DEPARTMENT OF THE INTERIOR
Ray Lyman Wilbur, Secretary

U. S. GEOLOGICAL SURVEY
George Otis Smith, Director

Water-Supply Paper 612

SURFACE WATER SUPPLY OF THE UNITED STATES

1925

PART XII. NORTH PACIFIC SLOPE DRAINAGE BASINS

A. PACIFIC BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN

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

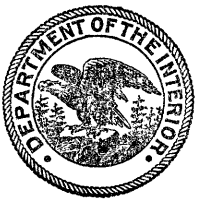

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ILLUSTRATION

SURFACE WATER SUPPLY OF PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN, 1925

AUTHORIZATION AND SCOPE OF WORK

This volume is one of a series of 14 reports presenting records of measurements of flow made on streams in the United States during the year ending September 30, 1925.

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, 1895–1926

1895	$12,500.00	1911–1917	$150,000.00
1896	[1] 24,500.00	1918	175,000.00
1897–1899	50,000.00	1919	148,244.10
1900	[2] 70,000.00	1920	175,000.00
1901–1902	100,000.00	1921–1923	180,000.00
1903–1906	200,000.00	1924–1925	170,000.00
1907	150,000.00	1926	165,000.00
1908–1910	100,000.00		

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

[1] Includes $4,500 appropriated in act of Apr. 25, 1896.

[2] Includes $20,000 appropriated in deficiency act of Mar. 30, 1900.

Measurements of stream flow have been made at about 5,120 points in the United States and also at many points in Alaska and the Hawaiian Islands. In July, 1925, 1,710 gaging stations were being maintained by the Survey and the cooperating organizations. Many miscellaneous discharge measurements were made at other points. In connection with this work data were also collected in regard to precipitation, evaporation, storage reservoirs, river profiles, and water power in many sections of the country and will be made available in water-supply papers from time to time.

DEFINITION OF TERMS

The volume of water flowing in a stream—the "run-off" or "discharge"—is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups—(1) those that represent a rate of flow, as second-feet, gallons per minute, miner's inches, and discharge in second-feet per square mile; and (2) those that represent the actual quantity of water, as run-off in inches, acre-feet, and millions of cubic feet. The principal terms used in this series of reports are second-feet, second-feet per square mile, run-off in inches, 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 section or sections of the stream channel below the gage which determines the stage-discharge relation at the gage. It should be noted that the control may not be the same section or sections at all stages.

The "point of zero flow" for a gaging station is that point on the gage—the gage height—at which water ceases to flow over the control.

EXPLANATION OF DATA

The data presented in this report cover the year beginning October 1, 1924, and ending September 30, 1925. At the beginning of January in most parts of the United States much of the precipitation in the preceding three months is stored as ground water, in the form of snow or ice, or in ponds, lakes, and swamps, 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.

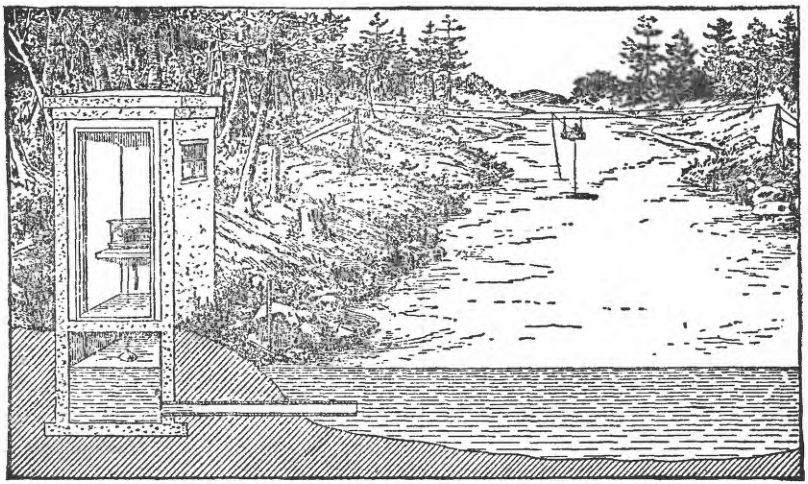

FIGURE 1.—Typical gaging station

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 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. The general methods are 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 discharge from which the monthly and yearly mean discharge is determined.

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

If the base data are insufficient to determine the daily discharge, tables giving daily gage height and records of discharge measurements are published.

The description of the station gives, in addition to statements regarding location and equipment, information in regard to any conditions that may affect the permanence of the stage-discharge relation, covering such subjects as the occurrence of ice, the use of the stream for log driving, shifting of control, and the cause and effect of backwater. It gives also 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 table of daily discharge gives, in general, the discharge in second-feet corresponding to the means of the gage heights read each day. 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 use of the discharge integrator, an instrument operating on the principle of the planimeter and containing as an essential element the rating curve of the station.

In the table of monthly discharge the column headed "Maximum" gives the mean flow for the day when the mean gage height was highest. As the gage height is the mean for the day it does not indicate correctly the stage when the water surface was at crest height and the corresponding discharge was consequently larger than given in the maximum column. Likewise, in the column headed "Minimum" the quantity given is the mean flow for the day when the mean gage height was lowest. 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 pages 2 and 3.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

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

A paragraph in the description of the station gives information regarding the (1) permanence of the stage-discharge relation, (2) precision with which the discharge rating curve is defined, (3) refine-

ment of gage readings, (4) frequency of gage readings, and (5) methods of applying daily gage height to the rating table to obtain the daily discharge.

For the rating tables "well defined" indicates, in general, that the rating is probably accurate within 5 per cent; "fairly well defined," within 10 per cent; "poorly defined," within 15 to 25 per cent. These notes are very general and are based on the plotting of the individual measurements with reference to the mean rating curve.

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 depth 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. All figures representing "second-feet per square mile" and "run-off in inches" published by the Geological Survey in earlier reports should be used with caution because of possible inherent but unknown sources of error.

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 be satisfied first. To give an idea of the amount of prior appropriations, a paragraph on diversions is presented in each station description. The figures given can not be considered exact but represent the best information available.

The table of monthly discharge gives only a general idea of the flow at the station and should not be used for other than preliminary estimates; the tables of daily discharge allow 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.

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. Great Basin.
XI. Pacific slope basins in California.
XII. North Pacific slope basins, in three volumes:
A, Pacific slope basins in Washington and upper Columbia River Basin.
B, Snake River Basin.
C, Lower Columbia River Basin and Pacific slope basins in Oregon.

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 of the United States.

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

Boston, Mass., 2500 Customhouse.
Albany, N. Y., 904 Home Savings Bank Building.
Trenton, N. J., Statehouse.
Charlottesville, Va., care of University of Virginia.
Asheville, N. C., 608 City Hall.
Chattanooga, Tenn., 830 Power Building.
Columbus, Ohio, Engineering Experiment Station, Ohio State University.
Chicago, Ill., 1510 Consumers Building.
Madison, Wis., care of Railroad Commission of Wisconsin.
Rolla, Mo., Rolla Building, School of Mines and Metallurgy.
Helena, Mont., 45–46 Federal Building.
Denver, Colo., 403 Post Office Building.
Tucson, Ariz., 106 College of Law Building, University of Arizona.
Salt Lake City, Utah, 313 Federal Building.
Boise, Idaho, Federal Building.

Idaho Falls, Idaho, 228 Federal Building.
Tacoma, Wash., 406 Federal Building.
Portland, Oreg., 606 Post Office Building.
San Francisco, Calif., 303 Customhouse.
Los Angeles, Calif., 600 Federal Building.
Austin, Tex., Capitol Building.
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 5,120 points in the United States, and the data obtained have been published in the reports tabulated below:

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

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

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

NOTE.—No data regarding stream flow are given in the 15th and 17th annual reports.

The records at most of the stations discussed in these reports extend over a series of years, and miscellaneous measurements at many points other than regular gaging stations have been made each year. 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 1924. The data for any particular station will be found in the reports covering the years during which the station was maintained. For example, data for Machias River at Whitneyville, Me., 1903 to 1921, are published in Water-Supply Papers 97, 124, 165, 201, 241, 261, 281, 301, 321, 351, 381, 401, 431, 451, 471, 501, and 521, which contain records for the New England streams from 1903 to 1921. Results of miscellaneous measurements are published by drainage basins.

Number of water-supply papers containing results of stream measurements, 1899–1925

[For basins included see p. 6]

Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII		
												A	B	C
1899 [a]	35	[b] 35, 36	36	36	36	[c] 36, 37	37	37	[d] 37, 38	38, [e] 39	38, [f] 39	38	38	38
1900 [g]	47, [h] 48	48	48, [i] 49	49	49	49, [j] 50	50	50	50	51	51	51	51	51
1901	65, 75	65, 75	65, 75	[k] 65, 66, 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	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	323	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

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

COOPERATION

The work in Washington, Montana, and Idaho was carried on under cooperative agreements between the United States Geological Survey and the respective States.

Cooperation with the States is effected under contracts which are made between the Director of the United States Geological Survey and the State engineers or other officials and are authorized by legislative act appropriating moneys.

Work in Washington was carried on in cooperation with the Department of Conservation and Development, Dan A. Scott, succeeded by Erle J. Barnes, as director. Cooperative relations were administered by Marvin Chase and R. K. Tiffany, supervisors of hydraulics, Division of Water Resources.

Acknowledgments are due C. S. Heidel, State engineer of Montana, and to W. G. Swendsen, commissioner of reclamation of Idaho, for cooperation with their respective States.

Acknowledgments are also due to the United States Bureau of Reclamation, the United States Forest Service, the United States Office of Indian Affairs, and the United States Weather Bureau for assistance, suggestions, and the freest use of data gathered exclusively for them and paid for by them.

The Dominion Water Power and Reclamation Service of Canada furnished complete records of Columbia River at Trail, British Columbia.

The following municipalities, corporations, and individuals have aided in the collection of records by paying expense of all or part of the work: Inter-County River Improvement Commission of King and Pierce Counties; Skagit County; the cities of Aberdeen, Everett, Seattle, and Tacoma; Chelan Electric Co.; Hugh L. Cooper Co.; Great Northern Railroad Co.; Greater Wenatchee Irrigation District; Interurban Land Co.; Methow-Okanogan Irrigation District; Northwestern Power & Manufacturing Co.; Puget Sound Power & Light Co.; Sound Power Co.; Spokane Valley Farms Co.; Stevens County Power & Light Co.; Stone-Webster Engineering Corporation; Washington Coast Utilities Co.; Washington Water Power Co.; Whitestone Irrigation District; Washington Irrigation & Development Co.; West Okanogan Valley Irrigation District; and J. L. Keeler.

DIVISION OF WORK

The data for stations in Washington 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, C. O. Dueval, K. N. Vaksvik, and J. M. Rogers.

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 and Miss G. B. McDonough.

The data for stations in the Yakima Basin were collected and results computed and prepared for publication by Paul Taylor, engineer in charge of hydrometric work, United States Bureau of Reclamation, assisted by D. E. Ball and R. O. Crawford.

The manuscript was assembled and reviewed by H. C. Troxell.

GAGING-STATION RECORDS

DRAINAGE BASINS BETWEEN COLUMBIA RIVER AND PUGET SOUND

CHEHALIS RIVER BASIN

WYNOOCHEE RIVER NEAR MONTESANO, WASH.

LOCATION.—In sec. 36, T. 20 N., R. 8 W., at Waters ranch 14 miles north of Montesano, Grays Harbor County.

DRAINAGE AREA.—105 square miles, at measuring section (measured on map of Olympic National Forest, edition of 1923).

RECORDS AVAILABLE.—February 1, 1923, to September 30, 1925.

GAGE.—Vertical staff in two sections on left bank, at Waters ranch.

DISCHARGE MEASUREMENTS.—Made from suspension bridge 2½ miles below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of boulders and gravel. Control is riffle on gravel and solid rock several hundred feet below gage. Shifts at high stages. Banks high, not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.5 feet at 8.30 a. m. February 2 (discharge, 11,700 second-feet); minimum stage recorded, 1.24 feet on September 27 (discharge, 123 second-feet).

1923–1925: Maximum stage, 17.0 feet at 6 p. m. February 11, 1924, discharge not determined; minimum discharge recorded, 106 second-feet on September 17, 1924.

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed February 3. Rating curves well defined up to 7,500 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Wynoochee River near Montesano, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 8	2.73	692	May 16	2.54	643	July 16	1.72	249
Nov. 7	7.57	6,460	May 19	2.48	564	Aug. 8	1.41	158
Mar. 6	3.48	1,320	July 7	1.77	263	Sept. 22	1.30	132
Mar. 13	2.65	696	July 11	1.71	261	Sept. 25	1.25	127
Apr. 10	2.57	644	July 15	1.80	286			

Daily discharge, in second-feet, of Wynoochee River near Montesano, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,810	2,950	892	2,070	5,650	1,430	490	930	490	318	177	144
2	2,290	3,680	1,250	2,510	9,670	1,430	490	855	445	300	174	158
3	1,850	2,840	1,010	2,510	8,230	1,340	490	752	515	300	172	149
4	1,250	4,070	1,090	2,400	4,480	1,630	468	688	1,170	300	169	140
5	1,340	3,190	1,170	3,550	4,480	1,430	490	688	855	281	166	136
6	820	2,510	1,170	2,510	4,200	1,250	468	720	688	281	163	135
7	750	6,250	1,010	2,180	3,430	1,090	468	720	625	264	163	135
8	715	3,680	892	1,850	3,430	1,010	468	625	625	264	161	144
9	682	2,840	930	1,740	3,310	930	468	568	625	264	161	135
10	590	2,180	4,200	2,290	2,510	855	625	568	655	246	158	135
11	560	2,180	6,100	1,850	2,070	752	688	595	595	246	158	133
12	1,090	1,740	4,760	1,740	1,740	720	720	568	568	246	158	131
13	1,010	1,430	3,550	1,630	1,530	688	625	568	540	318	158	127
14	4,200	1,740	2,290	1,530	1,340	655	468	595	515	338	158	127
15	2,840	1,630	3,680	1,340	1,170	720	595	595	490	281	156	127
16	2,290	1,530	2,510	1,170	1,090	785	820	625	490	264	151	144
17	1,740	1,430	1,850	1,090	930	720	1,090	688	468	246	149	153
18	1,340	1,430	1,530	3,680	892	752	1,090	595	445	230	149	153
19	1,090	5,350	1,340	3,190	820	855	1,090	595	445	214	146	149
20	970	3,680	1,170	3,430	930	892	970	595	423	214	144	163
21	855	2,730	1,010	2,730	2,510	785	855	568	423	214	153	144
22	855	2,510	930	4,760	3,070	752	820	515	445	214	158	135
23	820	2,070	855	5,200	4,070	720	752	445	423	214	153	131
24	7,040	1,740	715	2,950	3,070	752	720	445	380	200	149	127
25	6,560	1,430	715	2,180	2,400	752	655	423	401	200	149	125
26	4,340	1,250	715	2,070	2,400	595	595	423	380	200	153	125
27	3,680	1,170	715	2,290	2,180	595	568	445	380	185	153	123
28	3,430	1,010	1,430	2,400	1,630	568	540	855	358	185	146	131
29	6,250	930	2,400	3,430	-------	540	540	752	338	185	140	140
30	4,340	530	1,960	6,400	-------	540	540	595	318	180	135	158
31	3,430	-------	1,530	4,340	-------	490	-------	515	-------	180	135	-------

Monthly discharge of Wynoochee River near Montesano, Wash., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	7,040	560	2,350	144,000
November	6,250	530	2,390	142,000
December	6,100	715	1,790	110,000
January	6,400	1,090	2,680	165,000
February	9,670	820	2,970	165,000
March	1,630	490	872	53,600
April	1,090	468	656	39,000
May	930	423	617	37,900
June	1,170	318	517	30,800
July	338	180	244	15,000
August	177	135	155	9,530
September	163	123	139	8,270
The year	9,670	123	1,270	920,000

QUILLAYUTE RIVER BASIN

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

LOCATION.—In sec. 28, T. 30 N., R. 11 W., at Snider ranger station, 9 miles below South Fork and 11 miles above Beaver, Clallam County.

DRAINAGE AREA.—111 square miles (measured on Plate I, United States Geological Survey Professional Paper 7).

RECORDS AVAILABLE.—November 13, 1921, to September 30, 1925; winter records 1922 and 1923 fragmentary.

GAGE.—Vertical staff in two sections on right bank a few hundred feet above ranger station, installed February 5, 1922; read by R. O. Stanley.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Right bank high, will not be overflowed; left bank may be overflowed at extremely high stage. Channel straight for several hundred feet above and below gage. Control is gravel and boulder riffle about 500 feet below gage; shifts at high stages. Stage of zero flow, according to measurement made September 14, 1924, gage height 0.4 foot ± 0.1 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.2 feet at 4.10 p. m. February 1 (discharge, 7,030 second-feet); minimum stage recorded, 1.24 feet on September 27 and 28 (discharge, 44 second-feet).

1922–1925: Maximum stage recorded, 14.7 feet at noon on December 12, 1921 (discharge, 23,500 second-feet); minimum stage recorded, 1.17 feet on September 16 and 17, 1924 (discharge, 34 second-feet).

ICE.—Stage-discharge relation seriously affected by ice during severe winters; flow estimated from discharge measurements, observer's notes, and weather records.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent; not affected by ice. Rating curve well defined below 5,000 second-feet. Gage read to hundredths once or twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

COOPERATION.—Gage-height record furnished by United States Forest Service.

Discharge measurements of Soleduck River at Snider ranger station, near Beaver, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Nov. 16	3.41	865	Apr. 15	2.77	539	Aug. 27	1.60	111
Nov. 17	3.72	1,050	May 23	2.78	521			
Apr. 14	2.80	533	July 13	2.49	388			

Daily discharge, in second-feet, of Soleduck River at Snider ranger station, near Beaver, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,620	1,410	608	685	6,060	740	294	485	485	395	140	77
2	1,110	1,670	855	915	5,870	915	294	533	462	333	137	74
3	855	1,490	633	915	6,440	1,330	294	533	462	395	135	70
4	558	1,410	633	740	5,450	1,580	294	608	439	395	132	67
5	462	1,250	608	1,330	4,460	1,180	313	659	439	353	130	65
6	374	1,670	533	975	3,470	915	353	795	439	333	126	63
7	381	2,400	485	795	2,480	712	462	740	462	313	123	62
8	388	1,670	439	712	1,490	633	583	685	485	313	119	62
9	395	1,110	4,020	685	1,410	583	659	558	533	313	115	60
10	363	915	3,600	712	1,330	533	712	533	439	313	110	58
11	333	855	4,170	740	1,220	485	740	659	439	294	106	56
12	915	712	4,020	712	1,120	439	740	633	462	294	102	53
13	659	633	3,600	659	1,010	395	712	659	485	333	102	52
14	1,410	685	2,850	583	900	395	558	558	485	313	106	48
15	1,410	740	1,760	485	792	439	509	740	485	395	108	47
16	1,330	855	1,410	462	685	395	583	855	485	313	108	53
17	795	1,040	1,110	583	608	395	1,110	975	485	258	106	60
18	633	1,490	975	2,620	1,180	374	855	855	533	225	104	58
19	533	4,480	880	1,580	1,580	395	795	795	558	225	100	56
20	533	3,090	840	1,960	1,580	439	659	730	583	209	96	55

Daily discharge, in second-feet, of Soleduck River at Snider ranger station, near Beaver, Wash., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
21	1,000	2,290	800	1,580	1,670	485	633	664	583	209	90	53
22		1,860	780	4,170	1,760	462	583	598	583	203	90	52
23		1,580	770	2,400	1,760	439	533	533	583	197	92	50
24		1,250	760	1,760	1,760	439	485	533	583	189	100	49
25	1,760	1,040	740	1,250	1,330	417	439	533	583	180	108	47
26	1,490	855	730	1,180	975	439	439	533	533	172	126	46
27	2,400	795	720	1,110	855	462	395	533	485	167	108	44
28	1,760	685	890	1,180	855	439	395	1,410	439	162	100	44
29	1,960	659	1,040	1,330	-------	417	417	740	439	159	88	47
30	2,400	633	940	2,180	-------	374	485	533	417	152	79	50
31	1,760	-------	800	2,730	-------	333	-------	533	-------	144	77	-------

NOTE.—Gage not read Oct. 7, 8, 21–24, Dec. 19–31, Feb. 4–7, 11–15, May 20–22, and Sept. 23–26; discharge estimated by comparison with records of near-by streams or by interpolation.

Monthly discharge of Soleduck River at Snider ranger station, near Beaver, Wash., for the year ending September 30, 1925

[Drainage area, 111 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	2,620	333	1,080	9.73	11.22	66,400
November	4,480	633	1,370	12.3	13.72	81,500
December	4,170	439	1,390	12.5	14.41	85,500
January	4,170	462	1,280	11.5	13.26	78,700
February	6,440	608	2,150	19.4	20.20	119,000
March	1,580	333	580	5.23	6.03	35,700
April	1,110	294	544	4.90	5.47	32,400
May	1,410	485	669	6.03	6.95	41,100
June	583	417	496	4.47	4.99	29,500
July	395	144	266	2.40	2.77	16,400
August	140	77	108	.973	1.12	6,640
September	77	44	55.9	.504	.56	3,330
The year	6,440	44	824	7.42	100.70	596,000

LYRE RIVER BASIN

LAKE CRESCENT AT PIEDMONT, WASH.

LOCATION.—In sec. 14, T. 30 N., R. 9 W., on dock at Log Cabin Hotel at Piedmont, Clallam County.

DRAINAGE AREA.—49.1 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 1, 1919, to September 30, 1925.

GAGE.—Vertical staff on dock; read by J. A. Martin and F. S. Dann.

EXTREMES OF STAGE.—Maximum stage recorded during year, 2.54 feet February 5 and 6; minimum stage recorded, 0.10 foot September 22–30.

1919–1925: Maximum stage recorded, 5.46 feet December 13 and 14, 1921; minimum stage recorded, 0.00 foot September 20, 1924.

ACCURACY.—Gage read to hundredths once daily. Records excellent.

COOPERATION.—Gage-height record furnished by Northwest Power & Manufacturing Co.

Daily gage height, in feet, of Lake Crescent at Piedmont, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.72	1.60	1.36	1.14	1.98	1.58	0.92	0.90	0.94	0.54	0.28	0.20
2	.74	1.58	1.34	1.16	2.10	1.56	.92	.90	.94	.52	.28	.20
3	.68	1.60	1.30	1.20	2.32	1.56	.90	.90	.92	.50	.28	.20
4	.62	1.66	1.28	1.20	2.50	1.54	.90	.90	.92	.50	.28	.20
5	.60	1.70	1.24	1.20	2.54	1.54	.90	.90	.90	.50	.28	.20
6	.60	1.74	1.22	1.22	2.54	1.52	.90	.88	.90	.48	.30	.20
7	.58	1.76	1.20	1.22	2.52	1.50	.90	.88	.90	.48	.30	.20
8	.58	1.78	1.20	1.20	2.52	1.46	.89	.90	.90	.48	.30	.18
9	.56	1.74	1.20	1.20	2.50	1.40	.89	.90	.90	.48	.30	.17
10	.56	1.60	1.26	1.22	2.40	1.38	.88	.88	.88	.48	.30	.17
11	.55	1.54	1.32	1.24	2.36	1.32	.86	.88	.84	.48	.28	.16
12	.55	1.50	1.36	1.24	2.28	1.30	.86	.88	.82	.46	.28	.16
13	.55	1.48	1.52	1.22	2.20	1.26	.88	.90	.78	.46	.26	.16
14	.56	1.44	1.54	1.22	2.10	1.24	.88	.90	.76	.46	.26	.16
15	.64	1.42	1.50	1.24	2.04	1.22	.90	.90	.74	.44	.24	.16
16	.74	1.38	1.42	1.30	1.96	1.20	.90	.90	.70	.44	.22	.15
17	.76	1.42	1.38	1.32	1.88	1.20	1.00	.90	.70	.44	.22	.15
18	.74	1.50	1.36	1.34	1.80	1.18	1.00	.90	.70	.42	.22	.15
19	.72	1.58	1.34	1.34	1.72	1.16	1.00	.90	.70	.42	.20	.15
20	.70	1.70	1.30	1.46	1.70	1.14	1.00	.90	.68	.40	.20	.12
21	.70	1.78	1.34	1.58	1.72	1.12	1.00	.90	.68	.40	.20	.12
22	.74	1.80	1.26	1.70	1.70	1.10	1.00	.90	.66	.40	.18	.10
23	.80	1.78	1.22	1.85	1.74	1.08	1.00	.90	.64	.40	.20	.10
24	.86	1.60	1.20	1.82	1.72	1.04	.98	.90	.64	.38	.20	.10
25	.90	1.54	1.18	1.82	1.72	1.02	.96	.90	.62	.38	.20	.10
26	.98	1.50	1.14	1.78	1.70	1.00	.92	.90	.60	.38	.20	.10
27	1.08	1.48	1.14	1.78	1.66	1.00	.92	.90	.60	.38	.20	.10
28	1.32	1.46	1.14	1.80	1.60	.98	.92	.94	.60	.36	.20	.10
29	1.46	1.44	1.12	1.80	-------	.98	.90	.96	.58	.32	.20	.10
30	1.54	1.40	1.12	1.82	-------	.96	.88	.96	.58	.32	.20	.10
31	1.62	-------	1.12	1.82	-------	.94	-------	.96	-------	.30	.20	-------

LYRE RIVER AT PIEDMONT, WASH.

LOCATION.—In NE. ¼ sec. 15, T. 30 N., R. 9 W., a quarter of a mile below outlet of Lake Crescent and half a mile west of Piedmont, Clallam County.

DRAINAGE AREA.—49.5 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1917, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on right bank except for the period October 17, 1922, to September 30, 1923, when the staff gage in Lake Crescent was used. Gage inspected by A. Firkins.

DISCHARGE MEASUREMENTS.—Made by wading or from cable, 1,000 feet above gage.

CHANNEL AND CONTROL.—Channel composed of bedrock and boulders. Banks medium high and wooded. Control formed by series of rapids over bedrock and by contracted channel between railroad bridge abutments.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.88 feet at 4 a. m. February 5 (discharge, 827 second-feet); minimum stage recorded, 4.03 feet at 3 p. m. September 28 (discharge, 29.5 second-feet).

1918–1925: Maximum stage recorded, 3.4 feet on Lake Crescent gage January 10 and 11, 1923 (discharge, 1,180 second-feet); minimum discharge, 18 second-feet on September 19, 1924.

ICE.—None.

DIVERSIONS.—None.

REGULATION.—Flow is very uniform because of natural regulation in Lake Crescent. Channel at mouth of lake cleared of driftwood and deepened July 25 to August 7, 1922.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve well defined. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph by inspection. Records excellent.

Discharge measurements of Lyre River at Piedmont, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Nov. 16	6.62	349	Apr. 15	5.77	212	Aug. 26	4.34	45.5
Nov. 18	6.50	327	May 22	5.79	202	Aug. 28	4.32	44.9
Apr. 13	5.68	199	July 12	4.90	89.1			

Daily discharge, in second-feet, of Lyre River at Piedmont, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	154	430	345	258	562	429	218	208	210	124	60	42
2	154	430	336	266	648	419	210	210	210	122	58	42
3	146	430	327	275	736	419	210	204	210	117	55	42
4	138	448	318	275	781	429	205	196	210	116	52	42
5	130	439	309	300	804	419	202	194	205	113	52	42
6	126	429	300	300	804	410	196	192	197	110	51	40
7	126	489	292	300	781	390	191	196	194	109	52	40
8	130	510	275	292	781	381	186	194	192	106	52	39
9	126	499	275	292	781	363	182	194	188	101	52	38
10	122	469	318	309	758	354	182	192	180	100	52	37
11	114	459	345	309	714	336	186	191	178	99	51	36
12	122	429	381	309	692	327	191	190	176	94	50	36
13	122	400	390	300	648	318	194	190	170	98	51	36
14	138	390	400	292	626	309	196	188	164	100	50	34
15	146	372	419	284	583	300	205	192	160	97	47	34
16	150	354	419	266	562	300	218	194	156	94	45	34
17	146	336	400	266	530	300	234	199	151	90	45	34
18	146	345	381	318	510	284	242	204	149	84	44	36
19	142	429	363	327	489	284	242	207	149	81	44	36
20	138	499	345	363	469	284	242	210	149	79	43	34
21	134	520	327	381	479	275	234	218	150	76	42	34
22	130	530	309	459	479	275	234	210	150	74	42	34
23	130	510	300	520	489	258	226	210	146	71	41	34
24	162	489	284	520	479	258	226	205	146	69	41	34
25	189	459	275	510	479	258	210	202	144	68	42	33
26	232	439	258	499	469	250	207	196	142	67	47	32
27	262	419	258	499	459	242	199	197	140	66	45	32
28	325	390	266	489	439	242	196	226	135	64	43	31
29	376	381	275	489	-------	234	192	226	130	64	42	30
30	412	354	266	510	-------	226	196	226	130	62	42	30
31	430	-------	258	520	-------	226	-------	218	-------	61	42	-------

NOTE.—Discharge based on gage readings at Lake Crescent for the period Oct. 26 to Nov. 4.

Monthly discharge of Lyre River at Piedmont, Wash., for the year ending September 30, 1925

[Drainage area, 49.5 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	430	114	177	3.58	4.13	10,900
November	530	336	436	8.81	9.83	25,900
December	419	258	323	6.53	7.53	19,900
January	520	258	364	7.35	8.47	22,400
February	804	439	608	12.3	12.81	33,800
March	429	226	316	6.38	7.36	19,400
April	242	182	208	4.20	4.69	12,400
May	226	188	203	4.10	4.73	12,500
June	210	130	167	3.37	3.76	9,940
July	124	61	89.5	1.81	2.09	5,500
August	60	41	47.6	.962	1.11	2,930
September	42	30	35.9	.725	.81	2,140
The year	804	30	245	4.95	67.32	178,000

ELWHA RIVER BASIN

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

LOCATION.—In NE. ¼ NW. ¼ sec. 33, T. 30 N., R. 7 W., at McDonald Bridge, 6½ miles above mouth and 8 miles southwest of Port Angeles, Clallam County.

DRAINAGE AREA.—262 square miles (measured on Plate I, United States Geological Survey, Professional Paper 7).

RECORDS AVAILABLE.—October 8, 1897, to December 31, 1901; October 1, 1918, to September 30, 1925.

GAGE.—Since October 17, 1918, Stevens water-stage recorder on left bank; inspected by A. J. Hooper. Gage datum 206.29 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel, shifting. Banks high.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 6.1 feet at 5.30 a. m. November 19 (discharge, 8,680 second-feet); minimum stage, from water-stage recorder, 0.79 foot at midnight September 30 (discharge, 345 second-feet).

1897–1901; 1918–1925: Maximum stage recorded, 10.6 feet November 27, 1901 (discharge, 23,800 second-feet); minimum stage recorded, 0.80 foot October 18, 1897 (discharge, 170 second-feet).

ICE.—Stage-discharge relation only slightly affected by ice during severe winters.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed at high water October 24, November 19, and December 11; not affected by ice. Rating curves used prior to December 11 fairly well defined; curve used subsequent to December 11 well defined. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage heights obtained by inspecting gage-height graph or, for days of considerable variation in stage, by averaging results obtained by applying gage heights for shorter intervals. Records good October to December; excellent thereafter.

COOPERATION.—Gage-height record and some discharge measurements furnished by Northwestern Power & Manufacturing Co.

Discharge measurements of Elwha River at McDonald Bridge, near Port Angeles, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 22	1.17	959	Feb. 18	1.86	1,090	May 22	3.49	3,120
Nov. 15	1.83	1,430	Mar. 12	1.62	931	July 14	2.57	1,950
Dec. 8	1.48	1,210	Apr. 13	2.62	2,070	Aug. 26	1.54	879
Jan. 27	2.20	1,480	May 9	2.47	1,740	Sept. 21	.85	354

Daily discharge, in second-feet, of Elwha River at McDonald Bridge, near Port Angeles, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,360	2,810	1,730	1,040	3,440	1,320	715	1,490	2,160	1,910	1,040	579
2	1,800	3,250	1,740	1,090	5,710	1,670	715	1,470	1,970	1,850	1,000	551
3	1,270	2,810	1,640	1,110	6,070	1,560	755	1,420	1,910	1,970	924	537
4	1,020	3,180	1,690	1,060	4,650	1,590	771	1,410	1,730	2,040	875	530
5	915	2,810	1,580	1,290	3,980	1,440	819	1,670	1,670	1,910	891	510
6	848	2,530	1,420	1,140	3,350	1,310	859	2,300	1,730	1,790	915	491
7	832	3,320	1,370	1,040	2,840	1,210	899	2,490	1,670	1,730	907	484
8	832	2,600	1,270	983	2,700	1,140	992	2,100	1,910	1,670	907	510
9	773	2,140	1,370	974	2,490	1,090	1,310	1,850	1,970	1,910	899	504
10	717	1,860	3,640	1,080	2,160	1,010	1,790	1,850	1,730	2,100	875	517
11	696	1,740	4,310	983	1,970	974	2,230	2,230	1,730	1,910	875	498
12	907	1,520	4,480	949	1,790	924	2,300	2,300	1,730	1,790	859	484
13	848	1,420	4,310	899	1,610	891	2,040	2,360	1,850	1,970	843	478
14	2,730	1,520	3,580	859	1,490	875	1,790	2,770	1,790	1,910	755	472
15	3,100	1,470	3,820	819	1,390	843	1,970	2,910	1,970	1,610	691	459
16	2,480	1,470	2,770	771	1,310	835	3,280	3,350	2,300	1,530	668	465
17	1,690	1,690	2,360	763	1,230	803	3,350	3,740	2,420	1,530	660	453
18	1,370	2,570	2,100	1,840	1,150	779	2,630	3,660	2,300	1,390	668	447
19	1,180	6,810	1,850	1,590	1,110	851	2,230	3,580	2,230	1,320	691	417
20	1,080	5,040	1,730	1,850	1,090	851	1,910	3,740	2,420	1,290	715	394
21	1,050	4,190	1,550	1,790	1,470	827	1,730	3,660	2,770	1,300	731	388
22	1,020	3,710	1,410	2,680	1,850	899	1,590	3,120	2,770	1,310	668	400
23	1,080	3,100	1,330	3,120	2,560	891	1,460	2,770	2,490	1,250	593	417
24	5,040	2,740	1,240	2,230	2,100	875	1,350	2,560	2,420	1,180	565	417
25	5,520	2,400	1,180	1,790	1,850	867	1,270	2,420	2,840	1,150	600	394
26	3,870	2,140	1,130	1,610	1,670	835	1,230	2,420	2,980	1,140	771	388
27	3,790	1,960	1,130	1,500	1,510	835	1,200	2,630	2,840	1,170	600	361
28	3,320	1,860	1,240	1,450	1,360	819	1,210	4,220	2,560	1,160	537	350
29	4,030	1,800	1,330	1,610	-------	779	1,300	3,120	2,230	1,080	510	378
30	3,710	1,740	1,190	2,910	-------	755	1,380	2,560	2,160	1,020	510	356
31	3,250	-------	1,080	2,700	-------	731	-------	2,300	-------	1,020	524	-------

Monthly discharge of Elwha River at McDonald Bridge, near Port Angeles, Wash., for the year ending September 30, 1925

[Drainage area, 262 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	5,520	696	2,070	7.90	9.11	127,000
November	6,810	1,420	2,610	9.96	11.11	155,000
December	4,480	1,080	2,020	7.71	8.89	124,000
January	3,120	763	1,470	5.61	6.47	90,400
February	6,070	1,090	2,350	8.97	9.34	131,000
March	1,670	731	1,000	3.82	4.40	61,500
April	3,350	715	1,570	5.99	6.68	93,400
May	4,220	1,410	2,600	9.92	11.44	160,000
June	2,980	1,670	2,180	8.32	9.28	130,000
July	2,100	1,020	1,550	5.92	6.82	95,300
August	1,040	510	751	2.87	3.31	46,200
September	579	350	454	1.73	1.93	27,000
The year	6,810	350	1,710	6.53	88.78	1,240,000

DUNGENESS RIVER BASIN

DUNGENESS RIVER NEAR SEQUIM, WASH.

LOCATION.—In sec. 12, T. 29 N., R. 4 W., half a mile above State fish hatchery, 4½ miles southwest of Sequim, and 11 miles above mouth, Clallam County.

DRAINAGE AREA.—150 square miles (measured on Olympic National Forest map, 1923 edition).

RECORDS AVAILABLE.—June 1, 1923, to September 30, 1925; July 5, 1897, to July 28, 1898, at a station about 1½ miles below; July 29, 1898, to December 31, 1900, at a station at Dungeness, 1 mile above mouth.

GAGE.—Vertical and inclined staff on left wall of canyon about 100 feet above McLeay Lindsey Canal intake; read by W. H. Knapman.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Channel in winding gorge, bed composed of gravel and solid rock. Banks high; will not be overflowed. Control is gravel riffle, modified since installation of gage by canal headworks; shifts easily.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.5 feet at 8 a. m. November 19 (discharge, 3,000 second-feet); minimum discharge recorded, 140 second-feet on September 24 and 28.

1897–1900, 1923–1925: Maximum stage recorded, 6.0 feet February 12, 1924 (discharge, 5,140 second-feet); minimum discharge recorded, 85 second-feet December 26, 1897.

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed October 26, April 1, and frequently thereafter owing to changes made to diversion dam just below. Rating curve used prior to October 25 poorly defined; subsequent curves fairly well defined. Shifting-control method used April 17 to May 19. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

Discharge measurements of Dungeness River near Sequim, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Nov. 14	1.02	299	Apr. 12	2.32	750	July 11	2.12	647
Nov. 19	3.90	2,290	Apr. 16	2.71	1,060	July 15	1.96	545
Nov. 20	3.48	1,840	May 20	2.71	1,140	Aug. 25	1.52	195
Do	3.30	1,720	May 24	2.14	715	Aug. 29	1.41	178
Nov. 21	2.78	1,160						

Daily discharge, in second-feet, of Dungeness River near Sequim, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	570	450	366	308	574	282	258	478	530	512	357	192
2	380	623	382	295	1,290	336	284	460	512	512	357	192
3	291	488	382	282	1,470	322	390	442	495	530	342	212
4	241	623	382	282	1,040	322	460	425	478	595	326	222
5	219	552	351	269	787	308	408	478	442	550	297	201
6	199	508	336	269	675	295	390	595	425	550	297	192
7	190	1,290	322	269	623	269	425	880	425	550	326	182
8	180	623	308	257	488	295	442	710	512	530	357	173
9	171	488	295	257	450	282	478	595	620	550	342	182
10	162	415	322	257	432	245	570	570	512	650	342	201
11	162	351	552	245	398	234	680	650	495	620	326	201
12	154	322	1,120	245	351	234	775	680	495	595	312	201
13	154	308	1,380	245	322	222	680	710	530	570	312	182
14	413	295	1,040	234	295	222	570	810	550	650	270	182
15	525	308	847	234	295	222	550	880	570	550	258	173
16	448	322	552	222	295	222	1,080	1,000	595	530	245	164
17	396	382	488	222	295	211	1,000	1,400	710	495	222	164
18	319	415	450	675	269	211	710	1,210	620	478	222	164
19	291	2,400	450	415	269	211	595	1,210	595	460	201	156
20	265	1,760	432	469	269	234	530	1,160	650	442	201	164
21	241	1,200	415	488	257	234	512	1,120	810	425	245	156
22	230	910	398	508	282	245	495	960	960	408	258	147
23	219	730	366	552	308	234	460	880	845	390	222	147
24	265	675	351	529	336	234	408	710	810	374	201	140
25	1,200	529	351	450	322	234	390	680	880	357	201	147
26	787	488	336	415	308	245	390	680	1,120	357	258	147
27	730	450	322	382	282	245	390	650	810	374	234	147
28	623	398	322	366	269	245	390	1,500	680	390	212	140
29	649	382	322	351	-------	245	390	960	570	374	173	147
30	574	382	322	322	-------	245	478	740	530	357	173	147
31	508	-------	308	351	-------	245	-------	570	-------	374	164	-------

Monthly discharge of Dungeness River near Sequim, Wash., for the year ending September 30, 1925

[Drainage area, 150 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	1,200	154	379	2.53	2.92	23,300
November	2,400	295	636	4.24	4.73	37,800
December	1,380	295	470	3.13	3.61	28,900
January	675	222	344	2.29	2.64	21,200
February	1,470	257	473	3.15	3.28	26,300
March	336	211	253	1.69	1.95	15,600
April	1,080	258	519	3.46	3.86	30,900
May	1,500	425	800	5.33	6.14	49,200
June	1,120	425	626	4.17	4.65	37,200
July	650	357	487	3.25	3.75	29,900
August	357	164	266	1.77	2.04	16,400
September	222	140	172	1.15	1.28	10,200
The year	2,400	140	452	3.01	40.85	327,000

PUGET SOUND BASINS

DOSEWALLIPS RIVER BASIN

DOSEWALLIPS RIVER AT BRINNON, WASH.

LOCATION.—In sec. 2, T. 25 N., R. 2 W., at old highway bridge, half a mile above mouth, at Brinnon, Jefferson County.

DRAINAGE AREA.—130 square miles (measured on Olympic National Forest map, edition of 1923).

RECORDS AVAILABLE.—October 30, 1910, to October 31, 1911; July 14, 1924, to December 31, 1925, when gaging station was discontinued.

GAGE.—Vertical staff on left bank 15 feet downstream from old highway bridge; read by B. L. Snyder.

DISCHARGE MEASUREMENTS.—Made from highway bridge at gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and small boulders; two or more channels at extremely high stage. Low-water control is riffle formed by gravel and small boulders; shifts easily. High-water control not defined.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period October 1, 1924, to December 31, 1925, 3.6 feet on October 25 and 29 and November 19, 1924 (discharge, 2,620 second-feet); minimum stage recorded, 0.24 foot at 2.50 p. m. August 24, 1925, as result of regulation (discharge, 19 second-feet).

1910–1911; 1924–1925: Maximum stage recorded, 6.2 feet November 20, 1910 (discharge, 4,920 second-feet); minimum discharge recorded, that of August 24, 1925.

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—None.

REGULATION.—A flash dam about 4 miles above used occasionally during low-water periods in the interests of the logging industry.

ACCURACY.—Stage-discharge relation changed frequently. Rating curves fairly well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Shifting-control method used October 14 to November 6, 1924, and April 18 to July 9, 1925. Records good except for October and November, 1925, for which they are poor.

Discharge measurements of Dosewallips River at Brinnon, Wash., for the period October 1, 1924, to December 31, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
1924	*Feet*	*Sec.-ft.*	1925	*Feet*	*Sec.-ft.*	1925	*Feet*	*Sec.-ft.*
Nov. 13	1.48	477	May 20	2.61	1,460	Aug. 25	0.66	57.9
Nov. 22	2.30	1,080	July 10	2.17	668	Aug. 29	1.10	151
			July 15	1.95	525	Dec. 14	1.80	473
1925			Aug. 24	.26	20.3	Dec. 17	1.83	491
Apr. 11	2.33	1,050	Do	.30	22.5			
Apr. 17	2.78	1,490	Aug. 25	.88	95.6			

Daily discharge, in second-feet, of Dosewallips River at Brinnon, Wash., for the period October 1, 1924, to December 31, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1924–25												
1		1,040	520	350	765	383	190	566	820	742	370	211
2		1,320	620	339	1,830	470	183	566	742	705	345	204
3	600	1,000	552	361	1,860	500	223	566	705	742	345	190
4		1,370	690	328	1,300	439	277	600	670	780	322	183
5		1,080	620	427	1,400	411	287	670	670	705	322	177
6		808	552	372	1,250	383	328	940	705	634	345	170
7		2,210	487	339	900	350	361	1,110	670	634	322	157
8		1,170	457	317	1,020	318	383	980	742	634	322	164
9		880	427	297	940	268	500	780	900	634	322	157
10	200	690	520	287	705	259	780	820	705	690	300	170
11		620	1,120	258	634	240	980	940	670	690	300	164
12		552	1,370	249	566	231	1,020	1,060	670	655	300	170
13		487	1,590	249	533	190	820	1,020	742	690	292	157
14	1,170	457	1,270	240	500	215	670	1,200	742	690	283	151
15	1,710	457	1,170	222	439	223	670	1,300	742	560	250	140
16	1,320	457	880	214	411	231	1,510	1,510	860	560	242	134
17	765	552	690	198	383	198	1,510	1,510	900	560	242	140
18	620	552	655	168	372	183	1,060	1,510	860	560	234	134
19	487	2,620	586	128	350	183	860	1,400	820	530	250	123
20	267	1,830	552	655	318	231	742	1,510	900	530	234	118
21	198	1,270	487	620	500	223	670	1,510	980	445	258	113
22	198	1,080	457	728	634	231	670	1,250	980	472	250	123
23	202	920	427	1,120	1,300	259	600	1,200	860	445	218	129
24	457	802	400	802	940	268	533	1,020	860	420	197	129
25	2,620	690	372	620	780	268	533	940	940	395	190	134
26	1,320	620	361	620	634	259	500	940	1,020	395	234	123
27	1,590	552	339	520	533	240	470	1,020	940	420	211	118
28	1,590	520	400	457	500	268	470	1,860	940	445	183	123
29	2,620	520	427	457	-------	223	500	1,200	820	395	157	123
30	1,420	520	372	690	-------	215	566	980	780	370	170	121
31	1,320	-------	350	728	-------	223	-------	860	-------	345	177	-------

Day	Oct.	Nov.	Dec.	Day	Oct.	Nov.	Dec.	Day	Oct.	Nov.	Dec.
1925				1925				1925			
1	118	116	1,750	11	112	345	2,100	21	118	218	590
2	118	113	560	12	109	218	810	22	118	183	1,080
3	118	113	395	13	109	121	530	23	116	151	1,860
4	118	113	1,030	14	116	115	472	24	115	123	810
5	118	113	395	15	116	130	472	25	114	123	810
6	118	113	345	16	116	1,530	472	26	113	151	655
7	116	113	250	17	116	445	530	27	118	151	560
8	113	117	242	18	109	300	279	28	121	151	530
9	116	121	226	19	109	300	655	29	118	123	472
10	116	218	250	20	116	300	590	30	118	123	420
								31	118	-------	370

NOTE.—Gage not read Oct. 1–7, 1924, Oct. 11, 24, 25, Nov. 1, 8, 14, 15, 1925. Gage-height record questionable Oct. 8–13, 1925. Discharge Oct. 1–13, 1924, and Nov. 14 and 15, 1925, estimated by comparison with records of near-by streams. Other missing periods interpolated.

Monthly discharge of Dosewallips River at Brinnon, Wash., for the period October 1, 1924, to December 31, 1925

[Drainage area, 130 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
1924–25						
October	2,620		789	6.07	7.00	48,500
November	2,620	457	924	7.11	7.93	55,000
December	1,590	339	636	4.89	5.64	39,100
January	1,120	128	431	3.32	3.83	26,500
February	1,860	318	796	6.12	6.37	44,200
March	500	183	277	2.13	2.46	17,000
April	1,510	183	629	4.84	5.40	37,400
May	1,860	566	1,080	8.31	9.58	66,400
June	1,020	670	812	6.25	6.97	48,300
July	780	345	564	4.34	5.00	34,700
August	370	157	264	2.03	2.34	16,200
September	211	113	148	1.14	1.27	8,810
The year	2,620	113	610	4.69	63.79	442,000
1925						
October	121	109	116	.892	1.03	7,130
November	1,530	113	218	1.68	1.87	13,000
December	2,100	226	662	5.09	5.87	40,700
The period						60,800

SKOKOMISH RIVER BASIN

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

LOCATION.—In SW.¼ sec. 3, T. 23 N., R. 5 W., 300 feet below Staircase Rapids, 2 miles above Dry Creek, and 10½ miles northwest of Hoodsport, Mason County.

DRAINAGE AREA.—60 square miles (measured on map of city of Tacoma's Cushman power project).

RECORDS AVAILABLE.—July 30, 1924, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on right bank, inspected by employees of city of Tacoma.

CHANNEL AND CONTROL.—Bed composed of gravel; control is well-defined riffle in gravel and angular boulders; shifts only during high stages. Stage of zero flow, according to measurement made September 12, 1924, gage height 0.2 foot ±0.1 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from high-water mark in well, 6.88 feet, probably some time February 2, while recorder was not operating (discharge, 4,400 second-feet); minimum stage recorded, from water-stage recorder, 1.41 feet from noon to 5 p. m. September 28 (discharge, 46 second-feet).

1924–1925: Maximum stage recorded, that of February 2, 1925; minimum flow probably occurred during the period September 15–20, 1924, when water-stage recorder was not operating (stage and discharge not determined).

ICE.—Float frozen in well December 18 and 20–28; discharge estimated from weather records.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent; rating curve well defined. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height obtained from recorder graph by inspection or, for days of considerable variation in stage, by averaging results obtained by applying to rating table mean gage heights for shorter intervals. Records excellent, except for January and February for which they are good.

Discharge measurements of North Fork of Skokomish River below Staircase Rapids, near Hoodsport, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 15	5.04	1,980	Dec. 8	2.58	371	May 16	3.92	1,020
Oct. 25	5.29	2,340	Feb. 6	3.65	843	July 8	2.52	315
Oct. 31	4.21	1,240	Mar. 3	3.05	549	Aug. 22	1.71	89.1
Nov. 10	3.15	613	Apr. 8	2.62	379	Sept. 23	1.48	53.8
Nov. 23	3.68	914	Apr. 18	3.62	859			

Daily discharge, in second-feet, of North Fork of Skokomish River below Staircase Rapids, near Hoodsport, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,380	1,200	475	348	1,750	475	237	489	503	368	171	120
2	680	1,600	630	364	3,800	630	244	493	480	372	163	95
3	470	1,230	470	364	3,500	575	286	452	475	396	155	79
4	368	1,900	475	360	2,600	546	308	466	512	400	144	76
5	308	1,260	422	708	1,750	470	326	655	470	368	142	72
6	270	1,060	376	680	1,060	413	341	875	466	348	142	70
7	253	1,230	364	546	875	376	348	762	435	341	137	68
8	253	905	352	368	818	356	364	600	625	337	132	68
9	224	735	368	380	735	345	590	512	595	356	132	66
10	212	620	1,490	470	610	329	762	600	503	364	129	64
11	203	526	1,650	522	565	311	935	708	444	345	125	62
12	352	422	1,500	457	541	297	845	680	444	329	118	60
13	530	388	1,300	322	484	280	680	762	466	368	118	59
14	2,960	396	1,120	273	444	273	570	875	439	345	109	59
15	1,850	413	1,220	250	413	270	955	965	508	308	99	58
16	1,300	475	818	240	392	266	1,550	1,120	625	294	97	95
17	818	570	615	237	376	260	1,200	1,090	605	286	93	72
18	605	1,280	489	493	364	247	905	995	565	273	93	70
19	457	2,550	418	1,020	360	283	762	995	560	253	93	97
20	380	1,860	384	1,130	380	290	630	1,060	630	244	95	68
21	400	1,380	356	965	790	290	556	965	708	240	95	60
22	376	1,120	318	2,160	1,180	329	484	790	655	234	95	58
23	436	905	283	1,500	1,500	318	435	680	570	228	88	56
24	3,340	762	250	1,090	995	311	396	625	600	218	84	55
25	2,700	630	224	790	790	311	368	600	708	209	84	53
26	1,850	498	228	531	708	297	356	620	680	203	99	51
27	1,780	422	280	372	600	286	356	766	615	206	86	49
28	1,980	388	396	426	484	276	356	1,550	503	197	77	55
29	2,100	384	531	818	-------	260	376	875	430	185	74	89
30	1,550	380	384	1,420	-------	247	418	680	409	171	72	72
31	1,300	-------	356	1,120	-------	237	-------	570	-------	174	71	-------

NOTE.—Gage-height record Jan. 5 to Feb. 7 lost because of broken pencil; discharge determined from graph completed from occasional faint trace, high-water marks in well, and records at near-by stations.

Monthly discharge of North Fork of Skokomish River below Staircase Rapids, near Hoodsport, Wash., for the year ending September 30, 1925

[Drainage area, 60 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	3,340	203	1,020	17.0	19.60	62,700
November	2,550	380	916	15.3	17.07	54,500
December	1,650	224	598	9.97	11.49	36,800
January	2,160	237	669	11.2	12.91	41,100
February	3,800	360	1,030	17.2	17.91	57,200
March	630	237	337	5.62	6.48	20,700
April	1,550	237	565	9.42	10.51	33,600
May	1,550	452	770	12.8	14.76	47,300
June	708	409	541	9.02	10.06	32,200
July	400	171	289	4.82	5.56	17,800
August	171	71	110	1.83	2.11	6,760
September	120	49	69.2	1.15	1.28	4,120
The year	3,800	49	573	9.55	129.74	415,000

NORTH FORK OF SKOKOMISH RIVER NEAR HOODSPORT, WASH.

LOCATION.—In NE. ¼ sec. 8, T. 22 N., R. 4 W., 1 mile below Cushman Reservoir dam site, 5 miles below Lake Cushman, and 3½ miles west of Hoodsport, Mason County.

DRAINAGE AREA.—92 square miles (measured on Plate I, U. S. Geological Survey Professional Paper 7, and township plats).

RECORDS AVAILABLE.—October 1, 1923, to September 30, 1925, at present site; August 17, 1910, to September 22, 1911; February 1, 1913, to September 30, 1923, at Forest Service trail bridge, 1 mile above.

GAGE.—Stevens water-stage recorder on left bank; inspected by city of Tacoma employees.

DISCHARGE MEASUREMENTS.—Made from cable 1,200 feet above gage or by wading.

CHANNEL AND CONTROL.—Channel curved above gage, straight below gage for 200 feet. Banks high, not subject to overflow. Control composed of boulders and gravel, slightly shifting at extremely high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 12.2 feet at 10 a. m. February 2 (discharge, 5,530 second-feet); minimum stage from recorder, 0.44 foot at 2.20 p. m. September 18 when tunnel gates were closed (discharge, 28 second-feet).

1913–1925: Maximum stage estimated at 23.5 feet January 6, 1914, during part of day when recorder was not operating (discharge estimated at 14,000 second-feet); minimum stage recorded, that of September 18, 1925.

ICE.—Stage-discharge relation affected by ice December 22–28, 1924; discharge estimated from weather records.

DIVERSIONS.—None.

REGULATION.—Flow regulated by natural storage at Lake Cushman and very slightly during June, 1924, to September, 1925, as a result of work in connection with the dam construction above.

ACCURACY.—Stage-discharge relation changed frequently until April 17. Rating curves used prior to April 17 fairly well defined; that used after April 17 well defined. Operation of water-stage recorder affected somewhat by sluggish intake after March 1. Daily discharge ascertained by applying to rating tables mean daily gage height determined from recorder graph by inspection or, for days when variation in stage was considerable, by averaging results obtained by applying mean gage heights for shorter intervals. Shifting-control method used January 24–26. Records good.

Discharge measurements of North Fork of Skokomish River near Hoodsport, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 14	10.20	3,670	Jan. 24	7.08	1,690	May 15	5.89	1,090
Nov. 9	6.98	1,570	Jan. 26	5.75	995	July 9	3.73	455
Nov. 24	6.36	1,280	Apr. 6	3.63	464	Aug. 23	1.97	165
Jan. 23	9.32	3,180	Apr. 22	4.93	749			

Daily discharge, in second-feet, of North Fork of Skokomish River near Hoodsport, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,610	2,110	731	652	2,160	950	385	668	721	546	258	154
2	1,400	2,410	915	652	5,020	985	385	694	668	523	250	171
3	908	2,290	915	731	4,540	1,060	420	668	655	523	250	165
4	652	2,670	950	731	3,380	1,020	444	655	721	546	234	154
5	507	2,470	915	880	2,950	950	468	694	694	534	226	148
6	420	1,830	813	880	2,530	863	494	862	668	500	226	143
7	363	2,530	715	780	2,050	796	507	959	642	478	226	138
8	332	2,050	652	668	1,830	731	534	862	668	456	219	138
9	312	1,530	636	606	1,780	668	652	652	775	456	212	138
10	285	1,260	1,090	636	1,480	621	915	668	721	478	212	133
11	258	1,100	2,170	591	1,260	591	1,140	748	655	478	204	133
12	303	950	2,050	562	1,180	562	1,220	803	630	456	204	129
13	396	863	1,830	520	1,060	534	1,060	803	630	456	204	127
14	2,550	863	1,580	494	985	507	915	1,030	617	478	197	124
15	3,090	846	1,630	468	915	494	950	1,030	617	456	184	126
16	2,230	863	1,340	444	863	494	1,630	1,150	668	425	190	136
17	1,430	915	1,060	456	813	481	1,720	1,280	721	406	184	143
18	1,060	1,080	880	668	747	456	1,380	1,200	694	396	177	146
19	830	3,380	780	1,160	699	468	1,110	1,110	668	377	171	154
20	796	3,090	715	1,100	699	494	959	1,150	668	368	177	148
21	699	2,230	668	1,220	1,160	494	832	1,150	775	358	171	143
22	591	1,880	621	1,640	1,730	494	748	1,030	803	348	171	133
23	548	1,530	562	2,950	2,530	534	694	862	721	339	165	131
24	2,240	1,260	507	1,830	2,230	520	642	775	668	320	160	127
25	4,580	1,100	481	1,260	1,730	520	605	721	748	310	154	124
26	2,740	950	468	985	1,430	494	546	721	803	301	154	123
27	2,670	863	468	915	1,260	481	523	748	775	292	154	121
28	2,670	796	520	915	1,100	468	534	1,410	721	292	154	122
29	4,020	747	683	1,100	-------	444	523	1,330	630	283	154	136
30	3,230	715	780	2,080	-------	432	635	959	581	274	148	143
31	2,600	-------	683	2,170	-------	408	-------	803	-------	258	143	-------

Monthly discharge of North Fork of Skokomish River near Hoodsport, Wash., for the year ending September 30, 1925

[Drainage area, 92 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	4,580	258	1,490	16.2	18.68	91,600
November	3,380	715	1,570	17.1	19.08	93,400
December	2,170	468	929	10.1	11.64	57,100
January	2,950	444	992	10.8	12.45	61,000
February	5,020	699	1,790	19.5	20.31	99,400
March	1,060	408	613	6.66	7.68	37,700
April	1,720	385	786	8.54	9.53	46,800
May	1,410	652	910	9.89	11.40	56,000
June	803	581	691	7.51	8.38	41,100
July	546	258	410	4.46	5.14	25,200
August	258	143	191	2.08	2.40	11,700
September	171	121	138	1.50	1.67	8,210
The year	5,020	121	870	9.46	128.36	629,000

SOUTH FORK OF SKOKOMISH RIVER NEAR POTLATCH, WASH.

LOCATION.—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, Mason County.

DRAINAGE AREA.—68 square miles (measured on map of Skokomish River watershed of city of Tacoma's Cushman power project).

RECORDS AVAILABLE.—October 1, 1923, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on right bank, about 300 feet below head of canyon; inspected by employees of city of Tacoma.

DISCHARGE MEASUREMENTS.—Made from cable about 75 feet above gage or by wading.

CHANNEL AND CONTROL.—Channel winding, bed composed of light gravel to heavy boulders. Banks high and not subject to overflow. Control varies with stage; for low water it is of light gravel, shifting; for medium and high stages, heavy boulder riffles, shifting at high stages only.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 12.0 feet at 11.30 p. m. February 1 (discharge, 7,700 second-feet); minimum stage recorded, from water-stage recorder, 1.68 feet September 14, 15, 26, and 27 (discharge, 65 second-feet).

1924–1925: Maximum stage recorded, from recorded range of stage, 14.86 feet, some time January 31, 1924 (discharge, by extending rating curve, 9,950 second-feet); minimum discharge, 44 second-feet, occurred from 6 p. m. September 19 to midnight September 20, 1924.

ICE.—Stage-discharge relation slightly affected by ice during severe winters. Flow estimated from gage height and weather records.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent; affected by ice December 18–28. Rating curve fairly well defined. Operation of water stage recorder fairly satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage heights determined from recorder graph by inspection or, for days of considerable variation in stage, by averaging results obtained by applying to rating table mean gage heights for shorter intervals. Records good except for the period March to May.

