,250	362	192	69	48
6	780	2,870	1,910		1,250	980	1,430	1,560	350	158	66	46
7	570	2,370	1,510		1,250	1,190	1,250	1,620	344	154	66	46
8	394	1,450	1,220	750	1,140	1,250	1,140	1,830	333	150	64	45
9	367	1,160	1,110		930	2,120	1,080	1,690	311	136	64	46
10	341	1,220	1,010		880	3,370	1,030	1,620	305	122	64	46
11	422	1,010	915		880	4,620	880	1,620	294	122	62	46
12	394	870	825		745	3,990	1,310	1,560	283	118	60	50
13	328	915		2,000	660	2,430	1,690	1,560	272	115	60	60
14	360	870			660	1,970	1,430	1,310	251	115	60	76
15	304	2,210			400	1,500	1,310	1,140	240	109	60	64
16	270	1,770			500	1,430	1,310	1,080	240	112	59	57
17	259	1,580			582	1,370	1,430	1,080	240	109	59	53
18	249	1,220	600	1,100	545	1,370	1,430	1,030	240	112	57	53
19	230	1,110			510	1,430	1,370	980	235	112	55	51
20	211	1,010			475	1,500	1,250	930	226	112	53	48
21	195	1,220		790	475	2,120	1,250	880	206	112	53	48
22	179	1,110		790	442	1,690	1,190	880	206	109	50	48
23	175	1,010		790	442	3,370	1,190	880	202	101	50	48
24	195	1,110		700	398	3,370	1,500	790	197	93	48	48
25	380	5,800		620	410	2,780	1,560	700	197	87	48	48
26	322	4,670		582	398	2,120	1,620	660	171	82	46	46
27	276	3,420	440	582	404	2,430	1,620	660	167	82	44	46
28	276	3,230		545	380	2,270	1,970	620	184	82	71	46
29	374	3,610		545	350	2,430	2,120	620	163	82	69	46
30	360	2,700		582	------	2,600	1,970	545	158	78	64	48
31	309	------		700	------	4,840	------	510	------	71	60	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,220	105	360	0.857	0.99	22,100
November	5,800	287	1,800	4.29	4.79	107,000
December	3,810	----------	1,110	2.64	3.04	68,200
January	----------	----------	922	2.20	2.54	56,700
February	1,250	350	662	1.58	1.70	38,100
March	4,840	300	2,010	4.79	5.52	124,000
April	3,990	880	1,640	3.90	4.35	97,600
May	2,120	510	1,170	2.79	3.22	71,900
June	442	158	270	.643	.72	16,100
July	192	71	118	.281	.32	7,260
August	71	44	60.0	.143	.16	3,690
September	76	45	50.5	.120	.13	3,000
The year	5,800	44	848	2.02	27.48	616,000

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, one-fourth mile north of Hayden Lake railway station.

RECORDS AVAILABLE.—May, 1920, to September, 1928.

EXTREMES.—Maximum water-surface elevation during year, 2,239.47 feet May 10 and 11; minimum, 2,231.55 feet October 1 and 2.

1920–1928: Maximum water-surface elevation, 2,240.41 feet April 30 to May 18, 1921; minimum, 2,227.03 feet November 18–22, 1926.

REMARKS.—Records excellent. Water pumped from lake for irrigation and domestic uses. No regulation. To gage heights published prior to October 1, 1925, should be added 2,230.35 feet [4] to reduce them to mean sea level.

Daily gage height, in feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	31.55	31.90	34.00	34.96	35.34	35.57	38.15	39.34	38.71	36.96	34.98	32.83
2	31.55	31.93	34.14	34.96	35.35	35.57	38.30	39.36	38.65	36.90	34.92	32.75
3	31.59	31.95	34.28	34.97	35.35	35.57	38.40	39.38	38.60	36.85	34.84	32.67
4	31.66	31.98	34.39	34.97	35.36	35.58	38.48	39.40	38.54	36.80	34.78	32.60
5	31.71	32.00	34.48	34.98	35.39	35.60	38.55	39.41	38.50	36.76	34.70	32.54
6	31.77	32.03	34.58	34.99	35.11	35.65	38.60	39.42	38.44	36.72	34.63	32.47
7	31.79	32.07	34.64	35.00	35.43	35.72	38.62	39.43	38.38	36.66	34.56	32.40
8	31.82	32.10	34.70	35.02	35.45	35.82	38.62	39.45	38.34	36.60	34.48	32.35
9	31.84	32.13	34.75	35.03	35.47	35.90	38.63	39.46	38.30	36.55	34.41	32.30
10	31.85	32.16	34.81	35.03	35.48	36.00	38.65	39.47	38.25	36.50	34.35	32.25
11	31.86	32.18	34.84	35.03	35.50	36.10	38.66	39.47	38.20	36.45	34.28	32.20
12	31.86	32.21	34.86	35.04	35.52	36.25	38.67	39.45	38.15	36.40	34.22	32.15
13	31.84	32.24	34.89	35.04	35.54	36.45	38.68	39.44	38.09	36.34	34.16	32.11
14	31.88	32.30	34.90	35.05	35.54	36.60	38.70	39.42	38.03	36.28	34.10	32.08
15	31.90	32.44	34.91	35.06	35.55	36.69	38.72	39.40	37.95	36.22	34.03	32.05
16	31.90	32.55	34.92	35.07	35.55	36.72	38.74	39.38	37.87	36.17	33.96	32.01
17	31.90	32.68	34.93	35.09	35.55	36.76	38.77	39.36	37.82	36.09	33.89	31.99
18	31.90	32.76	34.93	35.10	35.55	36.80	38.81	39.35	37.75	36.00	33.81	31.99
19	31.91	32.86	34.93	35.11	35.56	36.83	38.86	39.33	37.70	35.91	33.75	31.94
20	31.91	32.94	34.93	35.13	35.56	36.88	38.90	39.30	37.65	35.82	33.68	31.91
21	31.90	32.98	34.94	35.14	35.56	36.95	38.92	39.26	37.60	35.75	33.61	31.89
22	31.90	33.02	34.94	35.14	35.56	37.06	38.93	39.22	37.54	35.70	33.55	31.84
23	31.89	33.08	34.95	35.16	35.56	37.20	38.95	39.17	37.50	35.65	33.47	31.81
24	31.89	33.14	34.95	35.19	35.57	37.30	38.96	39.12	37.45	35.58	33.40	31.79
25	31.88	33.20	34.95	35.22	35.57	37.43	38.99	39.06	37.30	35.52	33.34	31.76
26	31.88	33.25	34.95	35.25	35.57	37.56	39.04	39.01	37.25	35.43	33.28	31.76
27	31.88	33.36	34.95	35.28	35.57	37.68	39.10	38.96	37.20	35.35	33.20	31.73
28	31.87	33.50	34.95	35.30	35.57	37.75	39.16	38.90	37.16	35.28	33.13	31.70
29	31.86	33.68	34.95	35.32	35.57	37.80	39.23	38.85	37.08	35.20	33.06	31.68
30	31.87	33.82	34.95	35.33	-------	37.88	39.30	38.80	37.00	35.13	32.98	31.66
31	31.89	-------	34.95	35.33	-------	38.00	-------	38.75	-------	35.06	32.90	-------

NOTE.—Add 2,200 feet to obtain mean sea-level elevations (U. S. Coast and Geodetic Survey datum).

[4] The elevation previously published (2,233.13 feet) was based on information obtained by use of a bench mark that had been disturbed and its published elevation which has been revised.

SPOKANE VALLEY FARM 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, 1928.

EXTREMES.—Maximum discharge during year, 257 second-feet in June, July, and August; canal dry or practically so September 16–30 and during nonirrigation season.

1911–1917, 1919–1928: Maximum discharge, 286 second-feet July 18, 1927 (gage height, 4.95 feet); no water in canal during nonirrigation periods.

REMARKS.—Records fair. Discharge estimated March 22–26, 28–31, April 1, 3–7, 9–13, and 15–28. Some leakage September 16–30. Canal diverts water from Spokane River in SE. ¼ sec. 3, T. 50 N., R. 5 W.; water used for irrigation. Gage-height record furnished by Spokane Valley Farms Co.; some measurements furnished by Washington Water Power Co.

Daily and monthly discharge, in second-feet, 1927–28

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	36	97	248	257	248	212
2	0	53	97	248	257	248	212
3	0	53	97	248	257	248	212
4	0	53	97	248	257	257	212
5	0	53	97	248	257	248	212
6	0	53	97	248	257	248	212
7	0	53	97	248	257	248	212
8	0	58	103	248	257	248	203
9	0	58	117	248	257	239	203
10	0	58	124	248	257	239	203
11	0	58	153	239	257	239	203
12	0	58	203	248	257	239	203
13	0	58	203	257	257	239	203
14	0	68	212	257	257	230	194
15	0	68	212	257	257	230	194
16	0	68	221	248	257	230	----------
17	0	68	221	248	257	230	----------
18	0	68	230	248	257	230	----------
19	0	68	239	248	257	230	----------
20	0	68	239	248	257	221	----------
21	0	68	248	248	257	221	----------
22	22	79	248	257	248	221	----------
23	22	79	248	257	248	221	----------
24	22	79	248	248	248	221	----------
25	22	85	248	248	248	221	----------
26	22	85	248	248	248	212	----------
27	36	85	248	248	248	212	----------
28	36	91	248	248	248	212	----------
29	36	97	248	257	248	212	----------
30	36	97	248	257	248	212	----------
31	36	----------	248	----------	248	212	----------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March 22–31	36	22	29.0	575
April	97	36	67.4	4,010
May	248	97	190	11,700
June	257	239	250	14,900
July	257	248	254	15,600
August	257	212	231	14,200
September 1–15	212	194	206	6,130
The period	----------	----------	----------	67,100

NOTE.—No flow in months omitted.

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, 1928.

EXTREMES.—Maximum discharge during year, 107 second-feet May 1 and 2 (gage height, 2.1 feet); minimum, 3.5 second-feet September 29 and 30 (gage height, 0.72 foot).

1911–1928: Maximum discharge, 483 second-feet April 5, 1919 (gage height, 4.9 feet; from high-water mark); minimum, 2.7 second-feet July 26 to August 1, 1926 (gage height, 0.70 foot).

REMARKS.—Records for October to February and June to September, good; others fair. Nespelem Canal diverts water above gage for irrigation. See records for Nespelem Canal.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.3	8.9	11	12	15	15	64	107	34	9.0	5.0	4.1
2	8.3	9.5	11	12	15	15	65	107	33	9.0	5.3	4.1
3	8.3	9.5	11	12	15	15	67	106	31	9.6	5.3	4.1
4	9.5	9.5	11	12	15	15	68	103	28	16	5.0	4.1
5	9.5	9.5	11	13	17	15	70	100	27	16	5.0	4.1
6	9.5	11	10	13	18	15	67	98	26	13	5.0	4.1
7	9.5	11	9.5	13	18	15	65	97	25	12	5.0	4.1
8	9.5	11	9.5	13	18	15	65	97	22	10	5.3	4.1
9	9.5	11	9.5	13	18	34	65	95	22	9.0	5.3	4.1
10	9.5	10	8.3	13	17	35	65	92	21	7.4	5.3	4.1
11	8.9	9.5	14	14	17	26	67	88	20	6.5	5.3	4.1
12	8.9	10	14	14	17	26	67	85	19	6.1	5.3	3.9
13	9.5	10	14	14	17	27	68	82	19	5.3	5.0	3.9
14	9.5	11	13	14	16	27	69	77	17	5.0	5.0	3.9
15	9.5	11	12	14	16	27	69	74	16	5.0	5.0	3.9
16	8.9	11	12	13	16	28	70	70	16	5.0	5.0	3.9
17	8.9	11	12	13	15	28	71	68	15	4.7	5.0	3.9
18	8.9	11	12	13	15	28	71	64	14	5.0	5.0	3.9
19	8.9	11	12	13	15	28	73	62	14	5.0	5.0	3.9
20	8.3	12	12	12	15	34	73	58	14	5.3	4.7	3.9
21	8.3	12	12	12	15	39	73	56	13	5.0	4.7	3.9
22	8.3	12	12	13	15	49	73	51	12	5.0	4.7	3.9
23	8.3	12	12	13	15	56	74	50	12	4.7	4.7	3.9
24	8.3	12	12	13	15	60	80	48	11	4.7	4.7	3.7
25	8.9	12	12	13	15	63	89	45	11	4.7	4.7	3.7
26	8.9	12	12	13	15	63	95	42	8.4	4.7	4.7	3.7
27	8.9	11	12	14	15	63	99	41	6.9	4.7	4.7	3.7
28	9.5	12	13	14	15	62	102	41	6.9	4.7	4.7	3.7
29	9.5	12	13	14	15	62	105	39	6.5	4.7	4.7	3.5
30	9.5	11	12	15	-------	62	106	38	8.4	4.7	4.7	3.5
31	8.9	-------	12	15	-------	62	-------	37	-------	5.0	4.4	------

Combined monthly discharge of Nespelem River and Nespelem Canal at Nespelem, Wash., 1927–28

Month	Discharge in second-feet					Combined run-off in acre-feet
	River (mean)	Canal (mean)	Combined			
			Maximum	Minimum	Mean	
October	9.00	5.27	15.9	13.2	14.3	879
November	10.9	6.33	19.3	13.7	17.2	1,020
December	11.7	1.99	17.9	12	13.7	842
January	13.2	----------	15	12	13.2	812
February	15.9	----------	18	15	15.9	915
March	35.8	----------	63	15	35.8	2,200
April	75.2	.67	108	64	75.9	4,520
May	71.5	6.74	109	49	78.2	4,810
June	17.6	10.2	46	16.5	27.8	1,650
July	6.98	8.47	29	9.3	15.4	947
August	4.94	4.41	10.4	8.7	9.35	575
September	3.91	4.78	9.2	8.2	8.69	517
The year	23.0	----------	109	8.2	27.1	19,700

NESPELEM CANAL AT NESPELEM, WASH.

