DEPARTMENT OF THE INTERIOR
ALBERT B. FALL, Secretary.

UNITED STATES GEOLOGICAL SURVEY
GEORGE OTIS SMITH, Director

WATER-SUPPLY PAPER 463

SURFACE WATER SUPPLY OF THE UNITED STATES

1917

PART XII. NORTH PACIFIC DRAINAGE BASINS

B. SNAKE RIVER BASIN

NATHAN C. GROVER, Chief Hydraulic Engineer

G. C. BALDWIN, G. L. PARKER and F. F. HENSHAW, District Engineers

Prepared in cooperation with
THE STATES OF IDAHO, OREGON, NEVADA, AND WASHINGTON

WASHINGTON
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SURFACE WATER SUPPLY OF SNAKE RIVER BASIN, 1917.

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, 1917.

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 in the arid west. Since the fiscal year ending June 30, 1895, successive sundry civil bills passed by Congress have carried the following item and appropriations:

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, 1895-1918.

1895	$12,500
1896	20,000
1897 to 1900, inclusive	50,000
1901 to 1902, inclusive	100,000
1903 to 1906, inclusive	200,000
1907	150,000
1908 to 1910, inclusive	100,000
1911 to 1917, inclusive	150,000
1918	175,000

In the execution of the work many private and State organizations have cooperated, either by furnishing data or by assisting in collecting data. Acknowledgments for cooperation of the first kind are made in connection with the description of each station affected; cooperation of the second kind is acknowledged on page 5.

Measurements of stream flow have been made at about 4,240 points in the United States, and also at many points in Alaska and the Hawaiian Islands. In July, 1917, 1,180 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 the regular water-supply papers from time to time.

DEFINITION OF TERMS.

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

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

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

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

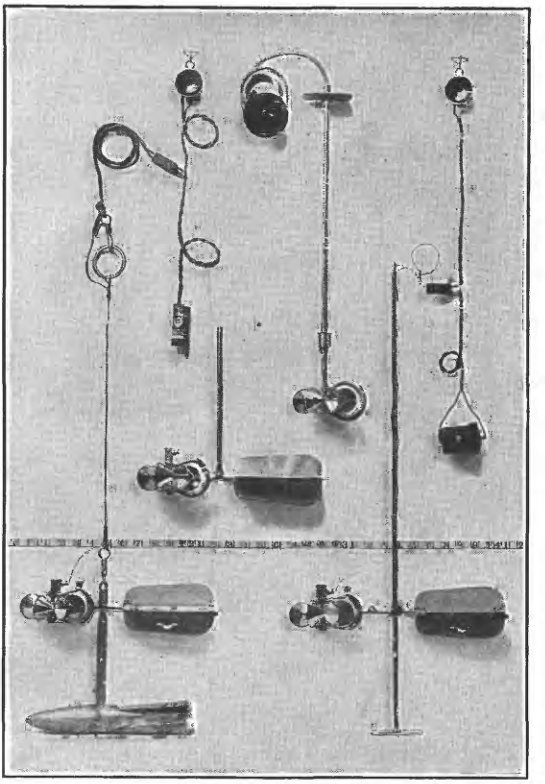
An "acre-foot," equivalent to 43,560 cubic feet, is the quantity required to cover an acre to the depth of 1 foot. The term is commonly used in connection with storage for irrigation.

The following terms not in common use are here defined:

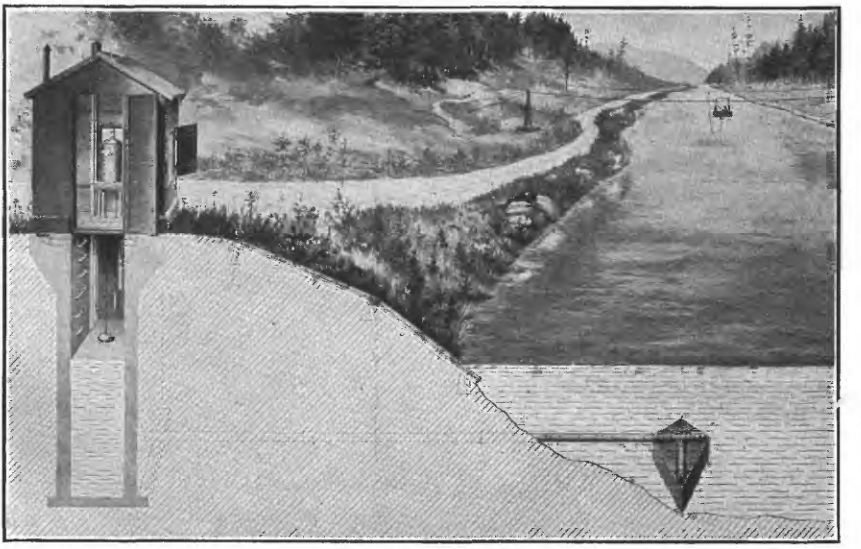
"Stage-discharge relation," an abbreviation for the expression "relation of gage height to discharge."

"Control," a term used to designate the natural section or stretch of the channel or artificial structure below the gage which determines the stage-discharge relation at the gage. It should be noted that the control may not be the same at all stages.

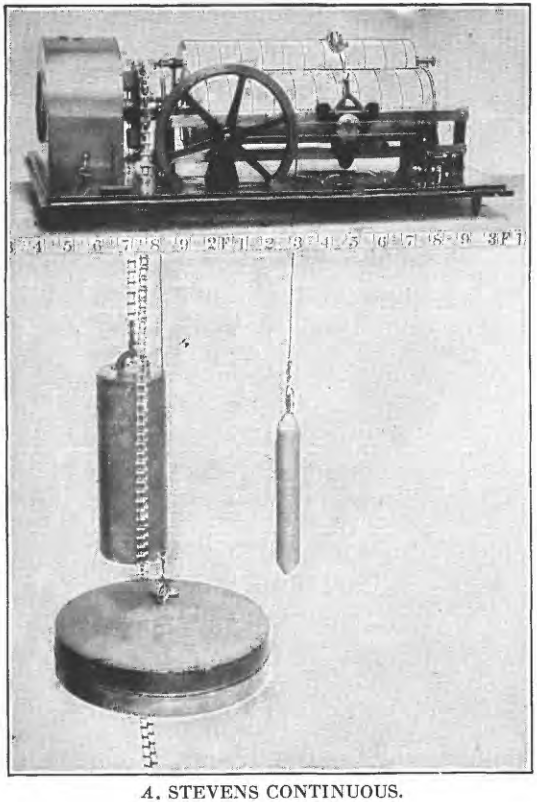
The "point of zero flow" for a gaging station is that point on the gage—the gage height—to which the surface of the water falls when the discharge is reduced to zero.



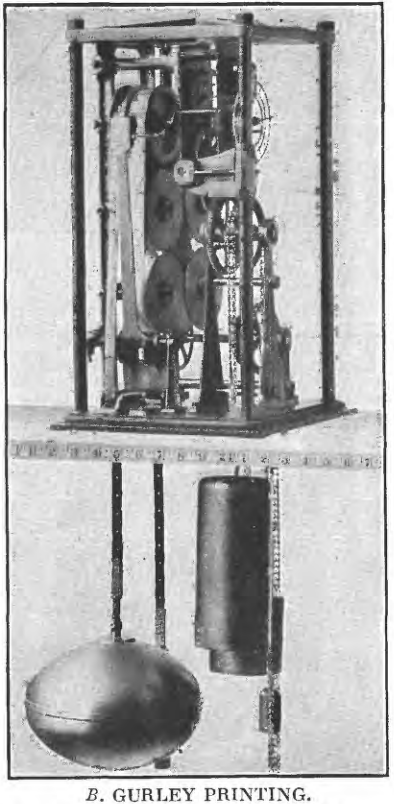
A. PRICE CURRENT METERS.



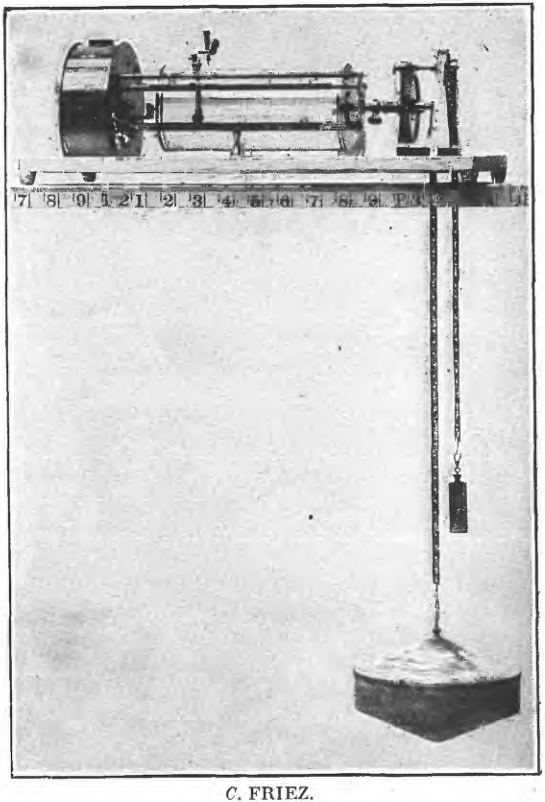
B. TYPICAL GAGING STATION.



A. STEVENS CONTINUOUS.



B. GURLEY PRINTING.



C. FRIEZ.

WATER-STAGE RECORDERS.

EXPLANATION OF DATA.

The data presented in this report cover the year beginning October 1, 1916, and ending September 30, 1917. 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.

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. (See Pls. I and II.) The general methods are outlined in standard textbooks on the measurement of river discharge.

From the discharge measurements rating tables are prepared that give the discharge for any stage, and these rating tables, when applied to the gage heights, give the daily discharge from which the monthly and yearly means of discharge are determined.

The data presented for each gaging station in the area covered by this report comprise a description of the station, a table giving results 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 results 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 channel, 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 the discharge in second-feet corresponding to the mean 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 true mean daily discharge may be obtained by computing the mean daily gage height and applying it to the rating table, by averaging quantities of discharge for regular intervals during the day, or by means of a 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 that 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 computations recorded in the remaining columns, which are defined on page 2, are based.

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, measurement 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) refinement 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.[1]

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 of run-off in inches may be subject to gross errors caused by the inclusion of large non-contributing 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"

[1] For a more detailed discussion of the accuracy of stream-flow data see Grover, N. C., and Hoyt, J. C., Accuracy of stream-flow data: U. S. Geol. Survey Water-Supply Paper 400, pp. 53–59, 1916.

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" previously published by the Survey should be used with caution because of possible inherent sources of error not known to the Survey.

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.

COOPERATION.

During the year ending September 30, 1917, work in the Snake River basin was carried on in cooperation with the States of Oregon, Nevada, and Washington, effected under contracts made between the Director of the Federal Survey and the State engineers or other officials and authorized by legislative acts appropriating money.

Special acknowledgements are due to Mr. John H. Lewis, State engineer of Oregon; to Mr. Henry Landes, State geologist of Washington; and to Mr. W. M. Kearney, succeeded by Mr. J. G. Scrugham, State engineer of Nevada; for the efficient manner in which they represented their States in the investigations.

Acknowledgements are due also to the United States Reclamation Service, the United States Forest Service, and the United States Indian Office, which permitted the freest use of data gathered exclusively for them and paid for by them. The United States Weather Bureau and the officials of Yellowstone National Park furnished hydrometric and climatic data.

The following cities, private companies, and individuals have aided in the collection of records by paying the expense of work or otherwise assisting: City of Pocatello, Twin Falls Canal Co., Idaho Power Co., Twin Falls North Side Land & Water Co., Maney Bros. Construction Co., Mr. P. W. McCarthy, Mr. Charles Skipper, and Mr. T. C. Shawver.

DIVISION OF WORK.

The data for stations in Nevada, except those in the basin of Salmon Falls Creek, were collected and prepared for publication under the direction of C. C. Jacob, district engineer, assisted by A. B. Purton, L. W. Jordon, and W. E. Dickinson.

For stations in Idaho, except the Salmon and Palouse basins, and in Wyoming, the data were collected and prepared for publication

under the direction of G. C. Baldwin, and C. G. Paulsen, district engineers, who were assisted by H. J. Dean, A. W. Harrington, T. R. Newell, Wm. Kessler, A. G. Fiedler, M. D. Anderson, and Miss E. Hazel Haugse.

Data for stations in Oregon were collected and prepared for publication under the direction of F. F. Henshaw, district engineer, who was assisted by James E. Stewart and C. L. Batchelder.

For stations in Washington and in the Salmon and Palouse basins in Idaho records were collected and prepared for publication by G. L. Parker, district engineer, who was assisted by James E. Stewart, Lasley Lee, C. O. Brown, J. T. Hartson, C. G. Paulsen, T. R. Newell, R. B. Kilgore, L. D. Carson, and John McCombs.

The manuscript was assembled and reviewed by B. L. Hopkins and B. L. Bigwood.

GAGING-STATION RECORDS.

SNAKE RIVER.

SNAKE RIVER AT SOUTH BOUNDARY OF YELLOWSTONE NATIONAL PARK.

LOCATION.—About a quarter of a mile below junction of Lewis and Snake rivers, half a mile north of Snake River soldier station and south boundary of Yellowstone National Park, and 25 miles north of Moran, Wyo.

DRAINAGE AREA.—490 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 19, 1913, to September 30, 1917.

GAGE.—Overhanging chain gage on right bank; read by Sergeant Keith C. Smith and Corporal Van Norman, in charge of Snake River soldier station.

DISCHARGE MEASUREMENTS.—Made by wading; from a highway bridge about 4 miles downstream; or from cable 225 feet downstream, installed September 1, 1917.

CHANNEL AND CONTROL.—Bed composed of coarse gravel; clean except for occasional lodgment of drift. Control probably permanent at ordinary stages. One channel at gage but divided by an island into two channels at control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.9 feet at 9 a. m. July 1 (discharge, 4,970 second-feet); minimum stage recorded, 1.9 feet at 4 p. m. November 4 and 3 p. m. November 17 (discharge, 351 second-feet).

1913–1917: Maximum stage recorded, 6.3 feet June 2, 1914 (discharge, 5,690 second-feet); minimum stage recorded, 1.4 feet October 26 to 31, 1915 (discharge, 160 second-feet).

ICE.—Stage-discharge relation not affected by ice, the formation of which is evidently prevented by hot springs above the gage.

DIVERSIONS.—None above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed in July. Two parallel rating curves used. Standard rating curve well defined between 250 and 5,000 second-feet by measurements in 1916 and 1917. Gage read to half-tenths twice daily, beginning July 15; prior to that date, occasional observations. Daily discharge ascertained by applying daily gage height to rating table, except as stated in footnote to daily-discharge table. Records fair.

COOPERATION.—Gage-height record furnished by superintendent of Yellowstone National Park.

Discharge measurements of Snake River at south boundary of Yellowstone National Park, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
July 1	William Kessler	5.87	4,900
Sept. 1	Baldwin and Hoyt	2.35	471

Daily discharge, in second-feet, of Snake River at South boundary of Yellowstone National Park, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	July.	Aug.	Sept.	Day.	Oct.	Nov.	Dec.	July.	Aug.	Sept.
1	.....	394	424	4,880	1,240	486	16	486	372	394	2,990	728	510
2	.....	394	439		1,170	510	17	486	351	394	2,830	728	462
3	.....	394	439		1,150	510	18	470	372	394	2,640	728	462
4	.....	351	439	4,900	1,150	462	19	455	394	.....	2,450	728	462
5	.....	439	439		1,110	462	20	439	416	.....	2,350	670	416
6	.....	462	439		992	462	21	439	439	.....	2,140	670	416
7	.....	486	439		922	462	22	439	394	.....	2,120	670	416
8	.....	486	439		854	462	23	462	394	.....	2,180	614	561
9	439	486	462		790	462	24	450	394	.....	1,930	614	561
10	439	470	486		758	462	25	439	416	.....	1,810	614	510
11	462	455	462	3,950	698	416	26	416	439	.....	1,700	561	462
12	486	439	439		790	416	27	428	424	.....	1,670	561	462
13	486	416	439		790	416	28	439	409	.....	1,640	561	462
14	486	394	439		790	561	29	416	394	.....	1,480	510	416
15	486	394	416	3,070	790	561	30	394	409	.....	1,380	510	416
							31	394	.....	.....	1,330	510	.....

NOTE.—No record obtained Oct. 1–8, Dec. 19 to June 30, and July 2–14. Discharge estimated July 2–6, and July 7–14

Monthly discharge of Snake River at south boundary of Yellowstone National Park, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October 9–31	486	394	449	20,500
November	486	351	416	24,800
December 1–18	486	394	435	15,500
July	.....	1,330	3,120	192,000
August	1,240	510	773	47,500
September	561	416	470	28,000

JACKSON LAKE AT MORAN, WYO.

LOCATION.—In sec. 18, T. 45 N., R. 114 W., a short distance above gates at outlet of lake at Moran, Lincoln County.

RECORDS AVAILABLE.—June 1, 1909, to September 30, 1917. Records for years 1909 and 1910 fragmentary.

GAGE.—Inclined staff on right shore just below engineers' cottage. Zero of gage, 6,700 feet above sea level.

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

Daily gage height, in feet, of Jackson Lake at Moran, Wyo, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	44.05	44.38	45.52	47.19	48.29	49.55	50.90	52.06	58.20	66.84	63.28	48.34
2	44.12	44.42	45.56	47.23	48.34	49.59	50.94	52.10	58.48	66.86	62.99	47.94
3	44.18	44.47	45.62	47.27	48.39	49.64	50.98	52.14	58.84	66.93	62.59	47.58
4	44.23	44.51	45.68	47.31	48.44	49.68	51.02	52.18	59.10	67.01	62.13	47.39
5	44.23	44.54	45.75	47.35	48.48	49.72	51.06	52.22	59.39	67.06	61.64	47.24
6	44.23	44.59	45.83	47.38	48.53	49.76	51.09	52.26	59.62	66.97	61.06	47.03
7	44.25	44.62	45.89	47.42	48.57	49.80	51.12	52.30	59.86	66.87	60.48	46.99
8	44.25	44.67	45.96	47.45	48.62	49.85	51.16	52.35	60.10	66.95	59.96	46.98
9	44.24	44.70	46.03	47.49	48.67	49.90	51.20	52.41	60.50	67.00	59.44	46.98
10	44.26	44.75	46.07	47.53	48.72	49.94	51.24	52.47	61.05	67.02	58.92	46.98
11	44.24	44.80	46.12	47.57	48.76	49.99	51.27	52.53	61.58	67.02	58.39	46.98
12	44.27	44.84	46.17	47.61	48.81	50.04	51.30	52.60	62.00	66.98	57.76	46.98
13	44.27	44.87	46.21	47.65	48.84	50.08	51.33	52.67	62.28	67.00	57.12	46.95
14	44.27	44.92	46.25	47.68	48.89	50.13	51.37	52.75	62.50	67.00	56.48	46.95
15	44.27	44.96	46.31	47.71	48.94	50.18	51.41	52.94	62.72	66.97	55.76	46.98
16	44.27	45.00	46.36	47.74	48.99	50.22	51.45	53.18	62.99	66.95	55.32	47.00
17	44.28	45.03	46.40	47.77	49.05	50.27	51.48	53.43	63.00	66.90	54.78	47.00
18	44.29	45.07	46.47	47.81	49.10	50.32	51.51	53.66	63.01	66.44	54.21	47.00
19	44.30	45.11	46.54	47.84	49.14	50.36	51.54	53.89	62.96	65.96	53.76	47.00
20	44.31	45.15	46.60	47.87	49.18	50.40	51.57	54.16	62.92	65.46	53.20	47.00
21	44.32	45.18	46.68	47.90	49.23	50.44	51.61	54.48	63.24	65.04	52.86	47.06
22	44.31	45.22	46.72	47.93	49.28	50.48	51.64	54.82	63.98	64.86	52.36	47.12
23	44.31	45.25	46.75	47.95	49.33	50.52	51.67	55.16	64.76	64.76	51.92	47.21
24	44.31	45.28	46.81	47.98	49.37	50.57	51.71	55.48	65.59	64.62	51.50	47.30
25	44.31	45.31	46.86	48.00	49.41	50.61	51.76	55.79	66.38	64.49	51.16	47.38
26	44.31	45.34	46.91	48.03	49.44	50.65	51.81	56.14	66.68	64.34	50.82	47.44
27	44.32	45.38	46.96	48.06	49.47	50.69	51.87	56.48	66.76	64.18	50.50	47.49
28	44.32	45.41	47.01	48.09	49.51	50.73	51.92	56.83	66.85	64.05	50.08	47.54
29	44.33	45.44	47.06	48.14	.....	50.77	51.96	57.22	66.95	63.88	49.62	47.60
30	44.33	45.48	47.10	48.19	.....	50.82	52.02	57.60	66.88	63.71	49.18	47.66
31	44.34	.....	47.15	48.24	.....	50.86	.....	57.90	.....	63.50	48.76	.....

NOTE.—Add 6,700 feet to reduce gage heights to sea-level datum.

SNAKE RIVER NEAR MORAN, WYO.

LOCATION.—In sec. 17, T. 45 N., R. 114 W., 1½ miles below Moran post office, Lincoln County, and United States Reclamation Service dam at outlet of Jackson Lake. No important tributaries between dam and station.

DRAINAGE AREA.—820 square miles.

RECORDS AVAILABLE.—September 21, 1903, to September 30, 1917.

GAGE.—Inclined staff on left bank. Datum lowered 1.0 foot on July 26, 1915. Stevens water-stage recorder installed June 14, 1917, on bank at rear of staff gage. Gage read by employees of United States Reclamation Service.

DISCHARGE MEASUREMENTS.—Made from cable about 100 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders. Control practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.30 feet June 18–20 (discharge, 12,000 second-feet); minimum stage recorded, 0.72 foot at 3.15 a. m. September 30 (discharge, 44 second-feet).

1903–1917: Maximum stage recorded, 8.8 feet (old datum) July 6, 1910 (discharge, 12,100 second-feet); practically no flow during a few days in 1907 and 1909 owing to closing of gates in Jackson Lake dam.

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

DIVERSIONS.—None between dam and station and practically none above Jackson Lake.

REGULATION.—Flow controlled by operation of gates in Jackson Lake dam. Storage capacity of reservoir, 790,000 acre-feet.

ACCURACY.—Two well-defined rating curves used, one applicable October 1 to June 15, the other June 18 to September 30. Shifting-control method used June 16 to 17. Discharge October 1 to July 14 obtained by applying mean daily gage height to rating table; discharge July 15 to September 30 is the mean of hourly discharge. For high stages, rating curve defined by measurements made during 1917 and 1918 indicates that discharge greater than 7,000 second-feet as published for the years 1910 to 1916, inclusive, is probably too small. Records good except for period June 23 to July 14, for which they are fair.