Discharge measurements of South Fork of Skokomish River near Potlatch, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 16	5.40	1,350	Dec. 12	6.05	1,810	Apr. 7	2.86	303
Nov. 11	4.50	904	Jan. 27	4.68	959	Apr. 20	3.72	591
Nov. 12	4.23	802	Feb. 2	8.53	3,860	May 14	3.26	444
Nov. 19	7.03	2,430	Feb. 3	8.72	4,280	July 9	2.20	142
Nov. 20	6.45	2,160	Feb. 4	6.50	2,220	Aug. 21	1.79	83.8
Dec. 11	6.38	2,030	Mar. 11	3.30	409			

Daily discharge, in second-feet, of South Fork of Skokomish River near Potlatch, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,000	1,480	556	635	3,610	766	262	520	342	171	104	88
2	1,180	2,080	744	854	5,040	788	265	503	312	167	102	88
3	832	1,580	656	876	3,990	744	268	469	342	165	100	81
4	575	2,240	832	942	2,320	788	281	420	503	165	99	76
5	469	1,680	744	1,330	2,400	744	287	452	436	161	96	75
6	398	1,390	656	988	1,860	656	284	520	385	155	95	74
7	351	2,400	575	788	1,480	575	298	452	351	152	95	75
8	327	2,030	503	656	1,330	538	324	385	382	148	93	72
9	292	1,660	538	614	1,210	503	420	373	373	144	92	72
10	265	1,290	2,160	744	988	469	472	373	361	144	90	69
11	249	920	2,160	635	876	436	452	379	330	142	90	68
12	427	810	1,760	556	810	420	420	392	315	141	89	68
13	498	722	1,360	520	744	388	398	404	306	174	89	67
14	2,950	744	1,160	452	700	373	373	436	301	159	88	65
15	1,940	810	1,540	404	656	367	503	436	290	146	88	65
16	1,480	832	1,060	367	594	376	898	469	292	139	85	83
17	1,010	854	832	342	556	364	898	486	284	134	83	82
18	788	1,330	700	1,320	520	348	788	436	268	130	81	76
19	635	3,190	594	1,180	503	392	700	420	257	127	79	92
20	556	2,300	503	1,420	556	420	575	398	252	125	81	83
21	520	1,790	436	1,240	1,310	404	538	379	260	124	81	75
22	503	1,540	382	2,600	1,740	395	503	354	254	121	81	71
23	520	1,210	342	2,720	2,160	379	469	336	234	119	81	68
24	3,310	1,010	312	1,480	1,480	367	436	318	224	117	79	68
25	2,990	854	312	1,060	1,210	351	401	298	226	116	79	67
26	1,790	744	342	920	1,110	339	376	287	226	114	82	65
27	1,790	656	436	988	965	324	361	379	214	111	82	65
28	2,140	594	575	1,110	854	309	345	656	202	110	79	71
29	3,370	556	810	1,580	-------	298	354	452	186	108	78	81
30	2,240	538	722	2,920	-------	284	388	420	180	106	78	88
31	1,790	-------	614	2,160	-------	273	-------	376	-------	105	76	------

NOTE.—Water-stage recorder not operating satisfactorily Nov. 8–10, 16, 17, Feb. 22, 23, Mar. 18 to Apr. 6, Apr. 10–19, May 4–13, and May 18 to June 1; discharge determined from recorded range of stage and records of North Fork.

Monthly discharge of South Fork of Skokomish River near Potlatch, Wash., for the year ending September 30, 1925

[Drainage area, 68 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	3,370	249	1,230	18.1	20.87	75,600
November	3,190	538	1,330	19.6	21.87	79,100
December	2,160	312	804	11.8	13.60	49,400
January	2,920	342	1,110	16.3	18.79	68,200
February	5,040	503	1,480	21.8	22.70	82,200
March	788	273	457	6.72	7.75	28,100
April	898	262	445	6.54	7.30	26,500
May	656	287	419	6.16	7.10	25,800
June	503	180	296	4.35	4.85	17,600
July	174	105	137	2.01	2.32	8,420
August	104	76	86.9	1.28	1.48	5,340
September	92	65	74.6	1.10	1.23	4,440
The year	5,040	65	651	9.57	129.86	471,000

NISQUALLY RIVER BASIN

NISQUALLY RIVER NEAR LA GRANDE, WASH.

LOCATION.—In sec. 9, T. 15 N., R. 4 E., 1,200 feet below diversion dam of city of Tacoma's municipal power plant, 2½ miles southeast of La Grande, Pierce County.

DRAINAGE AREA.—287 square miles (measured on topographic map of Rainier National Park; map of Rainier National Forest, edition of 1918; and Plate IV, Water-Supply Paper 313).

RECORDS AVAILABLE.—October 1, 1919, to September 30, 1925. September 5, 1906, to October 31, 1911, fragmentary.

GAGE.—Stevens long-distance recorder on left bank 1,200 feet below dam; also vertical staff on left bank at head of low-water control for use during periods of low water when silt interferes with normal stage-discharge relation. Recorder inspected and gage read by head-gate attendants.

DISCHARGE MEASUREMENTS.—Made from cable 250 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of bedrock and boulders. Banks high. A considerable amount of glacial silt is deposited during summer causing control to change temporarily.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 11.0 feet from 2.30 to 6 p. m. February 3 (discharge, 8,610 second-feet). Possibly no flow at gage for parts of several days during October and September, when entire flow may have been diverted into power conduit.

1920–1925: Maximum stage, from recorder, 15.6 feet from 3.30 to 6 a. m. December 12, 1921 (discharge, 19,200 second-feet). Possibly no flow at gage for parts of days when entire flow is diverted into power conduit.

ICE.—Stage-discharge relation not affected by ice.

DIVERSION.—City of Tacoma diverts water 1,200 feet above gage for power purposes. (See pp. 32–34 for records of this diversion.) Total monthly discharge is computed from determinations of combined flow of river and power conduit.

ACCURACY.—Stage-discharge relation changed at high water February 3; affected by silt washed from settling basin and behind dam as indicated in footnote to table of daily discharge. Rating curves for normal control conditions well defined. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by use of discharge integrator except for extremely high water when discharge was determined by applying mean daily gage height to rating table or, for days of considerable variation in gage height, by averaging results obtained by applying mean gage height for shorter intervals. Records good except for low water when amount of backwater effect is doubtful.

COOPERATION.—Gage-height record furnished by city of Tacoma.

Discharge measurements of Nisqually River near La Grande, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Jan. 20	7.41	3,160	Apr. 23	3.44	496	Aug. 6	1.17	34.4
Jan. 21	7.24	2,990	May 30	3.58	519			
Apr. 22	3.67	565	Aug. 5	1.16	32.9			

Daily discharge, in second-feet, of Nisqually River near La Grande, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	155	1,180	614	888	5,810	774	340	724	241	235	219	
2	225	2,010	896	867	7,270	606	275	740	156	314	268	
3	217	1,880	704	1,020	7,820	582	272	714	235	365		
4	50	2,950	1,020	1,030	6,430	537	266	611	295	484		
5		2,330	1,080	1,750	5,660	449	560	833	207	458	90	6
6		1,650	766	1,460	4,100	360	468	1,220	157	199		
7		1,850	650	1,070	2,970	284	509	1,600	232	176		
8		1,760	399	853	2,490	335	480	1,490	190	183	150	
9	5	1,550	334	668	2,100	190	671	1,030	258	256	262	
10		1,010	1,260	868	1,800	138	1,100	940	248	321		
11		906	4,560	704	1,640	120	1,520	858	148	376	70	
12		571	4,170	607	1,390	56	2,160	890	123	406		
13		368	3,660	466	1,280	54	1,700	988	286	185		
14	154	568	2,820	406	1,150	42	1,530	1,060	346	190		
15	182	830	2,420	320	1,180	76	1,450	1,180	220	219		8
16	50	962	1,770	584	889	133	1,720	1,610	309	229	15	
17		832	1,200	742	856	255	1,790	1,740	369	275		
18		872	894	2,240	792	150	1,580	1,520	398	252		
19		4,280	840	2,680	728	204	1,530	1,490	420	323		
20	5	3,900	644	2,740	860	498	1,170	1,470	592	172		
21		3,060	489	3,180	973	486	843	1,540	979	162	60	
22		3,180	367	2,540	1,160	652	713	1,120	810	161		
23		2,270	340	3,900	1,160	484	610	782	634	130		
24	348	1,660	274	2,660	1,360	282	480	772	570	147		
25	2,050	1,220	381	1,960	1,150	364	388	554	746	100		10
26	1,680	1,000	385	1,670	1,070	258	487	552	872	209		
27	1,860	866	390	1,740	992	226	304	577	681	158	20	
28	1,410	622	671	2,080	796	208	310	564	658	243		
29	1,380	549	1,150	3,420	-------	326	392	620	336	204		
30	1,860	632	1,220	5,090	-------	308	529	544	294	112		
31	1,590	-------	899	6,270	-------	321	-------	450	-------	170		------

NOTE.—Braced figures show mean discharge for periods indicated. Stage-discharge relation for these periods affected by deposition of silt. Flow estimated from gage-height graph constructed from gage-height records at regular and auxiliary gages and from notes of visiting engineers and of power-plant attendants. Gage-height record faulty Feb. 17–21 and Mar. 31 to Apr. 3. Discharge Feb. 17–21 estimated by comparison of combined flow with records of Puyallup River at Alderton; discharge Mar. 31 to Apr. 3 estimated by interpolation of combined flow.

Monthly discharge of Nisqually River and Tacoma power conduit near La Grande Wash., for the year ending September 30, 1925

[Drainage area, 287 square miles]

Month	Discharge in second-feet						Combined run-off	
	Combined		Mean		Combined		Inches	Acre-feet
	Maximum	Minimum	River	Power conduit	Mean	Per square mile		
October	2,480	----------	429	383	812	2.83	3.26	49,900
November	4,920	1,030	1,580	595	2,180	7.60	8.48	130,000
December	5,180	954	1,200	656	1,860	6.48	7.47	114,000
January	6,950	948	1,820	646	2,470	8.61	9.93	152,000
February	8,550	1,400	2,350	686	3,040	10.6	11.04	169,000
March	1,350	666	318	675	993	3.46	3.99	61,100
April	2,690	958	872	656	1,530	5.33	5.95	91,000
May	2,300	940	993	623	1,620	5.64	6.50	99,600
June	1,440	772	400	614	1,010	3.52	3.93	60,100
July	917	671	239	555	794	2.77	3.19	48,800
August	825	----------	71.4	485	556	1.94	2.24	34,200
September	----------	----------	8.0	375	383	1.33	1.48	22,800
The year	8,550	----------	846	578	1,430	4.98	67.46	1,030,000

NOTE.—Combined results are comparable with results previously published for Nisqually River below Little Nisqually River near La Grande, Wash.; also for Nisqually River near and at La Grande, Wash.

LITTLE NISQUALLY RIVER NEAR ALDER, WASH.

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

DRAINAGE AREA.—28.5 square miles (measured on Forest Service map).

RECORDS AVAILABLE.—August 1, 1920, to September 30, 1925.

GAGE.—Stevens water-stage recorder on left bank; installed April 16, 1921; inspected by employees of city of Tacoma.

DISCHARGE MEASUREMENTS.—Made by wading or from cable.

CHANNEL AND CONTROL.—One channel at all stages. Banks high, not subject to overflow. Control is riffle in heavy boulders 100 feet below gage. At extremely high stage, gage is on riffle.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 5.1 feet at 6 a. m. November 19 (discharge, 1,440 second-feet); minimum stage recorded, 0.82 foot on September 30 (discharge, 3.5 second-feet).

1920–1925: Maximum stage recorded, from water-stage recorder, 6.4 feet at 3 p. m. January 7, 1923 (discharge, 2,220 second-feet); minimum discharge occurred on September 30, 1925.

ICE.—Stage-discharge relation affected by ice during severe winters. Flow estimated from discharge measurements, observer's notes, and weather records.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed gradually April 23 to May 28 and August 7 to September 30. Logs in channel and on control caused uncertainty as to amount of backwater present after end of March. Rating curve used to April 22 well defined; that used May 29 to August 6 fairly well defined. Shifting-control method used April 23 to May 28 and August 7 to September 30. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Discharge ascertained by applying to rating table mean daily gage height obtained from recorder graph by inspection. Records excellent October, November, and January to March; otherwise fair.

Discharge measurements of Little Nisqually River near Alder, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 1	1.62	78.8	Apr. 22	1.95	143	Aug. 6	0.92	9.8
Jan. 22	3.00	444	May 29	1.31	46.1			

Daily discharge, in second-feet, of Little Nisqually River near Alder, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	317		170	890	160	52	96	42	16	9.6	6.8
2	49	445	200	192	1,090	153	50	96	45	15	9.6	6.8
3	38	397		216	940	141	57	90	87	15	9.6	6.4
4	28	600		218	746	124	102	85	128	15	10	6.4
5	22	472	224	391	769	109	105	89	105	15	10	6.4
6	18	330	182	305	580	96	96	102	87	15	10	6.0
7	15	408	146	221	393	90	87	137	72	15	10	6.0
8	22	386	117	167	336	82	84	137	64	15	11	6.0
9	24	314	111	148	290	75	109	103	60	14	11	6.4
10	25	224	220	169	221	72	155	89	53	15	12	6.4
11	24	195	484	141	182	64	182	82	47	15	11	6.0
12	30	155	346	130	153	62	174	75	44	15	11	6.0
13	69	132	252	117	139	60	146	75	42	14	11	5.8
14	197	187	205	111	128	59	113	80	41	14	11	6.0
15	134	213	272	92	117	59	119	77	39	15	12	6.4
16	82	227	216	84	109	74	153	82	38	14	11	6.0
17	60	240		78	100	90	160	80	34	14	11	6.8
18	46	322		571	90	78	179	80	32	14	12	8.0
19	36	1,140		599	87	82	227	94	31	14	12	14
20	32	792	60	623	94	96	200	78	31	14	12	9.6
21	28	560		600	189	94	157	70	30	13	12	8.4
22	26	468		502	238	92	141	59	28	13	14	7.2
23	24	326		792	281	90	137	52	27	12	15	6.0
24	152	240		480	311	84	126	45	27	12	13	5.8
25	520	182		308	269	77	109	42	24	11	11	5.8
26	408	144		287	246	72	100	40	22	10	11	5.8
27	540	117	80	320	229	66	94	39	21	9.2	11	6.4
28	372	102		393	192	64	90	45	20	9.2	9.6	5.2
29	404	90		732	------	60	90	46	18	9.2	8.4	4.0
30	187	90		940	------	57	96	45	17	9.2	7.6	3.5
31	865	------		990	------	54	------	44	------	9.2	7.6	------

NOTE.—Water-stage recorder not operating Oct. 9, Nov. 29 to Dec. 4, and Dec. 17 to Jan. 1; discharge estimated.

Monthly discharge of Little Nisqually River near Alder, Wash., for the year ending September 30, 1925

[Drainage area, 28.5 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	865	15	146	5.12	5.90	8,980
November	1,140	90	327	11.5	12.83	19,500
December	484	------	149	5.23	6.03	9,160
January	990	78	358	12.6	14.53	22,000
February	1,090	87	336	11.8	12.29	18,700
March	160	54	85.0	2.98	3.44	5,230
April	227	50	123	4.32	4.82	7,320
May	137	39	75.9	2.66	3.07	4,670
June	128	17	45.2	1.59	1.77	2,690
July	16	9.2	13.2	.463	.53	812
August	15	7.6	10.9	.382	.44	670
September	14	3.5	6.54	.229	.26	389
The year	1,140	3.5	138	4.84	65.91	100,000

TACOMA POWER CONDUIT NEAR LA GRANDE, WASH.

LOCATION.—In sec. 9, T. 15 N., R. 4 E., in Thurston County, 750 feet below head gate at diversion dam of municipal power plant of city of Tacoma, 2½ miles southeast of La Grande, Pierce County.

RECORDS AVAILABLE.—October 1, 1919, to September 30, 1925.

GAGE.—Stevens long-distance recorder on right side 750 feet below head gate; inspected by head-gate attendants.

DISCHARGE MEASUREMENTS.—Made from footbridge at gage or by wading.

CHANNEL AND CONTROL.—Open concrete-lined canal for 50 feet below gage merging into concrete-lined tunnel 1.9 miles in length.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 10.6 feet from 5 to 7 a. m. May 14 (discharge, 920 second-feet); no flow when operating gates are closed or when waste gates are opened wide for cleaning settling basin.

1920–1925: Maximum stage recorded, that of May 14, 1925; no flow when operating gates are closed and when waste gates are opened wide.

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Flow regulated at head gate to meet requirements of power plant.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by use of discharge integrator. Records excellent.

Canal diverts water from left bank of Nisqually River in SW. ¼ sec. 9, T. 15 N., R. 4 E. Willamette meridian. Water used for municipal power.

Discharge measurements of Tacoma power conduit near La Grande, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 1	6.50	446	Apr. 23	9.87	810	Aug. 5	8.49	668
Jan. 23	9.59	784	May 30	6.81	456			

Daily discharge, in second-feet, of Tacoma power conduit near La Grande, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	448	480	622	588	562	576	640	582	620	592	606	474
2	429	420	650	632	682	722	705	548	718	572	502	346
3	438	486	661	647	728	730	707	538	723	541	584	470
4	418	486	664	598	702	728	712	620	664	433	604	526
5	326	482	658	623	745	738	582	593	652	444	580	386
6	323	511	676	629	709	734	702	646	668	592	568	410
7	293	580	580	644	680	724	640	704	540	582	580	398
8	312	643	660	630	577	606	624	650	650	566	575	462
9	377	558	678	631	701	732	616	683	660	564	490	364
10	306	642	656	626	722	714	634	584	632	581	570	402
11	269	642	624	578	706	696	693	619	670	535	608	392
12	288	670	668	613	713	729	530	640	685	450	593	455
13	384	663	638	648	709	714	683	574	658	570	552	452
14	462	665	571	658	707	694	678	637	500	573	531	494
15	466	644	657	628	582	590	654	624	608	568	402	385
16	472	494	680	620	712	708	652	648	622	535	297	334
17	391	620	712	627	674	710	682	512	618	538	420	288
18	346	672		560	678	700	638	634	609	562	439	358
19	322	638		649	672	698	558	614	606	438	567	330
20	321	660	700	680	670	680	645	644	591	566	590	262
21	306	639		667	667	583	698	666	458	598	576	252
22	315	674	712	662	595	438	690	674	615	603	608	345
23	300	590	646	692	722	600	696	658	592	590	420	428
24	392	622	680	699	710	684	740	548	564	574	340	465
25	428	636	646	594	721	710	704	652	574	580	309	416
26	402	629	662	684	722	714	508	652	568	462	376	387
27	434	575	643	716	725	714	682	686	610	596	407	272
28	476	638	577	690	705	700	648	746	520	601	273	234
29	472	620	636	719	-------	527	638	707	604	610	300	237
30	480	563	632	720	-------	674	715	527	620	603	310	234
31	480	-------	646	681	-------	660	-------	490	-------	592	451	-------

NOTE.—Water-stage recorder not operating December 18–21; discharge estimated.

Monthly discharge of Tacoma power conduit near La Grande, Wash., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	480	269	383	23,600
November	674	420	595	35,400
December		571	656	40,300
January	720	560	646	39,700
February	745	562	686	38,100
March	738	438	675	41,500
April	740	508	656	39,000
May	746	490	623	38,300
June	723	458	614	36,500
July	610	433	555	34,100
August	608	273	485	29,800
September	526	234	375	22,300
The year	746	234	578	419,000

PUYALLUP RIVER BASIN

PUYALLUP RIVER NEAR ELECTRON, WASH.

LOCATION.—In NE. ¼ NW. ¼ sec. 3, T. 16 N., R. 6 E., 1,000 feet above intake of Puget Sound Power & Light Co.'s flume, a quarter of a mile below Mowich River, and 10 miles southeast of Electron, Pierce County.

DRAINAGE AREA.—91 square miles (measured on Plate IV, Water-Supply Paper 313).

RECORDS AVAILABLE.—January 1, 1909, to September 30, 1925.

GAGE.—Friez water-stage recorder on left bank at gaging bridge; inspected by William Chambers. Datum lowered 1.00 foot March 9, 1918.

DISCHARGE MEASUREMENTS.—Made from gaging bridge at gage.

CHANNEL AND CONTROL.—Channel straight for 150 feet above and below gage. Banks high and wooded. One channel at all stages. Bed composed of boulders and glacial débris; shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.18 feet at 7.45 a. m. December 11 (discharge, 2,830 second-feet); minimum stage recorded, 1.12 feet from 8 p. m. October 11 to 2 a. m. October 12 (discharge, 169 second-feet).

1909–1925: Maximum stage estimated from incomplete gage-height record, 6.4 feet at noon December 18, 1917 (discharge, 4,800 second-feet); minimum discharge estimated at 100 second-feet on December 12, 1922, when stage-discharge relation was affected by ice.

ICE.—Stage-discharge relation slightly affected by ice except during mild winters. Flow estimated from observer's notes and weather records.

DIVERSIONS.—None above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed frequently throughout year; affected by ice December 22–26. Standard rating curve developed in 1923 and well defined below 1,500 second-feet. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph. Shifting-control method used throughout year. Records good.

COOPERATION.—Discharge measurements and gage-height record furnished by Puget Sound Power & Light Co.

Discharge measurements of Puyallup River near Electron, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 11	1.14	173	Feb. 22	1.84	339	June 12	2.15	527
Oct. 18	1.26	203	Mar. 10	1.54	248	July 2	2.36	615
Nov. 7	2.18	459	Mar. 18	1.49	217	July 21	2.39	659
Nov. 18	2.23	473	Apr. 7	1.65	290	Aug. 1	2.55	799
Dec. 30	2.55	699	Apr. 21	2.06	410	Aug. 23	1.97	391
Jan. 15	1.55	245	May 4	2.03	491	Sept. 6	2.00	448
Feb. 7	2.55	660	May 25	2.39	672	Sept. 20	1.59	243
Feb. 14	1.86	321	June 5	1.81	364			

Daily discharge, in second-feet, of Puyallup River near Electron, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	498	383	486	486	1,140	308	273	490	458	651	950	462
2	478	598	520	454	1,500	344	264	486	446	663	805	466
3	390	604	474	422	1,750	330	267	478	422	729	675	540
4	287	756	520	406	1,460	327	270	494	390	777	669	486
5	248	550	494	478	1,180	311	278	621	369	742	756	438
6	222	454	454	402	875	296	281	847	366	681	798	494
7	212	458	418	358	681	281	296	988	376	633	819	525
8	226	426	380	334	571	278	344	749	446	627	912	550
9	222	478	438	330	486	267	486	615	502	723	861	470
10	192	355	1,260	352	426	253	663	576	482	882	735	454
11	176	338	2,560	317	406	245	898	576	434	950	711	434
12	209	311	1,800	302	380	234	1,060	598	470	875	723	450
13	234	296	1,700	281	348	232	833	645	555	791	582	486
14	341	515	1,340	273	317	226	639	770	510	861	454	466
15	352	540	1,020	250	317	229	735	875	535	798	394	383
16	267	486	669	242	305	248	868	1,100	588	854	366	327
17	229	478	515	237	290	242	805	1,060	627	861	394	305
18	209	525	486	571	284	216	627	1,100	639	749	458	341
19	204	1,500	446	555	276	355	530	1,220	717	699	566	276
20	204	1,180	446	687	299	426	458	1,260	935	693	742	256
21	209	1,140	426	675	341	362	410	1,460	1,220	763	663	278
22	202	1,020		627	352	390	386	1,060	1,140	763	515	338
23	222	805		763	386	372	380	868	905	763	398	390
24	466	675	400	540	380	352	358	770	861	717	341	422
25	1,100	593		442	366	355	344	687	988	699	338	372
26	663	530		422	355	327	341	669	1,100	669	454	320
27	615	490	418	422	344	314	341	735	988	935	383	245
28	498	466	566	418	314	305	348	847	833	988	317	219
29	498	466	861	805	-------	284	402	735	735	770	320	197
30	478	470	681	1,140	-------	278	466	576	717	791	410	192
31	410	-------	525	1,180	-------	270	-------	506	-------	920	478	-------

Monthly discharge of Puyallup River near Electron, Wash., for the year ending September 30, 1925

[Drainage area, 91 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	1,100	176	347	3.81	4.39	21,300
November	1,500	296	596	6.55	7.31	35,500
December	2,560	380	707	7.77	8.96	43,500
January	1,180	237	489	5.37	6.19	30,100
February	1,750	276	576	6.33	6.59	32,000
March	426	216	299	3.29	3.79	18,400
April	1,060	264	488	5.36	5.98	29,000
May	1,460	478	789	8.67	10.00	48,500
June	1,220	366	658	7.23	8.07	39,200
July	988	627	775	8.52	9.82	47,700
August	950	317	580	6.37	7.34	35,700
September	550	192	386	4.24	4.73	23,000
The year	2,560	176	558	6.13	83.17	404,000

PUYALLUP RIVER AT ALDERTON, WASH.

LOCATION.—On line between sec. 25, T. 20 N., R. 4 E., and sec. 30, T. 20 N., R. 5 E., at highway bridge 1 mile north of Alderton, Pierce County, and 1½ miles above Stuck River.

DRAINAGE AREA.—410 square miles (measured on Plate IV, Water-Supply Paper 313).

RECORDS AVAILABLE.—November 20, 1914, to September 30, 1925.

GAGE.—Chain gage on highway bridge, installed December 15, 1920; read by Mrs. H. D. Foster.

DISCHARGE MEASUREMENTS.—Made from bridge at gage.

CHANNEL AND CONTROL.—Bed composed of silt and gravel; shifting. Right bank is overflowed at gage height about 9 feet; left bank high and not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.86 feet on December 11 (discharge, 8,380 second-feet); minimum stage recorded, 0.55 foot October 9 (discharge, 415 second-feet).

1915–1925: Maximum stage recorded, 11.5 feet at 11 a. m. December 12, 1921 (discharge, 21,200 second-feet); minimum stage, 0.28 foot September 22, 1924 (discharge, 228 second-feet).

ICE.—Stage-discharge relation slightly affected by ice for a few days during severe winters.

DIVERSIONS.—None.

REGULATION.—The operation of the Puget Sound Power & Light Co.'s plant at Electron does not materially affect the natural flow as the pondage utilized is small.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined below 5,000 second-feet. Gage read to hundredths once daily. Some diurnal fluctuation. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Puyallup River at Alderton, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 15	1.09	787	Mar. 17	1.62	1,320	July 29	1.53	1,220
Dec. 5	2.30	1,990	Apr. 15	2.20	2,000	Sept. 3	.93	665
Jan. 16	1.56	1,230	May 18	2.62	2,500			
Feb. 13	1.70	1,370	June 19	1.76	1,490			

Daily discharge, in second-feet, of Puyallup River at Alderton, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	510	935	2,190	2,190	3,970	980	800	1,080	1,180	1,180	1,230	610
2	445	1,280	1,490	1,230	4,830	1,030	845	1,080	1,080	1,230	1,130	610
3	445	1,490	1,030	2,460	4,650	1,080	760	1,080	1,030	1,380	980	610
4	478	1,820	2,320	1,820	5,200	980	800	1,080	845	1,380	935	800
5	478	1,820	2,060	1,710	4,310	1,180	845	1,710	682	1,490	935	845
6	445	1,600	1,710	1,600	3,490	890	800	1,820	760	1,280	1,080	760
7	445	1,380	1,380	1,280	2,740	890	760	1,820	800	1,180	1,130	760
8	445	1,600	1,280	1,380	2,740	935	720	2,060	935	1,180	1,130	760
9	415	1,600	1,180	1,380	2,190	935	1,030	1,710	1,280	1,180	1,180	720
10	478	1,600	2,880	1,820	1,820	720	1,600	1,600	1,380	1,490	1,180	720
11	575	1,490	8,380	1,380	1,710	682	1,820	1,380	980	1,710	1,130	682
12	610	1,490	6,340	1,380	1,280	682	3,330	1,600	1,080	1,600	1,180	682
13	575	845	5,010	1,600	1,380	760	2,600	1,600	1,230	1,490	1,130	682
14	760	845	5,200	1,710	1,280	800	1,940	1,710	1,280	1,380	845	760
15	800	1,380	5,200	1,600	1,180	845	1,940	1,940	1,380	1,490	645	682
16	935	1,820	5,200	1,280	1,180	935	2,060	2,320	1,380	1,380	610	645
17	890	1,820	5,200	890	1,180	1,230	2,320	2,600	1,380	1,380	610	510
18	845	1,820	5,010	935	980	980	2,060	2,460	1,380	1,380	682	542
19	682	4,140	1,710	2,320	845	1,180	1,820	2,740	1,490	1,280	845	542
20	645	3,970	1,710	2,190	935	1,940	1,820	2,880	1,710	1,180	1,080	575
21	645	3,970	1,080	2,320	980	1,600	1,490	2,320	1,600	1,180	1,230	575
22	510	3,650	935	2,460	1,080	1,380	1,380	2,190	2,320	1,280	1,080	478
23	615	2,460	1,230	3,650	1,180	1,490	1,280	1,710	1,940	1,180	720	720
24	720	2,460	1,180	2,600	1,280	1,380	1,180	1,710	1,600	1,230	682	682
25	2,460	2,460	1,130	2,060	1,230	1,600	1,030	1,710	1,710	1,080	510	610
26	1,940	2,320	1,490	1,820	1,180	1,380	1,030	1,380	2,190	1,130	682	542
27	1,710	2,190	1,710	1,820	1,130	1,080	935	1,940	1,940	1,230	760	510
28	1,280	2,060	2,060	1,820	980	1,030	890	2,060	1,600	1,600	682	542
29	1,380	2,190	2,460	2,460	-------	935	935	1,820	1,600	1,230	510	542
30	1,280	1,940	3,180	4,480	-------	890	1,080	1,380	1,380	1,230	542	510
31	1,280	-------	2,460	4,310	-------	845	-------	1,130	-------	1,130	610	-------

Monthly discharge of Puyallup River at Alderton, Wash., for the year ending September 30, 1925

[Drainage area, 410 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	2,460	415	830	2.02	2.33	51,000
November	4,140	845	2,010	4.90	5.47	120,000
December	8,380	935	2,750	6.71	7.74	169,000
January	4,480	890	2,000	4.88	5.63	123,000
February	5,200	845	2,030	4.95	5.16	113,000
March	1,940	682	1,070	2.61	3.01	65,800
April	3,330	720	1,400	3.41	3.80	83,300
May	2,880	1,080	1,790	4.37	5.04	110,000
June	2,320	682	1,370	3.34	3.73	81,500
July	1,710	1,080	1,310	3.20	3.69	80,600
August	1,230	510	893	2.18	2.51	54,900
September	845	478	640	1.56	1.74	38,100
The year	8,380	415	1,510	3.68	49.85	1,090,000

PUYALLUP RIVER AT PUYALLUP, WASH.

LOCATION.—In NE. ¼ sec. 20, T. 20 N., R. 4 E., 1 mile northwest of Puyallup, about three-fourths of a mile above Clark Creek, and 3½ miles below mouth of Stuck River, Pierce County.

DRAINAGE AREA.—914 square miles (measured on Plates IV and XI, Water-Supply Paper 313).

RECORDS AVAILABLE.—May 1, 1914, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on left bank since December 3, 1919.

DISCHARGE MEASUREMENTS.—Made from cable 50 feet below gage.

CHANNEL AND CONTROL.—Stream bed composed of light silt; shifting. Control formed by section of stream bed extending some distance downstream.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 10.70 feet at 11 p. m. December 11 (discharge, 18,600 second-feet); minimum discharge, 1,190 second-feet at 8.30 a. m. September 30.

1914–1925: Maximum stage recorded, 34.15 feet[3] at 4.45 p. m. December 18, 1917 (discharge, 40,500 second-feet); minimum stage recorded, 17.36 feet at 8 p. m. November 18, 1917 (discharge, 726 second-feet).

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—Two hydroelectric plants, owned by the Puget Sound Power & Light Co., divert water above station. Water for the Electron plant is diverted from Puyallup River 10 miles above Electron into an equalizing basin having a capacity of 185 acre-feet; water used at this plant is returned directly into the river. Water for the Dieringer plant is diverted from White River at Buckley into Lake Tapps (capacity, 51,000 acre-feet) and after use is discharged into Stuck River.

REGULATION.—See "Diversions."

ACCURACY.—Stage-discharge relation changed frequently. Well-defined rating curve developed during 1921 used as standard form of curve for this station, and changes in control indicated by frequent discharge measurements have been assumed to yield curves parallel to this. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph and corrected as to time and amount of shift in accordance with results of discharge measurements. Records good.

Discharge measurements of Puyallup River at Puyallup, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 15	2.45	1,650	Mar. 17	3.85	2,970	July 29	3.99	3,370
Dec. 4	3.90	3,290	Apr. 15	5.24	4,700	Sept. 3	2.87	1,920
Jan. 16	4.29	3,090	May 18	6.55	7,490			
Feb. 13	4.36	3,500	June 19	4.59	3,830			

[3] Referred to gage 1¼ miles above present site and set to different datum.

Daily discharge, in second-feet, of Puyallup River at Puyallup, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,690	1,890	2,530	3,160	8,530	2,110	2,530	2,930	2,530	2,930	3,040	1,690
2	1,890	1,820	2,720	3,280	10,200	2,440	2,530	2,930	2,530	2,720	2,440	1,630
3	1,890	2,110	2,820	3,410	10,800	2,620	2,440	2,720	2,350	2,720	2,720	1,690
4	1,570	2,440	2,930	3,040	10,800	2,530	2,350	2,930	2,350	2,720	2,620	1,690
5	1,410	2,350	3,410	3,700	8,770	2,530	2,350	3,280	2,270	2,720	2,530	1,690
6	1,510	2,190	3,040	3,700	7,350	2,530	2,350	5,090	2,190	2,820	2,620	1,510
7	1,510	2,190	2,440	3,410	6,200	2,350	2,440	6,430	2,270	2,620	2,620	1,510
8	1,510	2,350	2,620	3,280	4,650	1,960	2,350	6,200	2,440	2,620	2,620	1,690
9	1,510	1,960	2,720	3,040	4,030	2,350	2,530	4,870	2,620	2,620	2,350	1,630
10	1,460	2,190	5,400	3,280	3,550	2,350	3,700	2,720	2,720	2,820	2,530	1,630
11	1,410	2,440	14,700	2,720	3,860	2,350	6,200	3,040	2,620	3,040	2,530	1,630
12	1,320	2,110	13,600	3,410	3,550	2,350	5,970	3,160	2,620	2,930	2,620	1,630
13	1,460	1,960	10,000	3,040	3,410	2,190	6,890	3,160	2,930	2,930	2,440	1,570
14	1,510	2,190	7,580	2,930	3,160	2,270	5,310	3,550	2,930	2,820	2,270	1,690
15	1,570	2,720	7,350	2,820	2,530	1,890	4,650	4,030	2,820	2,820	1,890	1,630
16	1,460	2,110	5,970	2,720	2,720	2,350	5,090	5,090	3,040	2,820	1,690	1,570
17	1,410	2,270	3,860	2,620	2,620	2,720	5,530	5,090	3,280	2,820	1,820	1,510
18	1,360	2,350	3,160	2,530	2,530	2,530	4,870	6,890	3,280	2,720	2,030	1,510
19	1,250	4,860	3,040	4,030	2,530	2,620	4,650	6,660	3,410	2,350	1,890	1,510
20	1,410	4,870	3,040	4,430	2,530	3,280	4,430	5,090	3,700	2,720	2,030	1,360
21	1,460	3,700	2,720	7,580	2,530	2,930	4,030	6,200	4,650	2,720	2,110	1,510
22	1,460	4,870	2,820	6,430	2,190	2,530	3,410	5,970	5,090	2,820	2,190	1,460
23	1,360	3,160	2,440	6,660	2,440	2,930	3,160	4,650	4,220	2,720	1,690	1,460
24	1,510	3,160	2,350	4,870	2,620	3,280	3,040	4,030	3,700	2,720	1,820	1,460
25	2,440	2,930	1,960	3,040	2,620	3,700	2,930	3,860	3,700	2,620	1,690	1,510
26	2,030	2,930	2,270	3,280	2,620	2,930	2,440	3,550	4,030	2,270	1,690	1,410
27	2,030	2,350	2,440	3,700	2,620	3,040	2,530	4,650	3,860	2,820	1,750	1,250
28	1,960	2,620	2,930	4,220	2,440	3,040	2,440	5,090	3,860	2,930	1,630	1,460
29	1,890	2,530	4,870	5,970	-------	2,350	2,440	5,310	3,410	2,930	1,630	1,460
30	2,110	2,190	5,310	8,530	-------	2,530	2,720	3,550	3,160	2,820	1,570	1,410
31	2,030	-------	3,860	8,770	-------	2,620	-------	2,110	-------	3,040	1,690	-------

Monthly discharge of Puyallup River at Puyallup, Wash., for the year ending September 30, 1925

[Drainage area, 914 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	2,440	1,250	1,630	----------	----------	100,000
November	4,870	1,820	2,660	----------	----------	158,000
December	14,700	1,960	4,420	----------	----------	272,000
January	8,770	2,530	4,120	----------	----------	253,000
February	10,800	2,190	4,440	----------	----------	247,000
March	3,700	1,890	2,590	----------	----------	159,000
April	6,890	2,350	3,610	----------	----------	215,000
May	6,890	2,110	4,350	----------	----------	267,000
June	5,090	2,190	3,150	----------	----------	187,000
July	3,040	2,270	2,760	----------	----------	170,000
August	3,040	1,570	2,150	----------	----------	132,000
September	1,690	1,250	1,550	----------	----------	92,200
The year	14,700	1,250	3,110	3.40	46.15	2,250,000

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.

WHITE RIVER AT BUCKLEY, WASH.

LOCATION.—River gage in SE. ¼ sec. 34, T. 20 N., R. 6 E., at Northern Pacific Railway bridge; flume gage in sec. 35, T. 20 N., R. 6 E., on left side of White River, half a mile above Northern Pacific Railway crossing, both about a mile northeast of Buckley, Pierce County.

DRAINAGE AREA.—424 square miles (measured on Plate XI, Water-Supply Paper 313).

RECORDS AVAILABLE.—April 22, 1899, to August, 1903 (gage-height record only January 1, 1902, to August 31, 1903); June 8 to December 31, 1911; January 18, 1913, to September 30, 1925.

GAGE.—Stevens eight-day water-stage recorder on left bank of river 40 feet below railway bridge at end of concrete wall protecting abutment of bridge, installed January 9, 1917; and Stevens long-distance recorder with transmitter at stilling well on right side of flume 800 feet below head gate and recorder in gate house, installed January 12, 1918. Recorders inspected by employees of Puget Sound Power & Light Co.

DISCHARGE MEASUREMENTS.—Measurements of river made by wading or from railway bridge; measurements of flume made from footbridge 8 feet below flume gage.

CHANNEL AND CONTROL.—River bed composed of small boulders and gravel; shifting. Gradient steep. One channel prior to flood of January 23, 1919; two channels after the flood. Right bank of main channel low and flat. Left bank protected by concrete wing wall. Various types of protection to undercrossing of city of Tacoma's municipal water supply have also been factors in control for this stream. Flume control formed by long section of flume bottom below gage. A rock spill a quarter of a mile below gage is partial control also. Stage-discharge relation affected by variable quantity of rocks which work their way from intake to rock spill.

EXTREMES OF DISCHARGE.—Maximum combined daily discharge of river and flume, 6,060 second-feet December 11; minimum combined daily discharge, 358 second-feet October 12.

1899–1901; 1911; and 1913–1925: Maximum combined daily discharge, 18,100 second-feet December 18, 1917; minimum combined daily discharge, 349 second-feet November 19, 1917.

ICE.—Stage-discharge relation slightly affected by ice during severe winters.

DIVERSIONS.—White River flume diverts water from river one-half mile above gage. Combined discharge is computed from separate determinations of flow of river and flume.

ACCURACY.—River and flume rated separately. Stage-discharge relation of both river and flume changed continuously throughout year. Standard form of rating curves fairly well defined, and changes in control indicated by frequent discharge measurements have been assumed to yield curves parallel to standard forms. Operation of water-stage recorders satisfactory. Daily discharge determined by combining results obtained for river and for flume by using shifting-control method. Records good.

COOPERATION.—Complete records furnished by Puget Sound Power & Light Co.

Discharge measurements of White River and White River flume at Buckley, Wash., during the year ending September 30, 1925

Date	White River		White River flume		Date	White River		White River flume	
	Gage height	Discharge	Gage height	Discharge		Gage height	Discharge	Gage height	Discharge
	Feet	*Sec.-ft.*	*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*	*Feet*	*Sec.-ft.*
Oct. 10	621.00	21.6	1.87	378	Apr. 9	621.46	72.6	5.70	1,660
Oct. 27	621.40	70.0	3.72	934	Apr. 25			3.44	886
Nov. 14	621.50	51.7	3.19	780	Apr. 27	621.83	146		
Nov. 26	621.70	87.7	4.38	1,150	May 12	623.48	783	5.32	1,510
Jan. 3	621.86	100	5.44	1,440	May 25	624.26	1,380	4.04	1,160
Jan. 10	621.52	86.9	5.20	1,340	June 10	622.44	316	4.27	1,150
Jan. 26	621.54	89.2	5.52	1,480	June 14	621.36	67.9	4.06	1,210
Jan. 31	625.70	2,830			June 25	623.57	855	4.43	1,300
Feb. 25			3.98	980	July 23	621.20	57.6	3.50	950
Feb. 26	621.37	28.7			Aug. 19	621.13	38.0	2.94	760
Mar. 9	621.22	24.4	3.52	846	Sept. 5	621.10	34.5	2.68	647
Mar. 26	621.38	33.6			Sept. 25	621.08	31.3	2.22	496
Apr. 2			3.72	956					

Combined daily discharge, in second-feet, of White River and White River flume at Buckley, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	589	618	944	1,850	3,480	917	1,040	1,450	1,570	1,320	1,080	645
2	600	1,040	1,040	1,690	4,400	1,060	999	1,500	1,520	1,180	970	565
3	604	997	968	1,540	4,440	1,130	959	1,530	1,420	1,210	969	629
4	481	1,180	1,120	1,410	4,200	1,130	987	1,390	1,310	1,260	901	630
5	420	1,020	1,200	1,700	3,410	1,100	987	1,880	1,270	1,270	933	596
6	392	848	1,010	1,600	2,720	1,020	1,020	2,400	1,270	1,240	934	597
7	378	828	887	1,350	2,430	954	1,060	3,090	1,280	1,250	967	597
8	392	844	807	1,220	2,060	920	1,210	2,630	1,320	1,250	1,000	662
9	420	808	760	1,140	1,710	880	1,790	2,300	1,930	1,250	1,040	628
10	392	381	3,300	1,480	1,440	837	655	2,180	1,410	1,310	966	644
11	361	407	6,060	1,160	1,240	803	3,020	2,190	1,360	1,370	930	612
12	358	644	5,600	1,200	1,320	784	3,430	2,260	1,410	1,530	931	595
13	406	578	5,240	1,060	1,200	784	3,280	2,350	1,610	1,190	896	580
14	436	759	4,370	989	1,080	751	2,730	2,700	1,960	1,150	827	580
15	524	1,280	3,550	900	1,020	802	2,440	2,970	1,470	1,120	727	520
16	458	1,150	2,590	830	994	872	2,700	3,380	1,680	1,150	710	473
17	414	1,080	2,210	796	909	976	2,770	3,080	1,810	1,190	694	457
18	386	994	1,860	1,260	880	855	2,590	3,640	1,870	1,050	759	518
19	372	2,820	1,730	2,080	854	1,080	2,380	3,500	1,880	1,020	825	532
20	372	3,580	1,540	2,600	859	1,770	2,170	3,750	1,820	1,210	895	486
21	372	2,540	1,450	2,880	857	1,510	1,930	4,120	2,480	1,140	930	471
22	373	3,010	1,660	2,280	873	1,770	1,650	3,570	2,550	1,280	862	456
23	372	2,420	1,690	3,160	958	1,760	1,610	2,990	2,160	1,280	678	487
24	551	1,980	1,410	2,050	990	1,280	1,510	2,750	1,940	1,280	621	518
25	1,860	1,630	1,290	1,840	989	1,410	1,430	2,310	2,070	1,200	579	517
26	1,120	1,300	1,130	1,480	1,020	1,610	1,320	2,230	2,250	1,170	693	486
27	961	1,240	1,030	1,390	1,020	1,410	1,290	2,400	2,120	1,280	661	499
28	851	993	1,340	1,410	950	1,210	1,280	2,470	2,090	1,270	580	424
29	758	952	2,110	2,310	-------	1,170	1,230	2,990	1,660	1,050	564	409
30	781	956	2,330	3,090	-------	1,100	1,390	2,110	1,460	976	563	420
31	683	-------	2,050	3,640	-------	1,040	-------	1,700	-------	1,080	628	-------

Combined monthly discharge of White River and White River flume at Buckley, Wash., for the year ending September 30, 1925

[Drainage area, 424 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	1,860	358	562	1.33	1.53	34,600
November	3,580	381	1,300	3.07	3.42	77,400
December	6,060	760	2,070	4.88	5.63	127,000
January	3,640	796	1,720	4.06	4.68	106,000
February	4,440	854	1,730	4.08	4.25	96,100
March	1,770	751	1,120	2.64	3.04	68,900
April	3,430	655	1,760	4.15	4.63	105,000
May	4,120	1,390	2,570	6.06	6.99	158,000
June	2,550	1,270	1,730	4.08	4.55	103,000
July	1,530	976	1,210	2.85	3.29	74,400
August	1,080	563	817	1.93	2.22	50,200
September	662	409	541	1.28	1.43	32,200
The year	6,060	358	1,430	3.37	45.66	1,030,000

LAKE WASHINGTON BASIN

CEDAR RIVER AT CEDAR FALLS, WASH.

LOCATION.—In sec. 4, T. 22 N., R. 8 E., below Seattle municipal power plant at Cedar Falls, King County, and 3½ miles above Taylor Creek.

DRAINAGE AREA.—83 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 9, 1914, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on right bank, 0.7 mile below power plant; installed April 8, 1914; inspected by E. C. and F. H. Hoffstrom.

DISCHARGE MEASUREMENTS.—Made from cable 90 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of small boulders and gravel. Shifts at extremely high water. Banks high; one channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 7.61 feet at 10 p. m. February 7 (discharge, 1,880 second-feet); minimum stage recorded, 3.86 feet from 6.30 to 11 p. m. August 8 (discharge, 4.3 second-feet).

1914–1925: Maximum stage recorded, 11.4 feet at 9 a. m. December 19, 1917 (discharge, 6,290 second-feet); no flow at 4 p. m. November 25, 1917, and August 18, 1923.

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—Seattle municipal power plant diverts water direct from Cedar Lake through a pressure pipe and returns it to the river at the plant above the gage. Practically the entire flow at low water is carried through the plant.

REGULATION.—Flow partly controlled by storage and release of water in Cedar Lake Reservoir to accommodate requirements of Seattle municipal power plant.

ACCURACY.—Stage-discharge relation changed October 21 to December 3, December 17, and February 3–12. Rating curves well defined. shifting-control method used October 21 to December 3 and February 3–12. Operation of water-stage recorder excellent except as noted in footnote to table of daily discharge. Daily discharge ascertained by use of discharge integrator. Records excellent.

Discharge measurements of Cedar River at Cedar Falls, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 1	4.88	160	Jan. 22	6.00	667	June 3	4.88	154
Oct. 20	4.68	100	Feb. 5	7.05	1,450	July 2	4.55	74.9
Dec. 3	5.30	290	Mar. 10	5.24	283	Aug. 7	4.15	18.5
Dec. 5	5.57	407	Mar. 12	5.02	206	Sept. 2	4.25	28.0

Daily discharge, in second-feet, of Cedar River at Cedar Falls, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	179	112	295	309	422	378	107	268	381	74	42	28
2	248	92	283	358	579	365	106	236	368	70	62	38
3	102	166	242	357	921	331	108	236	251	71	46	34
4	70	170	276	370	1,140	332	106	262	266	71	69	32
5	93	174	346	380	1,130	312	160	292	293	69	114	54
6	154	129	308	384	964	305	102	288	202	67	25	29
7	179	179	172	406	1,020	330	102	396	137	80	7	22
8	156	182	251	436	1,510	290	100	384	236	106	5	28
9	139	130	230	480	1,200	308	98	368	208	85	7	32
10	150	173	250	485	1,020	288	100	352	182	60	6	32
11	200	177	313	460	835	206	110	336	121	57	23	32
12	178	173	324	468	624	207	116	429	120	105	30	48
13	181	150	274	472	430	214	247	345	124	83	34	275
14	210	156	243	412	365	208	427	304	146	124	34	90
15	222	122	391	408	355	208	456	253	200	72	38	71
16	151	66	533	400	397	220	446	307	203	48	35	104
17	145	127	644	386	340	217	466	267	220	48	41	130
18	180	143	596	314	379	222	450	384	192	48	34	166
19	102	118	562	403	341	213	350	380	193	84	30	164
20	106	117	560	430	449	206	466	433	176	47	38	76
21	132	166	331	438	390	219	486	430	117	46	65	182
22	168	130	316	424	330	198	485	410	92	45	35	72
23	132	170	366	389	335	205	474	400	84	44	38	62
24	134	189	358	405	324	208	472	274	90	52	49	78
25	154	160	338	380	360	212	460	362	86	59	50	140
26	90	216	376	378	314	192	344	366	84	45	44	144
27	97	204	296	375	316	183	373	360	83	48	38	130
28	122	304	317	402	295	180	372	370	189	58	44	159
29	135	306	308	436	-------	188	344	356	82	58	49	203
30	128	258	313	450	-------	180	308	252	83	52	74	120
31	130	-------	305	527	-------	124	-------	200	-------	43	157	-------

NOTE.—Water-stage recorder not operating Oct. 1. Intake partly clogged Aug. 6 and 7. Discharge estimated Oct. 1 from power-plant output by Seattle officials; Aug. 6 and 7 from partial graph and engineer's observations.

Monthly discharge of Cedar River at Cedar Falls, Wash., for the year ending September 30, 1925

[Drainage area, 83 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	248	70	147			9,040
November	306	66	165			9,820
December	644	172	346			21,300
January	527	309	410			25,200
February	1,510	295	610			33,900
March	378	124	240			14,800
April	486	98	291			17,300
May	433	200	332			20,400
June	381	82	174			10,400
July	124	43	65.1			4,000
August	157	5	44.0			2,710
September	275	22	92.5			5,500
The year	1,510	5	241	2.90	39.37	174,000

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.—In sec. 17, T. 22 N., R. 7 E., 1¾ miles above intake of Seattle water-supply system at Landsberg, King County, 3 miles northeast of Ravensdale, and 5 miles below Taylor Creek.

DRAINAGE AREA.—135 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 30, 1914, to September 30, 1925; July 25, 1895, to September 30, 1898, at Clifford Bridge, 2 miles below present gage; March 24, 1901, to April 30, 1912, at intake of Seattle water-supply system, 1¾ miles below present gage. Early records not exactly comparable with those for present site because of small difference in drainage area.

GAGE.—Stevens continuous water-stage recorder installed on right bank April 29, 1914; inspected by T. S. Beals.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.

CHANNEL AND CONTROL.—Bed composed of large boulders and gravel. Control formed by broad riffle about 1,200 feet below gage; shifts at extremely high water. Logs may lodge on riffle. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 8.83 feet at 12.30 a. m. February 8 (discharge, 2,740 second-feet); minimum stage, 4.33 feet at 11 p. m. September 7 and 11 a. m. September 20 (discharge, 218 second-feet).

1914–1925: Maximum stage from recorder, 13.55 feet at 10 p. m. December 29, 1917 (discharge, 7,500 second-feet); minimum stage, 4.35 feet at 1 a. m. October 15, 1914 (discharge, 162 second-feet).

ICE.—Stage-discharge relation not affected by ice.

DIVERSION.—None above the station (see Cedar River at Cedar Falls, Wash.).

REGULATION.—Flow partly controlled by storage and release of water in Cedar Lake Reservoir to accommodate requirements of Seattle municipal power plant.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined between 200 and 7,000 second-feet. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by use of discharge integrator. Records excellent.

The following discharge measurements were made:

October 21, 1924: Gage height, 4.47 feet; discharge, 252 second-feet.

June 4, 1925: Gage height, 5.66 feet; discharge, 622 second-feet.

August 6, 1925: Gage height, 4.57 feet; discharge, 270 second-feet.

Daily discharge, in second-feet, of Cedar River near Landsberg, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	308	400	562		1,580	850	536	662	688	386	321	258
2	438	374	562		1,680	838	527	660	662	374	331	252
3	302	404	534		2,050	845	523	666	640	372	322	250
4	264	482	573		2,210	800	520	652	617	371	330	244
5	267	488	674		2,130	797	557	672	619	368	376	253
6	309	427	632		1,890	763	512	672	548	364	326	246
7	334	476	492		1,830	774	508	824	492	374	274	231
8	312	510	532	950	2,430	740	510	826	529	396	268	225
9	332	484	534		2,050	730	510	781	532	380	266	230
10	316	460	923		1,820	714	514	760	514	360	263	230
11	364	480	1,100		1,610	646	538	712	464	353	272	229
12	344	451	902		1,360	632	568	810	465	389	292	228
13	348	422	772		1,080	634	626	732	477	374	296	415
14	403	460	695		965	650	803	689	478	376	296	314
15	419	472	1,030		944	636	844	658	508	376	291	245
16	337	421	1,040	880	958	668	859	680	509	337	288	281
17	328	423	1,060	856	869	660	878	674	534	337	289	303
18	350	458	976	938	898	658	890	728	501	338	280	336
19	282	650	906	1,060	865	660	838	720	490	368	277	323
20	250	600	926	1,180	956	662	906	772	488	343	276	270
21	280	566	693	1,220	892	648	906	772	457	338	307	345
22	310	543	627	1,110	839	672	911	754	435	354	282	256
23	282	544	668	1,140	836	670	902	722	412	372	290	248
24	354	528	653	1,060	812	645	888	663	400	354	288	242
25	550	504	632	988	834	678	863	702	391	353	290	284
26	489	517	636	974	810	635	752	704	390	340	297	293
27	439	535	612	1,030	802	621	772	692	386	334	280	282
28	442	563	708	1,050	778	614	760	700	456	340	281	320
29		582	810	1,360	-------	616	725	684	382	339	273	355
30	440	575	840	1,470	-------	609	700	627	382	340	295	320
31		-------	850	1,750	-------	555	-------	606	-------	324	380	-------

NOTE.—Water-stage recorder not operating Oct. 29 to Nov. 1 and Dec. 31 to Jan. 15; discharge estimated from flow at Cedar Falls, records of near-by streams, and weather records.

Monthly discharge of Cedar River near Landsberg, Wash., for the year ending September 30, 1925

[Drainage area, 135 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	550	250	357	----------	----------	22,000
November	650	374	493	----------	----------	29,300
December	1,100	492	747	----------	----------	45,900
January	1,750	----------	1,040	----------	----------	64,000
February	2,430	778	1,310	----------	----------	72,800
March	850	555	688	----------	----------	42,300
April	911	508	705	----------	----------	42,000
May	826	606	709	----------	----------	43,600
June	688	382	495	----------	----------	29,500
July	396	324	359	----------	----------	22,100
August	380	263	297	----------	----------	18,300
September	415	225	277	----------	----------	16,500
The year	2,430	225	619	4.59	62.31	448,000

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.—In NE. ¼ sec. 29, T. 27 N., R. 10 E., 300 feet above Sunset Falls, 2 miles southeast of Index and mouth of North Fork, Snohomish County.

DRAINAGE AREA.—355 square miles (revised; measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1902, to September 30, 1905; April 26, 1911, to September 30, 1925.

GAGE.—Inclined and vertical staff gage on right bank; installed April 19, 1914; read by Mrs. George Bingham.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Sunset Falls, 300 feet below gage, forms solid rock control. Stage-discharge relation changed by blasting at falls in July, 1914, and by shifting of channel above falls during floods.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 14.0 feet on December 11 (discharge, 19,200 second-feet); minimum stage recorded, 0.65 foot on September 30 (discharge, 271 second-feet).

1902–1905; 1911–1925: Maximum stage recorded, 22.6 feet at 9 a. m. December 18, 1917 (discharge, 47,000 second-feet); minimum stage recorded, 0.54 foot September 30, 1915 (discharge, 262 second-feet).

ICE.—Stage-discharge relation slightly affected by ice during severe winters. Discharge estimated from gage height and weather records.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent; not affected by ice. Rating curve well defined below 16,000 second-feet. Staff gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

The following discharge measurement was made:

September 7, 1925: Gage height, 1.14 feet; discharge, 412 second-feet.

Daily discharge, in second-feet, of South Fork of Skykomish River near Index, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,540	2,210	1,440	3,370	7,150	1,880	1,200	3,370	2,860	2,210	753	417
2	2,960	3,480	1,440	2,860	17,700	2,040	1,140	3,590	2,760	2,570	753	387
3	3,700	2,760	1,440	2,480	14,600	2,210	1,320	3,060	2,480	2,300	673	387
4	2,210	3,370	1,440	2,040	6,990	2,390	1,580	2,960	2,300	2,210	673	387
5	1,580	3,260	1,440	3,160	5,760	2,120	1,580	4,050	2,390	2,040	633	359
6	1,320	2,570	1,380	2,390	4,540	1,800	1,880	5,910	2,760	1,880	633	359
7	1,140	2,570	1,200	2,040	4,800	1,580	1,880	6,990	2,570	1,720	633	387
8	1,140	2,570	1,090	1,880	3,060	1,440	2,480	4,930	2,960	1,720	633	417
9	1,140	2,210	1,140	1,650	4,800	1,380	4,050	4,800	3,160	1,720	594	417
10	990	1,880	6,510	2,040	2,300	1,260	4,670	4,540	3,370	1,880	594	387
11	940	1,880	19,200	1,720	1,960	1,200	6,670	4,930	2,860	1,720	556	387
12	1,140	1,720	15,600	1,650	2,660	1,090	8,170	4,540	3,480	1,650	556	359
13	1,380	1,440	12,200	1,440	1,880	1,040	6,670	5,910	3,590	1,580	556	359
14	1,880	1,320	8,720	1,320	1,580	1,040	4,930	6,210	3,160	1,440	594	359
15	1,580	1,380	9,690	1,140	1,510	1,200	4,670	6,670	3,480	1,320	556	346
16	1,320	1,380	5,760	1,090	1,440	1,320	5,060	9,490	4,050	1,320	519	359
17	1,140	1,440	3,810	1,040	1,320	1,260	5,200	8,530	3,810	1,260	483	359
18	990	1,380	2,860	1,960	1,260	1,140	4,170	8,350	3,810	1,200	483	346
19	890	5,910	2,570	3,700	1,200	1,580	3,590	8,530	4,050	1,090	449	333
20	843	4,540	2,390	3,370	1,200	1,720	3,160	7,990	4,540	1,090	483	346
21	798	3,810	2,210	2,040	1,720	1,580	2,760	7,480	5,480	1,040	483	333
22	753	4,050	1,960	3,160	1,800	2,210	2,480	6,990	4,540	1,040	633	320
23	753	3,590	1,720	4,410	2,210	1,880	2,210	4,290	3,700	990	519	320
24	4,410	2,960	1,720	2,960	2,480	1,720	2,040	3,930	3,810	940	594	320
25	5,060	2,390	1,650	2,390	2,210	1,880	1,960	3,810	4,410	940	483	308
26	4,170	2,040	1,510	2,040	2,300	1,650	1,880	4,050	4,800	890	519	308
27	4,540	1,720	1,260	2,210	2,390	1,580	1,800	4,410	4,050	890	519	320
28	3,160	1,580	1,650	2,300	2,040	1,440	1,880	4,670	3,160	890	483	296
29	3,370	1,580	3,930	4,050	-------	1,320	2,210	4,050	2,760	843	417	283
30	3,160	1,510	2,860	8,170	-------	1,260	2,960	3,370	2,390	798	417	271
31	2,570	-------	3,590	12,200	-------	1,200	-------	3,060	-------	798	417	-------

Monthly discharge of South Fork of Skykomish River near Index, Wash., for the year ending September 30, 1925

[Drainage area, 355 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	5,060	753	2,120	5.97	6.88	130,000
November	5,910	1,320	2,480	6.99	7.80	148,000
December	19,200	1,090	4,040	11.4	13.14	248,000
January	12,200	1,040	2,850	8.03	9.26	175,000
February	17,700	1,200	3,740	10.5	10.93	208,000
March	2,390	1,040	1,560	4.39	5.06	95,900
April	8,170	1,140	3,210	9.04	10.09	191,000
May	9,490	2,960	5,340	15.0	17.29	328,000
June	5,480	2,300	3,450	9.72	10.84	205,000
July	2,570	798	1,420	4.00	4.61	87,300
August	753	417	558	1.57	1.81	34,300
September	417	271	351	.989	1.10	20,900
The year	19,200	271	2,590	7.30	98.81	1,870,000

OLNEY CREEK NEAR STARTUP, WASH.

LOCATION.—In SE. ¼ sec. 12, T. 28 N., R. 8 E., 1½ miles above Stickney Bridge, 5 miles northeast of Startup, Snohomish County.

DRAINAGE AREA.—10 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1922, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on left bank; installed April 20, 1923; inspected by Dale Annis.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.

CHANNEL AND CONTROL.—Banks high; not subject to overflow. Channel straight for 300 feet below gage. Control is of boulders and solid rock outcroppings; may shift at high water.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 5.73 feet at 1.20 p. m. December 10 (discharge, 1,450 second-feet); minimum stage, 0.73 foot from 2 to 3 p. m. September 29 (discharge, 5.2 second-feet).

1923–1925: Maximum stage recorded from water-stage recorder, 6.1 feet at 5 a. m. February 12, 1924 (discharge, 1,520 second-feet); minimum stage, that of September 29, 1925.

ICE.—Stage-discharge relation seriously affected by ice during severe winters.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent; not affected by ice. Rating curve well defined. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height determined from gage-height graph by inspection or, for days of considerable variation in stage, by averaging results obtained by applying mean gage heights for shorter periods. Records excellent except for estimated periods.