LOCATION.—Staff gage in sec. 24, T. 31 N., R. 30 E., three-fourths mile below intake and three-fourths mile northwest of Nespelem.

RECORDS AVAILABLE.—April, 1921, to September, 1928.

EXTREMES.—Maximum discharge during year, 12.6 second-feet July 4 and 5 (gage height, 1.8 feet); canal dry December 11 to April 19.

1921–1928: Maximum discharge, 12.7 second-feet May 29 to June 1, 1924 (gage height, 1.8 feet); no flow in canal during winter.

REMARKS.—Records fair. Canal diverts water from Nespelem River about on line between secs. 24 and 13, T. 31 N., R. 30 E.; water used for irrigation.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Apr.	May	June	July	Aug.	Sept.
1	5.0	4.8	6.9	0	1.7	11.6	10.8	4.3	4.3
2	5.2	5.2	6.9	0	1.7	11.6	10.9	4.8	4.3
3	5.3	5.2	6.8	0	1.7	11.3	10.9	5.1	4.3
4	6.2	5.3	6.6	0	1.6	11.2	12.6	4.9	4.2
5	6.4	5.2	6.4	0	1.5	10.8	12.6	4.9	4.1
6	5.9	6.1	6.0	0	1.4	10.3	12.1	4.8	4.1
7	5.7	6.0	5.5	0	1.4	10.0	11.8	4.7	4.1
8	5.5	6.4	5.5	0	1.8	12.3	11.3	4.7	4.1
9	5.5	6.0	5.5	0	2.1	12.1	10.8	4.5	4.1
10	5.5	5.7	5.5	0	2.9	11.8	10.3	4.4	4.1
11	5.3	5.3	0	0	4.5	11.4	9.9	4.7	4.1
12	5.3	5.7	0	0	4.5	11.3	9.6	4.6	4.8
13	5.3	6.0	0	0	4.8	11.0	8.7	4.5	5.1
14	5.3	6.6	0	0	8.2	10.5	8.7	4.3	5.1
15	5.3	6.6	0	0	9.0	10.3	8.3	4.3	5.1
16	5.3	6.8	0	0	8.7	10.1	8.0	4.1	5.2
17	5.2	6.6	0	0	8.6	9.7	7.5	4.1	5.3
18	5.2	6.6	0	0	8.6	9.5	7.9	4.3	5.3
19	5.2	6.6	0	0	8.5	9.2	7.9	4.3	5.3
20	5.0	7.3	0	1.1	8.3	9.0	7.9	4.2	5.1
21	5.0	7.3	0	1.2	8.2	8.7	7.9	4.1	5.1
22	4.9	7.1	0	1.2	10.5	8.7	7.2	4.1	5.1
23	4.9	6.9	0	1.2	10.5	8.7	6.4	4.1	5.1
24	4.9	6.9	0	1.4	10.3	8.2	6.4	4.3	5.1
25	5.0	6.8	0	2.0	10.0	7.7	6.0	4.5	5.1
26	4.9	6.8	0	2.3	11.0	8.7	5.7	4.3	5.1
27	5.0	6.6	0	2.4	10.8	10.0	5.1	4.3	5.1
28	5.2	7.3	0	2.4	10.8	10.0	5.1	4.1	5.1
29	5.0	7.3	0	2.4	10.6	10.0	5.1	4.1	5.3
30	5.0	6.9	0	2.4	12.3	10.5	4.9	4.1	5.3
31	4.9	-------	0	-------	12.3	-------	4.3	4.3	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	6.4	4.9	5.27	324
November	7.3	4.8	6.33	377
December 1-10	6.9	5.5	6.16	122
April 20-30	2.4	1.1	1.82	39.7
May	12.3	1.4	6.74	414
June	12.3	7.7	10.2	607
July	12.6	4.3	8.47	521
August	5.1	4.1	4.41	271
September	5.3	4.1	4.78	284

NOTE.—No flow in months omitted.

OKANOGAN RIVER BASIN

SIMILKAMEEN RIVER NEAR OROVILLE, WASH.

LOCATION.—Staff gage in SE. ¼ sec. 13, T. 40 N., R. 26 E., at Okanogan Valley Power Co.'s plant, 4 miles above Oroville. Gage set to sea-level datum.

DRAINAGE AREA.—3,450 square miles.

RECORDS AVAILABLE.—May, 1911, to September, 1928.

EXTREMES.—Maximum discharge during year, 20,600 second-feet May 23 (gage height, 980.5 feet); minimum, 191 second-feet August 30 (gage height, 965.2 feet).

1911–1928: Maximum discharge, 21,400 second-feet June 5, 1922 (gage height, 18.5 feet); river dry December 5, 1920, while filling pond behind dam.

REMARKS.—Records good. Water diverted for irrigation above station; see record of Oroville-Tonasket Irrigation District Canal. Slight regulation caused by operation of flashboards on power-plant dam during low-water periods. Gage-height record and some discharge measurements furnished by Washington Water Power Co.

Daily discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,540	2,040	1,540	551	1,380	840	1,540	4,600	8,370	3,220	765	348
2	1,540	1,860	1,700	655	1,460	840	1,460	4,600	7,920	3,120	765	313
3	1,540	1,860	1,950	655	1,540	808	1,460	4,240	7,770	3,120	765	313
4	1,540	1,860	2,910	713	1,380	775	1,460	4,130	7,190	3,220	705	296
5	1,540	1,860	2,380	970	1,460	775	1,380	4,020	6,770	3,420	705	313
6	1,460	1,950	2,380	970	1,380	744	1,380	4,480	6,630	3,420	650	313
7	1,380	1,950	2,200	1,100	1,380	840	1,380	6,530	6,350	3,320	650	279
8	1,380	1,860	1,860	1,240	1,100	840	1,310	8,480	5,810	3,020	622	232
9	1,380	1,780	1,860	1,240	1,240	905	1,310	9,920	5,550	2,830	595	218
10	1,950	1,700	970	1,240	1,240	905	1,310	10,400	5,290	2,650	595	232
11	2,120	1,540	840	1,380	1,240	840	1,310	10,700	5,290	2,470	545	247
12	2,380	1,540	970	1,700	1,170	905	1,310	12,100	5,420	2,380	522	247
13	2,460	1,460	1,100	1,860	1,170	1,170	1,240	13,000	5,550	2,290	545	247
14	3,180	1,460	1,240	2,460	1,100	840	1,380	12,500	5,290	2,110	479	247
15	2,910	1,540	1,240	2,200	1,100	775	1,310	15,000	4,900	1,930	499	263
16	2,730	1,460	1,170	1,860	1,100	744	1,310	14,700	4,770	1,850	499	247
17	2,730	1,380	1,240	1,540	1,040	840	1,380	15,800	4,410	1,770	479	279
18	2,550	1,700	1,380	1,700	970	775	1,380	15,800	4,060	1,690	459	247
19	2,640	1,860	1,380	1,620	970	840	1,540	16,000	3,950	1,770	479	263
20	2,910	1,780	1,310	1,540	970	905	1,540	16,400	4,060	1,770	421	247
21	2,730	1,700	1,380	1,620	970	905	1,540	16,900	3,950	1,690	384	247
22	2,640	1,620	1,380	1,700	970	1,100	1,540	18,500	3,840	1,530	421	247
23	2,550	1,540	1,380	1,780	905	1,380	1,700	20,400	3,840	1,450	421	218
24	2,640	1,460	1,310	1,700	775	1,620	2,200	18,800	3,950	1,380	348	232
25	2,550	1,540	1,310	1,700	713	1,620	3,180	16,800	3,840	1,310	440	232
26	2,380	1,700	1,240	1,620	808	1,540	3,910	16,600	3,520	1,170	330	232
27	2,380	1,700	1,240	1,540	905	1,540	4,720	16,200	3,420	1,100	348	232
28	2,380	1,700	1,240	1,460	970	1,540	5,710	15,100	3,320	1,030	384	218
29	2,200	1,620	1,040	1,540	905	1,460	5,320	13,000	3,220	960	279	218
30	2,200	1,620	840	1,380	-------	1,540	4,840	11,100	3,220	890	218	218
31	2,120	-------	655	1,460	-------	1,460	-------	9,450	-------	825	279	-------

Monthly discharge of Similkameen River and Oroville–Tonasket Irrigation District Canal near Oroville, Wash., 1927–28

Month	Discharge in second-feet						Run-off (combined)	
	River (mean)	Canal (mean)	Combined					
			Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	2,210	0	3,180	1,380	2,210	0.641	0.74	136,000
November	1,690	0	2,040	1,380	1,690	.490	.55	101,000
December	1,440	0	2,910	655	1,440	.417	.48	88,500
January	1,440	0	2,460	551	1,440	.417	.48	88,500
February	1,110	0	1,540	713	1,110	.322	.35	63,800
March	1,050	0	1,620	744	1,050	.304	.35	64,600
April	2,080	52.5	5,770	----------	2,130	.617	.69	127,000
May	12,100	128	20,600	4,090	12,200	3.54	4.08	750,000
June	5,050	145	8,520	3,360	5,200	1.51	1.68	309,000
July	2,090	136	3,550	973	2,230	.646	.75	137,000
August	503	142	913	358	645	.187	.22	39,700
September	256	132	488	343	388	.112	.12	23,100
The year	2,600	61.4	20,600	343	2,660	.771	10.49	1,930,000

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, 1928; June to October, 1920, half a mile downstream; May, 1921, to September, 1923, at Twin Bridges, 4 miles downstream.

EXTREMES.—Maximum discharge during year, 118 second-feet May 8 (gage height, 1.55 feet); minimum, 3.4 second-feet April 7; discharge probably lower during winter, when recorder was not operating.

1920–1928: Maximum discharge, 363 second-feet May 18, 1922 (gage height, 2.6 feet, on Twin Bridges gage); minimum, 0.6 second-foot or lower August 6–10, 1926, and perhaps other days in same year when recorder was not operating.

REMARKS.—Records fair. Recorder not operating November 11 to March 27. No diversions above station.

Daily and monthly discharge, in second-feet, 1927–28.

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.7	9.0		5.0	32	28	48	12	4.8
2	8.1	9.7		5.0	29	28	39	12	4.5
3	8.7	9.7		5.2	28	26	40	13	4.5
4	9.0	10		5.0	33	25	50	12	4.3
5	8.4	10		5.0	47	23	57	11	4.3
6	8.1	10		4.5	77	23	55	11	4.1
7	8.1	9.4		4.5	82	22	48	11	4.1
8	8.7	9.0		4.6	94	22	44	10	4.1
9	11	7.2		5.0	96	21	37	9.8	4.1
10	13	5.2		5.0	94	20	34	9.4	4.1
11	10			4.8	96	22	32	9.0	3.9
12	10			4.8	91	24	30	7.9	4.1
13	11			5.0	85	48	28	8.3	4.1
14	11			5.5	82	40	26	7.9	4.3
15	10			5.5	80	32	24	7.5	3.9
16	11			5.2	77	29	24	7.2	3.9
17	12			6.2	69	28	24	6.9	3.9
18	11			6.7	64	25	27	6.6	3.7
19	11			8.1	60	24	28	6.3	3.7
20	11			7.4	57	23	28	6.3	3.7
21	11			7.4	55	22	24	6.0	3.7
22	11			9.0	69	21	22	6.0	3.7
23	10			14	50	22	20	5.7	3.9
24	10			35	45	25	18	5.4	3.7
25	10			38	44	21	17	5.4	3.7
26	10			47	40	20	16	5.7	3.7
27	10			68	40	22	15	5.7	3.7
28	11		5.5	50	37	24	14	5.4	3.7
29	10		5.5	40	37	22	13	5.4	3.7
30	10		5.5	39	31	39	13	5.1	3.6
31	9.0		5.2		29		12	4.8	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	13	8.1	10.1	621
November 1–10	10	5.2	8.92	177
March 28–31	5.5	5.2	5.42	43.0
April	68	4.5	15.2	904
May	96	28	59.7	3,670
June	48	20	25.7	1,530
July	57	12	29.3	1,800
August	13	4.8	7.93	488
September	4.8	3.6	3.97	236

OROVILLE-TONASKET IRRIGATION DISTRICT CANAL[a] NEAR OROVILLE, WASH.

LOCATION.—Float and staff gage in sec. 20, T. 40 N., R. 27 E., at undercrossing of road to power plant, 1½ miles northwest of Oroville.

RECORDS AVAILABLE.—Irrigation seasons 1922–1928.

EXTREMES.—Maximum discharge during year, 156 second-feet May 18 21–23, and 25; canal dry during nonirrigating season.

1922–1928: Maximum discharge, 182 second-feet June 27 to July 1, 1924 (gage height, 3.1 feet); canal dry at times.

REMARKS.—Records fair. Canal diverts water for irrigation from Similkameen River in sec. 7, T. 40 N., R. 26 E. Gage-height records furnished by Oroville-Tonasket Irrigation District.