COOPERATION.—Gage-height records furnished by United States Reclamation Service.

Discharge measurements of Snake River near Moran, Wyo., during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 31	Markham and Banks [a].	0.86	56.1	Aug. 21	William Kessler.....	6.83	6,500
Nov. 2	.....do.....	.86	57.9	21	.....do.....	6.81	6,420
2	.....do.....	.86	55.0	26	G. C. Baldwin.....	5.90	4,790
2	.....do.....	.86	56.4	26	.....do.....	7.92	8,480
July 2	William Kessler.....	7.57	7,800	27	.....do.....	8.58	10,100
20	.....do.....	8.43	10,400	Sept. 11	William Kessler.....	2.45	706
Aug. 6	.....do.....	8.18	9,430	11	.....do.....	2.45	719

[a] Employees of United States Reclamation Service.

Daily discharge, in second-feet, of Snake River near Moran, Wyo., for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	555	57	53	61	62	62	62	70	76	8,130	4,890	5,460
2	555	57	54	61	62	62	62	70	76	7,150	5,700	5,040
3	555	57	54	61	62	62	62	71	76	6,580	6,980	3,840
4	555	57	56	61	62	62	62	71	80	7,150	7,930	2,880
5	555	57	57	61	62	62	62	73	85	8,770	8,230	2,900
6	555	57	58	61	62	62	62	74	90	9,450	9,150	2,330
7	555	57	59	61	62	62	62	79	96	7,530	8,310	1,060
8	555	57	60	61	62	62	62	84	101	6,580	7,850	712
9	555	57	61	61	62	62	62	88	107	6,580	7,770	712
10	555	57	61	61	62	62	62	94	107	6,580	7,860	712
11	555	57	61	61	62	62	62	100	118	6,200	8,320	708
12	555	57	61	61	62	62	62	105	130	6,020	9,170	706
13	555	57	61	61	62	62	62	111	340	4,780	9,240	706
14	555	57	61	61	62	62	62	111	1,110	4,780	9,150	706
15	555	57	61	61	62	62	62	111	4,440	4,610	8,430	706
16	555	57	61	61	62	62	62	100	7,900	4,000	7,810	706
17	555	57	61	61	62	62	62	100	10,300	7,150	7,760	704
18	555	57	61	61	62	62	62	94	12,000	10,700	7,310	702
19	555	57	61	61	62	62	62	90	12,000	10,300	7,140	700
20	555	56	61	61	62	62	62	90	12,000	9,980	6,940	394
21	555	56	61	61	62	62	64	88	338	7,720	6,440	51
22	555	56	61	61	62	62	64	87	304	4,420	6,330	48
23	555	54	61	62	62	62	64	85	316	4,800	6,240	53
24	555	54	61	62	62	62	65	84	374	4,700	5,570	52
25	555	53	61	62	62	62	66	84	2,500	4,570	4,930	52
26	555	53	61	62	62	62	68	69	7,150	4,440	5,040	49
27	61	53	61	62	62	62	68	69	8,550	4,320	6,100	48
28	61	53	61	62	62	62	69	70	8,550	4,230	6,460	45
29	59	53	61	62	.....	62	69	71	9,690	4,220	5,400	44
30	58	53	61	62	.....	62	69	73	10,200	4,260	5,700	44
31	57	.....	61	62	.....	62	.....	74	.....	4,250	5,700	.....

NOTE.—Gates in dam at Jackson Lake closed Oct. 27 to June 12 and Sept. 21–30.

Monthly discharge of Snake River near Moran, Wyo., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	555	57	475	29,200
November	57	53	55.9	3,330
December	61	53	59.8	3,680
January	62	61	61.3	3,770
February	62	62	62.0	3,440
March	62	62	62.0	3,810
April	69	62	63.5	3,780
May	111	69	85.2	5,240
June	12,000	76	3,640	217,000
July	10,700	4,000	6,290	387,000
August	9,240	4,890	7,090	436,000
September	5,460	44	1,090	64,900
The year	12,000	44	1,600	1,160,000

SNAKE RIVER AT ALPINE, IDAHO.

LOCATION.—In T. 3 S., R. 46 E., 300 yards below ranch house, 1 mile below highway bridge at Alpine, Bonneville County, and Idaho-Wyoming State line. Salt River enters just above station.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—June 20, 1916, to September 30, 1917.

GAGE.—Vertical staff in two sections on right bank. Stevens water-stage recorder installed June 1, 1917, at site of low-water staff. Observers, Mrs. Hattie Miller and T. R. Newell.

DISCHARGE MEASUREMENTS.—Made from highway bridge, or from cable installed June 14, 1917, 200 feet downstream from gage, and below mouth of Salt River. Measurements of the flow of Snake River at the highway bridge are combined with those of the flow of Salt River to obtain the flow below mouth of Salt River.

CHANNEL AND CONTROL.—Bed composed of sand and gravel. One channel at all stages. Control shifts during high water.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 10.99 feet at 1 a. m. June 19 (discharge, 38,200 second-feet); minimum stage recorded, 2.70 feet at 9 a. m. November 15–16 (discharge, 2,130 second-feet).

ICE.—Stage-discharge relation affected by ice; observations discontinued during winter.

REGULATION.—Flow controlled by storage at Jackson Lake reservoir, which was completed in 1916. Capacity of reservoir about 790,000 acre-feet.

ACCURACY.—Stage-discharge relation changed during high water in June. Rating curve used before change fairly well defined between 2,500 and 27,000 second-feet; curve used after change well defined between 4,000 and 33,000 second-feet. Gage read to hundredths once daily September 30 to December 2 and May 3 to June 1; after that date, mean daily gage heights obtained by inspecting recorder graph. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying daily gage height to rating table or by shifting-control method as noted in footnote to daily discharge table. Records good.

Discharge measurements of Snake River at Alpine, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 30	C. G. Paulsen	3.20	2,820	Aug. 9	T. R. Newell	6.52	14,900
June 15	William Kessler	7.14	13,600	14	do	6.67	15,500
July 1	T. R. Newell	9.79	32,400	23	do	5.80	11,400
14	do	7.71	21,000	30	do	5.51	10,300
26	do	6.74	15,400	Sept. 9	do	3.71	5,080
				25	do	3.36	4,260

Daily discharge, in second-feet, of Snake River at Alpine, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	May.	June.	July.	Aug.	Sept.
1	3,660	2,820	2,390	.....	15,100	32,700	12,600	10,200
2	3,850	2,670	2,390	.....	14,100	29,700	13,100	9,840
3	3,850	2,670	.....	3,660	13,200	27,900	13,500	9,480
4	4,050	2,670	.....	3,850	12,800	27,900	14,900	8,460
5	3,850	2,670	.....	4,260	11,900	30,300	15,400	7,530
6	3,660	2,670	.....	4,480	11,900	31,500	15,900	7,680
7	3,660	2,530	.....	5,460	12,800	30,300	15,900	7,530
8	3,660	2,530	.....	5,460	13,200	27,900	15,400	5,760
9	3,660	2,530	.....	6,300	16,100	27,300	14,500	4,940
10	3,480	2,530	.....	7,240	19,700	26,800	14,500	4,830
11	3,660	2,530	.....	8,290	20,200	25,600	14,500	4,830
12	3,660	2,530	.....	9,860	16,400	24,500	14,900	4,830
13	3,480	2,260	.....	10,700	13,000	22,200	15,400	4,720
14	3,660	2,260	.....	13,600	12,600	20,600	15,400	4,940
15	3,480	2,130	.....	15,600	14,400	19,500	14,900	5,050
16	3,480	2,130	.....	17,200	20,100	18,400	14,000	4,940
17	3,480	2,260	.....	15,100	25,300	17,400	13,500	4,830
18	3,480	2,390	.....	15,100	35,000	22,200	13,500	4,720
19	3,660	2,390	.....	15,100	37,000	23,300	13,100	4,620
20	3,480	2,390	.....	16,300	37,200	22,800	12,600	4,510
21	3,480	2,390	.....	17,200	36,300	22,200	12,200	4,410
22	3,480	2,530	.....	17,200	29,100	17,900	11,400	4,020
23	3,480	2,530	.....	17,800	28,500	17,400	11,400	4,110
24	3,300	2,390	.....	17,200	28,500	17,400	11,400	4,310
25	3,300	2,390	.....	17,200	29,100	16,400	10,200	4,210
26	3,300	2,260	.....	16,700	31,500	15,900	9,840	4,210
27	3,300	2,260	.....	16,700	33,900	14,900	10,200	4,110
28	3,000	2,260	.....	16,700	33,900	14,900	11,000	4,020
29	2,820	2,390	.....	17,200	34,500	14,500	11,400	3,920
30	2,820	2,390	.....	18,300	35,700	13,500	10,200	3,920
31	2,820	.....	.....	17,200	.....	13,100	10,200	.....

NOTE.—Discharge June 12 and June 16–20 obtained by shifting-control method. No records obtained Dec. 3 to May 2.

Monthly discharge of Snake River at Alpine, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	4,050	2,820	3,480	214,000
November	2,820	2,130	2,440	145,000
December 1–2	2,390	2,390	2,390	9,480
May 3–31	18,300	3,660	12,700	730,000
June	37,200	11,900	23,100	1,370,000
July	32,700	13,100	22,200	1,360,000
August	15,900	9,840	13,100	806,000
September	10,200	3,920	5,520	328,000

SNAKE RIVER NEAR HEISE, IDAHO.

LOCATION.—In sec. 5, T. 3 N., R. 41 E., 600 feet above Anderson dam, in Bonneville County, 3 miles above Heise, and 25 miles below site of station formerly maintained near Lyon. Several small creeks enter between the two stations.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—September 25, 1910, to September 30, 1917.

GAGE.—Friez water-stage recorder, on left bank; installed July 8, 1913, and referred to vertical staff gage; inspected by Parley Byington.

DISCHARGE MEASUREMENTS.—Made from cable about 100 feet below gage.

CHANNEL AND CONTROL.—Bed composed of coarse gravel and cobblestones. Two channels at low and medium stages. Control formed by crest of Anderson dam. The dam was washed out during high water of June, 1917, causing considerable change in the stage-discharge relation.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.20 feet at 2.30 and 4.30 p. m. June 18 (discharge, 38,900 second-feet); minimum stage recorded, from water-stage recorder, 1.79 feet at 6 p. m. April 19 (discharge, 3,200 second-feet); actual extremes probably occurred during periods of no record.

1910–1917: Maximum stage recorded, as stated above; minimum stage, 1.1 feet at 10 a. m. March 10, 1915 (discharge, 2,180 second-feet); actual maximum probably occurred during period of no record.

ICE.—Stage-discharge relation seriously affected by ice. Observations discontinued during winter.

DIVERSIONS.—No large diversions above station. A small ditch of about 20 second-feet capacity takes out just above station.

REGULATION.—Flow controlled to a large extent by storage in Jackson Lake reservoir.

ACCURACY.—Stage-discharge relation changed slightly during winter and considerably during high water in June when Anderson dam was washed out. Standard rating curve used before change, well defined between 2,200 and 27,000 second-feet; rating curve used after change, well defined between 4,000 and 20,000 second-feet. Operation of water-stage recorder satisfactory except on July 24, September 4–5, and September 8–9, when inlet to float well was clogged. Daily discharge ascertained by applying mean daily gage height to rating table except for period July 16 to September 29, for which the mean of hourly discharges was used. Records good.

Discharge measurements of Snake River near Heise, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 23	C. G. Paulsen	2.43	4,180	Aug. 15	M. D. Anderson	4.48	15,100
27	do	2.38	4,180	20	C. H. Wallis [a]	3.96	13,600
June 16	William Kessler	7.64	23,800	22	M. D. Anderson	3.68	11,800
18	do	10.20	38,900	26	C. H. Wallis [a]	3.20	11,400
July 17	Baldwin and Anderson	5.14	17,900	Sept. 1	M. D. Anderson	3.30	10,200
18	M. D. Anderson	5.60	20,500	6	C. H. Wallis [a]	2.61	7,900
27	Anderson and Vance [a]	4.54	15,400	10	M. D. Anderson	1.72	5,540
28	M. D. Anderson	4.58	15,500	14	Wallis [a] and Empey [a]	1.73	5,570
30	do	4.28	14,100	19	M. D. Anderson	1.58	5,230
Aug. 6	Anderson and Wallis [a]	4.61	15,700	29	do	1.31	4,490
14	M. D. Anderson	4.53	15,500				

[a] Vance, Wallis, and Empey were State employees.

Daily discharge, in second-feet, of Snake River near Heise, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Apr.	May.	June.	July.	Aug.	Sept.
1	4,340	3,600	.....	5,920	19,800	.....	13,200	10,500
2	4,790	3,500	.....	5,530	18,600	.....	13,200	10,300
3	5,030	3,500	.....	5,280	18,600	.....	13,600	9,770
4	4,910	3,500	.....	5,280	17,700	27,800	14,700	9,280
5	4,680	3,500	.....	5,400	16,500	29,400	15,600	8,000
6	4,440	3,500	.....	5,660	15,700	31,000	15,800	8,100
7	4,440	3,500	.....	6,770	15,300	30,400	16,400	8,020
8	4,440	3,410	.....	8,000	15,700	28,900	15,500	6,560
9	4,440	3,410	.....	8,640	17,300	27,800	14,900	5,790
10	4,440	3,410	.....	9,990	21,500	27,300	14,800	5,500
11	4,440	3,410	.....	11,800	24,200	26,300	14,700	5,430
12	4,560	.....	.....	13,300	20,700	24,700	15,000	5,390
13	4,440	.....	.....	14,100	17,700	23,700	15,800	5,360
14	4,340	.....	.....	16,900	16,500	21,700	15,400	5,540
15	4,340	.....	.....	20,200	17,700	20,300	15,200	5,650
16	4,220	.....	.....	21,500	22,400	19,200	14,500	5,600
17	4,220	.....	3,220	19,800	28,000	17,900	13,900	5,470
18	4,340	.....	3,220	19,000	37,900	19,900	14,000	5,340
19	4,440	.....	3,220	19,000	.....	23,000	13,600	5,240
20	4,340	.....	3,220	20,200	.....	22,900	13,000	5,150
21	4,220	.....	3,500	20,700	.....	22,600	12,700	5,090
22	4,220	.....	3,900	20,200	.....	20,100	12,000	4,990
23	4,220	.....	4,440	20,700	.....	17,400	11,700	4,640
24	4,220	.....	5,030	20,700	.....	18,100	11,600	4,870
25	4,120	.....	5,920	20,700	.....	17,000	11,000	4,920
26	4,120	.....	6,480	20,700	.....	16,400	10,200	4,820
27	4,220	.....	7,060	20,700	.....	15,500	10,500	4,730
28	4,120	.....	6,770	21,100	.....	15,500	11,300	4,660
29	3,800	.....	6,200	21,100	.....	15,200	11,600	4,530
30	3,700	.....	5,920	22,400	.....	14,400	10,500	4,500
31	3,600	.....	.....	22,000	.....	13,800	10,600	.....

NOTE.—Discharge interpolated Nov. 9–10. No records Nov. 12 to Apr. 16 and June 19 to July 3.

Monthly discharge of Snake River near Heise, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	5,030	3,600	4,330	266,000
November 1–11	3,600	3,410	3,480	75,900
April 17–30	7,060	3,220	4,860	135,000
May	22,400	5,280	15,300	941,000
June 1–18	37,900	15,300	20,100	718,000
July 4–31	31,000	13,800	21,700	1,210,000
August	16,400	10,200	13,400	824,000
September	10,500	4,500	6,110	364,000

SNAKE RIVER NEAR SHELLEY, IDAHO.

LOCATION.—In sec. 17, T. 1 N., R. 37 E., a quarter of a mile upstream from Woodville highway bridge and 3 miles north of Shelley, Bingham County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 18, 1915, to September 30, 1917.

GAGE.—Friez water-stage recorder on right bank, standard hook gage in float well, and combination vertical and inclined staff gage outside; read by James Thorne.

DISCHARGE MEASUREMENTS.—Made from Woodville bridge and from cable installed May 20, 1917, 600 feet upstream from gage.

CHANNEL AND CONTROL.—Control is a lava-rock reef extending across the channel about 500 feet below gage. Banks high and clean at gage and control.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 14.68 feet at 8 a. m. June 22 (discharge, 36,800 second-feet); minimum stage, 6.50 feet at 10 a. m. April 21 (discharge, 4,580 second-feet); actual minimum stage probably occurred during period of no record.

1915–1917: Maximum stage, as stated above; minimum stage, 4.88 feet at 4 a. m. September 2, 1915 (discharge, 1,800 second-feet).

ICE.—Stage-discharge relation probably seriously affected by ice; observations discontinued during winter.

DIVERSIONS.—Practically the entire natural summer flow of the river above the station is appropriated by numerous diversions in the Idaho Falls district.

REGULATION.—Natural flow during the irrigation season is augmented by the release of water stored in Jackson Lake for use on the Minidoka project and Twin Falls tracts.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined. Operation of water-stage recorder satisfactory; inspected daily and auxiliary staff read. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting gage-height graph. Records good.

Discharge measurements of Snake River near Shelley, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Apr. 19[a]	William Kessler.....	6.55	5,170	July 10	G. C. Baldwin.....	12.07	25,400
May 21	.....do.....	12.26	26,400	27	.....do.....	8.35	16,700
June 22	.....do.....	14.58	37,400	Sept. 12	.....do.....	6.61	4,830

[a] Measured from highway bridge.

Daily discharge, in second-feet, of Snake River near Shelley, Idaho, for the year ending Sept. 30, 1917.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Day.	Apr.	May.	June.	July.	Aug.	Sept.
1.....	.....	7,470	28,600	32,100	7,300	8,140	16.....	5,280	23,100	19,000	17,400	9,350	5,280
2.....	.....	7,140	26,500	31,600	6,980	8,310	17.....	5,090	25,700	22,700	15,800	8,830	5,430
3.....	.....	6,660	25,200	29,100	6,820	8,140	18.....	4,900	25,200	27,800	14,600	8,660	5,430
4.....	.....	6,500	24,000	26,900	7,470	7,800	19.....	4,710	24,800	31,600	17,400	8,830	5,430
5.....	.....	6,500	22,700	26,100	8,480	6,980	20.....	4,710	24,800	34,700	18,600	8,480	5,430
6.....	.....	6,500	21,100	26,900	9,180	6,500	21.....	4,580	26,100	36,500	18,200	8,310	5,280
7.....	.....	6,820	19,800	27,800	9,700	6,660	22.....	4,850	27,300	36,500	17,800	7,970	5,140
8.....	.....	8,140	19,000	27,800	10,100	6,500	23.....	5,280	26,900	33,800	14,600	7,640	4,850
9.....	.....	8,830	19,000	26,500	9,180	5,730	24.....	6,040	26,900	30,800	13,000	7,470	4,990
10.....	.....	10,100	21,500	25,700	8,830	5,280	25.....	6,660	26,900	29,500	12,600	7,470	5,280
11.....	.....	11,500	25,200	24,800	8,660	4,990	26.....	7,470	26,900	29,100	11,500	6,980	5,580
12.....	.....	13,400	26,100	24,000	8,830	4,850	27.....	8,140	26,900	29,900	10,400	6,660	5,730
13.....	.....	15,400	23,600	22,700	9,000	4,710	28.....	8,660	26,900	31,200	9,350	7,140	5,580
14.....	.....	17,000	20,600	20,600	9,350	4,850	29.....	7,970	27,800	31,600	9,350	7,970	5,430
15.....	.....	19,800	18,600	19,000	9,350	4,990	30.....	7,470	28,600	31,600	8,830	8,480	5,140
							31.....	.....	29,500	.....	8,140	7,970	.....

NOTE.—No record obtained Oct. 1 to Apr. 15. Discharge interpolated Apr. 17–18 because of lack of gage heights.

Monthly discharge of Snake River near Shelley, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
April 16–30	8,660	4,580	6,120	182,000
May	29,500	6,500	18,600	1,140,000
June	36,500	18,600	26,600	1,580,000
July	32,100	8,140	19,600	1,210,000
August	10,100	6,660	8,300	510,000
September	8,310	4,710	5,810	346,000
The period				4,970,000

SNAKE RIVER NEAR BLACKFOOT, IDAHO.

LOCATION.—In sec. 31, T. 3 S., R. 34 E., a quarter of a mile below mouth of Blackfoot River and 14 miles southwest of Blackfoot, Bingham County. Blackfoot River is the only large tributary between station and mouth of Henrys Fork, 60 miles above. Portneuf and Bannock rivers, together with 2,500 second-feet of spring water, enter between this station and the one at Neeley.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—June 6, 1910, to September 30, 1917.

GAGE.—Friez water-stage recorder on right bank; installed July 6, 1913, at same site and datum as staff gage installed October 1, 1912. Original gage, used June 6, 1910, to September 30, 1912, was 50 feet above present site. Datum of gage raised 0.06 foot June 25, 1911, and 0.03 foot October 1, 1912, when new staff gage was installed; read by James A. Clough.

DISCHARGE MEASUREMENTS.—Made by wading or from a cable about 50 feet above gage.

CHANNEL AND CONTROL.—Bed composed of very coarse gravel. Two channels at low and medium stages. Control shifts slightly during high water.

EXTREMES OF DISCHARGE.—Maximum stage during the year from water-stage recorder, 12.67 feet at 10 p. m. June 22 (discharge, 36,200 second-feet); minimum stage, 3.23 feet at 5 p. m. January 17 (discharge, 1,510 second-feet).

1910–1917: Maximum stage recorded, as stated above; minimum stage, 1.89 feet August 11 and 15, 1910 (discharge, 238 second-feet).

ICE.—Floating ice sometimes present for short periods; stage-discharge relation apparently not affected.

DIVERSIONS.—Practically all the natural summer flow of the river is diverted above station.

REGULATION.—Flow regulated by storage in Jackson Lake reservoir and also by storage in Blackfoot-Marsh reservoir on Blackfoot River. Practically all the summer flow is water released from these reservoirs.

ACCURACY.—Stage-discharge relation changed slightly in Jun . Two rating curves used, one applicable October 1 to June 19, the other Jun 22 to September 30. Rating curve used before the change, well defined between 400 and 20,000 second-feet; curve used after the change, well defined between 2,000 and 36,000 second-feet. Operation of water-stage recorder satisfactory except January 13 to 25. Gage read to hundredths once daily during that period. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting gage-height graph; shifting-control method used June 20 and 21. Records good.