Discharge measurements of Olney Creek near Startup, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Dec. 8	1.44	43.3	Feb. 4	2.62	231	Aug. 13	0.86	9.40
Jan. 30	3.69	567	May 26	1.45	43.6	Sept. 29	.73	4.94
Jan. 31	3.66	564	Aug. 13	.82	7.26			

Daily discharge, in second-feet, of Olney Creek near Startup, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		98	49		432	69	50	95	42	19	6.5	9.7
2		132	75		528	122	54	76	44	20	6.5	9.1
3		122	62		430	132	56	58	53	18	6.5	8.5
4		178	78		247	140	58	62	51	16	6.5	7.9
5		212	90		205	96	55	92	44	15	6.5	7.3
6	130	127	64	120	156	79	56	116	46	15	6.2	7.0
7		154	53		126	64	55	144	42	14	6.2	7.0
8		120	42		102	54	76	96	72	14	6.2	7.0
9		96	60		86	47	118	76	57	14	6.2	7.0
10		79	680		70	42	135	95	69	14	6.0	7.6
11		77	509	87	61	38	229	94	52	13	6.0	8.5
12	209	62	741		56	39	369	86	105	13	6.0	7.3
13		52	622		51	45	174	105	106	12	7.0	7.0
14		160	293		50	47	103	109	81	12	9.1	6.8
15		170	310		64	67	118	114	73	11	8.2	6.8
16		127	140		52	90	188	134	63	11	6.8	7.6
17		120	94		42	87	157	112	55	10	6.5	9.4
18		142	83	115	39	67	116	112	53	10	6.0	8.2
19	150	261	72		37	154	178	103	52	9.7	6.0	8.2
20		142	62		49	171	120	98	56	9.4	6.0	7.9
21		240	51		110	106	92	114	54	9.1	5.8	7.3
22		198	40		105	136	85	69	44	9.1	30	7.0
23		160	38		137	101	86	54	39	8.8	44	6.5
24		115	36		167	83	91	50	39	8.8	18	6.2
25		92	35	87	129	95	69	52	40	8.2	12	6.0
26	193	73	33		110	76	59	56	34	7.9	39	5.8
27	390	63	31	220	102	62	55	58	29	7.6	23	5.8
28	199	57			79	68	55	69	25	7.3	16	5.5
29	219	58	200	427	-------	57	65	68	23	6.8	12	5.5
30	149	55		584	-------	52	82	65	21	6.8	10	5.8
31	120	-------		536	-------	48	-------	47	-------	6.5	9.4	-------

NOTE.—Gage-height record Oct. 1–25 lost in mail. Water-stage recorder not operating Dec. 18 to Jan. 28. Discharge determined Oct. 12, Dec. 22, 27, Jan. 11 and 25 from staff gage reading and Dec. 18–21 and 23–26 by interpolation. Estimates of discharge made by comparison with records of Sultan River. Braced figures give mean discharge for periods indicated.

Monthly discharge of Olney Creek near Startup, Wash., for the year ending September 30, 1925

[Drainage area, 10 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	-------	-------	157	15.7	18.10	9,650
November	261	52	125	12.5	13.95	7,440
December	741	31	169	16.9	19.48	10,400
January	584	-------	164	16.4	18.91	10,100
February	528	37	136	13.6	14.16	7,550
March	171	38	81.7	8.17	9.42	5,020
April	369	50	107	10.7	11.94	6,370
May	144	47	86.4	8.64	9.96	5,310
June	106	21	52.1	5.21	5.81	3,100
July	20	6.5	11.5	1.15	1.33	707
August	44	5.8	11.3	1.13	1.30	695
September	9.7	5.5	7.24	.724	.81	431
The year	741	5.5	92.2	9.22	125.17	66,800

SULTAN RIVER NEAR SULTAN, WASH.

LOCATION.—In sec. 8, T. 28 N., R. 8 E., at Horseshoe Bend, 4½ miles north of Sultan and mouth of river, in Snohomish County.

DRAINAGE AREA.—88 square miles (measured on topographic maps).

RECORDS AVAILABLE.—August 18, 1911, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on left bank one-fourth mile above Horseshoe Bend; inspected by Jesse Reese and N. S. Berridge.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.

CHANNEL AND CONTROL.—In canyon; control formed by large rocks, boulders, and heavy gravel; not likely to change except at extremely high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from high-water mark in well, 13.0 feet on December 10 (discharge, 13,700 second-feet); minimum stage, 0.17 foot at midnight September 24 (discharge, 44 second-feet).

1911–1925: Maximum stage recorded, from high-water mark in well, 18.5 feet on December 12, 1921 (discharge, 24,600 second-feet); minimum discharge recorded that of September 24, 1925.

ICE.—Stage-discharge relation seldom affected by ice.

DIVERSIONS.—City of Everett diverts water above station for municipal use. (See results of discharge measurements of Everett water-supply conduit, p. 155).

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed at high water December 13; not affected by ice. Rating curves well defined below 10,000 second-feet. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection from recorder graph or, for days of considerable variation in stage, by averaging results obtained by applying mean gage heights for shorter intervals. Records excellent except for periods when recorder was not operating.

COOPERATION.—Gage-height record furnished by city of Everett, Wash.

Discharge measurements of Sultan River near Sultan, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Dec. 9	2.18	360	Dec. 19	2.96	615	May 27	3.45	833
Dec. 12	9.45	7,220	Feb. 1	6.67	3,190	Aug. 14	.90	116
Dec. 13	7.65	4,210	Feb. 2	8.85	5,640	Sept. 30	.20	46.3
Dec. 18	3.30	752	Feb. 3	9.71	6,890			

Daily discharge, in second-feet, of Sultan River near Sultan, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,160	925	492	1,320	3,870	640	356	1,400	526	362	161	100
2	3,190	1,420	562	1,320	6,180	1,100	370	1,200	492	384	152	98
3	2,320	1,200	600	1,020	5,280	1,150	429	950	492	476	136	95
4	1,160		640	1,030	2,780	1,010	492	750	460	460	124	92
5	723		744	1,860	2,180	874	509	1,100	429	399	117	90
6	526		581	1,080	1,680	736	544	1,400	450	319	115	88
7	460		460	810	1,380	598	544	1,750	420	285	109	85
8	581		399	702	1,080	460	765	1,300	750	290	105	82
9	640	1,100	417	620	900	414	1,370	925	620	339	106	80
10	476		4,970	950	702	364	1,680	1,080	590	384	108	78
11	384		5,910	660	600	329	1,930	1,180	550	384	106	75
12	1,000		5,950	620	526	326	2,530	1,020	780	345	103	72
13	1,150		4,340	526	492	342	1,800	1,180	1,000	290	104	70
14	1,450	640	3,390	444	476	348	1,200	1,350	800	269	114	68
15	1,060	832	4,090	384	526	664	1,290	1,410	600	262	112	65
16	702	766	1,660	345	476	788	1,940	1,720	800	265	110	62
17	526	900	1,050	316	414	681	1,760	1,540	750	276	108	60
18	429	937	788	1,850	367	492	1,230	1,760	702	254	106	58
19	356	4,390	640	1,780	345	748	1,290	1,780	766	213	104	55
20	309	1,820	526	2,330	384	950	975	1,510	832	202	102	52
21	276	2,400	460	1,800	930	702	788	1,510	975	198	100	50
22	262	2,480	399	1,690	1,050	942	723	1,020	878	196	200	48
23	267	1,650	339	2,220	1,340	766	670	766	723	189	247	45
24	2,510	1,150	311	1,240	1,480	640	620	702	744	184	200	47
25	4,250	855	299	878	1,120	723	560	681	878	175	150	45
26	2,640	681	285	744	1,000	581	500	766	855	173	250	45
27	2,660	562	278	925	950	476	450	855	723	175	180	45
28	1,720	509	1,510	1,000	702	492	500	855	562	181	120	50
29	1,790	526	2,980	2,900	-------	444	850	832	460	176	120	48
30	1,780	526	2,180	5,350	-------	384	1,150	723	460	166	110	46
31	1,230	-------	1,510	4,790	-------	350	-------	600	-------	161	100	-------

NOTE.—Water-stage recorder not operating Nov. 3–13, Mar. 4–7, Apr. 23 to May 8, June 6–17, and Aug. 15 to Sept. 22. Discharge estimated from recorded range of stage and by comparison with records of Deer Creek. Braced figures give estimated mean discharge for periods indicated.

Monthly discharge of Sultan River near Sultan, Wash., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	4,250	262	1,320	81,200
November	4,390	----------	1,210	72,000
December	5,950	278	1,570	96,500
January	5,350	316	1,400	86,100
February	6,180	345	1,400	77,800
March	1,150	326	629	38,700
April	2,530	356	994	59,100
May	1,780	600	1,150	70,700
June	1,000	420	669	39,800
July	476	161	272	16,700
August	250	100	132	8,120
September	100	45	66.5	3,960
The year	6,180	45	899	651,000

MIDDLE FORK OF SNOQUALMIE RIVER NEAR NORTH BEND, WASH.

LOCATION.—In NE. ¼ SE. ¼ sec. 10, T. 23 N., R. 8 E., 1 mile southeast of North Bend, King County, and 2¾ miles above junction with North Fork.

DRAINAGE AREA.—173 square miles (revised; measured on topographic maps).

RECORDS AVAILABLE.—August 10, 1907, to February 29, 1908; August 25, 1908, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on left bank; installed August 7, 1915; inspected by employees of Puget Sound Power & Light Co.

DISCHARGE MEASUREMENTS.—Made by wading or from highway bridge 2¼ miles below station.

CHANNEL AND CONTROL.—Bed composed of large boulders. Channel slightly curved above and below station. Control shifts at extremely high water. Right bank high; left bank low and heavily wooded. Stage of zero flow according to measurements made September 11, 1919, gage height −0.7 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 9.02 feet at 5.40 p. m. December 11 (discharge, 10,600 second-feet); minimum stage recorded, 1.33 feet from 6 to 8 p. m. September 30 (discharge, 133 second-feet).

1907–1925: Maximum stage recorded, 12.2 feet at 10 a. m. December 18, 1917 (discharge, 18,300 second-feet); discharge may have been greater during floods of November, 1909, and November, 1910; minimum discharge that of September 30, 1925.

ICE.—Stage-discharge relation seldom affected by ice.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed November 20; not affected by ice. Rating curves fairly well defined. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph by inspection or, for days of considerable variation in stage, by averaging results obtained by applying mean gage heights for shorter intervals. Record good.

COOPERATION.—Discharge measurements and gage-height record furnished by Puget Sound Power & Light Co.

Discharge measurements of Middle Fork of Snoqualmie River near North Bend, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Nov. 26	3.25	1,010	Apr. 17	4.73	2,580	Aug. 5	1.84	283
Feb. 18	2.56	559	Apr. 30	3.68	1,380	Sept. 24	1.41	149

Daily discharge, in second-feet, of Middle Fork of Snoqualmie River near North Bend, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,270	1,170	837	1,390	4,180	802	546	1,490	1,030	851	315	209
2	2,550	1,720	865	1,640	5,170	1,090	563	1,640	1,010	851	307	202
3	2,620	1,600	802	1,340	4,990	1,170	624	1,340	970	928	294	195
4	1,450	2,080	823	1,210	3,680	1,090	706	1,340	893	949	271	189
5	1,050	1,950	893	1,800	2,830	942	712	1,910	914	907	254	182
6	813	1,500	742	1,390	2,340	809	748	2,830	978	742	251	175
7	702	1,400	652	1,130	1,860	706	781	3,280	928	688	254	177
8	757	1,550	596	1,090	1,540	658	2,080	2,140	1,090	682	254	217
9	1,010	1,400	640	942	1,300	602	1,960	1,740	1,210	712	251	207
10	841	1,170	5,540	1,100	1,050	546	2,610	1,800	1,490	767	248	190
11	696	1,220	9,210	1,000	928	519	2,980	2,080	1,170	774	239	184
12	900	1,130	5,880	1,000	809	498	3,930	1,960	1,390	712	231	175
13	1,350	915	5,640	960	724	487	3,680	2,400	1,550	624	228	177
14	1,600	1,010	5,020	920	676	481	2,270	2,760	1,250	590	226	181
15	1,550	1,400	5,640	880	664	525	2,020	2,900	1,400	568	256	184
16	1,130	1,260	2,400	840	624	624	2,470	2,520	1,550	546	231	175
17	1,300	1,260	1,500	800	568	634	2,610	3,360	1,500	563	210	175
18	715	1,170	1,250	1,500	536	558	2,150	3,360	1,500	508	200	186
19	620	4,000	1,000	2,340	514	754	1,690	3,200	1,600	441	195	179
20	536	2,760	914	2,400	530	1,300	1,390	3,130	1,750	421	198	175
21	492	2,270	830	2,270	701	986	1,170	2,830	2,020	412	205	160
22	450	2,320	800	1,740	872	1,170	1,010	2,080	1,860	407	239	152
23	415	1,910	770	2,610	1,090	1,090	986	1,540	1,490	393	274	146
24	1,470	1,490	740	1,690	1,170	921	986	1,490	1,440	366	262	148
25	3,220	1,260	700	1,210	1,010	949	851	1,490	1,740	358	217	148
26	2,620	1,030	675	1,000	1,050	816	774	1,540	1,800	362	239	146
27	2,620	879	718	1,260	1,030	730	774	1,740	1,590	366	234	144
28	2,140	802	2,270	1,390	914	688	837	1,690	1,340	366	236	144
29	1,890	844	2,760	2,760	-------	629	1,000	1,640	1,090	354	229	140
30	1,950	872	1,960	4,360	-------	585	1,390	1,300	1,020	326	222	135
31	1,600	-------	1,540	4,990	-------	546	-------	1,170	-------	318	216	-------

NOTE.—Water-stage recorder not operating Dec. 17–19, 22–26, Jan. 10–18, Feb. 21, Apr. 18, June 13–20, and Aug. 29 to Sept. 5. Discharge for days of missing gage-height record estimated by comparison with records of North and South Forks of Snoqualmie River.

Monthly discharge of Middle Fork of Snoqualmie River near North Bend, Wash., for the year ending September 30, 1925

[Drainage area, 173 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	3,220	415	1,400	8.09	9.33	86,100
November	4,000	802	1,510	8.73	9.74	89,800
December	9,210	596	2,050	11.8	13.60	126,000
January	4,990	800	1,640	9.48	10.93	101,000
February	5,170	514	1,550	8.96	9.33	86,100
March	1,300	481	771	4.46	5.14	47,400
April	3,930	546	1,540	8.90	9.93	91,600
May	3,520	1,170	2,150	12.4	14.30	132,000
June	2,020	893	1,350	7.80	8.70	80,300
July	949	318	576	3.33	3.84	35,400
August	315	195	241	1.39	1.59	14,800
September	217	135	173	1.00	1.12	10,300
The year	9,210	135	1,250	7.23	97.55	901,000

NORTH FORK OF SNOQUALMIE RIVER NEAR NORTH BEND, WASH.

LOCATION.—In NE. ¼ sec. 26, T. 24 N., R. 8 E., at Gabriel ranch, 2 miles above mouth and 3½ miles northeast of North Bend, King County.

DRAINAGE AREA.—105 square miles (revised; measured on topographic maps).

RECORDS AVAILABLE.—July 4, 1907, to September 30, 1925.

GAGE.—Friez water-stage recorder on right bank 200 yards southeast of ranch house; installed September 26, 1916; inspected by employees of Puget Sound Power & Light Co.

DISCHARGE MEASUREMENTS.—Made by wading or from cable 200 yards above mouth.

CHANNEL AND CONTROL.—Bed composed of boulders and gravel; shifting at extremely high stages. Left bank not subject to overflow; right bank fairly high, not subject to overflow except at extremely high stages. Stage of zero flow according to measurements made August 25, 1922, gage height 0.0 ±0.3 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 8.71 feet at 8.15 p. m. December 10 (discharge, 6,830 second-feet); minimum stage, 1.63 feet at midnight September 30 (discharge, 64 second-feet).

1907–1925: Maximum stage determined by leveling to high-water mark, 14.5 feet November 18, 1911 (discharge, 11,100 second-feet); water above gage November 18, 19, 23, 24, 29, and 30, 1909, and stage may have exceeded that reached in 1911. Minimum discharge 56 second-feet September 26–28, 1910, and September 16, 1924.

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed December 12. Rating curves fairly well defined. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height determined from gage-height graph by inspection or, for days of considerable variation in stage, by averaging results obtained by applying mean gage heights for shorter intervals. Records good.

COOPERATION.—Discharge measurements and gage-height record furnished by Puget Sound Power & Light Co.

Discharge measurements of North Fork of Snoqualmie River near North Bend, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Apr. 14	4.29	1,270	Aug. 6	1.83	86
Apr. 29	3.49	645	Sept. 25	1.67	66

Daily discharge, in second-feet, of North Fork of Snoqualmie River near North Bend, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,780	785	541	1,040	2,620	496	381	992	486	331	97	92
2	1,430	1,190	571	1,080	3,640	692	394	1,080	465	324	94	88
3	1,530	1,020	553	960	3,640	762	416	848	491	347	91	85
4	896	1,310	571	832	2,440	692	455	800	465	347	88	82
5	634	1,150	614	1,180	1,970	602	465	1,120	440	312	87	86
6	491	896	508	920	1,530	524	496	1,580	455	261	85	88
7	390	912	445	748	1,210	475	491	1,700	435	242	83	88
8	390	848	403	686	968	440	628	1,180	513	238	81	92
9	502	712	412	602	840	412	1,180	992	602	242	80	85
10	445	385	3,650	718	426	377	1,580	1,010	770	238	79	83
11	372	602	4,290	602	167	356	1,800	1,160	614	268	78	79
12	500	518	3,280	589	149	339	2,380	1,030	872	216	77	79
13	750	455	3,040	535	229	339	2,020	1,210	1,380	196	81	78
14	1,000	666	2,200	480	316	327	1,380	1,380	960	183	88	76
15	700	1,090	3,640	430	486	331	1,270	1,380	864	176	94	73
16	600	920	1,530	398	460	372	1,700	1,640	880	167	89	74
17	500	984	1,020	364	435	381	1,700	1,530	762	160	86	80
18	400	976	868	1,060	408	351	1,220	1,530	699	151	85	85
19	356	2,960	717	1,530	390	445	1,110	1,480	706	145	82	78
20	312	1,860	565	1,530	398	936	920	1,430	740	140	81	79
21	280	1,480	531	1,430	547	718	762	1,380	824	136	80	79
22	263	1,380	497	1,150	647	880	686	968	748	133	93	73
23	253	1,120	463	1,640	864	785	686	740	608	128	128	71
24	864	904	429	1,080	816	654	748	706	595	127	145	69
25	1,430	778	395	840	712	686	608	686	666	125	127	67
26	1,700	647	361	725	686	583	535	692	660	118	133	66
27	1,800	565	327	856	634	508	513	778	595	114	140	66
28	1,380	513	1,080	872	559	486	541	748	486	112	122	66
29	1,200	541	2,140	1,750	-------	440	654	755	394	107	108	66
30	1,170	571	1,580	3,400	-------	407	848	589	385	103	101	65
31	960	-------	1,230	3,900	-------	385	-------	518	-------	99	96	------

NOTE.—Water-stage recorder not operating satisfactorily Oct. 12–18 and Dec. 18, 19, and 21–26. Discharge estimated by comparison with records of Middle and South Forks of Snoqualmie River and by interpolation.

Monthly discharge of North Fork of Snoqualmie River near North Bend, Wash., for the year ending September 30, 1925

[Drainage area, 105 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	1,800	253	815	7.76	8.95	50,100
November	2,960	385	958	9.12	10.18	57,000
December	4,290	327	1,240	11.8	13.60	76,200
January	3,900	364	1,090	10.4	11.99	67,000
February	3,640	149	1,010	9.62	10.02	56,100
March	936	327	522	4.97	5.73	32,100
April	2,380	381	952	9.07	10.12	56,600
May	1,700	518	1,080	10.3	11.87	66,400
June	1,380	385	652	6.21	6.93	38,800
July	347	99	193	1.84	2.12	11,900
August	145	77	96.1	.915	1.05	5,910
September	92	65	77.9	.742	.83	4,640
The year	4,290	65	723	6.89	93.39	523,000

SOUTH FORK OF SNOQUALMIE RIVER AT NORTH BEND, WASH.

LOCATION.—In SE. ¼ sec. 9, T. 23 N., R. 8 E., at Cooper ranch, half a mile south of North Bend, King County, and 3½ miles by river above mouth.

DRAINAGE AREA.—84 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 21, 1907, to February 29, 1908, and June 26, 1908, to September 30, 1925.

GAGE.—Friez water-stage recorder on left bank at Cooper ranch; installed October 2, 1916; inspected by employees of Puget Sound Power & Light Co.

DISCHARGE MEASUREMENTS.—Made by wading or from cable 150 feet below gage.

CHANNEL AND CONTROL.—Bed composed of gravel; shifting at extremely high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water stage recorder, 9.31 feet at 12.30 a. m. December 12 (discharge, 4,540 second-feet); minimum stage recorded, 1.24 feet on September 30 (discharge, 73 second-feet).

1907–1925: Maximum stage recorded "Water over gage" November 3, 4, 19, 23, and 29, 1909 (gage height and discharge not determined); minimum stage recorded, 0.70 foot October 10 and 11, 1908 (discharge, 68 second-feet).

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve fairly well defined below 2,000 second-feet. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph by inspection or, for days of considerable variation in stage, by averaging results obtained by applying mean gage heights for shorter intervals. Records good.

COOPERATION.—Discharge measurements and gage-height record furnished by Puget Sound Power & Light Co.

Discharge measurements of South Fork of Snoqualmie River at North Bend, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Nov. 25	3.24	602	May 3	3.63	787	Aug. 2	1.61	120
Feb. 17	3.40	742	May 6	4.58	1,220	Sept. 23	1.28	77
Apr. 26	3.12	588	July 8	2.21	282			

Daily discharge, in second-feet, of South Fork of Snoqualmie River at North Bend, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	625	530	388	785	2,240	672	512	785	590	385	119	96
2	700	630	388	830	2,360	740	512	852	590	365	119	95
3	750	695	385	808	2,600	785	512	808	570	359	115	92
4	478	830	405	762	2,180	762	530	785	530	340	113	92
5	362	762	428	942	1,780	718	530	942	550	321	112	90
6	299	650	405	920	1,560	672	550	1,220	550	299	111	88
7	260	630	388	852	1,350	630	570	1,400	530	284	109	90
8	260	650	378	830	1,220	610	630	1,150	550	272	108	93
9	330	610	385	785	1,180	590	830	942	590	263	106	91
10	311	530	1,310	875	1,010	550	1,100	942	610	257	105	88

Daily discharge, in second-feet, of South Fork of Snoqualmie River at North Bend, Wash., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
11	269	530	3,720	808	942	550	1,300	1,030	570	249	105	85
12	272	461	3,150	852	898	530	1,500	988	610	237	104	85
13	395	415	2,420	785	830	512	1,450	1,060	695	223	104	82
14	428	408	1,750	740	785	512	1,200	1,180	650	212	111	81
15	461	421	2,500	672	762	512	1,030	1,220	630	204	116	82
16	369	418	1,500	650	740	530	1,080	1,400	672	198	109	84
17	308	412	1,200	610	695	550	1,180	1,400	650	193	102	84
18	272	408	1,000	785	672	530	1,060	1,300	630	196	101	82
19	252	650	850	695	650	550	965	1,300	610	201	98	82
20	240	1,010	718	1,150	650	672	875	1,300	610	190	98	84
21	234	898	672	1,250	672	650	785	1,180	650	182	98	81
22	226	1,010	630	1,080	718	718	718	965	610	172	102	80
23	226	875	590	1,250	785	762	695	808	530	163	119	78
24	311	740	570	1,060	830	718	650	762	512	154	119	77
25	875	630	530	942	808	718	610	740	530	156	109	77
26	762	550	512	875	808	672	590	740	530	161	111	76
27	762	495	512	920	785	630	570	785	512	152	109	76
28	718	444	590	965	740	590	590	785	478	145	106	76
29	610	415	830	1,300	-------	570	630	762	428	137	101	74
30	695	402	920	1,780	-------	550	740	672	412	130	100	73
31	610	-------	830	2,600	-------	512	-------	630	-------	124	97	-------

NOTE.—Water-stage recorder not operating satisfactorily Oct. 1–3 and Dec. 14–19; discharge estimated by comparison with records of North and Middle Forks of Snoqualmie River.

Monthly discharge of South Fork of Snoqualmie River at North Bend, Wash., for the year ending September 30, 1925

[Drainage area, 84 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	875	226	441	5.25	6.05	27,100
November	1,010	402	604	7.19	8.02	35,900
December	3,720	378	995	11.8	13.60	61,200
January	2,600	610	973	11.6	13.37	59,800
February	2,600	650	1,120	13.2	13.85	62,200
March	785	512	622	7.40	8.53	38,200
April	1,500	512	816	9.71	10.83	48,600
May	1,400	630	995	11.8	13.60	61,200
June	695	412	573	6.82	7.61	34,100
July	385	124	223	2.65	3.06	13,700
August	119	97	108	1.29	1.49	6,640
September	96	73	83.8	.998	1.11	4,990
The year	3,720	73	626	7.45	101.12	454,000

STILAGUAMISH RIVER BASIN

DEER CREEK AT OSO, WASH.

LOCATION.—In sec. 5, T. 32 N., R. 7 E., 1¼ miles above Oso and junction with North Fork of Stilaguamish River, Snohomish County.

DRAINAGE AREA.—84 square miles (measured on topographic maps).

RECORDS AVAILABLE.—August 11, 1917, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on left bank about 250 feet below mouth of 3-mile canyon; inspected by F. L. Bloxham.

DISCHARGE MEASUREMENTS.—Made by wading or from highway bridge at Oso.

CHANNEL AND CONTROL.—Bed composed of boulders and gravel overlying bedrock. Banks high. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.50 feet at 2.30 p. m. December 10 (discharge, 7,230 second-feet); minimum stage, 0.43 foot from 6 p. m. to midnight September 30 (discharge, 24 second-feet).

1918–1925: Maximum stage from high-water mark in well, 11.7 feet December 12, 1921 (discharge, 10,400 second-feet); minimum stage that of September 30, 1925.

ICE.—Stage-discharge relation affected by ice during severe winters.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed February 9 and 21, gradually February 21 to June 29 and on July 12 and 28; affected by ice December 17–26. Rating curve used prior to first change well defined; that used February 9–21 and July 12–28 fairly well defined by evidence on recorder graph; that used June 30 to July 11 and July 29 to September 30 well defined. Shifting-control method used February 21 to June 29. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection from gage-height graph or, for days of considerable variation in stage, by averaging results obtained by applying mean gage heights for shorter intervals. Records October to January and June to September good; remaining records fair.

COOPERATION.—Gage-height record furnished by Interurban Land Co.

Discharge measurements of Deer Creek at Oso, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Dec. 14	4.57	1,500	June 29	1.61	148	Sept. 8	0.56	32.0
Feb. 5	4.96	1,660	June 30	1.59	143			
Feb. 6	4.15	1,160	Aug. 4	.61	35.5			

Daily discharge, in second-feet, of Deer Creek at Oso, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,050	720	344	770	2,820	457	239	1,160	391	127	40	40
2	2,330	1,150	589	1,090	3,270	931	239	932	355	124	38	52
3	1,120	672	509	695	3,380	878	274	626	338	126	37	41
4	527	1,250	565	509	1,590	1,220	335	605	319	122	35	38
5	341	1,060	585	1,330	1,630	605	379	960	313	112	35	35
6	250	585	491	648	1,190	403	410	1,340	324	105	34	34
7	284	1,110	419	474	1,070	303	397	1,550	287	96	34	33
8	486	878	335	441	720	248	588	988	400	88	33	33
9	464	585	373	541	622	204	1,070	720	370	86	33	32
10	282	441	4,150	650	313	189	1,310	878	338	86	33	32
11	219	406	3,680	450	252	185	1,440	960	280	84	32	33
12	1,380	}	4,820	400	257	183	1,630	795	428	81	32	32
13	1,050	}	2,720	360	208	175	1,020	988	509	76	33	30
14	1,130	}	2,740	320	163	209	648	1,100	376	81	39	30
15	633	400	2,600	280	138	509	687	1,130	400	77	42	29
16	410	}	850	250	110	457	1,370	1,340	403	70	36	32
17	308	}	730	230	87	457	1,470	1,220	355	66	34	32
18	248	}	620	2,020	73	327	822	1,310	341	62	32	33
19	212	}	500	1,190	64	554	988	1,250	327	60	30	38
20	181	}	430	1,840	86	584	822	1,160	347	58	30	33
21	162	1,400	370	1,080	1,280	367	605	960	376	57	30	30
22	148	}	300	1,970	1,340	840	491	585	332	57	184	29
23	143	}	280	2,100	1,510	590	425	457	264	56	62	28
24	1,240	}	270	795	1,340	413	382	425	255	53	149	27
25	2,620	}	250	546	932	605	316	441	282	51	70	27
26	1,460	}	230	560	1,040	416	274	474	270	50	291	27
27	1,220	400	212	1,250	1,230	324	260	565	241	48	130	26
28	795	}	1,280	1,040	672	324	298	1,000	187	44	63	26
29	2,020	}	1,930	2,330	-------	274	457	768	150	42	50	26
30	1,840	}	1,210	3,860	-------	246	626	605	147	41	43	25
31	1,100	-------	822	2,970	-------	241	-------	457	-------	40	40	-------

NOTE.—Water-stage recorder not operating satisfactorily Nov. 12–30, and intake clogged Jan. 11–17; discharge estimated by comparison with records of near-by streams. Braced figures give estimated mean discharge for periods indicated.

Monthly discharge of Deer Creek at Oso Wash., for the year ending September 30, 1925

[Drainage area, 84 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	2,620	143	860	10.2	11.76	52,900
November			782	9.31	10.39	46,500
December	4,820	212	1,140	13.6	15.68	70,100
January	3,860	230	1,060	12.6	14.53	65,200
February	3,380	64	978	11.6	12.08	54,300
March	1,220	175	443	5.27	6.08	27,200
April	1,630	239	676	8.05	8.98	40,200
May	1,550	425	895	10.7	12.34	55,000
June	509	147	324	3.86	4.31	19,300
July	127	40	75.0	.893	1.03	4,610
August	291	30	58.2	.693	.80	3,580
September	52	25	32.1	.382	.43	1,910
The year	4,820	25	609	7.25	98.41	441,000

SKAGIT RIVER BASIN

SKAGIT RIVER BELOW RUBY CREEK, NEAR MARBLEMOUNT, WASH.

LOCATION.—In Whatcom County, three-fourths of a mile below Ruby Creek, 5 miles above Reflector Bar, and 23 miles northeast of Marblemount, Skagit County.

DRAINAGE AREA.—978 square miles. Area in United States, 588 square miles measured on Washington National Forest map, edition 1922; area in British Columbia, 390 square miles.[4]

RECORDS AVAILABLE.—June 1, 1919, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on right bank; installed June 9, 1919; inspected by F. E. Davis.

DISCHARGE MEASUREMENTS.—Made from cable 40 feet below gage.

CHANNEL AND CONTROL.—Control at head of rapids about 125 feet below gage composed of large, angular boulders and perhaps some bedrock. Banks high and wooded, not subject to overflow. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 11.6 feet from 11 p. m. May 19 to 1 a. m. May 20 (discharge, 23,200 second-feet); minimum stage from recorder, 3.49 feet at midnight September 30 (discharge, 674 second-feet).

1919–1925: Maximum stage recorded, 16.1 feet at 7 p. m. December 12, 1921 (discharge, 45,700 second-feet); minimum stage, 3.30 feet at 10 p. m. November 11, 1919 (discharge, 555 second-feet).

ICE.—Stage-discharge relation slightly affected by ice during severe winters. Flow estimated from observer's notes and weather records.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent; affected by ice December 17 to January 1. Rating curve well defined below 20,000 second-feet. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph by inspection or, for days when there was considerable variation in stage, by averaging results obtained by applying to rating table mean gage heights for shorter intervals. Records excellent.

The following discharge measurements were made:

June 3, 1925: Gage height, 7.44 feet; discharge, 6,670 second-feet.

August 1, 1925: Gage height, 5.62 feet; discharge, 3,020 second-feet.

September 15, 1925: Gage height, 4.07 feet; discharge, 1,130 second-feet.

[4] White, A. V., Water powers of British Columbia, p. 483, Commission of Conservation, Canada, 1919.

Daily discharge, in second-feet, of Skagit River below Ruby Creek, near Marblemount, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,160	2,420	1,740	1,900	2,770	1,800	1,630	5,120	7,100	6,600	3,070	1,270
2	2,030	2,630	1,740	1,910	5,440	2,090	1,630	5,120	6,840	6,360	2,920	1,220
3	2,090	2,700	1,740	1,850	6,600	2,280	1,850	5,020	6,360	6,360	2,630	1,270
4	1,680	2,630	1,740	1,740	6,000	2,350	2,160	5,120	6,000	6,360	2,350	1,320
5	1,470	2,420	1,680	1,800	5,020	2,220	2,420	5,880	5,880	6,000	2,350	1,270
6	1,320	2,160	1,630	1,680	4,240	2,090	2,920	8,200	6,360	5,550	2,350	1,220
7	1,270	2,090	1,580	1,630	3,710	2,030	3,380	11,400	6,600	4,920	2,350	1,220
8	1,220	1,970	1,420	1,580	3,220	1,910	4,060	10,000	7,360	4,620	2,350	1,270
9	1,180	1,910	1,420	1,520	2,920	1,850	5,230	8,800	7,900	4,920	2,420	1,270
10	1,080	1,740	1,800	1,520	2,630	1,740	7,100	9,100	8,200	5,340	2,350	1,220
11	1,040	1,680	4,440	1,420	2,420	1,680	8,500	10,400	7,620	5,440	2,280	1,180
12	1,040	1,520	14,000	1,420	2,220	1,630	9,100	11,100	7,620	5,020	2,220	1,130
13	1,040	1,470	16,200	1,370	2,090	1,580	8,500	12,200	7,620	4,620	2,090	1,180
14	1,270	1,420	15,300	1,320	1,970	1,520	7,100	13,500	7,100	4,620	1,850	1,180
15	1,520	1,420	13,000	1,270	1,910	1,520	6,360	15,300	8,200	4,340	1,630	1,130
16	1,420	1,370	9,100	1,220	1,800	1,470	6,360	17,700	10,000	4,240	1,470	1,040
17	1,320	1,370	6,800	1,220	1,740	1,420	6,840	18,700	10,000	4,340	1,470	960
18	1,180	1,420	5,800	1,420	1,630	1,370	6,600	20,700	9,700	3,880	1,520	1,000
19	1,130	2,490	4,900	1,520	1,580	1,420	5,880	22,200	9,700	3,540	1,580	920
20	1,130	2,920	4,300	1,630	1,520	1,420	5,340	21,200	10,400	3,460	1,740	845
21	1,080	2,840	3,800	1,680	1,580	1,470	4,920	19,200	11,800	3,380	1,800	845
22	1,040	2,770	3,400	1,680	1,630	1,630	4,620	16,200	12,200	3,460	2,220	880
23	1,040	2,560	3,100	2,160	1,740	1,740	4,340	13,500	11,100	3,300	1,680	1,000
24	2,800	2,350	2,800	2,090	1,800	1,740	4,060	11,400	9,700	3,220	1,420	1,000
25	6,840	2,160	2,600	1,910	1,850	1,850	3,800	10,800	10,800	3,140	1,320	960
26	5,120	1,970	2,600	1,800	1,850	1,850	3,620	10,800	11,400	3,140	1,580	880
27	4,430	1,850	2,400	1,740	1,850	1,800	3,540	11,100	11,100	3,220	1,520	810
28	3,710	1,800	2,400	1,630	1,850	1,740	3,620	11,400	9,400	3,300	1,270	740
29	3,220	1,740	2,200	1,580	-------	1,680	4,060	11,100	7,900	3,140	1,220	710
30	2,920	1,740	2,000	1,910	-------	1,630	4,820	9,100	7,360	3,000	1,220	680
31	2,700	-------	1,900	2,350	-------	1,630	-------	7,900	-------	3,070	1,270	-------

Monthly discharge of Skagit River below Ruby Creek, near Marblemount, Wash., for the year ending September 30, 1925

[Drainage area, 978 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	6,840	1,040	2,020	2.07	2.39	124,000
November	2,920	1,370	2,050	2.10	2.34	122,000
December	16,200	1,420	4,500	4.60	5.30	277,000
January	2,350	1,220	1,660	1.70	1.96	102,000
February	6,600	1,520	2,700	2.76	2.87	150,000
March	2,350	1,370	1,750	1.79	2.06	108,000
April	9,100	1,630	4,810	4.92	5.49	286,000
May	22,200	5,020	11,900	12.2	14.07	732,000
June	12,200	5,880	8,640	8.83	9.85	514,000
July	6,600	3,000	4,380	4.48	5.16	269,000
August	3,070	1,220	1,920	1.96	2.26	118,000
September	1,320	680	1,050	1.07	1.19	62,500
The year	22,200	680	3,960	4.05	54.94	2,860,000

SKAGIT RIVER NEAR MARBLEMOUNT, WASH.

LOCATION.—In SE. ¼ sec. 21, T. 37 N., R. 12 E., at city of Seattle power camp, Whatcom County, one-fourth mile above Newhalem Creek, 6½ miles below Stetattle Creek, and 16 miles above Marblemount.

DRAINAGE AREA.—1,160 square miles. Area in Canada, 390 square miles;[5] area in United States 770 square miles, measured on Washington National Forest maps.

RECORDS AVAILABLE.—December 21, 1908, to May 23, 1914; October 1, 1920, to September 30, 1925.

GAGE.—Stevens water-stage recorder installed June 5, 1923, on right bank about 300 feet below suspension footbridge and trail to Newhalem Creek power plant; inspected by F. E. Davis. Present gage datum 400 feet United States Geological Survey datum.

DISCHARGE MEASUREMENTS.—Made from suspension bridge or from cable at gage.

CHANNEL AND CONTROL.—Right bank high, is not overflowed; left bank gently sloping and wooded, will be overflowed at extremely high stage. Channel straight for several hundred feet above and for long distance below gage. Control is gravel and boulder riffle; will shift at high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 89.65 feet from 1 to 3 a. m. May 20 (discharge, 25,400 second-feet); minimum stage from recorder, 80.10 feet at 2.10 a. m. September 20 and 11.45 p. m. September 30 (discharge, 655 second-feet).

1908–1914; 1920–1925: Maximum stage recorded, 94.2 feet at 8 p. m. December 12, 1921 (discharge, 60,000 second-feet); minimum stage, that of September 20 and 30, 1925.

ICE.—Stage-discharge relation seriously affected by ice during severe winters.

DIVERSIONS.—Seattle municipal power plant diverts water directly from river about 3 miles by river above gage, through a pressure tunnel, and returns it to the river at the plant just above gage. The entire low-water flow may be carried through the plant.

REGULATION.—Daily flow partly controlled at very low water by storage and release of water at tunnel intake to accommodate requirements of power plant.

ACCURACY.—Stage-discharge relation changed December 12 and February 2; not affected by ice. Rating curves well defined. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Discharge determined by use of discharge integrator except for high water, when daily discharge was ascertained by applying to rating table mean daily gage height determined from recorder graph by inspection or, for days of considerable variation in stage, by averaging results obtained by applying mean gage heights for shorter intervals. Records excellent.

Discharge measurements of Skagit River near Marblemount, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Jan. 7	81.71	2,010	June 1	85.44	8,780	Sept. 13	81.75	2,010
Jan. 18	81.27	1,600	June 4	84.80	7,200	Sept. 16	81.22	1,480
Jan. 19	81.83	2,140	July 30	83.62	4,700			
Feb. 8	83.37	4,020	Aug. 2	83.49	4,360			

[5] White, A. V., Water powers of British Columbia, p. 483, Commission of Conservation, Canada, 1919.

Daily discharge, in second-feet, of Skagit River near Marblemount, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,740	3,130	2,150	2,420	4,030	2,360	1,990	6,120	8,400	8,400	5,280	2,020
2	3,780	3,410	2,130	2,400	8,140	2,840	2,050	6,120	8,140	8,400	4,820	1,840
3	3,410	3,470	2,100	2,310	8,660	3,110	2,290	5,960	7,650	8,660	4,210	2,120
4	2,420	3,400	2,110	2,190	7,410	3,130	2,760	6,060	6,970	8,660	3,700	2,280
5	1,970	3,180	2,040	2,260	5,760	2,950	3,080	6,970	6,970	8,140	3,850	2,150
6	1,730	2,820	1,960	2,130	4,890	2,750	3,700	9,800	7,650	7,650	4,010	1,930
7	1,640	2,740	1,820	2,070	4,520	2,560	4,260	13,200	7,890	6,750	4,070	1,990
8	1,590	2,600	1,680	1,950	4,150	2,460	5,190	11,600	8,940	6,540	4,180	2,100
9	1,540	2,440	1,640	1,870	3,780	2,300	6,750	10,100	9,500	6,970	4,200	2,100
10	1,350	2,240	2,810	1,810	3,310	2,210	8,940	10,400	9,800	7,890	4,180	2,020
11	1,340	2,130	8,880	1,760	3,050	2,120	10,700	11,900	8,940	8,140	4,140	1,920
12	1,320	1,880	20,700	1,700	2,830	2,030	11,000	12,500	9,220	7,410	3,980	1,920
13	1,360	1,840	21,200	1,570	2,640	1,950	10,100	13,600	8,940	6,970	3,650	2,110
14	1,740	1,770	18,400	1,490	2,500	1,900	8,660	15,600	8,400	6,970	3,040	2,110
15	2,080	1,730	15,200	1,440	2,370	1,870	7,650	17,400	9,800	6,540	2,510	1,930
16	1,980	1,700	10,500	1,400	2,240	1,850	7,890	20,400	11,900	6,540	2,220	1,660
17	1,720	1,760	7,900	1,430	2,120	1,810	8,400	21,400	11,900	6,770	2,300	1,540
18	1,560	1,830	6,620	1,820	2,030	1,720	7,890	22,900	11,900	5,940	2,420	1,560
19	1,480	3,830	5,720	2,100	1,990	1,740	7,090	24,400	11,600	5,380	2,740	1,380
20	1,450	3,960	5,000	2,240	1,920	1,750	6,400	23,900	12,200	5,300	3,280	1,190
21	1,440	3,770	4,450	2,280	2,020	1,930	5,910	21,400	14,400	5,390	3,340	1,210
22	1,390	3,760	4,000	2,340	2,120	2,100	5,480	18,400	15,200	5,500	3,910	1,520
23	1,430	3,370	3,700	3,090	2,380	2,280	5,100	14,800	13,200	5,200	2,560	1,840
24	5,500	3,030	3,400	2,780	2,470	2,280	4,780	12,800	11,900	5,020	2,140	1,860
25	11,000	2,740	3,160	2,450	2,450	2,460	4,430	11,900	13,200	4,960	1,940	1,670
26	7,330	2,470	3,040	2,300	2,520	2,380	4,190	11,900	14,400	5,240	2,600	1,470
27	6,130	2,300	2,940	2,210	2,600	2,290	4,120	12,500	13,600	5,480	2,380	1,180
28	4,920	2,180	2,820	2,110	2,490	2,240	4,240	13,200	11,900	5,810	1,900	1,040
29	4,140	2,160	2,680	2,110	-------	2,160	4,740	12,500	10,100	5,330	1,720	940
30	3,920	2,160	2,480	2,920	-------	2,060	5,800	10,700	9,500	5,000	1,820	947
31	3,500	-------	2,380	3,580	-------	2,000	--------	9,220	--------	5,320	2,050	-----

NOTE.—Gage-height record faulty Jan. 10, 11, Feb. 7, 8, Mar. 21 and 22; discharge interpolated.

Monthly discharge of Skagit River near Marblemount, Wash., for the year ending September 30, 1925

[Drainage area, 1,160 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	11,000	1,320	2,900	2.50	2.88	178,000
November	3,960	1,700	2,660	2.29	2.56	158,000
December	21,200	1,640	5,660	4.88	5.63	348,000
January	3,580	1,400	2,150	1.85	2.13	132,000
February	8,660	1,920	3,480	3.00	3.12	193,000
March	3,130	1,720	2,240	1.93	2.22	138,000
April	11,000	1,990	5,850	5.04	5.62	348,000
May	24,400	5,960	13,500	11.6	13.37	830,000
June	15,200	6,970	10,500	9.05	10.10	625,000
July	8,660	4,960	6,520	5.62	6.48	401,000
August	5,280	1,720	3,200	2.76	3.18	197,000
September	2,280	940	1,720	1.48	1.65	102,000
The year	24,400	940	5,040	4.31	58.94	3,650,000

SKAGIT RIVER NEAR CONCRETE, WASH.

LOCATION.—In sec. 16, T. 35 N., R. 8 E., at The Dalles, 2 miles below mouth of Baker River, 2½ miles southwest of Concrete, Skagit County.

DRAINAGE AREA.—2,700 square miles. Area in United States, 2,310 square miles measured on topographic maps and Washington National Forest map, edition of 1922. Area in British Columbia, 390 square miles.[6]

RECORDS AVAILABLE.—September 15, 1924, to September 30, 1925.

GAGE.—Since December 10, 1924, Stevens continuous recorder in concrete shelter, on right bank at The Dalles. Gage used prior to December 10, 1924, was vertical and inclined staff on right bank about 200 feet above present gage. Both gage readings refer to same datum, 163 feet above sea level.

DISCHARGE MEASUREMENTS.—Made from cable three-fourths of a mile below gage.

CHANNEL AND CONTROL.—Control formed by boulder riffle below canyon for low stages and by rock canyon forming The Dalles for high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period September 15, 1924, to September 30, 1925, 19.75 feet at 1 p. m. December 12 (discharge, 92,500 second-feet); minimum daily discharge, estimated at 3,400 second-feet September 30, 1925.

High-water marks at gage height 56.6 feet indicate a flood of 500,000 second-feet to have occurred about 1815. Other floods are known to have occurred about as follows:

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
1856	44.6	350,000	Dec. 30, 1917	33.0	220,000
Nov. 19, 1897	38.4	275,000	Dec. 13, 1921	34.9	240,000
Nov. 30, 1909	36.4	260,000			

DIVERSIONS.—Water is diverted for the operation of Seattle's municipal power plant in sec. 21, T. 37 N., R. 12 E., and at low stage the entire flow at that point may be carried through the plant, but return to the river is made at power plant so that all water passes this station.

REGULATION.—At very low stage flow of upper river is partly controlled by storage and release of water at tunnel intake of Seattle's municipal power plant, to accommodate plant requirements.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Staff gage read to hundredths once daily prior to December 10, 1924. Operation of water-stage recorder, used thereafter, satisfactory except as noted in footnote to table of daily discharge, and except for the period August 25 to September 5, when clogged intake interfered with correct registering of the low-water stages. Discharge September 15 to December 9, 1924, ascertained by applying daily gage height to rating table, thereafter by applying to rating table mean daily gage height obtained from recorder graph by inspection or, for days of considerable variation in stage, by averaging results obtained by applying mean gage heights for shorter intervals. Records good September to November, excellent December to July, and fair August and September.

COOPERATION.—Gage-height record and some discharge measurements furnished by Skagit County.

[6] White, A. V., Water powers of British Columbia, p. 483, Commission of Conservation, Canada, 1919

Discharge measurements of Skagit River near Concrete, Wash., for the period September 15, 1924, to September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
1924	*Feet*	*Sec.-ft.*	1925	*Feet*	*Sec.-ft.*	1925	*Feet*	*Sec.-ft.*
Sept 16	2.52	5,740	Mar. 11	3.62	8,420	July 29	5.90	15,000
Dec. 24	4.74	10,700	May 18	14.41	56,600	Aug. 3	5.18	12,200
			May 29	10.66	35,400	Sept. 9	2.66	6,090
1925			June 5	6.96	18,900			
Feb. 9	6.78	17,500	June 25	11.36	39,900			

Daily discharge, in second-feet, of Skagit River near Concrete, Wash., for the period September 15, 1924, to September 30, 1925

Day	Sept.	Day	Sept.	Day	Sept.
1924		1924		1924	
15	5,780	21	3,500	27	5,990
16	6,200	22	10,400	28	5,780
17	5,990	23	22,900	29	5,580
18	4,340	24	15,000	30	10,700
19	4,340	25	8,670		
20	3,570	26	6,410		

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1924-25												
1	22,500	13,600	9,150	11,200	29,700	11,000	7,070	18,000	22,900	24,200	15,000	6,410
2	20,500	19,300	9,400	11,800	52,200	12,700	7,070	19,000	22,100	24,700	13,600	5,990
3	20,100	15,800	9,150	11,200	51,600	13,900	7,290	18,000	20,900	26,500	12,000	5,990
4	12,000	18,900	9,400	10,400	36,000	14,600	8,430	18,000	18,900	27,000	10,700	6,630
5	9,980	16,100	9,150	12,400	29,500	13,300	9,150	21,000	18,900	25,600	10,400	6,410
6	7,970	13,000	8,200	11,200	24,000	11,800	10,400	30,000	19,700	23,400	11,200	6,360
7	6,850	14,300	7,510	10,200	21,500	10,700	11,800	38,500	20,100	20,100	11,200	6,300
8	7,290	13,300	7,070	9,650	19,000	9,900	13,900	31,500	22,900	20,100	11,800	6,250
9	7,070	11,800	7,070	9,150	17,700	9,150	19,500	26,500	25,200	21,700	12,000	6,200
10	6,410	10,200	14,700	9,650	15,400	8,670	27,200	28,000	26,000	23,800	11,500	6,000
11	5,580	9,400	39,200	9,150	13,600	8,200	31,400	32,000	23,800	25,600	11,200	5,700
12	6,540	8,670	85,400	8,670	12,600	7,740	34,700	32,500	24,200	23,800	11,000	5,700
13	7,510	7,740	71,700	8,200	11,800	7,510	32,200	35,500	25,600	20,900	10,400	5,800
14	12,400	7,510	62,600	7,740	11,000	7,290	26,000	41,000	23,400	20,900	9,150	5,900
15	12,000	7,740	56,400	7,290	10,400	7,740	22,900	45,500	26,000	20,500	7,970	5,500
16	10,400	9,150	38,000	7,070	9,650	7,740	24,700	53,000	33,200	20,100	7,290	5,000
17	8,200	8,910	27,400	6,850	9,150	7,510	28,300	55,000	34,200	20,900	6,850	4,800
18	6,850	9,105	22,100	10,000	8,670	7,290	25,600	57,000	33,200	18,500	7,070	4,990
19	6,420	37,300	19,300	14,600	8,430	7,290	22,100	61,300	33,700	16,500	7,510	4,340
20	5,990	23,800	16,900	13,900	8,200	7,740	19,700	60,600	34,200	15,800	8,670	4,160
21	5,780	20,100	15,000	15,800	9,420	7,510	17,300	57,000	41,200	15,800	9,400	3,980
22	5,780	22,100	13,300	17,100	11,000	8,920	15,800	48,600	44,400	16,500	11,200	5,000
23	5,990	18,100	12,000	23,400	13,000	9,650	14,600	38,400	39,500	15,800	8,810	5,500
24	15,400	14,600	11,000	18,100	13,900	8,910	13,500	33,700	35,200	14,600	7,070	5,500
25	55,800	13,000	10,400	14,300	12,600	9,400	12,500	30,700	40,000	13,900	6,200	5,000
26	42,300	11,200	9,900	12,400	13,000	8,910	11,500	31,200	44,400	14,300	7,210	4,500
27	28,800	10,200	9,650	13,000	13,300	8,430	11,500	34,700	42,800	15,400	8,570	4,200
28	21,300	9,400	10,800	13,000	12,400	8,200	12,000	37,300	36,200	16,500	6,410	3,800
29	18,100	9,400	12,400	14,600	-------	7,740	13,500	36,200	30,200	15,800	5,990	3,600
30	20,100	9,400	13,300	23,800	-------	7,510	17,000	30,200	28,300	14,300	5,780	3,400
31	13,000	-------	11,800	29,200	-------	7,070	-------	25,600	-------	15,000	5,990	-------

NOTE.—Staff gage not read Sept. 21, 28, Oct. 5, 12, 19, 26, 1924. Water-stage recorder not operating Feb. 4–8, Apr. 24 to May 18, Sept. 6–16, and 22–30, 1925. Discharge for Sept. 28, Oct. 5, 12, 19, and 26, 1924, and for Sept. 6–8, 1925, interpolated. Remaining gaps in record estimated by comparison with records of combined flow of Skagit River near Marblemount, Sauk River at Darrington, and Baker River below Anderson Creek, near Concrete.

Monthly discharge of Skagit River near Concrete, Wash., for the period September 15, 1924, to September 30, 1925

[Drainage area, 2,700 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
1924						
September 15–30	22,900	3,500	7,820	2.90	1.73	248,000
1924–25						
October	55,800	5,580	14,000	5.19	5.98	861,000
November	37,300	7,510	13,800	5.11	5.70	821,000
December	85,400	7,070	21,300	7.89	9.10	1,310,000
January	29,200	6,850	12,700	4.70	5.42	781,000
February	52,200	8,200	17,800	6.59	6.86	989,000
March	14,600	7,070	9,160	3.39	3.91	563,000
April	34,700	7,070	17,600	6.52	7.27	1,050,000
May	61,300	18,000	36,300	13.4	15.45	2,230,000
June	44,400	18,900	29,700	11.0	12.27	1,770,000
July	27,000	13,900	19,600	7.26	8.37	1,210,000
August	15,000	5,780	9,330	3.46	3.99	574,000
September	6,630	3,400	5,300	1.96	2.19	315,000
The year	85,400	3,400	17,200	6.37	86.51	12,500,000

THUNDER CREEK NEAR MARBLEMOUNT, WASH.

LOCATION.—One-fourth mile above junction with Skagit River, 3½ miles from Reflector Bar ranger station, Whatcom County, and 20 miles northeast of Marblemount.

DRAINAGE AREA.—111 square miles (measured on Washington National Forest map, edition of 1922).

RECORDS AVAILABLE.—February 15, 1919, to September 30, 1925.

GAGE.—Stevens water-stage recorder on left bank; inspected by F. E. Davis.

DISCHARGE MEASUREMENTS.—Made from cable half a mile above gage or by wading.

CHANNEL AND CONTROL.—Control at high stage is at head of falls about 200 feet below gage; at low stage it is the bed of stream between gage and falls. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 9.53 feet at 3 a. m. December 12 (discharge, 3,470 second-feet); minimum stage, 3.25 feet at noon January 17 (discharge, 132 second-feet). Stage may possibly have been lower during period December 17–31 when float was frozen in well.

1919–1925: Maximum stage recorded, from high-water marks in well, 15.5 feet about 4.30 p. m. December 12, 1921 (discharge, 9,720 second-feet); minimum stage, 2.88 feet from March 14–17, 1922 (discharge, 71 second-feet).

ICE.—Stage-discharge relation affected by ice during severe winters. Flow estimated from study of observer's notes, weather records, and flow at near-by gaging stations.

REGULATION.—None.

DIVERSION.—None.

ACCURACY.—Stage-discharge relation changed December 12 and April 11 to September 26; affected by ice December 17–31. Rating curves fairly well defined up to 2,000 second-feet. Shifting-control method used April 11 to September 26. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph by inspection or, for days of considerable variation in stage, by averaging results obtained by applying mean gage heights for shorter intervals. Records good.

Discharge measurements of Thunder Creek near Marblemount, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Jan. 3	3.65	205	June 2	5.31	772	Sept. 14	4.86	678
Jan. 13	3.36	150	Do	5.34	780			
Feb. 10	4.08	307	July 31	6.64	1,530			

Daily discharge, in second-feet, of Thunder Creek near Marblemount, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
1	732	375	274	218	362	222	197	548	795	1,410	1,770	673
2	806	388	272	214	732	256	205	548	753	1,500	1,530	618
3	584	362	267	207	774	278	230	516	673	1,630	1,260	816
4	362	350	267	201	673	276	263	532	636	1,660	1,080	906
5	302	337	260	203	548	263	290	636	673	1,560	1,260	795
6	265	313	249	193	470	243	337	979	795	1,440	1,350	673
7	245	302	239	181	415	234	388	1,320	838	1,230	1,410	732
8	228	290	230	174	375	220	456	1,030	980	1,320	1,470	795
9	211	283	228	172	337	214	600	883	1,030	1,560	1,500	774
10	195	269	408	170	302	199	838	930	1,060	1,910	1,500	692
11	185	263	1,620	162	283	195	1,000	1,080	906	1,910	1,500	673
12	189	241	3,060	160	267	185	1,030	1,170	1,030	1,660	1,440	732
13	191	234	2,500	151	249	179	906	1,290	930	1,530	1,230	816
14	258	234	2,050	146	241	177	732	1,500	838	1,700	883	838
15	313	228	1,440	141	230	177	673	1,700	1,080	1,560	692	673
16	283	232	838	138	222	175	712	2,050	1,470	1,700	582	532
17	243	239		134	214	172	774	2,050	1,560	1,740	654	516
18	224	245		175	203	166	673	2,260	1,530	1,410	753	500
19	216	543	250	199	195	170	600	2,420	1,500	1,290	955	362
20	224	456		203	185	177	532	2,260	1,770	1,320	1,320	337
21	241	402		207	189	184	485	1,910	2,260	1,440	1,290	402
22	241	402		209	199	191	456	1,630	2,340	1,470	1,170	565
23	260	375		265	218	198	428	1,350	2,050	1,380	636	732
24	1,190	350	190	245	230	205	402	1,200	1,840	1,380	532	712
25	1,970	325		224	232	212	375	1,170	2,260	1,380	516	565
26	955	302		218	232	219	362	1,290	2,660	1,530	860	442
27	732	288		203	239	226	362	1,380	2,420	1,740	636	325
28	548	276		195	237	224	388	1,440	1,980	1,910	485	270
29	470	274	210	193	-------	214	428	1,290	1,660	1,630	470	237
30	470	276		256	-------	207	532	1,000	1,630	1,560	565	222
31	415	-------		313	-------	197	-------	860	-------	1,770	732	-------

NOTE.—Braced figures give mean discharge for periods indicated.

Monthly discharge of Thunder Creek near Marblemount, Wash., for the year ending September 30, 1925

[Drainage area, 111 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	1,970	185	443	3.99	4.60	27,200
November	543	228	315	2.84	3.17	18,700
December	3,060	----------	563	5.07	5.84	34,600
January	313	134	196	1.77	2.04	12,100
February	774	185	323	2.91	3.03	17,900
March	278	166	208	1.87	2.16	12,800
April	1,030	197	522	4.70	5.24	31,100
May	2,420	516	1,300	11.7	13.49	79,900
June	2,660	636	1,400	12.6	14.06	83,300
July	1,910	1,230	1,560	14.1	16.26	95,900
August	1,770	470	1,030	9.28	10.70	63,300
September	906	222	598	5.39	6.01	35,600
The year	3,060	----------	708	6.38	86.60	512,000

SAUK RIVER AT DARRINGTON, WASH.

LOCATION.—In SE. ¼ sec. 24, T. 32 N., R. 9 E., at suspension footbridge, half a mile southeast of Darrington, Snohomish County, 2½ miles below Clear Creek, and 23 miles above mouth of river.

DRAINAGE AREA.—293 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 15, 1914, to September 30, 1925.

GAGE.—Vertical and inclined staff on right bank at suspension footbridge; installed April 14, 1922; read by Wilber Whaite and E. L. Jackson.

DISCHARGE MEASUREMENTS.—Made by wading or from the suspension footbridge.

CHANNEL AND CONTROL.—Bed composed of gravel and large boulders. Right bank at gage high and not subject to overflow; left bank flat and subject to overflow at extremely high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.6 feet, on February 2 (discharge, 10,800 second-feet); higher stage probably occurred on October 25, while gage was not being read. Minimum stage recorded, 1.55 feet on September 30 (discharge, 398 second-feet).

1914–1925: Maximum stage, 15.0 feet at 9 a. m. December 29, 1917, and 4 p. m. December 12, 1921, determined by levels to high-water mark (discharge, 36,000 second-feet); minimum stage recorded, 1.15 feet on March 26, 1922 (discharge, 315 second-feet).

ICE.—Stage-discharge relation only slightly affected by ice during severe winters.

DIVERSIONS.—An average diversion of possibly 10 second-feet is made from a point about one-fourth mile above gage for the purpose of driving shingle bolts to mill pond at Darrington.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent; not affected by ice. Rating curve well defined below 10,000 second-feet. Gages read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good, except for estimated periods.

COOPERATION.—Gage-height record furnished by United States Forest Service.