Daily and monthly discharge, in second-feet, 1927–28

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1		63	148	132	148	140	16		140	148	140	140	132
2		63	148	132	148	140	17		148	148	140	140	125
3		63	148	132	140	140	18		156	148	132	140	125
4		66	148	125	140	140	19	50	140	132	140	140	125
5		66	148	132	148	140	20		140	148	140	140	125
6		90	148	125	148	140	21		156	118	140	140	125
7		97	148	125	148	140	22	57	156	140	132	140	125
8	50	111	148	125	148	140	23	57	156	148	132	140	125
9		118	148	140	148	140	24	60	148	140	140	140	125
10		132	148	132	140	140	25	60	156	140	140	140	125
11		148	148	140	140	140	26	57	148	148	140	140	125
12		140	148	132	140	140	27	57	148	148	140	140	125
13		140	148	140	140	140	28	57	148	140	140	140	125
14		140	148	132	140	132	29	57	148	148	140	140	125
15		140	148	140	140	132	30	63	148	140	140	140	125
							31	-------	148	-------	148	140	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April	63	----------	52.5	3,120
May	156	63	128	7,870
June	148	118	145	8,630
July	148	125	136	8,360
August	148	140	142	8,730
September	140	125	132	7,860
The year	----------	----------	----------	44,600

NOTE.—No flow Oct. 1 to Mar. 31.

[a] Formerly published as "West Okanogan Valley Irrigation District Canal."

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 mile below Twisp River.

DRAINAGE AREA.—1,330 square miles.

RECORDS AVAILABLE.—June, 1919, to September, 1928.

EXTREMES.—Maximum discharge during year, 10,200 second-feet May 21 (gage height, 8.90 feet); minimum, 195 second-feet September 8–11 and 30 (gage height, 1.65 feet).

1919–1928: Maximum discharge, 13,400 second-feet June 5, 1921 (gage height, 10.4 feet); minimum, 134 second-feet September 4 and 5, 1926 (gage height, 1.42 feet).

REMARKS.—Records good. Numerous diversions above station for irrigation.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	605	840	605	500	478	368	765	2,230	3,500	2,350	500	228
2	605	800	880	478	455	368	765	1,990	3,350	2,230	455	210
3	605	800	1,280	478	455	368	730	1,880	3,350	2,110	455	210
4	635	800	1,120	478	455	368	730	1,770	3,200	2,110	455	210
5	635	840	1,040	455	455	368	698	1,770	3,200	1,990	411	210
6	635	800	1,000	455	455	368	665	2,350	3,050	1,990	390	210
7	605	765	920	478	433	368	665	3,500	2,900	1,880	368	210
8	605	800	880	478	433	390	665	4,490	2,750	1,770	368	195
9	635	730	800	500	411	390	635	5,010	2,480	1,660	368	195
10	920	730	665	550	411	411	665	5,370	2,610	1,560	347	195
11	880	730	665	665	411	411	665	5,550	2,750	1,460	347	195
12	880	730	665	800	411	433	665	6,280	3,050	1,370	326	265
13	960	665	665	730	411	433	665	6,470	3,200	1,370	326	210
14	1,120	665	635	605	390	411	635	6,660	3,050	1,280	306	210
15	1,120	665	635	550	390	433	665	6,850	2,750	1,200	306	210
16	1,040	665	605	550	390	433	698	8,000	2,480	1,120	285	210
17	1,040	665	605	550	390	433	730	8,200	2,350	1,040	285	210
18	1,040	665	605	550	390	455	730	8,400	2,480	1,040	265	228
19	1,200	665	578	550	368	478	730	8,400	2,480	1,040	265	228
20	1,200	665	578	550	368	550	730	9,200	2,480	1,000	265	228
21	1,120	635	578	550	347	635	730	10,200	2,610	920	245	228
22	1,200	635	578	550	347	800	730	10,000	2,750	880	265	228
23	1,120	665	578	550	326	1,000	840	10,000	3,050	880	265	228
24	1,040	698	578	550	306	1,000	1,200	8,400	2,900	800	245	210
25	1,040	730	578	525	326	960	1,560	8,400	2,750	730	245	210
26	1,040	698	578	500	347	920	1,770	9,400	2,750	698	245	210
27	1,000	665	550	500	347	880	2,480	8,600	2,610	665	245	210
28	960	635	525	500	368	840	2,750	6,470	2,480	635	245	210
29	920	635	525	500	368	800	2,610	5,550	2,480	605	245	210
30	880	605	500	500	------	800	2,480	4,490	2,480	578	245	195
31	880	------	500	478	------	800	------	3,660	------	500	228	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,200	605	909	55,900
November	840	605	710	42,200
December	1,280	500	693	42,600
January	800	455	537	33,000
February	478	306	395	22,700
March	1,000	368	570	35,000
April	2,750	635	1,030	61,300
May	10,200	1,770	6,110	376,000
June	3,500	2,350	2,810	167,000
July	2,350	500	1,270	78,100
August	500	228	316	19,400
September	265	195	214	12,700
The year	10,200	195	1,300	946,000

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 Lake Chelan and Stehekin. Flow in Boulder Creek included in records of discharge.

DRAINAGE AREA.—372 square miles.

RECORDS AVAILABLE.—December, 1910, to October, 1915; January, 1927, to September, 1928.

EXTREMES.—Maximum discharge during year, 11,400 second-feet May 22 (gage height, 26.62 feet); minimum (estimated), 340 second-feet December 31, when stage-discharge relation was affected by ice.

1910–1915, 1927–28: Maximum discharge, 11,400 second-feet June 12, 1911 and May 22, 1928; minimum (estimated), 150 second-feet March 10 1911, from gage reading of doubtful accuracy and observer's statement that river fell to a very low stage.

REMARKS.—Records good. Discharge December 30 to January 3 estimated because of ice. At very high stages small percentage of flow is diverted above gage by natural sloughs; amount diverted included in daily discharge. Gage-height record and many discharge measurements furnished by Washington Water Power Co.

Daily discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	763	756	1,210	350	560	373	842	1,910	2,630	2,560	1,310	896
2	665	888	3,000	360	555	378	805	1,750	2,980	2,630	1,220	912
3	665	992	2,480	370	532	378	777	1,600	2,980	3,200	1,310	858
4	665	1,450	1,960	549	526	382	735	1,550	3,200	3,050	1,260	798
5	627	1,360	1,910	526	526	392	707	1,700	3,280	2,630	1,180	805
6	589	1,260	1,650	510	516	387	672	2,420	3,200	2,370	1,120	707
7	584	1,110	1,500	472	504	426	659	3,430	2,700	2,500	1,260	714
8	639	1,030	1,400	622	488	462	652	4,000	2,440	2,500	1,310	510
9	1,810	960	1,260	920	472	478	659	4,440	2,560	2,370	1,360	478
10	1,600	896	1,090	828	472	526	672	4,260	3,120	2,310	1,360	488
11	1,220	858	1,080	996	467	578	659	4,620	3,590	2,700	1,360	462
12	1,500	820	1,030	2,290	441	538	652	5,090	4,080	2,910	1,090	426
13	2,360	784	952	1,860	436	526	659	4,620	3,920	2,560	1,060	621
14	1,800	770	896	1,500	421	538	679	5,090	3,350	2,250	858	1,160
15	1,500	728	865	1,310	421	532	721	5,470	2,910	2,020	798	633
16	1,500	798	820	1,180	412	526	742	5,850	2,500	2,310	798	532
17	1,500	1,010	777	1,080	412	526	805	5,470	2,190	2,250	812	526
18	1,860	1,020	742	1,000	407	538	798	5,850	2,310	2,130	820	560
19	2,880	968	700	936	412	595	812	6,850	3,120	1,960	805	436
20	2,130	912	672	888	416	714	828	7,870	3,750	1,960	805	392
21	1,750	842	646	842	416	896	865	9,170	3,750	2,130	842	397
22	1,600	805	620	798	421	1,260	960	9,830	4,260	2,440	912	452
23	1,500	791	601	763	392	1,310	1,260	7,450	4,900	2,440	960	526
24	1,310	828	584	728	387	1,260	1,960	6,650	5,090	2,440	968	532
25	1,130	1,360	566	714	421	1,120	2,130	7,870	5,090	2,250	960	478
26	1,030	1,110	538	672	412	1,060	2,250	8,510	5,090	2,190	928	472
27	944	1,030	532	646	387	1,000	2,630	7,250	4,170	2,190	777	472
28	936	1,010	521	627	382	936	2,560	5,280	3,590	2,020	728	446
29	976	936	483	614	378	920	2,190	4,170	3,120	1,800	714	436
30	858	880	390	601	-------	880	2,080	3,280	2,910	1,600	756	416
31	805	-------	340	578	-------	880	-------	2,840	-------	1,450	828	-------

Monthly discharge, in second-feet, of Stehekin River at Stehekin, Wash., 1927–28

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	2,880	584	1,280	3.44	3.97	78,700
November	1,450	728	965	2.59	2.89	57,400
December	3,000	340	1,030	2.77	3.19	63,300
January	2,290	350	843	2.27	2.62	51,800
February	560	378	448	1.20	1.29	25,800
March	1,310	373	688	1.85	2.13	42,300
April	2,630	652	1,110	2.98	3.32	66,000
May	9,830	1,550	5,040	13.5	15.56	310,000
June	5,090	2,190	3,430	9.22	10.29	204,000
July	3,200	1,450	2,330	6.26	7.22	143,000
August	1,360	714	1,010	2.72	3.14	62,100
September	1,160	392	585	1.57	1.75	34,800
The year	9,830	340	1,570	4.22	57.37	1,140,000

LAKE CHELAN AT CHELAN, WASH.

LOCATION.—Staff gage until November 14, 1927, when water-stage recorder was installed, in sec. 13, T. 27 N., R. 22 E., at Forest Service boat landing at Chelan. Recorder 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, 1928.

EXTREMES.—Maximum water-surface elevation during year, 1,099.56 feet June 26; minimum, 1,082.03 feet November 1.

1897–1899, 1910–1928: Maximum water-surface elevation, that of June 26, 1928; minimum, 1,076.78 feet January 27, 28, December 2 and 3, 1898.

REMARKS.—Records excellent. Lake level is controlled by operation of gates in diversion and control dam at outlet in accordance with stipulation of Federal Power Commission for power and for scenic effect during tourist season.

Daily gage height, in feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	83.22	82.03	83.37	84.83	85.99	85.99	87.10	89.06	96.02	99.28	99.39	98.63
2	83.22	82.07	83.59	84.89	86.00	85.98	87.15	89.18	96.18	99.32	99.31	98.60
3	83.24	82.17	83.82	84.91	86.02	85.97	87.20	89.29	96.28	99.39	99.28	98.59
4	83.31	82.09	83.92	84.91	86.02	85.96	87.22	89.39	96.37	99.38	99.33	98.57
5	83.35	82.07	84.07	84.92	86.03	85.98	87.25	89.49	96.56	99.31	99.31	98.51
6	83.40	82.26	84.14	84.93	86.05	85.96	87.22	89.62	96.85	99.31	99.27	98.53
7	83.36	82.32	84.20	84.93	86.08	85.96	87.22	89.85	97.04	99.40	99.27	98.38
8	83.29	82.36	84.30	84.93	86.07	85.95	87.26	90.13	97.19	99.30	99.30	98.28
9	83.32	82.32	84.35	84.95	86.07	85.98	87.31	90.44	97.32	99.28	99.31	98.21
10	83.37	82.37	84.42	84.98	86.06	86.01	87.35	90.78	97.56	99.26	99.32	98.12
11	83.39	82.42	84.50	85.08	86.09	86.03	87.35	91.12	97.82	99.29	99.41	98.02
12	83.47	82.37	84.53	85.24	86.06	86.01	87.39	91.61	98.12	99.39	99.40	98.00
13	83.57	82.47	84.57	85.37	86.06	86.05	87.41	91.91	98.44	99.39	99.39	97.90
14	83.67	82.52	84.59	85.46	86.07	86.03	87.43	92.30	98.70	99.32	99.39	97.87
15	83.77	82.54	84.61	85.54	86.05	86.03	87.45	92.72	98.95	99.25	99.32	97.78
16	83.77	82.59	84.67	85.59	86.05	86.05	87.49	93.27	99.09	99.20	99.28	97.71
17	83.97	82.61	84.67	85.63	86.04	86.06	87.56	93.66	99.19	99.20	99.26	97.67
19	83.92	82.64	84.67	85.67	86.03	86.07	87.61	94.09	99.20	99.22	99.23	97.62
19	84.07	82.74	84.71	85.71	86.04	86.09	87.61	94.44	99.31	99.22	99.21	97.52
20	84.22	82.81	84.71	85.73	86.04	86.10	87.64	94.85	99.40	99.24	99.14	97.41
21	84.27	82.86	84.72	85.77	86.04	86.17	87.68	95.41	99.31	99.31	99.14	97.34
22	84.07	82.90	84.73	85.80	86.01	86.31	87.71	96.05	99.40	99.39	99.09	97.30
23	83.97	82.96	84.75	85.83	86.03	86.43	87.80	96.40	99.46	99.40	99.01	97.26
24	83.65	83.03	84.78	85.83	86.02	86.58	87.92	96.66	99.38	99.38	98.96	97.21
25	83.45	83.14	84.79	85.85	86.01	86.66	88.03	96.72	99.25	99.32	98.94	97.14
26	83.18	83.18	84.79	85.85	86.01	86.75	88.21	96.85	99.40	99.28	98.93	97.07
27	82.92	83.21	84.81	85.89	86.00	86.89	88.41	96.97	99.30	99.28	98.89	96.99
28	82.69	83.32	84.83	85.90	86.00	86.96	88.61	96.90	99.13	99.32	98.85	96.93
29	82.47	83.36	84.83	85.92	86.00	87.00	88.74	96.72	99.15	99.39	98.79	96.87
30	82.31	83.36	84.83	85.98	-------	87.04	88.92	96.48	99.23	99.41	98.73	96.81
31	82.10	-------	84.80	85.99	-------	87.07	-------	96.21	-------	99.40	98.68	-------

NOTE.—Add 1,000 feet to obtain mean sea-level elevation.

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 southeast of Chelan. Gage set to sea level datum.

DRAINAGE AREA.—950 square miles.

RECORDS AVAILABLE.—November, 1903, to September, 1928.