Discharge measurements of Snake River near Blackfoot, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 3	C. G. Paulsen	5.22	4,720	July 30	G. C. Baldwin	6.16	7,060
Feb. 5	T. R. Newell	3.79	2,210	Sept. 14	do	4.52	3,410
June 22	G. C. Baldwin	12.61	36,000				

Daily discharge, in second-feet, of Snake River near Blackfoot, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	3,060	4,890	3,870	2,510	2,900	3,060	4,060	7,440	30,200	30,800	5,390	6,260
2	3,500	4,780	3,960	2,820	2,820	2,980	4,260	7,290	28,200	31,300	4,940	6,650
3	4,160	4,680	4,060	2,900	2,580	2,740	4,060	6,730	26,200	28,800	4,510	6,650
4	4,890	4,680	4,260	3,150	2,290	2,510	4,060	6,460	25,200	26,300	4,510	6,260
5	5,460	4,570	4,160	3,590	2,220	2,440	4,260	6,460	24,200	24,800	5,270	5,890
6	5,580	4,570	3,960	3,870	2,440	2,360	4,260	6,660	22,300	24,800	6,650	5,160
7	5,230	4,570	3,960	3,770	2,740	2,660	4,360	6,460	20,300	26,300	6,920	5,160
8	5,230	4,570	3,770	3,770	2,900	2,740	4,680	7,440	19,400	26,800	7,640	5,160
9	5,230	4,570	3,320	3,680	2,980	2,740	5,000	8,340	18,900	25,800	7,350	4,510
10	5,340	4,460	2,980	3,680	2,980	2,820	5,230	9,320	19,900	24,300	6,790	4,100
11	5,340	4,260	2,820	3,410	2,980	2,900	5,120	10,800	23,700	24,800	6,650	3,810
12	5,230	3,320	2,820	3,410	2,900	2,820	5,120	12,700	25,700	23,300	6,650	3,620
13	5,340	3,770	3,230	2,980	2,900	2,820	5,230	14,400	23,700	21,900	6,920	3,440
14	5,230	2,980	3,230	2,460	2,900	2,820	5,230	16,200	20,800	20,400	7,350	3,360
15	5,230	2,740	3,150	1,950	2,900	2,660	5,230	18,500	18,000	18,100	7,490	3,620
16	5,230	3,150	3,060	1,820	3,060	2,580	5,120	21,800	16,600	16,700	7,350	3,900
17	5,120	3,680	2,980	1,530	2,980	2,740	4,890	24,700	19,400	14,900	7,060	4,400
18	5,230	4,160	2,980	1,590	2,440	2,900	4,680	25,200	24,200	13,600	6,790	4,400
19	5,340	4,360	3,410	1,590	2,440	2,900	4,460	24,700	28,700	14,100	6,920	4,300
20	5,460	4,460	3,680	1,820	2,660	2,900	4,460	24,700	32,300	16,700	6,920	4,200
21	5,460	4,360	3,590	1,820	2,660	2,900	4,360	25,700	34,800	16,300	6,520	4,100
22	5,340	4,160	3,590	1,640	2,660	2,900	4,360	26,700	35,900	15,800	6,390	3,900
23	5,340	4,060	3,590	1,950	2,660	2,900	4,780	27,700	35,400	14,100	6,000	3,810
24	5,460	3,870	3,500	2,360	2,660	2,980	5,340	28,200	31,800	12,000	5,750	3,810
25	5,460	3,770	3,590	2,360	2,820	2,900	6,080	28,200	29,300	12,000	5,630	4,200
26	5,340	3,960	3,410	2,360	2,900	2,980	7,010	28,200	28,300	10,800	5,510	4,720
27	5,340	3,680	3,150	2,510	2,980	2,980	7,880	28,200	28,300	9,050	5,160	5,270
28	5,230	4,060	2,980	2,740	3,150	2,980	8,340	27,700	29,300	7,940	5,160	5,270
29	5,230	3,870	2,980	2,900	.....	2,980	8,340	28,200	30,300	7,350	5,630	5,050
30	5,120	3,960	2,660	2,980	.....	3,410	7,730	29,200	30,300	6,920	6,390	4,720
31	4,890	.....	2,510	2,900	.....	3,770	.....	30,200	.....	6,130	6,390	.....

NOTE.—Discharge estimated Sept. 25, 26, and 30 on account of lack of gage heights.

Monthly discharge of Snake River near Blackfoot, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	5,580	3,060	5,120	315,000
November	4,890	2,740	4,100	244,000
December	4,260	2,510	3,390	208,000
January	3,870	1,530	2,670	164,000
February	3,150	2,220	2,770	154,000
March	3,770	2,360	2,860	176,000
April	8,340	4,060	5,270	314,000
May	30,200	6,460	18,500	1,140,000
June	35,900	16,600	26,100	1,550,000
July	31,300	6,130	18,500	1,140,000
August	7,640	4,510	6,280	386,000
September	6,650	3,360	4,660	277,000
The year	35,900	1,530	8,380	6,070,000

SNAKE RIVER AT NEELEY, IDAHO.

LOCATION.—In sec. 11, T. 8 S., R. 30 E., half a mile north of Neeley post office, Power County, 4 miles southwest of American Falls, and 32 miles above Minidoka dam. Portneuf and Bannock rivers and 2,500 second-feet of spring water enter Snake River between station near Blackfoot and that at Neeley. Raft River enters 18 miles below Neeley.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 17, 1906, to September 30, 1917.

GAGE.—Friez water-stage recorder installed August 8, 1910, on left bank at site of staff gage originally used; inspected by Morgan and Richards.

DISCHARGE MEASUREMENTS.—Made from cable at gage.

CHANNEL AND CONTROL.—Bed of river at measuring section rough, especially near right bank. Banks high and clean. One channel at all stages. Control is of lava rock, probably partly overlain with coarse gravel; shifts slightly.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 11.73 feet at 2 a. m. June 24 (discharge, 37,700 second-feet); minimum stage, 4.9 feet at 9 a. m. February 6; minimum discharge of about 3,700 second-feet probably occurred about January 17.

1906–1917: Maximum stage recorded, 12.5 feet June 11, 1909 (discharge, 41,100 second-feet); minimum stage recorded, 3.65 feet August 20–22, 1906 (discharge, 2,220 second-feet).

ICE.—Stage-discharge relation seriously affected by ice during parts of December, January, and February; flow estimated principally by comparison with the record obtained at the Blackfoot station.

DIVERSIONS.—Numerous canals in the vicinity of Blackfoot and Idaho Falls divert practically the entire natural summer flow of Snake River.

REGULATION.—Summer flow augmented by stored water from Jackson Lake for use on the Minidoka project and Twin Falls tracts.

ACCURACY.—Stage-discharge relation permanent during year except as affected by ice. Rating curve well defined. Operation of water-stage recorder satisfactory, except November 19 to March 24, during which period staff gage was read to hundredths once daily. Mean daily gage heights obtained by inspecting recorder graph and from staff record. Daily discharge ascertained by applying mean daily gage height to rating table, except as noted in footnote to daily-discharge table. Records good.

Discharge measurements of Snake River at Neeley, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 1	T. R. Newell	[a] 5.67	6,170
June 20	do	10.70	31,500
July 25	G. C. Baldwin	7.47	14,100

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Snake River at Neeley, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	5,320	7,680	6,690	4,710	5,700	5,760	7,340	11,000	33,900	32,200	8,730	9,090
2	5,910	7,680	6,690	5,000	5,500	5,760	7,680	11,000	33,300	32,700	8,200	9,090
3	6,370	7,680	6,690	5,130	5,110	5,460	7,510	10,600	32,200	33,300	7,680	9,280
4	7,010	7,510	7,010	5,350	4,830	5,320	7,510	10,200	30,400	31,000	7,180	9,280
5	7,680	7,680	7,010	5,750	4,600	5,170	7,680	9,840	29,200	28,600	7,340	9,090
6	8,020	7,570	7,010	6,400	4,700	5,170	8,020	9,840	27,500	27,500	8,370	8,550
7	8,020	7,450	6,370	6,320	4,870	5,170	8,020	9,840	25,800	27,500	9,280	8,020
8	8,020	7,340	6,210	6,230	5,020	5,170	8,020	9,840	24,100	28,600	9,650	8,020
9	7,850	7,340	5,840	6,150	5,250	5,170	8,550	11,000	23,000	28,600	10,200	8,020
10	7,850	7,510	5,450	6,060	5,140	5,460	8,550	11,800	22,500	28,100	9,650	7,680
11	8,020	7,180	5,170	5,970	5,110	5,460	8,730	13,100	24,100	26,900	9,460	7,180
12	8,200	6,690	5,170	5,840	5,300	5,460	8,730	14,400	26,900	26,900	9,090	6,850
13	8,020	6,200	5,500	5,690	5,110	5,460	8,730	16,300	28,100	25,800	9,460	6,530
14	8,020	5,750	5,460	4,900	5,300	5,460	8,910	18,300	26,900	24,100	9,650	6,370
15	8,020	5,400	5,760	4,130	5,130	5,320	9,090	20,300	23,600	21,900	10,000	6,370
16	8,050	5,550	5,760	3,970	5,310	5,170	8,730	25,200	20,800	19,800	10,000	6,530
17	8,070	5,900	5,460	3,700	5,250	5,170	8,550	28,100	20,300	18,800	9,840	6,690
18	8,100	6,400	5,760	3,750	5,230	5,460	8,370	29,200	23,600	17,300	9,650	6,850
19	8,120	6,800	5,760	3,820	5,170	5,460	8,020	29,200	27,500	15,800	9,460	7,010
20	8,150	7,000	6,370	3,980	5,270	5,460	7,850	28,600	31,000	17,800	9,650	7,010
21	8,170	7,010	6,370	4,000	5,360	5,460	7,680	29,200	33,900	19,300	9,650	6,850
22	8,200	7,010	6,060	3,920	5,460	5,460	7,510	29,800	35,700	18,800	9,460	6,690
23	8,020	6,690	6,060	4,140	5,460	5,760	7,850	30,400	37,500	17,800	9,280	7,010
24	8,020	6,530	6,050	4,680	5,760	5,760	8,200	31,000	37,500	15,800	8,910	
25	8,200	6,370	6,370	4,720	6,060	5,760	8,730	31,600	35,700	14,400	8,730	
26	8,200	6,370	5,460	4,740	6,370	5,760	9,650	31,600	32,700	14,000	8,730	7,600
27	8,020	6,690	5,320	4,860	6,060	5,760	10,600	32,200	31,600	13,100	8,370	
28	8,020	6,690	5,190	5,100	6,060	6,220	11,400	32,200	31,600	11,800	8,020	
29	8,020	6,370	5,040	5,330	.....	6,850	11,800	32,200	32,200	10,600	8,020	
30	8,020	6,370	4,870	5,550	.....	6,690	11,800	32,200	32,200	10,000	8,730	8,020
31	7,850	.....	4,710	5,800	.....	7,010	.....	32,700	.....	9,460	9,280	.....

NOTE.—Discharge interpolated, because of lack of gage heights, Oct. 16–21, Nov. 6–7, 24, Dec. 2, Feb. 20–21, Mar. 4, 7, 11, 15, 20–21, and Sept. 16–18. Discharge estimated on account of ice from observers' notes, weather records, actual measurements, and record obtained at Blackfoot station, Nov. 13–20, Dec. 8–10, 13, 24, and Dec. 27 to Feb. 18. Mean discharge estimated because of lack of gage heights Sept. 24–29.

Monthly discharge of Snake River at Neeley, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	8,200	5,320	7,790	479,000
November	7,680	5,400	6,810	405,000
December	7,010	4,710	5,890	362,000
January	6,400	3,700	5,020	309,000
February	6,370	4,600	5,340	297,000
March	7,010	5,170	5,610	345,000
April	11,800	7,340	8,660	515,000
May	32,700	9,840	21,700	1,330,000
June	37,500	20,300	29,200	1,740,000
July	33,300	9,460	21,600	1,330,000
August	10,200	7,180	9,020	555,000
September	9,280	6,370	7,590	452,000
The year	37,500	3,700	11,200	8,120,000

NOTE.—See footnote to daily-discharge table.

LAKE WALCOTT NEAR MINIDOKA, IDAHO.

LOCATION.—In sec. 1, T. 9 S., 25 E., in backwater of Reclamation Service dam, 6 miles southeast of Minidoka post office, Minidoka County.

RECORDS AVAILABLE.—April 1, 1909, to September 30, 1917.

GAGE.—Hook gage in wooden stilling well on face of dam at entrance to power house. Early gage-height record from hook gage in concrete stilling well on point of rocks in front of power house. Same datum as present gage. Zero of gage, 4,200 feet above sea level.

ACCURACY.—Gage heights occasionally affected by wind.
COOPERATION.—Gage-height record furnished by United States Reclamation Service.

Lake Walcott impounds water for the irrigation of lands in the North Side Minidoka project and the South Side Minidoka project of the United States Reclamation Service. It has a capacity of 128,770 acre-feet between elevations 4,235 and 4,247 feet; elevation of spillway, 4,240 feet, sea level datum.

Daily gage height, in feet, of Lake Walcott near Minidoka, Idaho, for the years ending Sept. 30, 1909–1917.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Day.	Apr.	May.	June.	July.	Aug.	Sep
1909							1909						
1.....	41.05	41.47	42.58	42.87	41.24	40.95	16.....	41.05	41.65	42.57	41.74	41.25	40.04
2.....	41.05	41.45	42.55	42.89	41 14	40.82	17.....	41.20	41.70	42.53	41.64	41.25	39.66
3.....	41.05	41.40	42.48	42.91	41.15	40.72	18.....	41.20	41.70	42.57	41.57	41.23	39.36
4.....	41.05	41.35	42.45	42.93	41.08	40.65	19.....	41.02	41.74	42.67	41.58	41.20	38.82
5.....	41.05	41.17	42.57	42.94	41.19	40.68	20.....	41.07	41.69	42.68	41.47	41.17	38.60
6.....	41.05	41.43	42.70	42.85	41.33	40.75	21.....	41.20	41.60	42.87	41.52	41.08	38.14
7.....	41.05	41.46	42.76	42.88	41.25	40.77	22.....	41.20	41.60	42.95	41.48	41.10	38.05
8.....	41.05	41.69	42.94	42.91	41.25	40.78	23.....	41.23	41.65	43.03	41.44	41.10	37.61
9.....	41.05	41.65	43.03	42.90	41.26	40.82	24.....	41.21	41.79	43.10	41.43	41.10	37.23
10.....	41.05	41.46	43.11	42.53	41.23	40.84	25.....	41.24	41.98	43.07	41.35	41.07	37.86
11.....	41.05	41.62	43.14	42.23	41.23	40.88	26.....	41.12	42.12	43.06	41.38	41.06	36.39
12.....	41.05	41.74	43.16	42.15	41.22	40.81	27.....	41.26	42.12	42.97	41.39	40.82	36.37
13.....	41.05	41.80	43.07	41.97	41.19	40.60	28.....	41.20	42.18	42.91	41.30	41.08	36.38
14.....	41.05	41.77	42.88	41.89	41.22	40.47	29.....	41.35	42.26	42.90	41.30	41.05	36.28
15.....	41.05	41.70	42.70	41.83	41.24	40.29	30.....	41.43	42.47	42.87	41.35	41.02	36.18
							31.....	.....	42.58	.....	41.35	41.05	.....

Day.	Oct.	Nov.	July.	Aug.	Sept.	Day.	Oct.	Nov.	July.	Aug.	Sept.
1909–10						1909–10					
1.....	36.10	36.56	43.67	43.50	39.22	16.....	36.74	36.19	44.32	41.03	39.76
2.....	36.12	36.57	43.70	43.27	39.20	17.....	36.40	36.30	44.35	40.82	39.85
3.....	36.19	36.59	43.66	43.07	39.24	18.....	36.22	36.26	44.27	40.62	39.95
4.....	36.26	36.63	43.67	42.88	39.22	19.....	36.00	36.25	44.26	40.42	39.95
5.....	36.38	36.67	43.75	42.60	39.47	20.....	35.82	36.40	44.27	40.26	39.97
6.....	36.44	36.56	43.65	42.43	39.51	21.....	35.66	36.61	44.26	40.20	39.67
7.....	36.27	36.65	43.19	42.28	39.73	22.....	35.76	37.81	44.13	40.23	39.66
8.....	36.39	36.63	42.65	42.09	39.70	23.....	35.76	37.14	44.04	40.25	39.70
9.....	36.39	36.61	42.62	42.05	39.66	24.....	36.26	37.27	43.96	40.17	39.69
10.....	36.40	36.60	42.66	42.00	39.67	25.....	36.17	37.59	43.75	40.30	39.70
11.....	36.48	36.61	43.19	41.98	39.69	26.....	36.27	38.62	43.80	40.34	.....
12.....	36.56	36.62	43.58	41.92	39.71	27.....	36.24	38.54	43.80	40.10	.....
13.....	36.61	36.59	43.91	41.63	39.66	28.....	36.47	39.59	43.87	39.85	.....
14.....	36.66	36.61	44.19	41.43	39.66	29.....	36.64	39.64	43.88	39.52	.....
15.....	36.74	36.62	44.30	41.20	39.71	30.....	36.16	39.90	43.88	39.56	39.74
						31.....	36.62	.....	43.70	39.46	.....

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1911				1911			
1.....	42.64	41.53	43.23	16.....	44.96	42.25	44.60
2.....	42.74	41.09	43.46	17.....	44.99	42.04	44.80
3.....	42.78	40.67	43.41	18.....	44.97	42.80	44.86
4.....	42.63	40.22	43.41	19.....	44.95	41.65	44.93
5.....	42.76	40.24	43.38	20.....	44.90	41.35	44.96
6.....	42.61	40.35	43.50	21.....	44.96	41.24	45.03
7.....	42.78	40.63	43.63	22.....	44.85	41.11	44.95
8.....	42.74	41.14	43.82	23.....	44.82	41.24	44.78
9.....	42.90	41.83	44.00	24.....	44.93	41.62	44.73
10.....	43.04	42.34	44.17	25.....	44.70	41.93	44.76
11.....	43.26	42.79	44.36	26.....	44.45	42.13	44.74
12.....	43.75	43.04	44.56	27.....	44.05	42.39	44.78
13.....	44.32	42.93	44.61	28.....	43.52	42.60	44.77
14.....	44.82	42.77	44.58	29.....	43.07	42.80	44.73
15.....	45.00	42.52	44.65	30.....	42.67	42.96	44.69
				31.....	42.10	43.10	.....

Daily gage height, in feet, of Lake Walcott near Minidoka, Idaho, for the years ending Sept. 30, 1909–1917—Continued.

Day.	Oct.	Nov.	May.	June.	July.	Aug.	Sept.
1911–12.							
1	44.69	41.01	.....	42.38	42.75	44.91	45.07
2	44.69	41.05	.....	42.50	42.81	44.86	45.06
3	44.74	41.06	.....	42.67	42.71	44.96	45.09
4	44.74	41.08	.....	42.73	42.65	45.42	45.16
5	44.74	41.08	.....	42.76	42.60	45.77	45.17
6	44.87	41.10	.....	42.88	42.57	45.63	45.20
7	44.77	41.15	.....	42.89	42.58	45.11	45.17
8	44.62	41.15	.....	42.86	42.64	44.85	45.22
9	44.51	41.15	.....	42.89	42.85	45.13	45.18
10	44.31	41.15	.....	42.96	43.04	45.21	45.28
11	44.19	41.04	.....	43.04	43.45	45.25	45.26
12	44.03	41.16	.....	43.14	44.04	45.15	45.27
13	43.86	41.09	.....	43.19	44.60	44.97	45.28
14	43.06	41.03	.....	43.16	44.76	44.70	45.27
15	42.33	41.08	.....	43.19	44.82	44.50	45.14
16	42.02	41.08	.....	43.21	44.85	44.27	45.15
17	41.24	41.23	.....	43.30	44.84	44.14	44.78
18	41.16	41.25	.....	43.35	44.74	43.77	44.55
19	41.08	41.27	.....	43.29	44.62	43.59	.....
20	41.00	41.23	.....	43.05	44.62	43.60	.....
21	40.95	41.21	.....	42.67	44.72	43.78	43.80
22	40.90	41.21	.....	42.45	44.83	44.29	43.64
23	40.93	41.22	.....	42.37	45.29	44.92	43.50
24	40.94	41.24	.....	42.21	45.35	45.29	43.40
25	40.92	41.23	.....	42.33	45.29	45.33	43.12
26	40.93	41.21	42.30	42.45	45.26	45.28	42.81
27	40.80	41.22	42.10	42.50	45.12	45.14	42.69
28	40.91	.....	42.21	42.75	44.98	45.17	42.42
29	40.90	.....	42.34	42.79	44.81	45.21	42.10
30	40.92	.....	42.30	42.80	44.75	45.23	41.80
31	41.01	.....	42.42	.....	44.82	45.15	.....

Day.	Oct.	Nov.	Dec.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.									
1	41.60	37.50	37.40	41.83	42.85	44.20	45.50	44.35	42.84
2	41.61	37.30	38.00	41.98	43.08	43.95	45.15	44.50	43.20
3	41.48	37.25	38.60	42.10	.....	43.78	45.20	45.25	43.38
4	41.08	37.24	39.30	42.21	.....	43.68	45.15	45.35	43.96
5	40.84	37.22	40.35	42.30	42.81	43.58	45.15	45.25	44.35
6	40.10	37.23	.....	42.15	42.60	43.50	45.15	45.15	44.86
7	39.81	37.20	41.20	42.11	42.46	43.60	45.12	44.90	45.25
8	39.92	37.18	41.40	42.08	42.40	43.75	45.00	44.91	45.00
9	39.85	37.05	41.50	42.05	42.45	43.80	44.90	44.79	44.75
10	39.78	36.95	41.55	42.05	.....	43.80	44.85	44.73	44.90
11	39 60	36.80	41.60	42.02	.....	43.85	45.25	44.51	44.94
12	39.38	36.70	41.65	42.02	.....	43.85	45.35	44.34	45.00
13	39.02	36.65	41.70	41.95	42.95	43.80	44.90	44.10	45.01
14	38.83	36.55	41.80	42.00	43.09	43.78	44.98	43.77	44.91
15	38.50	36.70	41.85	42.00	43.04	43.80	44.60	43.57	45.00
16	38.32	36.68	41.85	.....	42.92	43.70	45.08	43.27	45.02
17	38.00	36.85	41.85	42.26	.....	43.50	45.24	42.96	45.03
18	37.90	36.90	41.85	42.38	42.75	43.40	45.18	42.60	44.86
19	37.70	36.85	41.85	42.33	42.60	43.25	45.03	42.36	45.10
20	37.50	36.75	41.80	42.48	42.90	43.20	44.77	42.29	45.10
21	37.70	36.90	41.63	42.58	43.70	43.15	44.36	42.20	45.01
22	37.65	36.85	41.61	.....	44.00	43.00	44.15	42.21	44.70
23	37.70	36.85	41.63	.....	44.05	42.90	43.98	42.10	44.85
24	37.60	.....	.....	.....	43.95	42.80	43.76	42.08	44.79
25	37.50	.....	.....	42.76	43.85	42.65	43.69	42.08	44.90
26	37.45	36.70	.....	42.70	43.95	42.95	44.00	42.08	44.76
27	37.40	36.75	.....	.....	44.18	43.80	44.83	42.12	44.00
28	37.30	36.70	.....	42.47	44.33	44.30	45.49	42.24	43.35
29	37.42	36.75	.....	42.40	44.40	44.50	45.25	42.30	43.15
30	.....	36.90	.....	42.65	44.18	45.20	44.90	42.44	42.62
31	.....	.....	.....	.....	44.18	.....	44.55	.....	.....