Discharge measurements of Sauk River at Darrington, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Dec. 15	6.07	7,000	June 30	4.42	3,530	Sept. 8	1.91	579
Feb. 7	4.31	3,390	Aug. 5	2.58	1,030			

Daily discharge, in second-feet, of Sauk River at Darrington, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			1,470	1,700	6,840	1,470	805	2,510	2,660	2,980	1,360	605
2			1,580	2,220	10,800	1,950	840	2,660	2,660	3,500	1,260	635
3			1,360	1,700	10,300	1,820	910	2,510	2,510	3,680	1,160	575
4			1,470	1,470	5,920	2,080	1,070	2,510	2,080	3,860	990	575
5		2,800	1,360	2,510	5,270	1,700	1,070	2,980	2,220	3,860	1,070	575
6	2,500		1,070	1,700	3,860	1,360	1,360	4,640	2,510	3,320	1,070	575
7			1,070	1,470	3,320	1,260	1,470	5,480	2,510	2,660	1,070	548
8			910	1,360	2,820	1,160	1,950	3,860	2,980	2,360	1,070	575
9			1,070	1,160	2,510	1,070	3,150	3,150	2,820	2,820	1,160	548
10			8,760	1,470	1,950	990	4,050	3,500	3,150	3,320	990	548
11		1,400	8,040	1,260	1,700	910	4,640	3,860	2,660	3,150	1,070	520
12			10,500	1,360	1,580	875	5,060	3,680	2,820	2,660	990	520
13			7,320	1,260	1,470	840	4,050	4,240	3,150	2,510	910	520
14			5,700	990	1,360	840	3,150	4,850	2,820	2,380	840	520
15			6,840	910	1,260	1,070	3,320	5,480	3,320	2,240	805	520
16	2,000		3,680	875	1,260	1,070	4,050	6,380	3,860	2,100	700	520
17			2,820	1,070	1,070	990	3,860	6,380	3,860	1,970	635	470
18			2,360	4,640	990	910	3,150	6,840	3,860	1,840	635	495
19			2,080	2,820	990	1,070	2,820	7,320	3,860	1,700	805	470
20		3,500	1,820	5,060	1,070	1,070	2,510	7,080	4,240	1,820	840	420
21			1,580	3,680	2,080	1,070	2,080	6,610	5,270	1,470	875	420
22			1,470	3,860	1,950	1,470	1,950	5,060	5,060	1,700	875	420
23		3,150	1,260	4,240	2,510	1,260	1,700	4,050	4,240	1,580	770	470
24		2,660	910	3,150	2,510	1,070	1,700	3,680	3,860	1,470	700	470
25		2,080	840	1,820	2,080	1,160	1,470	3,500	5,270	1,470	605	445
26	4,000	1,700	1,070	1,950	2,080	1,070	1,360	3,860	5,060	1,470	1,070	470
27		1,470	1,160	2,660	2,220	990	1,360	4,240	4,640	1,700	668	520
28		1,470	1,950	2,510	1,700	990	1,470	4,240	4,050	1,700	605	420
29		1,470	2,820	3,500	-------	910	1,700	3,680	3,320	1,580	575	420
30		1,470	2,080	8,040	-------	875	2,220	3,150	3,500	1,470	548	398
31		-------	2,360	7,800	-------	840	-------	2,820	-------	1,470	575	------

NOTE.—No gage-height record Oct. 1 to Nov. 22; discharge estimated by comparison with records of near-by streams. Braced figures give estimated mean discharge for periods indicated.

Monthly discharge of Sauk River at Darrington, Wash., for the year ending September 30, 1925

[Drainage area, 293 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	----------	----------	2,870	9.80	11.30	176,000
November	----------	----------	2,360	8.05	8.98	140,000
December	10,500	840	2,860	9.76	11.25	176,000
January	8,040	875	2,590	8.84	10.19	159,000
February	10,800	990	2,980	10.2	10.62	166,000
March	2,080	840	1,170	3.99	4.60	71,900
April	5,060	805	2,340	7.99	8.91	139,000
May	7,320	2,510	4,350	14.8	17.06	267,000
June	5,270	2,080	3,490	11.9	13.28	208,000
July	3,860	1,470	2,320	7.92	9.13	143,000
August	1,360	548	881	3.01	3.47	54,200
September	635	398	506	1.73	1.93	30,100
The year	----------	398	2,390	8.16	110.72	1,730,000

BAKER RIVER BELOW ANDERSON CREEK, NEAR CONCRETE, WASH.

LOCATION.—In SE. ¼ sec. 30, T. 37 N., R. 9 E., Whatcom County, 350 feet below Anderson Creek, a quarter of a mile above Baker River ranger station, and 11 miles above Concrete.

DRAINAGE AREA.—184 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 10, 1910, to October 3, 1925, when station was discontinued.

GAGE.—Stevens continuous water-stage recorder on left bank; installed September 24, 1915; inspected by Charles Bagnell.

DISCHARGE MEASUREMENTS.—Made from cable 300 feet above gage.

CHANNEL AND CONTROL.—Bed composed of boulders and gravel over bedrock; not likely to shift except during extremely high water. Right bank high and rocky; left bank fairly high, wooded, subject to overflow at about 11-foot stage.

EXTREMES OF DISCHARGE.—Maximum stage during period October 1, 1924, to October 3, 1925, occurred during period December 12–15, when recorder was not operating; stage and discharge not determined. Minimum stage from recorder 1.92 feet from 2 to 4 p. m. October 2, 1925 (discharge, 474 second-feet).

1910–1925: Maximum stage recorded, 13.7 feet at 12.30 p. m. December 29, 1917 (discharge, 36,800 second-feet); minimum stage recorded, 1.21 feet on December 15 and 16, 1919 (discharge, 219 second-feet).

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—None.

REGULATIONS.—None.

ACCURACY.—Stage-discharge relation changed at high water December 12–15. Rating curves fairly well defined below 10,000 second-feet. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph by inspection or, for a few days when range of stage was considerable, by averaging results obtained by applying mean gage heights for shorter intervals. Records fair.

The following discharge measurement was made:

September 11, 1925: Gage height, 2.75 feet; discharge, 925 second-feet.

Daily discharge, in second-feet, of Baker River below Anderson Creek, near Concrete, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,650	1,820	974	1,300	4,160	1,320	828	2,120	2,320	2,680	2,270	1,000
2	3,970	2,630	1,010	1,280	8,180	1,750	828	2,430	2,270	3,100	2,020	990
3	3,370	2,380	1,010	1,200	7,860	1,880	888	2,270	2,070	3,490	1,750	1,080
4	2,070	2,380	1,060	1,120	5,030	1,880	1,040	2,120	1,880	3,490	1,620	1,120
5	1,490	2,020	998	1,240	3,650	1,660	1,200	2,550	1,930	3,180	1,660	1,080
6	1,230	1,580	882	1,200	2,810	1,440	1,360	3,730	2,020	2,880	1,700	1,040
7	1,070	1,670	788	1,050	2,270	1,280	1,480	4,440	1,980	2,430	1,800	1,040
8	1,030	1,490	715	902	1,880	1,160	1,840	3,330	2,320	2,620	1,930	1,040
9	998	1,310	688	881	1,700	1,080	2,680	2,740	2,740	2,950	2,020	998
10	889	1,150	1,870	874	1,480	982	3,730	3,020	2,620	3,410	1,930	960
11	814	1,050	8,500	874	1,360	916	4,070	3,570	2,380	3,820	1,880	975
12	1,110	889	12,500	771	1,280	881	4,250	3,490	2,550	3,410	1,800	1,000
13	1,230	801		730	1,200	847	3,570	3,900	2,740	3,100	1,620	1,040
14	2,600	769		724	1,160	860	2,550	4,440	2,490	3,100	1,440	1,040
15	2,770	775		724	1,080	895	2,220	4,840	3,410	2,880	1,240	968
16	2,170	834	6,000	718	1,040	902	2,880	5,620	3,980	2,950	1,120	1,040
17	1,580	990	4,000	730	975	874	3,730	5,740	3,730	2,950	1,160	909
18	1,270	1,270	3,000	840	930	828	2,880	5,860	3,730	2,620	1,200	840
19	1,110	5,610	2,600	1,280	888	860	2,270	6,250	3,820	2,320	1,360	777
20	1,010	3,530	2,200	1,360	895	902	1,930	6,120	4,070	2,270	1,570	753

Daily discharge, in second-feet, of Baker River below Anderson Creek, near Concrete, Wash., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
21	926	2,500	1,900	1,280	1,240	916	1,750	5,620	4,840	2,320	1,520	814
22	889	2,380	1,500	2,180	1,440	1,200	1,620	4,160	4,740	2,490	2,170	952
23	868	1,920	1,400	2,950	1,700	1,200	1,520	3,180	4,070	2,430	1,520	1,040
24	5,480	1,580	1,300	2,070	1,700	1,120	1,440	2,810	3,980	2,120	1,200	1,040
25	12,200	1,310	1,100	1,570	1,620	1,160	1,320	2,880	4,840	2,020	1,040	923
26	6,700	1,150	1,000	1,320	1,620	1,080	1,240	3,180	5,380	2,120	1,720	834
27	4,440	998	900	1,320	1,620	1,000	1,200	3,730	4,840	2,320	1,480	735
28	2,910	926	1,100	1,240	1,440	982	1,280	4,840	4,070	2,430	1,160	647
29	2,380	942	1,200	1,480	-------	923	1,480	4,640	3,410	2,220	1,000	580
30	2,440	990	2,100	3,420	-------	874	1,840	3,410	3,180	2,170	1,040	548
31	2,170	-------	1,400	3,650	-------	834	-------	2,680	-------	2,320	1,040	------

NOTE.—Recorder not operating satisfactorily Dec. 12 to Jan. 1 and Jan. 6-19. Discharge Dec. 12 to Jan. 1 determined by hydrograph comparison with discharge of Skagit River near Concrete less the combined discharge of Skagit River near Marblemount and Sauk River at Darrington; discharge Jan. 8-19 determined from staff-gage readings. Braced figures show estimated mean discharge for periods indicated. Discharge for Oct. 1, 2, and 3, 1925, was respectively 506, 494, and 494 second-feet.

Monthly discharge of Baker River below Anderson Creek, near Concrete, Wash., for the year ending September 30, 1925

[Drainage area, 184 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	12,200	814	2,510	13.6	15.68	154,000
November	5,610	769	1,650	8.97	10.01	98,200
December	----------	688	3,260	17.7	20.41	200,000
January	3,650	718	1,360	7.39	8.52	83,600
February	8,180	888	2,220	12.1	12.60	123,000
March	1,880	828	1,110	6.03	6.95	68,200
April	4,250	828	2,030	11.0	12.27	121,000
May	6,250	2,120	3,860	21.0	24.21	237,000
June	5,380	1,880	3,280	17.8	19.86	195,000
July	3,820	2,020	2,730	14.8	17.06	168,000
August	2,270	1,000	1,550	8.42	9.71	95,300
September	1,120	548	927	5.04	5.62	55,200
The year	----------	548	2,210	12.0	162.90	1,600,000

UPPER COLUMBIA RIVER BASIN

MAIN STREAM

COLUMBIA RIVER AT TRAIL, BRITISH COLUMBIA

LOCATION.—At highway bridge at Trail, 15 miles above international boundary and mouth of Clark Fork and 18 miles below mouth of Kootenai River.

DRAINAGE AREA.—34,000 square miles (measured by Dominion Water Power Branch).

RECORDS AVAILABLE.—April 18, 1913, to September 30, 1925.

GAGE.—Chain gage installed on bridge in June, 1913, read by C. A. Broderick.

DISCHARGE MEASUREMENTS.—Made from highway bridge.

CHANNEL AND CONTROL.—Channel straight for a quarter of a mile above and below gage. Riffle control below gage; apparently permanent.

EXTREMES OF DISCHARGE.—Maximum mean daily stage recorded during year, 35.6 feet May 26 and 27 (discharge, 245,000 second-feet); minimum mean daily stage recorded, 10.16 feet January 28 (discharge, 23,300 second-feet).

1913–1925: Maximum stage recorded, 41.6 feet June 14 and 15, 1913 (discharge, 312,000 second-feet); minimum stage recorded, 7.40 feet March 28, 1917 (discharge, 9,600 second-feet).

ICE.—Stage-discharge relation not affected by ice.

DIVERSION.—A small amount of water is diverted above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table.

COOPERATION.—Complete record furnished by Dominion Water Power and Reclamation Service, Department of the Interior, Canada.

The following discharge measurements were made:

April 15, 1925: Gage height, 16.70 feet; discharge, 67,200 second-feet.

September 17, 1925: Gage height, 16.46 feet; discharge, 67,600 second-feet.

Daily discharge, in second-feet, of Columbia River at Trail, British Columbia, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	49,200	40,200	28,700	28,900	23,500	25,600	26,000	89,800	230,000	238,000	138,000	76,900
2	47,400	40,800	28,400	28,900	23,600	25,600	26,700	90,600	227,000	236,000	138,000	73,600
3	46,700	41,500	28,000	28,600	23,700	25,900	27,400	91,400	223,000	232,000	138,000	71,200
4	46,000	42,200	27,500	28,900	24,000	25,800	29,500	92,400	218,000	228,000	138,000	68,800
5	45,400	42,800	27,000	29,100	24,200	25,900	30,000	93,600	213,000	224,000	137,000	67,600
6	44,800	43,200	26,400	28,900	24,500	26,100	31,600	96,900	210,000	220,000	136,000	65,200
7	44,200	42,900	26,000	28,300	24,700	26,200	34,100	100,000	205,000	215,000	133,000	63,200
8	43,700	42,400	25,500	27,700	25,000	26,200	37,000	102,000	201,000	209,000	130,000	63,600
9	43,300	41,900	24,500	26,900	25,400	25,900	40,000	107,000	200,000	200,000	126,000	62,800
10	42,900	41,200	24,300	26,200	25,700	25,600	44,200	112,000	197,000	190,000	122,000	61,200
11	42,400	40,600	24,200	25,600	25,900	25,300	48,400	118,000	195,000	189,000	121,000	61,600
12	41,800	40,000	24,500	25,000	26,200	25,000	53,400	123,000	194,000	188,000	120,000	62,000
13	41,200	39,300	24,900	24,600	26,500	25,000	58,200	130,000	195,000	187,000	118,000	62,000
14	40,700	38,600	25,600	24,400	26,800	25,000	62,700	137,000	196,000	185,000	117,000	62,400
15	40,000	37,300	26,100	24,200	27,200	24,800	67,700	146,000	197,000	182,000	115,000	62,800
16	39,500	37,400	26,300	24,000	26,600	24,800	72,800	155,000	199,000	179,000	114,000	63,400
17	38,800	36,700	27,000	24,000	26,200	24,800	78,300	164,000	202,000	176,000	112,000	62,700
18	38,200	36,100	27,500	23,700	25,900	24,900	81,400	175,000	207,000	173,000	111,000	62,100
19	37,600	35,300	28,800	23,500	25,600	24,800	84,500	186,000	210,000	170,000	110,000	61,600
20	36,900	34,700	29,800	23,500	25,300	24,500	87,000	188,000	214,000	168,000	108,000	60,000
21	36,400	34,000	31,300	23,700	25,000	24,200	88,200	211,000	216,000	164,000	107,000	58,600
22	35,800	33,400	32,300	23,500	24,800	24,000	89,400	223,000	222,000	159,000	105,000	57,200
23	35,200	32,800	32,700	23,500	24,700	24,000	90,000	233,000	225,000	155,000	104,000	55,800
24	35,800	32,200	32,200	23,500	24,800	24,000	90,200	242,000	229,000	151,000	102,000	54,700
25	36,400	31,700	31,900	23,500	24,900	24,200	90,600	244,000	232,000	149,000	102,000	53,700
26	37,000	31,200	31,300	23,500	25,000	24,100	90,200	245,000	234,000	146,000	98,800	52,600
27	36,900	30,700	30,500	23,400	25,200	24,200	89,800	245,000	233,000	143,000	94,300	51,600
28	37,500	30,200	30,300	23,300	25,500	24,200	89,300	243,000	236,000	142,000	90,600	50,800
29	38,200	29,700	29,500	23,400	-------	24,500	89,000	241,000	240,000	140,000	87,400	49,800
30	38,800	29,200	29,200	23,500	-------	24,800	89,000	238,000	240,000	139,000	83,600	48,800
31	39,500	-------	29,100	23,500	-------	25,400	-------	234,000	-------	138,000	80,300	-------

NOTE.—Gage not read Feb. 10 and 11; discharge interpolated.

Monthly discharge of Columbia River at Trail, British Columbia, for the year ending September 30, 1925

[Drainage area, 34,000 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	49,200	35,200	40,600	1.19	1.37	2,500,000
November	43,200	29,200	37,000	1.09	1.22	2,200,000
December	32,700	24,200	28,100	.83	.96	1,730,000
January	29,100	23,300	25,300	.74	.85	1,560,000
February	27,200	23,500	25,200	.74	.77	1,400,000
March	26,200	24,000	25,000	.74	.85	1,540,000
April	90,600	26,000	63,900	1.88	2.10	3,800,000
May	245,000	89,800	164,000	4.82	5.56	10,100,000
June	240,000	194,000	215,000	6.32	7.05	12,800,000
July	238,000	138,000	181,000	5.32	6.13	11,100,000
August	138,000	80,300	114,000	3.35	3.86	7,010,000
September	76,900	48,800	60,900	1.78	1.99	3,620,000
The year	245,000	23,300	81,700	2.40	32.71	59,400,000

COLUMBIA RIVER AT KETTLE FALLS, WASH.

LOCATION.—In SW. ¼ sec. 23, T. 36 N., R. 37 E., 150 feet above ferry at Kettle Falls, Stevens County, 1½ miles above mouth of Colville River, and 4½ miles below mouth of Kettle River.

DRAINAGE AREA.—64,500 square miles. (Areas in United States measured on maps issued by United States Geological Survey. Areas in British Columbia measured on Department of the Interior railway-belt maps; Department of Mines, West Kootenay sheet; and Department of Lands map.)

RECORDS AVAILABLE.—April 1, 1916, to September 30, 1925. Monthly discharge, April, 1913, to March, 1916.

GAGE.—Since June 5, 1921, several sets of vertical and inclined staff gages on left bank at Kettle Falls Ferry, set first at arbitrary datum and later to mean sea level datum, read by C. T. Humphreys and B. E. Crofoot. An auxiliary low-water gage installed at mean sea level datum on right or west bank January 25 and 26, 1924, was read in conjunction with gages on left bank or east side October 6 to April 5, 1925.

DISCHARGE MEASUREMENTS.—Made from cable at gage.

CHANNEL AND CONTROL.—Left bank high; right bank is overflowed at extremely high stages. Two channels at extremely low stage. Channel straight for half a mile above and 1 mile below gage. Bed composed of small boulders and gravel. Control consists of river channel below gage and Rickey Rapids, which is about 3 miles downstream from gage; permanent except at extremely high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1,190.7 feet at 6.20 p. m. May 28 and 7.00 a. m. May 30 (discharge, 373,000 second-feet); minimum stage, 1,166.5 feet on December 10–12 (discharge, 31,700 second-feet).

1913–1925: Maximum stage, 34.2 feet during night of June 14 and 15, 1913, as determined from a well-defined high-water mark referred to United States Weather Bureau gage at Marcus (discharge, 468,000 second-feet). Minimum discharge, 15,800 second-feet, result of current-meter measurement February 16, 1923, when stage-discharge relation was affected by ice. Minimum discharge prior to winter of 1921–22 not known because daily record of stage not available.

The United States Weather Bureau reports a maximum stage of 44.7 feet on the Marcus gage during the flood in June (probably June 7), 1894; discharge, 735,000 second-feet, estimated by extending rating curve.

ICE.—Stage-discharge relation affected by ice during severe winters; flow estimated from gage-height record, discharge measurements, observer's notes, and weather records.

DIVERSIONS.—Considerable water diverted for irrigation above gage but amount very small in proportion to flow past gage.

REGULATIONS.—None, except the effect of natural storage in Upper and Lower Arrow Lakes, Kootenay, Flathead, Pend Oreille, Priest, and other smaller lakes.

ACCURACY.—Stage-discharge relation practically permanent; affected by ice December 20–25. Rating curve well defined below 500,000 second-feet. Gage read to hundredths twice daily. Morning and afternoon readings made by different parties. Daily discharge ascertained by applying mean daily gage height to rating table. Records excellent.

Discharge measurements of Columbia River at Kettle Falls, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Nov. 12	68.91	45,500	Jan. 22	67.05	33,200	June 9	88.17	318,000
Jan. 2	67.43	36,700	Apr. 1	68.62	45,300	Sept. 18	72.26	71,600

Daily discharge, in second-feet, of Columbia River at Kettle Falls, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	53,600	44,900	35,000	36,800	35,000	42,900	44,200	162,000	359,000	332,000	168,000	91,000
2	52,000	46,300	35,000	36,800	35,600	42,900	45,600	164,000	355,000	327,000	166,000	88,000
3	51,300	47,000	34,400	36,800	36,800	42,900	47,700	164,000	350,000	320,000	166,000	85,100
4	50,600	47,700	33,900	36,800	39,200	42,900	51,300	164,000	343,000	318,000	164,000	82,200
5	49,800	47,700	33,900	37,400	42,300	43,600	54,300	166,000	336,000	311,000	164,000	80,300
6	49,100	47,700	33,300	37,400	44,200	42,900	59,600	169,000	329,000	302,000	162,000	78,500
7	48,400	47,700	33,300	36,800	44,900	43,600	64,400	177,000	325,000	296,000	157,000	77,500
8	48,400	48,400	32,800	36,800	47,000	43,600	69,300	183,000	318,000	285,000	154,000	76,600
9	47,700	48,400	32,200	36,800	48,400	43,600	75,700	186,000	313,000	274,000	148,000	75,700
10	47,000	47,700	31,700	36,800	49,100	43,600	83,200	191,000	309,000	266,000	145,000	73,800
11	46,300	46,300	31,700	36,800	49,100	42,900	93,200	197,000	307,000	258,000	142,000	72,900
12	45,600	46,300	31,700	36,800	49,100	42,300	104,000	204,000	302,000	254,000	139,000	72,900
13	44,900	44,900	32,800	36,800	48,400	42,300	112,000	210,000	302,000	246,000	137,000	72,900
14	44,200	44,200	33,900	36,800	47,700	41,600	116,000	220,000	298,000	242,000	134,000	72,900
15	43,600	43,600	35,600	36,200	47,000	41,600	121,000	232,000	298,000	237,000	133,000	72,900
16	42,900	42,300	38,600	36,200	46,300	41,000	129,000	240,000	298,000	234,000	130,000	72,900
17	42,300	42,300	38,600	35,600	44,900	40,400	137,000	254,000	298,000	230,000	130,000	72,900
18	41,600	41,600	36,800	35,600	44,200	40,400	146,000	266,000	300,000	225,000	129,000	72,900
19	41,000	41,000	34,400	35,000	44,200	39,800	151,000	285,000	304,000	220,000	128,000	72,000
20	40,400	40,400	33,300	35,000	42,900	39,200	154,000	300,000	307,000	215,000	125,000	71,100
21	39,800	39,800	33,900	35,000	42,300	39,200	156,000	318,000	309,000	210,000	122,000	70,200
22	39,800	39,200	33,900	35,000	42,300	39,200	158,000	336,000	313,000	204,000	121,000	67,700
23	39,200	39,200	34,400	35,000	42,300	39,800	160,000	352,000	316,000	197,000	118,000	66,000
24	38,600	38,600	33,900	35,600	43,600	39,800	160,000	359,000	320,000	191,000	117,000	65,200
25	38,000	38,000	33,900	35,000	43,600	39,800	162,000	366,000	322,000	188,000	116,000	63,600
26	39,800	37,400	34,400	34,400	42,900	39,800	160,000	371,000	322,000	181,000	112,000	62,800
27	41,000	36,800	35,000	34,400	42,900	40,400	160,000	373,000	327,000	180,000	108,000	62,000
28	42,300	35,600	35,600	34,400	43,600	41,000	160,000	371,000	329,000	175,000	105,000	62,000
29	42,900	35,600	35,600	34,400	-------	42,300	158,000	371,000	332,000	174,000	101,000	61,200
30	43,600	35,600	36,800	34,400	-------	42,900	158,000	371,000	334,000	170,000	97,600	59,600
31	44,200	-------	36,800	34,400	-------	43,600	-------	366,000	-------	169,000	94,300	-------

Monthly discharge of Columbia River at Kettle Falls, Wash., for the year ending September 30, 1925

[Drainage area, 64,500 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	53,600	38,000	44,500	0.690	0.80	2,740,000
November	48,400	35,600	42,700	.662	.74	2,540,000
December	38,600	31,700	34,400	.533	.61	2,120,000
January	37,400	34,400	35,900	.557	.64	2,210,000
February	49,100	35,000	43,900	.681	.71	2,440,000
March	43,600	39,200	41,700	.647	.75	2,560,000
April	162,000	44,200	115,000	1.78	1.99	6,840,000
May	373,000	162,000	261,000	4.05	4.67	16,000,000
June	359,000	298,000	319,000	4.95	5.52	19,000,000
July	332,000	169,000	240,000	3.72	4.29	14,800,000
August	168,000	94,300	133,000	2.06	2.38	8,180,000
September	91,000	59,600	72,500	1.12	1.25	4,310,000
The year	373,000	31,700	116,000	1.80	24.35	83,700,000

COLUMBIA RIVER AT VERNITA, WASH.

LOCATION.—In sec. 11, T. 13 N., R. 24 E., at Richmond Ferry half a mile north of Vernita and 6 miles below Priest Rapids, Benton County.

DRAINAGE AREA.—95,500 square miles. (Areas in the United States measured on topographic maps and on other maps issued by the United States Geological Survey. Areas in British Columbia measured on Department of the Interior railway-belt maps; Department of Mines, West Kootenai sheet; and Department of Lands map.)

RECORDS AVAILABLE.—Flood heights only, at Wenatchee, 1894 to 1903; continuous gage height record at Wentchee April 18, 1904, to December 31, 1916; at Beverly January 1–13, 1917; at Vernita January 14, 1917, to September 30, 1925. Gage-height record at Wenatchee published by United States Weather Bureau.

GAGE.—Since March 25, 1918, vertical staff gage in eight sections, on right bank at ferry; read by J. P. Richmond. Gage datum 388.7 feet above sea level.

DISCHARGE MEASUREMENTS.—Made from standard gaging car on ferry cable at Vernita or, when ice conditions are severe, from railroad bridge at Beverly.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders. High-water control is Coyote Rapids 6 or 7 miles below gage; low-water control, riffle about three-fourths mile below gage; apparently permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 29.2 feet May 28 and 29 (discharge, 434,000 second-feet); minimum stage recorded, 2.3 feet December 11 and 12 (discharge, 39,300 second-feet).

1913–1925: Maximum stage recorded, 45.7 feet at Wenatchee June 15 and 16, 1913 (discharge, 528,000 second-feet); minimum discharge, 23,900 second-feet (current-meter measurements) January 31, 1917, and December 14, 1919, when stage-discharge relation was affected by ice.

Maximum stage recorded at Wenatchee by United States Weather Bureau and Great Northern Railway Co., 58.0 feet June 7, 1894 (estimated discharge by extending rating curve, 710,000 second-feet). The Chief of Engineers, United States Army,[7] gives a crest elevation of the flood in 1894 and an elevation of zero on the Weather Bureau gage from which it appears that the gage height was 59.8 feet (estimated discharge, by extending rating curve, 740,000 second-feet).

[7] Report of Chief of Engineers, U. S. Army, 1895, Pt. V, p. 3542.

ICE.—Stage-discharge relation affected by ice except during mild winters. Flow estimated from gage-height record, discharge measurements, observer's notes, and weather records.

DIVERSION.—Some water diverted for irrigation.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent; affected by ice December 19–28. Rating curve well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage heights to rating table. Records excellent except for periods of ice effect.

The following discharge measurements were made:

December 30, 1924: Gage height, 3.70 feet; discharge, 48,100 second-feet.

June 18, 1925: Gage height, 25.21 feet; discharge, 350,000 second-feet.

September 29, 1925: Gage height, 6.32 feet; discharge, 70,600 second-feet.

Daily discharge, in second-feet, of Columbia River at Vernita, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	62,100	50,500	43,800	51,200	53,400	65,400	64,600	196,000	424,000	364,000	179,000	108,000
2	61,300	51,200	42,600	52,700	61,300	64,600	65,400	199,000	417,000	361,000	176,000	104,000
3	59,700	52,000	42,600	51,200	62,900	63,800	67,200	200,000	410,000	357,000	175,000	101,000
4	59,700	52,000	42,600	49,800	64,600	64,600	68,800	202,000	403,000	354,000	174,000	96,800
5	58,100	54,200	41,200	49,400	63,800	63,800	69,700	202,000	396,000	350,000	172,000	95,800
6	57,300	54,200	41,200	49,100	67,200	62,900	74,800	203,000	387,000	343,000	171,000	94,000
7	56,500	54,200	42,600	47,800	73,100	63,800	80,200	208,000	382,000	334,000	169,000	92,000
8	55,000	55,000	42,600	47,800	74,800	64,600	86,500	218,000	377,000	328,000	168,000	89,200
9	55,000	54,200	41,900	47,800	85,600	63,800	95,800	227,000	370,000	319,000	164,000	88,300
10	55,000	54,200	40,000	46,400	83,800	63,800	103,000	232,000	364,000	311,000	160,000	86,500
11	53,400	54,200	39,300	45,800	82,000	62,900	112,000	238,000	359,000	300,000	156,000	84,700
12	53,400	54,200	39,300	45,800	81,100	62,100	126,000	245,000	354,000	288,000	153,000	82,900
13	52,700	53,400	43,200	45,200	80,200	62,100	138,000	252,000	350,000	280,000	148,000	81,100
14	52,000	52,700	49,100	45,200	77,500	61,300	150,000	263,000	348,000	270,000	145,000	80,200
15	51,200	52,000	53,400	45,800	76,600	60,500	158,000	274,000	343,000	265,000	143,000	80,200
16	50,500	51,200	57,300	47,100	74,000	59,700	164,000	288,000	341,000	261,000	140,000	80,200
17	50,500	50,500	57,300	45,200	71,400	58,900	167,000	308,000	339,000	255,000	139,000	80,200
18	49,100	49,100	55,000	43,800	68,000	59,700	179,000	323,000	341,000	250,000	138,000	80,200
19	48,400	47,800		43,800	65,400	58,900	185,000	339,000	345,000	246,000	136,000	80,200
20	47,800	47,800		43,200	65,400	57,300	194,000	357,000	345,000	239,000	134,000	80,200
21	46,400	47,800	52,500	43,200	62,900	58,100	197,000	373,000	350,000	232,000	133,000	79,300
22	45,800	47,800		45,200	63,800	58,100	199,000	389,000	352,000	227,000	131,000	78,400
23	45,200	49,100		45,800	62,100	58,100	202,000	405,000	357,000	222,000	128,000	77,500
24	45,800	49,100		45,800	63,800	58,100	202,000	415,000	359,000	216,000	126,000	75,700
25	45,200	50,500		46,400	64,600	58,100	202,000	424,000	359,000	208,000	125,000	74,000
26	45,800	49,800	50,500	49,100	64,600	58,900	203,000	429,000	361,000	202,000	123,000	72,200
27	45,800	47,800		47,800	64,600	59,700	202,000	431,000	364,000	196,000	122,000	71,400
28	46,400	45,800		46,400	64,600	61,300	199,000	434,000	364,000	193,000	119,000	70,600
29	47,100	44,500	49,100	45,800	-------	62,100	199,000	434,000	364,000	188,000	116,000	68,800
30	49,100	43,800	48,400	45,800	-------	62,900	197,000	431,000	364,000	187,000	113,000	68,800
31	50,500	-------	49,800	47,100	-------	63,800	--------	429,000	--------	184,000	112,000	--------

NOTE.—Gage not read Jan. 5; discharge interpolated. Braced figures give estimated mean discharge for periods indicated.

Monthly discharge of Columbia River at Vernita, Wash., for the year ending September 30, 1925

[Drainage area, 95,500 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	62,100	45,200	51,700	0.541	0.62	3,180,000
November	55,000	43,800	50,700	.531	.59	3,020,000
December	57,300	39,300	47,700	.499	.58	2,930,000
January	52,700	43,200	46,900	.491	.57	2,880,000
February	85,600	53,400	69,400	.727	.76	3,850,000
March	65,400	57,300	61,400	.643	.74	3,780,000
April	203,000	64,600	145,000	1.52	1.70	8,630,000
May	434,000	196,000	309,000	3.24	3.74	19,000,000
June	424,000	339,000	366,000	3.83	4.27	21,800,000
July	364,000	184,000	269,000	2.82	3.25	16,500,000
August	179,000	112,000	145,000	1.52	1.75	8,920,000
September	108,000	68,800	83,400	.873	.97	4,960,000
The year	434,000	39,300	137,000	1.43	19.54	99,400,000

KOOTENAI RIVER BASIN

KOOTENAI RIVER AT LIBBY, MONT.

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

DRAINAGE AREA.—11,000 square miles.

RECORDS AVAILABLE.—October 13, 1910, to September 30, 1925.

GAGE.—Chain gage on left span of highway bridge; read by United States Forest Service.

DISCHARGE MEASUREMENTS.—Made from highway bridge.

CHANNEL AND CONTROL.—Channel probably permanent; broken by two piers. Bed of stream composed of small rocks; current fairly swift and uniformly distributed.

EXTREMES OF DISCHARGE.—Maximum stage reported during year, 14.30 feet at noon May 23 (discharge, 77,300 second-feet); minimum stage, 2.50 feet March 21 (discharge, 3,550 second-feet).

1910–1925: Maximum stage, 19.17 feet June 21, 1916 (discharge, 130,000 second-feet); minimum stage, 1.4 feet February 7, 1914 (discharge, 1,480 second-feet).

ICE.—Stage-discharge relation seriously affected by ice. No records during winter.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent except when affected by ice. Rating curve well defined between 2,500 and 40,000 second-feet. Gage read to hundredths once daily, except on Sundays or holidays. Record fragmentary October 25 to April 21. Daily discharge ascertained by applying daily gage height to rating table. Discharge interpolated for days of no gage height record. Records good for discharges below 40,000; others fair.

COOPERATION.—Gage heights furnished by United States Forest Service.

No discharge measurements made during year.

Daily discharge, in second-feet, of Kootenai River at Libby, Mont., for the year ending September 30, 1925

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,140				17,000	39,000	32,000	11,600	6,280
2	4,140				19,000	34,400	38,800	11,400	6,280
3	4,400				20,000	32,400	27,000	11,200	6,280
4	5,220				21,100	30,700	25,800	11,200	6,280
5	5,220				21,900	30,400	23,800	11,000	6,280
6	5,220		4,940		23,000	28,800	21,900	10,600	6,180
7					25,200	28,600	21,100	10,000	6,070
8					28,200	28,500	20,800	9,650	5,970
9					29,200	28,800	19,800	9,290	5,970
10					29,000	30,400	18,700	8,920	5,970
11	4,600		4,020		28,800	31,400	17,800	8,920	6,120
12					28,800	32,000	17,800	8,740	6,280
13					32,700	33,400	17,800	8,570	6,520
14					39,700	36,200	18,000	8,230	6,750
15			3,780		47,500	39,000	17,000	8,570	6,520
16	4,020				53,000	39,000	16,400	9,280	6,280
17	4,020				52,400	39,700	15,400	10,000	6,280
18	4,020				51,700	41,600	15,000	9,840	6,280
19	4,020		3,660		55,600	42,300	14,800	9,650	6,280
20	4,020	4,140			62,200	43,500	14,600	9,650	6,440
21	4,020		3,550		66,800	43,700	13,700	9,280	6,590
22	4,020			18,700	73,400	43,900	12,800	8,920	6,280
23	4,020			17,800	76,800	45,100	12,400	8,920	5,970
24	4,020			17,300	74,400	44,300	12,400	8,920	5,970
25				16,800	67,300	42,000	12,200	8,570	5,970
26				16,100	57,800	37,500	12,100	8,230	5,970
27				15,400	48,300	36,100	12,000	7,560	5,970
28	4,000			15,000	44,300	36,000	11,600	7,230	5,970
29				14,800	44,700	35,800	11,200	6,910	5,970
30				15,200	42,800	35,100	11,200	6,750	5,970
31					40,900		11,400	6,590	

NOTE.—Braced figures show estimated mean discharge for period indicated.

Monthly discharge of Kootenai River at Libby, Mont., for the year ending September 30, 1925

[Drainage area, 11,000 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	5,220	4,000	4,320	0.393	0.45	266,000
April 22-30	18,700	14,800	16,300	1.48	.50	291,000
May	76,800	17,000	42,700	3.88	4.47	2,630,000
June	45,100	28,500	36,300	3.30	3.68	2,160,000
July	32,000	11,200	17,300	1.57	1.81	1,060,000
August	11,600	6,590	9,170	.834	.96	564,000
September	6,750	5,970	6,200	.564	.63	369,000

CLARK FORK BASIN

CLARK FORK NEAR PLAINS, MONT.

LOCATION.—On lot 7, sec. 7, T. 19 N., R. 26 W., at Coopers Ferry, 3 miles above Plains, in Sanders County, and 7 miles below mouth of Flathead River.

DRAINAGE AREA.—19,900 square miles.

RECORDS AVAILABLE.—October 28, 1910, to September 30, 1925.

GAGE.—Stevens continuous recorder installed November 1, 1924; read by Mattie Monaghan. Prior to that date Barratt & Lawrence water-stage recorder at same site and datum.

DISCHARGE MEASUREMENTS.—Made from cable about 500 feet above gage.

CHANNEL AND CONTROL.—The river is deep, and the current is only moderately swift even at flood stages. The banks are high and are not overflowed. The channel probably acts as the control, as there is no defined control below gage

EXTREMES OF DISCHARGE.—Maximum stage during the year, 16.55 feet at 8 a. m. May 22 (discharge, 106,000 second-feet); minimum stage, 3.86 feet at 6.45 p. m. December 11 (discharge, 5,470 second-feet).

1910–1925: Maximum stage recorded, 17.9 feet June 5, 1913, and July 2, 1916 (discharge, 115,000 second-feet); minimum stage, 3.7 feet several times during October and November, 1919 (discharge, 4,890 second-feet); lower flow may have occurred during the ice periods.

ICE.—Stage-discharge relation seriously affected by ice.

DIVERSIONS.—Numerous diversions are made for irrigation from the headwaters of Clark Fork and tributaries to Flathead River.

REGULATION.—Flathead Lake furnishes a natural but uncontrolled regulation for part of the flow.

ACCURACY.—Stage-discharge relation affected by ice; otherwise permanent during year. Rating curve well defined between 5,000 and 100,000 second-feet. Gage heights obtained by inspection of recorder graph. Recorder visited once each week by observer. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Clark Fork near Plains, Mont., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 1	3.96	5,710	Apr. 7	7.46	21,700	Aug. 13	5.74	12,800
Nov. 1	3.92	5,770	May 23	16.20	[a]107,000			
Dec. 11	3.97	5,870	June 18	12.62	63,900			

[a] Surface velocities taken over part of section on account of driftwood.

Daily discharge, in second-feet, of Clark Fork near Plains, Mont., for the year ending September 30, 1925

Day	Nov.	Dec.	Apr.	May	June	July	Aug.	Sept.
1	6,000	6,260		44,100	89,400	56,000	18,200	11,400
2	6,320	6,320		45,900	87,800	55,500	17,900	11,200
3	6,320	6,320		48,700	84,600	53,500	17,400	11,000
4	6,460	6,420		49,600	82,400	62,200	16,900	10,800
5	6,660	6,520		51,600	80,300	48,700	16,700	10,800
6	6,660	6,490		53,500	77,100	46,400	16,200	10,800
7	6,760	6,560	21,600	57,500	75,000	43,600	15,900	10,800
8	6,660	6,420	22,700	58,600	71,200	42,300	15,700	10,800
9	6,590	6,220	24,500	59,100	69,600	39,600	15,500	11,000
10	6,760	5,750	27,000	57,500	69,100	37,100	14,700	11,000
11	6,840	5,690	30,300	56,500	68,500	35,500	14,300	11,000
12	6,840	6,130	33,900	58,600	69,600	33,900	13,600	11,000
13	6,940	6,870	35,500	63,800	68,500	32,800	13,200	11,200
14	6,560	9,150	40,900	70,100	67,500	30,700	12,700	11,200
15	6,540		45,000	74,400	65,900	30,000	12,700	11,400
16	6,940		47,300	78,700	64,800	28,600	12,500	11,400
17	6,630		49,200	81,400	65,300	27,600	12,300	11,400
18	6,560		51,400	83,500	64,300	26,400	12,500	11,200
19	6,940		52,500	87,300	63,800	25,400	12,700	11,000
20	6,560		53,400	92,600	64,800	24,800	12,500	11,200
21	6,700		53,500	98,000	66,400	23,900	12,300	11,400
22	6,870		52,800	104,000	67,500	23,000	12,300	11,200
23	7,190		51,100	103,000	67,500	22,500	12,000	11,000
24	7,410		51,800	102,000	66,900	21,900	12,000	11,000
25	7,410		50,600	101,000	65,300	21,600	12,000	10,800
26	7,330		47,300	99,000	63,200	21,100	12,000	10,600
27	7,120		45,900	95,800	60,600	20,500	12,000	10,300
28	6,940		45,000	93,700	59,100	20,000	11,800	10,100
29	6,630		44,100	93,100	58,600	19,500	11,600	9,720
30	6,350		44,100	93,100	57,000	18,900	11,400	9,720
31				92,100		18,200	11,400	

NOTE.—No record Oct. 1–31 and Dec. 29 to Apr. 7. Stage-discharge relation affected by ice Dec. 15–28; flow not computed.

Monthly discharge of Clark Fork near Plains, Mont., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
November	7,410	6,000	6,750	402,000
December 1–14	9,150	5,750	6,510	181,000
April 7–30	53,500	21,600	42,600	2,030,000
May	104,000	44,100	75,700	4,650,000
June	89,400	57,000	69,400	4,130,000
July	62,200	18,200	32,600	2,000,000
August	18,200	11,400	13,700	842,000
September	11,400	9,720	10,900	649,000

PEND OREILLE LAKE AT HOPE, IDAHO

LOCATION.—In lot 2, sec. 35, T. 57 N., R. 1 E. Boise meridian, at floating dock near Northern Pacific depot at Hope, Bonner County.

DRAINAGE AREA.—22,900 square miles. (Areas in United States measured on maps issued by United States Geological Survey; area of Flathead River Basin in British Columbia measured on Department of Lands map.)

RECORDS AVAILABLE.—September 17, 1921, to September 30, 1925.

GAGE.—Vertical staff in three sections on piles at floating dock; read by Capt. E. E. Moore and Capt. R. E. Smith. Zero of gage at elevation 2,048.88 feet when referred to bench mark at Hope (described on p. 94, Bulletin 567, United States Geological Survey). Zero of gage at elevation 2,045.67 feet, United States Coast and Geodetic Survey datum.

EXTREMES OF STAGE.—Maximum stage recorded during year, 19.7 feet on May 29 and 30; minimum stage recorded, 1.70 feet on October 24, 25, and 27.

1922–1925: Maximum stage recorded, that of May 29 and 30, 1925; minimum stage recorded, 1.46 feet on January 9, 1924.

Crest elevation during flood in June, 1894, was 2,079.29 feet as determined by William Ashley who referred the height of the water to the United States Geological Survey bench mark at Hope, Idaho. This crest elevation is equivalent to a gage height of 30.41 feet on gage at Hope and of 33.71 feet on gage formerly used at Sandpoint, when referred to bench mark described on page 94, Bulletin 567, United States Geological Survey.

ICE.—Ice conditions not serious at this station.

DIVERSIONS.—Considerable water diverted from tributaries of Clark Fork for irrigation.

REGULATION.—None.

ACCURACY.—Gage read to hundredths once on each day for which gage height is shown.

Daily gage height, in feet, of Pend Oreille Lake at Hope, Idaho, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	1.82	2.00	------	------	------	4.20	------	19.65	14.05	6.45	------
2	1.78	------	2.00	2.76	------	3.85	4.35	------	19.50	13.85	------	3.40
3	------	1.88	1.98	------	3.65	------	4.55	------	19.40	13.70	------	3.35
4	1.80	------	2.00	------	3.85	------	4.60	12.20	19.20	13.50	5.90	3.35
5	------	------	------	------	------	------	------	12.30	19.15	------	5.80	3.30
6	1.78	------	2.00	------	4.45	------	5.05	12.40	18.85	13.00	5.65	------
7	1.76	------	------	------	4.60	3.80	5.35	12.60	------	12.70	5.50	3.22
8	------	------	1.98	2.92	------	------	5.65	12.80	18.30	12.50	5.35	------
9	1.80	------	1.98	2.92	------	3.85	6.10	13.15	18.15	12.25	------	------
10	------	------	2.00	------	4.65	3.85	6.40	------	------	11.90	5.10	3.10
11	------	2.04	------	------	4.65	3.85	6.90	13.50	17.40	11.55	5.00	3.08
12	------	2.02	2.02	2.92	4.60	------	------	13.65	17.15	------	4.90	3.05
13	1.78	2.00	------	2.90	4.55	3.75	8.05	13.80	16.90	11.00	------	------
14	1.76	2.00	------	2.84	4.50	3.75	8.70	------	------	10.65	------	3.00
15	1.76	1.98	------	2.84	------	------	9.15	14.25	16.40	10.35	4.50	2.98

Daily gage height, in feet, of Pend Oreille Lake at Hope, Idaho, for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	1.74			2.82	4.40	3.65		14.75	16.10	10.05		2.94
17	1.74	1.98	2.54	2.78	4.30		10.05		15.90	9.45	4.30	2.90
18	1.74	1.96				3.60	10.50	15.50	15.65	9.20	4.20	2.88
19			2.62	2.80	4.05	3.60		16.00	15.50		4.15	
20	1.74		2.60	2.82	4.00	3.55	11.40	16.40	15.30	8.95	4.10	
21	1.74	2.02		2.82		3.55	11.70	17.10		8.65	4.05	2.84
22	1.74		2.60	2.84			11.85	17.65	15.20	8.45	4.00	2.82
23			2.58			3.50	12.00	18.30	15.10	8.15		2.82
24	1.70		2.60	2.86		3.50	12.05		15.05	7.95	3.90	2.82
25	1.70	2.02	2.60		3.95		12.25	19.10	15.00	7.75	3.80	2.82
26		2.02	2.60	2.86		3.65		19.30	14.95		3.75	
27	1.70	2.02	2.60	2.90		3.75	12.25	19.50	14.80	7.35	3.70	
28	1.72	2.02			3.90	3.80	12.22	19.60		7.15		2.74
29	1.78	2.02	2.64	2.94			12.20	19.70	14.40	6.95	3.60	2.70
30			2.68			4.00	12.15	19.70	14.20	6.75		2.65
31			2.70			4.10				6.60	3.50	

CLARK FORK AT METALINE FALLS, WASH.

LOCATION.—In SE. ¼ sec. 21, T. 39 N., R. 43 E., three-eighths of a mile above Metaline Falls, opposite town of Metaline Falls, Pend Oreille County, and 11 miles south of the international boundary.

DRAINAGE AREA.—25,100 square miles. (Areas in United States measured on maps issued by United States Geological Survey; area of Flathead River Basin in British Columbia measured on Department of Lands map; area of Priest River Basin in British Columbia measured on Nelson sheet, British Columbia map.)

RECORDS AVAILABLE.—November 4, 1908, to September 4, 1910 (gage heights only; data insufficient for determination of discharge); October 1, 1912, to September 30, 1925.

GAGE.—Vertical and inclined staff on right bank, three-eighths of a mile above the falls; installed December 10, 1916; read by Willis Pugh.

DISCHARGE MEASUREMENTS.—Made from cable at gage. Flow of Sullivan Creek added to flow measured at cable.

CHANNEL AND CONTROL.—Banks high and not subject to overflow. Sensitive and practically permanent control formed by Metaline Falls, the drop over which is 20 feet in a distance of 1,200 feet. Elevation, water surface at medium low stage, 1,970 feet above sea level.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 34.0 feet May 29 to June 3 (discharge, 114,000 second-feet); minimum stage recorded, 0.95 foot December 18 (discharge, 6,600 second-feet).

1912–1925: Maximum stage recorded, 41.2 feet June 16, 1913 (discharge, 139,000 second-feet); minimum stage recorded, −2.4 feet December 12, 1919 (discharge, 2,500 second-feet).

Maximum stage at Newport (900 square miles less drainage area), independently determined from three separate high water marks left by the flood in June, 1894, 38.9 feet (discharge, 217,000 second-feet), estimated by extending the rating curve.

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—Numerous diversions from upper tributaries for irrigation.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined above 8,000 second-feet. Gage read to hundredths once daily. No diurnal fluctuation. Daily discharge ascertained by applying daily gage height to rating table. Records excellent.

COOPERATION.—Station maintained in cooperation with Dominion Water Power and Reclamation Service, Department of the Interior, Canada. Gage height record furnished by Hugh L. Cooper Co.

The following discharge measurements were made:
May 27, 1925: Gage height, 33.35 feet; discharge, 110,000 second-feet.
September 14, 1925: Gage height, 5.38 feet; discharge, 12,000 second-feet.
September 15, 1925: Gage height, 5.30 feet; discharge, 14,000 second-feet.

Daily discharge, in second-feet, of Clark Fork at Metaline Falls, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8,080	8,360	9,400	10,600	13,100	18,500	18,700	63,800	114,000	76,900	29,700	15,000
2	7,940	8,360	9,400	10,800	13,100	18,900	19,300	63,400	114,000	75,100	29,500	14,800
3	7,810	8,500	9,400	10,600	14,800	18,500	19,800	63,400	114,000	74,200	28,700	14,600
4	7,810	8,650	9,250	10,800	16,400	18,500	20,600	63,800	113,000	73,300	27,500	14,400
5	7,810	9,100	9,250	10,600	17,700	18,100	21,500	63,800	112,000	71,500	26,800	14,400
6	7,940	8,950	9,250	11,500	18,900	18,300	22,400	64,600	111,000	70,600	26,200	14,000
7	7,810	9,250	9,250	11,300	20,400	18,500	22,800	65,000	110,000	69,700	25,200	14,000
8	7,810	9,550	9,100	11,200	21,300	18,300	24,600	66,300	107,000	67,100	24,600	14,200
9	7,680	9,250	9,100	11,500	22,400	18,100	26,200	67,100	106,000	65,500	24,100	14,000
10	7,680	9,400	8,950	11,900	21,500	18,100	28,300	68,800	104,000	63,800	23,500	13,700
11	7,940	9,400	9,250	12,200	21,900	17,700	30,400	70,600	101,000	62,500	22,800	13,300
12	7,940	9,250	9,550	12,200	21,900	17,700	33,100	71,500	99,600	62,100	22,400	13,100
13	7,810	9,400	9,250	11,900	21,900	17,400	35,100	72,400	97,600	60,800	21,700	13,300
14	7,940	9,250	9,550	12,600	21,000	17,400	37,900	73,800	96,100	55,400	21,000	13,300
15	7,940	9,100	9,850	11,700	20,400	17,200	40,800	75,100	94,200	52,200	20,400	13,100
16	7,940	9,100	9,550	11,300	19,300	16,600	44,300	76,400	92,700	51,900	20,000	12,800
17	7,810	8,950	10,800	12,200	18,900	16,400	47,300	80,500	90,300	50,000	19,600	12,800
18	7,810	9,100	6,600	12,200	19,600	16,400	49,600	82,400	88,900	49,600	18,900	12,600
19	7,810	9,250	6,720	12,400	19,100	16,400	53,000	85,100	86,600	46,600	18,700	12,600
20	7,810	9,250	8,650	12,600	18,700	16,400	55,400	87,000	85,600	44,300	18,500	12,600
21	7,810	9,250	8,360	14,000	18,700	16,200	57,900	91,800	84,200	43,000	18,100	12,400
22	7,810	9,250	8,500	13,700	18,300	16,200	60,000	95,600	82,400	41,700	17,700	12,200
23	7,810	9,400	7,440	13,000	18,700	16,000	60,800	98,600	82,800	40,200	17,200	12,200
24	7,940	9,250	7,080	13,000	19,100	16,200	62,100	103,000	82,400	38,400	16,800	12,200
25	7,810	9,250	7,680	12,400	18,700	16,400	62,100	106,000	81,400	37,300	16,600	12,200
26	7,810	9,250	8,360	12,200	18,900	16,000	62,900	109,000	81,400	36,700	16,400	12,100
27	7,810	9,250	8,950	12,800	18,700	16,800	63,800	111,000	80,500	35,100	16,200	12,100
28	7,940	9,250	10,200	12,600	18,500	17,200	64,200	112,000	79,600	34,400	16,000	12,200
29	8,220	9,250	10,200	13,000	-------	17,400	64,200	114,000	79,200	33,100	16,000	12,200
30	8,360	9,250	10,300	12,800	-------	18,100	64,200	114,000	78,700	31,100	15,800	12,200
31	8,360	-------	10,500	12,800	-------	18,500	-------	114,000	-------	30,200	15,400	-------

Monthly discharge of Clark Fork at Metaline Falls, Wash., for the year ending September 30, 1925

[Drainage area, 25,100 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	8,360	7,680	7,900	0.315	0.36	486,000
November	9,550	8,360	9,140	.364	.41	544,000
December	10,800	6,600	9,020	.359	.41	555,000
January	14,000	10,600	12,100	.482	.56	744,000
February	22,400	13,100	19,000	.757	.79	1,060,000
March	18,900	16,000	17,400	.693	.80	1,070,000
April	64,200	18,700	42,400	1.69	1.89	2,520,000
May	114,000	63,400	83,700	3.33	3.84	5,150,000
June	114,000	78,700	95,000	3.78	4.22	5,650,000
July	76,900	30,200	53,000	2.11	2.43	3,260,000
August	29,700	15,400	21,000	.837	.96	1,290,000
September	15,000	12,100	13,200	.526	.59	786,000
The year	114,000	6,600	31,900	1.27	17.26	23,100,000

ROCK CREEK NEAR QUIGLEY, MONT.

LOCATION.—In SW. ¼ sec. 36, T. 10 N., R. 17 W. (unsurveyed), at highway bridge one-fourth mile above mouth of Ranch Creek and 2½ miles south of Quigley, Granite County.

DRAINAGE AREA.—772 square miles (measured on topographic map).

RECORDS AVAILABLE.—May 1, 1922, to September 30, 1925, at present site; September 22, 1910, to November 17, 1912, at a site below mouth of Ranch Creek.

GAGE.—Standard wire and weight on downstream side of highway bridge; read by Ed. Shaughnessy.

CHANNEL AND CONTROL.—Bed composed of heavy boulders. Two channels at high stages. Control is bed of stream for several hundred feet below gage; probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.94 feet; May 21 and 22 (discharge, 3,540 second-feet); minimum stage, 1.00 foot December 17 (discharge, 115 second-feet).

1922–1925: Maximum stage recorded, 6.32 feet June 5, 1922 (discharge, 6,260 second-feet); minimum stage that of December 17.

ICE.—The stage-discharge relation is seriously affected by ice during the period December 18 to February 24, and discharge is based upon the measurements made during the period and a study of the temperature, precipitation, and observer's notes on ice.

DIVERSIONS.—None of importance.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent; affected by ice and by change of control. Two rating curves used during year; one applicable for November 17 to February 24 is well defined between 150 and 3,500 second-feet; the other, applicable February 25 to September 30, is well defined between 145 and 3,500 second-feet. Gage read to hundredths once daily. Daily discharge, except during ice-affected period, ascertained by applying daily gage height to rating table. Records good for open channel; fair for ice periods.

COOPERATION.—Maintained in cooperation with Rock Creek Power Co.

Discharge measurements of Rock Creek near Quigley, Mont., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Dec. 22	[a] 3.40	166	Feb. 14	[a] 2.68	153	June 27	3.33	1,190
Jan. 9	[a] 3.00	217	Feb. 24	[a] 1.94	151			
Jan. 22	[a] 2.70	170	Apr. 10	2.36	477			

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Rock Creek near Quigley, Mont., for the year ending September 30, 1925

Day	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	177	200	185	221	285	810	2,520	1,090	282	189
2	------	182			201	291	906	2,360	1,190	288	189
3	------	203			192	298	1,020	2,360	1,090	288	181
4	------	203			178	317	1,120	2,210	997	282	181
5	------	182			323	323	1,200	2,060	834	282	176
6	------	177			273	330	1,300	2,060	758	270	194
7	------	177			232	323	1,530	1,920	700	252	198
8	------	167			226	343	1,650	1,920	588	252	224
9	------	162			192	364	1,530	1,920	535	246	224
10	------	160			178	455	1,410	2,060	486	246	204
11	------	203	190	155	170	482	1,350	1,920	435	246	198
12	------	351			174	750	1,530	1,780	427	241	185
13	------	345			156	765	2,060	1,650	419	241	185
14	------	293			152	735	2,210	1,650	404	252	185
15	------	287			161	795	2,680	1,530	382	282	185
16	------	133			156	858	2,850	1,530	360	258	185
17	182	115			148	1,060	2,680	1,530	354	258	185
18	187	115			148	1,080	3,020	1,530	354	252	185
19	187	115			148	988	3,190	1,530	340	252	208
20	213	115			156	922	3,360	1,600	320	234	204
21	213	140	170	279	206	890	3,540	1,730	301	229	198
22	240	160		261	216	826	3,540	1,600	320	224	194
23	235	160		237	267	890	3,350	1,370	333	229	185
24	229	115		-------	216	826	3,190	1,260	320	229	185
25	203	115		-------	211	810	3,020	1,160	313	208	181
26	182	115		279	206	795	2,850	997	313	204	181
27	182	115		261	211	735	2,520	997	307	194	185
28	192	115		237	216	693	2,360	997	294	214	194
29	192	130		-------	255	693	2,360	997	313	208	204
30	182	150		-------	273	721	2,520	1,090	301	204	208
31	------	160		-------	267	-------	2,520	-------	288	198	------

NOTE.—Braced figures show estimated mean discharge for periods indicated. No record Oct. 1 to Nov. 16.

Monthly discharge of Rock Creek near Quigley, Mont., for the year ending September 30, 1925

[Drainage area, 772 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
November 17–30	240	182	201	0.260	0.14	5,580
December	351	115	172	.223	.26	10,600
January	-------	-------	186	.241	.28	11,400
February	-------	-------	179	.232	.24	9,940
March	323	148	204	.264	.30	12,500
April	1,080	285	655	.848	.95	39,000
May	3,540	810	2,230	2.89	3.33	137,000
June	2,520	997	1,660	2.15	2.40	98,900
July	1,190	288	499	.646	.74	30,700
August	288	194	243	.315	.36	14,900
September	224	176	193	.250	.28	11,500
The period	3,540	115	606	.785	9.04	382,000

RANCH CREEK NEAR QUIGLEY, MONT.

LOCATION.—In NE. ¼ sec. 36, T. 10 N., R. 17 W. (unsurveyed), one-fourth mile above mouth and 2¼ miles south of Quigley in Granite County.

DRAINAGE AREA.—42.7 square miles (measured on topographic map).

RECORDS AVAILABLE.—May 2, 1922, to September 30, 1925.

GAGE.—Vertical staff with enamel face on right abutment of highway bridge; read by Mrs. C. H. Hamm and Ed. Shaughnessy.

DISCHARGE MEASUREMENTS.—Bed composed of cobblestones. Control is riffle 20 feet below gage, subject to slight shifts. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.22 feet May 21 and 22 (discharge, 145 second-feet); minimum discharge estimated, 15 second-feet December 9.

1922–1925: Maximum stage, 1.50 feet May 19 and 20, 1922 (discharge, 238 second-feet); minimum discharge, 10.7 second-feet February 1, 1924.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—None of importance.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during year except for short periods affected by ice on control. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good except for periods affected by ice for which they are fair.

COOPERATION.—Gage heights and some discharge measurements furnished by the Rock Creek Power Co.

Discharge measurements of Ranch Creek near Quigley, Mont., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Dec. 22	[a] 0.90	20.0	Feb. 14	[a] 0.64	15.9	June 27	0.96	66.8
Jan. 9	.62	18.5	Feb. 28	.60	19.4			
Jan. 22	.62	20.1	Apr. 10	.86	45.7			

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Ranch Creek near Quigley, Mont., for the year ending September 30, 1925

Day	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	25	19	19	18	25	73	101	68	34	32
2	-------	25	19	19	18	27	78	95	76	36	32
3	-------	22	19	19	18	27	78	95	68	36	32
4	-------	22	19	21	19	32	84	95	58	34	32
5	-------	22	19	21	19	34	90	90	58	34	29
6	-------	22	19	21	21	34	84	90	58	34	29
7	-------	19	19	21	21	34	90	90	58	34	29
8	-------	17	18	21	19	36	95	84	53	34	32
9	-------	15	19	19	19	43	90	84	53	34	32
10	-------	25	18	19	21	46	90	84	50	32	29
11	-------	25	18	18	21	53	90	78	50	32	29
12	-------	25	18	17	19	73	95	78	50	32	27
13	-------	25	18	16	21	73	113	78	36	34	27
14	-------	27	19	16	21	73	126	78	46	34	27
15	-------	25	18	19	19	78	138	78	46	34	27
16	-------	22	18	19	19	84	138	78	43	34	27
17	25	22	18	18	18	101	132	78	39	34	27
18	25	22	18	18	18	101	138	78	39	34	27
19	25	21	18	18	18	78	138	84	36	34	27
20	25	21	18	18	19	78	138	84	36	32	27
21	25	20	19	18	19	73	145	78	34	32	27
22	27	20	19	18	19	73	145	78	36	32	27
23	25	25	19	18	21	78	138	73	36	32	25
24	25	25	19	18	21	73	132	73	36	32	25
25	24	24	19	18	21	73	132	73	36	32	25
26	22	22	18	18	21	73	126	68	34	32	25
27	22	20	18	18	22	73	126	68	34	32	25
28	27	20	18	18	24	73	107	68	34	34	27
29	27	22	18	-------	25	68	107	68	35	32	27
30	27	21	19	-------	25	68	107	68	36	32	25
31	-------	21	19	-------	25	-------	107	-------	34	32	------

NOTE.—Stage-discharge relation affected by ice Dec. 8-10, 16-22, 27, 28, and Feb. 11-14; daily discharge computed from discharge measurements, observer's notes, and temperature records.