EXTREMES.—Maximum mean daily discharge during year, 9,700 second-feet on May 27; no flow March 22 and 23.

1903–1928: Maximum discharge, 11,600 second-feet June 8, 1921; no flow at times during winter owing to artificial regulation.

REMARKS.—Records good. Small diversion for irrigation above station. Chelan Electric Co., diverts water from point in town of Chelan for power purposes and for irrigation of small area; this 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, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	875	913	753	579	696	696	556	692	4,300	2,910	2,140	1,820
2	870	909	536	406	696	698	701	692	2,900	2,920	1,930	1,770
3	855	714	671	593	696	751	696	657	2,770	3,770	1,470	1,320
4	860	543	591	536	696	591	701	694	1,660	3,990	1,760	1,350
5	855	676	683	676	581	691	696	697	715	4,520	1,160	1,630
6	839	586	726	698	631	751	701	608	698	1,710	994	1,870
7	765	701	756	641	696	754	696	691	693	2,890	910	1,850
8	770	676	776	580	696	751	581	1,090	707	4,660	951	1,870
9	775	716	211	700	631	756	698	676	589	2,720	1,010	1,870
10	775	784	516	696	700	751	696	678	402	2,940	955	1,830
11	840	800	456	700	750	609	701	681	441	2,600	875	1,580
12	840	894	718	701	578	678	631	729	801	3,170	742	1,670
13	856	756	746	676	636	721	696	571	403	3,640	865	1,710
14	830	846	641	748	696	706	707	679	401	3,760	1,310	1,750
15	698	856	518	698	681	696	578	783	401	3,570	2,020	1,680
16	602	856	736	700	706	721	696	699	1,030	3,180	1,470	1,090
17	786	851	851	693	696	751	696	685	1,620	2,710	1,430	1,670
18	856	792	596	701	751	552	694	2,430	1,840	2,660	1,450	1,630
19	846	501	761	716	581	696	691	3,760	2,500	2,340	1,230	1,690
20	886	281	606	658	686	638	702	3,860	5,800	1,260	1,410	1,760
21	2,610	226	499	747	686	331	699	4,390	5,630	1,120	1,480	1,760
22	5,250	181	481	691	696	0	596	5,340	2,920	2,460	1,550	1,550
23	5,300	546	583	696	696	0	659	7,180	6,360	3,110	1,660	1,130
24	5,030	581	706	701	696	2	692	7,510	8,770	3,370	1,510	1,520
25	5,170	706	591	691	696	6	475	9,390	6,000	3,160	1,500	1,660
26	5,150	676	416	696	581	6	399	9,630	5,500	2,890	1,510	1,880
27	4,920	296	416	759	696	6	692	9,700	6,240	2,720	1,510	1,920
28	4,910	341	456	772	701	244	709	8,840	5,690	1,850	1,750	1,900
29	4,790	756	376	586	698	696	576	9,410	3,810	1,840	1,770	1,900
30	4,730	756	711	696	-------	716	692	8,820	4,280	1,930	1,810	1,680
31	1,000	-------	416	696	-------	756	-------	7,640	-------	2,000	1,820	-------

Month	Observed				Gain or loss in storage in Chelan Lake (acre-feet)	Corrected for storage			
	Discharge in second-feet			Run-off in acre-feet		Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October	5,300	602	2,100	129,000	−37,400	91,600	1,490	1.57	1.81
November	913	181	657	39,100	+40,600	79,700	1,340	1.41	1.57
December	851	211	597	36,700	+46,100	82,800	1,350	1.42	1.64
January	772	406	671	41,300	+37,100	78,400	1,280	1.35	1.56
February	751	578	677	38,900	+960	39,900	694	.731	.79
March	756	0	539	33,100	+34,900	68,000	1,110	1.17	1.35
April	709	399	657	39,100	+59,100	98,200	1,650	1.74	1.94
May	9,700	571	3,550	218,000	+235,000	453,000	7,370	7.76	8.95
June	8,770	401	2,860	170,000	+98,900	269,000	4,520	4.76	5.31
July	4,660	1,120	2,850	175,000	+2,620	178,000	2,890	3.04	3.50
August	2,140	742	1,420	87,300	−19,700	67,600	1,100	1.16	1.34
September	1,920	1,090	1,680	100,000	−62,900	37,100	623	.656	.73
The year	9,700	0	1,530	1,110,000	+435,000	1,540,000	2,120	2.23	30.49

RAILROAD CREEK AT LUCERNE, WASH.

LOCATION.—Water-stage recorder in sec. 9, T. 31 N., R. 18 E., half a mile above mouth and half a mile southwest of Lucerne.

DRAINAGE AREA.—64 square miles.

RECORDS AVAILABLE.—December, 1910, to June, 1913; January, 1927, to September, 1928. Former gage was at site 1,800 feet below present gage.

EXTREMES.—Maximum discharge during year, 1,860 second-feet May 22 (gage height, 5.1 feet); minimum, 48 second-feet February 23 (gage height, 2.82 feet).

1910–1913, 1927–28: Maximum discharge, 1,910 second-feet June 8, 1927 (gage height, 5.3 feet); minimum, 13 second-feet February 8, 1927 (gage height, 2.70 feet).

REMARKS.—Records good. Discharge estimated December 11, 14, 15, 29–31, and January 1–3 because of ice effect. No diversions above station. Gage-height record and many discharge measurements furnished by Washington Water Power Co.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	127	113	167		94	84	124	267	437	468	250	174
2	111	122	460	60	91	82	119	236	438	453	229	188
3	111	124	340		89	70	119	224	431	515	218	193
4	111	174	276	98	89	61	113	215	445	515	218	188
5	108	203	249	98	89	59	113	232	453	461	213	188
6	96	181	215	91	89	57	108	285	476	410	203	179
7	94	161	207	84	89	59	108	408	431	424	218	147
8	96	141	199	89	89	66	108	531	376	424	224	126
9	167	135	181	116	86	70	111	642	376	383	224	111
10	185	132	148	119	82	79	108	633	431	370	224	111
11	157	130	150	141	79	84	106	678	473	404	224	108
12	174	124	161	262	72	82	106	742	599	453	203	98
13	285	122	138	211	70	79	108	723	619	417	179	98
14	253	113	130	174	68	79	111	760	531	370	147	130
15	203	113	130	151	66	79	113	798	453	329	130	138
16	199	113	119	151	68	77	116	798	390	323	118	111
17	203	113	113	145	70	77	122	732	341	323	115	104
18	236	116	108	132	77	75	116	770	341	341	115	101
19	394	116	103	127	75	75	116	875	417	300	111	82
20	315	116	96	122	70	96	119	991	468	300	104	77
21	253	111	91	122	70	116	122	1,210	531	311	104	70
22	224	98	89	119	68	167	132	1,680	643	364	108	70
23	203	98	84	113	66	164	167	1,300	752	410	108	79
24	185	103	86	111	77	151	236	1,070	789	417	104	84
25	164	138	84	113	68	141	258	1,180	733	397	101	84
26	148	122	86	108	61	141	281	1,310	789	376	98	82
27	135	111	86	106	63	135	335	1,160	696	383	94	82
28	132	119	75	101	66	132	340	875	599	364	90	79
29	130	113		96	82	127	300	678	515	323	87	77
30	122	108	55	89	-------	127	295	523	484	288	147	75
31	113	-------		98	-------	130	-------	445	-------	266	159	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	394	94	175	2.73	3.15	10,800
November	203	98	126	1.97	2.20	7,500
December	460	----------	146	2.28	2.63	8,980
January	262	----------	118	1.84	2.12	7,260
February	94	61	76.7	1.20	1.29	4,410
March	167	57	97.5	1.52	1.75	6,000
April	340	106	158	2.47	2.76	9,400
May	1,680	215	741	11.6	13.37	45,600
June	789	341	515	8.05	8.98	30,600
July	515	266	383	5.98	6.89	23,600
August	250	87	157	2.45	2.82	9,650
September	193	70	114	1.78	1.99	6,780
The year	1,680	----------	235	3.67	49.95	171,000

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, 1928.

EXTREMES.—Maximum discharge during year, 14,300 second-feet May 23 (gage height, 9.50 feet); minimum 398 second-feet September 30 (gage height, 2.79 feet).

1910–1928: Maximum discharge, 20,800 second-feet December 13, 1921 (gage height, 11.8 feet); minimum, 250 second-feet October 18 and 19, 1925.

REMARKS.—Records excellent. Discharge January 4 estimated. Wenatchee Park Land & Irrigation Co. diverts a maximum of about 12 second-feet from Chiwawa River during irrigation season. No regulation.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,200	1,150	2,420	860	1,150	770	2,100	4,040	5,380	3,660	1,140	560
2	1,050	1,200	4,800	905	1,100	770	1,950	3,660	5,380	3,660	1,090	560
3	1,150	1,510	5,590	950	1,150	770	1,880	3,300	5,180	3,660	1,040	552
4	1,100	2,590	4,800	1,140	1,150	770	1,800	3,300	5,180	3,660	982	544
5	1,050	3,120	4,230	1,320	1,100	770	1,720	3,480	5,380	3,480	930	544
6	1,000	3,300	3,660	1,510	1,200	860	1,580	3,660	5,590	3,300	930	544
7	950	2,940	3,300	1,380	1,150	905	1,580	5,180	5,180	3,120	930	520
8	950	2,420	2,940	1,510	1,050	1,000	1,510	6,240	4,420	3,120	930	465
9	1,650	2,100	2,760	1,950	1,050	1,150	1,580	7,190	4,420	2,940	880	450
10	2,100	1,950	2,420	1,950	1,000	1,260	1,580	7,440	4,800	2,940	880	435
11	2,100	1,800	2,100	2,260	1,000	1,510	1,580	7,690	5,590	2,940	880	420
12	1,950	1,650	1,950	5,380	1,000	1,380	1,580	8,460	5,800	2,940	782	442
13	2,590	1,580	1,800	6,020	950	1,320	1,580	8,460	5,590	2,940	782	480
14	2,760	1,580	1,720	5,180	905	1,260	1,580	8,460	5,380	2,590	735	520
15	2,420	1,510	1,720	4,230	905	1,200	1,580	8,980	5,180	2,260	690	560
16	2,260	1,650	1,650	3,660	905	1,200	1,720	9,250	4,420	2,260	645	520
17	2,100	2,420	1,510	2,940	860	1,150	1,950	9,520	3,850	2,260	645	480
18	2,260	3,120	1,440	2,760	860	1,150	1,950	9,250	3,850	2,100	645	465
19	2,940	2,940	1,440	2,420	860	1,260	1,880	10,100	4,420	1,950	645	442
20	2,590	2,940	1,320	2,260	860	1,510	1,880	11,200	4,800	1,950	602	420
21	2,260	2,590	1,150	2,100	860	1,950	1,880	12,600	5,180	1,880	602	412
22	2,100	2,260	1,150	1,880	860	2,420	2,100	14,000	5,380	1,950	602	412
23	1,950	2,100	1,150	1,800	860	2,940	2,260	14,000	6,020	1,950	602	405
24	1,720	2,100	1,150	1,720	815	2,940	3,480	13,200	6,020	1,950	645	420
25	1,580	4,040	1,100	1,650	860	2,760	3,660	11,700	6,020	1,880	645	412
26	1,440	3,660	1,100	1,510	815	2,590	4,040	12,900	6,240	1,800	645	412
27	1,380	3,300	1,050	1,440	815	2,260	4,610	12,300	5,590	1,720	645	412
28	1,320	3,120	1,050	1,380	815	2,260	4,800	10,100	5,180	1,650	645	412
29	1,380	2,760	1,050	1,440	815	2,100	4,420	7,440	4,230	1,510	560	405
30	1,320	2,420	860	1,320	------	2,100	4,230	6,700	3,850	1,380	560	398
31	1,260	------	770	1,260	------	2,100	------	5,180	------	1,260	560	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	2,940	950	1,740	2.94	3.39	107,000
November	4,040	1,150	2,390	4.04	4.51	142,000
December	5,590	770	2,100	3.55	4.09	129,000
January	6,020	860	2,200	3.72	4.29	135,000
February	1,200	815	956	1.62	1.75	55,000
March	2,940	770	1,560	2.64	3.04	95,900
April	4,800	1,510	2,330	3.94	4.40	139,000
May	14,000	3,300	8,350	14.1	16.26	513,000
June	6,240	3,850	5,120	8.66	9.66	305,000
July	3,660	1,260	2,470	4.18	4.82	152,000
August	1,140	560	758	1.28	1.48	46,600
September	560	398	467	.790	.88	27,800
The year	14,000	398	2,550	4.31	58.57	1,850,000

PHELPS CREEK NEAR PLAIN, WASH.

LOCATION.—Staff gage one-fourth mile above mouth and 25 miles northwest of Plain. Zero of gage is 2,772.75 feet above mean sea level.

DRAINAGE AREA.—16.8 square miles.

RECORDS AVAILABLE.—November, 1926, to September, 1928.

EXTREMES.—Maximum discharge during year, 658 second-feet May 24 (gage height, 2.96 feet); minimum, 8.5 second-feet September 19 and 23 (gage height, 0.10 foot).

1926–1928: Maximum discharge, 1,080 second-feet June 7, 1927 (gage height, 3.9 feet); no flow February 20–23 and March 1–12, 1927, because of snow slides in gorge above station.