Daily gage height, in feet, of Lake Walcott near Minidoka, Idaho, for the years ending Sept. 30, 1909–1917—Continued.

Day.	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.											
1	41.80	35.00	36.65	41.20	41.33	41.30	42.29	43.33	45.15	43.76	41.90
2	41.47	.....	36.70	41.10	41.34	41.30	42.18	43.23	45.07	43.97	42.24
3	41.15	.....	36.65	41.10	41.37	41.29	42.13	43.46	45.09	44.18	42.79
4	40.65	.....	36.70	41.06	41.37	41.29	41.95	43.57	45.43	44.30	42.85
5	39.65	.....	36.90	41.05	41.37	41.30	42.37	43.84	45.57	44.44	43.04
6	39.20	.....	37.10	41.04	41.37	41.34	42.46	44.00	45.55	44.59	43.07
7	38.20	.....	37.05	40.98	41.36	41.35	42.51	44.01	45.50	44.62	43.19
8	37.60	.....	37.00	40.95	41.37	41.38	42.33	44.10	45.54	44.81	43.20
9	36.60	.....	37.15	40.96	41.33	41.46	42.23	43.98	45.55	44.88	43.40
10	36.10	.....	38.00	40.97	41.33	41.54	42.08	43.97	45.49	44.72	43.37
11	35.50	.....	38.30	40.96	41.28	41.54	42.26	43.84	45.62	44.60	43.53
12	35.35	.....	39.40	41.03	41.28	41.58	43.24	43.44	45.66	44.37	43.41
13	35.25	.....	39.60	41.09	41.24	41.58	43.93	43.03	45.56	44.10	43.65
14	35.40	.....	39.85	41.12	41.26	41.61	44.00	42.88	45.51	43.80	43.85
15	35.30	.....	40.20	41.17	41.27	41.60	43.90	43.15	45.54	43.53	43.91
16	35.10	.....	40.20	41.17	41.27	41.60	43.71	43.21	45.49	43.23	44.31
17	35.10	.....	40.80	41.12	41.35	41.76	43.64	43.14	45.50	42.76	44.75
18	35.15	.....	40.28	41.14	41.37	41.95	43.71	42.98	45.50	42.66	45.12
19	35.35	.....	41.29	41.20	41.39	42.00	43.93	42.76	45.45	42.55	44.84
20	35.30	.....	41.28	41.27	41.37	42.00	44.11	43.07	45.32	42.42	45.03
21	35.30	.....	41.29	41.42	41.36	41.93	44.34	43.21	45.22	42.28	44.65
22	35.10	.....	41.30	41.47	41.35	42.00	44.25	44.55	44.68	42.09	44.82
23	35.10	.....	41.37	41.43	41.35	42.19	44.34	44.83	44.68	41.91	45.11
24	35.10	.....	41.33	41.40	41.36	42.25	44.34	44.80	44.40	41.70	44.91
25	35.10	.....	41.31	41.40	41.33	42.35	44.50	44.80	44.09	41.07	44.57
26	35.20	.....	41.45	41.41	41.33	42.50	44.57	44.50	43.79	41.00	44.70
27	35.30	.....	41.46	41.38	41.31	42.45	44.23	44.70	43.69	41.00	44.72
28	35.10	.....	41.42	41.32	41.30	42.50	43.93	44.94	43.56	41.99	44.74
29	35.10	.....	41.32	.....	41.32	42.43	43.75	45.07	43.55	41.00	44.73
30	35.10	.....	41.24	.....	41.31	42.45	43.49	45.14	43.57	41.29	44.81
31	35.05	.....	41.23	.....	41.28	.....	43.48	.....	43.64	41.40	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	44.74	43.25	.....	41.83	41.85	41.55	41.55	41.72	44.69	41.69	41.73	41.53
2	44.45	42.95	.....	41.67	41.75	41.17	41.54	41.95	44.83	41.91	41.58	41.33
3	44.17	43.25	.....	41.62	41.89	41.35	41.45	42.00	45.05	42.10	41.40	41.18
4	43.97	43.35	.....	41.62	41.87	41.35	41.48	42.21	45.19	42.35	41.32	41.06
5	43.82	43.25	.....	41.35	41.90	41.42	41.48	42.30	45.30	42.47	41.29	41.00
6	43.82	43.07	.....	41.60	41.88	41.30	41.47	42.29	45.04	42.80	41.35	40.85
7	43.83	43.36	.....	41.67	41.85	41.40	41.57	42.17	45.11	43.17	41.18	40.65
8	43.88	43.52	.....	41.65	41.85	41.42	41.62	42.30	45.12	43.55	41.03	40.65
9	43.89	43.45	.....	41.69	41.70	41.45	41.60	42.27	44.90	43.94	41.07	40.50
10	43.76	44.07	.....	41.63	41.60	41.75	41.61	42.23	44.90	44.37	41.21	40.70
11	43.93	43.97	.....	41.41	41.61	41.70	41.56	42.24	45.00	44.72	41.36	40.70
12	44.02	43.87	.....	41.76	41.50	41.60	41.53	42.27	45.34	45.16	41.42	40.80
13	44.25	44.81	.....	41.79	41.62	41.56	41.50	42.32	45.38	45.42	41.65	40.70
14	44.15	45.17	.....	41.47	41.70	41.51	41.54	42.40	45.30	45.62	41.80	40.65
15	43.83	.....	.....	41.70	41.50	41.55	41.47	42.39	45.58	45.77	41.87	40.60
16	43.18	.....	.....	41.80	41.21	41.55	41.49	42.67	45.70	45.71	41.93	40.50
17	43.74	.....	.....	41.89	41.40	41.56	41.49	42.91	45.48	45.34	41.93	40.35
18	43.45	.....	.....	41.86	41.55	41.55	41.55	43.21	45.42	45.16	42.08	40.25
19	43.32	.....	.....	41.89	41.62	41.55	41.62	43.48	45.25	45.00	42.09	40.25
20	43.30	.....	.....	41.83	41.25	41.61	41.58	43.66	44.83	44.86	42.00	40.20
21	42.95	.....	.....	41.78	41.10	41.55	41.52	43.79	44.32	44.60	41.90	40.20
22	42.74	.....	41.44	41.65	41.05	41.54	41.58	44.09	43.83	44.30	41.80	40.20
23	42.68	.....	41.51	41.85	41.40	41.52	41.73	44.25	43.35	43.98	41.74	40.25
24	42.62	.....	41.56	41.87	41.58	41.54	41.69	44.44	42.92	43.65	41.66	40.15
25	42.61	.....	41.58	41.95	41.25	41.58	41.65	44.45	42.19	43.32	41.63	40.15
26	42.62	.....	41.59	41.90	41.15	41.58	41.74	44.60	41.74	43.05	41.66	40.00
27	42.71	.....	41.62	41.84	41.55	41.51	41.69	44.69	41.27	42.80	41.71	39.95
28	42.70	.....	41.69	41.80	41.25	41.57	41.61	44.75	41.00	42.55	41.75	40.30
29	42.66	.....	41.73	41.85	.....	41.46	41.59	44.81	41.05	42.25	41.77	40.65
30	42.66	.....	41.77	41.81	.....	41.62	41.62	44.85	41.35	42.04	41.75	41.10
31	43.20	.....	41.79	41.80	.....	41.55	.....	44.79	.....	41.90	41.66	.....

Daily gage height, in feet, of Lake Walcott near Minidoka, Idaho, for the years ending Sept. 30, 1909–1917—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1915–16.												
1	40.07	41.19	41.05	.....	40.93	41.09	41.46	42.42	41.68	43.03	44.08	45.15
2	40.85	41.20	41.00	.....	40.90	41.04	41.40	42.30	41.80	43.10	44.08	45.15
3	40.60	41.17	40.95	.....	.....	41.00	41.42	42.27	41.89	43.10	44.11	45.08
4	40.50	41.16	40.95	40.86	.....	41.03	41.44	42.37	41.87	43.07	44.31	45.14
5	40.40	41.20	40.95	40.86	40.90	41.05	41.38	42.04	41.55	43.15	44.41	45.22
6	40.60	41.24	40.95	40.80	40.95	41.07	41.32	42.04	41.85	43.38	44.23	45.34
7	40.95	41.10	40.95	40.90	41.00	41.12	41.40	42.28	41.85	43.40	44.00	45.45
8	41.20	41.25	40.80	40.97	41.00	41.12	41.40	42.45	41.97	43.27	43.68	45.29
9	41.30	41.20	41.00	41.00	41.03	41.10	41.38	42.55	41.95	43.26	43.35	44.75
10	41.26	41.16	41.08	41.00	41.03	41.12	41.40	43.22	41.73	43.37	43.10	44.60
11	41.25	41.15	41.12	41.00	41.18	41.15	41.40	43.30	41.90	43.73	43.01	44.61
12	41.21	41.16	41.10	41.00	41.26	41.18	41.41	43.23	41.97	44.30	43.00	44.84
13	41.20	41.16	41.10	41.00	41.19	41.09	41.58	43.41	42.07	44.57	43.04	45.10
14	41.20	41.17	41.00	41.00	41.14	41.24	41.70	43.60	42.09	44.95	43.21	45.19
15	41.22	41.17	40.97	41.00	41.08	41.20	41.56	43.46	42.38	45.11	43.40	45.13
16	41.19	41.10	41.00	41.00	41.07	41.20	41.71	43.19	42.76	45.06	43.52	44.99
17	41.17	41.15	41.00	.....	41.05	41.22	41.63	42.99	42.89	44.90	43.38	44.90
18	41.17	41.10	40.90	.....	41.04	41.21	41.74	42.70	43.04	44.97	43.47	44.86
19	41.13	41.08	40.94	.....	41.06	41.20	41.65	42.55	43.28	45.12	43.77	44.85
20	41.17	41.05	40.90	.....	41.06	41.24	41.75	42.25	43.47	45.00	44.14	44.86
21	41.18	41.10	40.85	.....	41.07	41.26	41.74	42.20	43.66	44.98	44.59	44.86
22	41.15	41.05	40.80	.....	41.07	41.28	41.69	42.15	43.82	45.08	45.02	44.85
23	41.18	41.09	40.90	.....	41.06	41.40	41.67	42.55	44.04	45.01	45.27	44.75
24	41.26	41.09	40.85	40.90	41.08	41.40	41.61	42.67	43.98	44.92	45.27	44.67
25	41.20	41.10	41.05	41.00	41.09	41.50	41.61	42.82	43.97	45.14	45.27	44.65
26	41.15	41.16	41.08	41.00	41.08	41.50	41.63	42.71	43.80	44.96	45.19	44.46
27	41.15	41.10	41.10	41.00	41.10	41.48	41.64	42.40	43.57	44.72	45.05	44.46
28	41.17	41.11	41.01	41.00	41.12	41.41	41.78	41.95	43.20	44.49	44.98	44.50
29	41.19	41.01	41.00	40.90	41.10	41.45	41.98	41.85	42.80	44.32	44.80	44.49
30	41.17	41.00	.....	40.90	.....	41.44	42.20	41.78	42.95	44.31	45.06	44.53
31	.....	.....	.....	40.90	.....	41.46	.....	41.78	.....	44.24	45.11	.....
1916–17.												
1	44.55	41.37	41.22	40.90	40.94	41.07	41.20	41.65	43.11	44.92	45.66	45.58
2	44.54	41.33	41.20	40.90	40.95	41.02	41.23	41.56	43.10	44.97	45.60	45.66
3	44.50	41.32	41.23	40.90	40.95	41.03	41.28	41.60	43.07	45.05	45.27	45.75
4	44.64	41.31	41.21	40.98	40.97	40.98	41.27	41.55	42.90	44.93	45.06	45.80
5	44.81	41.34	41.20	41.00	40.97	40.98	41.27	41.50	42.84	44.80	45.84	45.70
6	44.88	41.34	41.02	41.06	40.95	40.98	41.35	41.50	42.72	44.89	45.60	45.65
7	45.06	41.30	41.22	41.09	40.94	40.98	41.34	41.50	42.55	44.90	45.60	45.57
8	45.10	41.28	41.10	41.11	40.95	40.99	41.35	41.48	42.47	45.02	45.70	45.46
9	44.45	41.30	41.09	41.08	40.97	41.00	41.43	41.50	42.30	45.11	45.79	45.54
10	43.58	41.25	41.05	41.07	40.97	41.00	41.43	41.60	42.25	45.03	45.79	45.55
11	42.40	41.35	41.02	41.05	41.00	41.00	41.44	41.72	42.30	44.97	45.00	45.44
12	41.88	41.25	41.00	41.01	41.00	41.00	41.37	41.83	42.40	44.97	45.05	45.53
13	41.38	41.17	41.00	41.03	41.00	41.00	41.45	41.96	42.68	44.93	45.09	45.16
14	41.51	41.09	41.00	41.02	41.00	41.00	41.42	42.12	42.69	45.04	45.15	45.20
15	41.47	41.05	41.00	41.00	41.00	41.00	41.44	42.22	42.48	45.00	45.26	45.10
16	41.46	41.07	40.98	.....	41.00	41.00	41.50	42.40	42.23	44.90	45.45	45.00
17	41.40	41.05	40.97	.....	41.00	41.00	41.44	42.62	42.00	44.96	45.63	44.94
18	41.35	41.10	40.97	.....	41.00	41.00	41.35	42.80	42.15	44.95	45.73	44.96
19	41.34	41.18	40.97	.....	41.00	41.00	41.56	42.89	42.45	44.97	45.72	44.95
20	41.34	41.21	41.00	.....	41.00	41.00	41.30	42.78	42.67	45.24	45.70	44.98
21	41.33	41.28	41.05	.....	41.00	41.00	41.26	42.90	43.34	45.82	45.72	44.86
22	41.33	41.25	41.03	.....	41.00	41.00	41.33	42.88	43.60	45.80	45.70	44.70
23	41.36	41.22	41.04	.....	41.00	41.00	41.32	42.93	43.82	45.70	45.70	44.54
24	41.22	41.25	41.04	.....	41.00	41.00	41.37	42.95	43.80	45.60	45.67	44.40
25	41.34	41.23	41.04	.....	41.02	41.00	41.40	42.95	43.88	45.47	45.58	44.20
26	41.23	41.20	41.06	.....	41.20	41.07	41.45	42.96	43.80	45.67	45.60	44.14
27	41.25	41.25	41.00	.....	41.16	41.02	41.51	43.02	44.35	45.60	45.63	43.50
28	41.36	41.20	40.98	.....	41.05	41.04	41.60	43.04	44.69	45.63	45.57	43.16
29	41.40	41.20	40.97	.....	.....	41.19	41.60	42.94	44.77	45.63	45.54	42.86
30	41.38	41.22	40.97	.....	.....	41.19	41.68	42.96	44.87	45.43	45.45	43.05
31	41.34	.....	40.90	40.95	.....	41.17	.....	43.05	.....	45.65	45.48	.....

NOTE.—Add 4.200 feet to gage heights to reduce to sea-level datum.

SNAKE RIVER NEAR MINIDOKA, IDAHO.

LOCATION.—In sec. 2, T. 9 S., R. 25 E., 100 yards below Howell's ferry, 1 mile below Reclamation Service dam, 6 miles southeast of Minidoka post office, Minidoka County, nearest railroad point, and 6 miles above Montgomery's ferry station, which was discontinued December 31, 1910. Raft River enters between station at Neeley and that near Minidoka.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 21, 1910, to September 30, 1917.

GAGE.—Friez water-stage recorder on right bank directly across river from and at same datum as staff gage used prior to August 28, 1911; also Stevens long-distance recorder installed April 1, 1915. Gage read by employees of United States Reclamation Service.

DISCHARGE MEASUREMENTS.—Made from cable about 50 feet downstream from gage.

CHANNEL AND CONTROL.—Bed composed of coarse gravel. One channel at all stages. Control shifts slightly but infrequently.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 13.72 feet at 10.30 p. m. June 24 (discharge, 34,900 second-feet); minimum stage, 5.32 feet at 12.10 a. m. October 1 (discharge, 3,140 second-feet).

1910–1916: Maximum stage recorded, 14.18 feet from 4 to 5 p. m. June 8, 1914 (discharge, 36,400 second-feet); minimum stage, 4.05 feet from 11 a. m. to 3 p. m. October 13, 1914 (discharge, 960 second-feet).

ICE.—Some shore ice is formed in vicinity of gage and river closes farther downstream; stage-discharge relation affected at times.

DIVERSIONS.—The North Side and South Side Minidoka canals divert water between the Neeley and Minidoka stations. (See pp. 97–100.) The nearest diversions below the station are the Twin Falls North Side and South Side canals, at Milner. (See pp. 100–104.)

REGULATION.—Flow partly regulated by storage above Minidoka dam (storage capacity, 54,000 acre-feet).

ACCURACY.—Stage-discharge relation permanent during year except as affected by ice. Rating curve well defined. Operation of water-stage recorder satisfactory except during very short periods, when Stevens long-distance recorder records were used. Discharge ascertained by applying to rating table mean daily gage height obtained by inspecting gage-height graph except as noted in footnote to daily-discharge table. Daily-discharge record from December 1 to February 28 too unreliable to warrant publication, on account of insufficient data for ice study. Monthly discharge as published for this period is believed to be fairly accurate. Records October 1 to November 30 and March 1 to September 30, good.

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

Discharge measurements of Snake River near Minidoka, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Feb. 14	T. R. Newell	[a] 6.80	5,890	July 24	G. C. Baldwin	8.85	12,400
15	do	[a] 6.84	5,920	26	do	9.32	15,000
June 7	Schlapkohl and Anderson [b]	11.38	23,800	26	do	8.12	9,850
19	T. R. Newell	11.22	23,500	Aug. 4	F. Schlapkohl	6.75	6,350
				Sept. 15	G. C. Baldwin	6.37	5,370

[a] Stage-discharge relation affected by ice.
[b] Employees of United States Reclamation Service.

Daily discharge, in second-feet, of Snake River near Minidoka, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	4,310	7,750	6,450			6,450	7,480	11,200	31,500	29,600	6,320	5,950
2	4,640	7,480	6,580			6,200	8,020	10,800	31,900	29,100	6,320	5,830
3	4,760	7,220	6,700			5,950	8,020	10,500	31,000	30,100	6,960	6,200
4	4,980	7,480	7,220			5,700	7,750	10,100	29,600	30,500	6,200	6,960
5	6,080	7,480	7,220			5,700	7,750	9,800	27,700	26,300	6,200	6,960
6	6,080	8,020	7,220			5,580	8,300	9,480	26,300	24,000	6,200	6,450
7	6,450	7,480			5,500	5,340	8,300	9,480	24,000	24,000	6,200	6,200
8	9,980	7,480				5,340	8,020	9,170	22,600	24,500	6,320	5,580
9	13,500	7,220				5,580	8,580	9,480	20,800	25,800	6,580	5,220
10	13,100	7,750				5,700	8,870	10,500	20,800	25,800	6,580	5,340
11	12,700	7,750	5,850			5,700	8,870	11,600	21,200	24,500	6,200	5,100
12	11,000	6,960				5,700	8,870	12,700	23,500	23,500	6,200	5,220
13	9,220	6,320				5,700	9,170	14,300	25,800	22,600	6,200	5,460
14	7,480	5,950			5,890	5,700	8,870	15,900	25,400	21,700	6,200	5,340
15	8,020	6,080	5,700		5,920	5,830	9,170	16,800	22,600	19,900	6,080	5,340
16	8,020	5,700	5,700	5,250		5,700	9,170	19,900	19,900	17,200	6,080	5,460
17	8,020	5,700	5,830			5,580	8,580	22,600	17,700	15,500	6,200	5,460
18	8,020	6,080	5,830			5,460	8,580	25,400	19,400	14,300	6,830	5,580
19	8,020	6,450	6,080			5,580	8,300	26,800	22,600	11,600	6,830	5,460
20	7,750	6,960	6,200		5,800	5,580	8,020	26,800	24,900	10,500	6,830	5,950
21	7,750	7,220	6,450			5,830	7,750	26,800	28,200	15,100	6,960	6,450
22	8,020	6,960	6,450			5,830	7,750	27,200	31,500	16,400	6,830	6,320
23	8,300	6,960	6,320		5,830	5,830	7,750	28,200	33,400	15,500	6,700	6,200
24	7,750	6,830	6,320		5,830	6,080	8,020	28,600	34,300	13,900	6,580	6,450
25	8,020	6,580	6,580		6,830	6,450	8,300	29,100	33,400	10,800	5,950	6,580
26	7,480	6,450			7,220	6,450	9,170	29,600	26,800	11,200	5,700	8,300
27	7,480	6,960			6,830	6,200	10,100	30,100	25,800	9,480	5,830	9,800
28	7,750	6,580	5,350		6,580	6,320	10,500	30,100	26,800	9,480	5,950	9,480
29	8,020	6,700			.....	7,220	10,800	30,100	27,700	7,220	5,950	7,750
30	7,750	6,450			.....	7,750	11,600	30,500	28,600	6,580	5,950	4,980
31	7,750	.....			.....	7,480	.....	31,000	.....	6,580	5,950	.....

NOTE.—Discharge interpolated because of lack of gage-height records, Oct. 8, 10, 12–13. Discharge estimated on account of ice, from comparison with Neeley station, Dec. 7–14, 26–31, Jan. 1–31, Feb. 1–13, and 16–22.

Monthly discharge of Snake River near Minidoka, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			
	Maximum.	Minimum.	Mean.	Run-off in acre-feet.
October	13,500	4,310	8,010	493,000
November	8,020	5,700	6,900	411,000
December	.....	.....	6,060	373,000
January	.....	.....	5,250	323,000
February	7,220	.....	5,820	323,000
March	7,750	5,340	5,980	368,000
April	11,600	7,480	8,680	516,000
May	31,000	9,170	19,800	1,220,000
June	34,300	17,700	26,200	1,560,000
July	30,500	6,580	18,500	1,140,000
August	6,960	5,700	6,320	389,000
September	9,800	4,980	6,250	372,000
The year	34,300	4,310	10,300	7,490,000

LAKE MILNER AT MILNER, IDAHO.

LOCATION.—In sec. 29, T. 10 S., R. 21 E., in backwater of Twin Falls companies' dam at Milner, Cassia County.

RECORDS AVAILABLE.—April 10, 1911, to September 30, 1917.