Monthly discharge of Ranch Creek near Quigley, Mont., for the year ending September 30, 1925

[Drainage area, 42.7 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
November 17-30	27	22	25.1	0.588	0.31	697
December	27	15	22.2	.520	.60	1,360
January	19	18	18.5	.433	.50	1,140
February	21	16	18.6	.436	.45	1,030
March	25	18	20.3	.475	.55	1,250
April	101	25	61.8	1.45	1.62	3,680
May	145	73	112	2.63	3.03	6,890
June	101	68	80.5	1.89	2.11	4,790
July	76	34	45.4	1.06	1.22	2,790
August	36	32	33.2	.778	.90	2,040
September	32	25	27.9	.513	.57	1,660
The period	145	15	43.3	1.01	11.86	27,300

FLATHEAD LAKE AT SOMERS, MONT.

LOCATION.—In NE. ¼ sec. 26, T. 27 N., R. 21 W., at steamboat dock at Somers, Flathead County.

RECORDS AVAILABLE.—April 25, 1922, to September 30, 1925.

GAGE.—Stevens water-stage recorder in wooden shelter, referenced to staff gage in well set at sea-level datum.

EXTREMES OF STAGE.—Maximum stage recorded during year, 2,894.40 feet at 4.30 p. m. May 28; minimum stage, 2,882.2 feet at 11 a. m. November 3.

1922–1925: Maximum stage, that of May 28, 1925; minimum stage, 2,882.0 feet December 6–12, 1923.

ACCURACY.—Records fragmentary.

Daily gage height, in feet, of Flathead Lake at Somers, Mont., for the year ending September 30, 1925

Day	Oct.	Nov.	Apr.	May	June	Aug.	Day	Oct.	Nov.	Apr.	May	June	Aug.
1	-------	82.3	-------	88.3	93.8	-------	16	82.3	82.4	87.25	90.4	91.2	84.35
2	82.5	82.3	-------	88.3	93.6	-------	17	82.3	82.4	87.8	90.85	91.1	84.3
3	82.5	82.25	-------	88.35	93.4	-------	18	82.3	82.4	88.15	91.2	91.1	84.3
4	82.5	82.35	-------	88.45	93.2	-------	19	82.3	82.4	88.4	91.5	91.1	84.3
5	82.4	82.35	-------	88.55	93.05	-------	20	82.3	82.4	88.65	91.8	-------	84.3
6	82.45	82.35	-------	88.7	92.7	-------	21	82.3	82.4	88.8	92.15	-------	84.25
7	82.45	82.4	-------	88.75	92.4	-------	22	82.3	82.4	88.75	92.6	-------	------
8	82.45	82.4	-------	88.85	92.15	-------	23	82.3	82.4	88.8	93.2	-------	------
9	82.4	82.4	84.8	89.1	92.0	-------	24	82.3	82.4	88.85	93.6	-------	------
10	82.4	82.4	85.0	89.35	91.9	-------	25	82.25	82.4	88.8	93.8	-------	------
11	82.4	82.4	85.35	89.4	91.7	-------	26	82.25	82.4	88.75	94.0	-------	------
12	82.4	82.35	85.75	89.45	91.6	-------	27	82.25	82.4	88.65	94.05	-------	------
13	82.4	82.35	86.3	89.6	91.45	-------	28	82.25	82.4	88.55	93.95	-------	------
14	82.4	82.35	86.85	89.75	91.35	84.4	29	-------	-------	88.45	93.9	-------	------
15	82.35	82.35	87.25	90.0	91.3	84.45	30	-------	-------	88.35	94.0	-------	------
							31	-------	-------	-------	93.95	-------	------

NOTE.—Add 2,800 feet to reduce to sea level. No record Oct. 1, 29–31, Nov. 29 to Apr. 9, June 20 to Aug. 13, and Aug. 22 to Sept. 30.

FLATHEAD LAKE AT POLSON, MONT.

LOCATION.—In SE. ¼ sec. 4, T. 22 N., R. 20 W., at steamboat dock at south end of lake at Polson, Lake County.

RECORDS AVAILABLE.—August 23, 1908, to September 30, 1925.

GAGE.—Stevens water-stage recorder in wooden shelter installed April 23, 1922, and referenced to staff gage in well set to sea-level datum.

EXTREMES OF STAGE.—Maximum stage recorded during year, 2,894.3 feet at 5.30 p. m. May 28; minimum stage, 2,881.7 feet on January 20.

1908–1925: Maximum stage recorded, 2,895.7 feet July 1, 2, and 4, 1916; minimum stage, 2,881.5 feet February 16–22, 1913.

ACCURACY.—Records reliable but fragmentary.

Daily gage height, in feet, of Flathead Lake at Polson, Mont., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Apr.	May	June	July	Aug.	Sept.
1	------	82.3	82.3	83.4	------	88.2	------	90.5	------	84.0
2	82.35	82.3	82.3	83.4	------	88.3	------	90.4	------	84.0
3	82.4	82.3	82.3	83.5	------	88.4	------	90.1	------	84.0
4	82.5	82.2	82.3	83.5	------	88.5	------	89.8	------	83.9
5	82.5	82.25	82.3	83.5	------	88.7	------	89.6	------	83.9
6	82.5	82.25	82.35	83.3	------	88.8	------	89.4	------	83.9
7	82.45	82.2	82.3	83.3	------	------	------	89.2	------	82.8
8	82.4	82.2	82.35	83.35	84.5	------	------	88.9	------	83.7
9	82.5	82.3	82.3	83.3	84.7	------	------	------	------	83.7
10	82.6	82.25	82.3	83.3	84.9	------	------	------	------	83.7
11	82.45	82.35	82.2	83.35	85.3	------	------	------	------	83.7
12	82.35	82.4	82.1	83.3	85.5	------	------	------	84.4	83.7
13	82.4	82.25	82.15	83.3	86.1	------	------	------	84.3	83.7
14	82.45	82.25	82.3	83.3	86.7	------	------	------	84.2	83.65
15	82.45	82.2	83.0	------	87.2	------	------	------	84.3	83.6
16	82.4	82.3	83.65	------	87.4	------	------	------	84.4	83.6
17	82.4	82.3	83.5	------	87.7	------	------	------	84.4	83.6
18	82.4	82.3	83.5	------	88.0	------	90.95	------	84.4	83.65
19	82.4	82.3	83.4	81.75	88.3	------	91.0	------	84.4	83.8
20	82.35	82.3	83.4	81.7	88.5	------	91.0	------	84.3	83.65
21	82.35	82.35	83.5	------	88.6	------	91.1	------	84.3	83.6
22	82.4	82.3	83.5	------	88.6	------	91.2	------	84.3	83.6
23	82.35	82.35	83.55	------	88.65	------	91.2	------	84.25	83.6
24	82.3	82.35	83.45	------	88.6	93.4	91.2	------	84.25	83.6
25	82.35	82.3	83.4	------	88.6	93.5	91.2	------	84.25	83.6
26	82.3	82.35	83.4	------	88.6	93.9	91.1	------	84.2	83.65
27	82.3	82.4	83.4	------	88.5	94.0	90.95	------	84.1	83.5
28	82.3	82.35	83.4	------	88.4	93.8	90.8	------	84.1	83.5
29	82.3	82.35	83.4	------	88.3	------	90.7	------	84.1	83.5
30	82.3	82.3	83.4	------	88.25	------	90.6	------	84.1	83.5
31	82.3	------	83.5	------	------	------	------	------	84.0	------

NOTE.—Add 2,800 feet to reduce to sea level. No record Oct. 1, Dec. 15–18, Dec. 21 to Apr. 8, May 7–23, May 29 to June 18, and July 9 to Aug. 11. Elevations probably affected by backwater from ice on Flathead River at lake outlet, Dec. 14 to Jan. 14.

FLATHEAD RIVER NEAR POLSON, MONT.

LOCATION.—In sec. 19, T. 22 N., R. 21 W., on highway bridge at Norrisvale, 5 miles below Newell Tunnel, 15 miles northwest of Ronan, and 12 miles below Polson, Lake County.

DRAINAGE AREA.—7,010 square miles.

RECORDS AVAILABLE.—July 23, 1907, to September 30, 1925.

GAGE.—Chain gage on upstream side of bridge; read by Mrs. J. Wigen.

DISCHARGE MEASUREMENTS.—Made from highway bridge at gage.

CHANNEL AND CONTROL.—Control premanent. Current fairly swift. Banks high.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 15.02 feet at 8 a. m. on May 25 and 26 (discharge, 67,300 second-feet); minimum stage, 1.84 feet October 9 (discharge, 3,060 second-feet).

1907–1925: Maximum stage recorded, 16.4 feet June 13, 1913 (discharge, 75,400 second-feet); minimum stage recorded, −0.1 foot December 9–14, 1919, and March 14, 1920 (discharge, 1,360 second-feet).

ICE.—Stage-discharge relation not seriously affected by ice.

DIVERSIONS.—Several diversions from tributaries above Flathead Lake.

REGULATION.—Flathead Lake forms a natural regulation.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve well defined between 2,000 and 70,000 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table except for December 7–13 and August 22–28, when discharge was interpolated. Records good.

The following discharge measurements were made:

April 9, 1925: Gage height, 5.58 feet; discharge, 11,300 second-feet.

May 26, 1925: Gage height, 15.04 feet; discharge, 65,200 second-feet.

August 13, 1925: Gage height, 5.16 feet; discharge, 9,120 second-feet.

Daily discharge, in second-feet, of Flathead River near Polson, Mont., for the year ending September, 30, 1925

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,320	3,250	3,190	-------	5,700	29,200	65,600	45,800	14,600	8,270
2	3,190	3,130	3,190	-------	6,120	29,700	63,400	46,400	14,100	8,000
3	3,190	3,190	3,130	-------	6,120	30,300	61,300	47,100	13,300	7,740
4	3,130	3,190	3,130	-------	6,340	30,900	60,600	45,100	13,300	7,740
5	3,130	3,190	3,130	-------	7,250	31,500	59,200	37,500	12,900	7,740
6	3,130	3,190	3,130	-------	7,740	32,100	57,800	36,300	12,500	7,490
7	3,130	3,250	3,130	-------	8,830	33,300	55,700	35,700	12,100	7,250
8	3,080	3,250	3,140	5,110	10,000	34,500	54,400	34,500	11,700	7,250
9	3,080	3,320	3,150	4,750	11,000	35,100	52,300	32,700	11,400	7,250
10	3,130	3,250	3,160	4,750	12,100	35,700	51,700	30,900	11,000	7,250
11	3,130	3,190	3,170	4,840	14,100	36,300	50,400	28,600	10,700	7,010
12	3,130	3,130	3,180	4,930	15,400	36,300	49,700	27,400	10,300	7,010
13	3,130	3,130	3,190	4,930	16,800	36,900	49,000	26,900	10,300	6,780
14	3,130	3,130	3,190	4,930	20,900	38,800	48,400	26,900	9,710	6,780
15	3,320	3,130	3,130	4,750	23,000	41,300	47,100	26,300	9,120	6,560
16	3,320	3,130	3,130	4,750	24,700	43,200	46,400	25,200	9,410	6,340
17	3,250	3,250	3,130	4,750	26,300	45,100	46,400	24,100	9,410	6,120
18	3,250	3,320	3,130	4,840	28,000	47,700	45,800	23,600	9,710	5,910
19	3,130	3,250	3,130	4,750	29,200	49,000	45,800	22,500	9,120	5,700
20	3,320	3,250	3,130	4,660	30,300	51,700	46,400	22,000	9,120	5,800
21	3,320	3,130	3,130	4,580	32,700	54,400	46,400	20,900	9,120	5,300
22	3,250	3,130	3,130	4,580	32,100	55,700	47,100	20,200	9,120	5,300
23	3,250	3,250	3,190	4,420	32,100	64,100	47,100	19,500	9,120	5,300
24	3,250	3,190	3,190	4,580	32,100	65,600	47,700	18,800	9,120	5,300
25	3,190	3,190	3,190	4,580	31,500	67,000	46,400	18,100	9,120	5,300
26	3,190	3,190	3,250	4,750	31,500	67,000	46,400	17,500	9,120	5,300
27	3,190	3,190	3,250	4,750	30,900	67,000	45,800	16,800	9,120	5,300
28	3,190	3,190	3,250	4,930	30,300	66,300	45,800	15,100	8,830	5,300
29	3,190	3,190	3,190	4,020	30,300	59,900	45,100	15,400	8,550	5,300
30	3,130	3,190	3,190	4,750	29,700	65,600	45,100	15,400	8,550	5,300
31	3,130	-------	3,190	5,110	-------	66,300	-------	15,400	8,550	-------

NOTE.—No record Jan. 1 to Mar. 7.

Monthly discharge of Flathead River near Polson, Mont., for the year ending September 30, 1925

[Drainage area, 7,010 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	3,320	3,080	3,190	0.455	0.52	196,000
November	3,320	3,130	3,200	.456	.51	190,000
December	3,250	3,130	3,170	.452	.52	195,000
March 8–31	5,110	4,020	4,740	.676	.60	226,000
April	32,700	5,700	20,800	2.97	3.31	1,240,000
May	67,000	29,200	46,700	6.66	7.68	2,870,000
June	65,600	45,100	50,700	7.23	8.07	3,020,000
July	47,100	15,400	27,100	3.87	4.46	1,670,000
August	14,600	8,550	10,400	1.48	1.71	640,000
September	8,270	5,300	6,420	.916	1.02	382,000

SOUTH FORK OF FLATHEAD RIVER NEAR COLUMBIA FALLS, MONT

LOCATION.—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, Flathead County.

DRAINAGE AREA.—1,640 square miles (measured on Forest Service map).

RECORDS AVAILABLE.—September 20, 1910, to September 30, 1916, and April 13, 1923, to September 30, 1925.

GAGE.—Stevens water-stage recorder installed April 13, 1923, in gage shelter on downstream side of pier.

DISCHARGE MEASUREMENTS.—Made from highway bridge.

CHANNEL AND CONTROL.—Channel composed of boulders and cobblestones. No definite control. Banks high; not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11.00 feet at 4 p. m. May 25 (discharge, 23,200 second-feet); minimum stage, 2.10 feet at 8 a. m. October 1 (discharge, 360 second-feet).

1910–1916; 1923–1925: Maximum stage recorded, 16.6 June 19, 1916, (discharge estimated by extension of rating curve, 46,200 second-feet); minimum stage, 2.08 feet October 6, 1923 (discharge, 340 second-feet).

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent, except as affected by shifting control during the period April 8–20. Gage-height record fragmentary. Curve is well defined between 400 and 24,000 second-feet. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of South Fork of Flathead River near Columbia Falls, Mont., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 3	2.78	902	May 25	10.80	22,600	June 20	8.85	16,200
Nov. 3	2.92	1,030	Apr. 8	6.65	10,100	Aug. 15	4.04	2,430

Daily discharge, in second-feet, of South Fork of Flathead River near Columbia Falls, Mont., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Apr.	May	June	July	Aug.	Sept.
1	412	758	731			11,400	8,260		1,200
2	406	850	731			7,280	7,700		1,150
3	749	1,020	722			6,740	7,000		1,100
4	985	1,150	722			6,480	6,350		1,100
5	880	1,330	731				5,960		1,040
6	776	1,280	722				5,580		1,040
7	722	1,140	731				5,200		1,040
8	704	1,070	713	10,000			4,820		1,150
9	695	1,020		11,100			4,460		1,260
10	548	985		12,800			4,120		1,155
11	510	941		14,000			4,340		1,150
12	495	910		18,200			3,790		1,100
13	495	890		21,100			3,580		1,100
14	495	890		17,000			3,480		1,040
15	488	900		14,300			3,280	2,470	1,100
16	481	910		13,000			3,100	3,280	1,100
17	474	880		14,900			3,000	2,730	
18	481	900		16,000			3,000	2,240	
19	488	910		14,000			2,820	2,090	
20	481	910		11,400		15,800	2,640	1,950	
21	474	900				16,000	2,560	1,820	
22	474	880				15,800	2,470	1,680	
23	460	850				14,400	2,470	1,620	
24	439	767				13,000	2,310	1,680	
25	412	740			22,300	11,900	2,560	1,620	1,150
26	392	731			19,700	11,200	2,470	1,560	1,130
27	439	722			18,500	10,800	2,470	1,500	1,110
28	460	704			19,400	10,200		1,440	1,080
29	555	722			21,200	9,900		1,380	1,010
30	634	731			21,600	9,150		1,300	985
31	650				17,700			1,200	

NOTE.—No record Dec. 9 to Apr. 8, Apr. 20 to May 25, June 5-19, July 28 to Aug. 14, and Sept. 17-24.

Monthly discharge of South Fork of Flathead River near Columbia Falls, Mont., for the year ending September 30, 1925

[Drainage area, 1,640 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	985	392	553	0.337	0.38	34,000
November	1,330	704	913	.557	.62	54,300
December 1-8	731	713	726	.443	.13	11,500
April 8-20	21,100	10,000	14,400	8.78	4.24	371,000
May 25-31	22,300	17,700	20,100	12.3	3.20	279,000
June (15 days)	16,000	6,480	11,300	6.89	3.84	336,000
July 1-27	8,260	2,310	4,070	2.48	2.49	218,000
August 15-31	3,280	1,200	1,860	1.13	.71	62,700
September (22 days)	1,260	985	1,100	.671	.55	48,000

SWAN RIVER NEAR BIG FORK, MONT.

LOCATION.—In NW. ¼ sec. 14, T. 26 N., R. 19 W., Lake County, at outlet of Swan Lake, 7 miles southeast of Big Fork, Flathead County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 28, 1922, to September 30, 1925.

GAGE.—Vertical staff with enamel face fastened to pier on left bank, 1,000 feet below outlet of lake; read by Pat Murphy.

DISCHARGE MEASUREMENTS.—Made from highway bridge three-fourths of a mile below gage or from boat.

CHANNEL AND CONTROL.—Bed of stream composed of boulders and gravel. Banks subject to overflow at high stages. Control is rock ledge about 300 feet below gage, slightly shifting.

EXTREMES OF DISCHARGE.—Maximum stage reported during year, 5.45 feet at 8 p. m. May 23 (discharge, 6,760 second-feet); minimum stage, 0.58 foot October 1 and 26–29 (discharge, 352 second-feet).

1922–1925: Maximum stage reported, that of May 23, 1925; minimum stage, 0.33 foot February 25 to March 24, 1923 (discharge, 268 second-feet).

ICE.—Stage-discharge relation seriously affected by ice.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during year, except as affected by ice. Rating curve well defined between 300 and 6,500 second-feet. Gage read to hundredths once or twice daily. Discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Swan River near Big Fork, Mont., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 2	0.63	384	Apr. 8	3.70	3,620	June 20	3.55	3,390
Nov. 4	.91	506	May 25	5.06	6,090			

Daily discharge, in second-feet, of Swan River near Big Fork, Mont., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	352	424	443		1,670	2,280	4,620	3,100	974	722
2	360	433	443		1,780	2,420	4,280	2,960	936	690
3	395	474	453		1,890	2,550	3,960	2,810	917	676
4	424	516	463		2,070	2,610	3,750	2,650	917	662
5	424	596	453		2,580	2,670	3,560	2,510	898	634
6	433	608	453		3,130	2,820	3,350	2,370	870	634
7	414	620	453		3,490	3,120	3,130	2,220	824	634
8	414	596	433		3,600	3,460	2,920	2,120	815	690
9	414	584	414		3,520	3,670	2,750	2,000	788	722
10	414	584	414		3,590	3,700	2,810	1,900	770	722
11	395	572	453		3,720	3,570	2,920	1,810	754	722
12	395	549	463		3,860	3,670	3,080	1,700	722	706
13	395	538	505		4,330	4,000	3,100	1,660	722	706
14	395	516			4,560	4,580	3,070	1,590	722	706
15	378	505			4,360	5,110	3,000	1,540	964	706
16	378	505			4,070	5,350	2,840	1,480	1,070	706
17	378	505			3,860	5,400	2,790	1,440	1,110	754
18	378	495			3,810	5,300	2,850	1,400	1,110	788
19	369	474			3,780	5,420	3,070	1,360	1,070	788
20	369	453			3,680	5,670	3,350	1,330	1,030	806
21	369	453			3,520	6,030	3,640	1,290	993	788
22	360	474		706	3,330	6,240	3,830	1,230	917	788
23	360	516		722	3,220	6,660	3,970	1,240	879	788
24	360	527		754	3,220	6,560	3,970	1,210	898	754
25	360	527		842	3,190	6,010	3,800	1,240	898	754
26	352	527		898	3,010	5,600	3,640	1,200	898	706
27	352	516		955	2,810	5,110	3,480	1,160	824	706
28	352	516		1,010	2,550	4,730	3,350	1,110	824	690
29	352	453		1,130	2,390	4,670	3,250	1,080	788	662
30	360	453		1,290	2,260	4,770	3,200	1,050	788	662
31	360			1,490		4,800		1,020	754	

NOTE.—No record Dec. 14 to Mar. 21.

Monthly discharge of Swan River near Big Fork, Mont., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	433	352	391	23,400
November	620	424	517	30,800
December 1–13	505	414	449	11,600
March 22–31	1,490	706	980	19,400
April	4,560	1,670	3,230	192,000
May	6,660	2,280	4,470	275,000
June	4,620	2,750	3,380	201,000
July	3,100	1,020	1,700	105,000
August	1,110	722	885	54,400
September	806	634	716	42,600

BIG CREEK NEAR POLSON, MONT.

LOCATION.—In NW. ¼ sec. 4, T. 22 N., R. 19 W., just below power house of Mission Range Power Co., three-fourths mile above mouth and 7 miles east of Polson, Lake County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—June 1, 1917, to September 30, 1925.

GAGE.—Stevens eight-day water-stage recorder on left bank.

CHANNEL AND CONTROL.—An artificial control about 2 feet below gage. One channel at all stages. Shifts occasionally, owing to gravel being deposited above control.

DISCHARGE MEASUREMENTS.—Made from foot log just above gage or by wading.

EXTREMES OF DISCHARGE.—Maximum discharge recorded during year ending September 30, 1924, 27.2 second-feet May 17 (the flow in pipe line and canal has been included); minimum discharge about 2 second-feet during October (entire flow in pipe line and canal).

Maximum discharge recorded during year ending September 30, 1925, 61 second-feet May 22 (the flow in the pipe line only, has been included); minimum discharge about 2.0 second-feet October 5 (entire flow in pipe line and canal).

1917–1925: Maximum stage recorded, 2.4 feet June 9, 1917 (discharge from extended rating curve, 104 second-feet); minimum discharge, no flow as power plant was shut down for short periods during November and December, 1922—seldom longer than one or two hours.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Polson "A" Canal of United States Office of Indian Affairs diverts water between power house and gage, and the intake for Polson pipe line is between the canal and the gage.

REGULATION.—Operation of power plant materially affects flow, maximum effect being during low-water period.

ACCURACY.—Stage-discharge relation not permanent, affected by shifting control and by ice. Rating curves fairly well defined. Daily discharge ascertained by applying mean daily gage height to rating table and adding the flow in the city pipe line.

Discharge measurements of Big Creek near Polson, Mont., during the years ending September 30, 1924 and 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
1924	*Feet*	*Sec.-ft.*	1924	*Feet*	*Sec.-ft.*	1925	*Feet*	*Sec.-ft.*
Apr. 9	1.34	2.6	Oct. 2	1.30	3.4	June 20	1.46	11.8
May 24	1.68	16.8	1925			Aug. 14	1.32	1.7
June 29	1.20	.26	Apr. 8	1.45	11.4			
Aug. 7	1.29	1.3	May 26	1.54	18.1			

Daily discharge, in second feet, of Big Creek near Polson, Mont., for the years ending September 30, 1924 and 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1923–24												
1	5.6	3.2	4.7	3.3	3.8	4.0	3.6	6.2	7.2	5.4	4.6	4.8
2	5.4	3.8	3.2	3.2	3.5	3.2	3.6	6.4	9.8	5.4	4.4	6.2
3	5.2	3.4	4.7	3.4	3.1	4.4	4.2	13.6	10.4	5.2	4.4	5.4
4	5.0	2.4	5.1	3.3	4.1	5.3	3.1	17.2	8.2	5.2	4.4	6.0
5	4.8	3.4	4.7	3.3	5.1	4.0	3.7	17.6	6.0	5.2	4.4	6.0
6	4.8	4.0	4.9	3.1	4.8	3.9	2.7	10.0	6.8	5.0	4.6	6.2
7	3.0	4.0	4.8	3.2	4.7	5.0	4.0	6.6	8.4	5.2	4.4	5.2
8	3.8	4.0	4.9	3.4	3.9	5.0	4.3	7.0	9.6	5.2	4.4	6.0
9	4.0	3.2	3.2	3.3	4.9	2.9	3.0	11.2	9.8	5.6	4.4	6.4
10	3.8	4.6	4.6	3.3	3.0	4.7	3.0	12.2	7.2	5.4	4.4	7.0
11	4.0	3.2	4.8	3.3	4.3	5.3	3.8	13.6	7.2	5.4	4.4	6.8
12	4.0	4.6	5.1	3.2	5.5	5.3	3.2	17.2	10.0	5.4	4.4	5.6
13	3.4	5.0	5.0	3.1	4.4	5.0	2.8	17.8	9.4	5.0	4.4	5.8
14	2.6	5.4	4.5	3.0	4.8	5.0	4.0	18.0	10.0	5.4	4.4	4.4
15	3.2	5.3	4.6	3.1	4.3	5.2	3.2	16.6	8.2	5.4	4.6	5.0
16	3.4	5.3	3.3	3.3	5.4	2.8	3.2	16.8	10.0	5.4	4.6	5.0
17	4.4	5.2	4.5	3.4	3.1	3.4	3.8	22.6	8.4	5.4	4.2	5.0
18	3.0	3.2	5.2	3.2	3.9	2.8	4.6	20.8	8.4	5.4	4.2	5.0
19	3.4	4.6	4.4	3.1	5.3	3.9	3.8	21.6	8.4	5.0	4.2	4.8
20	5.2	5.0	3.2	3.1	4.1	3.8	3.0	21.0	8.0	4.8	4.2	4.8
21	4.4	4.9	3.3	3.4	5.5	4.2	3.4	18.6	6.4	4.8	4.4	4.4
22	3.6	4.9	3.6	3.8	4.5	4.4	4.0	15.4	5.6	4.8	4.2	5.0
23	3.0	4.8	3.3	4.1	5.2	2.7	3.4	16.0	6.6	4.6	4.6	5.2
24	3.0	4.6	3.3	3.7	2.9	2.7	3.2	15.2	6.2	4.8	4.0	5.0
25	3.2	3.2	3.3	3.9	4.8	3.9	4.0	13.8	6.2	5.0	4.8	5.2
26	3.0	4.5	3.3	4.2	4.3	2.9	3.8	11.4	5.4	4.6	5.0	5.0
27	3.2	4.9	3.7	3.1	4.3	3.8	2.8	9.0	5.6	4.8	5.0	6.0
28	2.4	5.0	3.7	3.9	5.4	3.3	3.8	9.6	5.2	5.2	5.0	4.4
29	3.0	3.1	3.6	3.7	5.0	4.2	4.6	9.2	5.0	4.8	5.2	5.4
30	4.4	4.4	3.1	3.3	-------	2.6	3.8	6.0	5.4	5.2	5.4	5.4
31	3.4	-------	3.3	3.3	-------	4.2	-------	6.2	-------	4.8	4.2	-------
1924–25												
1	4.0	2.8	5.0	3.5	3.1	2.6	6.0	13.4	19.4	-------	-------	-------
2	3.4	2.2	5.1	4.3	4.3	4.4	5.4	13.4	16.0	-------	-------	-------
3	2.6	2.2	3.8	3.7	3.5	3.4	5.4	10.0	13.4	-------	-------	-------
4	3.0	2.2	4.9	3.2	4.6	3.6	4.8	10.6	15.4	-------	-------	-------
5	2.2	3.6	4.0	4.5	3.4	3.3	8.0	10.0	16.0	-------	-------	-------
6	3.6	4.2	5.0	3.6	4.2	3.2	14.0	10.6	16.0	-------	-------	-------
7	2.8	4.2	3.1	3.5	3.2	3.7	12.0	13.4	12.6	-------	-------	-------
8	3.0	3.6	4.5	4.6	2.8	2.5	8.4	14.8	13.4	-------	-------	-------
9	3.0	3.4	3.7	3.7	4.2	4.0	4.6	14.8	11.4	-------	-------	-------
10	3.0	4.0	3.8	3.5	3.2	3.2	8.4	10.6	14.0	-------	-------	-------
11	3.2	4.0	5.0	2.8	4.3	4.3	12.0	10.6	18.4	-------	-------	-------
12	2.8	3.8	3.9	4.2	3.0	3.4	19.4	12.6	16.8	-------	-------	-------
13	3.2	4.5	3.7	3.5	3.8	4.1	21.0	16.0	17.6	-------	-------	-------
14	2.8	4.8	3.2	3.3	3.0	3.0	18.8	17.6	14.8	-------	-------	-------
15	2.8	4.8	4.2	4.3	2.7	2.6	8.4	24.8	15.4	-------	-------	-------
16	4.0	3.0	2.7	3.4	3.6	4.0	9.0	25.8	14.8	-------	-------	-------
17	3.6	4.6	3.7	3.5	3.2	3.3	12.0	25.8	14.8	-------	-------	-------
18	3.6	5.1	4.2	2.9	4.0	4.1	14.8	27.8	13.4	-------	-------	-------
19	3.0	4.9	4.8	4.0	3.0	3.1	13.4	31.8	13.4	-------	-------	-------
20	4.2	4.8	5.0	3.2	3.8	3.0	14.0	36.8	16.0	-------	-------	-------
21	3.0	4.9	3.5	4.4	3.0	2.6	14.8	38.8	14.8	-------	-------	-------
22	3.2	4.8	4.6	2.9	2.7	2.6	12.6	51.8	14.0	-------	-------	-------
23	3.0	3.3	4.9	4.4	3.7	3.8	14.0	47.8	13.4	-------	-------	-------
24	2.4	4.6	4.7	3.6	3.1	3.0	16.8	35.8	10.6	-------	-------	-------
25	2.2	4.9	3.3	2.8	3.7	2.8	18.4	23.8	8.0	-------	-------	-------
26	2.2	3.8	4.2	3.0	2.7	3.6	10.8	19.4	4.2	-------	-------	-------
27	2.2	2.8	4.7	4.3	3.9	2.8	9.0	21.8	6.4	-------	-------	-------
28	2.4	4.5	3.3	3.4	3.2	2.8	9.0	20.2	7.4	-------	-------	-------
29	2.8	3.7	4.0	4.5	-------	2.5	8.4	30.8	9.0	-------	-------	-------
30	2.8	3.3	4.9	3.3	-------	4.8	8.4	25.8	7.0	-------	-------	-------
31	2.8	-------	5.0	4.3	-------	6.0	-------	20.2	-------	-------	-------	-------

NOTE.—Daily discharge Nov. 10, 1923, to Apr. 8, 1924, determined from output of power plant. The discharge of the Polson "A" Canal has been included from May 1 to Sept. 30, 1924.

Monthly discharge of Big Creek near Polson, Mont., for the years ending September 30, 1924 and 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
1923–24				
October	5.6	2.4	3.83	236
November	5.4	2.4	4.24	252
December	5.2	3.1	4.09	251
January	4.2	3.0	3.39	208
February	5.5	2.9	4.41	254
March	5.3	2.6	3.99	245
April	4.6	2.7	3.58	213
May	22.6	6.0	13.7	842
June	10.4	5.0	7.63	454
July	5.6	4.6	5.12	315
August	5.4	4.0	4.51	277
September	7.0	4.4	5.41	322
The year	22.6	2.4	5.33	3,870
1924–25				
October	4.2	2.2	2.99	184
November	5.1	2.2	3.91	233
December	5.1	2.7	4.21	259
January	4.5	2.8	3.68	226
February	4.6	2.7	3.46	192
March	6.0	2.5	3.42	210
April	21.0	4.6	11.4	678
May	51.8	10.0	22.2	1,360
June	19.4	4.2	13.3	791
July			3.31	204
August			4.25	261
September			4.74	282
The year	51.8		6.74	4,880

NOTE.—Mean monthly discharge for July, August, and September, 1925, computation from the kilowatt output of power plant.

PRIEST RIVER AT OUTLET OF PRIEST LAKE, NEAR COOLIN, IDAHO

LOCATION.—In SW. ¼ sec. 5, T. 59 N., R. 4 W., at southwest end of Priest Lake, 2 miles northwest of Coolin, Bonner County.

DRAINAGE AREA.—572 square miles.

RECORDS AVAILABLE.—June 18, 1911, to September 30, 1925.

GAGE.—Stevens water-stage recorder on right bank 600 feet below outlet; installed November 24, 1914; inspected by F. S. Williamson.

DISCHARGE MEASUREMENTS.—Made from cable about 300 feet above gage or by wading.

CHANNEL AND CONTROL.—Bed rough. Banks high. Control formed by boulder riffle. Many large boulders and angular rocks at control catch logs and cause backwater.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year from water-stage recorder, 5.55 feet at 8 a. m. on May 23 (discharge, 5,730 second-feet); minimum stage, 0.13 foot at 8.20 p. m. October 2 (discharge, 152 second-feet).

1911–1925: Maximum stage recorded, 6.83 feet at 1.30 p. m. May 30, 1917 (discharge, 7,290 second-feet); minimum discharge, that of October 2, 1924.

ICE.—Ice forms on lake and occasionally in river just below outlet. Stage-discharge relation not affected by ice except possibly for short periods when ice, running out of lake, jams on rocks at control.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent; affected by logs April 8–15. Rating curve well defined. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height determined from gage-height graph by inspection. Records excellent.

The following discharge measurements were made:

May 28, 1925: Gage height, 5.02 feet; discharge, 5,040 second-feet.

September 22, 1925: Gage height, 0.31 foot; discharge, 204 second-feet.

September 22, 1925: Gage height, 0.31 foot; discharge, 207 second-feet.

Daily discharge, in second-feet, of Priest River at outlet of Priest Lake near Coolin, Idaho, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	176	258	381	484	553	735	710	3,660	4,220	2,000	602	262
2	173	284	381	484	558	722	722	3,660	4,080	1,950	587	258
3	176	303	381	484	585	722	742	3,660	3,940	1,900	571	248
4	176	331	385	484	636	729	782	3,660	3,800	1,780	556	240
5	182	347	389	494	690	729	839	3,660	3,660	1,680	540	237
6	176	360	398	489	735	729	760	3,660	3,530	1,620	525	230
7	176	368	389	484	748	722	735	3,800	3,400	1,520	510	224
8	179	381	377	484	762	716	992	3,940	3,400	1,470	494	215
9	182	398	368	484	769	716	1,280	3,940	3,270	1,420	479	209
10	185	402	377	494	769	703	1,570	4,080	3,200	1,320	469	206
11	179	406	377	494	776	697	1,950	4,080	3,140	1,280	458	206
12	179	410	381	498	762	697	2,400	4,080	3,140	1,230	448	203
13	188	406	393	494	755	690	2,820	4,080	3,080	1,180	437	200
14	191	406	410	484	748	690	3,200	4,220	3,080	1,130	427	200
15	191	406	457	484	742	678	3,400	4,220	3,010	1,100	416	200
16	194	406	461	479	735	672	3,530	4,360	2,940	1,050	406	200
17	194	406	453	479	729	666	3,660	4,500	2,940	1,000	395	197
18	194	402	461	503	716	666	3,940	4,650	2,880	962	385	197
19	194	414	461	508	703	666	4,080	4,800	2,880	930	372	200
20	197	419	466	508	703	660	4,080	4,950	2,820	883	360	197
21	197	419	461	508	703	660	4,080	5,100	2,760	854	348	194
22	197	419	461	512	710	666	3,940	5,570	2,700	817	335	200
23	197	419	461	522	735	660	3,940	5,570	2,640	789	329	203
24	197	414	461	517	748	666	3,940	5,410	2,580	762	324	200
25	197	410	461	512	748	666	3,940	5,250	2,460	735	318	197
26	203	406	461	508	748	666	3,800	4,950	2,400	716	312	200
27	209	398	461	508	762	666	3,800	4,880	2,280	690	306	200
28	221	393	479	508	755	678	3,660	4,800	2,280	672	301	203
29	234	389	484	508	-------	684	3,660	4,650	2,220	648	295	194
30	240	385	484	422	-------	690	3,660	4,650	2,120	636	284	185
31	248	-------	479	542	-------	703	-------	4,500	-------	618	276	-------

NOTE.—Water-stage recorder not operating May 27. Gage height record Aug. 2–28 lost in mail; discharge obtained by interpolation between occasional days on which observer read and reported staff gage readings.

Monthly discharge of Priest River at outlet of Priest Lake, near Coolin, Idaho, for the year ending September 30, 1925

[Drainage area, 572 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	248	173	194	0.339	0.39	11,900
November	419	258	386	.675	.75	23,000
December	484	368	429	.750	.86	26,400
January	542	479	499	.872	1.01	30,700
February	776	553	717	1.25	1.30	39,800
March	735	660	691	1.21	1.40	42,500
April	4,080	710	2,690	4.70	5.24	160,000
May	5,570	3,660	4,420	7.73	8.91	272,000
June	4,220	2,120	3,030	5.30	5.91	180,000
July	2,000	618	1,140	1.99	2.29	70,100
August	602	276	415	.726	.84	25,500
September	262	185	210	.367	.41	12,500
The year	5,570	173	1,240	2.17	29.31	894,000

COLVILLE RIVER BASIN

COLVILLE RIVER AT MEYERS FALLS, WASH.

LOCATION.—In sec. 29, T. 36 N., R. 38 E., at Stevens County Light & Power Co.'s plant at foot of Meyers Falls at town of Meyers Falls, Stevens County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 26, 1922, to September 30, 1925.

GAGE.—Vertical staff in two sections at confluence of power plant tailrace and river; read by W. L. Miller.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Right bank high, will not be overflowed; left bank may be overflowed at extremely high water. Channel straight for several hundred feet below gage. Control is of sand, gravel, and boulders that form pool at foot of falls; will shift at high stage. Stage of zero flow, according to measurement made September 19, 1925, gage height 0.23 foot, ±0.05 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.65 feet at 2.15 p. m. April 19 (discharge, 1,290 second-feet); minimum stage, 0.86 foot at 1.10 p. m. September 14 (discharge, 18 second-feet).

1923–1925: Maximum stage recorded, that of April 19, 1925; minimum stage recorded, 0.70 foot at 1.45 p. m. August 13, 6.18 a. m. August 14, and 1.25 p. m. September 3, 1924 (discharge, 17 second-feet).

ICE.—Stage-discharge relation seriously affected by ice; flow estimated from observer's notes and weather records.

DIVERSIONS.—Several small ditches divert water for irrigation above station.

REGULATION.—Small reservoir above the falls; effect of regulation probably slight.

ACCURACY.—Stage-discharge relation changed at high water April 22; affected by ice November 27 to December 2, December 7–12, and December 16 to February 14, and by logs on control August 23–25. Rating curves well defined below 900 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good except for period of ice effect.

The following discharge measurements were made:

May 4, 1925: Gage height, 3.36 feet; discharge, 622 second-feet.

June 8, 1925: Gage height, 2.15 feet; discharge, 227 second-feet.

September 19, 1925: Gage height, 1.18 feet; discharge, 43.1 second-feet.

Daily discharge, in second-feet, of Colville River at Meyers Falls, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46	100	100			640	557	716	280	91	50	64
2	52	108	105			683	557	678	280	91	42	47
3	68	113	113			683	598	641	295	88	46	53
4	54	142	113			683	640	641	280	75	42	47
5	60	152	132		450	683	727	604	266	82	44	62
6	60	161	132	70		683	772	604	252	82	46	39
7	55	161				640	867	567	239	75	46	57
8	55	171				598	916	530	226	74	39	56
9	54	192				598	1,020	530	252	72	48	56
10	64	192	100			598	1,120	530	226	65	44	31
11	64	181			650	557	1,170	493	266	61	42	51
12	65	152				557	1,220	474	295	53	38	46
13	65	121	152			517	1,270	474	295	65	45	56
14	63	123	181			517	1,270	438	280	53	40	37
15	65	120	192		517	517	1,270	404	266	72	39	56
16	68	113		70		498	498	1,220	404	252	64	43	46
17	65	116				440	498	1,170	404	239	69	48	33
18	68	120				404	459	1,220	388	239	56	39	37
19	65	123				354	459	1,270	372	214	53	51	44
20	68	142	65			338	459	1,270	372	202	57	61	44
21	68	161				338	422	1,220	340	202	56	48	50
22	63	181				338	440	1,080	356	190	51	45	45
23	63	171				404	440	1,030	388	178	57	44	46
24	72	161				498	478	980	388	145	58	48	47
25	69	152				517	498	932	388	139	56	62	56
26	70	132		120		557	498	885	356	156	53	53	69
27	68		60			557	498	839	340	120	56	98	58
28	75	100				598	517	796	325	105	52	50	64
29	82						517	755	310	100	48	44	66
30	86						517	716	295	93	46	47	69
31	94						557		295		44	52	

NOTE.—Braced figures give estimated mean discharge for periods indicated.

Monthly discharge of Colville River at Meyers Falls, Wash., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	94	46	65.6	4,030
November	192		139	8,270
December	192		91.0	5,600
January			87.7	5,390
February			502	27,900
March	683	422	545	33,500
April	1,270	557	979	58,300
May	716	295	453	27,900
June	295	93	219	13,000
July	91	44	63.7	3,920
August	98	38	47.9	2,950
September	69	31	51.1	3,040
The year	1,270	31	268	194,000

HALL CREEK BASIN

HALL CREEK AT INCHELIUM, WASH.

LOCATION.—In NE. ¼ sec. 6, T. 32 N., R. 37 E., half a mile above highway bridge, three-fourths mile above mouth, and three-fourths mile northwest of Inchelium, Ferry County.

DRAINAGE AREA.—163 square miles (measured on topographic map and maps of Colville Indian Reservation and Colville National Forest).

RECORDS AVAILABLE.—December 18, 1912, to September 30, 1925.

GAGE.—Stevens water-stage recorder on right bank one-half mile above highway bridge since August 27, 1916; inspected by C. E. Williamson.

DISCHARGE MEASUREMENTS.—Made from cable 15 feet downstream from gage or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of gravel and boulders; shifts at extremely high stages. Channel straight above and below gage. Banks high.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 3.84 feet at 6.45 p. m. April 12 (discharge, 700 second-feet); minimum stage, 1.31 feet from midnight to 1 a. m. October 1 (discharge, 10 second-feet). Minimum discharge for the year probably occurred during period records were not being kept.

1912–1925: Maximum stage recorded, 3.10 feet at 6.20 a. m. April 16, 1914 (discharge, 965 second-feet). Minimum discharge probably occurred on January 1, 1919, when stage-discharge relation was affected by ice; discharge estimated at 4 second-feet.

ICE.—Stage-discharge relation seriously affected by ice; observations discontinued during winter.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed gradually April 7–11. Rating curves fairly well defined. Shifting-control method used April 7–11. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table the mean daily gage height determined by inspection from gage-height graph. Records good.

Discharge measurements of Hall Creek at Inchelium, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Mar. 17	2.05	62.7	May 3	3.05	304	Sept. 20	1.46	12.8
May 2	3.06	316	June 6	2.31	99.6	Do	1.46	12.9

Daily discharge, in second-feet, of Hall Creek at Inchelium, Wash., for the year ending September 30, 1925

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11		142	300	114	35	14	12
2	12		161	307	114	35	14	12
3	12		192	311	105	34	14	12
4			235	303	101	32	14	12
5			290	300	96	31	14	12
6			358	300	99	31	14	12
7			437	303	97	31	13	11
8			496	307	91	31	13	11
9			552	296	99	30	14	11
10			593	286	97	28	14	11
11			663	275	101	27	14	11
12			676	261	93	25	14	11
13			647	251	88	24	14	11
14			601	240	89	23	13	11
15			540	227	85	22	15	11
16			551	217	79	22	16	11
17		63	573	211	76	20	16	11
18		63	540	206	72	19	15	12
19		63	524	194	68	19	14	13
20		64	487	186	64	19	13	13

Daily discharge, in second-feet, of Hall Creek at Inchelium, Wash., for the year ending September 30, 1925—Continued

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
21		70	456	206	59	18	13	13
22		83	423	188	56	18	13	13
23		110	400	173	52	17	13	12
24		116	378	160	48	17	13	12
25		125	353	155	46	17	13	12
26		125	329	145	44	17	13	12
27		120	318	138	42	16	12	14
28		120	307	131	40	15	12	15
29		125	300	131	39	15	12	14
30		125	296	125	36	15	12	14
31		127		120		14	12	

NOTE.—Water-stage recorder not operating Aug. 21 to Sept. 10; discharge interpolated. No record Oct. 4 to Mar. 16.

Monthly discharge of Hall Creek at Inchelium, Wash., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
March 17-31	127	63	99.9	2,970
April	676	142	427	25,400
May	311	120	224	13,800
June	114	36	76.3	4,540
July	35	14	23.1	1,420
August	16	12	13.5	830
September	15	11	12.1	720
The period				49,700

STRANGER CREEK BASIN

STRANGER CREEK AT METEOR, WASH.

LOCATION.—In sec. 21, T. 32 N., R. 36 E., at highway bridge at Meteor, 8 miles southwest of Inchelium, Ferry County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—August 29, 1916, to September 30, 1925.

GAGE.—Vertical staff on right bank 15 feet downstream from bridge; read by Andrew Kilgore.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading.

CHANNEL AND CONTROL—Bed composed of gravel. One channel at all stages. Left bank subject to overflow at extremely high stages. Concrete control 6 feet downstream from gage. Stage of zero flow, according to measurements made April 6 and September 25, 1923, gage height zero.

EXTREMES OF DISCHARGE—Maximum stage recorded during year, 1.8 feet on April 19 and 20 (discharge, 180 second-feet); minimum stage recorded, 0.10 foot August 20–22, 26-28, and September 1–5 (discharge, 0.2 second-foot).

1916–1925: Maximum stage recorded, that of April 19–20, 1925; probably no flow on December 12, 1919, creek frozen almost solid; no flow August 13–18 and August 24 to September 30, 1924.

ICE.—Stage-discharge relation affected by ice. Observations discontinued during winter.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed April 1–19. Rating curves fairly well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Stranger Creek at Meteor, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Mar. 18	0.84	24.6	June 7	0.75	19.2	Sept. 20	0.17	0.58
May 3	1.32	78.1	Sept. 20	.17	.62			

Daily discharge, in second-feet, of Stranger Creek at Meteor, Wash., for the year ending September 30, 1925

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	29	91	21	8.8	1.8	0.2	16	153	46	14	5.1	0.7	0.4
2	30	89	20	8.5	1.8	.2	17	165	42	14	4.5	.7	.5
3	32	78	20	8.5	1.5	.2	18	168	39	14	4.3	.7	.6
4	36	75	19	8.1	1.5	.2	19	180	37	13	4.3	.5	1.0
5	43	74	17	7.8	1.2	.2	20	180	35	12	4.2	.2	.7
6	46	74	19	7.5	1.0	.2	21	170	38	12	4.3	.2	.7
7	56	72	20	7.1	.7	.2	22	160	35	12	4.3	.2	.7
8	66	70	18	7.1	.7	.2	23	149	34	12	4.3	.2	.7
9	72	69	19	6.8	.5	.2	24	139	31	12	3.8	.2	.7
10	81	69	18	6.5	.5	.2	25	123	29	12	3.8	.2	.7
11	97	63	17	6.5	.5	.2	26	115	28	11	3.3	.2	.8
12	114	59	17	6.2	.5	.2	27	111	27	11	3.3	.2	1.4
13	130	55	16	5.9	.4	.2	28	109	26	9.6	2.9	.2	1.0
14	139	53	16	5.4	.5	.2	29	105	24	9.2	2.5	.2	1.1
15	142	49	15	5.4	.7	.2	30	96	23	8.8	2.1	.2	1.0
							31		23		2.1	.2	

Monthly discharge of Stranger Creek at Meteor, Wash., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April	180	2[illegible]	108	6,430
May	91	2[illegible]	50.2	3,090
June	21	3.8	15.0	893
July	8.8	2.1	5.33	328
August	1.8	.2	.61	37.5
September	1.4	.2	.50	29.8
The period				10,800

SPOKANE RIVER BASIN

COEUR D'ALENE RIVER NEAR CATALDO, IDAHO

LOCATION.—In sec. 26, T. 49 N., R. 1 E. Boise meridian, in Shoshone County, 1½ miles above Cataldo and 3 miles below junction of North and South Forks.

DRAINAGE AREA.—1,220 square miles (measured by engineers of Washington Water Power Co. on large scale map of Spokane River Basin compiled from best data available).

RECORDS AVAILABLE.—April 25, 1911, to December 31, 1912; July 29, 1920, to September 30, 1925.

GAGE.—Inclined staff on right bank; installed August 4, 1921; read by Lola Wilcox. Elevation of gage datum about 2,100 feet above sea level.

DISCHARGE MEASUREMENTS.—Made from cable about 50 feet above gage or by wading.

CHANNEL AND CONTROL.—Channel straight for 500 feet above and 1,500 feet below gage. Left bank high and wooded; not subject to overflow. Right bank is overflowed at gage height about 50 feet. Low-water control is boulder and gravel riffle about 1,500 feet below gage; high-water control indeterminate, probably long stretch of river channel.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 51.3 feet from high-water mark on February 5 (discharge, 27,600 second-feet); minimum stage recorded, 37.15 feet October 23–25 (discharge, 280 second-feet).

1911–1912; 1920–1925: Maximum stage recorded, that of February 5, 1925; minimum stage recorded, 37.0 feet August 27, 1923 (discharge, 215 second-feet). Discharge probably lower in December, 1922, while gage was not being read.

ICE.—Stage-discharge relation seriously affected by ice during severe winters; flow estimated from discharge measurements, observer's notes, and weather records.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed February 6; affected by ice December 17 to January 16. Rating curves well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage heights to rating table. Records good.

COOPERATION.—Gage-height record and some discharge measurements furnished by Washington Water Power Co.

Discharge measurements of Coeur d'Alene River near Cataldo, Idaho, during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Nov. 6	38.95	1,230	Jan. 29	39.53	1,680	June 4	40.96	2,920
Dec. 9	37.95	588	Feb. 6	46.45	14,100	July 2	39.07	1,170
Jan. 6	39.22	952	Mar. 11	41.26	3,280	July 31	38.18	630
Jan. 7	38.77	924	May 15	43.58	7,460	Sept. 8	37.88	477

Daily discharge, in second-feet, of Coeur d'Alene River near Cataldo, Idaho, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	350	765	655	885	12,900	3,520	7,030	7,830	3,240	1,190	590	410
2	400	765	682	945	10,500	3,520	7,630	7,830	3,380	1,190	590	385
3	400	765	765	945	17,200	3,960	8,460	7,230	3,240	1,120	562	385
4	400	1,290	765	945	20,400	4,780	11,900	6,830	2,970	1,080	535	385
5	360	1,430	765	1,010	23,700	6,430	7,830	7,230	2,840	1,030	535	362
6	340	1,290	710	952	13,700	6,040	13,200	8,250	2,720	990	510	385
7	320	945	682	924	10,400	5,300	15,000	9,090	2,600	990	510	385
8	320	885	631	885	7,630	6,430	14,500	8,250	2,490	930	510	485
9	320	825	580	825	6,230	4,280	15,300	7,230	2,490	930	510	460
10	340	765	655	765	4,950	3,660	17,500	6,830	2,490	870	510	435
11	340	765	1,290	710	4,280	3,380	20,000	6,230	2,380	870	510	435
12	320	710	3,630	682	3,810	3,100	21,700	6,430	2,380	870	485	410
13	320	605	4,930	655	3,380	2,720	20,200	7,030	2,280	810	510	385
14	300	580	7,270	630	3,100	2,600	14,500	7,230	2,180	810	562	385
15	300	555	7,090	630	2,840	2,490	11,900	7,430	2,080	810	618	385
16	300	532	5,720	630	2,720	2,490	13,000	8,250	2,020	755	618	362
17	320	532	4,050	630	2,490	2,380	14,200	8,040	1,960	755	590	385
18	340	510	2,770	655	2,380	2,180	15,000	6,430	1,900	755	562	385
19	320	765	1,900	1,010	2,280	2,080	12,600	6,230	1,900	755	510	385
20	320	1,740	1,430	1,010	2,180	2,490	10,400	6,430	1,810	700	485	374
21	320	2,060	1,010	1,150	2,380	2,840	8,250	7,030	1,810	700	485	362
22	300	1,900		1,220	2,720	3,100	7,630	8,670	1,720	770	460	320
23	280	1,900		2,060	3,520	5,300	7,430	8,040	1,640	700	485	340
24	280	1,580		2,770	5,120	5,850	7,030	7,030	1,560	755	485	340
25	280	1,360		2,350	5,300	9,720	6,430	6,040	1,560	870	485	340
26	300	1,080	800	1,900	5,120	11,300	6,230	4,950	1,560	755	485	340
27	340	1,080		1,740	4,440	9,090	5,850	4,440	1,400	700	485	340
28	380	1,010		1,660	3,960	8,250	5,660	4,120	1,330	672	460	320
29	555	825		1,660	-------	7,630	5,850	4,280	1,260	618	460	340
30	655	710		2,550	-------	7,030	5,850	4,120	1,260	590	435	340
31	710	-------		8,840	-------	6,230	-------	3,810	-------	618	410	-------

NOTE.—Mean discharge Feb. 5 estimated from high-water marks. Gage not read Feb. 4, Apr. 16, June 16, 17, July 4, 5, 22, and Sept. 20; discharge interpolated.

Monthly discharge of Coeur d'Alene River near Cataldo, Idaho, for the year ending September 30, 1925

[Drainage area, 1,220 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	710	280	359	0.294	0.34	22,100
November	2,060	510	1,020	.836	.93	60,700
December	7,270	580	1,810	1.48	1.71	111,000
January	8,840	630	1,430	1.17	1.35	87,900
February	23,700	2,180	6,770	5.55	5.78	376,000
March	11,300	2,080	4,840	3.97	4.58	298,000
April	21,700	5,660	11,300	9.26	10.33	672,000
May	9,090	3,810	6,740	5.52	6.36	414,000
June	3,380	1,260	2,150	1.76	1.96	128,000
July	1,190	590	835	.684	.79	51,300
August	618	410	514	.421	.49	31,600
September	485	320	378	.310	.35	22,500
The year	23,700	280	3,140	2.57	34.97	2,280,000

COEUR D'ALENE LAKE AT COEUR D'ALENE, IDAHO

LOCATION.—In SW. ¼ sec. 13, T. 50 N., R. 4 W., at Johnson Wharf, 800 feet southeast of railroad station at Coeur d'Alene, Kootenai County.

DRAINAGE AREA.—3,750 square miles (measured by engineers of Washington Water Power Co. on map of Spokane River Basin compiled from best data available).

RECORDS AVAILABLE.—February 15, 1905, to September 30, 1925; April 26, 1903, to February 14, 1905, at St. Joe Boom Co.'s gage at mouth of St. Joe River.

GAGE.—Stevens continuous water-stage recorder at wharf; installed March 24, 1921; inspected by employees of Washington Water Power Co. Prior to March 24, 1921, gage was vertical staff at same site. The original gage installed by the Geological Survey February 11, 1905, was referred to the Geological Survey bench mark in the southeast corner of the Merriam Building at the corner of Sherman and Fourth Streets in the city of Coeur d'Alene, Idaho. The bench mark, described above, is firmly set in a substantial building which has not been moved. Accordingly 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 the appendix of the Twenty-first Annual Report of the Geological Survey, volume 1, page 518	2,157.404
Second, as published in Geological Survey Bulletins 487 and 567, pages 24 and 79, respectively	2,157.909
Third, as determined by adjustment to fit the United States 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 elevations of the bench mark, i. e., 2,157.404 feet; to obtain mean sea level elevation corresponding to the last (third) accepted elevation of the bench mark, add 2,097.105 feet to published stages.

EXTREMES OF STAGE.—Maximum stage recorded during year from water-stage recorder, 33.45 feet at 7 p. m. April 19; minimum stage recorded, 23.14 feet at 2 a. m. October 27.

1903–1925: Maximum stage recorded, 36.00 feet at 6.15 p. m. January 3, 1918; minimum stage recorded, 19.9 feet on October 10–12, 1904, September 24 and 25, 1905, and October 14 to November 3, 1906.

The maximum stage known to early settlers, 37.6 feet as determined from high-water marks, occurred May 31, 1894.

DIVERSIONS.—None.

REGULATION.—Considerable storage is used by the Washington Water Power Co. Regulation is affected by Taintor gates and bear-trap dam at Post Falls.

ACCURACY.—Daily mean gage heights have been determined by inspection from gage-height graph. Records excellent.

COOPERATION.—Gage-height record furnished by Washington Water Power Co.

Daily gage height, in feet, of Coeur d'Alene Lake at Coeur d'Alene, Idaho, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sept.
1	23.69	23.43	24.56	24.12	25.32	26.53	27.40	30.00	29.15	26.45	26.29	24.73
2	23.71	23.53	24.59	23.99	26.23	26.45	27.49	29.94	28.90	26.46	26.24	24.69
3	23.67	23.57	24.59	23.84	27.04	26.39	27.63	29.89	28.60	26.48	26.23	24.62
4	23.65	23.67	24.55	23.80	28.06	26.32	27.90	29.83	28.34	26.49	26.16	24.60
5	23.63	23.78	24.47	23.81	29.26	26.34	28.30	29.79	28.07	26.47	26.12	24.53
6	23.62	23.90	24.31	23.73	30.27	26.44	28.71	29.87	27.83	26.44	26.07	24.50
7	23.62	24.00	24.21	23.71	30.80	26.55	29.17	29.99	27.60	26.46	26.00	24.44
8	23.59	24.05	24.19	23.69	30.88	26.60	29.65	30.12	27.36	26.49	25.94	24.42
9	23.55	24.14	24.20	23.69	30.70	26.57	30.12	30.22	27.13	26.50	25.90	24.39
10	23.51	24.21	24.22	23.72	30.37	26.48	30.60	30.21	26.95	26.47	25.86	24.35
11	23.51	24.26	24.32	23.72	29.96	26.36	31.12	30.18	26.79	26.45	25.81	24.29
12	23.49	24.29	24.43	23.74	29.56	26.20	31.75	30.10	26.62	26.45	25.75	24.24
13	23.46	24.30	24.62	23.72	29.16	26.06	32.37	30.07	26.53	26.46	25.72	24.21
14	23.44	24.30	24.95	23.72	28.75	25.91	32.87	30.08	26.42	26.48	25.71	24.19
15	23.42	24.30	25.38	23.70	28.34	25.75	33.11	30.10	26.45	26.46	25.67	24.15
16	23.40	24.31	25.70	23.68	27.98	25.56	33.15	30.14	26.49	26.45	25.61	24.10
17	23.37	24.32	25.72	23.64	27.63	25.43	33.19	30.22	26.47	26.43	25.53	24.07
18	23.33	24.33	25.60	23.66	27.28	25.26	33.30	30.26	26.48	26.42	25.50	24.03
19	23.32	24.39	25.42	23.60	26.95	25.11	33.42	30.28	26.48	26.41	25.45	23.98
20	23.29	24.54	25.27	23.53	26.68	25.03	33.40	30.27	26.48	26.41	25.41	23.93
21	23.28	24.68	25.02	23.49	26.45	25.00	33.17	30.41	26.48	26.40	25.39	23.90
22	23.24	24.73	24.84	23.49	26.28	24.99	32.90	30.52	26.48	26.40	25.32	23.87
23	23.23	24.72	24.66	23.55	26.23	25.05	32.58	30.70	26.46	26.39	25.28	23.83
24	23.22	24.63	24.52	23.64	26.29	25.23	32.16	30.73	26.41	26.39	25.21	23.79
25	23.19	24.49	24.49	23.74	26.40	25.47	31.79	30.64	26.46	26.40	25.16	23.75
26	23.16	24.50	24.50	23.78	26.52	25.90	31.40	30.47	26.51	26.40	25.11	23.68
27	23.17	24.56	24.50	23.76	26.59	26.36	31.03	30.22	26.48	26.40	25.08	23.60
28	23.20	24.57	24.57	23.69	26.61	26.73	30.67	30.01	26.45	26.39	25.00	23.56
29	23.27	24.56	24.58	23.66	-------	26.98	30.37	29.80	26.42	26.37	24.92	23.55
30	23.29	24.55	24.44	23.80	-------	27.18	30.17	29.62	26.43	26.32	24.84	23.52
31	23.35	-------	24.26	24.34	-------	27.32	-------	29.38	-------	26.30	24.79	-------

NOTE.—Add 2,100 feet to gage heights to obtain mean sea level elevations.

SPOKANE RIVER AT POST FALLS, IDAHO

LOCATION.—In sec. 4, T. 50 N., R. 5 W. Boise meridian, a quarter of a mile below power plant of Washington Water Power Co., three-fourths of a mile below intake of Spokane Valley Farm Co.'s canal and 1 mile west of Post Falls, Kootenai County.