REMARKS.—Records fair. A few second-feet are diverted 2 miles above gage for operation of mine power plant. (See table of miscellaneous discharge measurements.) Gage-height record furnished by Royal Development Co.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	58	69		18	16	24	105	31[illegible]	140	48	17
2	21	42	121		18	14	25	89	161	132	42	17
3	22	44	76		18	15	25	82	17[illegible]	130	36	15
4	22	68	64		19	16	23	80	17[illegible]	128	36	15
5	23	72	64		19	17	24	89	17[illegible]	128	35	15
6	23	58	53	18	18	16	25	132	18[illegible]	125	30	14
7	23	59	52		18	18	25	174	161	123	31	13
8	26	62	50		18	17	26	200	15[illegible]	119	30	13
9	51	51	44		21	17	26	213	145	115	28	12
10	41	50	34		17	17	29	213	17[illegible]	113	28	12
11	41	50			17	17	30	213	18[illegible]	121	29	12
12	61	46		28	16	17	31	241	21[illegible]	115	25	15
13	72	39		30	17	17	30	256	227	113	24	15
14	72	34		31	16	16	30	270	21[illegible]	109	23	17
15	66	33		29	16	16	28	285	17[illegible]	101	21	15
16	64	42	30	29	16	16	28	347	15[illegible]	99	22	14
17	67	38		28	16	17	27	316	14[illegible]	117	21	12
18	104	36		27	16	18	27	380	13[illegible]	95	21	12
19	122	37		26	15	19	27	363	17[illegible]	84	20	9.7
20	101	33		27	15	23	26	363	18[illegible]	75	20	10
21	84	31		27	15	42	26	501	20[illegible]	82	20	9.7
22	103	29		25	15	58	26	618	21[illegible]	89	20	9.4
23	101	28		25	15	50	28	618	241	86	19	9.1
24	69	28		23	16	41	80	618	241	86	20	9.4
25	63	32		22	16	36	74	618	241	75	21	9.4
26	58	27	22	21	16	34	80	618	241	72	20	10
27	59	27		21	16	33	123	578	18[illegible]	75	20	9.7
28	47	26		22	16	32	140	578	17[illegible]	66	18	9.4
29	58	26		22	17	31	140	539	15[illegible]	59	18	9.1
30	70	26		21	------	29	101	501	14[illegible]	51	17	9.1
31	64	------		20	------	29	------	501	------	49	17	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	122	20	58.6	3,600
November	72	26	41.1	2,450
December	121	----------	37.7	2,320
January	31	----------	22.6	1,390
February	21	15	16.8	966
March	58	14	24.3	1,490
April	140	23	45.1	2,680
May	618	80	345	21,200
June	316	134	188	11,200
July	140	49	99.1	6,090
August	48	17	25.2	1,550
September	17	9.1	12.3	732
The year	618	9.1	76.7	55,700

YAKIMA RIVER BASIN

YAKIMA RIVER NEAR MARTIN, WASH.

LOCATION.—Water-stage recorder below dam at outlet of Keechelus Lake, 3½ miles northwest of Martin.

DRAINAGE AREA.—55 square miles.

RECORDS AVAILABLE.—October, 1903, to September, 1928.

EXTREMES.—Maximum discharge during year, 1,890 second-feet August 9 (gage height, 9.21 feet); minimum, 2 second-feet November 14 and 15 (gage height, 1.25 feet).

1903–1928: Maximum discharge, 7,370 second-feet March 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 records furnished by United States Bureau of Reclamation.

Daily discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	783	95	3	174	309	45	51	55	274	274	1,490	471
2	817	96	325	174	274	45	52	55	278	305	1,540	471
3	817	96	913	174	249	45	52	55	316	385	1,540	471
4	817	96	913	174	249	45	52	55	351	426	1,590	471
5	817	96	880	174	249	46	52	55	385	426	1,680	460
6	817	96	913	175	249	46	52	55	442	426	1,680	346
7	817	60	913	175	249	46	52	56	532	426	1,780	346
8	817	3	913	178	249	46	52	56	494	448	1,330	346
9	817	3	913	178	249	46	52	56	392	520	1,880	346
10	817	3	913	180	249	46	53	57	365	635	1,880	356
11	817	3	913	181	249	46	53	56	378	873	1,880	346
12	590	3	913	262	249	46	53	57	385	1,060	1,880	346
13	87	3	880	437	249	46	53	57	378	1,100	1,830	346
14	87	2	880	437	249	46	53	57	358	995	1,830	346
15	87	2	880	437	249	47	53	58	378	928	1,830	346
16	88	3	1,020	437	249	47	53	58	372	947	1,830	336
17	88	3	1,050	437	241	48	53	59	331	1,020	1,780	336
18	88	3	1,090	380	241	48	53	59	303	1,060	1,730	327
19	89	3	982	327	241	48	53	59	290	1,080	1,730	160
20	89	3	756	327	241	48	53	59	303	1,100	1,730	46
21	90	3	756	327	241	48	53	59	311	1,100	1,680	45
22	90	3	482	327	233	48	53	60	307	1,140	1,590	45
23	91	3	257	327	233	48	53	61	311	1,180	1,490	44
24	91	3	180	327	128	49	53	127	316	1,180	1,310	43
25	92	3	177	318	45	50	53	837	320	1,220	1,010	43
26	92	3	173	318	45	51	54	1,110	303	1,220	820	45
27	92	3	170	318	45	51	54	1,070	282	1,270	635	47
28	92	3	174	318	45	51	54	935	276	1,270	520	47
29	94	3	174	318	45	51	55	785	274	1,310	471	47
30	94	3	174	318	-------	51	55	627	274	1,360	471	47
31	94	-------	174	309	-------	51	-------	355	-------	1,400	483	-------

Monthly discharge of Yakima River near Martin, Wash., 1927–28

Month	Observed				Gain or loss in storage in Keechelus Lake Reservoir (acre-feet)	Corrected for storage			
	Discharge in second-feet			Run-off in acre-feet		Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October	817	87	363	22,300	+682	23,000	374	6.80	7.84
November	96	2	23.4	1,390	+47,200	48,600	817	14.9	16.62
December	1,090	3	640	39,400	−20,400	19,000	309	5.62	6.48
January	437	174	288	17,700	+11,300	29,000	472	8.58	9.89
February	309	45	210	12,100	−5,940	6,160	107	1.95	2.10
March	51	45	47.6	2,930	+18,700	21,600	351	6.38	7.36
April	55	51	52.9	3,150	+17,800	21,000	353	6.42	7.16
May	1,110	55	231	14,200	+41,500	55,700	906	16.5	19.02
June	532	274	343	20,400	+51	20,500	345	6.27	7.00
July	1,400	274	906	55,700	−49,700	6,000	97.6	1.77	2.04
August	1,880	471	1,470	90,100	−85,700	4,400	71.6	1.30	1.50
September	471	43	249	14,800	−12,800	2,000	33.6	.611	.68
The year	1,880	2	405	294,000	−37,300	257,000	354	6.44	87.69

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, 1928.

EXTREMES.—Maximum discharge during year, 10,600 second-feet January 13 (gage height, 7.7 feet); minimum, 487 second-feet September 20 (gage height, 1.52 feet).

1906–1928: Maximum discharge, about 25,600 second-feet November 14, 1906 (gage height, 12.5 feet; from high-water marks); minimum, 144 second-feet November 17–19, 1923 (gage height, 0.83 foot).

REMARKS.—Records excellent. No diversions above station. 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, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,970	918	2,630	974	1,340	688	1,910	2,990	3,060	2,150	2,780	1,430
2	1,970	966	4,220	835	1,300	676	1,800	2,640	2,920	2,090	2,850	1,430
3	2,200	1,070	7,150	835	1,200	671	1,630	2,330	2,850	2,150	2,850	1,430
4	2,260	1,410	6,250	835	1,160	676	1,530	2,090	2,780	2,270	2,850	1,430
5	2,200	2,500	5,200	926	1,160	740	1,430	2,090	2,780	2,270	2,920	1,380
6	2,200	3,370	4,500	1,160	1,160	800	1,340	2,580	2,850	2,210	2,920	1,250
7	2,260	3,130	3,870	1,320	1,120	860	1,250	3,560	2,920	2,090	2,990	1,160
8	2,200	2,560	3,700	1,500	1,080	930	1,200	4,350	2,640	2,030	2,990	1,080
9	2,260	2,080	3,450	1,650	1,080	1,080	1,200	4,920	2,450	2,090	3,060	1,040
10	2,500	1,750	3,370	1,750	1,040	1,430	1,340	4,920	2,330	2,270	3,140	1,000
11	2,200	1,550	3,130	1,970	1,040	1,970	1,340	4,920	2,450	2,390	3,060	1,000
12	2,080	1,410	3,060	4,500	1,000	1,910	1,380	5,120	2,710	2,640	3,060	1,000
13	1,650	1,280	2,910	10,000	1,000	1,740	1,340	5,320	2,710	2,780	3,060	1,000
14	1,280	1,280	2,840	8,280	965	1,530	1,380	5,120	2,640	2,780	2,990	1,000
15	1,370	1,320	2,770	6,180	965	1,430	1,480	5,320	2,580	2,580	2,990	1,080
16	1,650	1,500	2,910	4,920	930	1,380	1,530	5,530	2,450	2,580	2,990	1,040
17	1,600	2,260	3,210	4,080	930	1,340	1,680	5,320	2,210	2,710	2,920	1,040
18	1,700	3,060	3,290	3,470	930	1,300	1,740	5,120	1,970	2,710	2,850	1,000
19	1,810	3,130	3,210	2,920	930	1,340	1,740	5,120	1,970	2,780	2,850	1,040
20	1,750	2,910	2,980	2,640	930	1,680	1,630	5,740	2,210	2,780	2,780	860
21	1,600	2,500	2,700	2,520	930	2,090	1,580	6,400	2,270	2,780	2,780	800
22	1,410	2,140	2,500	2,390	965	2,640	1,580	7,080	2,520	2,780	2,780	800
23	1,320	1,860	2,320	2,270	930	3,220	1,910	6,850	2,850	2,710	2,710	770
24	1,320	1,920	2,080	2,210	930	3,380	2,710	5,960	3,140	2,780	2,580	740
25	1,280	4,220	1,970	2,090	860	2,990	3,220	5,960	3,220	2,850	2,390	717
26	1,160	5,200	1,920	1,910	800	2,580	3,380	6,850	3,140	2,780	2,090	682
27	1,070	4,040	1,920	1,740	800	2,330	3,560	7,310	2,920	2,780	1,970	644
28	990	3,700	1,920	1,580	770	2,090	3,810	6,400	2,710	2,780	1,800	595
29	982	3,290	1,600	1,480	705	2,030	3,470	5,740	2,450	2,780	1,630	534
30	974	2,770	1,160	1,430	-------	1,970	3,140	4,730	2,210	2,780	1,530	506
31	958	-------	1,070	1,380	-------	2,030	-------	3,810	-------	2,780	1,480	-------

Month	Observed				Gain or loss in storage in reservoirs (acre-feet)	Corrected for storage			
	Discharge in second-feet			Run-off in acre-feet		Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October	2,500	958	1,680	103,000	+17,500	120,000	1,950	3.90	4.50
November	5,200	918	2,370	141,000	+88,200	229,000	3,850	7.70	8.59
December	7,150	1,070	3,090	190,000	−30,800	159,000	2,590	5.18	5.97
January	10,000	835	2,640	162,000	+10,200	172,000	2,800	5.60	6.46
February	1,340	705	998	57,400	−12,500	44,900	781	1.56	1.68
March	3,380	671	1,660	102,000	+32,800	135,000	2,200	4.40	5.07
April	3,810	1,200	1,940	115,000	+35,200	150,000	2,520	5.04	5.62
May	7,310	2,090	4,910	302,000	+89,400	391,000	6,360	12.7	14.64
June	3,220	1,970	2,630	157,000	+9,870	167,000	2,810	5.62	6.27
July	2,850	2,030	2,550	157,000	−94,400	62,600	1,020	2.04	2.35
August	3,140	1,480	2,670	164,000	−142,000	22,000	358	.716	.83
September	1,430	506	983	58,500	−44,300	14,200	239	.478	.53
The year	10,000	506	2,350	1,710,000	−40,800	1,670,000	2,300	4.60	62.51

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, and August, 1913, to October, 1918; irrigation seasons; April, 1919, to September, 1922; October, 1926, to September, 1928.

EXTREMES.—Maximum discharge during year, 18,400 second-feet January 15 (gage height, 10.23 feet); minimum, 1,000 second-feet July 30 (gage height, 2.21 feet).