GAGE.—Staff gage at dam. A Lietz and a Friez water-stage recorder have also been used for short periods. All gages have same datum.

ACCURACY.—Gage heights occasionally seriously affected by wind.

COOPERATION.—Gage-height record furnished by the Twin Falls North Side Land & Water Co. and the Twin Falls Canal Co.

Daily gage height, in feet, of Lake Milner at Milner, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	9.14	8.08	8.55	7.20	8.30	9.00	9.50	8.74	9.80	10.30	10.28	10.54
2	9.70	8.65	8.44	7.00	8.10	9.50	9.80	8.60	9.80	10.30	10.28	10.54
3	9.92	8.75	8.40	7.00	8.10	9.40	9.50	8.40	9.80	10.36	10.24	10.64
4	9.76	8.70	8.42	7.30	8.10	9.10	9.50	7.60	9.90	10.28	10.40	10.59
5	9.48	8.60	8.90	7.70	8.10	8.90	9.40	7.60	9.74	10.20	10.42	10.60
6	10.00	8.65	8.45	7.78	8.44	8.80	9.50	7.40	9.90	10.18	10.42	10.40
7	10.10	8.60	8.90	8.10	8.30	8.80	9.50	7.35	9.90	10.34	10.42	10.62
8	10.10	8.70	8.50	8.20	8.20	8.60	9.60	7.30	9.85	10.30	10.50	10.44
9	9.30	8.70	8.40	8.20	8.20	8.70	9.60	7.30	10.00	10.46	10.52	10.44
10	9.40	8.20	8.20	8.20	8.30	8.60	9.40	7.60	9.80	10.40	10.44	10.44
11	9.74	8.90	8.30	8.00	8.20	8.70	9.40	8.60	9.90	10.28	10.62	10.50
12	9.24	9.00	8.10	7.80	7.90	8.75	9.40	8.30	10.00	10.30	10.48	10.50
13	9.05	8.68	8.10	7.70	7.80	8.80	9.60	8.90	10.15	10.30	10.50	10.15
14	8.46	8.35	8.50	7.40	7.70	8.80	9.64	9.30	9.94	10.30	10.48	10.44
15	10.10	7.90	8.20	7.20	7.60	8.70	8.90	9.40	10.00	10.34	10.48	10.54
16	10.15	7.70	7.95	7.00	7.50	8.80	9.80	9.80	9.98	10.30	10.54	10.44
17	10.00	7.40	7.60	7.00	7.55	9.20	9.30	9.80	10.00	10.30	10.50	10.42
18	9.85	7.40	7.60	6.90	7.55	9.40	9.20	9.90	10.00	10.30	10.58	10.45
19	10.30	7.40	7.60	6.65	7.60	9.40	8.70	10.00	10.20	10.20	10.44	10.45
20	10.14	7.68	7.70	6.50	7.40	9.30	8.70	9.76	10.20	10.24	10.50	10.53
21	10.35	8.28	7.75	7.00	7.40	9.30	8.70	9.70	10.20	10.40	10.66	10.68
22	10.16	8.48	8.30	7.75	7.40	9.35	8.70	9.70	10.14	10.40	10.45	10.36
23	10.34	8.50	8.70	8.20	7.40	9.50	8.70	10.00	10.20	10.44	10.50	10.08
24	10.30	8.60	8.40	8.20	7.70	9.20	8.70	9.74	10.14	10.38	10.48	9.75
25	9.80	8.46	8.20	8.20	9.40	9.20	8.80	9.70	10.20	10.20	10.60	9.80
26	9.74	8.40	7.76	8.40	10.00	9.50	8.70	9.76	10.10	10.28	10.30	10.50
27	9.10	8.40	7.90	8.20	9.96	9.30	9.10	9.90	10.20	10.30	10.46	9.76
28	8.26	8.44	7.90	7.90	9.60	9.30	9.00	10.00	10.26	10.50	10.54	8.20
29	8.30	8.46	7.70	7.70	.....	9.50	9.00	9.90	10.30	10.40	10.54	7.84
30	8.20	8.58	7.75	8.00	.....	9.70	8.70	9.90	10.40	10.30	10.60	7.70
31	8.16	.....	7.30	8.30	.....	9.60	.....	9.80	.....	10.20	10.56	.....

SNAKE RIVER AT MILNER, IDAHO.

LOCATION.—In sec. 29, T. 10 S., R. 21 E., 300 yards below Milner dam, at Milner, Twin Falls County. No tributaries enter Snake River between Minidoka station and Milner, and no large amount of water between Milner and station near Twin Falls except seepage and spring water.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 10, 1909, to September 30, 1917.

GAGE.—Staff gage in three sections; installed October 20, 1909; high and low sections vertical, middle section inclined; read by F. W. Deming October 1 to July 14 and September 11 to 30; by L. H. Perrine July 15 to September 10. An auxiliary gage in two sections is about 100 yards below main gage, to which it bears no definite relation; low-water section, an inclined staff on right bank; high-water section, an inclined staff on left bank; datum of auxiliary gage lowered 1 foot July 30 and 1 foot September 7, 1916. Gage used prior to October 20, 1909, was a vertical staff on the right bank at about the same datum as the present gage.

DISCHARGE MEASUREMENTS.—Made from a cable at gage, from foot planks at the auxiliary low-water gage, or by wading. Measurements may also be made from the suspension highway bridge a quarter of a mile below the main gage, but conditions for making measurements at this bridge are poor.

CHANNEL AND CONTROL.—Bed of stream at both the main gage and the auxiliary gage consists of lava rock, which also forms the control for the low-water gage. Control for main gage is an old crib-and-rock diversion dam and is practically permanent for medium and high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 17.5 feet June 25 (discharge, 28,100 second-feet); minimum stage, 1.35 feet at 8 a. m. October 1 (discharge, 18 second-feet).

1909–1917: Maximum stage recorded, 20.1 feet June 12, 1909 (discharge, 44,400 second-feet); minimum stage recorded, −1.08 feet (old datum on auxiliary gage) August 17–18, 1915 (discharge, 9 second-feet).

ICE.—Stage-discharge relation not seriously affected by ice; open-water rating curve assumed applicable. Observations discontinued during part of winter because gages are inaccessible to observer.

DIVERSIONS.—The Twin Falls canals divert water at the Milner dam, just above the station. During part of the season practically the entire flow of the river is taken by these canals.

REGULATION.—Flow past the station during the irrigation season is regulated at Milner dam.

ACCURACY.—Stage-discharge relation changed during high-water period. Rating curve fairly well defined before change; not well defined after change. Gage read to hundredths once daily while water is being released from storage, and to half-tenths once daily during rest of year. Daily discharge ascertained by applying mean daily gage height to rating table and by shifting-control method. Records only fair because of infrequency of gage readings and discharge measurements and sudden changes in flow.

COOPERATION.—Gage-height record furnished by the Twin Falls Canal Co., and some discharge measurements were made by an assistant of the State engineer.

Discharge measurements of Snake River at Milner, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 18	C. G. Paulsen	[a] 10.72	3,340	Aug. 9	Baldwin and Perrine	1.51	24.0
Feb. 17	T. R. Newell	[b] 11.10	3,820	15	L. H. Perrine	3.06	104
Aug. 7	L. H. Perrine [c]	1.40	18.0	18	....do	3.06	102
9	Baldwin and Perrine	1.53	24.2	21	....do	6.60	636

[a] Auxiliary gage read 12.25 feet.
[b] Auxiliary gage read 12.50 feet.
[c] Employee of State engineer.

Daily discharge, in second-feet, of Snake River at Milner, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	18	4,130	3,660	3,570	.....	.....	5,910	10,800	26,700	22,900	341	84
2	24	4,570	3,660	3,480	.....	.....	8,660	10,400	26,300	22,700	266	397
3	61	5,010	3,660	3,480	.....	.....	7,520	9,690	26,300	22,900	118	85
4	52	4,850	3,660	3,660	.....	.....	7,520	9,000	26,700	23,100	170	985
5	52	4,700	4,030	3,660	.....	.....	7,370	9,000	25,600	22,200	54	1,890
6		4,540	3,660	.....	.....	.....	7,060	8,330	22,200	19,300	27	1,880
7		4,390	4,030	.....	.....	.....	7,520	8,330	19,700	18,100	22	839
8		4,230	3,660	.....	.....	.....	7,840	8,500	17,800	17,600	21	1,110
9	6,200	4,230	3,660	.....	.....	.....	7,840	8,500	16,000	18,900	22	105
10		3,840	3,570	.....	.....	.....	9,340	9,000	15,200	19,700	21	103
11		4,780	3,570	.....	.....	.....	9,170	9,000	15,600	18,500	24	110
12	9,340	5,010	3,660	.....	.....	.....	9,340	8,660	16,000	17,600	21	122
13	8,500	3,750	3,660	.....	.....	.....	9,690	9,170	20,500	16,400	21	80
14	430	3,630	3,660	.....	.....	.....	9,860	14,200	20,300	16,000	22	103
15	571	3,520	4,230	.....	.....	.....	6,910	14,000	18,100	15,000	23	108
16		3,400	4,340	.....	.....	.....	10,400	16,800	15,600	14,800	23	106
17		3,150	4,230	.....	3,840	.....	9,690	19,500	15,000	10,100	2,010	105
18	3,500	3,150	4,130	.....	.....	.....	9,170	22,500	17,000	9,940	52	103
19		3,150	4,030	.....	.....	.....	8,000	22,800	18,300	6,970	2,160	103
20		3,570	4,030	.....	.....	.....	8,000	23,200	19,300	5,300	91	106
21	4,550	3,840	4,130	.....	.....	.....	7,680	23,500	20,500	4,380	582	619
22	4,440	4,030	4,440	.....	.....	.....	7,520	21,800	22,700	5,830	535	1,010
23	4,660	3,940	4,550	.....	.....	.....	7,680	23,600	25,800	10,300	1,040	982
24	4,890	4,030	4,230	.....	.....	.....	7,370	24,500	27,200	8,900	1,030	952
25	3,840	3,940	4,130	.....	.....	.....	8,000	24,600	28,100	7,280	149	5,920
26	3,570	3,840	4,030	.....	.....	.....	7,370	25,100	19,300	4,590	653	8,240
27	3,320	3,750	4,030	.....	.....	.....	9,000	25,400	19,700	3,700	74	6,670
28	3,840	3,660	4,030	.....	.....	.....	9,690	25,600	20,500	4,380	71	6,970
29	4,130	3,660	3,920	.....	.....	.....	9,690	26,100	20,700	3,270	75	6,670
30	3,840	3,660	3,800	.....	.....	3,840	10,900	26,200	21,000	2,560	78	3,700
31	3,840	.....	3,680	.....	.....	3,570	.....	26,700	.....	414	61	.....

NOTE.—Discharge interpolated or estimated because of lack of gage heights, Nov. 2, 4-7, 14-15, Dec. 29-31, May 16, 20, June 8, 17, and Sept. 30. Discharge estimated from records at other stations: Oct. 6-11 and 16-20. No record obtained Jan. 6 to Feb. 16 and Feb. 18 to Mar. 29.

Monthly discharge of Snake River at Milner, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	9,340	18	3,830	236,000
November	5,010	3,150	4,000	238,000
December	4,550	3,570	3,930	242,000
January 1-5	3,660	3,480	3,570	35,400
March 30-31	3,840	3,570	3,700	14,700
April	10,900	5,910	8,390	499,000
May	26,700	8,500	17,000	1,050,000
June	28,100	15,000	20,800	1,240,000
July	23,100	414	12,700	781,000
August	2,160	21	318	19,600
September	8,240	80	1,680	100,000

NOTE.—See footnote to daily-discharge table.

SNAKE RIVER NEAR TWIN FALLS, IDAHO.

LOCATION.—In sec. 33, T. 9 S., R. 17 E., at Perrine's bridge, on I. B. Perrine's Blue Lakes ranch, 4 miles north of Twin Falls, Twin Falls County, and 4 miles below Shoshone Falls. Outlet of Blue Lakes enters Snake River 200 feet below gage, and Salmon Falls Creek enters 18 miles below.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—September 29, 1911, to June 30, 1917, when station was discontinued.

GAGE.—Inclined staff on left bank about 100 feet above bridge; read by T. C. Shawver.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed of river at measuring section very rough. Banks high; not subject to overflow. Control consists of lava boulders and solid rock; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 12.6 feet at 6.10 p. m. June 25 (discharge, 29,300 second-feet); minimum stage recorded, 2.5 feet October 1 and 2 (discharge, 720 second-feet).

1911–1917: Maximum stage recorded, 13.3 feet at 6 a. m. and 7 p. m. June 10, 1914 (discharge, 32,200 second-feet); minimum stage recorded, 2.05 feet June 27–30, July 1–4, 9–16, 18–20, 28–29, 31, and August 1–3, 6–7, 1915 (discharge, 468 second-feet).

ICE.—Stage-discharge relation not seriously affected by ice. Open-channel rating curve assumed applicable.

DIVERSIONS.—No water is diverted from the river between this station and that at Milner, except by small ranch ditches.

REGULATION.—Flow past the station is regulated directly by the diversions of the North Side and South Side canals at Milner, where practically the entire flow of the river is diverted during the last part of the irrigation season; flow at such times consists of inflow and seepage between this station and that at Milner.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined. Gage read to quarter-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records of monthly discharge excellent, though parts of the records of daily discharge may be somewhat in error as a result of diurnal fluctuations due to operation of gates at Milner dam.

COOPERATION.—Gage-height record furnished by T. C. Shawver.

The following discharge measurement was made by C. G. Paulsen:
November 17, 1916: Gage height, 5.66 feet; discharge, 5,700 second-feet.

Daily discharge, in second-feet, of Snake River near Twin Falls, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
1	720	6,270	6,530	5,040	5,040	7,320	8,720	13,000	27,700
2	720	6,790	6,530	5,040	5,280	6,270	8,160	12,400	27,700
3	755	6,790	6,530	5,040	5,280	6,270	9,900	11,100	27,300
4	1,690	6,270	6,530	5,280	5,040	6,270	8,720	9,600	27,300
5	2,220	6,270	5,760	5,520	5,040	6,020	8,160	10,200	25,000
6	2,520	6,270	7,060	5,520	4,820	6,020	8,440	9,600	23,400
7	2,670	6,790	5,520	6,020	5,280	6,020	9,020	9,300	21,500
8	5,040	6,790	6,790	6,270	5,520	5,760	9,020	9,300	18,900
9	11,100	6,790	6,530	6,020	5,520	5,760	8,720	9,300	17,100
10	11,400	6,530	6,530	6,020	5,520	5,760	10,200	8,720	15,700
11	12,700	7,060	6,270	6,530	5,760	5,760	10,200	9,900	16,100
12	10,800	6,790	6,270	6,270	5,760	5,520	9,600	10,200	17,100
13	9,900	6,530	5,520	6,270	5,760	5,280	10,200	12,100	20,400
14	5,520	6,530	6,020	6,270	5,520	5,280	10,200	14,400	21,500
15	3,940	6,020	6,530	5,760	5,760	5,520	9,020	15,700	19,300
16	5,760	6,020	6,020	5,520	5,520	5,760	11,400	18,600	16,400
17	5,760	5,760	5,760	5,040	5,520	5,280	11,100	21,900	13,400
18	5,520	5,520	5,760	4,590	5,520	5,040	10,200	24,200	13,400
19	6,270	5,520	5,520	4,590	5,520	4,160	9,600	25,700	15,700
20	6,140	5,760	5,520	4,370	5,520	5,520	9,300	25,000	19,700
21	6,790	5,760	5,520	3,540	5,520	6,020	8,720	25,700	20,800
22	6,530	6,020	5,760	3,180	5,520	5,760	8,720	26,100	25,000
23	7,060	6,020	5,760	3,540	5,520	5,760	8,720	26,500	27,700
24	7,060	6,270	6,020	4,160	5,040	6,270	8,720	26,100	28,100
25	7,060	6,270	6,020	4,160	7,060	6,790	9,020	26,100	29,300
26	7,320	6,530	5,520	4,160	9,300	7,060	9,020	26,500	26,100
27	7,320	6,530	5,520	5,280	9,300	6,270	10,500	26,900	20,800
28	7,600	6,530	5,760	5,280	8,720	5,280	11,800	26,900	20,400
29	7,600	6,530	5,520	5,040	.....	7,060	12,400	26,500	21,900
30	6,790	6,790	5,280	5,040	.....	7,320	12,700	26,500	23,400
31	6,530	.....	5,280	5,040	.....	8,720	.....	27,700	.....

Monthly discharge of Snake River near Twin Falls, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	12,700	720	6,090	374,000
November	7,060	5,520	6,340	377,000
December	7,060	5,280	5,980	368,000
January	6,530	3,180	5,140	316,000
February	9,300	4,820	5,870	326,000
March	8,720	4,160	6,030	371,000
April	12,700	8,160	9,670	575,000
May	27,700	8,720	18,400	1,130,000
June	29,300	13,400	21,600	1,290,000
The period				5,130,000

SNAKE RIVER NEAR HAGERMAN, IDAHO.

LOCATION.—In sec. 2, T. 8 S., R. 13 E., at Owsley's ferry, just above Upper Salmon Falls, and 4 miles south of Hagerman, Gooding County. Big Wood River enters 10 miles below.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—August 24, 1912, to June 18, 1917, when station was discontinued.

GAGE.—Stevens water-stage recorder on right bank about 200 feet above the ferry; installed November 15, 1916, and referred to an outside staff set at same datum as former gage; read by C. Owsley. Previous to November 15, vertical staff on left bank about 50 feet below ferry, installed August 15, 1915, at same site and datum as former inclined gage.

DISCHARGE MEASUREMENTS.—Made from cable about 100 feet below gage.

CHANNEL AND CONTROL.—Control rocky; practically permanent during year.

EXTREMES OF DISCHARGE.—Maximum and minimum stages during year not determined because of unreliable gage-height record.

1912–1915: Maximum stage recorded, 7.75 feet at 6 p. m. June 10, 1914 (discharge, 35,100 second-feet); minimum stage recorded, 3.1 feet July 15 to August 2, 1915 (discharge, 4,030 second-feet).

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

DIVERSIONS.—No noteworthy diversions between this station and that at Milner. Practically entire flow of river is diverted at Milner during part of the irrigation season by the Twin Falls canals, and the flow at Owsley's ferry is maintained largely by springs and waste water from irrigation.

REGULATION.—Flow regulated by diversions of Twin Falls canals at Milner.

ACCURACY.—Stage-discharge relation practically permanent during year. Rating curve well defined. Gage-height record not satisfactory, owing to poor operation of recorder and unreliable observer. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspection of recorder graph. For periods when recorder was not operating, discharge was estimated or interpolated on basis of observer's record. Daily discharge may be subject to large error, but monthly discharge is believed to be fairly accurate.

Discharge measurements of Snake River near Hagerman, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Nov. 15	C. G. Paulsen	4.36	10,100
Feb. 19	T. R. Newell	4.30	9,770
June 18	.....do	5.30	16,500

Daily discharge, in second-feet, of Snake River near Hagerman, Idaho, for the year ending Sept. 30, 1917.

Day.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
1		10,200	9,770		11,500	12,400		
2		10,100	9,770	9,500	9,770	12,400	15,500	31,500
3		9,980	9,770		10,000	12,700		
4		9,880	9,770		10,000	13,000	13,400	
5		9,770	9,490	9,770	10,000	12,400	13,400	28,700
6	10,600	10,300	9,490	9,220	9,770	12,500	13,400	27,100
7		10,600	9,490	9,770	10,000	12,600	13,000	25,500
8		10,300	9,770	9,900	10,000	12,600	13,000	23,100
9		10,000	9,770	10,000	9,770	12,700	12,700	19,700
10		10,300	10,000	10,200	9,660	13,700	12,400	19,400
11		10,300	10,000	10,300	9,550	13,700	13,400	19,400
12		10,300	10,300	10,000	9,440	13,700	14,000	20,800
13	10,300	10,000	9,770	9,770	9,330	13,700	15,300	23,900
14	10,300	9,770	9,220	9,770	9,220	14,000	17,400	23,900
15	10,000	10,300	9,220	9,770	9,490	13,000	19,200	22,400
16	10,000	10,300	9,220	9,770	9,770	13,400	20,000	20,100
17	10,000	10,200	9,220	10,000	8,940	15,300	24,700	18,300
18	9,770	10,100	9,220	9,770	9,220	14,000	27,100	16,500
19	9,770	10,000	9,220	9,770	9,220	13,400	29,500	.....
20	9,770	9,950		9,770	9,220	13,000	29,500	.....
21	10,000	9,860		9,490	10,900	12,700	29,500	.....
22	10,000	9,770		9,490	10,300	12,700		.....
23	10,300	9,770		9,770	10,300	13,000		.....
24	10,300	9,770	8,300	9,770	10,300	13,000		.....
25	10,300	9,770		12,700	11,500	13,400		.....
26	10,600	9,770		17,400	11,500		31,000	.....
27	10,300	9,770		14,000	11,200			.....
28	10,300	9,770	9,220	12,700	9,770	16,000		.....
29	10,300	9,770	9,220	.....	10,600			.....
30	10,300	9,770	9,220	.....	11,800			.....
31	.....	9,770		.....	12,400			.....

NOTE.—Discharge estimated Nov. 1–12; Jan. 20–27, 30–31; Feb. 1–4; Mar. 2, 9, 19–20; Apr. 26–30; May 1–3, 19–20, 22–31; June 1–4. Discharge interpolated because of no gage heights, Dec. 1–4, 17–21, 23–30; Feb. 8–10; Mar. 10–13, 23; Apr. 6–8; June 6 and 17.

Monthly discharge of Snake River near Hagerman, Idaho, for the year ending Sept. 30, 1917

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
November	.....	.....	10,300	613,000
December	10,600	9,770	10,000	615,000
January	10,300	.....	9,220	567,000
February	17,400	.....	10,400	578,000
March	12,400	8,940	10,100	621,000
April	.....	12,400	13,600	809,000
May	.....	12,400	22,200	1,360,000
June 1–18	.....	16,500	24,200	864,000
The period	.....	.....	.....	6,030,000

SNAKE RIVER AT KING HILL, IDAHO.

LOCATION.—In sec. 7, T. 5 S., R. 11 E., 300 feet east of Oregon Short Line Railroad station at King Hill, Elmore County. Big Wood River enters from north 20 miles above station.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 13, 1909, to September 30, 1917.

GAGE.—Inclined staff on right bank; installed August 17, 1910; read by P. W. McCarthy. Original gage, used May 13, 1909, to March 1, 1910, was a vertical staff on left bank at practically the same section as present gage, but at datum about 2.2 feet higher. Temporary staff gage three-fourths mile above present site, March 7 to August 16, 1910.

DISCHARGE MEASUREMENTS.—Made from cable 100 feet below gage.