DRAINAGE AREA.—3,880 square miles (measured by engineers of Washington Water Power Co. on map compiled from best information available).

RECORDS AVAILABLE.—January 1, 1913, to September 30, 1925.

GAGE.—Stevens water-stage recorder on right bank since November 22, 1920; inspected by employees of Washington Water Power Co. Elevation of zero of gage 2,000 feet above sea level.

DISCHARGE MEASUREMENTS.—Made from cable 600 feet above gage.

CHANNEL AND CONTROL.—River bed composed of coarse gravel and boulders; shifts during floods. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 75.2 feet on April 19 (discharge, 30,600 second-feet); minimum stage, 65.66 feet at 1 and 3 p. m. July 25 (discharge, 710 second-feet).

1911–1925: Maximum stage recorded, 79.20 feet at 7.30 a. m. May 18, 1917 (discharge, 39,800 second-feet); minimum stage recorded, 65.15 feet at 11 a. m. September 5, 1922 (discharge, 578 second-feet).

ICE.—Stage-discharge relation not affected by ice.

DIVERSION.—Spokane Valley Farms Co.'s canal diverts above gage for irrigation. Mean diversion during 1925, 91 second-feet.

REGULATION.—Varying load on power plant causes fluctuation in stage. Storage in Coeur d'Alene Lake partly regulated by operation of gates in dam at Post Falls.

ACCURACY.—Stage-discharge relation permanent; rating curve well defined. Operation of water-stage recorder satisfactory except as stated in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection from gage-height graph or by use of discharge integrator. Records excellent.

COOPERATION.—Gage-height record and some discharge measurements furnished by the Washington Water Power Co.

Discharge measurements of Spokane River at Post Falls, Idaho, during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Nov. 20	67.48	2,370	May 18	72.89	19,800	Sept. 3	66.66	1,340
Mar. 10	70.86	11,000	June 1	72.15	16,400			
Apr. 15	75.14	29,500	July 22	66.27	1,060			

Daily discharge, in second-feet, of Spokane River at Post Falls, Idaho, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	900	952	1,450	5,520	8,790	11,200	13,100	19,600	15,800	2,540	1,230	1,360
2	928	920	1,820	5,130	10,400	11,200	13,400	19,600	15,400	2,280	1,190	1,410
3	956	907	2,740	5,260	12,300	10,800	13,400	19,200	14,600	2,240	1,360	1,390
4	984	914	3,980		14,600	10,800	14,200	19,200	14,200	2,680	1,240	1,250
5	1,010	870	5,160		16,600	10,800	15,000	19,200	13,400	2,540	1,250	1,150
6	1,040	946	3,620	3,000	18,700	10,800	16,200	18,700	13,100	1,760	1,340	1,160
7	956	996	2,500		20,800	11,600	17,400	19,200	12,700	1,140	1,400	1,200
8	1,010	962	1,630		22,800	11,600	18,700	19,600	11,900	955	1,420	1,330
9	1,080	920	1,340		22,400	11,600	20,000	19,600	11,600	1,550	1,400	1,400
10	1,080	953	1,340		21,000	11,200	21,400	19,600	11,200	1,960	1,430	1,380
11	1,010	1,000	3,100		20,000	10,800	23,300	19,600	10,800	1,680	1,480	1,290
12	957	1,100	6,180		18,700	10,400	25,300	19,200	10,400	1,140	1,490	1,130
13	914	1,090	7,320		17,900	10,100	27,400	19,200	9,360	978	1,440	1,170
14	906	1,150	7,930	2,000	16,600	9,750	29,000	18,700	6,750	1,140	1,420	1,260
15	950	1,170	8,490		15,800	9,420	30,100	19,200	4,809	1,280	1,460	1,250
16	973	1,140	8,560		15,000	9,100	30,100	19,200	6,460	1,310	1,530	1,280
17	968	1,140	8,640		14,200	8,790	30,100	19,200	6,410	1,280	1,600	1,350
18	997	1,140	8,720		13,400	8,490	30,100	19,200	5,660	1,230	1,660	1,300
19	1,010	1,310	8,790	3,690	12,500	8,200	30,600	18,700	5,630	980	1,460	1,210
20	998	2,020		3,280	11,700	7,920	30,100	18,700	5,590	1,030	1,480	1,210
21	908	4,180	7,000	3,790	10,900	7,920	29,500	19,200	5,580	1,070	1,610	1,270
22	896	5,890		3,840	10,100	7,920	28,400	19,600	5,690	1,020	1,650	1,280
23	900	6,760		4,920	10,100	8,200	27,400	20,000	5,350	1,070	1,670	1,300
24	900	6,700		5,530	10,100	8,490	26,300	20,000	4,360	1,140	1,660	1,360
25	870	4,240		5,600	10,800	8,790	25,300	20,000	4,240	920	1,500	1,310
26	845	1,690	2,500	5,610	11,200	9,750	23,800	19,600	3,890	840	1,640	1,180
27	870	1,670		5,610	11,600	10,800	22,800	18,700	4,380	1,100	1,700	1,190
28	890	2,140		5,620	11,600	11,600	21,900	18,300	4,220	1,220	1,680	1,270
29	898	1,960		5,870	-------	12,300	21,000	17,900	3,480	1,210	1,710	1,300
30	890	1,640	6,940	6,120	-------	12,700	20,000	17,000	2,680	1,210	1,640	1,330
31	881	-------	6,430	6,930	-------	12,700	-------	16,600	-------	1,260	1,550	-------

NOTE.—Water-stage recorder not operating Oct. 2-5, Dec. 16-18, 20-29, Jan. 4-18, 26, 27, 29, Feb. 5-8, 16-21; discharge estimated.

Monthly discharge of Spokane River and Spokane Valley Farms Co.'s canal at Post Falls, Idaho, for the year ending September 30, 1925

[Drainage area, 3,880 square miles]

Month	Discharge in second-feet						Run-off (combined)	
	River			Canal mean	Combined			
	Maximum	Minimum	Mean		Mean	Per square mile	Inches	Acre-feet
October	1,080	845	948		948			58,300
November	6,760	870	1,950		1,950			116,000
December	8,790	1,340	4,970		4,970			306,000
January	6,930		3,780		3,780			232,000
February	22,800	8,790	14,700		14,700			816,000
March	12,700	7,920	10,200		10,200			627,000
April	30,600	13,100	23,200	106	23,300			1,390,000
May	20,000	16,600	19,100	182	19,300			1,190,000
June	15,800	2,680	8,320	190	8,510			506,000
July	2,680	840	1,410	252	1,660			102,000
August	1,710	1,190	1,490	241	1,730			106,000
September	1,410	1,130	1,280	112	1,390			82,700
The year	30,600	840	7,530		7,640	1.97	26.74	5,530,000

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.—In sec. 13, T. 25 N., R. 42 E., opposite Cochran Street, Spokane, Spokane County, a quarter of a mile above high railroad viaduct, and half a mile above Latah Creek.

DRAINAGE AREA.—4,350 square miles (measured by engineers of Washington Water Power Co. on maps compiled from best information available).

RECORDS AVAILABLE.—April 1, 1891, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on right bank at Cochran Street and 1 mile below Monroe Street Bridge; used since July 1, 1921. Elevation of gage datum about 1,700 feet above sea level.

DISCHARGE MEASUREMENTS.—Made from cable at gage.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders. One channel at all stages. Control is well-defined riffle one-fourth mile below gage; permanent. Stage of zero flow estimated at gage height 14.5 feet on October 7, 1922.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 26.3 feet at noon on April 20 (discharge, 31,700 second-feet); minimum stage, 17.36 feet at 5 a. m. October 24 (discharge, 1,150 second-feet).

1891–1925: Maximum discharge recorded, 49,000 second-feet May 31, 1894; minimum stage, 16.70 feet at 8.30 a. m. October 21, 1922 (discharge, 500 second-feet).

ICE.—Stage-discharge relation not affected by ice.

DIVERSION.—Water is diverted above station for irrigation by Spokane Valley Farms Co.

REGULATION.—Flow partly regulated by storage in Coeur d'Alene Lake since July, 1906.

ACCURACY.—Stage-discharge relation permanent. Rating curve is well defined. Operation of water-stage recorder satisfactory. Daily discharge ascertained by use of discharge integrator or, when discharge was above 8,600 second-feet, by applying to rating table mean daily gage height determined from recorder graph by inspection. Records excellent.

COOPERATION.—Gage-height record and some discharge measurements furnished by Washington Water Power Co.

Discharge measurements of Spokane River at Spokane, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 9	17.71	1,630	Apr. 16	26.10	29,900	Sept. 11	18.09	2,030
Feb. 16	22.95	15,300	May 19	24.07	20,600			
Apr. 13	25.36	26,600	July 24	17.87	1,830			

Daily discharge, in second-feet, of Spokane River at Spokane, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,410	1,480	2,020	5,800	8,060	11,600	13,600	20,500	16,500	3,480	1,940	2,040
2	1,390	1,360	2,040	5,200	9,870	11,600	14,000	20,100	16,200	3,120	1,910	1,940
3	1,360	1,380	2,710	4,920	11,600	11,200	14,300	20,100	15,800	3,050	2,020	1,960
4	1,390	1,370	3,510	3,500	13,600	11,200	14,700	19,600	15,400	3,320	1,970	1,940
5	1,480	1,400	5,070	3,430	16,500	11,200	15,800	19,600	14,700	3,380	1,950	1,810
6	1,490	1,400	4,360	3,650	19,100	11,200	16,500	19,600	14,300	2,920	1,940	1,790
7	1,530	1,410	3,230	3,150	21,500	11,600	17,400	19,600	13,600	2,160	2,060	1,850
8	1,400	1,520	2,460	2,820	22,500	11,900	18,700	19,600	13,300	1,900	2,000	1,930
9	1,560	1,410	1,970	2,760	22,000	11,600	20,100	20,100	12,900	2,010	2,000	2,020
10	1,560	1,430	1,910	2,410	21,000	11,600	21,500	20,100	12,600	2,720	1,970	2,010
11	1,530	1,500	2,330	2,200	20,100	11,200	23,000	20,100	12,200	2,410	2,010	2,040
12	1,490	1,500	5,180	2,290	18,700	11,200	25,000	19,600	11,600	2,060	2,030	1,950
13	1,440	1,590	6,900	2,600	17,800	10,900	26,600	19,600	11,200	1,880	2,030	1,780
14	1,430	1,570	7,410	2,650	16,900	10,500	28,200	19,600	8,420	1,810	1,990	1,950
15	1,390	1,640	8,360	2,600	16,200	9,870	29,900	19,600	6,460	1,980	2,020	1,940
16	1,420	1,870	8,820	2,590	15,000	9,550	30,500	19,600	7,240	2,020	2,090	1,950
17	1,450	1,660	9,130	2,540	14,300	9,230	30,500	20,100	7,520	2,010	2,090	2,020
18	1,490	1,600	8,940	2,520	13,600	8,920	31,100	20,100	6,780	1,990	2,160	2,020
19	1,460	1,680	8,650	3,890	12,900	8,610	31,100	20,100	6,600	1,870	2,090	1,960
20	1,460	2,000	8,360	3,560	12,200	8,610	31,100	19,600	6,610	1,690	2,000	1,840
21	1,440	3,230	7,900	3,930	11,600	8,310	31,100	20,100	6,360	1,820	2,020	1,960
22	1,410	5,290	7,330	4,150	11,200	8,310	29,900	20,500	6,500	1,820	2,190	1,900
23	1,420	6,170	6,660	4,640	11,200	8,310	28,800	21,000	6,290	1,780	2,200	1,870
24	1,370	6,560	5,820	5,440	11,200	8,610	27,600	21,000	5,460	1,850	2,200	1,890
25	1,410	5,290	2,740	5,510	11,200	8,920	26,600	21,000	3,770	1,820	2,130	1,890
26	1,370	2,530	2,540	5,690	11,600	9,870	25,000	20,100	4,270	1,600	2,070	1,860
27	1,370	2,090	2,620	5,750	11,900	10,900	24,000	19,600	4,970	1,700	2,150	1,720
28	1,430	2,420	2,690	5,720	11,900	11,900	23,000	18,700	4,930	1,800	2,200	1,810
29	1,370	2,410	3,850	5,700	-------	12,200	22,000	18,200	4,630	1,900	2,180	1,860
30	1,400	2,180	6,320	5,820	-------	12,900	21,000	17,800	3,690	1,920	2,170	1,870
31	1,400	-------	6,380	6,480	-------	13,300	-------	17,400	-------	1,920	2,160	-------

Monthly discharge of Spokane River at Spokane, Wash., for the year ending September 30, 1925

[Drainage area, 4,350 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	1,560	1,360	1,440	----------	----------	88,500
November	6,560	1,360	2,300	----------	----------	137,000
December	9,130	1,910	5,100	----------	----------	314,000
January	6,480	2,200	4,000	----------	----------	246,000
February	22,500	8,060	14,800	----------	----------	822,000
March	13,300	8,310	10,500	----------	----------	646,000
April	31,100	13,600	23,800	----------	----------	1,420,000
May	21,000	17,400	19,800	----------	----------	1,220,000
June	16,500	3,690	9,360	----------	----------	557,000
July	3,480	1,600	2,180	----------	----------	134,000
August	2,200	1,910	2,060	----------	----------	127,000
September	2,040	1,720	1,910	----------	----------	114,000
The year	31,100	1,360	8,030	1.85	25.11	5,830,000

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.—In NW. ¼ sec. 19, T. 27 N., R. 39 E., just above Chamokane Ferry, 1½ miles below Little Falls power plant of Washington Water Power Co., 4 miles below Chamokane Creek, and 5 miles below Long Lake, Lincoln County.

DRAINAGE AREA.—6,380 square miles (measured by engineers of Washington Water Power Co. on maps compiled from best data available).

RECORDS AVAILABLE.—November 5, 1912, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on left bank; gage datum 1,200 feet above mean sea level.

DISCHARGE MEASUREMENTS.—Made from cable 50 feet below gage.

CHANNEL AND CONTROL.—Bed composed of large boulders; shifting at high stages. Banks high. One channel at all stages. No noticeable control below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 89.0 feet from 9.30 to 11 a. m. April 16 (discharge, 36,500 second-feet); minimum stage, 73.4 feet at 4 a. m. November 19 (discharge, 1,100 second-feet).

1912–1925: Maximum stage, 90.32 feet at 8.30 p. m. May 18, 1917 (discharge, 41,300 second-feet); minimum discharge probably below 1,100 second-feet from 3 to 4.30 p. m. September 1 and from 2.30 to 6.30 p. m. September 27, 1924, when recorder indicated a stage of less than 73.4 feet.

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—Water is diverted by the Spokane Valley Farms Co. for irrigation above the station.

REGULATION.—Flow affected considerably by power regulation at Little Falls and Long Lake, and slightly by power regulation at Ninemile, Spokane, and Post Falls. Low-water flow is affected by regulation of storage in Coeur d'Alene Lake.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined between 2,000 second-feet and 30,000 second-feet. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by use of discharge integrator or by applying to rating table mean daily gage heights determined from recorder graph by inspection. Records excellent.

COOPERATION.—Gage-height record and some discharge measurements furnished by Washington Water Power Co.

Discharge measurements of Spokane River below Little Falls, near Long Lake, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 10	75.71	2,500	Mar. 13	82.09	14,400	Sept. 4	76.34	3,280
Nov. 25	76.92	4,000	Apr. 17	86.98	28,100			
Dec. 15	80.51	10,500	May 20	84.61	21,600			

Daily discharge, in second-feet, of Spokane River below Little Falls, near Long Lake, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,430	2,330	3,180	7,020	17,600	14,400	14,900	22,900	19,100	4,080	2,680	2,690
2	2,410	1,920	2,810	6,470	16,400	14,600	15,000	22,200	17,600	4,350	2,390	2,650
3	2,380	2,280	2,860	4,860	16,700	13,800	14,800	21,900	17,000	3,700	2,590	2,570
4	2,300	2,290	4,160	5,230	20,900	13,600	16,700	21,600	16,300	3,920	2,710	2,930
5	1,820	2,330	4,960	4,130	26,200	13,800	16,100	21,600	15,900	4,050	2,980	3,100
6	2,050	2,320	6,060	3,710	28,200	13,800	15,300	21,600	14,700	4,090	2,760	2,440
7	2,170	2,420	4,420	4,400	25,200	13,600	20,300	21,900	14,000	3,140	2,910	2,470
8	2,250	2,290	3,490	4,320	25,900	13,300	21,600	21,900	13,900	2,950	2,800	2,610
9	2,190	2,030	2,980	3,580	25,200	14,400	20,600	22,500	13,100	2,540	2,460	2,610
10	2,220	2,290	2,390	3,320	24,800	14,200	23,800	21,900	13,300	2,590	2,850	2,630
11	2,210	2,260	2,550	3,150	23,800	13,200	24,800	22,200	12,700	4,070	2,900	2,650
12	1,860	2,360	6,340	3,200	22,200	12,600	27,000	22,200	12,200	2,690	2,670	2,760
13	2,170	2,310	6,750	2,330	21,300	12,900	28,600	21,600	11,000	2,690	2,670	2,330
14	2,240	2,310	8,570	3,970	19,700	11,000	29,700	21,300	9,500	2,750	2,720	2,630
15	2,280	2,250	9,850	3,030	18,500	11,200	31,500	21,300	7,440	2,620	2,630	2,750
16	2,180	1,880	9,660	3,400	15,800	12,600	34,000	21,300	6,370	2,500	2,330	2,680
17	2,200	2,260	9,870	3,790	14,500	10,200	31,500	20,900	9,130	2,500	2,700	2,590
18	2,240	2,320	9,040	2,980	15,200	9,260	32,200	22,200	7,270	2,400	2,510	2,620
19	1,790	2,610	8,880	3,580	13,400	10,600	32,900	21,300	7,590	2,110	2,840	2,690
20	2,160	2,750	9,430	5,400	13,800	10,800	34,300	21,600	7,440	2,710	3,090	2,430
21	2,280	4,790	8,390	4,910	12,400	10,500	32,900	21,600	7,280	2,760	2,920	2,560
22	2,310	4,140	8,780	5,270	12,800	10,200	31,800	21,900	7,450	2,650	2,880	2,680
23	2,280	7,310	7,880	8,930	14,100	10,500	30,700	22,500	6,810	2,670	2,370	2,610
24	2,330	8,060	6,700	10,300	14,900	9,650	29,700	22,900	6,360	2,750	2,640	2,650
25	2,320	5,240	4,340	8,120	14,000	10,400	28,200	22,500	4,850	2,200	2,640	2,570
26	1,950	3,660	2,820	6,390	14,300	11,600	26,500	21,900	5,040	2,360	2,860	2,650
27	2,330	2,280	3,680	6,230	15,000	12,500	25,500	21,900	5,990	2,670	2,890	2,290
28	2,380	3,310	3,630	7,120	14,900	13,600	25,500	20,600	5,640	2,680	2,850	2,540
29	2,290	3,520	3,930	7,490	-------	14,200	23,200	20,300	5,920	2,690	2,910	2,610
30	2,480	3,080	6,790	11,200	-------	14,800	23,200	19,400	4,470	2,660	2,290	2,600
31	2,480	-------	7,740	19,700	-------	14,300	-------	18,800	-------	2,690	2,620	-------

NOTE.—Water-stage recorder not operating Dec. 16–18 and Jan. 27 to Feb. 10; discharge Dec. 16–18 determined from staff gage readings and recorded range of stage and Jan. 27 to Feb. 10 from record of tailrace elevations at Little Falls power plant.

Monthly discharge of Spokane River below Little Falls, near Long Lake, Wash., for the year ending September 30, 1925

[Drainage area, 6,380 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	2,480	1,790	2,220	-------	-------	136,000
November	8,060	1,880	3,040	-------	-------	181,000
December	9,870	2,390	5,900	-------	-------	363,000
January	19,700	2,330	5,730	-------	-------	352,000
February	28,200	12,400	18,500	-------	-------	1,030,000
March	14,800	9,260	12,400	-------	-------	762,000
April	34,300	14,800	25,400	-------	-------	1,510,000
May	22,900	18,800	21,600	-------	-------	1,330,000
June	19,100	4,470	10,200	-------	-------	607,000
July	4,350	2,110	2,940	-------	-------	181,000
August	3,090	2,290	2,710	-------	-------	167,000
September	3,100	2,290	2,620	-------	-------	156,000
The year	34,300	1,790	9,360	1.47	19.95	6,780,000

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

ST. JOE RIVER AT CALDER, IDAHO

LOCATION.—In sec. 3, T. 45 N., R. 2 E. Boise meridian, at suspension bridge, 150 feet southwest of Chicago, Milwaukee & St. Paul Railway station at Calder, Shoshone County, 5 miles below Marble Creek, and 11 miles east of St. Joe.

DRAINAGE AREA.—1,080 square miles (measured by engineers of Washington Water Power Company on map compiled from best data available).

RECORDS AVAILABLE.—July 13, 1920, to September 30, 1925; April 14, 1911, to September 30, 1912, at station about 2½ miles farther downstream.

GAGE.—Stevens continuous water-stage recorder on right bank at old ferry landing at Calder; installed December 22, 1920; inspected by C. P. Latham and Z. D. Turner. Elevation of gage datum about 2,100 feet above sea level.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Right bank high, not subject to overflow; left bank subject to overflow at high stages. Control is shifting gravel riffle 800 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 90.2 feet from high-water mark on February 3 or 4, while recorder was not operating and stage-discharge relation was affected by ice; discharge not determined. Minimum stage recorded, from recorder, 79.25 feet at 11.30 a. m. October 11, (discharge, 318 second-feet); minimum discharge probably occurred in January when stage-discharge relation was affected by ice.

1911–1912; 1920–1925: Maximum stage recorded from water-stage recorder, 87.8 feet at 7 a. m. May 18, 1922 (discharge, 17,600 second-feet). Discharge may have been greater on February 2 or 3, 1925. Minimum stage recorded from recorder, 78.67 feet at 9.30 a. m. and from 11 a. m. to noon November 25, 1922 (discharge, 194 second-feet). Discharge probably less in December, 1922, when stage-discharge relation was affected by ice.

ICE.—Stage-discharge relation seriously affected by ice; flow estimated from discharge measurements, observer's notes, and weather records.

DIVERSIONS.—None.

REGULATION.—Flash dam at Marble Creek used to store water for flushing logs down river during low water. Water released at regular intervals during driving season. Operation of dam causes diurnal fluctuation at gage of about 1 foot. Duration of effect about four hours.

ACCURACY.—Stage-discharge relation changed gradually November 2–6, February 4, and gradually May 14 to September 9; affected by ice December 17 to February 3. Rating curves used prior to February 4 well defined; later curves fairly well defined. Operation of water-stage recorder fairly satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by use of discharge integrator or by applying to rating table mean daily gage height determined from gage-height graph by inspection. Records good.

COOPERATION.—Gage-height record and some discharge measurements furnished by Washington Water Power Co.

Discharge measurements of St. Joe River at Calder, Idaho, during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 14	79.37	351	Mar. 5	82.38	3,110	July 1	81.78	2,170
Nov. 19	80.22	873	Apr. 9	86.08	13,200	July 30	80.24	796
Dec. 21	85.71	1,560	May 13	85.65	11,300	Sept 9	79.96	582
Jan. 10	82.71	764	June 3	83.24	4,450			

Daily discharge, in second-feet, of St. Joe River at Calder, Idaho, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	425	760	880			1,770	5,800	10,100	5,690	2,060	747	510
2	520	880	880		13,000	1,770	6,320	9,520	5,490	1,990	728	488
3	540	1,010	880			1,870	7,950	9,410	4,950	1,870	702	494
4	520	1,010	820		16,200	2,210	9,640	9,880	4,750	1,770	680	485
5	442	1,010	820		7,670	3,000	9,350	10,600	4,400	1,690	650	497
6	390	1,010	760	900	5,550	2,860	10,800	12,100	4,190	1,580	681	536
7	375	820	760		4,000	2,590	11,500	13,200	4,110	1,500	626	520
8	360	820	700		3,150	2,460	12,100	11,800	3,940	1,420	580	606
9	360	760	590		2,720	2,210	13,100	10,400	3,950	1,360	634	612
10	390	730	700		2,210	1,980	14,100	10,200	4,020	1,310	616	529
11	375	700	1,770		2,090	1,870	15,200	10,500	3,950	1,280	608	468
12	375	640	3,150		1,980	1,770	16,600	11,000	3,800	1,230	598	466
13	375	590	4,320		1,770	1,670	15,800	11,700	3,850	1,160	638	463
14	360	615	6,300		1,770	1,570	13,800	12,100	3,660	1,130	708	466
15	360	640	4,510		1,670	1,570	12,800	12,500	3,600	1,110	921	486
16	360	640	3,300	800	1,570	1,480	13,800	13,100	3,690	1,080	673	480
17	390	615	2,860		1,480	1,480	15,800	12,700	3,910	1,070	633	512
18	345	540	2,460		1,390	1,390	14,100	11,900	3,740	1,010	621	504
19	360	880	2,090		1,390	1,390	11,800	12,000	3,630	984	598	463
20	390	1,980	1,870		1,390	1,670	9,930	11,900	3,580	962	604	512
21	360	1,770	1,560		1,570	1,980	8,700	13,000	3,570	930	572	458
22	360	2,330	1,230		1,670	2,590	8,300	12,800	3,590	912	556	460
23	375	1,870	940		1,980	3,000	8,160	10,800	3,280	998	574	461
24	390	1,390			2,460	3,300	7,470	9,580	2,970	944	751	456
25	360	1,230			2,330	4,400	6,700	8,640	2,720	904	629	456
26	360	1,080		2,500	2,210	4,610	6,350	7,660	2,610	902	562	464
27	408	940	750		2,090	4,400	6,420	7,210	2,500	810	539	460
28	500	880			1,980	4,610	6,920	7,200	2,380	797	558	440
29	590	880			-------	5,060	7,580	7,590	2,280	810	548	475
30	565	820			-------	4,830	8,970	7,120	2,130	812	536	465
31	565	-------			-------	4,610	-------	6,270	-------	766	512	-------

NOTE.—Water-stage recorder not operating satisfactorily Nov. 4 and 5; discharge interpolated. Braced figures give mean discharge for periods indicated.

Monthly discharge of St. Joe River at Calder, Idaho, for the year ending September 30, 1925

[Drainage area, 1,080 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	590	345	414	0.383	0.44	25,500
November	2,330	540	995	.921	1.03	59,200
December	6,300	590	1,620	1.50	1.73	99,600
January	----------	----------	1,440	1.33	1.53	88,500
February	----------	1,390	4,050	3.75	3.90	225,000
March	5,060	1,390	2,640	2.44	2.81	162,000
April	16,600	5,800	10,500	9.72	10.84	625,000
May	13,200	6,270	10,500	9.72	11.21	646,000
June	5,690	2,130	3,700	3.43	3.83	220,000
July	2,060	766	1,200	1.11	1.28	73,800
August	921	512	632	.585	.67	38,900
September	612	440	490	.454	.51	29,200
The year	----------	----------	3,170	2.94	39.78	2,290,000

ST. MARIES RIVER AT LOTUS, IDAHO

LOCATION.—In sec. 20, T. 45 N., R. 2 W. Boise meridian, 1,000 feet below Lotus station, on Elk River branch of Chicago, Milwaukee & St. Paul Railway, and 9 miles above St. Maries and mouth of river, Benewah County.

DRAINAGE AREA.—420 square miles (measured by engineers of Washington Water Power Co. on map compiled from best data available).

RECORDS AVAILABLE.—July 9, 1911, to October 31, 1912, and July 15, 1920, to September 30, 1925.

GAGE.—Since October 1, 1922, vertical and inclined staff on left bank; read by Mrs. Naoma Carter.

DISCHARGE MEASUREMENTS.—Made by wading or from suspension footbridge at railway station.

CHANNEL AND CONTROL.—Bed composed of gravel and small boulders. Channel straight for 200 feet below gage. Left bank high, not subject to overflow; right bank is overflowed at high stages. Control at riffle 150 feet below gage; shifting at high stages.

EXTREMES OF DISCHARGE.—Maximum discharge occurred during period January 31 to February 3 while stage-discharge relation was affected by ice; stage and discharge not determined. Minimum discharge, 44 second-feet August 8–10.

1911–12; 1920–1925: Maximum stage recorded, 66.5 feet at 6 a. m. March 18, 1921 (discharge, 8,660 second-feet); discharge may have been greater during January 31 to February 3, 1925. Minimum discharge probably occurred during winter 1922–23, when stage-discharge relation was affected by ice and logs (discharge less than 30 second-feet).

ICE.—Stage-discharge relation seriously affected by ice. Flow estimated from discharge measurements, observer's notes, and weather records.

ACCURACY.—Stage-discharge relation changed January 31; affected by ice November 13–16, 29, 30, December 1–4, 17–31, January 1 to February 13, and by logs February 22 to March 10, March 20 to April 6, April 17–19, May 6–29, June 16 to September 30. Rating curves fairly well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Shifting-control method used April 4–6, May 6–13, and June 16–29. Records good October to December; poor January and February, and fair thereafter.

COOPERATION.—Gage-height record and some discharge measurements furnished by Washington Water Power Co.

Discharge measurements of St. Maries River at Lotus, Idaho, during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 16	2.75	52.3	Mar. 6	5.00	1,600	June 30	3.29	173
Nov. 17	2.99	115	Apr. 7	5.39	2,620	July 29	3.13	74.4
Dec. 30	6.38	147	Apr. 8	5.43	2,630	Sept. 10	2.93	58.6
Jan. 8	5.64	128	May 14	4.68	973			
Feb. 4	7.42	3,900	June 2	3.78	488			

Daily discharge, in second-feet, of St. Maries River at Lotus, Idaho, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	55	240	120	140		1,390	2,140	1,180	490	138	63	53
2	68	282	180	140		1,120	2,230	1,250	490	146	63	53
3	81	296	240	140		1,180	2,600	1,180	490	138	63	53
4	70	200	320	140	3,000	1,320	3,210	1,120	458	138	53	53
5	60	348	398	140		1,750	3,420	1,180	458	135	49	51
6	56	291	282	130		1,680	3,850	1,250	428	126	46	51
7	55	209	272	130		1,390	2,600	1,390	398	116	46	53
8	53	166	282	130		1,180	2,600	1,750	428	116	44	51
9	53	158	277	130		935	2,600	1,120	387	102	44	51
10	56	150	322	120		885	2,410	935	398	106	44	55
11	63	127	458	120	900	745	2,410	935	458	106	46	53
12	58	119	900	120		665	2,800	935	428	99	46	53
13	56	110	810			590	3,420	935	398	99	46	47
14	56	120	770		590	590	2,800	992	398	96	56	46
15	55	150	810		556	590	2,230	992	392	89	99	49
16	51	140	522	80	522	628	2,060	1,120	376	96	106	53
17	49	116			458	628	2,150	1,050	359	99	89	55
18	51	127			458	590	2,240	992	332	99	76	55
19	51	150			490	590	2,320	885	316	98	65	51
20	49	855			490	1,120	2,410	835	291	96	56	49
21	49	900	200		745	1,320	1,980	1,530	282	95	55	49
22	49	1,090			1,050	1,460	1,750	1,530	272	93	49	49
23	49	590			1,750	1,530	1,600	992	258	92	63	49
24	49	428		550	3,000	1,530	1,320	745	244	90	89	47
25	49	332			2,230	2,060	1,050	628	231	89	81	46
26	53	235			2,230	1,980	835	556	213	87	76	46
27	63	183			1,900	1,900	790	490	209	86	70	47
28	86	146	150		1,600	1,900	790	523	192	84	63	47
29	146	140				1,980	790	557	183	83	60	49
30	158	120		3,500		1,900	1,050	590	171	73	55	53
31	171					2,060		490		65	55	

NOTE.—Braced figures give mean discharge for periods indicated.

Monthly discharge of St. Maries River at Lotus, Idaho, for the year ending September 30, 1925

[Drainage area, 420 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	171	49	66.7	0.159	0.18	4,100
November	1,090	110	284	.676	.75	16,900
December	900	120	310	.738	.85	19,100
January			583	1.39	1.60	35,800
February		458	1,590	3.79	3.95	88,300
March	2,060	590	1,260	3.00	3.46	77,500
April	3,850	790	2,150	5.12	5.71	128,000
May	1,750	490	989	2.35	2.71	60,800
June	490	171	348	.829	.92	20,700
July	146	65	102	.243	.28	6,270
August	106	44	61.8	.147	.17	3,800
September	55	46	50.6	.120	.13	3,010
The year		44	641	1.53	20.71	464,000

HAYDEN LAKE AT HAYDEN LAKE, IDAHO

LOCATION.—In sec. 18, T. 51 N., R. 3 W. Boise meridian, at Avondale and Hayden Lake pumping plants about a quarter of a mile north of Hayden Lake depot of Spokane and Eastern Railway & Power Co., Kootenai County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 19, 1920, to September 30, 1925.

GAGE.—Vertical staff in three sections; read by Sigurd Berven. Zero of gage at elevation 2,233.13 feet United States Geological Survey datum when referred to bench marks at Hudlow ranch, described on page 80, United States Geological Survey Bulletin 567.

EXTREMES OF STAGE.—Maximum stage recorded during year, 6.04 feet April 25–27; minimum stage recorded, −1.56 feet October 25–29.

1920–1925: Maximum stage recorded, 10.06 feet April 30 to May 18, 1921; minimum stage recorded, that of October 25–29, 1924.

ICE.—No ice during period of record.

DIVERSION.—Water pumped from lake for irrigation and domestic use.

REGULATION.—None.

ACCURACY.—Gage read to hundredths once daily.

Daily gage height, in feet, of Hayden Lake at Hayden Lake, Idaho, for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	−1.26	−1.54	−1.27	−0.85	−0.18	2.54	4.44	5.95	5.58	4.39	2.40	0.96
2	−1.28	−1.52	−1.28	−.84	.20	2.64	4.54	5.93	5.57	4.32	2.34	.93
3	−1.29	−1.51	−1.28	−.83	.30	2.70	4.64	5.91	5.56	4.28	2.28	.90
4	−1.30	−1.48	−1.28	−.82	.85	2.81	4.74	5.89	5.54	4.20	2.23	.86
5	−1.32	−1.46	−1.28	−.81	1.34	2.92	4.84	5.87	5.52	4.20	2.17	.84
6	−1.34	−1.44	−1.28	−.80	1.55	3.04	4.94	5.85	5.50	4.13	2.10	.81
7	−1.35	−1.41	−1.28	−.80	1.75	3.16	5.04	5.83	5.48	4.03	2.05	.78
8	−1.37	−1.39	−1.28	−.80	1.87	3.28	5.16	5.81	5.46	3.92	2.00	.76
9	−1.39	−1.37	−1.28	−.80	1.95	3.33	5.37	5.76	5.44	3.84	1.95	.74
10	−1.40	−1.35	−1.28	−.79	1.97	3.35	5.49	5.77	5.41	3.76	1.90	.71
11	−1.42	−1.35	−1.28	−.79	1.98	3.38	5.59	5.76	5.38	3.67	1.85	.68
12	−1.42	−1.35	−1.27	−.79	1.99	3.38	5.64	5.75	5.35	3.58	1.80	.66
13	−1.43	−1.35	−1.26	−.79	2.00	3.40	5.68	5.73	5.32	3.49	1.75	.64
14	−1.45	−1.36	−1.25	−.79	2.01	3.43	5.71	5.71	5.28	3.42	1.70	.62
15	−1.46	−1.36	−1.22	−.79	2.01	3.45	5.74	5.69	5.25	3.37	1.65	.60
16	−1.48	−1.37	−1.17	−.78	2.02	3.45	5.77	5.67	5.22	3.37	1.60	.58
17	−1.50	−1.37	−1.14	−.78	2.02	3.47	5.81	5.65	5.12	3.30	1.55	.55
18	−1.51	−1.37	−1.10	−.78	2.03	3.50	5.84	5.64	5.07	3.25	1.50	.52
19	−1.52	−1.37	−1.07	−.76	2.04	3.52	5.88	5.63	5.01	3.18	1.45	.48
20	−1.53	−1.34	−1.04	−.75	2.06	3.55	5.91	5.65	4.95	3.08	1.41	.45
21	−1.54	−1.30	−1.01	−.75	2.08	3.58	5.94	5.67	4.92	3.02	1.37	.42
22	−1.54	−1.28	−.99	−.75	2.11	3.63	5.96	5.72	4.87	2.97	1.33	.39
23	−1.54	−1.26	−.98	−.74	2.15	3.69	5.99	5.74	4.82	2.92	1.29	.37
24	−1.55	−1.25	−.96	−.74	2.19	3.77	6.02	5.75	4.77	2.86	1.25	.34
25	−1.56	−1.24	−.94	−.73	2.25	3.84	6.04	5.74	4.72	2.80	1.21	.32
26	−1.56	−1.24	−.93	−.70	2.29	3.92	6.04	5.72	4.67	2.75	1.17	.30
27	−1.56	------	−.91	−.66	2.35	4.02	6.04	5.69	4.62	2.70	1.14	.27
28	−1.56	−1.24	−.89	−.62	2.45	4.19	6.02	5.67	4.57	2.65	1.10	.25
29	−1.56	−1.25	−.88	−.57	------	4.24	6.01	5.64	4.52	2.60	1.08	.23
30	−1.55	−1.26	−.87	−.42	------	4.31	5.99	5.62	4.45	2.53	1.04	.21
31	−1.54	------	−.86	−.38	------	4.37	------	5.60	------	2.47	1.00	------

SPOKANE VALLEY FARMS CO.'S CANAL[8] AT POST FALLS, IDAHO

LOCATION.—In NE. ¼ sec. 4, T. 50 N., R. 5 W. Boise meridian, on right bank of Spokane River, 1,200 feet below canal head gates and half a mile west of Post Falls, Kootenai County.

RECORDS AVAILABLE.—May 20, 1911, to September 30, 1917; September 6, 1919, to September 30, 1925.

[8] Formerly Spokane Valley Land & Water Co.'s canal.

GAGE.—Vertical staff on left side of flume; read by J. J. Sheahan.

DISCHARGE MEASUREMENTS.—Made from cross ties on top of flume.

CHANNEL AND CONTROL.—Control flume and canal section below gage; shifts at all stages owing to effect of gravel bar at end of flume and plant growth and possibly to regulation of head gates of diversion ditches below gage.

EXTREMES OF DISCHARGE.—Maximum discharge, 259 second-feet on July 23–28. Canal dry during nonirrigation season.

1911–1917; 1919–1924: Maximum discharge, that of July 23–28, 1925. No water in canal during nonirrigation periods.

ICE.—Stage-discharge relation not affected by ice.

ACCURACY.—Stage-discharge relation changed during period of no flow and gradually May 19 to September 2. Rating curves fairly well defined. Gage read to hundredths once daily which is considered adequate for determination of mean daily gage height since two submerged orifices and wasteway above canal head gates are instrumental in causing gage height in canal to remain constant even though the stage of the river is subject to considerable daily fluctuation. Daily discharge ascertained by applying daily gage height to rating table. Shifting-control method used May 19 to September 2. Records good.

COOPERATION.—Gage-height record furnished by Spokane Valley Farms Co. and some discharge measurements furnished by Washington Water Power Co.

Canal diverts water from right bank of Spokane River in SE. ¼ sec. 3, T. 50 N., R. 5 W. Boise meridian. Water used for irrigation.

Discharge measurements of Spokane Valley Farms Co.'s canal at Post Falls, Idaho, during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
May 18	4.23	229	July 23	4.88	257
June 29	4.71	255	Sept. 3	4.50	223

Daily discharge, in second-feet, of Spokane Valley Farms Co.'s canal at Post Falls, Idaho, for the year ending September 30, 1925

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	101	128	171	251	251	211	16	101	203	171	251	243	96
2	101	128	171	251	251	203	17	101	203	171	251	243	66
3	101	128	171	251	251	223	18	101	219	171	251	243	36
4	101	128	171	251	251	215	19	101	203	171	251	243	7
5	101	128	171	251	251	215	20	101	211	203	251	243	7
6	101	128	171	243	251	215	21	101	211	203	251	235	7
7	101	149	163	251	251	231	22	101	211	203	251	235	7
8	101	171	163	243	251	231	23	101	211	211	259	235	7
9	101	171	163	243	251	223	24	101	219	227	259	235	7
10	101	171	156	251	251	215	25	101	219	243	259	235	7
11	101	171	156	251	251	215	26	128	211	251	259	235	7
12	101	179	156	251	251	215	27	128	203	251	259	227	7
13	101	195	149	251	243	185	28	128	203	251	259	227	7
14	101	195	149	251	243	156	29	128	195	251	251	227	7
15	101	203	179	251	243	126	30	128	179	251	251	211	7
							31	-------	179	-------	251	211	-------

NOTE.—No gage-height record Sept. 13–18, gates closed some time during period; discharge interpolated

Monthly discharge of Spokane Valley Farms Co.'s canal at Post Falls, Idaho, for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April	128	101	106	6,310
May	219	128	182	11,200
June	251	149	190	11,300
July	259	243	252	15,500
August	251	211	241	14,800
September	231	7	112	6,660
The period				65,800

NESPELEM RIVER BASIN

NESPELEM RIVER AT NESPELEM, WASH.

LOCATION.—In SE. ¼ sec. 24, T. 31 N., R. 30 E., one-half mile above Nespelem, Okanogan County, 5 miles above Little Nespelem River, and 6 miles above mouth.

DRAINAGE AREA.—122 square miles (measured on map of Colville Indian Reservation, edition of 1911).

RECORDS AVAILABLE.—May 1, 1911, to September 30, 1925.

GAGE.—Vertical staff on left bank at gaging bridge, installed October 19, 1916; read by J. L. Davis and Claude Marble.

DISCHARGE MEASUREMENTS.—Made from gaging bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders. Concrete control. Moss grows on concrete control during summer. Right bank flat, subject to overflow at gage height 4.0 feet; left bank high, not subject to overflow. Stage of zero flow, gage height 0.4 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.87 feet on April 12 and 13 (discharge, 334 second-feet); minimum discharge recorded, 4.7 second-feet on August 28–31. Both of the extremes may have been surpassed during winter when records were discontinued.

1911–1925: Maximum stage recorded, 4.9 feet April 5, 1919, determined from leveling to high-water mark (discharge, 483 second-feet); minimum stage recorded, 0.71 foot July 11, 12, 27, 30, 31, August 1, 2, and 9–15, 1924 (discharge, 3.1 second-feet).

ICE.—Records discontinued during winter.

DIVERSIONS.—Nespelem Canal diverts water for irrigation from a point above gage. See records for Nespelem Canal.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed April 12, slightly affected by aquatic growth July 11 to August 31. Rating curves fairly well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Nespelem River at Nespelem, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Apr. 29	2.42	164	June 11	1.23	46.5	Sept. 1	0.76	5.0
Apr. 30	2.36	156	June 12	1.23	47.4	Do	.76	4.8

Daily discharge, in second-feet, of Nespelem River at Nespelem, Wash., for the year ending September 30, 1925

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	141	152	58	11	5.4	5.0	16	286	110	37	5.7	5.0	5.7
2	151	152	53	11	5.4	5.0	17	286	105	37	5.7	5.0	5.7
3	161	152	52	9.7	5.4	5.0	18	274	96	33	5.4	5.0	5.7
4	183	142	48	9.7	5.4	5.0	19	286	100	30	5.4	5.0	5.7
5	227	142	47	9.0	5.4	5.0	20	262	96	27	5.4	5.0	5.7
6	262	142	47	9.0	5.4	5.0	21	250	100	24	5.4	5.0	5.7
7	286	132	42	8.4	5.4	5.0	22	227	96	25	5.4	5.0	5.7
8	298	132	41	8.4	5.4	5.4	23	216	88	22	5.4	5.0	5.7
9	310	132	51	7.7	5.4	5.4	24	205	84	20	5.4	5.0	5.7
10	322	132	52	7.7	5.4	5.4	25	205	79	19	5.4	5.0	5.7
11	322	123	48	6.4	5.0	5.4	26	183	76	17	5.4	5.0	5.7
12	334	123	47	6.1	5.0	5.4	27	183	71	15	5.4	5.0	5.7
13	334	123	42	6.1	5.0	5.4	28	172	66	12	5.4	4.7	6.1
14	310	114	38	5.7	5.0	5.4	29	162	64	12	5.4	4.7	6.1
15	286	114	39	5.7	5.0	5.7	30	162	64	12	5.4	4.7	6.1
							31		60		5.4	4.7	

Combined monthly discharge of Nespelem River and Nespelem Canal at Nespelem, Wash., for the year ending September 30, 1925

Month	Discharge in second-feet					Combined run-off in acre-feet
	Combined		River mean	Canal mean	Combined mean	
	Maximum	Minimum				
April	339	141	243	2.27	245	14,600
May	156	67	108	5.13	113	6,950
June	65	23	34.9	10.5	45.4	2,700
July	21	11	6.73	7.37	14.1	867
August	11	8.8	5.09	4.94	10.0	615
September	11	8.7	5.51	4.47	9.98	594
The period						26,300

NESPELEM CANAL AT NESPELEM, WASH.

LOCATION.—In sec. 24, T. 31 N., R. 30 E., three-fourths mile below canal intake, three-fourths mile northwest of Nespelem post office, Okanogan County.

RECORDS AVAILABLE.—April 1, 1921, to September 30, 1925.

GAGE.—Vertical staff on right side of canal; read by Claude Marble.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Canal section, modified during growing season by plant growth.

EXTREMES OF DISCHARGE.—Maximum discharge recorded during year, 11.4 second-feet on June 11. No flow through canal December 14 to April 5.

1921–1925: Maximum stage recorded, 1.8 feet May 29 to June 1, 1924 (discharge, 12.7 second-feet). No flow through canal during winter.

ACCURACY.—Stage-discharge relation changed gradually June 12 to September 1. Rating curves fairly well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Shifting-control method used June 12 to September 1. Records good.

Canal diverts water from right bank of Nespelem River about on line between sections 24 and 13, T. 31 N., R. 30 E.

Discharge measurements of Nespelem Canal at Nespelem, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Apr. 29	0.72	1.3	June 11	1.67	11.0	Sept. 1	1.14	3.8
Apr. 30	.89	2.8	Sept. 1	1.14	3.9			

Daily discharge, in second-feet, of Nespelem Canal at Nespelem, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Apr.	May	June	July	Aug.	Sept.
1	3.8	5.7	5.3	-------	3.8	7.2	10.1	5.4	3.8
2	3.8	5.6	5.3	-------	3.6	7.2	10.1	5.3	3.8
3	3.8	5.6	5.4	-------	3.6	9.5	10.1	5.2	3.7
4	3.8	5.5	5.4	-------	3.6	10.8	10.1	5.2	3.7
5	3.8	5.6	5.4	-------	3.6	10.8	9.5	5.2	3.7
6	3.8	5.6	5.4	1.9	4.6	10.8	8.4	5.1	3.7
7	3.8	5.6	5.4	2.3	4.6	10.8	8.4	5.1	3.7
8	3.8	5.6	5.4	2.7	4.8	10.8	8.4	5.0	4.2
9	3.8	5.4	5.4	3.8	4.8	10.8	8.4	5.2	3.9
10	3.8	5.4	5.4	4.1	4.6	10.8	8.4	5.1	3.9
11	3.8	5.3	5.4	4.6	4.6	11.4	8.4	5.1	3.9
12	4.2	5.2	5.4	4.6	4.6	10.8	7.8	5.2	3.9
13	4.4	5.2	5.4	4.6	4.6	10.8	7.8	5.2	4.1
14	4.4	5.2	-------	3.6	4.6	10.8	7.2	5.3	4.1
15	4.7	5.2	-------	3.2	4.6	10.8	7.2	5.3	5.0
16	4.7	5.2	-------	2.7	4.5	10.8	6.7	5.1	5.0
17	4.7	5.2	-------	2.7	4.5	10.8	6.7	4.9	5.0
18	4.7	5.2	-------	2.9	4.5	10.8	6.7	4.9	5.0
19	4.7	5.2	-------	2.9	4.5	10.8	6.6	4.9	5.0
20	4.7	5.2	-------	2.8	6.0	10.8	6.5	4.9	5.0
21	4.7	5.2	-------	2.8	6.0	10.8	6.5	4.9	5.0
22	4.7	5.2	-------	2.7	6.0	10.8	6.3	4.9	5.0
23	4.7	5.2	-------	1.9	6.0	10.8	6.3	4.9	5.0
24	4.9	5.2	-------	1.9	6.0	10.8	6.2	4.9	5.0
25	5.1	5.2	-------	1.6	5.9	10.8	6.0	4.8	5.0
26	5.1	5.2	-------	1.3	5.9	10.8	5.9	4.7	5.0
27	5.1	5.2	-------	1.3	5.9	10.8	5.7	4.7	5.0
28	5.1	5.2	-------	1.3	7.2	10.8	5.6	4.5	5.0
29	5.1	5.2	-------	1.3	7.2	10.8	5.5	4.1	5.0
30	5.1	5.3	-------	2.7	7.2	10.8	5.5	4.1	5.0
31	5.6	-------	-------	-------	7.2	-------	5.4	4.1	-------

Monthly discharge of Nespelem Canal at Nespelem, Wash., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	5.6	3.8	4.46	274
November	5.7	5.2	5.33	317
December 1–13	5.4	5.3	5.38	139
April 6–30	4.6	1.3	2.73	135
May	7.2	3.6	5.13	315
June	11.4	7.2	10.5	625
July	10.1	5.4	7.37	453
August	5.4	4.1	4.94	304
September	5.0	3.7	4.47	266

OKANOGAN RIVER BASIN

OKANOGAN RIVER AT OKANOGAN, WASH.

LOCATION.—In sec. 16, T. 33 N., R. 26 E., at Okanogan, Okanogan County, a quarter of a mile above Salmon Creek.

DRAINAGE AREA.—7,740 square miles (measured on topographic maps and maps of Okanogan National Forest, Colville Indian Reservation, and Canadian Railway belt).

RECORDS AVAILABLE.—May 10, 1911, to September 30, 1925, when station was discontinued.

GAGE.—Chain gage on highway bridge; installed June 10, 1920; read by W. A. Steiner.

DISCHARGE MEASUREMENTS.—Made from boat at gage, from highway bridge, or by wading.

CHANNEL AND CONTROL.—Bed composed of boulders and cobblestones; likely to shift at extremely high water. Banks fairly high. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11.4 feet May 22 (discharge, 19,200 second-feet); minimum discharge, 450 second-feet September 16–21, 24, 29, and 30.

1911–1925: Maximum stage recorded, 12.21 feet on June 20, 1916 (discharge, 22,200 second-feet); minimum stage recorded, 0.96 foot February 13, 1923 (discharge, 385 second-feet); flow may have been less in December, 1922, when stage-discharge relation was affected by ice.

ICE.—Stage-discharge relation affected by ice except during mild winters; flow estimated from gage-height record, discharge measurements, observer's notes, and weather records.

DIVERSIONS.—Numerous ditches divert water for irrigation above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed May 23; affected by ice December 18 to January 18. Rating curves fairly well defined. Gage read to hundredths once daily, except as indicated in footnote to table of daily discharge. Daily discharge ascertained by applying daily gage height to rating table. Records good.

COOPERATION.—Gage-height record furnished by United States Forest Service.

The following discharge measurements were made:

July 6, 1925: Gage height, 4.14 feet; discharge, 3,110 second-feet.

August 27, 1925: Gage height, 1.69 feet; discharge, 614 second-feet.

August 29, 1925: Gage height, 1.60 feet; discharge, 550 second-feet.

Daily discharge, in second-feet, of Okanogan River at Okanogan, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	558	1,050	530		2,590	798	1,320	4,160	9,430	4,280	1,020	555
2	558	992	558		3,860	798	1,320	4,960	8,550	4,000	1,000	528
3	530	935	558		4,480	765	1,320	5,040	8,130	3,690	980	500
4	615	935	585		3,860	798	1,320	5,130	8,340	3,540	940	500
5	660	970	705	{1,250	1,920	798	1,360	5,300	7,720	3,240	900	500
6	705	900	765		1,610	830	1,410	5,640	7,120	3,240	900	491
7	765	865	720		1,510	830	1,510	6,740	7,120	3,090	825	483
8	705	900	675		1,420	814	1,710	8,550	7,120	2,940	940	475
9	705	865	705		1,320	798	1,810	8,990	6,930	2,780	915	500
10	705	830	675		1,230	765	2,370	9,100	7,120	2,630	890	475
11	705	830	675		1,140	765	3,000	9,210	7,520	2,480	865	475
12	690	830	615		1,050	765	3,900	9,650	7,320	2,320	840	475
13	675	798	675		935	735	4,800	11,700	7,120	2,170	815	475
14	705	765	3,070	{1,200	900	735	5,640	12,200	7,020	2,050	790	475
15	675	705	5,470		849	735	5,380	12,700	6,930	2,050	765	475
16	645	660	3,860		798	735	5,130	13,800	6,930	1,930	740	450
17	675	615	2,250		865	705	5,130	14,700	7,320	1,820	715	450
18	675	735			830	735	5,130	15,600	7,520	1,710	680	450
19	690	765		1,320	830	705	5,220	16,400	7,120	1,610	615	450
20	705	765		1,320	830	705	5,300	17,500	6,930	1,510	615	450
21	705	798	{1,000	1,320	830	705	5,130	18,600	6,740	1,510	585	450
22		765		1,510	1,120	720	4,960	19,200	6,550	1,410	575	475
23		765		1,610	1,410	735	4,800	18,400	6,740	1,320	565	475
24		765		1,710	1,410	735	4,640	16,500	6,360	1,320	555	450
25		798		1,520	970	765	4,480	14,600	6,000	1,320	528	475
	900											
26		798		1,320	865	798	4,240	12,700	5,640	1,280	615	475
27		752	{1,150	1,230	830	798	4,010	11,700	5,470	1,230	615	475
28		705		1,320	798	830	3,860	11,300	5,300	1,230	615	475
29		705		1,230	-------	965	3,860	11,300	5,130	1,230	555	450
30	1,100	618		1,230	-------	1,100	3,860	10,700	4,750	1,140	555	450
31	1,050	-------		1,320	-------	1,320	-------	10,100	-------	1,060	528	-------

NOTE.—Gage not read Oct. 5, 10, 12, 19, 22–29, Nov. 2, 9, 11, 16, 23, 27, 30, Dec. 7, 14, 16, 21, 25, 28, Jan. 1, 4, 10, 11, 18, 25, Feb. 1, 8, 10, 15, 22, Mar. 1, 8, 15, 22, 29, Apr. 5, 12, 15, 19, 26, May 3, 10, 14, 17, 24, 30, 31, June 7, 14, 21, 28, 30, July 1, 7–12, 19, 26, Aug. 2, 9–16, 22, 23, Sept. 6, 7, 13, 20, and 27; discharge interpolated. Braced figures give estimated mean discharge for periods indicated.

Monthly discharge of Okanogan River at Okanogan, Wash., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	-------	530	755	46,400
November	1,050	615	806	48,000
December	5,470	530	1,230	75,600
January	-------	-------	1,290	79,300
February	4,480	798	1,470	81,600
March	1,320	705	800	49,200
April	5,640	1,320	3,600	214,000
May	19,200	4,160	11,400	701,000
June	9,430	4,750	6,930	412,000
July	4,380	1,060	2,170	133,000
August	1,020	528	743	45,700
September	555	450	476	28,300
The year	19,200	450	2,640	1,910,000

SIMILKAMEEN RIVER NEAR OROVILLE, WASH.

LOCATION.—In SE. ¼ sec. 13, T. 40 N., R. 26 E., at Okanogan Valley Power Co.'s plant, 4 miles above Oroville, Okanogan County, and 5 miles above mouth; below all tributaries.

DRAINAGE AREA.—3,450 square miles (measured on topographic and Canadian railway-belt maps).

RECORDS AVAILABLE.—May 14, 1911, to September 30, 1925.

GAGE.—Since March 4, 1924, vertical staff on right bank about 40 feet above tailrace of power plant; read by employees of Washington Water Power Co. Datum of gage is set to sea level.

DISCHARGE MEASUREMENTS.—Made by wading or from highway bridge at Oroville, 4 miles below gage.

CHANNEL AND CONTROL.—Narrow canyon at gage and control; fairly permanent. Banks high, not subject to overflow. Control for low and medium stage is riffle formed by bedrock and boulders; high-water control not well defined.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 979.3 feet at 6 a. m. on May 21 (discharge, 18,300 second-feet); minimum stage recorded, 965.35 feet at 6 p. m. on September 16 (discharge, 206 second-feet).

1911–1925: Maximum stage recorded, 18.5 feet on June 5, 1922 (discharge, 21,400 second-feet); river dry at 4 p. m. December 5, 1920, while filling pond behind dam.

ICE.—Stage-discharge relation seriously affected by ice; flow estimated from gage-height record, discharge measurements, observer's notes, and weather records.

DIVERSIONS.—Some water is diverted for irrigation from tributaries above the station. The principal diversion is made from the river above the gage by the West Okanogan Valley Irrigation District (see p. 123).

REGULATION.—Slight regulation by means of flashboards during low-water periods to accommodate power load.

ACCURACY.—Stage-discharge relation practically permanent. Not affected by ice. Rating curve well defined above 300 second-feet. Gage read to tenths twice daily until October 28; to hundredths thereafter. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

COOPERATION.—Gage-height record and some discharge measurements furnished by the Washington Water Power Co.

Discharge measurements of Similkameen River near Oroville, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 28	67.07	999	July 7	68.76	2,290
May 26	75.22	10,300	Aug. 30	65.81	371

Daily discharge, in second-feet, of Similkameen River near Oroville, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	334	775	351	905	775	713	655	4,360	7,840	3,380	655	299
2	369	775	351	1,040	840	684	655	4,240	7,230	3,090	655	299
3	463	713	463	970	840	684	655	4,360	7,530	2,910	601	316
4	505	775	576	970	808	840	808	4,480	6,950	2,730	601	299
5	551	744	601	970	905	840	744	4,960	6,390	2,640	551	266
6	528	744	528	905	905	808	970	5,970	6,250	2,550	551	266
7	551	744	551	840	905	840	1,240	8,320	6,390	2,380	551	299
8	551	628	505	840	905	905	1,540	9,760	6,390	2,200	484	299
9	505	655	484	905	840	808	1,950	9,440	6,670	2,040	444	282
10	505	628	369	840	808	808	2,550	9,600	6,950	1,950	424	266
11	505	601	505	775	775	808	3,380	10,400	6,950	1,860	424	250
12	551	601	505	713	713	713	4,360	11,100	6,670	1,860	424	250
13	576	576	4,840	840	713	744	5,200	11,800	6,670	1,700	551	235
14	463	528	5,080	744	713	684	4,960	12,800	6,530	1,700	528	235
15	463	484	4,360	713	713	775	4,600	13,900	6,390	1,540	484	250
16	463	484	1,950	655	744	775	4,480	15,000	6,950	1,540	484	235
17	463	601	970	655	684	655	4,480	16,200	7,230	1,380	387	250
18	505	576	713	655	684	655	4,720	16,900	6,950	1,310	351	250
19	505	576	655	601	713	528	4,600	17,500	6,950	1,170	351	250
20	484	628	655	684	713	551	4,600	18,100	6,530	1,040	369	266
21	484	576	655	713	713	628	4,360	18,100	6,530	1,040	387	266
22	505	601	655	713	713	775	4,240	17,300	6,530	970	334	266
23	463	744	601	775	628	775	3,910	15,400	6,390	970	351	266
24	463	601	713	840	713	684	3,690	13,200	5,580	970	551	250
25	444	576	713	684	713	655	3,480	11,600	5,080	970	387	266
26	484	628	840	655	713	775	3,480	10,700	4,960	905	387	250
27	1,100	551	970	655	713	684	3,380	10,100	4,720	905	369	235
28	1,170	463	840	628	684	713	3,280	10,200	4,480	840	351	235
29	970	444	840	551	-------	744	3,280	10,400	4,020	713	334	250
30	840	369	970	655	-------	684	3,580	9,600	3,580	684	369	266
31	808	-------	970	713	-------	684	-------	8,480	-------	655	316	-------

Monthly discharge of Similkameen River and West Okanogan Valley Irrigation District Canal near Oroville, Wash., for the year ending September 30, 1925

[Drainage area, 3,450 square miles]

Month	Discharge in second-feet						Run-off (combined)	
	Combined		River mean	Canal mean	Combined			
	Maximum	Minimum			Mean	Per square mile	Inches	Acre-feet
October	1,170	334	567	0.0	567	0.164	0.19	34,900
November	775	369	613	.0	613	.178	.20	36,500
December	5,080	351	1,090	.0	1,090	.316	.36	67,000
January	1,040	551	768	.0	768	.223	.26	47,200
February	905	628	760	.0	760	.220	.23	42,200
March	905	528	730	.0	730	.212	.24	44,900
April	5,240	689	3,130	51.5	3,180	.922	1.03	189,000
May	18,200	4,360	11,100	137	11,200	3.25	3.75	689,000
June	7,980	3,740	6,280	142	6,420	1.86	2.08	382,000
July	3,540	827	1,630	164	1,790	.519	.60	110,000
August	827	472	452	147	599	.174	.20	36,800
September	472	346	264	143	407	.118	.13	24,200
The year	18,200	334	2,290	65.7	2,350	.681	9.27	1,700,000

SINLAHEKIN CREEK ABOVE BLUE LAKE, NEAR LOOMIS, WASH.