1904–1906, 1913–1922, 1926–1928: Maximum discharge, about 62,800 second-feet (measured by floats) November 17, 1906; minimum, about 40 second-feet August 19, 26, 30, 31, and September 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, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,950	2,540	7,520	3,450	4,740	2,880	6,050	6,250	6,250	2,110	1,140	1,310
2	3,090	2,540	7,080	3,020	4,740	2,810	5,850	5,850	4,920	2,000	1,110	1,350
3	3,160	2,540	8,940	2,480	4,740	2,670	5,660	5,100	4,240	2,000	1,180	1,440
4	3,680	2,540	11,100	2,810	4,740	2,740	5,280	4,150	3,990	1,940	1,140	1,440
5	4,400	2,610	13,800	3,380	4,740	2,740	4,920	3,450	3,830	1,890	1,140	1,440
6	4,240	3,090	12,500	3,830	4,570	2,810	4,570	3,160	3,760	1,830	1,140	1,440
7	4,150	4,740	11,100	4,240	4,570	3,160	4,400	3,530	3,680	1,780	1,110	1,490
8	4,150	5,470	9,960	4,570	4,570	3,680	4,070	5,100	3,600	1,680	1,140	1,490
9	4,070	5,280	9,190	4,740	4,240	4,070	3,830	6,660	3,380	1,530	1,140	1,440
10	3,990	4,740	8,700	5,100	3,990	4,400	3,680	7,750	3,090	1,440	1,220	1,440
11	4,150	4,400	8,220	5,100	3,830	4,740	3,830	7,980	2,810	1,310	1,220	1,400
12	4,240	3,910	7,520	5,660	3,680	5,470	3,910	7,980	2,740	1,270	1,220	1,400
13	4,070	3,680	7,520	9,480	3,600	5,660	3,830	8,450	2,810	1,220	1,220	1,530
14	3,910	3,450	7,300	14,800	3,530	5,280	3,760	8,700	2,880	1,350	1,310	1,630
15	3,600	3,300	7,080	17,900	3,450	4,920	3,760	8,700	2,880	1,490	1,310	1,680
16	3,300	3,380	7,080	16,500	3,380	4,570	3,830	8,940	2,740	1,440	1,270	1,730
17	3,230	3,380	6,870	13,100	3,300	4,400	3,760	9,700	2,610	1,310	1,270	1,780
18	3,300	4,150	6,870	10,500	3,450	4,240	3,760	9,700	2,350	1,220	1,270	1,890
19	3,230	5,280	6,870	8,940	3,600	4,150	3,830	8,940	2,050	1,220	1,270	1,830
20	3,300	5,850	6,660	8,220	3,760	4,400	3,680	8,450	1,780	1,310	1,270	1,830
21	3,450	6,050	6,050	7,520	3,830	5,660	3,450	9,190	1,630	1,400	1,220	1,830
22	3,680	5,660	5,660	7,080	3,680	6,870	3,020	10,500	1,730	1,490	1,220	1,730
23	3,530	5,100	5,470	6,660	3,600	8,220	2,950	11,600	1,830	1,580	1,220	1,580
24	3,300	4,740	5,100	6,450	3,530	9,440	3,090	12,200	2,050	1,490	1,220	1,580
25	3,230	4,570	4,740	6,050	3,380	9,440	4,400	11,300	2,350	1,490	1,350	1,530
26	3,090	6,870	4,570	5,470	3,230	8,450	5,850	10,800	2,610	1,440	1,440	1,530
27	2,950	9,440	4,400	4,920	3,160	7,520	6,660	11,300	2,740	1,400	1,530	1,400
28	2,810	8,700	4,240	4,920	3,090	6,660	6,870	11,900	2,880	1,310	1,530	1,310
29	2,670	7,980	4,070	4,920	3,020	6,250	7,300	11,300	2,810	1,140	1,490	1,270
30	2,610	7,980	3,830	4,920	-------	6,050	7,080	9,190	2,540	1,070	1,440	1,220
31	2,540	-------	3,760	4,920	-------	6,050	-------	7,520	-------	1,070	1,350	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	4,400	2,540	3,490	214,000
November	9,440	2,540	4,800	285,000
December	13,800	3,760	7,220	444,000
January	17,900	2,480	6,830	420,000
February	4,740	3,020	3,850	222,000
March	9,440	2,670	5,170	318,000
April	7,300	2,950	4,560	272,000
May	12,200	3,160	8,240	506,000
June	6,250	1,630	2,990	178,000
July	2,110	1,070	1,490	91,700
August	1,530	1,110	1,260	77,600
September	1,890	1,220	1,530	91,200
The year	17,900	1,070	4,300	3,120,000

KACHESS RIVER NEAR EASTON, WASH.

LOCATION.—Water-stage recorder in sec. 3, T. 20 N., R. 13 E., one-fourth mile below Kachess Lake and 2½ miles northwest of Easton.

DRAINAGE AREA.—64 square miles.

RECORDS AVAILABLE.—November, 1903, to September, 1928.

EXTREMES.—Maximum discharge during year, 1,310 second-feet January 13 (gage height, 5.75 feet); practically no flow when gates in dam are closed.

1903–1928: Maximum discharge, 2,240 second-feet (computed from gate opening) August 27, 1920; practically no flow when gates in dam are closed.

REMARKS.—Records good. No diversions. Flow controlled by storage and release of water in Kachess Lake Reservoir. Complete records furnished by United States Bureau of Reclamation.

Daily and monthly dischage, in second-feet, 1927–28

Day	Oct.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	936	0	168	210	137	140	106	235	489	940	766
2	936	0	168	210	135	140	81	235	489	940	766
3	936	0	168	210	135	140	12	159	534	940	766
4	947	0	168	210	135	140	12	71	563	940	766
5	930	124	168	210	135	140	12	6	551	940	766
6	925	242	205	210	135	140	10	6	544	940	702
7	919	228	230	210	135	116	9	6	544	940	661
8	919	228	233	210	135	99	9	6	544	940	588
9	919	371	233	208	135	99	9	6	641	940	544
10	493	546	233	208	137	99	8	6	723	940	544
11	0	532	281	208	137	99	8	6	723	918	544
12	0	429	808	208	137	99	7	6	723	918	544
13	0	546	1,290	208	137	99	7	6	702	918	544
14	0	617	1,240	208	137	99	6	6	702	918	199
15	0	622	1,130	208	137	99	6	6	702	918	3
16	0	722	931	208	137	99	6	6	787	918	2
17	0	806	830	208	137	99	6	6	830	918	2
18	0	806	702	208	137	101	6	6	887	918	2
19	0	780	621	208	137	101	6	129	918	918	2
20	0	751	621	208	137	101	6	106	931	918	2
21	0	850	621	208	138	101	6	170	940	918	2
22	0	935	621	208	138	101	6	252	940	918	2
23	0	949	621	208	138	101	6	417	940	918	2
24	0	968	621	208	138	102	6	507	940	896	4
25	0	981	554	208	138	102	6	496	940	896	4
26	0	981	437	208	138	102	183	478	940	896	4
27	0	975	336	205	138	102	682	471	940	896	3
28	0	851	245	159	140	104	766	471	918	874	4
29	0	424	210	137	140	104	641	454	940	874	5
30	0	284	210	-------	140	104	437	454	940	808	3
31	0	206	210	-------	140	-------	297	-------	940	766	-------

Month	Observed				Gain or loss in storage in reservoirs (acre-feet)	Corrected for storage			
	Discharge in second-feet			Run-off in acre-feet		Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October	947	0	286	17,600	+770	18,400	299	4.67	5.38
November	0	0	0	0	+39,300	39,300	660	10.3	11.49
December	981	0	540	33,200	−7,910	25,300	411	6.42	7.40
January	1,290	168	488	30,000	−1,570	28,400	462	7.22	8.32
February	210	137	204	11,800	−5,950	5,850	102	1.59	1.72
March	140	135	137	8,420	+12,500	20,900	340	5.31	6.12
April	140	99	109	6,490	+15,600	22,100	371	5.80	6.47
May	766	6	109	6,680	+47,600	54,300	883	13.8	15.91
June	507	6	173	10,300	+11,200	21,500	361	5.64	6.29
July	940	489	769	47,300	−42,900	4,400	71.6	1.12	1.29
August	940	766	911	56,000	−55,500	500	8.13	.127	.15
September	766	2	292	17,300	−17,100	200	3.36	.052	.06
The year	1,290	0	338	245,000	−3,960	241,000	332	5.19	70.60

NOTE.—No flow Oct. 11 to Dec. 4.

CLE ELUM RIVER NEAR ROSLYN, WASH.

LOCATION.—Water-stage recorder in sec. 10, T. 20 N., R. 14 E., below Cle Elum Lake, 4 miles northwest of Roslyn.

DRAINAGE AREA.—202 square miles.

RECORDS AVAILABLE.—October, 1903, to September, 1928.

EXTREMES.—Maximum discharge during year, 5,790 second-feet May 22 (gage height, 7.9 feet); minimum, 101 second-feet October 1 (gage height, 1.08 feet).

1903–1928: Maximum discharge, 18,700 second-feet November 15, 1906 (gage height, 14.05 feet); practically no flow September 28, 1914.

REMARKS.—Records excellent. No diversions above station. Flow partly controlled by storage and release of water at Cle Elum Lake Reservoir. Complete records furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	117	549	1,350	358	446	257	864	1,730	1,730	1,080	366	160
2	128	554	2,120	366	430	251	807	1,540	1,730	1,050	340	160
3	201	632	3,430	397	405	242	752	1,350	1,730	984	330	155
4	234	984	2,880	451	389	245	699	1,250	1,730	984	305	151
5	260	2,030	2,300	540	385	295	683	1,250	1,900	954	288	149
6	288	2,390	1,860	678	401	322	627	1,620	1,900	894	275	136
7	330	2,120	1,500	752	381	333	587	2,350	1,940	864	272	130
8	340	1,730	1,390	752	370	370	554	2,990	1,730	836	269	126
9	362	1,390	1,250	864	358	459	549	3,430	1,580	807	266	122
10	451	1,140	1,020	923	336	597	597	3,430	1,540	780	266	118
11	544	984	894	1,110	333	780	622	3,430	1,690	752	257	118
12	578	864	894	2,360	330	807	632	3,660	1,900	752	245	118
13	632	807	864	4,410	322	780	607	3,660	1,900	780	236	122
14	458	780	752	3,540	316	694	602	3,660	1,900	752	231	251
15	836	780	689	2,490	298	637	647	3,900	1,820	699	222	673
16	1,110	894	699	1,860	279	587	726	4,150	1,650	673	214	694
17	1,140	1,420	627	1,500	275	540	807	4,020	1,420	637	206	694
18	1,250	1,860	587	1,250	275	512	836	3,780	1,290	602	191	694
19	1,390	1,940	554	1,080	275	531	836	3,900	1,250	587	186	699
20	1,390	1,820	521	954	279	637	780	4,540	1,390	573	176	694
21	1,250	1,620	485	864	282	864	752	5,230	1,540	544	176	699
22	1,050	1,350	455	780	285	1,280	752	5,650	1,650	535	174	699
23	954	1,180	442	726	282	1,650	954	5,230	1,820	531	174	663
24	954	1,210	425	657	285	1,730	1,460	4,410	1,900	535	181	637
25	864	2,120	405	627	282	1,540	1,820	4,410	1,900	540	181	592
26	780	2,580	393	587	279	1,320	1,940	4,810	1,940	531	183	554
27	699	2,300	401	549	275	1,140	2,070	4,410	1,780	499	183	508
28	642	2,030	421	521	269	1,020	3,310	3,540	1,690	481	174	455
29	597	1,780	401	503	263	923	2,070	2,890	1,390	451	166	397
30	602	1,500	389	494	-------	894	1,860	2,350	1,140	417	164	358
31	583	-------	340	468	-------	864	-------	2,030	-------	393	160	------

Month	Observed				Gain or loss in storage in Cle Elum Lake Reservoir (acre-feet)	Corrected for storage			
	Discharge in second-feet			Run-off in acre-feet		Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October	1,390	117	678	41,700	+16,000	57,700	938	4.64	5.35
November	2,580	549	1,440	85,900	+1,680	87,600	1,470	7.28	8.12
December	3,430	340	992	61,000	−2,460	58,500	951	4.71	5.43
January	4,410	358	1,080	66,300	+475	66,800	1,090	5.40	6.23
February	446	263	324	18,600	−611	18,000	313	1.55	1.67
March	1,730	242	745	45,800	+1,550	47,400	771	3.82	4.40
April	3,310	549	1,030	61,100	+1,790	62,900	1,060	5.25	5.86
May	5,650	1,250	3,370	207,000	+258	207,000	3,370	16.7	19.25
June	1,990	1,140	1,700	101,000	−1,380	99,600	1,670	8.27	9.23
July	1,080	393	693	42,600	−1,810	40,800	664	3.29	3.79
August	366	160	228	14,000	−746	13,300	216	1.07	1.23
September	699	118	391	23,300	−14,400	8,900	150	.743	.83
The year	5,650	117	1,060	769,000	+346	768,000	1,060	5.25	71.39

NACHES RIVER BELOW TIETON RIVER, NEAR NACHES, WASH.

LOCATION.—Water-stage recorder in sec. 35, T. 15 N., R. 16 E., 600 feet below Tieton River and 5 miles northwest of Naches.

DRAINAGE AREA.—942 square miles.

RECORDS AVAILABLE.—August to October, 1905; March, 1909, to October, 1912; May, 1915, to September, 1928; discontinued.

EXTREMES.—Maximum discharge during year, 8,470 second-feet May 25 (gage height, 8.1 feet); minimum, 490 second-feet August 21 (gage height, 2.43 feet).

1905, 1909–1912, 1915–1928: Maximum discharge, 18,800 second-feet November 24, 1909 (gage height, 8.9 feet); minimum, 57 second-feet September 23 and 24, 1924 (gage height, 1.10 feet).

REMARKS.—Records good. Station is above all important diversions, except Selah Valley and Tieton Canals. Flow partly controlled by storage and release of water at Bumping Lake and at Tieton Reservoir. Maintained by United States Bureau of Reclamation in cooperation with Pacific Power & Light Co. Bureau of Reclamation furnished records for publication.