CHANNEL AND CONTROL.—Bed at gage and measuring section composed largely of gravel. Control is lava reef partly overlain with gravel; shifts slightly.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.8 feet at 6 p. m. May 31 (discharge, 36,600 second-feet); minimum stage recorded, 5.6 feet October 1, 2, August 7–18, September 1–2 (discharge, 6,610 second-feet).

1909–1917: Maximum stage recorded, 13.1 feet June 12, 13, 1909 (discharge, 41,900 second-feet); minimum stage recorded, 4.5 feet July 7–9 and August 15, 16, 1910 (discharge, 4,760 second-feet).

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

DIVERSIONS.—No noteworthy diversions for irrigation are made between this station and that at Milner.

REGULATION.—Flow regulated by diversions at Milner. During certain parts of the irrigation season practically the entire flow of the river is appropriated and the flow at King Hill is derived largely from springs and seepage water from the Twin Falls tracts.

ACCURACY.—Stage-discharge relation practically permanent during year. Rating curve fairly well defined. Gage read to quarter-tenths once daily until May 1, after which date it was read about thrice weekly. Daily discharge ascertained by applying daily gage height to rating table and interpolating for days of no gage heights. Records good.

Discharge measurements of Snake River at King Hill, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Nov. 8	C. G. Paulsen	7.96	13,700
Mar. 3	T. R. Newell	7.56	12,600
Sept. 21	G. C. Baldwin	5.98	7,330
21	....do	6.01	7,570

Daily discharge, in second-feet, of Snake River at King Hill, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1....	6,610	13,400	13,000	11,400	11,000	14,400	15,200	20,700	35,800	27,800	7,060	6,610
2....	6,610	13,000	13,000	11,000	11,000	11,700	15,500	20,700	35,400	27,400	6,980	6,610
3....	7,530	14,100	13,000	11,000	11,000	12,000	15,900	19,800	35,400	27,000	6,910	6,720
4....	8,040	12,700	13,000	11,000	11,000	12,000	16,200	18,800	34,400	26,600	6,830	6,830
5....	8,590	12,700	13,000	11,400	11,000	11,700	16,200	16,600	33,400	26,200	6,760	7,420
6....	8,880	12,700	13,000	11,700	11,000	11,700	16,200	16,400	32,400	25,800	6,680	8,000
7....	9,470	13,000	12,700	11,700	10,700	12,000	16,600	16,200	32,000	25,000	6,610	8,590
8....	10,400	13,400	12,700	11,700	11,000	12,000	17,700	15,900	31,600	25,800	6,610	8,040
9....	17,000	13,800	12,700	12,000	11,700	12,000	19,200	16,400	29,500	26,600	6,610	
10....	19,600	13,400	12,400	12,400	11,700	12,000	20,400	17,000	26,400	26,600	6,610	
11....	18,800	13,000	12,400	12,400	11,700	11,400	20,000	17,900	23,400	26,000	6,610	
12....	19,200	13,000	12,400	12,700	11,700	11,000	19,600	18,800	24,200	25,400	6,610	
13....	17,400	13,000	12,000	12,400	12,000	11,000	19,600	20,700	25,000	24,400	6,610	
14....	14,800	13,000	11,700	12,400	12,000	11,000	18,800	22,800	28,600	23,400	6,610	
15....	13,400	12,400	12,400	12,000	12,400	11,000	18,800	25,000	25,600	21,600	6,610	6,700
16....	11,000	12,400	12,400	11,400	12,400	11,000	20,000	25,800	22,700	19,900	6,610	
17....	12,400	12,400	12,400	11,000	12,700	11,000	19,600	29,000	21,100	18,100	6,610	
18....	12,000	12,400	12,400	10,700	11,700	11,000	18,100	31,600	25,000	16,600	6,610	
19....	13,000	12,400	12,000	10,400	11,700	11,000	16,600	33,200	27,100	15,000		
20....	13,800	11,700	12,000	10,400	12,000	11,000	16,600	33,200	29,100	13,500		
21....	13,000	12,000	12,000	9,770	12,000	13,400	17,000	32,400	31,200	12,000		
22....	13,400	12,400	12,000	9,170	11,700	12,700	17,700	33,200	31,800	12,600		7,530
23....	13,800	12,700	11,700	9,170	11,700	12,400	18,100	33,200	32,400	13,200		10,100
24....	14,100	12,400	11,700	9,170	11,700	13,000	17,400	34,000	35,800	13,800		9,770
25....	14,400	12,400	11,700	10,400	12,400	13,400	17,400	34,900	35,800	14,400	6,800	9,770
26....	13,800	12,700	12,000	9,470	21,900	13,800	17,000	34,900	37,800	15,200		11,000
27....	14,100	12,700	11,700	9,770	16,600	13,800	18,100	35,200	31,600	15,900		16,200
28....	14,400	13,000	11,700	10,400	15,200	13,800	20,000	35,500	27,400	15,200		17,000
29....	14,400	13,000	11,700	11,000	.....	14,100	20,400	35,800	27,800	12,500		15,900
30....	14,400	13,000	11,700	11,000	.....	14,400	20,400	34,900	28,200	9,770		15,200
31....	13,400	.....	12,000	11,000	.....	15,900	.....	36,600	.....	8,310		

NOTE.—Discharge estimated Aug. 19–31, Sept. 1 and 9–21.

Monthly discharge of Snake River at King Hill, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	19,600	6,610	13,000	799,000
November	14,100	11,700	12,800	762,000
December	13,000	11,700	12,300	756,000
January	12,700	9,170	11,000	676,000
February	21,900	10,700	12,300	683,000
March	15,900	11,000	12,300	756,000
April	20,400	15,200	18,000	1,070,000
May	36,600	15,900	26,400	1,620,000
June	35,800	21,100	29,900	1,780,000
July	27,800	8,310	19,700	1,210,000
August	.....	.....	6,740	414,000
September	17,000	.....	8,610	512,000
The year	36,600	.....	15,300	11,000,000

SNAKE RIVER NEAR MURPHY, IDAHO.

LOCATION.—In NW. ¼ sec. 18, T. 2 S., R. 1 E., three-quarters of a mile below Swan Falls power plant, 1¼ miles below company ferry, and 12 miles east of Murphy, Owyhee County. Gage is in Ada County 38 miles below mouth of Bruneau River.

DRAINAGE AREA.—41,900 square miles (measured on United States Land Office maps).

RECORDS AVAILABLE.—August 21, 1913, to September 30, 1917. Fragmentary records prior to August 21, 1913.

GAGE.—Friez water-stage recorder on right bank a quarter of a mile below house on ranch of S. N. Glass; installed September 7, 1914; inspected by S. N. Glass. Temporary vertical staff gage installed at this site August 29, 1912, was replaced August 22, 1913. Friez water-stage recorder, temporarily installed December 13, 1913, to June 27, 1914. All gages at practically same site and set to same datum.

DISCHARGE MEASUREMENTS.—Made from ferry boat 1¼ miles above gage.

CHANNEL AND CONTROL.—Stream bed of lava rock with deposits of sand, silt, and gravel where not scoured out by current. Control practically permanent. Banks not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 11.85 feet at 6 p. m. June 1 (discharge, 38,300 second-feet); minimum stage, about −2.25 feet at 6 a. m. August 6 (discharge, about 5,000 second-feet).

1912–1917: Maximum stage recorded, 12.13 feet at 11.30 a. m. June 10, 1914 (discharge, 39,600 second-feet); minimum stage occurred in 1917.

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

DIVERSIONS.—A number of small pumping plants divert water for irrigation between this station and that at King Hill.

REGULATION.—Large diurnal fluctuations in stage are caused by manipulation of gates at dam above and by variation in load at power plant, but because of the small amount of storage at dam the changes are of short duration.

ACCURACY.—Stage-discharge relation practically permanent during year. 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 by inspecting recorder graph. Records fair.

COOPERATION.—Gage-height record furnished by Idaho Power Co.

No discharge measurements were made at station during the year.

Daily discharge, in second-feet, of Snake River near Murphy, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1....	7,120	13,600	12,900	11,100	11,000	16,000	16,800	21,300	37,900	28,800	9,030	6,670
2....	7,360	13,300	13,100	11,400	11,200	14,300	16,500	21,600	37,900	30,300	7,870	6,670
3....	7,610	13,300	13,100	11,400	11,200	12,900	16,000	21,300	37,500	30,300	7,610	6,570
4....	7,740	13,800	13,300	11,400	11,400	12,200	15,800	20,100	37,100	30,300	6,290	6,470
5....	7,870	13,300	13,300	11,200	11,200	12,400	16,000	18,700	36,600	31,100	6,920	6,780
6....	8,720	12,900	12,600	11,600	11,800	12,600	15,800	18,100	35,000	30,700	5,660	6,890
7....	10,000	13,100	12,600	11,800	12,000	12,200	16,500	18,100	33,400	28,100	6,130	7,870
8....	10,000	13,300	12,900	11,800	12,000	12,400	17,900	18,100	31,900	25,900	5,980	8,280
9....	10,400	13,600	12,200	12,200	12,200	12,600	19,500	18,400	30,300	25,500	5,980	7,740
10....	15,500	13,300	12,600	12,400	12,200	12,200	20,400	19,000	28,800	25,200	5,840	7,740
11....	17,600	13,300	12,600	12,200	12,000	12,200	20,100	19,000	27,300	26,200	6,030	7,240
12....	18,700	13,100	12,400	12,400	12,000	12,200	20,400	20,100	27,000	25,900	6,230	6,890
13....	18,700	13,600	12,600	12,400	12,000	12,400	20,700	21,600	27,000	24,800	5,840	6,670
14....	16,800	13,300	12,400	12,400	12,200	11,800	20,400	23,200	27,700	23,500	5,910	6,670
15....	15,500	12,900	12,000	12,200	11,800	11,400	19,800	25,500	28,800	22,900	5,980	6,670
16....	11,600	12,600	12,400	12,200	11,800	11,600	18,700	28,100	28,100	22,200	6,130	6,670
17....	11,600	12,200	12,600	11,600	11,800	12,000	18,400	29,200	26,200	21,000	5,910	7,000
18....	11,600	12,200	12,200	11,200	11,800	11,400	19,200	32,300	24,200	18,700	5,910	6,890
19....	12,400	12,200	12,000	11,000	11,800	11,200	17,900	34,200	22,500	17,300	6,290	6,780
20....	13,100	12,400	12,000	10,800	12,000	11,400	17,300	35,000	22,900	16,300	7,000	6,780
21....	13,600	12,400	12,000	10,600	11,800	12,200	17,300	34,600	24,200	14,000	8,420	6,780
22....	14,000	12,400	12,200	9,860	11,800	14,500	17,900	35,000	25,500	12,900	7,740	6,670
23....	13,800	12,400	12,200	9,690	11,800	13,100	18,700	34,600	28,800	14,900	7,120	7,360
24....	13,600	12,600	12,200	9,520	12,200	12,900	19,800	35,000		17,100	7,480	9,350
25....	14,000	13,100	12,000	9,690	13,300	13,800	20,100	35,400		16,800	7,120	9,350
26....	14,300	13,100	12,400	10,200	16,700	14,800	20,100	36,600		15,800	7,360	
27....	14,000	12,600	12,000	10,600	21,900	14,000	20,100	37,900	32,000	13,300	7,120	
28....	14,300	13,100	12,200	11,600	16,800	14,000	20,700	37,500		14,000	6,890	16,000
29....	14,300	13,100	11,400	11,400	.....	13,300	21,900	37,900		12,200	6,780	
30....	14,300	13,100	11,400	11,400	.....	14,800	21,300	37,500		11,600	6,780	
31....	14,300	.....	12,200	11,200	.....	16,300	.....	37,500	.....	10,600	6,470	.....

NOTE.—Discharge estimated June 24–30, because of lack of gage-height record and Sept. 26–30, because of unsatisfactory operation of recorder.

Monthly discharge of Snake River near Murphy, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	18,700	7,120	12,700	781,000
November	13,800	12,200	13,000	774,000
December	13,300	11,400	12,400	762,000
January	12,400	9,520	11,300	695,000
February	21,900	11,000	12,600	700,000
March	16,300	11,200	12,900	793,000
April	21,900	15,800	18,700	1,110,000
May	37,900	18,100	27,800	1,710,000
June	37,900	22,500	30,400	1,810,000
July	31,100	10,600	21,200	1,300,000
August	9,030	5,660	6,700	412,000
September	.....	6,470	8,650	515,000
The year	37,900	5,660	15,700	11,400,000

SNAKE RIVER AT WEISER, IDAHO.

LOCATION.—In sec. 31, T. 11 N., R. 5 W., a third of a mile above wagon bridge at Weiser, Washington County. Between this station and that near Murphy, Sucker Creek and Owyhee and Malheur rivers enter Snake River from left and Boise, Payette, and Weiser rivers from right.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 8, 1910, to September 30, 1917. Fragmentary gage-height records obtained by Weather Bureau since 1895.

GAGE.—Inclined concrete gage on right bank; installed by Weather Bureau; read by J. W. Lapish. Gage used October 8, 1910, to September 30, 1914, was an inclined staff on right bank about 200 yards below wagon bridge; at different datum.

DISCHARGE MEASUREMENTS.—Made from cable about 200 yards below bridge.

CHANNEL AND CONTROL.—Bed composed of rocks and coarse gravel. One channel at all stages. Control fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11.9 feet May 28–29 (discharge, 70,400 second-feet); minimum stage recorded, 1.8 feet August 14 (discharge, 6,490 second-feet).

1910–1917: Maximum stage recorded, 14.5 feet (United States Geological Survey gage datum) June 15, 1912 (discharge, 73,800 second-feet); minimum stage, 1.5 feet (Weather Bureau datum) at 8 a. m. August 28 and 29, 1915 (discharge, 5,550 second-feet).

ICE.—Stage-discharge relation not seriously affected by ice; open-channel rating curve used throughout the year, except for period January 20–28.

DIVERSIONS.—Some water is diverted between Weiser and the station near Murphy, but almost entirely by pumping.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve well defined. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table, except for period when stage-discharge relation was affected by ice, for which it was estimated. Records good.

COOPERATION.—Gage-height record furnished by United States Weather Bureau.

Discharge measurements of Snake River at Weiser, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Dec. 17	A. W. Harrington	4.05	14,600
Mar. 5	William Kessler	4.10	16,200

Daily discharge, in second-feet, of Snake River at Weiser, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1....	8,870	17,400	16,500	14,600	14,100	21,200	27,300	51,500	68,100	47,800	11,200	7,140
2....	8,870	17,000	16,500	15,000	13,700	20,100	26,700	50,000	68,100	47,000	9,990	7,140
3....	9,240	16,500	17,400	16,000	13,700	18,000	26,100	50,000	67,300	47,000	9,610	7,140
4....	9,610	16,500	17,400	15,000	13,700	16,500	24,800	48,500	66,500	45,500	9,240	7,140
5....	9,990	16,500	17,400	14,600	13,700	15,500	25,400	46,200	64,900	45,500	8,870	7,140
6....	9,990	16,500	17,000	15,000	14,100	15,000	26,700	43,300	63,400	46,200	8,870	7,470
7....	10,400	16,000	17,000	15,000	14,100	15,500	32,000	44,000	60,800	44,000	7,140	7,470
8....	11,600	16,000	15,000	15,000	14,100	15,500	35,400	44,800	57,700	41,800	7,470	7,810
9....	12,800	16,500	15,000	15,000	14,100	15,000	38,200	47,800	56,100	38,900	7,810	8,160
10....	13,700	16,500	15,000	15,000	14,100	15,500	47,000	50,000	56,100	38,200	7,470	8,510
11....	15,500	16,500	15,500	15,000	14,100	15,000	49,200	51,500	56,100	36,100	7,810	8,510
12....	21,800	16,000	15,500	14,600	14,600	14,600	50,000	51,500	53,800	36,100	8,160	8,510
13....	22,400	15,500	15,500	14,600	14,600	14,600	56,100	61,600	52,300	34,000	8,510	8,510
14....	23,000	15,500	15,000	14,600	14,600	14,100	53,800	58,400	51,500	32,000	6,490	8,160
15....	20,700	15,500	15,000	14,600	14,600	14,100	49,200	63,400	51,500	29,300	6,810	8,160
16....	17,400	15,000	15,000	14,100	14,600	13,700	44,000	64,500	53,800	28,600	7,140	8,160
17....	16,500	15,000	15,500	14,100	14,600	13,700	40,400	65,700	54,600	26,700	7,140	8,160
18....	15,500	15,000	15,500	13,700	14,600	14,100	36,800	63,400	53,000	24,800	7,140	8,160
19....	14,600	15,000	15,500	13,300	15,000	14,100	37,500	63,400	50,800	24,800	7,140	8,160
20....	15,000	15,000	15,000		14,600	14,100	36,100	63,400	50,000	19,600	7,140	8,160
21....	16,000	15,000	15,000		14,600	14,100	35,400	63,400	52,300	19,000	7,140	8,160
22....	17,000	15,500	15,000		14,600	15,500	38,900	63,400	54,600	16,000	7,140	8,510
23....	17,000	15,500	15,500		15,000	17,400	45,500	64,100	56,100	14,600	7,140	8,870
24....	17,000	15,500	15,500	13,500	15,000	17,000	50,000	64,100	58,400	15,500	7,140	9,990
25....	16,500	16,000	15,500		16,500	17,400	56,100	65,700	60,000	18,000	7,470	11,600
26....	17,000	16,500	15,000		25,400	19,600	57,700	68,900	61,600	18,000	7,810	12,800
27....	17,000	16,500	15,000		24,800	19,000	60,000	69,600	59,200	17,000	7,810	14,100
28....	17,000	16,500	15,000		21,800	18,000	60,000	70,400	57,700	14,600	7,470	15,000
29....	17,400	16,000	14,600	14,600	.....	21,800	60,800	70,400	50,000	14,100	7,470	17,400
30....	17,400	16,000	14,600	15,000	.....	27,300	59,200	69,600	47,800	13,300	7,140	18,500
31....	17,400	.....	14,600	15,000	.....	28,000	.....	69,600	.....	11,600	7,140	.....

NOTE.—Discharge estimated because of ice Jan. 20-28.

Monthly discharge of Snake River at Weiser, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	23,000	8,870	15,300	941,000
November	17,400	15,000	15,900	946,000
December	17,400	14,600	15,600	959,000
January	16,000	.....	14,400	885,000
February	25,400	13,700	15,500	861,000
March	28,000	13,700	16,900	1,040,000
April	60,800	24,800	42,900	2,550,000
May	70,400	43,300	58,800	3,620,000
June	68,100	47,800	57,100	3,400,000
July	47,800	11,600	29,200	1,800,000
August	11,200	6,490	7,810	480,000
September	18,500	7,140	9,420	560,000
The year	70,400	6,490	24,900	18,000,000

SNAKE RIVER AT RIPARIA, WASH.

LOCATION.—In sec. 31, T. 13 N., R. 38 W., at Oregon-Washington Railroad & Navigation Co's bridge at Riparia, in Whitman County.

DRAINAGE AREA.—102,000 square miles (authority, United States Weather Bureau).

RECORDS AVAILABLE.—October 1, 1915, to September 30, 1917. Gage-height record during parts of May and June, 1900–2, May 1 to November 30, 1904, July 1, 1905, to December 31, 1906, February 1, 1908, to June 30, 1910, and August 1, 1910, to February 28, 1917, obtained and published by United States Weather Bureau.

GAGE.—Vertical staff in three sections, the highest section being on first bridge pier from right bank, and the lower sections on upper draw guard of bridge. On September 12, 1917, chain gage installed on bridge at same datum; read by R. E. Wilcox.

DISCHARGE MEASUREMENTS.—Made from bridge at gage.

CHANNEL AND CONTROL.—Texas Rapids, about half a mile below gage, forms control. The United States Army Engineer Corps is removing rock from the channel and dumping it on another part of the control, but this work apparently does not affect permanence of stage-discharge relation.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 18.2 feet May 30 (discharge, 256,000 second-feet); minimum stage recorded, 1.4 feet September 3–10 and 23 (discharge, 16,200 second-feet).

1916–17: Maximum stage recorded same as for 1917; minimum stage recorded, 1.4 feet October 1, 1915, and September 3–10 and 23, 1917 (discharge, 16,200 second-feet, revised since publication in Water-Supply Paper 443).

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

DIVERSIONS.—A large amount of water is diverted for irrigation.

REGULATION.—Flow is regulated to some extent by storage for irrigation in Jackson Lake reservoir (capacity, 790,000 acre-feet) and other smaller reservoirs in the basin; also by diversions for irrigation.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records prior to March good, for first half of March fair, and for remainder of year excellent.

COOPERATION.—Gage-height record furnished by United States Army Engineer Corps and United States Weather Bureau.

Discharge measurements of Snake River at Riparia, Wash., during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 11	G. L. Parker	2.74	22,700	July 1	John McCombs	12.98	165,000
Mar. 12	C. G. Paulsen	3.00	27,400	Sept. 13	C. G. Paulsen	1.73	18,600
Apr. 7	John McCombs	7.70	74,800				

Daily discharge, in second-feet, of Snake River at Riparia, Wash., for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	20,000	28,000	26,400	20,600	27,200		47,600	138,000	216,000	173,000	35,100	17,200
2	19,400	28,000	26,400	19,400	26,400		48,600	126,000	207,000	160,000	34,200	16,700
3	18,800	28,000	26,400	20,600	22,600		49,600	111,000	198,000	160,000	31,500	16,200
4	18,800	28,000	27,200	25,600	22,600		48,600	111,000	194,000	157,000	29,800	16,200
5	19,400	28,900	28,900	26,400	24,800	31,400	48,600	111,000	184,000	155,000	27,200	16,200
6	21,200	28,900	29,800	26,400	24,800		61,000	111,000	171,000	153,000	26,400	16,200
7	21,200	28,900	29,800	26,400	24,800		75,100	112,000	162,000	144,000	25,600	16,200
8	21,200	28,900	28,000	26,400	25,600		82,100	124,000	171,000	143,000	24,800	16,200
9	22,600	28,900	25,600	26,400	25,600		87,800	144,000	180,000	136,000	24,000	16,200
10	24,000	27,200	23,300	25,600	25,600		87,800	157,000	216,000	131,000	22,600	16,200
11	24,800	29,800	23,300	25,600	24,800	26,300	98,300	166,000	212,000	124,000	22,600	16,700
12	24,800	29,800	24,800	25,600	24,800		111,000	180,000	202,000	111,000	21,900	17,200
13	30,600	26,400	24,800	24,800	25,600		119,000	191,000	180,000	104,000	21,200	17,700
14	32,400	23,300	25,600	24,800	25,600		122,000	198,000	173,000	98,300	21,200	18,200
15	33,300	21,200	25,600	22,600	25,600		114,000	223,000	166,000	87,800	20,600	18,200
16	32,400	21,900	25,600	20,600	25,600	25,600	103,000	252,000	180,000	80,700	20,600	18,200
17	31,500	21,900	23,300	19,400	26,400	25,600	90,800	227,000	221,000	77,900	19,400	18,200
18	29,800	24,000	23,300	19,400	26,400	25,600	83,500	198,000	250,000	72,400	19,400	17,200
19	26,400	24,800	24,800	19,400	26,400	25,600	76,500	180,000	245,000	67,200	19,400	17,200
20	24,800	24,800	24,800	19,400	26,400	25,600	69,800	176,000	234,000	63,400	19,400	16,700
21	24,800	27,200	26,400	19,400	26,400	25,600	76,500	171,000	227,000	61,000	19,400	16,700
22	24,800	26,400	26,400	19,400	24,800	25,600	90,800	171,000	225,000	57,400	18,800	16,700
23	25,600	26,400	25,600	19,400	25,600	26,400	103,000	175,000	223,000	52,900	18,200	16,200
24	26,400	26,400	24,800	20,600	25,600	28,000	132,000	176,000	212,000	48,600	18,800	17,200
25	26,400	26,400	24,800	20,600	25,600	30,600	139,000	202,000	207,000	45,600	19,400	24,000
26	26,400	26,400	24,000	21,900	26,400	31,500	153,000	207,000	198,000	44,600	18,800	28,000
27	25,600	27,200	24,000	22,600	28,000	31,500	158,000	214,000	196,000	43,600	18,200	24,800
28	27,200	27,200	23,300	25,600	28,000	34,200	160,000	216,000	193,000	42,600	18,200	25,600
29	27,200	27,200	23,300	25,600	.....	36,000	144,000	225,000	189,000	39,800	17,700	24,800
30	28,000	26,400	21,200	26,400	.....	37,800	141,000	256,000	189,000	38,800	17,700	23,300
31	28,000	.....	21,200	27,200	.....	44,600	.....	238,000	.....	36,000	17,200	.....