LOCATION.—In NE. ¼ sec. 20, T. 37 N., R. 25 E., 1,800 feet above Blue Lake diversion dam, 1 mile northwest of Blue Lake, 3½ miles above Sarsapkin Creek, and 9½ miles southwest of Loomis, Okanogan County.

DRAINAGE AREA.—41.7 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 17, 1924, to September 30, 1925. June 13, 1903, to March 30, 1905, at site 3 miles above Loomis; June 1 to October 31, 1920, at Blue Lake half a mile below present gage; May 1, 1921, to September 30, 1923, at Twin Bridges, 4 miles below.

GAGE.—Stevens continuous water-stage recorder on right bank; inspected by employees of Whitestone Irrigation District.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed of stream composed of boulders. Right bank high; left bank subject to overflow at extremely high water. High-water control large boulders; permanent. Low-water control gravel and small boulders; will shift at high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.46 feet at 3 p. m. May 19 (discharge, 99 second-feet); minimum stage recorded, 0.49 foot at 7 p. m. September 14 (discharge, 2.3 second-feet). Flow may have been lower during period in September when water-stage recorder was not operating.

1920–1925: Maximum discharge recorded, 363 second-feet on May 18, 1922; minimum discharge recorded, 0.7 second-foot on August 16, 1920. Flow may have been lower August 17, 1920, when gage was not read.

ICE.—Station discontinued during winter.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve fairly well defined. Operation of water-stage recorder fairly satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph by inspection. Records good.

Discharge measurements of Sinlahekin Creek above Blue Lake, near Loomis, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Apr. 1	0.60	3.43	May 24	1.21	40.4	Aug. 29	0.50	2.44
May 7	1.30	55.2	July 8	.72	7.66			

Daily discharge, in second-feet, of Sinlahekin Creek above Blue Lake, near Loomis, Wash., for the year ending September 30, 1925

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	3.7	40	34	12	3.2	2.9	16	42	60	27	4.6	2.9	2.5
2	4.6	39	40	12	3.2	3.2	17	40	60	25	4.3	3.3	2.5
3	5.5	38	37	11	3.0	2.7	18	34	62	24	4.0	3.2	2.5
4	8.0	42	33	10	3.0	2.6	19	31	74	23	4.0	2.8	}
5	10	49	33	9.5	3.0	2.6	20	29	57	21	3.7	2.6	
6	12	62	32	9.0	2.9	2.7	21	28	44	21	3.7	2.6	}
7	17	65	32	8.5	2.9	2.6	22	27	43	21	3.7	2.6	3
8	23	55	33	8.0	2.8	2.6	23	27	43	19	5.2	2.9	
9	28	50	39	7.5	2.8	2.6	24	26	42	18	5.8	2.7	
10	34	49	33	7.0	2.8	2.5	25	25	40	18	6.6	2.6	}
11	54	52	30	6.6	2.7	2.5	26	25	37	16	4.6	2.6	2.6
12	69	54	29	6.2	2.7	2.5	27	24	37	16	4.3	2.6	2.7
13	57	60	28	5.8	2.7	2.4	28	25	44	14	4.0	2.5	2.7
14	49	62	30	5.5	2.7	2.4	29	28	44	14	3.7	2.5	2.7
15	46	62	28	5.2	2.7	2.4	30	38	39	13	3.5	2.5	2.7
							31	-------	36	-------	3.2	2.4	-------

NOTE.—Water-stage recorder not operating Apr. 21–24, Aug. 5, 26–28, and Sept. 19–25; gage-height record faulty May 22 and 23; discharge estimated. Braced figures show estimated mean discharge for period indicated.

Monthly discharge of Sinlahekin Creek above Blue Lake, near Loomis, Wash., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April	69	3.7	29.0	1,730
May	74	36	49.7	3,060
June	40	13	26.0	1,550
July	12	3.2	6.22	382
August	3.3	2.4	2.79	172
September		2.4	2.70	161
The period				7,060

TOATS COULEE CREEK NEAR LOOMIS, WASH.

LOCATION.—In SE. ¼ sec. 33, T. 39 N., R. 25 E., just below Deer Creek, 1,200 feet above intake of Whitestone Irrigation District flume, and 3 miles northwest of Loomis, Okanogan County.

DRAINAGE AREA.—132 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 1, 1920, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on left bank at head of falls, installed June 3, 1920; inspected by Harold Eastman.

DISCHARGE MEASUREMENTS.—Made from footbridge just above irrigation flume intake or by wading.

CHANNEL AND CONTROL.—Bed composed of large boulders and gravel. One channel at all stages. Banks high and wooded. Control head of 20-foot falls several feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 3.07 feet at 2 a. m. May 20 (discharge, 313 second-feet); minimum stage, 0.88 foot at 9 p. m. September 15 (discharge, 2.4 second-feet); flow may have been lower during winter when recorder was not operating.

1920–1925: Maximum stage recorded, 4.8 feet at 8 p. m. June 3, 1922 (discharge, 925 second-feet); minimum stage recorded, that of September 15, 1925.

ICE.—Stage-discharge relation seriously affected by ice; record discontinued during winter.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed gradually March 31 to July 8; not affected by ice while recorder was in operation. Rating curves used directly and as standard form for shifting control fairly well defined. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph by inspection. Shifting-control method used March 31 to July 8. Records fair.

Discharge measurements of Toats Coulee Creek near Loomis, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Mar. 31	1.29	5.70	May 8	2.59	129	Aug. 29	1.08	4.82
Apr. 1	1.30	5.65	May 23	2.76	169	Aug. 31	1.03	3.77
May 6	2.51	98.2	July 8	1.77	18.1			
May 7	2.62	125	Do	1.77	17.7			

Daily discharge, in second-feet, of Toats Coulee Creek near Loomis, Wash., for the year ending September 30, 1925

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.5	------	5.7	54	112	30	6.2	4.4
2	5.8	------	6.2	50	134	29	6.4	5.4
3	5.7	------	6.6	49	127	26	6.3	5.3
4	5.7	------	7.5	57	106	24	6.3	4.3
5	5.8	------	9.4	72	98	22	6.2	4.1
6	5.8	------	11	104	87	20	6.2	4.2
7	5.7	------	12	141	83	20	6.1	4.0
8	5.9	------	15	127	89	18	6.1	3.8
9	6.2	------	20	120	112	17	6.0	3.4
10	5.2	------	27	120	118	16	5.9	3.1
11	6.2	------	36	131	100	14	5.9	3.0
12	6.5	------	45	136	89	14	5.8	2.9
13	6.5	------	43	157	82	13	5.8	2.7
14	6.9	------	39	169	82	12	5.7	2.5
15	7.5	------	36	195	76	12	5.7	2.5
16	7.6	------	32	203	80	10	5.6	2.7
17	------	------	32	203	78	9.4	5.5	2.9
18	------	------	31	212	73	8.8	5.3	3.4
19	------	------	31	264	64	8.5	5.2	4.5
20	------	------	29	284	64	8.2	5.1	3.9
21	------	------	27	234	64	8.0	5.0	3.6
22	------	------	28	208	62	7.9	4.9	3.3
23	------	------	26	180	59	11	4.8	3.4
24	------	------	26	152	56	11	4.7	3.7
25	------	------	26	136	49	10	4.6	4.4
26	------	------	27	129	45	9.8	4.5	4.
27	------	------	24	123	43	8.6	4.4	4.8
28	------	------	28	131	40	7.6	4.3	5.3
29	------	------	33	154	36	7.4	4.2	5.2
30	------	------	53	129	33	6.9	4.0	5.1
31	------	5.7	------	120	------	6.3	3.7	------

NOTE.—Water-stage recorder not operating Aug. 3–15, 19–28; discharge estimated.

Monthly discharge of Toats Coulee Creek near Loomis, Wash., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October 1–16	7.6	5.2	6.16	195
April	53	5.7	25.7	1,530
May	284	49	147	9,040
June	134	33	78.0	4,640
July	30	6.3	13.8	848
August	6.4	3.7	5.37	330
September	5.4	2.5	3.88	231

WEST OKANOGAN VALLEY IRRIGATION DISTRICT CANAL NEAR OROVILLE, WASH.

LOCATION.—In sec. 20, T. 40 N., R. 27 E., at under crossing of road to power plant, 1½ miles northwest of Oroville, Okanogan County.

RECORDS AVAILABLE.—Irrigation seasons 1922 to 1925.

GAGE.—Since April 7, 1924, float and staff gage on left side of flume; read by John Truax.

DISCHARGE MEASUREMENTS.—Made from plank over flume.

CHANNEL AND CONTROL.—Control is long section of metal-lined flume and earth canal. There is a possibility that stage-discharge relation is affected somewhat by operation of lateral gates some considerable distance below gage and by plant growth in earth section.

EXTREMES OF DISCHARGE.—Maximum discharge during year, 172 second-feet on July 20, 21, 27–29, 31, August 1–6 and 8–12. Canal dry August 13–15 and during nonirrigating season.

1922–1925: Maximum discharge recorded, 182 second-feet from June 27 to July 1, 1924. Canal dry June 15, 1923, April 25, 1924, and August 13–15, 1925, and during nonirrigating seasons.

ICE.—Canal dry during winter.

ACCURACY.—Stage-discharge relation changed gradually May 27 to July 6, and September 9. Rating curves poorly defined. Shifting-control method used May 27 to July 6. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

COOPERATION.—Gage-height record furnished by West Okanogan Valley Irrigation District.

Canal diverts water from left bank of Similkameen River in sec. 7, T. 40 N., R. 26 E. Water is used for irrigation.

Discharge measurements of West Okanogan Valley Irrigation District Canal near Oroville, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
May 8	2.02	137	July 7	2.42	158	Aug. 31	2.41	154
May 26	2.16	144	Aug. 30	2.39	154			

Daily discharge, in second-feet, of West Okanogan Valley Irrigation District Canal near Oroville, Wash., for the year ending September 30, 1925

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	34	165	139	157	172	148	16	44	140	136	164	78	148
2	34	116	139	157	172	156	17	44	148	136	164	156	156
3	34	132	138	157	172	156	18	47	148	144	164	164	148
4	36	132	138	156	172	156	19	50	140	151	164	164	148
5	37	132	130	156	172	156	20	53	39	151	172	164	148
6	37	132	130	156	172	156	21	65	140	151	172	164	148
7	38	132	130	156	164	156	22	68	148	151	164	164	148
8	39	132	130	164	172	148	23	62	140	150	164	164	140
9	40	140	130	156	172	148	24	62	148	150	164	164	132
10	40	140	129	164	172	148	25	71	148	158	164	164	125
11	41	140	137	164	172	148	26	71	140	158	164	164	125
12	42	140	137	164	172	148	27	42	140	158	172	164	125
13	43	140	129	164	0	156	28	95	140	158	172	164	111
14	43	140	129	164	0	148	29	95	139	158	172	156	111
15	44	148	136	164	0	148	30	95	139	157	164	156	111
							31	-------	139	-------	172	156	-------

Monthly discharge of West Okanogan Valley Irrigation District Canal near Oroville, Wash., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April	95	34	51.5	3,060
May	165	39	137	8,420
June	158	129	142	8,450
July	172	156	164	10,100
August	172	0	147	9,040
September	156	111	143	8,510
The period				47,600

METHOW RIVER BASIN

METHOW RIVER AT TWISP, WASH.

LOCATION.—In sec. 17, T. 33 N., R. 22 E., at highway bridge at Twisp, Okanogan County, a quarter of a mile below mouth of Twisp River.

DRAINAGE AREA.—1,330 square miles (measured on topographic and Forest Service maps).

RECORDS AVAILABLE.—June 1, 1919, to September 30, 1925.

GAGE.—Chain gage on upstream side of highway bridge; installed June 14, 1920; read by H. A. Mykrantz.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading.

CHANNEL AND CONTROL.—One channel at all stages; straight for long distance above and below gage. Bed composed of boulders and gravel. Control consists of large boulder riffle about 300 feet below gage; may shift during floods.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.5 feet on May 20 (discharge, 11,400 second-feet); minimum stage recorded, 1.7 feet December 9 and September 3–6 and 9–23 (discharge, 204 second-feet).

1919–1925: Maximum stage recorded, 10.4 feet at 9 a. m. on June 5, 1921 (discharge, 13,400 second-feet); minimum discharge estimated at 144 second-feet December 13–15, 1919, when stage-discharge relation was affected by ice.

ICE.—Stage-discharge relation seriously affected by ice during severe winters. Flow estimated from discharge measurements, observer's notes, and weather records.

DIVERSIONS.—Numerous diversions above station for irrigation.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent, except as affected by ice December 17 to January 18. Rating curve well defined below 6,000 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

COOPERATION.—Gage-height record furnished by Methow Okanogan Irrigation District.

The following discharge measurements were made:

July 2, 1925: Gage height, 4.32 feet; discharge, 1,940 second-feet.

July 3, 1925: Gage height, 4.34 feet; discharge, 1,980 second-feet.

August 26, 1925: Gage height, 1.80 feet; discharge, 245 second-feet.

Daily discharge, in second-feet, of Methow River at Twisp, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	256	294	275		314	275	525	2,240	3,840	2,240	500	221
2	256	314	275		314	294	550	2,120	3,680	2,120	475	221
3	256	294	275		314	294	575	2,120	3,520	2,010	450	204
4	256	314	275	340	314	314	715	2,300	3,200	1,900	450	204
5	275	335	275		314	294	850	2,490	2,900	1,900	426	204
6	256	314	275		314	314	990	3,360	3,200	1,700	401	204
7	256	335	256		314	314	1,140	4,650	3,050	1,500	401	221
8	256	294	256		294	314	1,400	4,820	3,050	1,400	378	221
9	275	314	204		294	314	1,800	4,650	3,520	1,310	356	204
10	256	294	275	290	275	314	2,360	4,650	3,680	1,310	335	204
11	256	314	256		275	314	2,620	4,990	3,520	1,220	314	204
12	256	294	401		275	314	3,840	5,160	3,360	1,140	314	204
13	256	294	715		275	314	3,680	5,330	3,360	1,140	314	204
14	238	294	1,060		275	335	3,200	6,440	3,360	1,060	294	204
15	256	275	1,140		275	335	3,050	7,610	3,360	990	314	204
16	256	294	628	300	275	356	2,760	9,260	4,000	920	294	204
17	275	294			256	335	2,760	9,260	4,480	920	294	204
18	275	275			275	356	2,490	10,100	4,480	885	314	204
19	256	294	320	335	275	356	2,360	11,000	4,160	815	294	204
20	238	294		335	275	356	2,120	11,400	4,320	748	294	204
21	256	294		335	275	401	1,900	9,470	4,820	715	275	204
22	238	294		314	275	426	1,900	9,260	4,480	685	275	204
23	238	294		314	294	450	1,800	7,410	3,840	715	275	204
24	238	294	290	294	275	475	1,700	6,630	3,360	685	256	221
25	238	294		275	275	500	1,600	5,870	3,200	655	238	221
26	275	256		314	275	525	1,600	5,510	4,990	655	238	221
27	275	238		294	275	525	1,600	5,330	5,330	655	238	221
28	314	238		275	275	550	1,600	5,160	3,520	600	238	221
29	294	238	320	314	-------	550	1,600	5,510	2,900	600	238	221
30	294	256		294	-------	550	1,900	4,820	2,620	575	238	221
31	294	-------		314	-------	525	-------	4,160	-------	550	238	-------

NOTE.—Braced figures give estimated mean discharge for periods indicated.

Monthly discharge of Methow River at Twisp, Wash., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	314	238	262	16,100
November	335	238	291	17,300
December	1,140	204	371	22,800
January	-------	-------	309	19,000
February	314	256	286	15,900
March	550	275	384	23,600
April	3,840	525	1,900	113,000
May	11,400	2,120	5,910	363,000
June	5,330	2,620	3,700	220,000
July	2,240	550	1,110	68,200
August	500	238	321	19,700
September	221	204	210	12,500
The year	11,400	204	1,260	911,000

CHELAN RIVER BASIN

LAKE CHELAN AT CHELAN, WASH.

LOCATION.—In sec. 13, T. 27 N., R. 22 E., at Forest Service boat landing at Chelan, Chelan County, a quarter of a mile above highway bridge at outlet.

DRAINAGE AREA.—950 square miles (measured on topographic and Forest Service maps).

RECORDS AVAILABLE.—September 1 to October 15, 1897; January 1, 1898, to December 31, 1899; January 1 to June 30, 1905; December 5, 1910, to September 30, 1925.

GAGE.—Vertical staff on pile at landing; installed December 5, 1910; datum 1,076.15 feet above sea level; read by C. A. Bennett.

EXTREMES OF STAGE.—Maximum stage recorded during year, 6.85 feet on May 21 and 22; minimum stage recorded, 2.03 feet on September 30.

1898–99; 1911–1925: Maximum stage recorded, 8.2 feet (elevation, 1,084.35 feet) on June 8, 1921; minimum stage recorded, 6.60 feet (elevation, 1,076.78 feet) January 27, 28, December 2 and 3, 1898.

REGULATION.—The lake level is controlled at low water by operation of flashboard dam at outlet in the interest of navigation.

ACCURACY.—Gage read to hundredths once on days for which gage heights are given.

COOPERATION.—Gage-height record furnished by Chelan Electric Co.

Daily gage height, in feet, of Chelan Lake at Chelan, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	2.51	-------	-------	-------	-------	-------	-------	5.87	5.43	3.65	2.93
2	-------	-------	-------	-------	-------	-------	2.37	3.16	5.79	5.34	-------	2.90
3	-------	-------	-------	3.82	-------	-------	-------	-------	5.56	5.26	3.73	2.83
4	2.53	-------	-------	-------	-------	-------	2.45	3.18	5.38	5.26	3.68	2.80
5	-------	-------	-------	4.10	-------	-------	-------	-------	5.20	5.03	3.69	2.73
6	-------	-------	2.39	-------	-------	-------	-------	-------	5.07	4.93	3.72	-------
7	-------	-------	-------	-------	3.73	3.64	-------	3.67	-------	4.84	3.67	-------
8	-------	2.51	-------	-------	-------	-------	2.52	-------	4.93	4.75	3.65	2.73
9	-------	-------	-------	-------	-------	-------	2.60	3.91	-------	4.68	-------	2.75
10	-------	-------	-------	3.95	-------	-------	-------	-------	4.88	4.66	3.69	2.73
11	2.39	-------	-------	-------	-------	-------	2.96	4.00	-------	4.62	3.67	2.64
12	-------	-------	-------	-------	-------	-------	-------	-------	4.85	-------	3.68	2.60
13	-------	-------	3.10	-------	-------	-------	3.34	4.43	4.85	4.48	3.69	-------
14	-------	-------	-------	-------	3.67	3.60	3.40	4.70	-------	4.42	3.75	2.58
15	-------	2.54	3.54	-------	-------	-------	-------	4.96	4.68	4.34	3.58	2.58
16	-------	-------	-------	-------	-------	-------	-------	5.22	-------	4.26	-------	2.51
17	-------	-------	-------	3.65	-------	-------	3.55	-------	4.82	4.28	3.39	2.50
18	2.21	-------	-------	-------	-------	3.38	3.54	5.89	4.90	-------	3.36	2.45
19	-------	-------	-------	-------	-------	-------	-------	6.25	4.96	4.08	3.30	2.37
20	-------	-------	3.94	-------	-------	3.20	-------	6.63	5.05	3.94	3.27	-------
21	-------	2.59	-------	-------	3.72	-------	-------	6.85	-------	3.85	3.30	2.38
22	-------	2.62	-------	-------	-------	-------	3.49	6.85	-------	3.79	3.32	2.33
23	-------	-------	-------	-------	-------	-------	-------	6.80	-------	3.74	-------	2.26
24	-------	-------	-------	3.74	-------	3.10	-------	-------	5.48	3.69	3.19	2.26
25	2.25	-------	-------	-------	-------	-------	3.34	6.60	5.55	3.64	3.20	2.25
26	-------	-------	-------	-------	-------	2.73	-------	6.50	5.66	-------	3.11	2.18
27	-------	-------	3.93	-------	-------	-------	3.18	6.45	5.78	3.55	3.12	-------
28	-------	-------	-------	-------	3.67	2.68	3.12	6.41	-------	3.62	3.04	2.14
29	-------	2.41	-------	-------	-------	-------	-------	6.38	5.66	3.59	2.95	2.09
30	-------	-------	-------	-------	-------	-------	-------	6.21	5.62	3.55	-------	2.03
31	2.49	-------	3.94	3.64	-------	2.50	-------	-------	-------	3.58	2.95	-------

CHELAN RIVER AT CHELAN, WASH.

LOCATION.—In sec. 13, T. 27 N., R. 22 E., at lower bridge at Chelan, Chelan County, 800 feet below flashboard dam at outlet of Chelan Lake, and 4 miles northwest of Chelan Falls.

DRAINAGE AREA.—950 square miles (measured on topographic and Forest Service maps).

RECORDS AVAILABLE.—November 1, 1903, to September 30, 1925.

GAGE.—Vertical staff on fourth bent of left approach to lower bridge; read by C. A. Bennett.

DISCHARGE MEASUREMENTS.—Made from upper bridge 1,000 feet above gage, from boat, or by wading.

CHANNEL AND CONTROL.—Bed composed of boulders and gravel; shifting at extremely high water. Channel curved above gage, but practically straight below. Banks high, not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year ending September 30, 1924, 10.4 feet on May 22–24 (discharge, 7,950 second-feet); minimum stage, 4.0 feet January 20–23, 27, and 28 (discharge, 310 second-feet).

Maximum stage during year ending September 30, 1925, 10.8 feet May 21–23 (discharge, 8,670 second-feet); minimum stage, 4.7 feet November 24 and December 7–9 and 11 (discharge, 550 second-feet).

1903–1925: Maximum stage recorded, 12.3 feet June 8, 1921 (discharge, 11,600 second-feet). Practically no flow for at least part of day on January 30, 1917, when outlet to lake was blocked solidly with ice so that no water could flow over dam.

ICE.—Stage-discharge relation not affected by ice.

DIVERSION.—Several irrigation ditches divert from tributaries a very small proportion of the run-off.

REGULATION.—Flashboard dam 800 feet above gage controls lake level at low water in interest of navigation. Monthly summaries of flow have been corrected for storage.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve fairly well defined below 10,000 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

COOPERATION.—Gage-height record furnished by Chelan Electric Co.

Discharge measurements of Chelan River at Chelan, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Dec. 4	4.77	585	May 9	7.83	3,860	July 9	8.68	4,780
Apr. 2	6.36	1,840	July 1	9.43	6,080	Aug. 28	5.82	1,200

Daily discharge, in second-feet, of Chelan River at Chelan, Wash., for the years ending September 30, 1924 and 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1923–24												
1	810	528	355	355	330	810	1,500	1,850	6,060	3,100	1,850	1,200
2	810	528	355	342	342	865	1,390	1,980	6,060	3,240	1,730	1,200
3	810	505	342	342	342	865	1,290	2,120	6,230	3,380	1,610	1,200
4	700	505	342	342	355	865	1,200	2,260	6,230	3,940	1,610	1,200
5	700	505	342	330	355	865	1,290	2,400	6,230	3,940	1,610	1,200
6	700	482	402	330	370	985	1,200	2,540	5,900	4,080	1,500	1,200
7	700	482	385	342	355	865	1,200	2,540	5,740	3,800	1,500	1,200
8	650	482	355	342	370	865	1,290	2,680	5,580	3,520	1,500	1,200
9	650	460	355	330	370	925	1,290	2,680	5,420	3,380	1,500	1,200
10	700	460	355	355	370	925	1,390	2,960	5,270	3,240	1,500	1,120
11	650	450	355	330	370	1,050	1,390	3,240	5,270	3,240	1,500	1,120
12	650	440	342	330	482	1,200	1,610	3,800	5,120	2,960	1,500	1,120
13	650	430	342	330	550	2,820	1,610	4,370	4,970	2,960	1,500	1,120
14	650	420	355	330	600	3,380	1,610	5,120	4,820	2,960	1,500	1,120
15	650	440	342	342	600	3,240	1,610	5,900	4,820	2,960	1,500	1,050
16	625	420	342	330	625	2,960	1,610	6,570	4,670	2,820	1,500	1,050
17	625	420	355	330	650	2,820	1,610	6,910	4,670	2,820	1,500	1,050
18	625	420	355	330	700	2,960	1,730	7,080	4,370	2,820	1,500	1,050
19	600	402	355	320	810	2,820	1,610	7,250	3,940	2,680	1,390	1,050
20	600	402	355	320	755	2,680	1,610	7,590	3,240	2,540	1,500	985
21	600	402	342	320	700	2,540	1,610	7,770	2,540	2,400	1,390	985
22	600	402	342	320	755	2,400	1,610	7,950	2,120	1,730	1,390	985
23	600	402	342	320	700	2,260	1,610	7,950	1,850	1,610	1,390	925
24	575	402	330	320	755	2,120	1,500	7,950	1,980	1,610	1,390	925
25	575	385	342	320	810	2,120	1,500	7,770	1,980	1,610	1,390	925
26	575	370	355	320	865	1,850	1,500	7,590	2,260	1,610	1,390	925
27	575	370	355	320	755	1,730	1,500	7,250	2,400	1,730	1,390	925
28	550	355	355	320	810	1,730	1,500	6,910	2,400	1,730	1,390	925
29	528	355	355	320	810	1,730	1,610	6,570	2,540	1,730	1,290	925
30	528	355	355	330	-------	1,610	1,730	6,230	2,540	1,610	1,290	865
31	528	-------	355	330	-------	1,500	-------	6,060	-------	1,730	1,200	-------
1924–25												
1	865	700	575	1,050	810	865	1,850	2,960	6,910	6,230	1,850	1,120
2	865	700	575	985	810	865	1,850	2,960	6,910	6,060	1,850	1,120
3	865	700	575	985	810	865	1,850	2,890	6,400	5,900	1,850	1,120
4	865	700	575	1,050	865	865	1,850	2,820	6,060	5,900	1,850	1,120
5	810	700	575	1,120	865	865	1,850	3,100	5,900	5,740	1,850	1,050
6	810	700	575	1,050	865	865	1,850	3,240	5,740	5,580	1,850	1,050
7	810	650	575	1,050	865	865	1,850	3,520	5,580	5,420	1,850	1,050
8	810	650	575	1,050	925	810	1,980	3,660	5,420	5,270	1,730	1,120
9	810	700	575	1,050	925	810	1,980	3,800	5,420	5,120	1,730	1,120
10	810	700	575	1,120	925	810	2,120	3,940	5,420	4,970	1,730	1,050
11	810	700	528	1,050	925	810	2,400	4,080	5,270	4,970	1,730	1,050
12	755	650	575	985	925	810	2,820	4,370	5,270	4,900	1,730	1,050
13	755	650	650	925	865	810	3,240	4,670	5,270	4,820	2,120	1,080
14	755	650	730	865	865	810	3,380	4,970	5,120	4,670	2,120	1,120
15	755	650	810	865	865	865	3,380	5,420	4,970	4,520	1,980	1,050
16	755	625	810	925	865	1,200	3,380	5,900	5,120	4,370	1,920	1,050
17	755	600	865	865	865	1,290	3,520	6,490	5,270	4,370	1,850	1,050
18	755	600	925	865	865	2,680	3,520	7,080	5,270	4,220	1,850	985
19	755	600	985	925	865	2,680	3,450	7,590	5,420	4,080	1,610	985
20	755	575	1,050	925	810	2,540	3,380	8,130	5,580	3,940	1,500	985
21	755	600	1,050	925	810	2,400	3,380	8,670	5,740	3,800	1,500	985
22	700	600	1,050	925	865	2,400	3,240	8,670	5,900	3,800	1,500	985
23	700	600	1,050	925	925	2,260	3,240	8,670	6,060	3,660	1,400	985
24	700	575	1,050	810	865	2,260	3,240	8,490	6,400	3,520	1,290	985
25	700	575	1,050	810	810	2,120	3,240	8,310	6,570	3,380	1,290	985
26	700	575	1,050	810	810	2,120	3,170	8,130	6,740	3,240	1,290	925
27	755	575	1,050	810	925	2,120	3,100	7,950	6,740	3,100	1,200	925
28	700	575	1,050	810	810	1,980	2,960	7,950	6,910	2,960	1,200	925
29	700	575	1,050	810	-------	1,980	2,960	7,770	6,570	2,400	1,200	925
30	700	575	1,120	810	-------	1,980	2,960	7,590	6,570	1,730	1,200	925
31	700	-------	1,120	810	-------	1,850	-------	7,250	-------	1,730	1,200	-------

NOTE.—The above record for 1923–24 is a revision and supersedes that published in Water-Supply Paper 592. Gage not read Nov. 11–13, 1923, or May 18, 1924; discharge interpolated. Gage not read Dec. 14, 1924, Jan. 1, Apr. 12, 19, 26, May 3, 8, 10, 17, 24, 31, June 7, 14, July 12, 26, Aug .2, 9, 16, 23, 30, and Sept. 6, 13, 20, 27, 1925; discharge estimated.

Monthly discharge of Chelan River at Chelan, Wash., for the years ending September 30, 1924 and 1925

[Drainage area, 950 square miles]

Month	Observed discharge in second-feet			Run-off in acre-feet			Discharge without storage in second-feet		Run-off in inches
	Maximum	Minimum	Mean	Observed	Stored	Without storage	Mean	Per square mile	
1923-24									
October	810	528	638	39,200	−3,600	35,600	579	0.609	0.70
November	528	355	433	25,800	−10,400	15,400	259	.273	.30
December	402	330	352	21,600	+8,900	30,500	496	.522	.60
January	355	320	330	20,300	+300	20,600	335	.353	.41
February	865	330	578	33,200	+22,700	55,900	972	1.02	1.10
March	3,380	810	1,820	112,000	−59,000	53,000	862	.907	1.05
April	1,730	1,200	1,490	88,700	+5,300	94,000	1,580	1.66	1.85
May	7,950	1,850	5,220	321,000	+101,000	422,000	6,860	7.22	8.32
June	6,230	1,850	4,240	252,000	−19,700	232,000	3,900	4.11	4.59
July	4,080	1,610	2,690	165,000	−13,100	152,000	2,470	2.60	3.00
August	1,850	1,200	1,470	90,400	−19,000	71,400	1,160	1.22	1.41
September	1,200	865	1,060	63,100	−23,000	40,100	674	.709	.79
The year	7,950	320	1,700	1,230,000	−9,600	1,220,000	1,680	1.77	24.12
1924-25									
October	865	700	766	47,100	−5,100	42,000	683	.719	.83
November	700	575	634	37,700	−2,400	35,300	593	.624	.70
December	1,120	528	818	50,300	+47,400	97,700	1,590	1.67	1.92
January	1,120	810	934	57,400	−9,300	48,100	782	.823	.95
February	925	810	864	48,000	+1,100	49,100	884	.931	.97
March	2,680	810	1,500	92,200	−36,500	55,700	906	.954	1.10
April	3,520	1,850	2,770	165,000	+19,700	185,000	3,110	3.27	3.65
May	8,670	2,820	5,840	359,000	+89,500	448,000	7,290	7.67	8.84
June	6,910	4,970	5,880	350,000	−12,600	337,000	5,660	5.96	6.65
July	6,230	1,730	4,330	266,000	−63,200	203,000	3,300	3.47	4.00
August	2,120	1,200	1,640	101,000	−19,400	81,600	1,330	1.40	1.61
September	1,120	925	1,030	61,300	−28,600	32,700	550	.579	.65
The year	8,670	528	2,260	1,640,000	−19,400	1,620,000	2,230	2.35	31.87

NOTE.—The above record for the year ending Sept. 30, 1924, is a revision of the 1924 data and supersedes that published in Water-Supply Paper 592. Storage estimated from gage-height record of Lake Chelan and capacity of lake determined from areas measured on topographic maps.

ENTIAT RIVER BASIN

ENTIAT RIVER AT ENTIAT, WASH.

LOCATION.—In sec. 18, T. 25 N., R. 21 E., one-eighth of a mile below power plant of Wenatchee Valley Gas & Electric Co., three-fourths of a mile west of Entiat, Chelan County, and 1 mile above mouth.

DRAINAGE AREA.—419 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 5, 1910, to September 30, 1925, when records were discontinued.

GAGE.—Inclined staff on left bank; read by L. G. Asher.

DISCHARGE MEASUREMENTS.—Made from private bridge 200 feet below power plant or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; shifting. One channel at all stages. Left bank high, not subject to overflow; right bank slopes gradually. Stage of zero flow, -0.5 ± 0.1 foot; determined September 24, 1922.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.2 feet May 19 and 20 (discharge, 3,670 second-feet); minimum stage recorded, 0.65 foot on December 9 (discharge, 59 second-feet).

1910–1925: Maximum stage recorded, 5.0 feet June 17, 1916 (discharge, 5,150 second-feet); minimum discharge on record, 32 second-feet, the result of current-meter measurement made January 30, 1923, when stage-discharge relation was affected by ice.

ICE.—Stage-discharge relation affected by ice; flow estimated from gage-height records, discharge measurements, observer's notes, and weather records.

DIVERSIONS.—Several diversions above station for irrigation. Entiat Irrigation Co.'s high line canal (capacity about 20 second-feet) carries water past station.

REGULATION.—Flow slightly affected by changes in load at power plant.

ACCURACY.—Stage-discharge relation changed December 30; affected by ice December 17 to January 27. Rating curves fairly well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good except during periods when stage-discharge relation was affected by ice.

COOPERATION.—Gage-height records furnished by Washington Coast Utilities Co.

The following discharge measurements were made:

July 1, 1925: Gage height, 2.44 feet; discharge, 1,010 second-feet.

July 10, 1925: Gage height, 2.06 feet; discharge, 678 second-feet.

August 25, 1925: Gage height, 0.91 foot; discharge, 119 second-feet.

Daily discharge, in second-feet, of Entiat River at Entiat, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	104	158	106		138	156	219	745	1,520	1,020	301	132
2	104	161	133		138	162	227	785	1,400	875	292	121
3	104	161	139		143	159	234	785	1,280	785	275	116
4	106	150	139	160	143	169	242	875	1,170	705	271	107
5	106	147	128		162	175	250	922	1,070	668	242	102
6	104	144	128		175	175	267	1,020	1,070	630	234	102
7	95	144	133		169	169	330	1,650	1,070	630	227	102
8	90	144	108		162	169	390	1,650	1,120	630	219	98
9	90	150	59		149	169	563	1,650	1,280	630	219	98
10	90	139	82	160	143	172	630	1,650	1,340	668	204	98
11	90	128	229		138	169	705	1,780	1,340	668	197	98
12	90	123	237		143	162	830	1,920	1,400	630	193	98
13	86	113	355		138	162	1,070	2,070	1,400	596	193	93
14	95	128	548		138	156	1,070	2,390	1,460	596	175	93
15	108	128	458		132	156	1,070	2,390	1,400	596	169	98
16	104	128	229	130	130	162	1,070	3,090	1,400	563	169	100
17	99	123			127	169	1,020	3,090	1,520	532	162	100
18	99	108			127	169	1,020	3,280	1,650	501	156	100
19	99	108			130	162	1,020	3,470	1,650	501	146	100
20	90	128	100		127	169	875	3,670	1,650	501	143	98
21	90	128			132	175	705	3,670	1,650	444	138	98
22	88	123			138	182	705	3,470	1,920	390	138	93
23	88	118			138	182	668	3,280	1,780	390	138	93
24	88	113			143	189	630	3,090	1,780	364	132	93
25	128	113		140	149	204	630	2,560	1,650	364	121	91
26	155	108			156	211	596	2,070	1,580	339	116	93
27	161	104	110		149	211	630	2,070	1,580	339	114	95
28	161	67		143	156	219	630	2,070	1,460	330	111	114
29	155	86		149	-------	219	668	2,070	1,340	330	138	111
30	155	95		143	-------	211	705	1,920	1,280	320	138	107
31	155	-------		138	-------	219	-------	1,650	-------	311	132	-------

Monthly discharge of Entiat River at Entiat, Wash., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	161	86	109	6,700
November	161	67	126	7,500
December	548	59	155	9,530
January			147	9,040
February	175	127	143	7,940
March	219	156	178	10,900
April	1,070	219	656	39,000
May	3,670	745	2,150	132,000
June	1,920	1,070	1,440	85,700
July	1,020	311	543	33,400
August	301	111	181	11,100
September	132	91	101	6,010
The year	3,670		496	359,000

WENATCHEE RIVER BASIN

WENATCHEE RIVER NEAR LEAVENWORTH, WASH.

LOCATION.—In SW. ¼ sec. 12, T. 26 N., R. 17 E., 1,500 feet below highway bridge at Plain, half a mile below Beaver Creek, and 14 miles north of Leavenworth, Chelan County.

DRAINAGE AREA.—591 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 27, 1910, to September 30, 1925.

GAGE.—Since September 6, 1913, vertical and inclined staff gage on left bank; read by P. H. Hertzog.

DISCHARGE MEASUREMENTS.—Made from cable three-eighths of a mile above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and small boulders. Control likely to shift during extremely high water. One channel at all stages. Banks high and not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.03 feet May 20 (discharge, 12,600 second-feet); minimum discharge occurred during period when stage-discharge relation was affected by logs.

1910–1925: Maximum stage recorded, 11.8 feet December 13, 1921 (discharge, 20,800 second-feet); minimum discharge, 316 second-feet September 29 and 30 and October 11 and 12, 1915.

ICE.—Stage-discharge relation affected by ice during severe winters; flow estimated from gage-height records, discharge measurements, observer's notes, and weather records.

DIVERSION.—The Wenatchee Park Land & Irrigation Co. diverts a maximum of about 12 second-feet from Chiwawa River during irrigation season.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent except as affected by ice and logs on control. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good except for estimated periods.

Discharge measurements of Wenatchee River near Leavenworth, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Nov. 6	4.00	1,130	Feb. 3	4.73	2,060	June 30	6.26	5,410
Dec. 3	3.32	636	Apr. 3	4.56	1,400	July 10	5.22	3,380
Dec. 19	4.46	2,270	May 10	6.82	6,900	Aug. 24	3.59	657

Daily discharge, in second-feet, of Wenatchee River near Leavenworth, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1				1,300	1,480	1,190	1,240	3,830	4,900	4,490		
2				1,240	1,920	1,140	1,360	3,920	4,110	4,904		
3				1,190	2,050	1,240	1,420	4,020	3,920	4,300		
4				1,190	2,050	1,420	1,540	4,110	3,740	4,490		
5				1,190	1,920	1,420	1,920	4,490	3,740	4,490		
	500	1,160	620								1,300	580
6				1,140	1,790	1,300	2,610	5,770	3,560	3,740		
7				1,140	1,660	1,360	2,180	8,230	4,110	3,390		
8				1,140	1,360	1,240	2,760	7,710	4,490	3,230		
9				1,140	1,300	1,220	3,740	7,450	4,490	3,230		
10				1,190	1,140	1,190	4,900	6,710	5,330	3,390		
11			2,320	1,190	1,080	1,140	6,710	7,200	5,110	3,390		
12			4,110	1,240	1,190	1,080	7,450	7,200	4,900	3,390		
13			7,470	1,300	1,140	1,080	7,710	7,710	4,900	2,910		
14			7,710	1,240	1,080	1,080	6,470	8,760	4,690	2,760		
15			6,710	1,190	1,030	1,140	5,770	9,840	4,490	2,610		
	500	740									880	540
16			5,110	1,190	980	1,140	5,770	11,000	6,470	2,460		
17			3,560	1,240	930	1,080	5,330	11,800	6,710	2,180		
18			2,760	1,300	930	1,030	4,900	11,800	6,710	2,180		
19			2,180	1,360	930	1,140	4,490	12,400	6,950	2,180		
20			1,920	1,360	980	1,300	4,110	12,600	6,710	2,180		
21			1,790	1,480	980	1,420	3,740	12,100	7,970	2,050		
22			1,660	1,420	1,030	1,540	3,390	11,000	7,200	2,180		
23			1,540	1,480	1,080	1,540	3,230	9,840	7,200	2,050		
24			1,300	1,360	1,190	1,660	3,070	7,710	6,710	1,920		
25			1,190	1,240	1,140	1,790	2,910	7,200	6,710	1,920		
	1,000	740									640	450
26			1,140	1,190	1,190	1,660	2,760	7,200	6,710	1,790		
27			1,140	1,420	1,240	1,540	2,910	7,200	7,200	1,790		
28			1,190	1,240	1,240	1,420	2,910	7,200	7,200	1,790		
29			1,240	1,420	-------	1,300	3,230	6,710	5,550	1,660		
30			1,240	1,360	-------	1,300	3,740	6,230	5,550	1,660		
31			1,300	1,660	-------	1,240	-------	3,390	-------	1,660		-------

NOTE.—Braced figures show estimated mean discharge for periods indicated, based on results of seven discharge measurements, observer's notes, and records at gaging stations on near-by streams.

Monthly discharge of Wenatchee River near Leavenworth, Wash., for the year ending September 30, 1925

[Drainage area, 591 square miles]

Month	Discharge in second-feet				Run-off	
	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October			677	1.15	1.33	41,600
November			880	1.49	1.66	52,400
December	7,710		2,060	3.49	4.02	127,000
January	1,660	1,140	1,280	2.17	2.50	78,700
February	2,050	930	1,290	2.18	2.27	71,600
March	1,790	1,030	1,300	2.20	2.54	79,900
April	7,710	1,240	3,810	6.45	7.20	227,000
May	12,600	3,390	7,820	13.2	15.22	481,000
June	7,970	3,560	5,600	9.48	10.58	333,000
July	4,490	1,660	2,770	4.69	5.41	170,000
August			930	1.57	1.81	57,200
September			523	.885	.99	31,100
The year	12,600		2,420	4.09	55.53	1,750,000

YAKIMA RIVER BASIN

KEECHELUS LAKE NEAR MARTIN, WASH.

LOCATION.—At outlet of lake, 1¼ miles northeast of Meadow Creek railroad station, 3½ miles northwest of Martin, Kittitas County, and 9½ miles northwest of Easton.

DRAINAGE AREA.—55 square miles (measured on topographic maps).

RECORDS AVAILABLE.—January 12, 1906, to September 30, 1925.

GAGE.—Vertical and inclined staff attached to pier of bridge to gage house; set to sea-level datum; read by L. M. Ralph.

EXTREMES OF STORAGE.—Maximum stage recorded during year, 2,518.09 feet at 11 a. m. May 16 (storage, 160,570 acre-feet); minimum stage recorded, 2,429.61 feet at 12 p. m. October 1 (storage, 5,770 acre-feet).

1906–1925: Maximum stage recorded, that of May 16, 1925; minimum stage recorded, 2,429.26 feet from 5.25 p. m. October 5 to 7 a. m. October 6, 1922 (storage, 5,330 acre-feet).

STORAGE.—Capacity of reservoir at crest of spillway, 152,000 acre-feet; elevation of gate sill, 2,425 feet and of spillway crest, 2,515 feet. Record of storage or release each month used to determine discharge without storage at gaging station below dam.

ACCURACY.—Staff gage read to hundredths twice daily. Records excellent.

COOPERATION.—Complete records furnished by United States Bureau of Reclamation.

Daily storage, in acre-feet, of Keechelus Lake near Martin, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,830	15,010	29,990	63,230	79,830	97,910	108,940	139,610	159,130	158,440	107,730	45,820
2	6,240	15,720	30,280	63,720	81,540	98,310	109,200	140,680	159,060	157,670	105,460	44,570
3	7,030	16,460	30,520	64,120	83,840	98,760	109,580	141,900	158,930	156,900	103,530	43,360
4	7,310	17,280	30,830	64,720	85,920	99,200	110,010	142,880	158,900	156,140	101,420	42,210
5	7,340	18,100	31,150	65,320	87,440	99,620	110,520	144,160	158,820	155,350	99,280	40,860
6	7,470	18,710	31,400	65,800	88,600	100,030	111,050	146,080	158,800	154,360	97,150	39,530
7	7,540	19,280	31,620	66,390	89,480	100,320	111,720	148,470	158,880	153,350	95,120	38,190
8	7,650	19,870	31,790	66,800	90,090	100,640	112,470	150,670	158,900	152,340	92,980	36,960
9	7,740	20,350	32,030	67,140	90,740	100,890	113,650	152,110	158,980	151,350	90,940	36,010
10	7,680	20,690	33,010	67,700	91,270	101,090	115,070	153,550	159,000	150,020	88,880	35,450
11	7,630	21,120	36,170	68,080	91,680	101,380	117,420	154,990	158,980	148,540	86,770	34,800
12	7,610	21,450	41,490	68,530	92,060	101,590	120,070	156,500	159,030	147,270	84,730	34,280
13	7,630	21,790	46,020	68,760	92,390	101,810	122,620	158,130	159,080	145,660	82,590	33,600
14	7,760	22,170	49,570	69,060	92,740	102,040	124,580	159,470	159,080	144,260	80,450	32,960
15	7,910	22,500	52,980	69,260	93,060	102,370	126,060	160,190	159,110	142,560	78,170	32,380
16	8,170	22,690	55,050	69,510	93,290	102,720	127,520	160,370	159,160	140,680	76,010	31,900
17	8,460	22,890	56,090	69,720	93,580	103,030	129,030	159,720	159,240	138,670	73,450	31,130
18	8,660	23,110	56,950	70,160	93,840	103,380	130,400	159,420	159,290	136,740	71,340	30,340
19	8,890	23,670	57,480	70,650	94,030	103,570	131,570	159,240	159,290	134,640	69,140	29,480
20	9,070	24,380	58,040	71,150	94,290	103,840	132,510	159,210	159,260	132,560	66,880	28,750
21	9,170	25,080	58,530	71,660	94,640	104,190	133,240	159,000	159,310	130,420	63,360	28,050
22	9,280	25,720	58,750	72,170	95,000	104,650	133,930	158,570	159,360	128,330	61,590	27,260
23	9,420	26,510	59,180	72,700	95,200	105,230	134,590	158,080	159,340	126,180	60,090	26,530
24	9,880	27,130	59,580	73,140	95,810	105,670	135,160	157,620	159,180	124,230	58,360	25,850
25	10,850	27,730	59,890	73,570	96,210	106,260	135,610	157,360	159,130	122,190	56,240	25,170
26	11,590	28,310	60,090	73,960	96,790	106,720	136,120	158,310	159,180	120,160	54,160	24,490
27	12,120	28,730	60,410	74,410	97,230	107,140	136,600	159,130	159,160	118,160	52,130	23,700
28	12,710	29,060	61,040	74,930	97,610	107,520	136,930	159,420	159,110	116,080	50,460	23,030
29	13,300	29,430	61,570	75,500	-------	107,920	137,770	159,490	158,820	114,060	49,210	22,230
30	13,970	29,740	62,170	76,290	-------	108,240	138,670	159,420	158,700	111,940	48,020	21,490
31	14,550	-------	62,690	77,840	-------	108,560	-------	159,240	-------	109,880	46,830	-------

YAKIMA RIVER NEAR MARTIN, WASH.

LOCATION.—Below dam at outlet of Keechelus Lake, 1½ miles east of Meadow Creek railroad station, 3½ miles northwest of Martin, Kittitas County, and 9½ miles northwest of Easton.

DRAINAGE AREA.—55 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 18 to November 14, 1903; January 28, 1904, to September 30, 1925.

GAGE.—Inclined staff gage in paved section on left side of outlet works, installed December 2, 1916; read by L. M. Ralph.

DISCHARGE MEASUREMENTS.—Made from cable 700 feet below dam or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel; shifts at high stages. Logs and brush sometimes lodge on riffle control below gage and affect stage-discharge relation.

EXTREMES OF DISCHARGE.—Maximum discharge during year, 1,630 second-feet on May 16 (computed from spillway overflow and tunnel discharge); minimum discharge, 12 second-feet October 21 to November 4.

1904–1925: Maximum discharge, 7,370 second-feet at 10.45 a. m. March 25, 1915, when temporary crib dam was washed out (gage destroyed; discharge computed from hourly gage readings of lake surface and estimated natural inflow to lake); practically no flow when gates in Keechelus Reservoir dam are closed.

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—None.

REGULATION.—Flow partly controlled by storage and release of water at Keechelus Reservoir. Monthly discharge without storage determined from records of stage at reservoir.

ACCURACY.—Stage-discharge relation changed slightly on May 16. Rating curves fairly well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

COOPERATION.—Complete records furnished by United States Bureau of Reclamation.

Discharge measurements of Yakima River near Martin, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 17	2.13	16.1	Aug. 4	7.60	1,100
July 20	7.70	1,150	Sept. 4	6.33	625

Daily discharge, in second-feet, of Yakima River near Martin, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	119	12	16	24	26	30	33	35	464	485	1,080	692
2	126	12	17	24	26	31	33	35	429	596	1,080	706
3	126	12	17	24	26	31	34	35	376	584	1,080	692
4	126	12	17	24	27	31	34	35	365	623	1,080	692
5	121	13	16	24	28	31	34	35	333	637	1,080	779
6	122	13	16	24	28	31	35	35	322	637	1,080	810
7	136	13	16	24	28	32	35	35	354	637	1,080	779
8	141	14	16	24	28	32	35	35	376	678	1,080	634
9	140	14	16	24	28	32	35	35	397	720	1,080	460
10	140	14	17	24	29	32	35	35	408	810	1,080	416
11	140	14	17	24	30	32	35	35	397	841	1,080	416
12	140	14	17	24	30	32	36	36	418	841	1,120	416
13	140	14	19	24	30	32	36	161	441	841	1,160	416
14	141	14	20	24	30	32	36	632	441	873	1,160	416
15	66	14	21	24	30	32	36	1,020	452	939	1,160	416
16	18	14	22	25	30	32	36	1,630	476	973	1,160	416
17	15	14	22	25	30	32	36	1,600	511	1,040	1,160	449
18	14	14	22	25	30	32	36	1,440	534	1,080	1,160	483
19	14	14	22	25	30	32	35	1,360	534	1,120	1,160	483
20	13	14	22	25	30	32	35	1,350	523	1,120	1,160	483
21	12	14	23	25	30	32	35	1,260	546	1,120	1,160	483
22	12	14	23	25	30	32	35	1,080	571	1,120	1,160	483
23	12	14	23	25	30	32	35	937	559	1,080	1,160	483
24	12	15	23	25	30	32	35	875	477	1,040	1,160	483
25	12	15	23	26	30	32	35	363	465	1,040	1,160	483
26	12	15	23	26	30	32	35	153	489	1,040	1,160	483
27	12	15	24	26	30	32	35	465	477	1,080	1,010	483
28	12	15	24	26	30	32	35	597	453	1,080	810	483
29	12	15	24	26	-------	32	35	635	334	1,080	692	483
30	12	16	24	26	-------	32	35	597	285	1,080	692	471
31	12	-------	24	26	-------	33	-------	511	-------	1,080	692	-------

Monthly discharge of Yakima River near Martin, Wash., for the year ending September 30, 1925

[Drainage area, 55 square miles]

Month	Observed discharge (second-feet)			Run-off (acre-feet)			Discharge without storage (second-feet)		Run-off
	Maximum	Minimum	Mean	Observed	Stored	Without storage	Mean	Per square mile	
October	141	12	68.7	4,220	+8,770	13,000	211	3.84	4.43
November	16	12	13.9	827	+15,200	16,000	269	4.89	5.46
December	24	16	20.2	1,240	+33,000	34,200	556	10.1	11.64
January	26	24	24.7	1,520	+15,200	16,700	272	4.95	5.71
February	30	26	29.1	1,610	+19,800	21,400	385	7.00	7.29
March	33	30	31.8	1,960	+11,000	13,000	211	3.84	4.43
April	36	33	35.0	2,080	+30,100	32,200	541	9.84	10.98
May	1,630	35	551	33,900	+20,600	54,500	886	16.1	18.56
June	571	285	440	26,200	−540	25,700	432	7.85	8.76
July	1,120	485	900	55,400	−48,800	6,600	107	1.95	2.25
August	1,160	692	1,070	65,700	−63,000	2,700	43.9	.798	.92
September	810	416	529	31,500	−25,300	6,200	104	1.89	2.11
The year	1,630	12	312	226,000	+16,000	242,000	335	6.09	82.54

YAKIMA RIVER AT CLE ELUM, WASH.

LOCATION.—In sec. 27, T. 20 N., R. 15 E., at highway bridge at Cle Elum, Kittitas County, just above Roslyn Creek, 3 miles below mouth of Cle Elum River, and 6½ miles above Teanaway Creek.

DRAINAGE AREA.—500 square miles (measured on topographic maps).

RECORDS AVAILABLE.—August 24, 1906, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder in wooden shelter on left bank, just below highway bridge since October 22, 1924. Owing to reconstruction of highway bridge and recording gage equipment, several temporary staff gages at various locations on the left bank were read from June 28, 1923, to October 21, 1924. Gages read by J. F. Huffman.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and cobblestones. One channel at all stages. Control at low water formed by broad riffle about 1,200 feet below gage; riffle drowned out at high water. Control shifts during floods.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.00 feet at 4 a. m. May 17 (discharge, 8,590 second-feet); minimum stage recorded, 1.25 feet at 3 p. m. October 26 (discharge, 290 second-feet).

1906–1925: Maximum stage measured from high-water marks, 12.5 feet November 14, 1906 (discharge, about 25,600 second-feet); minimum stage recorded, 0.83 foot from 7.30 a. m. November 17 to 7.15 a. m. November 19, 1923 (discharge, 144 second-feet).

ICE.—Stage-discharge relation seriously affected by ice during severe winters.

DIVERSIONS.—None.

REGULATION.—Flow partly regulated by storage and release of water at Keechelus, Kachess, and Cle Elum Reservoirs. Monthly discharge without storage determined from records of stage at reservoirs.

ACCURACY.—Stage-discharge relation practically permanent; not affected by ice. Rating curve well defined. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

COOPERATION.—Complete record furnished by United States Bureau of Reclamation.

Discharge measurements of Yakima River at Cle Elum, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 23	1.32	340	Apr. 14	5.62	5,320	July 21	3.76	2,390
Dec. 30	2.31	975	May 28	4.89	4,080	Aug. 5	3.96	2,560
Apr. 3	2.73	1,260	June 25	4.09	2,810	Sept. 2	3.93	2,550

Daily discharge, in second-feet, of Yakima River at Cle Elum, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	726	355	410	850	1,500	1,160	1,240	2,630	2,910	2,030	2,500	2,500
2	752	365	416	858	1,700	1,160	1,240	2,840	2,630	2,140	2,560	2,500
3	496	365	427	858	2,200	1,200	1,240	2,840	2,500	2,140	2,560	2,560
4	496	310	427	828	2,630	1,240	1,370	2,770	2,260	2,030	2,560	2,500
5	508	310	444	902	2,500	1,240	1,600	2,980	2,140	2,080	2,560	2,560
6	508	310	444	902	2,200	1,200	1,920	3,780	2,140	2,080	2,630	2,500
7	508	314	416	835	1,920	1,160	2,260	5,200	2,200	1,970	2,630	2,500
8	532	314	405	821	1,700	1,160	2,700	5,400	2,320	1,920	2,560	2,500
9	538	324	400	758	1,500	1,110	3,370	4,500	2,500	1,970	2,700	2,260
10	484	319	478	793	1,320	1,030	4,410	3,950	2,630	2,030	2,770	2,140
11	460	319	1,550	758	1,200	982	5,400	3,870	2,500	2,140	2,770	2,140
12	472	319	5,000	752	1,110	934	6,030	4,130	2,380	2,140	2,770	1,970
13	538	346	6,250	706	1,030	910	6,030	4,310	2,440	2,140	2,840	1,370
14	520	410	6,690	664	982	902	5,400	5,000	2,440	2,080	2,840	1,280
15	508	427	6,030	622	958	942	4,500	6,250	2,380	2,140	2,840	1,280
16	449	422	4,900	586	918	990	4,040	7,390	2,560	2,140	2,770	1,550
17	405	416	3,290	562	880	966	3,870	8,350	2,910	2,140	2,770	1,600
18	385	405	2,500	586	858	910	3,700	7,630	3,060	2,200	2,770	1,600
19	375	422	1,920	664	842	950	3,290	7,390	2,980	2,320	2,770	1,600
20	360	520	1,600	694	835	1,110	2,910	7,390	2,980	2,320	2,770	1,600
21	346	628	1,410	739	858	1,200	2,630	7,150	3,210	2,320	2,840	1,550
22	346	713	1,280	720	910	1,320	2,380	6,470	3,450	2,380	3,060	1,550
23	337	758	1,160	746	942	1,500	2,200	5,400	3,210	2,380	3,060	1,550
24	314	726	1,070	746	1,030	1,500	2,080	4,700	2,840	2,380	3,060	1,810
25	328	676	926	713	1,070	1,650	1,920	4,220	2,770	2,320	3,060	1,810
26	298	628	835	706	1,110	1,650	1,810	3,370	2,840	2,320	3,060	1,860
27	337	598	765	713	1,200	1,600	1,810	3,530	2,910	2,380	3,060	1,370
28	346	550	850	739	1,200	1,500	1,860	3,950	2,770	2,440	2,840	918
29	355	508	926	765	-------	1,410	2,030	4,040	2,500	2,440	2,630	835
30	355	410	926	828	-------	1,320	2,380	3,700	2,200	2,380	2,560	786
31	360	-------	895	1,110	-------	1,280	-------	3,210	-------	2,440	2,560	-------

Monthly discharge of Yakima River at Cle Elum, Wash., for the year ending September 30, 1925

[Drainage area, 500 square miles]

Month	Observed discharge (second-feet)			Run-off (acre-feet)			Discharge without storage (second-feet)		Run-off in inches
	Maximum	Minimum	Mean	Observed	Stored	Without storage	Mean	Per square mile	
October	752	298	443	27,300	+22,800	50,100	815	1.63	1.88
November	758	310	450	26,700	+35,200	61,900	1,040	2.08	2.32
December	6,690	400	1,780	109,000	+61,800	171,000	2,780	5.56	6.41
January	1,110	562	759	46,600	+29,600	76,200	1,240	2.48	2.86
February	2,630	835	1,330	73,600	+38,800	112,000	2,020	4.04	4.21
March	1,650	902	1,200	73,700	+24,600	98,300	1,600	3.20	3.69
April	6,030	1,240	2,920	174,000	+65,100	239,000	4,020	8.04	8.97
May	8,350	2,630	4,790	294,000	+73,600	368,000	5,980	12.0	13.83
June	3,450	2,140	2,650	158,000	+23,700	182,000	3,060	6.12	6.83
July	2,440	1,920	2,200	135,000	−64,100	70,900	1,150	2.30	2.65
August	3,060	2,500	2,770	170,000	−144,000	26,000	423	.846	.98
September	2,560	786	1,820	108,000	−88,600	19,400	326	.652	.73
The year	8,350	298	1,930	1,400,000	+78,500	1,470,000	2,040	4.08	55.36

KACHESS LAKE NEAR EASTON, WASH.

LOCATION.—In sec. 24, T. 21 N., R. 13 E. (unsurveyed), at lake outlet, 2½ miles northwest of Easton, Kittitas County.

DRAINAGE AREA.—63 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 30, 1905, to September 30, 1925.

GAGE.—Stevens water-stage recorder installed in gate tower November 25, 1915, for use when gates are closed and staff gage (datum mean sea level); inspected by Fred Diener.

EXTREMES OF STORAGE.—Maximum stage recorded during year, 2,260.60 feet on July 8 and 9 (storage, 232,660 acre-feet); minimum stage recorded, 2,202.70 feet at 10.10 a. m. October 2 (storage, 27,550 acre-feet).

1906–1925: Maximum stage recorded, 2,261.14 feet at 4 p. m. July 21, 1920 (storage, 235,090 acre-feet); minimum stage recorded, 2,197.73 feet September 26 and 27, 1915 (storage, 13,730 acre-feet).

STORAGE.—Capacity of reservoir at crest of spillway, 221,000 acre-feet. Elevation of gate sill 2,192.75 feet and of spillway crest 2,258.00 feet. Record of storage or release each month used for determining discharge without storage at gaging station below dam.

ACCURACY.—Water-stage recorder in gate tower not used during year. Staff gage read to hundredths twice daily. Records excellent.

COOPERATION.—Complete record furnished by United States Bureau of Reclamation.