Daily discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	769	598	2,500	1,290	1,440	602	1,640	2,650	2,880	1,590	875	1,220
2	617	605	4,060	1,240	1,490	596	1,540	2,720	2,780	1,740	816	1,220
3	923	605	5,050	1,430	1,490	658	1,440	2,520	2,720	1,350	731	1,220
4	1,380	611	4,380	1,790	1,440	697	1,400	2,400	2,780	1,260	774	1,220
5	1,020	783	3,830	1,740	1,400	744	1,350	2,460	2,780	1,300	779	1,170
6	867	1,130	3,600	1,580	1,400	845	1,260	2,920	2,920	1,220	690	1,170
7	836	1,200	3,380	1,340	1,350	1,170	1,220	3,650	2,780	1,170	678	1,170
8	806	1,090	3,240	1,290	899	1,260	1,170	4,040	2,460	1,300	634	1,220
9	859	1,010	3,170	1,480	823	1,260	1,220	4,280	2,280	1,260	638	1,220
10	891	923	2,890	1,580	794	1,220	1,260	4,280	2,220	1,300	637	1,220
11	776	875	2,820	1,640	801	1,130	1,220	4,280	2,280	1,260	614	1,280
12	718	844	3,030	3,210	758	1,050	1,270	4,450	2,400	1,260	602	1,220
13	725	806	2,890	4,710	779	1,010	1,220	4,450	2,340	1,170	596	1,260
14	883	783	2,760	3,900	758	930	1,260	4,450	2,280	1,050	590	1,260
15	761	791	2,690	3,240	744	922	1,300	5,310	2,220	1,010	584	1,260
16	697	939	2,690	2,820	738	907	1,350	5,670	2,050	970	573	1,260
17	657	1,380	2,560	2,630	1,050	930	1,400	5,310	1,890	1,010	578	1,260
18	711	1,480	2,560	2,370	1,090	1,010	1,400	4,960	1,790	1,010	567	1,260
19	704	1,480	2,130	2,220	1,130	1,220	1,350	5,130	1,840	1,010	550	1,300
20	663	1,530	1,580	2,100	1,130	1,640	1,300	5,670	2,000	970	533	1,170
21	630	1,380	1,380	2,050	907	2,280	1,260	6,240	2,100	930	522	1,010
22	605	1,240	1,180	2,000	794	2,990	1,260	6,820	2,160	899	567	1,010
23	643	1,150	1,180	1,890	758	3,200	1,490	6,620	2,220	883	634	1,010
24	624	1,340	1,200	1,640	710	2,920	1,740	6,430	2,220	868	852	1,010
25	643	3,030	1,200	1,090	678	2,100	1,790	6,700	2,340	852	970	970
26	643	2,820	1,170	837	678	1,790	1,940	7,220	2,520	837	1,010	779
27	611	2,250	1,040	1,050	671	1,590	2,050	6,820	2,400	816	1,010	772
28	585	2,500	1,020	1,350	658	1,540	2,160	5,860	2,160	794	1,010	758
29	579	2,630	1,010	1,440	627	1,690	2,340	4,620	1,940	808	1,010	751
30	624	2,370	859	1,440	-------	1,640	2,460	4,120	1,590	860	1,050	779
31	579	-------	859	1,400	-------	1,690	-------	3,420	-------	852	1,170	------

Monthly discharge of Naches River below Tieton River, near Naches, Wash., 1927–28

Month	Observed				Gain or loss in storage in Bumping Lake and Tieton Reservoirs (acre-feet)	Diverted by Selah Valley and Tieton Canals (acre-feet)	Corrected for storage and diversion			
	Discharge in second-feet			Run-off in acre-feet			Run-off in acre-feet	Discharge in second-feet		Run off in inches
	Maximum	Minimum	Mean					Mean	Per square mile	
October	1,380	579	743	45,700	+18,900	3,150	67,800	1,100	1.17	1.35
November	3,030	598	1,340	79,700	+37,500	1,300	118,000	1,980	2.10	2.34
December	5,050	859	2,380	147,000	−31,400		116,000	1,890	2.01	2.32
January	4,710	837	1,930	119,000	+10,200		129,000	2,100	2.23	2.57
February	1,490	627	965	55,500	−12,600	938	43,800	761	.808	.87
March	3,200	596	1,390	85,700	+16,100	1,860	104,000	1,690	1.79	2.06
April	2,460	1,170	1,500	89,200	+17,700	6,510	113,000	1,900	2.02	2.25
May	7,220	2,400	4,720	291,000	+41,800	24,200	357,000	5,810	6.17	7.11
June	2,920	1,590	2,310	138,000	−2,780	25,400	161,000	2,710	2.88	3.21
July	1,740	794	1,080	66,700	−20,700	26,700	72,700	1,180	1.25	1.44
August	1,170	522	735	45,200	−43,700	26,800	28,400	462	.490	.56
September	1,300	751	1,110	66,300	−66,300	20,500	20,500	345	.366	.41
The year	7,220	522	1,690	1,230,000	−35,300	137,000	1,330,000	1,830	1.94	26.50

NOTE.—This record does not take into account depletion due to irrigation above the river gaging station, amounting to perhaps 6,000 acre-feet a year, and unmeasured waste above the gaging station on Selah Valley Canal which reaches the river below the river gaging station.

BUMPING RIVER NEAR NILE, WASH.

LOCATION.—Water-stage recorder one-fourth mile below spillway of Bumping Lake Dam and 19 miles west of Nile.

DRAINAGE AREA.—68 square miles.

RECORDS AVAILABLE.—June to July, 1906; April, 1909, to September, 1928.

EXTREMES.—Maximum discharge during year, 1,820 second-feet May 22 (gage height, 5.23 feet); minimum, 1 second-foot October 9 (gage height, 1.01 feet).

1906, 1909–1928: Maximum discharge, 5,180 second-feet December 29, 1917 (gage height, 9.33 feet); practically no flow when gates in outlet conduit are closed.

REMARKS.—Records excellent. No diversions above station. Flow partly controlled by storage and release of water at Bumping Lake Reservoir. Complete records furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	244	228	158	58	42	508	33	461	371	85	461
2	97	228	228	158	58	42	484	31	634	350	83	461
3	115	212	228	158	58	42	484	29	661	350	82	461
4	55	228	228	158	58	42	484	26	688	350	80	461
5	3	261	261	163	58	42	461	27	715	350	78	461
6	2	278	296	168	58	275	461	31	771	329	74	461
7	2	296	296	171	58	484	461	35	688	310	72	461
8	2	296	296	256	58	484	461	41	608	290	71	461
9	2	296	332	332	58	484	461	45	557	272	70	461
10	2	278	370	332	58	226	438	50	557	254	68	461
11	2	261	370	351	58	53	438	52	608	238	70	433
12	2	261	370	351	58	52	438	54	608	221	64	484
13	102	244	351	410	58	51	438	100	608	206	60	461
14	160	244	351	431	58	51	415	608	608	191	59	461
15	200	244	351	431	58	51	415	1,090	557	186	60	461
16	244	278	351	431	286	51	366	1,240	484	172	60	461
17	278	314	351	431	474	51	238	1,160	415	167	60	461
18	296	296	351	431	474	51	238	1,090	415	154	59	461
19	296	278	351	431	474	309	238	1,160	484	140	59	461
20	296	296	351	431	262	484	238	1,390	557	134	56	461
21	296	314	351	419	42	484	238	1,630	634	130	55	461
22	296	314	332	410	42	484	238	1,710	634	125	160	461
23	296	314	332	410	42	484	238	1,630	661	121	290	461
24	314	332	332	410	42	326	238	1,470	688	119	415	461
25	351	260	332	217	42	74	95	1,550	715	113	461	461
26	351	212	236	58	42	70	23	1,710	661	110	461	461
27	314	212	160	58	42	67	24	1,550	557	104	461	438
28	314	212	160	58	42	317	27	1,310	461	98	461	415
29	296	212	160	58	42	508	27	1,160	415	95	461	415
30	278	228	160	58	-------	508	35	954	371	88	461	393
31	244	-------	160	58	-------	508	-------	577	-------	86	461	-------

Month	Observed				Gain or loss in storage in Bumping Lake Reservoir (acre-feet)	Corrected for storage			
	Discharge in second-feet			Run-off in acre-feet		Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October	351	2	179	11,000	+1,280	12,300	200	2.94	3.39
November	332	212	265	15,800	+8,740	24,500	412	6.06	6.76
December	370	160	291	17,900	−1,010	16,900	275	4.04	4.66
January	431	58	271	16,600	+6,640	23,200	377	5.54	6.39
February	474	42	111	6,380	+837	7,220	126	1.85	2.00
March	508	42	232	14,300	+1,290	15,600	254	3.74	4.31
April	508	23	312	18,500	−2,800	15,700	264	3.88	4.33
May	1,710	26	759	46,700	+18,700	65,400	1,060	15.6	17.99
June	771	371	583	34,700	+671	35,400	595	8.75	9.76
July	371	86	201	12,300	−630	11,700	190	2.79	3.22
August	461	55	178	10,900	−6,490	4,410	71.7	1.05	1.21
September	484	393	455	27,100	−22,400	4,700	79.0	1.16	1.29
The year	1,710	2	320	232,000	+4,830	237,000	326	4.79	65.31

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; April, 1925, to September, 1928.

EXTREMES.—Maximum discharge during year, 4,380 second-feet June 1 (gage height, 7.80 feet); minimum, 4 second-feet October 16–22.

1908–1914, 1918–19, 1925–1928: Maximum discharge, that of June 1, 1928; minimum, 2 second-feet many periods in January, February, and October, 1926.

Gage height, 7.5 feet December 18 and 19, 1917 (discharge, 8,400 second-feet), reported by Bureau of Reclamation engineers.

REMARKS.—Records good. 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, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	513	5	808	311	906	349	10	840	1,040	808	974	1,080
2	351	5	1,220	311	940	349	9	840	974	940	858	1,080
3	486	5	1,460	345	974	349	8	808	974	651	840	1,080
4	478	5	1,550	374	940	361	8	808	974	639	840	1,080
5	440	5	1,460	363	873	392	7	808	1,010	639	840	1,080
6	448	6	1,420	381	906	401	8	808	1,040	645	840	1,080
7	461	5	1,420	352	792	405	8	808	1,010	715	840	1,080
8	465	5	1,420	359	405	396	7	873	940	808	840	1,080
9	461	5	1,420	374	384	293	8	840	873	873	840	1,080
10	378	5	1,380	363	376	247	7	840	873	906	840	1,080
11	233	5	1,380	363	368	247	7	873	90[illegible]	940	840	1,120
12	222	5	1,380	788	361	241	7	873	90[illegible]	940	808	1,080
13	222	5	1,380	966	349	241	7	873	90[illegible]	840	808	1,080
14	128	5	1,380	869	349	238	7	906	90[illegible]	808	840	1,080
15	26	5	1,380	808	349	241	7	873	90[illegible]	808	840	1,080
16	4	5	1,380	779	353	235	7	873	90[illegible]	873	840	1,080
17	4	5	1,380	808	349	238	7	906	873	873	873	1,080
18	4	5	1,380	779	349	241	7	906	840	940	873	1,080
19	4	5	905	779	349	250	7	906	840	940	840	1,080
20	4	5	613	750	349	260	6	940	840	906	840	906
21	4	5	519	750	349	266	6	750	840	906	873	776
22	4	5	345	750	349	276	6	940	840	873	906	776
23	5	5	304	750	345	269	6	1,230	840	873	974	776
24	5	5	308	362	342	199	45	1,620	840	906	974	776
25	5	5	308	13	349	24	291	1,810	90[illegible]	873	940	606
26	5	34	308	211	349	21	974	1,860	1,080	873	974	475
27	5	381	311	576	345	18	906	1,780	1,150	906	974	475
28	5	750	311	808	345	14	808	1,760	1,190	873	974	480
29	5	901	311	840	349	12	808	1,230	1,040	940	974	485
30	5	779	311	808	------	12	840	1,190	80[illegible]	974	1,040	485
31	5	------	311	840	------	12	------	1,040	------	940	1,120	------

Month	Observed				Gain or loss in storage in Tieton Reservoir (acre-feet)	Corrected for storage			
	Discharge in second-feet			Run-off in acre-feet		Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October	513	4	174	10,700	+17,600	28,300	460	2.46	2.84
November	901	5	99.0	5,890	+28,800	34,700	583	3.12	3.48
December	1,550	304	960	59,000	−30,400	28,600	465	2.49	2.87
January	966	13	578	35,600	+3,610	39,200	638	3.41	3.93
February	974	342	488	28,100	−13,400	14,700	256	1.37	1.48
March	405	12	229	14,100	+14,800	28,900	470	2.51	2.89
April	974	6	161	9,600	+20,500	30,100	506	2.71	3.02
May	1,860	808	1,050	64,300	+23,100	87,400	1,420	7.59	8.75
June	1,190	808	936	55,700	−3,450	52,200	877	4.69	5.23
July	974	639	853	52,400	−20,100	32,300	525	2.81	3.24
August	1,120	808	893	54,900	−37,200	17,700	288	1.54	1.78
September	1,120	475	919	54,700	−43,900	10,800	182	.973	1.09
The year	1,860	4	613	445,000	−40,000	405,000	558	2.98	40.60

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, 16 miles southwest of Naches.

DRAINAGE AREA.—240 square miles.

RECORDS AVAILABLE.—April to September, 1906 (fragmentary gage-height record); July, 1907, to September, 1928.

EXTREMES.—Maximum discharge during year, 4,000 second-feet May 28 (gage height, 6.72 feet); minimum, 12 second-feet November 5 and 6 (gage height, 1.79 feet).

1907–1928: Maximum discharge, 6,150 second-feet December 13, 1921 (gage height, 8.15 feet); no flow March 27, 28, and November 25–28, 1926.

REMARKS.—Records good. Tieton Canal diverts water above gage. Diversions through canal added to monthly discharge to determine monthly flow past gage. Flow regulated by storage and release of water at Tieton Reservoir, 7 miles above gage. Complete record furnished by United States Bureau of Reclamation.