NOTE.—No record Mar. 1–15; discharge estimated by comparison with record for Snake River at Burbank, Wash.

Monthly discharge of Snake River at Riparia, Wash., for the years ending Sept. 30, 1916–17.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
1915–16.				
October	24,000	15,200	20,700	1,270,000
November	28,000	21,000	23,900	1,420,000
December	38,800	21,000	27,100	1,670,000
January	.....	20,200	26,500	1,630,000
February	.....	.....	50,500	2,900,000
March	144,000	39,800	86,200	5,300,000
April	148,000	84,900	109,000	6,490,000
May	185,000	103,000	128,000	7,870,000
June	230,000	108,000	157,000	9,340,000
July	157,000	37,800	92,900	5,710,000
August	35,100	20,200	26,400	1,620,000
September	24,800	18,900	21,000	1,250,000
The year	230,000	15,200	64,100	46,500,000
1916–17.				
October	33,300	18,800	25,400	1,560,000
November	29,800	21,200	26,600	1,580,000
December	29,800	21,200	25,200	1,550,000
January	27,200	19,400	23,000	1,410,000
February	28,000	22,600	25,600	1,420,000
March	44,600	.....	29,400	1,810,000
April	160,000	47,600	97,400	5,800,000
May	256,000	111,000	177,000	10,900,000
June	250,000	162,000	201,000	12,000,000
July	173,000	36,000	93,900	5,770,000
August	35,100	17,200	22,200	1,360,000
September	28,000	16,200	18,500	1,100,000
The year	256,000	16,200	63,800	46,300,000

NOTE.—Discharge Jan. 24 to Feb. 18, 1916, revised since publication in Water-Supply Paper 443, as gage-height record was in error. Discharge estimated by hydrographic comparison with records of Snake River at Weiser, Idaho; Lewiston, Idaho; and Burbank, Wash.; as follows: Jan. 24–31, 36,000 second-feet; Feb. 1–7, 27,000 second-feet; and Feb. 8–18, 66,000 second-feet.

SNAKE RIVER NEAR BURBANK, WASH.

LOCATION.—In sec. 28, T. 9 N., R. 31 E., at head of Fivemile Rapids, 4 miles above Burbank, in Walla Walla County.

DRAINAGE AREA.—109,000 square miles (measured on maps issued by General Land Office and Forest Service).

RECORDS AVAILABLE.—September 1, 1909, to March 31, 1917, when station was discontinued; fragmentary records October 2, 1907, to August 31, 1909.

GAGE.—Inclined staff 1,500 feet above intake of Burbank Power & Water Co.'s canal; datum, 300 feet above sea level; read by Lewis Dunlap, E. B. Madden, and James Hogan. Auxiliary vertical staff at lower end of power canal used for short periods prior to 1916.

DISCHARGE MEASUREMENTS.—Made from Northern Pacific Railway bridge at Burbank, 4 miles below gage.

CHANNEL AND CONTROL.—Control at head of rapids; shifts at flood stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 38.85 feet March 31 (discharge, 48,400 second-feet); minimum stage recorded, 35.2 feet January 19 (discharge, 17,600 second-feet).

1909–1917: Maximum stage recorded, 51.8 feet May 29, 1913 (discharge, 298,000 second-feet, revised); minimum stage recorded, 34.3 feet August 26–27, 1910 (discharge, 11,800 second-feet). Minimum for September 4, 1914, of 11,400 second-feet has been revised to 13,000 second-feet.

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

DIVERSIONS.—A large amount of water diverted from Snake River and tributaries is used for irrigation in southern Idaho.

REGULATION.—Jackson Lake storage reservoir (capacity, 790,000 acre-feet) is the largest in operation.

ACCURACY.—Stage-discharge relation changed about November 15 when wing dam at intake below gage was repaired. Rating curves poorly defined. Gage read to hundredths once daily except as indicated in footnote to daily-discharge table. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

COOPERATION.—Gage-height record furnished by the Burbank Co.

Discharge measurements of Snake River near Burbank, Wash., during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Nov. 4	J. E. Stewart	37.08	30,600
Mar. 7	C. G. Paulsen	36.99	28,800

Daily discharge, in second-feet, of Snake River near Burbank, Wash., for the period Oct. 1, 1916, to Mar. 31, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1			27,800	20,800	33,200	37,100
2			27,300	23,100	31,400	42,800
3			27,700	28,100	25,100	36,100
4	22,300		28,100	28,900	24,400	32,300
5		30,700	29,400	28,100	25,100	30,600
6			30,600	28,900	26,500	30,600
7	24,400			28,900	28,100	28,900
8	24,400		28,000	28,100	28,900	28,900
9	24,400			28,100	28,900	28,900
10	25,800			28,900	28,900	28,900
11	26,600	30,600	25,800	28,100	27,300	28,100
12	27,400		25,100	27,300	27,300	28,900
13	28,200		24,400	27,300	28,100	28,900
14	34,200			26,500	27,300	28,100
15	35,200		25,000	25,100	28,100	28,100
16	36,200			23,100	28,100	28,100
17	36,200	26,000		22,500	27,300	28,100
18	32,400		25,100	23,100	29,700	28,100
19	31,500		26,200	17,600	29,700	27,300
20	28,200		27,300	19,200	29,700	27,300
21	25,200			19,700	28,000	27,300
22	26,600			21,900	28,900	28,100
23	28,200	27,300		23,100	28,100	28,100
24			29,000	25,100	27,300	28,900
25		27,300		24,400	28,100	31,400
26				25,100	28,100	34,100
27	30,000	27,300	26,500	25,100	28,900	34,100
28		28,100		27,300	37,100	36,100
29		28,900	23,600	27,300	.....	39,300
30		28,400		28,100	.....	41,600
31	30,600	.....		32,300	.....	47,800

NOTE.—Gage not read Oct. 1–6, 24–30, Nov. 1–10, 12–22, 24–26, 28, 30, Dec. 1, 3, 5, 7–10, 12, 14–17, 19, 21, and 28–31; discharge estimated by hydrographic comparison with record of Snake River at Riparia by interpolation.

Monthly discharge of Snake River near Burbank, Wash., for the years ending Sept. 30, 1916–17.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
1915–16.				
October	.....	.....	21,100	1,300,000
November	.....	.....	24,200	1,440,000
December	.....	.....	27,700	1,700,000
January	.....	.....	27,100	1,670,000
February	.....	.....	51,500	2,960,000
March	159,000	38,300	89,500	5,500,000
April	.....	.....	114,000	6,780,000
May	.....	.....	133,000	8,180,000
June	248,000	99,400	164,000	9,760,000
July	170,000	.....	99,000	6,090,000
August	.....	.....	28,400	1,750,000
September	.....	.....	22,800	1,360,000
The year	248,000	.....	66,800	48,500,000
1916–17.				
October	36,200	.....	28,000	1,720,000
November	.....	.....	28,200	1,680,000
December	.....	.....	26,800	1,650,000
January	32,300	17,600	25,500	1,570,000
February	37,100	24,400	28,500	1,580,000
March	47,800	27,300	31,700	1,950,000
The period	.....	.....	.....	10,200,000

NOTE.—Discharge Nov. 17–25, 1915, Jan. 22–31, and Feb. 1–14, 1916, revised since publication in Water-Supply Paper 443. Discharge estimated by hydrographic comparison with Snake River at Weiser, Idaho; Lewiston, Idaho; and Riparia, Wash., as follows: Nov. 17–25, 26,300 second-feet; Jan. 22–31, 34,000 second-feet; Feb. 1–8, 28,000 second-feet; and Feb. 9–14, 77,000 second-feet. Monthly mean discharge November, 1915, January to March, and July, 1916, determined by completing record of daily discharge by hydrographic comparison with records of Snake River at other points. Monthly mean discharge October and December, 1915, April, May, August, and September, 1916, estimated by percentage comparison with monthly mean discharge of Snake River at Riparia.

TRIBUTARY BASINS.

PACIFIC CREEK NEAR MORAN, WYO.

LOCATION.—On line between secs. 22 and 23, T. 45 N., R. 114 W., 500 feet below highway bridge on road from Moran to Jackson, half a mile above mouth of creek, and 5 miles east of Moran, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 31 to November 11, 1906; July 20 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff on right bank; read by R. B. Lozier. Lietz water-stage recorder installed July 19, 1917, but owing to unsatisfactory operation discharge is based chiefly upon daily gage-height readings.

DISCHARGE MEASUREMENTS.—Made by wading or from two highway bridges 500 feet above gage.

CHANNEL AND CONTROL.—Bed composed of gravel; shifts occasionally.

EXTREMES OF DISCHARGE.—Maximum stage recorded during 1917, 2.31 feet July 20 (discharge, 581 second-feet); minimum stage recorded, 0.68 foot September 17 (discharge, 68 second-feet).

DIVERSIONS.—None within 3 miles above or below gage.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Two fairly well defined rating curves used, one applicable July 20 to August 8, the other August 22 to September 30. Operation of water-stage recorder unsatisfactory. Daily discharge ascertained by applying daily gage height to rating table; interpolated for days of no gage height, except September 20–24, for which it was estimated; shifting-control method used August 9–21. Records after August 8, good.

Discharge measurements of Pacific Creek near Moran, Wyo., during the year 1917.

[Made by William Kessler.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 20	2.31	581	Aug. 22	0.96	125	Sept. 11	0.71	73.9
Aug. 5	1.37	217	29	.89	106	Oct. 5	.70	70.7
8	1.27	167						

Daily discharge, in second-feet, of Pacific Creek near Moran, Wyo., for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1		299	89	11		142	73	21	557	127	70
2		275	84	12		142	70	22	534	124	70
3		252	80	13		137	70	23	510	115	80
4		228	79	14		129	70	24	487	110	140
5		205	78	15		124	69	25	463	110	120
6		193	76	16		122	69	26	440	112	95
7		180	74	17		122	68	27	416	139	89
8		168	73	18		173	70	28	393	120	87
9		148	71	19		158	71	29	369	106	87
10		145	70	20	581	134	70	30	346	106	87
								31	322	98	

NOTE.—Discharge interpolated July 21 to Aug. 4, Aug. 6–7, Sept. 4, 6–8, and 15–16; estimated Sept. 20–24.

Monthly discharge of Pacific Creek near Moran, Wyo., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 20–31	581	322	452	10,800
August	299	98	153	9,410
September	140	68	80.0	4,760
The period				25,000

BUFFALO FORK NEAR MORAN, WYO.

LOCATION.—In SE. ¼ sec. 26, T. 45 N., R. 114 W., at highway bridge on road from Moran to Jackson, 1½ miles north of Elk post office, half a mile above mouth of river, and 6 miles east of Moran, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 31 to November 20, 1906; July 9 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff installed July 3, 1917, 500 feet above highway bridge, used July 9–20; vertical staff fastened to downstream side of left abutment of highway bridge, used July 21 to September 30; read by J. G. Brown.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading 600 feet below gage.

CHANNEL AND CONTROL.—Bed composed of gravel; shifts during high water.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 5.37 feet at 6 a. m. July 10 (discharge, 3,480 second-feet); minimum stage recorded, 1.05 feet September 20, 21, and 30 (discharge, 260 second-feet).

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Two well-defined rating curves used; one applicable July 9 to August 8, the other August 20 to September 30. Gage read to hundredths twice daily. Considerable fluctuation of stage noted at times. Daily discharge ascertained by applying mean daily gage height to rating table except for period August 9–19, for which it was ascertained by the shifting-control method. Records good.

Discharge measurements of Buffalo Fork near Moran, Wyo., during the year 1917.

[Made by William Kessler.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 21	3.75	1,980	Aug. 20	1.56	478	Aug. 29	1.40	383
Aug. 5	2.30	824	22	1.54	451	Sept. 12	1.12	292
7	2.00	632	27	1.64	513	Oct. 5	1.00	239
8	2.00	645						

Daily discharge, in second-feet, of Buffalo Fork near Moran, Wyo., for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1	.....	1,100	355	11	3,040	608	286	21	2,080	464	260
2	.....	970	347	12	2,860	549	286	22	2,100	445	278
3	.....	877	324	13	2,810	527	278	23	2,410	418	286
4	.....	912	324	14	2,210	516	355	24	2,100	396	324
5	.....	835	355	15	2,600	484	355	25	2,080	388	316
6	.....	686	355	16	1,920	489	336	26	1,740	376	316
7	.....	650	355	17	2,130	474	316	27	1,630	494	297
8	.....	615	316	18	2,070	500	286	28	1,710	418	286
9	3,040	615	316	19	1,960	489	278	29	1,410	388	278
10	3,250	608	297	20	1,840	484	271	30	1,280	363	260
								31	1,160	355	.....

Monthly discharge of Buffalo Fork near Moran, Wyo., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 9–31	3,250	1,160	2,150	98,100
August	1,100	355	564	34,700
September	355	260	310	18,400
The period	.....	.....	.....	151,000

SPREAD CREEK NEAR ELK, WYO.

LOCATION.—In NW. ¼ sec. 9, T. 44 N., R. 114 W., 300 feet above bridge on road from Moran to Jackson, 1½ miles above mouth of creek, and 3 miles south of Elk post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 4 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff on right bank, installed July 4, 1917; read by Willie E. Wolff.

DISCHARGE MEASUREMENTS.—Made by wading at gage.

CHANNEL AND CONTROL.—Bed composed of loose gravel; shifting. Banks low and subject to overflow at medium stages. Two channels at low stages; numerous channels at high stages; channel curved above and below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 1.68 feet July 7 (discharge, indeterminate because of shifting control and poor definition of rating curve at that stage); minimum stage recorded, 0.86 foot at 7 a. m. September 22 (discharge, 60 second-feet).

DIVERSIONS.—Wolff canal about one-half mile above gage diverts a maximum of 3 second-feet. No diversions of any size below gage.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Two fairly well defined rating curves used; one applicable July 15 to 29, the other August 8 to 20 and August 27 to September 12. For remaining periods of year shifting-control method was used, based upon measurements which define shifts very well for intervening periods. Gage read to quarter-tenths twice daily prior to July 16, and to hundredths twice daily for remainder of season. Daily discharge ascertained by applying mean daily gage height to rating table or by shifting-control method, except the period July 4–14 for which rating curve was not defined. Records fair.

Discharge measurements of Spread Creek near Elk, Wyo., during the year 1917.

[Made by William Kessler.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 17	1.30	133	Aug. 20	1.07	94.7	Aug. 29	0.97	77.8
21	1.17	145	22	1.06	87.2	Sept. 12	.90	63.8
Aug. 8	1.17	114	27	1.04	87.9	Oct. 6	.85	61.1

Daily gage height, in feet, of Spread Creek near Elk, Wyo., for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1	.....	1.14	0.92	11	1.62	1.10	0.88	21	1.16	1.04	0.88
2	.....	1.13	.92	12	1.55	1.10	.89	22	1.20	1.04	.87
3	.....	1.16	.91	13	1.49	1.03	.90	23	1.22	1.00	.94
4	1.65	1.20	.92	14	1.49	1.04	.96	24	1.17	1.00	.91
5	.....	1.20	.92	15	1.45	.99	.97	25	1.28	.96	.92
6	.....	1.19	.92	16	1.45	.98	.98	26	1.16	.96	.92
7	1.68	1.16	.92	17	1.30	1.02	.89	27	1.12	1.01	.92
8	1.66	1.14	.90	18	1.28	1.04	.90	28	1.21	1.00	.92
9	1.64	1.12	.90	19	1.24	1.03	.89	29	1.20	.98	.91
10	1.65	1.12	.90	20	1.18	1.06	.88	30	1.17	.96	.....
								31	1.16	.94	.....

Daily discharge, in second-feet, of Spread Creek near Elk, Wyo., for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1	.....	130	68	11	.....	100	61	21	142	86	62
2	.....	124	68	12	.....	100	62	22	154	84	61
3	.....	128	66	13	.....	87	66	23	160	77	73
4	.....	132	68	14	.....	89	77	24	145	78	69
5	.....	130	68	15	228	80	78	25	177	73	71
6	.....	124	68	16	228	78	80	26	142	73	71
7	.....	116	68	17	183	86	64	27	131	84	71
8	.....	108	64	18	177	89	66	28	157	82	71
9	.....	104	64	19	166	87	64	29	154	78	69
10	.....	104	64	20	148	93	62	30	142	75	69
								31	136	71	.....

NOTE.—Shifting-control method used July 30 to Aug. 7, Aug. 21–26, and Sept. 13–30.

Monthly discharge of Spread Creek near Elk, Wyo., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 15–31	228	131	163	5,500
August	132	71	95.2	5,850
September	80	61	67.8	4,030
The period	.....	.....	.....	15,400

SPRING CREEK NEAR TETON, WYO.

LOCATION.—In NE. ¼ sec. 24, T. 43 N., R. 116 W., one-eighth mile above mouth of creek and 5 miles northeast of Teton post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 16 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff on right bank; read by Jack Canfield. Daily readings discontinued after August 18.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of loose gravel. One channel at all stages. Control formed by gravel riffle; shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 1.44 feet on July 23, 25, and August 13 (discharge, 34 second-feet); minimum stage, 1.39 feet on several days during September (discharge, 24 second-feet).

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Rating curve fairly well defined. Gage read to hundredths twice daily prior to August 18, and thereafter only occasionally by engineer. Daily discharge ascertained by applying mean daily gage height to rating table for period July 16 to August 18, and interpolated for days of no gage height during remainder of season. Records good.

Discharge measurements of Spring Creek near Teton, Wyo., during the year 1917.

[Made by William Kessler.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 16	1.42	30.8	Aug. 9	1.42	29.5	Sept. 13	1.39	24.4
22	1.45	35.4	23	1.43	33.2	Oct. 7	1.38	23.1
Aug. 4	1.42	30.4						

Daily discharge, in second-feet, of Spring Creek near Teton, Wyo., for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1		26	29	11		30	24	21	30	31	24
2		26	28	12		30	24	22	32	31	24
3		26	27	13		34	24	23	34	32	24
4		30	27	14		30	24	24	32	31	24
5		26	26	15		30	24	25	34	31	24
6		26	25	16	30	32	24	26	30	31	24
7		30	24	17	30	32	24	27	28	31	24
8		28	24	18	30	30	24	28	26	31	24
9		30	24	19	30	31	24	29	26	31	24
10		28	24	20	30	31	24	30	30	30	24
								31	26	30	

NOTE.—Discharge interpolated Aug. 19–22, Aug. 24–29, Aug. 31 to Sept. 7, Sept. 9–12, 14–28, and 30.

Monthly discharge of Spring Creek near Teton, Wyo., for the year ending Sept. 30, 1917

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 16–31	34	26	29.9	949
August	34	26	29.9	1,840
September	29	24	24.6	1,460
The period				4,250

COTTONWOOD CREEK NEAR TETON, WYO.

LOCATION.—In NE. ¼ sec. 24, T. 43 N., R. 116 W., one-eighth mile above mouth of creek and 4 miles northeast of Teton post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 16 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff on right bank; read by Jack Canfield and Mrs. Dorothy Mears.

DISCHARGE MEASUREMENTS.—Made by wading. Cable was installed September 29, 1917.

CHANNEL AND CONTROL.—Bed composed of sand and gravel. Control of coarse gravel. One channel at all stages. Banks are seldom overflowed.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 2.05 feet July 23 (discharge, 642 second-feet); minimum stage recorded, 0.40 foot at 10 a. m. September 29 (discharge, 49 second-feet); minimum discharge estimated at 48 second-feet September 30.

DIVERSIONS.—None within 3 miles above or below gage.

REGULATION.—No artificial regulation; stream is outlet of Jenny and Taggart lakes and flow is therefore fairly regular.

ACCURACY.—Stage discharge relation probably permanent. Rating curve well defined up to 600 second-feet. Gage read to hundredths twice daily until August 17; once daily August 18 to September 3; thereafter only occasional readings available. Daily discharge ascertained by applying daily gage height to rating table except for days of no gage height, for which it was interpolated. Records good.

Discharge measurements of Cottonwood Creek near Teton, Wyo., during the year 1917.

[Made by William Kessler.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 16	2.01	622	Aug. 19	1.00	167	Sept. 8	0.72	97.9
23	2.05	575	23	.95	159	13	.65	83.9
Aug. 4	1.40	340	26	.90	154	29	.40	51.0
9	1.20	247	30	.89	155	Oct. 7	.33	40.4

Daily discharge, in second-feet, of Cottonwood Creek near Teton, Wyo., for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1	.....	382	130	11	.....	220	90	21	628	163	67
2	.....	378	130	12	.....	220	87	22	628	170	64
3	.....	337	133	13	.....	176	84	23	642	160	62
4	.....	337	126	14	.....	194	82	24	628	170	60
5	.....	333	119	15	.....	180	80	25	628	166	58
6	.....	337	112	16	623	190	77	26	623	144	56
7	.....	293	105	17	623	201	75	27	618	150	53
8	.....	276	98	18	628	176	73	28	618	144	51
9	.....	264	95	19	628	176	71	29	570	150	49
10	.....	251	92	20	628	170	69	30	498	144	48
								31	405	138	.....