Daily storage, in acre-feet, of Kachess Lake near Easton, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27,940	34,260	45,910	74,050	88,880	107,400	120,670	154,440	206,540	231,130	224,240	150,810
2	27,660	34,700	46,140	74,590	90,100	107,820	121,070	155,430	207,370	231,530	223,080	147,770
3	27,740	35,120	46,450	75,020	91,770	108,360	121,480	156,580	208,150	231,850	221,930	144,740
4	27,970	35,540	46,700	75,450	93,600	108,820	121,990	157,620	208,890	231,980	220,600	141,660
5	28,110	35,990	46,930	75,940	95,440	109,290	122,550	158,860	209,550	232,160	219,360	138,550
6	28,270	36,440	47,240	76,400	96,950	109,720	123,290	160,700	210,340	232,340	217,900	135,310
7	28,360	36,860	47,440	76,890	97,470	110,150	124,180	163,450	211,170	232,530	216,310	132,300
8	28,530	37,340	47,690	77,320	98,140	110,500	125,180	165,440	211,960	232,660	214,640	129,260
9	28,660	37,820	47,830	77,840	98,870	110,830	126,540	166,900	212,790	232,660	212,700	126,250
10	28,780	38,240	48,280	78,360	99,400	111,150	128,360	168,420	213,760	232,610	210,470	122,990
11	28,890	38,660	49,890	78,940	99,930	111,480	130,650	169,810	214,500	232,520	208,150	119,860
12	29,060	39,020	53,280	79,510	100,380	111,800	133,200	171,410	215,300	232,250	205,980	116,690
13	29,170	39,360	56,560	79,970	100,770	112,130	135,620	173,190	216,180	231,980	203,720	115,170
14	29,310	39,760	59,460	80,430	101,160	112,420	137,600	175,180	217,020	231,850	201,380	113,570
15	29,420	40,060	62,650	80,890	101,540	112,780	139,200	177,550	217,900	231,620	199,180	112,160
16	29,470	40,340	64,790	81,330	101,900	113,280	140,700	180,180	218,780	231,310	196,680	109,970
17	29,640	40,570	66,050	81,700	102,140	113,680	142,120	182,950	219,890	231,080	194,280	107,790
18	29,750	40,820	67,100	82,130	102,420	113,940	143,540	185,350	220,860	230,810	192,010	105,650
19	29,920	41,130	67,940	82,620	102,740	114,300	144,780	187,840	221,840	230,450	189,710	103,590
20	30,030	41,520	68,570	83,030	103,100	114,800	145,750	190,350	222,770	230,100	187,510	101,510
21	30,230	41,950	69,050	83,430	103,490	115,170	146,680	192,700	223,970	229,650	185,100	99,540
22	30,400	42,510	69,430	83,840	103,950	115,710	147,500	194,580	224,950	229,290	182,020	97,400
23	30,560	43,070	69,830	84,240	104,370	116,220	148,350	196,000	225,800	228,930	179,010	95,480
24	30,810	43,520	70,230	84,620	104,900	116,840	148,980	197,200	226,470	228,660	175,840	93,640
25	31,260	43,970	70,600	84,990	105,470	117,450	149,560	198,400	227,270	228,300	172,900	91,740
26	31,600	44,360	70,950	85,370	105,970	118,000	150,180	199,520	228,170	227,900	169,850	89,930
27	31,930	44,700	71,290	85,720	106,540	118,440	150,730	200,640	229,020	227,540	166,780	89,080
28	32,410	45,100	71,670	86,090	107,040	118,980	151,440	202,240	229,690	227,140	163,650	89,060
29	32,860	45,400	72,300	86,530	-------	119,350	152,150	203,800	230,230	226,740	160,340	89,110
30	33,280	45,660	72,900	87,110	-------	119,820	153,410	204,760	230,720	226,070	157,260	89,170
31	33,750	-------	73,500	87,920	-------	120,260	-------	205,720	-------	225,180	154,120	-------

KACHESS RIVER NEAR EASTON, WASH.

LOCATION.—In sec. 3, T. 20 N., R. 13 E., three-fourths of a mile below Kachess storage dam, one-fourth of a mile above mouth, and 2 miles northwest of Easton, Kittitas County.

DRAINAGE AREA.—64 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 20, 1903, to September 30, 1925.

GAGE.—Stevens water-stage recorder at highway bridge; installed August 15, 1916; inspected by Fred Diener.

DISCHARGE MEASUREMENTS.—Made from cable one-fourth of a mile below Kachess storage dam or by wading.

CHANNEL AND CONTROL.—Bed composed of light gravel and sand; shifting frequently. One channel at all stages. Control formed by broad riffle 125 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.12 feet at 1 a. m. September 12 (discharge, 1,660 second-feet). Practically no flow when gates in dam are closed.

1904–1925: Maximum discharge, 2,240 second-feet (computed from gate opening) August 27, 1920; practically no flow when gates in dam are closed.

ICE.—Stage-discharge relation affected by ice at times; flow estimated from gage-height record, discharge measurements, observer's notes, and weather records.

DIVERSIONS.—None.

REGULATION.—Flow controlled by storage and release of water in Kachess Lake Reservoir. Monthly discharge without storage, determined from records of stage of reservoir.

ACCURACY.—Stage-discharge relation changed September 8–12; not affected by ice. Rating curves fairly well defined. Water-stage recorder inspected daily except when gates are closed. Daily discharge ascertained by applying mean daily gage height to rating table. When gates are closed leakage estimated from knowledge of governing conditions. Records good.

COOPERATION.—Complete records furnished by United States Bureau of Reclamation.

Discharge measurements of Kachess River near Easton, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 15	1.43	0.00	Aug. 4	4.49	639
July 21	3.41	225	Sept. 4	6.10	1,590

Daily discharge, in second-feet, of Kachess River near Easton, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	356	1	1	1	1	1	2	2	2	2	557	1,580
2	179	1	1	1	1	1	2	2	2	23	589	1,580
3	31	1	1	1	1	1	2	2	2	217	608	1,590
4	31	1	1	1	1	1	2	2	2	38	622	1,590
5	31	1	1	1	1	1	2	2	2	40	710	1,590
6	32	1	1	1	1	1	2	2	2	41	802	1,590
7	32	1	1	1	1	1	2	2	2	41	824	1,590
8	31	1	1	1	1	1	2	2	2	65	918	1,590
9	24	1	1	1	1	1	2	2	2	120	1,100	1,610
10	13	1	1	1	1	1	2	2	2	172	1,150	1,620

Daily discharge, in second-feet, of Kachess River near Easton, Wash., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
11	9	1	1	1	1	1	2	2	2	188	1,170	1,640
12	2	1	1	1	1	1	2	2	2	188	1,170	1,170
13	0	1	1	1	1	1	2	2	2	185	1,170	827
14	0	1	1	1	1	1	2	2	2	188	1,170	821
15	0	1	1	1	1	1	2	2	2	195	1,170	905
16	0	1	1	1	1	1	2	2	2	198	1,180	1,170
17	0	1	1	1	1	1	2	2	2	208	1,180	1,150
18	0	1	1	1	1	1	2	2	2	217	1,190	1,120
19	0	1	1	1	1	1	2	2	2	225	1,200	1,090
20	0	1	1	1	1	1	2	2	2	222	1,210	1,070
21	0	1	1	1	1	1	2	2	2	225	1,400	1,060
22	0	1	1	1	1	1	2	2	2	222	1,520	1,030
23	0	1	1	1	1	1	2	2	2	219	1,540	1,010
24	0	1	1	1	1	1	2	2	2	203	1,550	990
25	0	1	1	1	1	1	2	2	2	203	1,550	979
26	0	1	1	1	1	1	2	2	2	200	1,560	821
27	0	1	1	1	1	1	2	2	2	208	1,560	196
28	0	1	1	1	1	1	2	2	2	211	1,560	0
29	0	1	1	1	------	1	2	2	2	257	1,550	
30	0	1	1	1	------	1	2	2	2	387	1,560	
31	0	------	1	1	------	1	------	2	------	479	1,560	------

Monthly discharge of Kachess River near Easton, Wash., for the year ending September 30, 1925

[Drainage area, 64 square miles]

Month	Observed discharge (second-feet)			Run-off (acre-feet)			Discharge without storage (second-feet)		Run-off in inches
	Maximum	Minimum	Mean	Observed	Stored	Without storage	Mean	Per square mile	
October	356	0	24.9	1,530	+5,250	6,780	110	1.72	1.98
November	1	1	1.0	59.5	+11,900	12,000	202	3.16	3.53
December	1	1	1.0	61.5	+27,800	27,900	454	7.09	8.17
January	1	1	1.0	61.5	+14,400	14,500	236	3.69	4.25
February	1	1	1.0	55.5	+19,100	19,200	346	5.41	5.63
March	1	1	1.0	61.5	+13,200	13,300	216	3.38	3.90
April	2	2	2.0	119	+33,200	33,300	560	8.75	9.76
May	2	2	2.0	123	+52,300	52,400	852	13.3	15.33
June	2	2	2.0	119	+25,000	25,100	422	6.59	7.35
July	479	2	180	11,100	−5,540	5,560	90.4	1.41	1.63
August	1,560	557	1,180	72,600	−71,100	1,500	24.4	.381	.44
September	1,640	0	1,100	65,400	−65,000	400	6.72	.105	.12
The year	1,640	0	209	151,000	+60,500	212,000	293	4.58	62.09

CLE ELUM LAKE NEAR ROSLYN, WASH.

LOCATION.—In sec. 10, T. 20 N., R. 14 E., at outlet of lake, 4 miles northwest of Roslyn, Kittitas County, and 7½ miles northwest of Cle Elum.

DRAINAGE AREA.—202 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 4, 1906, to September 30, 1925.

GAGE.—Stevens water-stage recorder; installed November 8, 1916; inspected by W. W. Wasson. Zero of gage at elevation of gate sills, 2,122.75 feet above sea level.

EXTREMES OF STORAGE.—Maximum stage recorded during year, 14.86 feet at noon May 17 (storage, 32,480 acre-feet); minimum stage recorded, 3.24 feet at 6 a. m. September 5 (storage, 6,750 acre-feet).

1907–1925: Maximum stage recorded, 19.10 feet at 6 p. m. December 30, 1917 (storage, 43,180 acre-feet); minimum stage estimated at 1.15 feet August 31, 1906 (storage, 2,380 acre-feet).

STORAGE.—Capacity of reservoir at crest of spillway (gage height, 11.3 feet), 24,100 acre-feet. Storage or release each month used for determining discharge without storage for gaging station below dam.

ACCURACY.—Water-stage recorder referred to staff gage twice daily. Gage read to hundredths twice daily. Records excellent.

COOPERATION.—Complete records furnished by United States Bureau of Reclamation.

Daily storage, in acre-feet, of Cle Elum Lake near Roslyn, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7,720	16,940	24,440	25,330	25,900	25,330	25,690	27,960	27,910	27,150	16,920	7,240
2	8,370	17,550	24,510	25,330	26,310	25,330	25,690	28,120	27,660	26,910	15,950	7,150
3	9,260	18,350	24,580	25,350	26,870	25,350	25,740	28,120	27,450	26,780	14,860	7,020
4	9,870	19,300	24,580	25,300	27,380	25,370	25,900	28,050	27,190	26,750	14,060	6,900
5	10,320	20,290	24,600	25,330	27,330	25,420	26,340	28,270	27,080	26,710	13,340	6,820
6	10,680	20,940	24,600	25,350	27,050	25,400	26,820	29,160	27,190	26,660	12,760	7,020
7	10,870	21,620	24,580	25,280	26,680	25,370	17,330	30,520	27,330	26,540	12,250	7,380
8	10,910	22,130	24,560	25,280	26,400	25,350	27,800	20,640	27,500	26,430	11,760	7,640
9	10,930	22,620	24,580	25,140	26,150	25,300	28,600	29,730	27,750	26,310	11,400	7,990
10	11,060	22,960	24,850	25,140	25,990	25,260	29,420	29,210	27,890	26,290	11,000	8,330
11	11,000	23,500	26,400	25,100	25,780	25,140	30,240	29,140	27,800	26,290	10,760	8,630
12	10,850	23,860	30,160	25,120	25,650	25,080	30,740	29,420	27,590	26,290	10,450	8,900
13	10,640	24,060	31,150	25,100	25,530	25,060	30,670	29,730	27,660	26,220	10,210	9,180
14	10,430	24,170	31,510	25,010	25,440	25,030	30,020	30,310	27,660	26,080	9,960	9,540
15	10,260	24,260	31,050	24,940	25,400	25,030	29,350	31,150	27,660	25,900	9,640	9,770
16	10,240	24,240	29,880	24,900	25,280	25,060	29,020	32,000	28,010	25,670	9,410	10,040
17	10,150	24,220	28,500	24,850	25,210	25,060	28,880	32,390	28,430	25,370	9,220	10,320
18	10,040	24,130	27,520	24,900	25,140	25,060	28,690	32,070	28,600	25,060	9,010	10,510
19	9,940	24,240	28,010	25,030	25,140	25,080	28,270	31,950	28,550	24,600	8,820	10,790
20	9,850	24,380	26,590	25,120	25,100	25,210	27,820	32,020	28,480	24,080	8,630	10,980
21	9,750	24,600	26,310	25,100	25,120	25,300	27,520	31,880	28,780	23,630	8,500	11,210
22	9,600	24,760	26,040	25,210	25,140	25,550	27,290	31,270	29,040	23,070	8,420	11,400
23	9,410	24,690	25,880	25,100	25,170	25,760	27,100	30,350	28,740	22,530	8,350	11,550
24	9,430	24,620	25,710	25,080	25,260	25,900	26,980	29,710	28,310	22,000	8,310	11,250
25	10,040	24,580	25,530	25,030	25,300	26,130	26,820	29,210	28,200	21,400	8,230	10,850
26	11,490	24,540	25,440	24,960	25,370	26,200	26,730	29,090	28,310	20,860	8,060	10,360
27	12,610	24,380	25,370	25,030	25,420	26,150	26,750	29,210	28,410	20,240	7,910	10,040
28	13,700	24,350	25,440	25,120	25,370	26,040	26,910	29,420	28,150	19,670	7,680	9,640
29	14,730	24,310	25,490	25,120	-------	25,940	27,150	29,330	27,840	19,110	7,590	9,300
30	15,610	24,350	25,440	25,120	-------	25,810	27,560	28,830	27,520	18,500	7,490	9,010
31	16,300	-------	25,400	25,440	-------	25,740	-------	28,290	-------	17,760	7,360	-------

CLE ELUM RIVER NEAR ROSLYN, WASH.

LOCATION.—In sec. 10, T. 20 N., R. 14 E., below temporary crib dam at outlet of Cle Elum Lake, 4 miles northwest of Roslyn, Kittitas County, and 7½ miles northwest of Cle Elum.

DRAINAGE AREA.—202 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 10, 1903, to September 30, 1925.

GAGE.—Stevens water-stage recorder on left bank 800 feet below temporary crib dam; installed October 14, 1913; inspected by W. W. Wasson.

DISCHARGE MEASUREMENTS.—Made from cable about 350 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of coarse gravel and boulders; shifting at high water. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 7.60 feet at 7 a. m. May 17 (discharge, 5,370 second-feet); minimum discharge, 9 second-feet September 12, 13, and 15–18.

1904–1925: Maximum stage recorded, 14.05 feet at 2 p. m. November 15, 1906 (discharge, 18,700 second-feet); minimum stage recorded, zero at 6 p. m. September 28, 1914 (practically no flow).

ICE.—Stage-discharge relation not seriously affected by ice.

DIVERSIONS.—None.

REGULATION.—Flow partly controlled by storage and release of water at Cle Elum Lake Reservoir. Monthly discharge without storage determined from records of stage at reservoir.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve fairly well defined. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying mean daily gage heights to rating table Records good.

COOPERATION.—Complete records furnished by United States Bureau of Reclamation.

Discharge measurements of Cle Elum River near Roslyn, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 23	1.67	231	May 28	5.54	2,790	Aug. 5	2.82	711
Dec. 31	2.37	493	June 26	4.75	2,060	Aug. 20	1.82	277
Apr. 13	6.33	3,690	July 22	3.05	835	Sept. 15	.12	9.32

Daily discharge, in second-feet, of Cle Elum River near Roslyn, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	122	242	222	490	699	463	597	1,860	1,860	1,390	807	188
2	138	242	242	490	864	463	597	1,990	1,690	1,250	807	214
3	162	198	245	468	1,180	463	607	1,940	1,540	1,180	807	222
4	191	149	251	459	1,500	490	694	1,940	1,390	1,140	752	211
5	211	144	257	503	1,460	503	836	2,070	1,320	1,140	699	98
6	214	144	248	490	1,320	499	1,110	2,580	1,390	1,110	652	13
7	228	151	242	468	1,110	485	1,390	3,660	1,460	1,050	602	16
8	234	153	236	459	984	472	1,650	3,780	1,540	984	559	13
9	239	153	236	421	836	455	2,120	2,990	1,690	923	517	10
10	242	155	295	442	752	442	2,780	2,680	1,820	923	490	10
11	236	162	971	413	652	417	3,310	2,580	1,730	923	459	10
12	275	169	3,320	425	592	405	3,660	2,780	1,620	923	442	9
13	312	242	4,150	385	544	385	3,660	3,100	1,650	894	438	9
14	305	285	4,540	358	503	373	3,310	3,540	1,650	836	405	10
15	282	295	4,150	326	477	381	2,780	4,280	1,620	836	373	9
16	275	288	3,200	305	451	385	2,490	4,950	1,860	836	347	9
17	272	279	2,300	288	425	385	2,490	5,230	2,160	836	333	9
18	266	272	1,650	336	409	358	2,350	5,090	2,300	807	312	9
19	248	302	1,280	351	393	389	2,070	4,950	2,210	836	302	10
20	242	340	1,050	393	393	421	1,780	4,950	2,210	807	288	10
21	242	377	923	381	393	459	1,580	4,810	2,390	807	266	10
22	234	421	807	366	409	540	1,420	4,280	2,580	836	260	14
23	217	417	699	381	413	632	1,350	3,540	2,350	864	260	126
24	228	413	637	377	455	699	1,280	2,990	2,120	836	254	330
25	239	385	559	366	463	780	1,180	2,680	2,030	836	245	340
26	214	370	512	370	485	807	1,140	2,580	2,120	836	245	351
27	245	347	503	370	508	807	1,140	2,680	2,120	836	239	326
28	245	330	531	381	490	752	1,250	2,780	2,030	836	220	305
29	245	272	544	385	-------	694	1,350	2,780	1,780	807	211	275
30	245	206	512	409	-------	652	1,620	2,390	1,580	807	201	254
31	239	-------	494	508	-------	637	-------	2,120	-------	836	193	-------

Monthly discharge of Cle Elum River near Roslyn, Wash., for the year ending September 30, 1925

[Drainage area, 202 square miles]

Month	Observed discharge (second-feet)			Run-off (acre-feet)			Discharge without storage (second-feet)		Run-off in inches
	Maximum	Minimum	Mean	Observed	Stored	Without storage	Mean	Per square mile	
October	312	122	235	14,500	+8,810	23,300	379	1.88	2.17
November	421	144	263	15,700	+8,050	23,800	400	1.98	2.21
December	4,540	222	1,160	71,000	+1,050	72,000	1,170	5.79	6.68
January	508	288	405	24,900	+40	24,900	405	2.00	2.31
February	1,500	393	684	38,000	−70	37,900	682	3.38	3.52
March	807	358	519	31,900	+370	32,300	525	2.60	3.00
April	3,660	597	1,790	106,000	+1,820	108,000	1,820	9.01	10.05
May	5,230	1,860	3,240	199,000	+730	200,000	3,250	16.1	18.56
June	2,580	1,320	1,860	111,000	−770	110,000	1,850	9.16	10.22
July	1,390	807	928	57,000	−9,760	47,200	768	3.80	4.38
August	807	193	419	25,700	−10,400	15,300	249	1.23	1.42
September	351	9	114	6,780	+1,650	8,430	142	.703	.78
The year	5,230	9	970	702,000	+1,520	703,000	971	4.81	65.30

NACHES RIVER BELOW TIETON RIVER, NEAR NACHES, WASH.

LOCATION.—In sec. 35, T. 15 N., R. 16 E., 600 feet below Tieton River, 500 feet above intake of Wapatox Canal, and 5 miles northwest of Naches, Yakima County.

DRAINAGE AREA.—942 square miles (revised; measured on topographic maps and Plate I, Water-Supply Paper 369).

RECORDS AVAILABLE.—August 4 to October 28, 1905; March 16, 1909, to October 31, 1912; May 10 to September 30, 1915; April 13, 1916, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on left bank, installed December 7, 1916; inspected by R. D. Powell.

DISCHARGE MEASUREMENTS.—Made from cable at gage.

CHANNEL AND CONTROL.—Bed of stream composed of small boulders and gravel; shifts at extremely high water. One channel except at extremely high stages.

EXTREMES OF DISCHARGE.—Maximum stage during year, 7.85 feet at 8 a. m. May 21 (discharge, 8,000 second-feet); minimum stage, 1.58 feet at 7.30 p. m. October 14 (discharge, 176 second-feet).

1905; 1909–1925: Maximum stage recorded, 8.9 feet at 8 a. m. November 24, 1909 (discharge, 18,800 second-feet); minimum stage recorded, 1.10 feet from 7 a. m. September 23 to noon September 24, 1924 (discharge, 57 second-feet).

ICE.—Stage-discharge relation seriously affected by ice during severe winters. Flow estimated from gage-height record, discharge measurements, observer's notes, and weather records.

DIVERSIONS.—Above all important diversions except Selah Valley and Tieton Canals.

REGULATION.—Flow partly controlled by storage and release of water at Bumping Lake and at Tieton Reservoir. See record for Bumping Lake and Bumping River near Nile, Wash., Tieton River and reservoir at Tieton Dam, and for Tieton Canal near Naches, Wash.

ACCURACY.—Stage-discharge relation changed July 9–11; not affected by ice. Possibly slightly affected during periods of low stage by backwater from Taintor gates at intake of Wapatox Canal. Rating curve fairly well defined. Water-stage recorder inspected daily. Daily discharge ascertained by applying mean daily gage height to rating table. Shifting-control method used July 9–11. Records good.

COOPERATION.—Maintained by United States Bureau of Reclamation in cooperation with Pacific Power & Light Co. United States Bureau of Reclamation furnished records for publication.

Discharge measurements of Naches River below Tieton River, near Naches, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 28	2.65	714	June 16	4.62	2,750	Aug. 24	2.86	805
Apr. 17	5.60	4,080	July 7	3.83	1,840	Sept. 29	2.22	384
June 10	3.92	1,860	July 30	3.49	1,380			

Daily discharge, in second-feet, of Naches River below Tieton River, near Naches, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	259	658	726	936	1,020	828	1,020	2,280	2,720	2,150	1,340	406
2	276	691	726	912	1,760	858	1,070	2,340	2,590	2,040	1,240	392
3	293	698	691	874	2,210	874	1,160	2,340	2,460	1,980	1,240	397
4	297	658	698	858	2,340	920	1,300	2,340	2,340	1,870	1,130	397
5	293	611	664	889	1,980	936	1,550	3,060	2,400	1,870	1,120	406
6	289	334	644	897	1,700	912	1,800	4,620	2,280	1,810	1,050	432
7	289	368	624	813	1,450	889	2,040	4,940	1,980	1,760	1,060	427
8	297	445	586	761	1,350	897	2,590	4,150	2,040	1,760	1,030	458
9	302	484	531	754	1,210	874	3,260	4,150	2,100	1,740	964	437
10	311	507	592	740	1,120	835	3,840	4,300	1,810	1,940	1,020	442
11	306	501	1,100	740	1,070	805	4,460	4,150	1,700	2,210	1,020	447
12	302	451	2,150	712	1,020	776	4,780	4,300	1,760	1,960	923	416
13	302	418	3,550	705	961	783	4,460	4,460	1,980	1,690	899	401
14	280	418	3,770	691	920	768	4,000	5,100	2,100	1,690	829	411
15	368	418	2,920	624	897	761	3,770	5,780	2,520	1,580	829	432
16	368	418	2,280	637	866	747	4,150	6,480	2,590	1,690	740	537
17	348	418	1,550	618	843	705	4,150	7,040	2,650	1,640	740	531
18	358	418	1,350	678	843	678	3,700	6,850	3,480	1,580	733	491
19	368	456	1,260	820	835	678	3,260	6,300	3,550	1,530	711	392
20	358	678	1,260	798	843	912	2,850	7,040	3,340	1,480	747	442
21	377	705	1,260	936	850	985	2,590	7,800	3,480	1,430	813	401
22	368	624	1,160	889	881	1,160	3,070	7,220	4,460	1,430	829	401
23	358	580	1,550	928	936	1,300	3,200	5,950	3,200	1,430	844	354
24	358	561	1,650	843	904	1,300	2,100	4,620	3,120	1,430	821	359
25	418	561	1,980	828	912	1,450	1,980	4,300	3,120	1,430	657	363
26	574	549	2,100	768	874	1,350	1,760	4,150	3,260	1,430	579	373
27	678	479	1,980	726	835	1,210	1,650	4,150	3,260	1,380	537	427
28	712	586	1,590	712	828	1,140	1,700	4,620	3,120	1,380	480	437
29	691	671	1,210	712	---- --	1,080	1,810	5,100	2,790	1,380	447	427
30	671	705	1,450	798	-------	1,050	2,150	4,460	2,520	1,380	427	406
31	671	-------	1,090	1,010	-------	1,020	-------	3,260	-------	1,340	416	-------

Monthly discharge of Naches River below Tieton River, near Naches, Wash., for the year ending September 30, 1925

[Drainage area, 942 square miles]

Month	Discharge of river in second-feet			Run-off in acre-feet					Discharge corrected for storage and diversion (second-feet)		Run-off in inches
	Maximum	Minimum	Mean	River, observed	Diversions: Selah Valley Canal	Diversions: Tieton Canal	Storage, Bumping and Tieton Reservoirs	Without storage	Mean	Mean per square mile	
October	712	259	392	24,100	2,330	-------	[a]+12,600	39,000	634	0.673	0.78
November	705	334	536	31,900	-------	1,270	[a]+20,600	53,800	904	.960	1.07
December	3,770	531	1,440	88,600	-------	-------	[a]+17,200	106,000	1,720	1.83	2.11
January	1,010	618	794	48,800	-------	-------	[a]+12,200	61,000	992	1.05	1.21
February	2,340	828	1,150	64,000	20	233	[a]+21,200	85,500	1,540	1.63	1.70
March	1,450	678	951	58,500	1,810	504	[a]+11,900	72,700	1,180	1.25	1.44
April	4,780	1,020	2,710	161,000	5,150	5,880	[a]+21,400	193,000	3,240	3.44	3.84
May	7,800	2,280	4,760	293,000	6,950	18,600	+16,300	335,000	5,450	5.79	6.68
June	4,460	1,700	2,690	160,000	7,740	18,700	+4,000	190,000	3,190	3.39	3.78
July	2,210	1,340	1,660	102,000	8,160	19,800	−49,300	80,700	1,310	1.39	1.60
August	1,340	416	846	52,000	8,160	19,400	−42,600	37,000	602	.639	.74
September	537	354	421	25,100	6,950	13,300	−22,800	22,600	380	.403	.45
The year	7,800	259	1,530	1,110,000	47,300	97,700	+22,700	1,280,000	1,760	1.87	25.40

[a] Partly estimated. Regulation in Tieton Reservoir began in September, 1924, but a record of reservoir contents was not kept until April, 1927. An accumulation of 84,100 acre-feet up to Apr. 30 has been divided equally over the months October, 1924, to April, 1925.

BUMPING LAKE NEAR NILE, WASH.

LOCATION.—At storage dam in outlet 12 miles above American River and 19 miles west of Nile, Yakima County.

DRAINAGE AREA.—68 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 27 to November 22, 1909; November 3, 1910, to September 30, 1925.

GAGE.—Stages below elevation 3,399 feet obtained by measuring from reference point to surface of water; a vertical staff on gate tower used for all stages above elevation 3,399 feet; gages read by J. H. Nelson. Datum of gage set at mean sea level.

EXTREMES OF STORAGE.—Maximum stage recorded during year, 3,430.55 feet from 7.05 a. m. June 21 to 4.50 p. m. June 22 (storage, 39,840 acre-feet); minimum stage recorded, 3,393.30 feet from 4.25 p. m. October 5 to 5.05 p. m. October 14 and 7.50 a. m. October 19 to 7 a. m. October 24 (storage, 2,740 acre-feet).

1911–1925: Maximum stage recorded, that of June 21, 1925; minimum stage recorded, 3,391.00 feet February 12–15, 1916 (storage, 1,260 acre-feet).

STORAGE.—Capacity of reservoir at crest of spillway, 33,700 acre-feet. Elevation of gate sill, 3,389 feet, and of spillway crest, 3,426 feet. Storage or release each month used for determining discharge with storage for gaging station below dam.

ACCURACY.—Gage read to hundredths twice daily. Records excellent.

COOPERATION.—Complete records furnished by United States Bureau of Reclamation.

Daily storage, in acre-feet, of Bumping Lake near Nile, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,850	3,370	11,930	17,040	17,700	26,520	26,520	35,980	36,520	38,990	26,030	9,900
2	2,800	4,120	11,930	16,940	18,340	26,520	26,580	36,060	36,420	38,810	25,440	9,740
3	2,800	4,730	11,930	16,840	19,770	26,480	26,630	36,090	36,400	38,740	24,890	9,590
4	2,780	5,190	11,930	16,740	21,200	26,410	26,630	36,140	36,360	38,640	24,320	9,390
5	2,750	5,510	11,930	16,580	22,630	26,390	26,590	36,250	36,340	38,510	23,670	9,250
6	2,740	5,800	11,930	16,430	23,400	26,360	26,590	36,480	36,400	38,400	23,000	9,140
7	2,740	6,030	11,890	16,250	23,950	26,340	26,720	36,830	36,750	38,190	22,250	9,090
8	2,740	6,210	11,840	16,180	24,440	26,340	26,970	36,840	37,220	37,900	21,540	9,070
9	2,740	6,370	11,810	16,130	24,820	26,340	27,170	36,750	37,900	37,480	20,860	9,040
10	2,740	6,560	11,810	16,080	25,130	26,340	27,570	36,610	38,620	37,180	20,230	8,990
11	2,740	6,770	12,010	16,010	25,340	26,340	28,130	36,560	38,990	36,940	19,540	8,910
12	2,740	6,950	12,960	16,020	25,480	26,340	28,960	36,610	39,150	36,570	18,990	8,790
13	2,740	7,140	14,390	16,020	25,570	26,340	29,990	36,710	39,200	36,200	18,370	8,680
14	2,750	7,350	15,790	15,990	25,720	26,340	30,740	36,840	39,220	35,790	17,800	8,560
15	2,790	7,570	16,840	15,980	25,790	26,340	31,350	37,060	39,260	35,350	17,110	8,490
16	2,800	7,740	17,710	15,980	25,870	26,340	32,080	37,330	39,420	34,900	16,460	8,410
17	2,800	7,940	18,030	15,980	25,930	26,320	33,010	37,470	39,560	34,430	15,750	8,340
18	2,770	8,130	17,850	15,990	25,990	26,280	33,760	37,490	39,630	34,020	15,060	8,320
19	2,740	8,530	17,570	16,000	26,050	26,280	34,480	37,490	39,680	33,470	14,410	8,290
20	2,740	8,990	17,320	16,030	26,130	26,280	34,940	37,540	39,750	32,880	13,780	8,290
21	2,740	9,480	17,300	16,080	26,250	26,280	35,280	37,660	39,820	32,290	13,220	8,290
22	2,740	10,010	17,260	16,190	26,370	26,280	35,540	37,430	39,820	31,740	12,640	8,260
23	2,740	10,610	17,220	16,320	26,460	26,280	35,740	37,170	39,690	31,160	11,980	8,190
24	2,750	11,070	17,260	16,450	26,510	26,280	35,790	37,020	39,510	30,590	11,320	8,110
25	2,920	11,410	17,240	16,520	26,520	26,280	35,790	36,950	39,510	29,930	10,790	8,040
26	3,090	11,690	17,160	16,560	26,520	26,320	35,740	36,900	39,550	29,390	10,460	7,960
27	3,260	11,810	17,180	16,560	26,520	26,340	35,670	36,940	39,550	28,840	10,230	7,940
28	3,340	11,880	17,170	16,580	26,520	26,340	35,620	36,950	39,450	28,290	10,180	7,910
29	3,360	11,920	17,180	16,760	-------	26,360	35,650	36,900	39,290	27,700	10,170	7,910
30	3,360	11,930	17,160	17,060	-------	26,400	35,770	36,820	39,150	27,150	10,080	7,910
31	3,350	-------	17,120	17,350	-------	26,460	-------	36,680	-------	26,610	10,000	-------

BUMPING RIVER NEAR NILE, WASH.

LOCATION.—A quarter of a mile below spillway of Bumping Lake Dam, half a mile below outlet conduit through storage dam, 11½ miles above American River, and 19 miles west of Nile, Yakima County.

DRAINAGE AREA.—68 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 13 to July 31, 1906; April 27, 1909, to September 30, 1925.

GAGE.—Stevens water-stage recorder installed June 17, 1913; inspected daily by J. H. Nelson.

DISCHARGE MEASUREMENTS.—Made from cable about 40 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and of large angular rocks; shifts at extremely high water. Riffle control 60 feet below gage. Stage of zero flow about gage height 0.4 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year from water-stage recorder, 5.04 feet at 1.30 a. m. May 21 (discharge, 1,760 second-feet); minimum stage from recorder, 1.02 feet November 14–18 (discharge, 5 second-feet).

1906; 1909–1925: Maximum stage recorded, 9.33 feet at 5 p. m. December 29, 1917 (discharge, 5,180 second-feet); practically no flow when gates in outlet conduit are closed.

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—None.

REGULATION.—Flow partly controlled by storage and release of water at Bumping Lake Reservoir. Monthly discharge without storage determined from records of stage at reservoir.

ACCURACY.—Stage-discharge relation practically permanent; not affected by ice. Rating curve fairly well defined. Water-stage recorder inspected daily. Daily discharge ascertained by applying mean daily gage height to rating table or, for a few days when range in stage was considerable, by averaging results obtained by applying mean gage heights for shorter intervals. Records good.

COOPERATION.—Complete records furnished by United States Bureau of Reclamation.

Discharge measurements of Bumping River near Nile, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
June 3	3.45	555	July 30	3.11	405	Aug. 31	1.92	65.3
June 4	3.35	507	Aug. 17	3.13	417			

Daily discharge, in second-feet, of Bumping River near Nile, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	68	103	139	261	122	142	139	424	675	529	414	92
2	72	13	137	258	126	142	153	477	651	492	414	112
3	74	9	135	258	129	135	160	487	597	457	414	112
4	71	8	133	258	131	124	160	487	524	452	414	112
5	68	8	133	254	131	124	163	540	513	452	414	112
6	65	8	133	254	129	124	165	720	370	443	419	112
7	65	7	133	234	129	124	176	1,020	275	438	414	99
8	62	7	133	215	129	122	198	1,020	278	433	414	94
9	61	7	133	192	129	122	282	883	286	433	414	94
10	58	6	137	176	129	122	349	799	305	428	414	94
11	58	6	144	165	129	122	379	779	424	428	414	94
12	58	6	268	151	129	122	387	841	502	428	414	92
13	58	6	365	151	129	122	392	912	568	424	414	92
14	62	5	383	129	129	122	396	1,060	556	424	414	76
15	71	5	401	110	129	122	401	1,210	562	424	414	71
16	72	5	410	110	129	122	405	1,440	688	424	405	71
17	71	5	405	110	129	120	405	1,600	806	419	414	71
18	68	6	396	112	129	116	357	1,560	890	424	414	71
19	65	11	392	116	129	116	336	1,560	905	419	410	71
20	64	11	333	116	129	116	332	1,640	984	419	410	70
21	62	10	272	118	129	116	332	1,720	1,170	419	414	70
22	61	10	261	118	129	118	328	1,480	1,130	419	410	70
23	60	10	174	120	103	118	340	1,250	984	414	396	70
24	65	10	137	118	131	118	349	1,100	862	419	345	70
25	92	9	254	120	142	118	336	1,020	869	414	244	70
26	120	59	200	120	142	120	332	1,020	926	419	189	70
27	146	118	191	120	142	120	328	1,020	905	414	146	70
28	155	126	258	120	142	120	324	1,100	806	414	112	70
29	155	133	264	120	-------	120	336	1,060	675	414	112	57
30	155	139	272	160	-------	129	370	898	591	414	110	39
31	148	-------	264	155	-------	135	-------	766	-------	414	92	-------

Monthly discharge of Bumping River near Nile, Wash., for the year ending September 30, 1925

[Drainage area, 68 square miles]

Month	Observed discharge (second-feet)			Run-off (acre-feet)			Discharge without storage (second-feet)		Run-off in inches
	Maximum	Minimum	Mean	Observed	Stored	Without storage	Mean	Per square mile	
October	155	58	81.6	5,020	+550	5,570	90.6	1.33	1.53
November	139	5	28.9	1,720	+8,580	10,300	173	2.54	2.83
December	410	133	238	14,700	+5,190	19,900	324	4.76	5.49
January	261	110	162	9,950	+240	10,200	166	2.44	2.81
February	142	103	130	7,210	+9,160	16,400	295	4.34	4.52
March	142	116	123	7,560	−60	7,500	122	1.79	2.06
April	405	139	304	18,100	+9,310	27,400	460	6.76	7.54
May	1,720	424	1,030	63,200	+910	64,100	1,040	15.3	17.64
June	1,170	275	676	40,200	+2,470	42,700	718	10.6	11.83
July	529	414	431	26,500	−12,500	14,000	228	3.35	3.86
August	414	92	350	21,560	−16,600	4,900	79.7	1.17	1.35
September	112	39	82.3	4,890	−2,090	2,800	47.1	.693	.77
The year	1,720	5	305	221,000	+5,160	226,000	312	4.59	62.23

TIETON RESERVOIR AT TIETON DAM, NEAR NACHES, WASH.

LOCATION.—About 2,000 feet above mouth of Wild Cat Creek, 1½ miles below junction of forks of river, 7½ miles above headworks of Tieton Canal, and 22½ miles southwest of Naches, Yakima County.

DRAINAGE AREA.—187 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 27 to September 30, 1925.

GAGE.—Vertical and inclined staff in five sections on and near spillway weir, installed in 1925; stages below elevation 2,828 feet, determined from reference point by means of steel tape; read by C. L. Tice.

EXTREMES OF STORAGE.—Maximum stage recorded during period of record, 2,881.21 feet from 4 p. m. June 26 to 8 a. m. June 28, 1925 (storage, 102,820 acre-feet; minimum stage recorded, 2,812.39 feet at midnight September 30, 1925.

STORAGE.—Capacity of reservoir at crest of spillway, drums up, 198,000 acre-feet. Elevation of sill of tunnel entrance, 2,766 feet. Elevation of spillway crest, drums down, 2,918 feet, drums up, 2,926 feet. Records of storage or release each month used for determining discharge without storage at gaging station below dam.

ACCURACY.—Gage read to half-tenths twice daily. Records good.

COOPERATION.—Complete record furnished by United States Bureau of Reclamation.

Daily storage, in acre-feet, of Tieton Reservoir at Tieton Dam, near Naches, Wash., for the period April 27 to September 30, 1925

Day	Apr.	May	June	July	Aug.	Sept.
1		84,960	99,950	100,420	62,610	37,860
2		86,220	100,210	99,930	60,780	37,480
3		87,350	100,350	99,440	59,060	36,980
4		88,170	100,420	98,920	57,650	36,640
5		89,060	100,180	98,470	56,470	36,210
6		89,190	99,700	97,910	55,670	35,710
7		89,970	99,510	97,300	54,660	35,140
8		92,030	99,420	96,500	53,550	34,510
9		93,540	99,440	95,590	52,520	33,920
10		93,320	100,000	94,390	51,410	33,410

Daily storage, in acre-feet, of Tieton Reservoir at Tieton Dam, near Naches, Wash., for the period April 27 to September 30, 1925—Continued

Day	Apr.	May	June	July	Aug.	Sept.
11		92,990	100,770	92,670	50,190	32,670
12		92,870	101,660	91,060	49,150	31,880
13		92,830	102,040	89,770	47,940	31,240
14		93,170	102,200	88,660	47,090	30,470
15		93,800	102,110	87,500	46,550	29,730
16		95,210	101,970	86,090	46,140	29,070
17		96,480	102,180	84,830	45,780	28,270
18		97,960	102,150	83,380	45,570	27,450
19		99,210	101,900	81,810	44,920	26,630
20		100,480	101,620	80,370	44,590	25,430
21		101,090	102,180	78,800	43,960	24,650
22		100,830	102,150	77,320	42,660	23,810
23		100,040	102,220	75,770	41,530	23,130
24		100,460	102,240	74,080	40,640	22,540
25		100,950	102,290	72,690	40,280	21,860
26		101,320	102,540	71,290	40,180	21,200
27	81,410	101,900	102,820	70,150	40,010	20,180
28	82,380	102,180	102,500	68,910	39,630	19,010
29	83,190	101,320	101,710	67,230	39,230	18,170
30	84,120	99,950	101,060	65,710	38,760	17,580
31		99,550		64,280	38,290	

TIETON RIVER AT TIETON DAM, NEAR NACHES, WASH.[9]

LOCATION.—At highway bridge at Rimrock site, 100 feet above Wild Cat Creek, 2 miles below junction of forks of river, 7 miles above headworks of Tieton Canal, and 22 miles southwest of Naches, Yakima County.

DRAINAGE AREA.—187 square miles (measured on topographic maps).

RECORDS AVAILABLE.—August 28 to November 24, 1908; March 21, 1909, to September 30, 1914 (fragmentary); October 1, 1918, to March 31, 1919; April 27 to September 30, 1925.

GAGE.—Friez water-stage recorder on left bank at highway bridge installed September 5, 1925; inspected by C. L. Tice. April 27 to August 11, 1925, a vertical staff on left abutment of highway bridge; August 12 to September 4, 1925, gage heights determined from reference point on stilling well.

DISCHARGE MEASUREMENTS.—Made from highway bridge at gage, by wading, or from cable one-half mile below Wild Cat Creek.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period April 27 to September 30, 1925, 5.55 feet from 11.00 a. m. May 28 to 11.00 a. m. May 30 (discharge, 2,390 second-feet); minimum stage recorded, 2.20 feet on April 27 (discharge, 123 second-feet).

1908; 1909–1914; 1918–19; 1925: Maximum stage recorded, 6.2 feet at 3.30 p. m. November 23, 1909 (discharge, 4,200 second-feet); minimum discharge occurred April 27, 1925. Bureau of Reclamation reports stage of 7.5 feet from 10.30 p. m. December 18 to 1.30 a. m. December 19, 1917 (discharge, 8,400 second-feet).

ICE.—Stage-discharge relation affected by ice during severe winters. Flow estimated from observer's notes, discharge measurements, and weather records.

DIVERSIONS.—None.

[9] Previously known as Tieton River at McAllisters Meadows and Tieton River at Rimrock, Wash.

REGULATION.—Flow regulated by storage and release of water at Tieton Reservoir about 2,000 feet above gage. Monthly discharge without storage determined from records of stage at reservoir.

ACCURACY.—Stage-discharge relation changed May 21–30. Not affected by ice. Rating curves fairly well defined. Gage read to hundredths once daily prior to May 28; twice daily thereafter. Daily discharge ascertained by applying mean daily gage height to rating table. Shifting-control method used May 21–30. Records fair.

COOPERATION.—Complete record furnished by United States Bureau of Reclamation.

Discharge measurements of Tieton River at Tieton Dam, near Naches, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Apr. 22	5.40	2,070	June 6	4.08	952	July 31	4.34	1,220
Apr. 25	2.20	124	June 10	3.29	479	Aug. 21	3.70	763
May 6	3.48	513	July 8	4.25	1,130	Sept. 9	3.45	551
May 15	4.43	1,140	July 16	4.55	1,360			

Daily discharge, in second-feet, of Tieton River at Tieton Dam, near Naches, Wash., for the period April 27 to September 30, 1925

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept
1		235	772	1,110	1,280	576	16		1,160	780	1,370	626	652
2		208	772	1,200	1,150	576	17		1,160	964	1,370	626	652
3		232	772	1,110	1,110	576	18		1,160	1,420	1,320	626	572
4		255	878	1,110	992	576	19		1,160	1,420	1,320	626	508
5		255	992	1,110	969	576	20		1,160	1,070	1,320	669	508
6		2,180	915	1,110	915	576	21		2,250	1,330	1,320	709	508
7		1,160	841	1,110	915	576	22		2,260	1,760	1,320	709	482
8		158	841	1,110	871	576	23		2,280	1,240	1,320	709	424
9		158	652	1,320	863	576	24		1,200	1,240	1,320	636	424
10		1,160	526	1,560	915	576	25		1,220	1,320	1,320	576	424
11		1,160	424	1,710	834	576	26		1,230	1,420	1,320	576	424
12		1,160	424	1,560	740	540	27	123	1,240	1,460	1,320	576	424
13		1,160	828	1,420	722	530	28	146	1,820	1,420	1,320	576	424
14		1,160	1,200	1,320	680	530	29	200	2,390	1,320	1,320	576	420
15		1,160	1,200	1,320	663	576	30	235	1,750	1,200	1,320	576	404
							31		992		1,320	576	

Monthly discharge of Tieton River at Tieton Dam, near Naches, Wash., for the period April 27 to September 30, 1925

[Drainage area, 187 square miles]

Month	Observed discharge (second-feet)			Run-off (acre-feet)			Discharge without storage (second-feet)		Run-off in inches
	Maximum	Minimum	Mean	Observed	Stored	Without storage	Mean	Per square mile	
April 27–30	235	123	176	1,400	+3,600	5,000	630	3.37	0.50
May	2,390	158	1,170	71,900	+15,400	87,300	1,420	7.59	8.75
June	1,760	424	1,050	62,300	+1,510	63,800	1,070	5.72	6.38
July	1,710	1,110	1,300	80,160	−36,800	43,300	704	3.76	4.34
August	1,280	576	761	46,800	−26,000	20,800	338	1.81	2.09
September	652	404	525	31,300	−20,700	10,600	178	.952	1.06
The period				294,000	−63,000	231,000			

TIETON RIVER AT HEADWORKS OF TIETON CANAL, NEAR NACHES, WASH.

LOCATION.—In sec. 30, T. 14 N., R. 15 E. (unsurveyed), below intake of Tieton Canal, 15 miles above mouth, and 16 miles southwest of Naches, Yakima County.

DRAINAGE AREA.—240 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 17 to September 17, 1906 (fragmentary gage height record); July 5, 1907, to September 30, 1925.

GAGE.—Stevens continuous water-stage recorder on right bank 1,000 feet below intake of Tieton Canal; inspected by Willis Taylor.

DISCHARGE MEASUREMENTS.—Made from cable about 500 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; shifts slightly at high water; gradient steep. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 5.58 feet on December 24 (discharge, 2,480 second-feet); minimum stage from recorder, 1.81 feet on November 6 (discharge, 15 second-feet).

1907–1925: Maximum stage recorded, from water-stage recorder, 8.15 feet at 1.20 a. m. December 13, 1921 (discharge, 6,150 second-feet); minimum stage, 1.29 feet at 5.20 p. m. August 2, 1924 (practically no flow).

ICE.—Stage-discharge relation affected by ice during severe winters.

DIVERSIONS.—Tieton Canal has diverted water above gage since 1910. Diversions through canal added to mean monthly discharge to determine monthly flow past gage.

REGULATION.—Flow regulated by storage and release of water at Tieton Reservoir about 7 miles above gage.

ACCURACY.—Stage-discharge relation practically permanent; not affected by ice. Rating curve fairly well defined. Operation of water-stage recorder satisfactory except as noted in footnote to table of daily discharge. Daily discharge ascertained by applying mean daily gage heights to rating table. Records good.

COOPERATION.—Complete record furnished by United States Bureau of Reclamation.

Discharge measurements of Tieton River at headworks of Tieton Canal near Naches, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 27	2.98	253	July 8	3.89	741	Sept. 9	3.17	330
Apr. 19	2.77	163	July 31	4.07	859			
June 13	2.90	223	Aug. 21	3.36	408			

Daily discharge, in second-feet, of Tieton River at headworks of Tieton Canal near Naches, Wash., for the year ending September 30, 1925

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	194	221	259	221	221	153	197	58	516	785	876	313
2	197	236	248	218	326	101	187	48	516	793	809	309
3	211	240	240	221	366	131	197	59	522	769	777	309
4	218	271	248	225	334	153	214	60	598	769	703	313
5	214	116	251	221	300	153	240	878	710	801	696	317
6	218	15	248	236	263	142	263	1,330	682	809	642	322
7	214	139	236	207	221	162	267	564	616	809	649	330
8	218	221	207	214	204	181	288	119	623	785	616	334
9	218	221	211	207	190	181	330	592	568	825	568	330
10	221	221	248	214	181	175	348	936	284	1,060	616	348

Daily discharge, in second-feet, of Tieton River at headworks of Tieton Canal near Naches, Wash., for the year ending September 30, 1925—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
11	221	214	343	214	168	168	371	936	184	1,360	598	366
12	221	214	334	214	162	181	257	952	225	1,120	510	334
13	218	218	357	218	159	184	309	978	236	936	488	343
14	172	221	309	221	159	207	255	986	531	927	424	352
15	248	225	275	221	159	211	248	986	859	893	394	444
16	240	225	259	221	159	184	259	1,230	556	978	339	477
17	240	225	259	221	159	184	259	1,190	676	961	334	482
18	240	240	259	280	159	156	211	1,230	1,220	910	330	414
19	236	275	259	275	159	181	187	986	1,170	910	326	343
20	225	267	339	267	165	218	162	1,610	811	902	384	352
21	229	240	477	255	184	207	224	2,120	846	902	424	380
22	229	211	927	236	194	248	1,230	2,180	1,630	893	419	352
23	225	207	1,670	221	201	244	1,050	1,580	616	884	414	304
24	229	214	2,480	229	194	244	170	995	809	893	361	317
25	229	211	893	207	194	263	54	961	952	893	322	326
26	232	201	868	194	156	229	44	978	1,030	884	317	339
27	240	197	842	207	148	183	34	986	1,070	884	317	343
28	240	204	214	207	150	204	42	1,370	1,080	884	317	339
29	229	259	229	214	-------	197	102	1,840	1,060	893	317	326
30	221	259	218	214	-------	201	109	1,580	961	884	322	317
31	221	-------	221	134	-------	197	-------	736	-------	884	322	-------

NOTE.—Water-stage recorder not operating Dec. 18 to Feb. 4. Discharge determined from two daily staff gage readings.

Monthly discharge of Tieton River at headworks of Tieton Canal near Naches, Wash., for the year ending September 30, 1925

[Drainage area, 240 square miles]

Month	Observed discharge of river in second-feet			Discharge corrected for storage and diversion (second-feet)		Run-off				
						Inches	Acre-feet			
	Maximum	Minimum	Mean	Mean	Per square mile		Observed	Stored	Diverted	Without storage or diversion
October	248	−194	223				13,700		-------	
November	275	15	214				12,700		1,270	
December	2,480	207	465				28,600		-------	
January	280	134	221	473	1.97	15.53	13,600	[a]+84,100	-------	199,000
February	366	148	201				11,200		230	
March	263	101	188				11,500		500	
April	1,230	34	270				16,100		5,880	
May	2,180	48	1,000	1,550	6.46	7.45	61,600	+15,400	18,600	95,600
June	1,630	184	739	1,080	4.50	5.02	43,900	+1,510	18,700	64,100
July	1,360	769	899	623	2.60	3.00	55,300	−36,800	19,800	38,300
August	876	317	482	374	1.56	1.80	29,600	−26,000	19,400	23,000
September	482	304	349	225	.938	1.05	20,800	−20,700	13,300	13,400
The year	2,480	15	440	599	2.50	33.85	319,000	+17,500	97,700	433,000

[a] Storage accumulation from some time in September, 1924, when regulation above Tieton Dam began, to Apr. 30, 1925. Records of reservoir stage were not kept prior to April 27.

TIETON CANAL NEAR NACHES, WASH.

LOCATION.—In sec. 30, T. 14 N., R. 15 E. (unsurveyed), below canal intake and 16 miles southwest of Naches, Yakima County.

RECORDS AVAILABLE.—Irrigation seasons 1910 to September 30, 1925.

GAGE.—Float gage installed in a stilling well about 500 feet below canal intake; read by Willis Taylor.

DISCHARGE MEASUREMENTS.—Made from gaging bridge 30 feet below gage or by wading.

CHANNEL AND CONTROL.—Earth section merging into concrete-lined section 1,000 feet below gage.

EXTREMES OF DISCHARGE.—Maximum discharge during year, 324 second-feet from June 22 to July 1; no flow October 1 to November 19, November 29 to February 25, and March 8 to April 1.

1910–1925: Maximum stage recorded, 5.53 feet for few hours September 9, 1921 (discharge, 344 second-feet); no flow when head gates are closed.

ACCURACY.—Stage-discharge relation changed during winter and gradually July 20 to September 30. Rating curves fairly well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

COOPERATION.—Complete record furnished by United States Bureau of Reclamation.

Canal diverts water from right bank of Tieton River in sec. 30, T. 14 N., R. 15 E.; water is used for irrigation.

Discharge measurements of Tieton Canal near Naches, Wash., during the year ending September 30, 1925

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Apr. 13	1.80	56.6	June 6	5.16	298	Aug. 24	5.48	315
Apr. 17	2.62	120	June 13	5.21	299	Sept. 3	5.58	317
Apr. 24	3.16	165	July 7	5.40	327	Sept. 14	4.46	234
May 19	5.14	309	Aug. 5	5.39	320	Sept. 24	3.13	146

Daily discharge, in second-feet, of Tieton Canal near Naches, Wash., for the year ending September 30, 1925

Day	Nov.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			39		260	306	324	319	312
2			39	17	276	307	321	319	314
3			39	19	290	307	323	318	317
4			39	19	296	306	323	318	318
5			39	19	298	307	323	318	316
6			39	19	304	305	322	318	315
7			20	33	305	306	323	317	306
8				40	305	305	323	317	299
9				40	305	307	323	316	294
10				52	307	307	323	316	273
11				57	307	308	323	315	266
12				57	307	310	323	315	253
13				67	307	311	323	316	245
14				88	308	310	323	315	235
15				110	305	310	323	314	239
16				118	306	310	323	314	238
17				118	307	310	323	314	230
18				118	307	315	323	314	225
19				118	307	317	323	315	204
20	55			118	307	320	322	316	182
21	69			122	305	323	322	315	175
22	84			128	307	324	321	315	156
23	82			153	306	324	321	314	145
24	78			163	307	324	321	314	138
25	78			167	307	324	320	316	121
26	78	39		176	305	324	320	316	118
27	78	39		189	307	324	320	315	119
28	38	39		200	307	324	320	314	120
29				210	307	324	320	314	121
30				233	306	324	320	314	100
31					307		319	313	

NOTE.—Canal dry during periods for which no discharge is given.

Monthly discharge of Tieton Canal near Naches, Wash., for the year ending September 30, 1925

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
November	84	0	21.3	1,270
February	39	0	4.2	233
March	39	0	8.2	504
April	233	0	98.9	5,880
May	308	260	303	18,600
June	324	305	314	18,700
July	324	319	322	19,800
August	319	313	316	19,400
September	318	100	223	13,300

MISCELLANEOUS DISCHARGE MEASUREMENTS

In addition to the records of stream flow obtained at gaging stations and reported in the preceding pages, measurements of flow were made at a number of other points as shown by the following tables:

Miscellaneous discharge measurements in drainage basins in Washington during the year ending September 30, 1925

Chehalis River Basin

Date	Stream	Tributary to or diverting from—	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
Sept. 7	South Fork of Porter Creek.[a]	Porter Creek	NE. ¼ sec. 12, T. 17 N., R. 5 W. Willamette meridian, near Porter, Wash.		10.4
13	do.[a]	do	do		7.94
26	do.[a]	do	do		7.26
May 22	Wynoochee River [b]	Chehalis River	NW. ¼ sec. 1, T. 21 N., R. 8 W. Willamette meridian, near Montesano, Wash.	1.79	430
June 30	do.[b]	do	do	1.24	249
July 24	do.[b]	do	do	.80	164
Aug. 12	do	do	do	.57	115
28	do.[b]	do	do	.53	113
Sept. 11	do.[b]	do	do	.42	98.6

Quinault River Basin

Sept. 23	Quinault River	Pacific Ocean	Former gaging station at Quinault Lake, Wash.	0.98	426

Queets River Basin

Aug. 30	Queets River	Pacific Ocean	Fisher Rapids near Clearwater, Wash.	0.62	568
30	Clearwater River	Queets River	Ben Northrup's ranch near Clearwater, Wash.	1.08	105

Hoh River Basin

Aug. 18	Hoh River	Pacific Ocean	Spruce, Wash	1.88	900
June 18	do	do	Big Bend near Forks, Wash.	1.06	1,900
Aug. 17	do	do	do	.22	869
20	Mount Tom Creek	Hoh River	1 mile above mouth, near Spruce, Wash.		93.8
19	South Fork of Hoh River.	do	Half mile above mouth, near Spruce, Wash.		247

[a] Results furnished by R. H. Ober of the firm of Jacobs & Ober, consulting engineers, Seattle, Wash.
[b] Results furnished by S. C. Watkins, superintendent of water, Aberdeen, Wash.

Miscellaneous discharge measurements in drainage basins in Washington during the year ending September 30, 1925—Continued

Quillayute River Basin

Date	Stream	Tributary to or diverting from—	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
Nov. 17	Soleduck River	Quillayute River	Former gaging station near Fairholm, Wash.	2.59	898
Apr. 14	do	do	do	1.92	536
May 23	do	do	do	1.93	540
July 13	do	do	do	1.61	399
Aug. 27	do	do	do	.60	120

Morse Creek Basin

Aug. 25	Morse Creek	Strait of Juan de Fuca	Olympic Highway crossing near Port Angeles, Wash.		39.9

Quilcene River Basin

Aug. 25	Quilcene River	Hood Canal	Olympia Highway crossing near Quilcene, Wash.		55.5

Duckabush River Basin

Aug. 14	Duckabush River [c]	Hood Canal	500 feet above Olympic Highway crossing near Duckabush, Wash.		134
24	do	do	Half a mile above Olympic Highway crossing at Duckabush, Wash.		99.9

Hamma Hamma River Basin

Aug. 14	Hamma Hamma River [c]	Hood Canal	500 feet above old highway crossing at Eldon, Wash.		90.7
24	do	do	Old Olympic Highway crossing at Eldon, Wash.		78.4

Lilliwaup Creek Basin

Sept. 26	Lilliwaup Creek	Hood Canal	Below forks near Lilliwaup, Wash.	0.75	4.54
22	do	do	Above falls at Lilliwaup, Wash.	.82	5.61
26	do	do	do	.81	5.56
22	do	do	Below falls at Lilliwaup, Wash.	.82	8.88
26	do	do	do	.81	9.64

Puyallup River Basin

Sept. 15	South Prairie Creek [a]	Carbon River	SE. ¼ sec. 23, T. 19 N., R. 6 E. Willamette meridian, near Pittsburg, Wash.		20.2

Lake Washington Basin

Feb. 26	Sammamish River [d]	Lake Washington	Hollywood Bridge between Woodinville and Redmond, Wash.		625

[a] Results furnished by R. H. Ober, of the firm of Jacobs & Ober, consulting engineers, Seattle, Wash.
[c] Results furnished by engineers with city of Tacoma's Cushman power project.
[d] Results furnished by Thomas R. Beeman, county engineer, King County, Wash.

Miscellaneous discharge measurements in drainage basins in Washington during the year ending September 30, 1925—Continued

Snohomish River Basin

Date	Stream	Tributary to or diverting from—	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
Dec. 17	Everett water supply conduit.	Right side of Sultan River.	Mouth of tunnel at gate tender's house near Sultan, Wash.	1.86	18.6
18	do	do	do	1.72	18.4
19	do	do	do	•2.41	16.6
20	do	do	do	•2.25	16.2
May 27	do	do	do	1.56	16.8
Aug. 14	do	do	do	1.56	17.8
Sept. 30	do	do	do	1.35	17.3

Kootenai River Basin

Mar. 12	Skin Creek	Moyie River	Three-fourths mile above mouth at Eileen, Idaho.		8.3

Clark Fork Basin

May 26	Sullivan Creek	Clark Fork	Highway crossing at Metaline Falls, Wash.		744
Sept. 14	do	do	do		96.2

Okanogan River Basin

Aug. 31	West Okanogan Valley Irrigation District Canal./	Left side of Similkameen River.	Three-fourths mile below intake near Nighthawk, Wash.	2.42	154
May 6	Whitestone Reclamation District Canal.	Right side of Toats Coulee Creek.	Intake near Loomis, Wash.	1.08	55.4
8	do	do	do	1.00	42.8
23	do	do	do	.47	22.8
July 8	do	do	do	.40	5.4

Methow River Basin

July 3	East Methow Valley Irrigation District Canal.	Left side of Methow River.	1,200 feet above highway bridge at Twisp, Wash.	5.60	61.3
Aug. 26	do	do	do	5.51	57.4
July 3	West Methow Valley Irrigation District Canal.	Right side of Twisp River.	3 miles below headworks, at Twisp, Wash.		37.2
Aug. 26	do	do	do		36.7
July 3	Risley ditch	do	Half a mile below intake at Twisp, Wash.	4.70	16.3
Aug. 26	do	do	do	4.41	10.1

Wentachee River Basin

Sept. 8	Puget Sound Power & Light Co.'s canal.	Left side of Wenatchee River.	One-eighth mile above power plant at Dryden, Wash.		612
8	Wenatchee Valley Canal.	Lower end of Puget Sound Power & Light Co.'s canal.	100 feet below intake at Dryden, Wash.		186

Yakima River Basin

Oct. 23	North Fork of Ahtanum Creek.*	Ahtanum Creek	Former gaging station near Tampico, Wash.	1.72	12.4
11	Satus Creek*	Yakima River	Former gaging station below Dry Creek, near Toppenish, Wash.	1.45	9.6
Dec. 10	do.*	do	do	1.78	51.2

• Backwater due to ice in conduit.
/ Furnished by engineers of Washington Water Power Co., Spokane, Wash.
* Results furnished by U. S. Office of Indian Affairs.

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