Daily discharge, in second-feet, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	546	13	967	395	959	324	100	773	940	527	706	851
2	403	13	1,440	395	985	324	83	758	751	699	603	851
3	521	13	1,790	405	1,030	395	69	721	714	416	552	851
4	515	13	1,920	421	933	421	58	714	721	376	564	851
5	481	12	1,790	421	933	458	44	692	758	371	570	851
6	475	16	1,730	421	1,000	475	44	699	812	371	570	851
7	486	20	1,730	405	884	475	44	678	758	416	564	859
8	492	20	1,670	405	458	458	44	721	644	558	558	859
9	492	20	1,670	405	421	405	40	714	616	590	546	859
10	413	19	1,620	411	395	347	40	692	603	664	540	851
11	265	17	1,620	437	395	357	38	706	610	671	534	859
12	246	16	1,620	1,000	395	347	40	736	622	671	534	867
13	238	16	1,620	1,160	395	347	44	736	629	603	534	867
14	184	16	1,620	1,010	395	324	50	736	616	534	534	884
15	64	16	1,670	933	395	324	48	729	629	534	534	900
16	31	91	1,670	900	395	324	48	736	616	577	546	900
17	22	62	1,620	892	395	324	58	743	616	629	570	908
18	21	50	1,620	867	395	357	52	743	610	643	570	908
19	18	50	1,100	851	395	395	46	743	596	657	552	900
20	17	38	685	851	395	421	42	766	596	643	540	738
21	17	54	584	851	385	437	35	551	596	629	558	584
22	13	60	385	851	371	447	35	758	603	610	616	577
23	14	33	334	851	371	447	58	1,040	610	622	657	564
24	16	94	329	551	347	352	133	1,560	616	622	685	584
25	16	253	324	172	324	143	206	1,840	678	622	678	499
26	16	116	324	596	324	129	950	2,020	820	622	678	347
27	15	354	324	851	324	109	917	1,900	925	622	671	347
28	14	790	324	892	324	104	828	1,800	950	622	685	357
29	13	967	329	933	324	104	796	1,160	812	664	699	366
30	13	884	338	908	-------	104	804	1,090	564	692	758	376
31	13	-------	347	917	-------	104	-------	925	-------	685	851	-------

Monthly discharge of Tieton River at headworks of Tieton Canal, near Naches, Wash., 1927–28

Month	Observed				Gain or loss in storage in Tieton Reservoir (acre-feet)	Diverted by Tieton Canal (acre-feet)	Corrected for storage and diversion			
	Discharge in second-feet			Run-off in acre-feet			Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean					Mean	Per square mile	
October	546	13	196	12,100	+17,600	----------	29,700	483	2.01	2.32
November	967	12	138	8,200	+28,800	1,300	38,300	644	2.68	2.99
December	1,920	324	1,130	69,600	−30,400	----------	39,200	638	2.66	3.07
January	1,160	172	689	42,400	+3,610	----------	46,000	748	3.12	3.60
February	1,030	324	519	29,800	−13,400	938	17,300	301	1.25	1.35
March	475	104	325	20,000	+14,800	238	35,000	569	2.37	2.73
April	950	35	193	11,500	+20,500	2,660	34,700	583	2.43	2.71
May	2,020	551	941	57,900	+23,100	16,900	97,900	1,590	6.62	7.63
June	950	564	688	40,900	−3,450	17,900	55,400	931	3.88	4.33
July	699	371	586	36,000	−20,100	18,600	34,500	561	2.34	2.70
August	851	534	605	37,200	−37,200	18,700	18,700	304	1.27	1.46
September	908	347	729	43,400	−43,900	14,000	13,500	227	.946	1.06
The year	2,020	12	562	409,000	−40,000	91,200	460,000	634	2.64	35.95

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 to September, 1928.

EXTREMES.—Maximum discharge during year, 313 second-feet, from current-meter measurement, July 21; no flow October 1 to November 19, December 1 to February 20, and March 3 to April 5.

1910–1928: Maximum discharge, 344 second-feet September 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.; water is used for irrigation. Complete records furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1927–28

Day	Nov.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0	67	0	160	301	301	305	305
2	0	0	53	0	171	301	301	305	305
3	0	0	0	0	190	301	299	305	307
4	0	0	0	0	206	301	301	305	306
5	0	0	0	0	220	301	301	304	307
6	0	0	0	8	226	301	301	303	303
7	0	0	0	21	247	301	301	303	301
8	0	0	0	21	259	301	301	303	301
9	0		0	26	267	301	301	303	301
10	0	0	0	29	274	301	301	303	295
11	0	0	0	29	282	301	301	303	287
12	0	0	0	29	290	301	301	303	279
13	0	0	0	29	293	301	303	303	269
14	0	0	0	29	298	301	303	303	256
15	0	0	0	35	301	301	303	303	248
16	0	0	0	37	301	301	304	303	247
17	0	0	0	37	301	301	305	303	242
18	0	0	0	37	301	301	305	303	240
19	0	0	0	37	301	301	305	303	229
20	14	0	0	43	301	301	305	303	193
21	32	18	0	45	301	301	305	303	188
22	64	33	0	45	301	301	305	303	183
23	75	32	0	52	301	301	305	303	183
24	75	55	0	64	301	301	305	303	176
25	75	67	0	81	301	301	305	303	164
26	75	67	0	96	301	301	305	304	156
27	75	67	0	109	301	301	305	305	150
28	75	67	0	121	301	301	305	305	141
29	75	67	0	132	301	301	305	305	137
30	22	------	0	149	301	301	305	305	86
31	------	------	0	------	301	------	305	305	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
November (11 days)	75	14	59.7	1,300
February (9 days)	67	18	52.6	939
March (2 days)	67	53	60.0	238
April (25 days)	149	8	53.6	2,660
May	301	160	274	16,800
June	301	301	301	17,900
July	305	299	303	18,600
August	305	303	304	18,700
September	307	86	236	14,000
The year				91,100

NOTE.—No flow in months omitted.

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 other points as shown by the following table:

Miscellaneous discharge measurements in Pacific slope basins in Washington and upper Columbia River Basin during the year ending September 30, 1928

Date	Stream	Tributary to or diverting from—	Locality	Gage height	Discharge
		North River Basin			
				Feet	*Sec.-ft.*
Mar. 7	Salmon Creek	North River	800 feet above mouth near South Bend, Wash.		77.0
Apr. 3	do	do	1,000 feet above mouth near South Bend, Wash.		169
		Queets River Basin			
Sept. 28	Queets River	Pacific Ocean	Sec. 36, T. 24 N., R. 13 W., at Fisher Rapids near Clearwater, Wash.	0.51	440
28	Clearwater River	Queets River	Sec. 18, T. 24 N., R. 12 W., at Ben Northrup's ranch near Clearwater, Wash.	1.25	92
		Quillayute River Basin			
July 21	Soleduck River	Quillayute River	Former gaging station near Fairholm, Wash.	0.80	157
		Nisqually River Basin			
Oct. 6	Ohop Creek	Nisqually River	NW. ¼ sec. 19, T. 17 N., R. 5E., near Kapowsin, Wash.		84
6	Twentyfivemile Creek	Ohop Creek	Under railway bridge at mouth near Eatonville, Wash.		40
		Chambers Creek Basin			
Dec. 7	Chambers Creek	Puget Sound	80 feet above low bridge at fish hatchery, near Steilacoom, Wash.		99
7	do	do	800 feet above fish trap, at tidewater, near Steilacoom, Wash.		103
		Snohomish River Basin			
Aug. 9	Snoqualmie River	Snohomish River	Puget Sound Power & Light Co.'s gaging station just below Snoqualmie Falls and mouth of Tokul Creek, Wash.	2.08	659
9	Tokul Creek	Snoqualmie River	500 feet above bridge near mouth, Wash.		38.6
		Stillaguamish River Basin			
July 20	South Fork of Stillaguamish River.	Stillaguamish River.	800 feet below railroad bridge just above Robe, Wash.	2.52	235

Miscellaneous discharge measurements in Pacific slope basins in Washington and upper Columbia River Basin during the year ending September 30, 1928—Con.

Kootenai River Basin

Date	Stream	Tributary to or diverting from—	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
June 7	West Branch of Kootenai River.	Kootenai Lake	NW. ¼ sec. 1, T. 10, at Midgely ranch, 5½ miles above Kootenai Landing and 4 miles southwest of Sirdar, British Columbia.	19.22	35,600
June 26	do	do	do	14.48	28,400
July 16	do	do	do	13.30	22,100
June 7	East Branch of Kootenai River.	do	NE. ¼ sec. 35, T. 10, at Canadian Pacific Railway bridge 2 miles northwest of Sirdar, British Columbia.	18.65	23,200
June 26	do	do	do	13.77	11,200
July 13	do	do	do	13.34	9,500
July 16	do	do	do	12.69	7,820
Apr. 6	Aggregate surface inflow, except Boulder Creek (8 streams).	Kootenai River	Between Leonia and Katka gaging stations, Idaho.		*42
May 1	do	do	do		*51
19	do	do	do		*48
June 19	do	do	do		*19
Aug. 8	do	do	do		*7
Apr. 22	Aggregate surface inflow (3 streams).	do	Between Katka gaging station and mouth of Moyie River, Idaho.		*6
June 19	do	do	do		*4
Aug. 8	do	do	do		*2
May 15	Fry Creek	do	Sec. 19, T. 62 N., R. 2 E., 300 feet downstream from State highway bridge, 1 mile above mouth and 2½ miles northeast of Bonners Ferry, Idaho.	1.22	2.97
June 28	do	do	do	1.09	1.89
May 18	Drain ditch of drainage district No. 1.	do	Sec. 30, T. 62 N., R. 1 E., at outlet works of drainage district No. 1, 3¼ miles west of Bonners Ferry, Idaho.		*4
May 11	Burton Creek	do	Sec. 26, T. 63 N., R. 1 W., 1 mile above mouth and 7½ miles northwest of Bonners Ferry, Idaho.	1.55	32.3
June 20	do	do	do		1.84
May 16	Fleming Creek	Kootenai River (through drainage district No. 5).	Sec. 29, T. 63 N., R. 1 E., at trestle of Kootenai Valley branch of Great Northern Ry., three-fourths mile above mouth and 6½ miles northwest of Bonners Ferry, Idaho.	.68	2.80
June 20	do	do	do		1.00
May 13	Aggregate surface inflow (several streams).	Kootenai River	West side of Kootenai Valley between Ball and Trout Creeks, 6 miles southwest of Copeland, Idaho.		*30
June 21	Aggregate surface inflow (3 streams).	do	West side of Kootenai Valley between Ball and Farnham Creeks, 6 miles southwest of Copeland, Idaho.		*.2
May 29	Farnham Creek	do	Sec. 35, T. 64 N., R. 1 W., at Forest Service trail crossing, 1 mile above mouth and 3¾ miles southwest of Copeland, Idaho.		9.10

* Estimated.

Miscellaneous discharge measurements in Pacific slope basins in Washington and upper Columbia River Basin during the year ending September 30, 1928—Con.

Kootenai River Basin—Continued

Date	Stream	Tributary to or diverting from—	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
May 31	Fisher Creek	Kootenai River	Sec. 22, T. 64 N., R. 1 W., at Forest Service trail crossing, 1 mile above mouth and 3 miles southwest of Copeland, Idaho.	2.10	29.9
June 23	do	do	do	1.66	6.39
July 17	do	do	do	1.56	4.02
June 22	Aggregate surface inflow (9 streams).	do	West side of Kootenai Valley between Fisher and Parker Creeks, 3½ miles west of Copeland, Idaho.		*3
Aug. 10	do	do	do		*.1
May 12	Aggregate surface inflow (several streams).	do	West side of Kootenai Valley between Parker and Canyon Creeks 5 miles southwest of Port Hill, Idaho.		*30
May 18	Eneas Creek	Kootenai River (through drainage district No. 6).	Sec. 36, T. 65 N., R. 1 W., at trestle of Great Northern Ry., 5½ miles southeast of Port Hill, Idaho.	.76	3.74
18	Small stream (unnamed)	do	Sec. 21, T. 65 N., R. 1 W., at trestle of Kootenai Valley branch of Great Northern Ry., 2½ miles southeast of Port Hill, Idaho.		*4
May 12	Aggregate surface inflow	Kootenai River	West side of Kootenai Valley, between Long Canyon and Smith Creeks, 4 miles southwest of Port Hill, Idaho.		*.5
May 27	Aggregate surface inflow (5 streams).	Myrtle Creek	Between gaging station and mouth of Cascade Creek, 5 miles northwest of Bonners Ferry, Idaho.		*2
27	Cascade Creek	do	NE. ¼ sec. 14, T. 62 N., R. 1 W., half a mile above mouth and 5½ miles northwest of Bonners Ferry, Idaho.		26.2
		Clark Fork Basin			
Oct. 2	Sullivan Creek	Clark Fork	700 feet below bridge at Metaline Falls, Wash.		249
Apr. 24	do	do	do		247
		Okanogan River Basin			
June 8	Sinlahekin Creek	Similkameen River	1,000 feet above Blue Lake Reservoir, near Loomis, Wash.		14.0

* Estimated.

Miscellaneous discharge measurements in Pacific slope basins in Washington and upper Columbia River Basin during the year ending September 30, 1928—Con.

Methow River Basin

Date	Stream	Tributary to or diverting from	Locality	Gage height	Discharge
				Feet	*Sec.-fee*
May 3	Methow Valley Irrigation District Canal.	Left side of Methow River.	Opposite confluence of Methow and Twisp Rivers at Twisp, Wash.	4.73	33.8
June 6	do	do	do	6.10	75.0
May 3	do	Right side of Twisp River.	Road crossing at Twisp, Wash.		22.2
June 6	do	do	do		41.1
May 3	Risley ditch	do	Methow Valley Creamery Building at Twisp, Wash.	3.97	7.2
June 6	do	do	do	4.31	11.1

Wenatchee River Basin

Oct. 8	Tailrace of mine power plant.	Phelps Creek	2 miles above gaging station at Phelps Creek near Plains, Wash.		5.1
Nov. 25	do	do	do		4.8
Dec. 29	do	do	do		5.3
Jan. 30	do	do	do		4.0
Feb. 14	do	do	do		3.8
Mar. 27	do	do	do		3.2
Apr. 17	do	do	do		3.5
May 15	do	do	do		3.0
June 16	do	do	do		3.8
July 20	do	do	do		6.1
Aug. 22	do	do	do		7.6

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