NOTE.—Discharge interpolated Sept. 4-7, 9-12, 14-28, and 30, because of missing gage heights.

Monthly discharge of Cottonwood Creek near Teton, Wyo., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 16-31	642	405	601	19,100
August	382	138	219	13,500
September	133	48	83.2	4,950
The period	.....	.....	.....	37,600

SPRING CREEK NEAR ZENITH, WYO.

LOCATION.—In NE. ¼ sec. 32, T. 42 N., R. 116 W., 200 feet above mouth of creek and half a mile west of Zenith post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 24 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Reference stake spiked to tree on right bank; read by William Kessler.

DISCHARGE MEASUREMENTS.—Made by wading at gage.

CHANNEL AND CONTROL.—Bed composed of gravel and sand. One channel at all stages. Control formed by series of rapids.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 2.00 feet July 24 (discharge, 53 second-feet); minimum discharge, estimated 13 second-feet September 30 (stage not known).

DIVERSIONS.—None.

REGULATION.—Flow regulated by springs, swamps, and seepage from irrigation ditches above.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths occasionally. Daily discharge interpolated for days of no gage height. Records good, except for possible inaccuracy owing to lack of gage heights.

Discharge measurements of Spring Creek near Zenith, Wyo., during the year ending Sept. 30, 1917.

[Made by William Kessler.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 24	2.00	53.0	Aug. 10	1.82	30.6	Aug. 24	1.73	22.0
Aug. 3	1.90	40.2	19	1.78	26.4	Sept. 7	1.67	17.3

Daily discharge, in second-feet, of Spring Creek near Zenith, Wyo., for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1	.....	42	19	11	.....	31	18	21	.....	25	16
2	.....	41	19	12	.....	30	18	22	.....	24	16
3	.....	40	19	13	.....	30	18	23	.....	23	16
4	.....	39	19	14	.....	29	18	24	53	22	15
5	.....	37	18	15	.....	29	18	25	51	22	15
6	.....	36	18	16	.....	28	18	26	49	21	15
7	.....	34	18	17	.....	28	18	27	47	21	14
8	.....	33	18	18	.....	27	17	28	46	21	14
9	.....	32	18	19	.....	27	17	29	45	20	14
10	.....	31	18	20	.....	26	17	30	44	20	13
								31	43	20	.....

NOTE.—Discharge interpolated because of missing gage heights July 25 to Aug. 2, Aug. 4–9, 11–18, 20–23, 25, 27–29, 31, Sept. 1–6, 8–14, 16–30.

Monthly discharge of Spring Creek near Zenith, Wyo., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 24–31	53	43	47.2	749
August	42	20	28.7	1,760
September	19	13	17.0	1,010
The period	.....	.....	.....	3,520

GROS VENTRE RIVER AT ZENITH, WYO.

LOCATION.—In NE. ¼ sec. 5, T. 41 N., R. 116 W., half a mile above mouth of river and three-quarters of a mile south of Zenith post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 13 to September 30, 1917, when station was discontinued.

GAGE.—Vertical staff on right bank; read by Franklin Francis.

DISCHARGE MEASUREMENTS.—Made by wading in several channels below gage.

CHANNEL AND CONTROL.—Bed composed of loose gravel; shifting. Right bank high, not overflowed; left bank low, readily overflowed causing several channels depending upon the stage. Control formed by diagonal bar of coarse gravel, 100 feet below gage; shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 3.30 feet at 5.30 p. m. July 13 (discharge, 1,800 second-feet); minimum stage, 1.85 feet at 5.30 p. m. September 30 (discharge, 134 second-feet).

DIVERSIONS.—Canals above gage divert possibly 200 second-feet during irrigation season.

REGULATION.—None, except that caused by change of head gates on diversions.

ACCURACY.—Stage-discharge relation not permanent. Rating curve well defined below 350 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table; shifting-control method used August 7–23 based upon measurements, which define shifts fairly well. Records fair.

Discharge measurements of Gros Ventre River at Zenith, Wyo., during the year 1917.

[Made by William Kessler.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 13	3.25	1,720	Aug. 24	2.11	296	Sept. 15	2.03	246
Aug. 2	2.43	569	25	2.10	280	Oct. 8	1.93	178
10	2.17	434	31	2.06	263			
18	2.22	411	Sept. 6	2.05	253			

Daily discharge, in second-feet, of Gros Ventre River at Zenith, Wyo., for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day	July.	Aug.	Sept.
1		648	233	11		443	214	21	1,210	331	172
2		593	240	12		443	208	22	1,110	309	166
3		538	233	13	1,770	462	208	23	1,400	309	208
4		538	220	14	1,610	443	220	24	1,180	302	196
5		560	233	15	1,450	418	233	25	1,080	287	214
6		538	254	16	1,330	402	220	26	1,030	274	172
7		510	287	17	1,300	402	220	27	900	287	160
8		426	287	18	1,180	393	190	28	928	287	155
9		435	247	19	1,180	393	190	29	942	287	155
10		443	220	20	1,260	377	172	30	848	260	139
								31	709	247	

Monthly discharge of Gros Ventre River at Zenith, Wyo., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 13–31	1,770	709	1,180	44,500
August	648	247	406	25,000
September	287	139	209	12,400
The period				81,900

SPRING CREEK AT ZENITH, WYO.

LOCATION.—In SE. ¼ sec. 32, T. 42 N., R. 116 W., a quarter of a mile above mouth of creek, and three-quarters of a mile southwest of Zenith post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 24 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Reference stake on right bank; read by William Kessler.

DISCHARGE MEASUREMENTS.—Made by wading below gage.

CHANNEL AND CONTROL.—Bed composed of gravel and sand, covered with moss.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 2.00 feet July 24 (discharge, 18 second-feet); minimum discharge, estimated 8 second-feet September 12–30 (stage not known).

DIVERSIONS.—None.

REGULATION.—Flow regulated by springs and swamps, and is fairly uniform.

ACCURACY.—Stage-discharge relation not permanent. Rating curve poorly defined. Gage read to hundredths occasionally. Daily discharge interpolated for days of no gage height. Records fair.

Discharge measurements of Spring Creek at Zenith, Wyo., during the year ending Sept. 30, 1917.

[Made by William Kessler.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 24	2.00	18.1	Aug. 10	1.84	*a* 4.5	Aug. 24	1.82	*a* 3.7
Aug. 3	1.90	*a* 5.4	19	1.84	*a* 4.5	Sept. 7	1.78	9.1

a Flow in one channel only.

Daily discharge, in second-feet, of Spring Creek at Zenith, Wyo., for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1		15	10	11		12	9	21		12	8
2		14	10	12		12	8	22		11	8
3		14	10	13		12	8	23		11	8
4		14	9	14		12	8	24	18	11	8
5		13	9	15		12	8	25	18	10	8
6		13	9	16		12	8	26	17	10	8
7		13	9	17		12	8	27	17	10	8
8		13	9	18		12	8	28	16	10	8
9		12	9	19		12	8	29	16	10	8
10		12	9	20		12	8	30	16	10	8
								31	15	10	

NOTE.—Discharge interpolated because of missing gage heights July 25 to Aug. 2, Aug. 4–9, 11–18, 20–23, 25, 27–30, Sept. 1–6, and 8–15; estimated Sept. 17–30.

Monthly discharge of Spring Creek at Zenith, Wyo., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet
	Maximum.	Minimum.	Mean.	
July 24–31	18	15	16.6	263
August	15	10	11.9	732
September	10	8	8.47	504
The period				1,500

FISH CREEK NEAR WILSON, WYO.

LOCATION.—About sec. 27, T. 41 N., R. 117 W. (unsurveyed), 300 feet above mouth of creek and 4 miles southeast of Wilson, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 20 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff on right bank installed August 13, 1917; read by Mrs. D. E. Edmiston.

DISCHARGE MEASUREMENTS.—Made by wading in two channels above gage.

CHANNEL AND CONTROL.—Channel covered by heavy growth of moss. Control formed by small log dam at mouth of creek, used to hold back water for irrigation.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 1.70 feet July 20 (discharge, 423 second-feet); minimum stage, 0.81 foot September 29 and 30 (discharge, 152 second-feet).

DIVERSIONS.—Several small diversions during irrigation season.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Standard rating curve fairly well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table; shifting-control method used August 14–19; interpolated for days of no gage height. Record beginning August 20 good, previous to that date poor, chiefly because of missing gage heights and shift in control.

Discharge measurements of Fish Creek near Wilson, Wyo., during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Aug. 5	T. R. Newell	1.48	348	Sept. 4	T. R. Newell	0.94	186
13	William Kessler	1.35	269	18	do	.82	153
20	T. R. Newell	1.20	256				

Daily discharge, in second-feet, of Fish Creek near Wilson, Wyo., for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1		362	179	11		291	169	21	418	243	155
2		357	187	12		281	167	22	413	237	155
3		352	182	13		270	162	23	408	234	157
4		347	182	14		255	169	24	403	228	160
5		347	195	15		234	162	25	398	228	157
6		344	187	16		255	160	26	393	228	155
7		333	187	17		267	157	27	388	200	155
8		323	182	18		255	157	28	382	190	155
9		312	179	19		252	155	29	377	182	152
10		302	174	20	423	258	155	30	372	179	152
								31	367	174	

NOTE.—Discharge interpolated because of missing gage heights, July 21–31, Aug. 1–3, 7–12; shifting-control method used Aug. 14–19.

Monthly discharge of Fish Creek near Wilson, Wyo., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 20–31	423	367	395	9,400
August	362	174	268	16,500
September	195	152	167	9,940
The period				35,800

MOSQUITO CREEK NEAR WILSON, WYO.

LOCATION.—About sec. 15, T. 40 N., R. 117 W., near mouth of creek and 5 miles south of Wilson, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 20 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff on left bank; read by T. R. Newell.

DISCHARGE MEASUREMENTS.—Made by wading above gage.

CHANNEL AND CONTROL.—Bed composed of cobbles. Control formed by riffle just below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 2.23 feet July 20 (discharge, 53 second-feet); minimum stage, 1.58 feet September 29 and 30 (discharge, 11 second-feet).

DIVERSIONS.—Small diversion above during irrigation season.

REGULATION.—None, other than that due to diversion.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths occasionally. Daily discharge ascertained by applying gage height to rating table; interpolated for days of no gage height. Records only fair, chiefly because of infrequency of gage readings.

Discharge measurements of Mosquito Creek near Wilson, Wyo., during the year ending Sept. 30, 1917.

[Made by T. R. Newell.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 20	2.23	52.8	Aug. 19	1.83	20.7	Sept. 17	1.60	11.4
Aug. 4	1.94	27.1	Sept. 1	1.73	14.9	29	1.58	11.5
6	1.94	27.5						

Daily discharge, in second-feet, of Mosquito Creek near Wilson, Wyo., for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1		33	16	11		25	13	21	51	18	11
2		31	15	12		24	13	22	50	18	11
3		30	14	13		24	13	23	48	18	11
4		28	14	14		23	13	24	46	18	11
5		28	14	15		22	13	25	45	18	11
6		28	14	16		22	13	26	43	17	11
7		27	14	17		21	12	27	41	17	11
8		27	14	18		21	12	28	40	17	11
9		26	14	19		20	11	29	38	17	11
10		26	13	20	53	19	11	30	36	17	11
								31	35	17	

NOTE.—Discharge interpolated because of missing gage heights, July 21–31, Aug. 1–3, 5, 7–18, 21–31, Sept. 3–16, and 20–28.

Monthly discharge of Mosquito Creek near Wilson, Wyo., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 20–31	53	35	43.8	1,040
August	33	17	22.5	1,380
September	16	11	12.5	744
The period				3,160

FLAT CREEK NEAR CHENEY, WYO.

LOCATION.—In NE. ¼ sec. 29, T. 40 N., R. 116 W., 2 miles above mouth of creek and 1 mile south of Cheney post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 7 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff on left bank; installed July 7, 1917; read by B. W. Clevenger.

DISCHARGE MEASUREMENTS.—Made by wading above gage.

CHANNEL AND CONTROL.—Bed composed of gravel. One channel at all stages. Control indefinite but seemingly permanent during season.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 1.33 feet at 6 a. m. July 28 and 29 (discharge, 264 second-feet); minimum stage recorded, 0.90 foot at 5 p. m. September 21, 29, and 30 (discharge, 129 second-feet).

DIVERSIONS.—No diversions immediately above or below gage, but valley above is irrigated by numerous canals; amount diverted not known.

REGULATION.—None except that due to diversions.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve fairly well defined. Gage read to hundredths twice daily; accuracy of observer's record for several days is doubtful. Daily discharge ascertained by applying mean daily gage height to rating table. Records good, except for days of questionable gage readings.

Discharge measurements of Flat Creek near Cheney, Wyo., during the year ending Sept. 30, 1917.

[Made by William Kessler.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 8	1.09	173	July 29	1.31	254	Sept. 1	0.94	139
11	1.05	162	Aug. 16	1.18	203	20	.91	129
27	1.17	194						

Daily discharge, in second-feet, of Flat Creek near Cheney, Wyo., for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1	.....	211	178	11	165	224	201	21	140	215	129
2	.....	224	215	12	165	220	194	22	137	215	133
3	.....	224	201	13	160	224	191	23	160	211	148
4	.....	224	201	14	160	224	188	24	181	215	150
5	.....	228	204	15	158	224	191	25	201	211	155
6	.....	232	207	16	160	215	207	26	188	215	152
7	158	228	211	17	158	224	201	27	191	215	146
8	165	224	211	18	152	220	201	28	259	215	144
9	160	224	215	19	144	220	191	29	254	201	137
10	165	228	207	20	142	215	140	30	249	204	129
								31	207	201	.....

Monthly discharge of Flat Creek near Cheney, Wyo., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 7–31	259	137	175	8,680
August	232	201	219	13,500
September	215	129	179	10,700
The period	.....	.....	.....	32,900

HORSE CREEK NEAR CHENEY, WYO.

LOCATION.—In NW. ¼ SE. ¼ sec. 14, T. 39 N., R. 116 W., 300 feet above bridge on road from Hoback to Jackson, a quarter of a mile above mouth, and 6 miles southeast of Cheney post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 8 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Reference point on right bank; read by William Kessler.

DISCHARGE MEASUREMENTS.—Made by wading above gage.

CHANNEL AND CONTROL.—Control for low stage composed of loose gravel; for high stages control formed by old log dam, short distance below.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 3.76 feet July 3 (discharge, 139 second-feet); minimum discharge, estimated 11 second-feet, September 26–30 (stage not known).

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve fairly well defined. Gage read to hundredths occasionally. Daily discharge ascertained by applying daily gage height to rating table; interpolated for days of no gage height. Records only fair, chiefly because of missing gage heights.

Discharge measurements of Horse Creek near Cheney, Wyo., during the year ending Sept. 30, 1917.

[Made by William Kessler.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 11	3.43	113	July 28	2.50	44.7	Sept. 1	2.00	16.7
27	2.44	45.8	Aug. 15	2.10	21.2	19	1.93	10.9

Daily discharge, in second-feet, of Horse Creek near Cheney, Wyo., for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1	.....	39	16	11	112	26	14	21	69	20	12
2	.....	37	15	12	108	25	14	22	65	19	12
3	.....	35	15	13	103	24	13	23	60	19	12
4	.....	33	15	14	99	23	13	24	56	19	12
5	.....	32	15	15	95	22	13	25	52	18	12
6	.....	31	15	16	90	21	13	26	47	18	11
7	.....	30	15	17	86	21	13	27	43	18	11
8	139	29	14	18	82	21	13	28	47	17	11
9	130	28	14	19	78	20	12	29	45	17	11
10	122	27	14	20	73	20	12	30	43	17	11
								31	41	17	.....

NOTE.—Discharge interpolated because of missing gage heights July 9, 12–26, July 29 to Aug. 14, Aug. 16–31, and Sept. 2–18; estimated Sept. 20–30.

Monthly discharge of Horse Creek near Cheney, Wyo., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 8–31	139	41	78.5	3,740
August	39	17	24.0	1,480
September	16	11	13.1	780
The period	.....	.....	.....	6,000

HOBACK RIVER NEAR CHENEY, WYO.

LOCATION.—In NW. ¼ NW. ¼ sec. 26, T. 39 N., R. 116 W., a quarter of a mile above mouth and 8 miles southeast of Cheney post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 9 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff in three sections on right bank; read by Jim C. Lmeson.

DISCHARGE MEASUREMENTS.—Made by wading or from cable 700 feet below gage.

CHANNEL AND CONTROL.—Bed very rough; covered with large boulders. One channel at all stages. Control formed by series of rapids just below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 9.50 feet at 6.30 a. m. July 9 (discharge, 4,000 second-feet); minimum stage recorded, 5.31 feet September 22 and 23 (discharge, 394 second-feet).

DIVERSIONS.—None within 5 miles.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during season. Rating curve fairly well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, except for period of no gage heights, for which it was estimated. Records good.

Discharge measurements of Hoback River near Cheney, Wyo., during the year ending Sept. 30, 1917.

[Made by William Kessler.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 9	9.14	[a] 3,590	Sept. 1	5.51	499	Sept. 2	5.49	449
28	7.10	1,550	2	5.50	456	19	5.35	422

[a] Surface velocity observed; coefficient of 0.90 used to reduce to mean velocity.

Daily discharge, in second-feet, of Hoback River near Cheney, Wyo., for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1	.....	975	465	11	3,420	697	438	21	2,180	584	401
2	.....	961	465	12	3,130	697	438	22	1,930	574	397
3	.....	926	457	13	3,010	703	442	23	2,180	564	397
4	.....	933	457	14	2,840	680	449	24	1,900	554	434
5	.....	905	513	15	2,480	604	442	25	1,710	536	457
6	.....	800	508	16	2,250	599	430	26	1,690	531	434
7	.....	812	491	17	2,380	604	419	27	1,620	545	422
8	.....	774	491	18	2,280	604	415	28	1,510	522	415
9	3,750	738	469	19	2,240	594	412	29	1,350	499	401
10	3,750	750	442	20	2,120	584	404	30	1,120	491	398
								31	975	474	.....

NOTE.—Discharge estimated because of missing gage heights Sept. 27–30.

Monthly discharge of Hoback River near Cheney, Wyo., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 9–31	3,750	975	2,250	103,000
August	975	474	671	41,300
September	513	397	440	26,200
The period	.....	.....	.....	170,000

FALL CREEK NEAR CHENEY, WYO.

LOCATION.—About sec. 22, T. 39 N., R. 116 W. (unsurveyed), a short distance from mouth of creek and 8 miles south of Cheney, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 19 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff on right bank, 40 feet upstream from bridge near Sewell ranch; read by Thomas Sewell.

DISCHARGE MEASUREMENTS.—Made by wading below gage.

CHANNEL AND CONTROL.—Bed composed of hardpan. One channel at all stages. Control permanent during season.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 2.40 feet at 11 a. m. July 19 (discharge, 142 second-feet); minimum stage, 1.65 feet September 30 (discharge, 38 second-feet).

DIVERSIONS.—Small diversion above gage during irrigation season.

REGULATION.—None except that caused by diversion.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table, except for days indicated in footnote to daily-discharge table. Records excellent.

Discharge measurements of Fall Creek near Cheney, Wyo., during the year ending Sept. 30, 1917.

[Made by T. R. Newell.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 19	2.41	142	Aug. 6	1.94	67.5	Sept. 3	1.70	41.5
Aug. 3	1.98	77.5	21	1.78	47.0	22	1.66	38.4

Daily discharge, in second-feet, of Fall Creek near Cheney, Wyo., for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1		93	41	11		70	41	21	125	46	38
2		93	41	12		70	41	22	125	46	38
3		76	41	13		70	41	23	125	46	38
4		78	41	14		50	41	24	117	46	41
5		78	41	15		50	41	25	125	46	41
6		69	41	16		50	41	26	109	46	41
7		70	41	17		50	41	27	109	50	41
8		70	41	18		50	41	28	109	50	41
9		70	41	19	142	50	40	29	109	46	41
10		70	41	20	134	50	38	30	109	41	38
								31	109	41	

NOTE.—Discharge interpolated because of missing gage heights, Aug. 7, 8, Sept. 19, 21.

Monthly discharge of Fall Creek near Cheney, Wyo., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 19–31	142	109	119	3,070
August	93	41	59.1	3,630
September	41	38	40.5	2,410
The period				9,110

DOG CREEK NEAR CHENEY, WYO.

LOCATION.—About sec. 15, T. 38 N., R. 116 W. (unsurveyed), half a mile above mouth of creek, and 11 miles south of Cheney post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 18 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff on right bank; read by T. R. Newell.

DISCHARGE MEASUREMENT.—Made by wading above gage.

CHANNEL AND CONTROL.—Bed composed of gravel. Control formed by large boulders.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 1.75 feet July 18 (discharge, 39 second-feet); minimum stage, 1.20 feet during latter part of September (discharge, 7 second-feet).

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths occasionally. Daily discharge ascertained by applying daily gage height to rating table; interpolated for days of no gage height. Records only fair, chiefly because of infrequency of gage readings.

Discharge measurements of Dog Creek near Cheney, Wyo., during the year ending Sept. 30, 1917.

[Made by T. R. Newell.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 21	1.61	27.6	Aug. 21	1.32	10.4	Sept. 22	1.20	7.34
Aug. 3	1.42	15.6	Sept. 3	1.23	7.75	22	1.20	7.24
7	1.38	13.4						

Daily discharge, in second-feet, of Dog Creek near Cheney, Wyo., for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1		17	9	11		13	8	21	28	11	7
2		16	8	12		13	8	22	27	10	7
3		15	8	13		13	8	23	26	10	7
4		14	8	14		13	8	24	25	10	7
5		14	8	15		13	8	25	24	10	7
6		14	8	16		13	8	26	23	10	7
7		13	8	17		12	8	27	22	10	7
8		13	8	18	39	12	8	28	21	10	7
9		13	8	19	35	12	7	29	20	10	7
10		13	8	20	32	12	7	30	19	10	7
								31	18	9	

NOTE.—Discharge interpolated because of missing gage heights, July 19–20, 22–31, Aug. 2, 4–6, 8–15, 17–20, 22–30, Sept. 1–2, 4–15, 17–21, 24–27, and 29.

Monthly discharge of Dog Creek near Cheney, Wyo., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 18–31	39	18	25.6	711
August	17	9	12.2	750
September	9	7	7.63	454
The period				1,920

CABIN CREEK NEAR CHENEY, WYO.

LOCATION.—About sec. 27, T. 38 N., R. 116 W. (unsurveyed), near mouth of creek and 14 miles south of Cheney post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 18 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff on left bank; read by T. R. Newell.

DISCHARGE MEASUREMENTS.—Made by wading above gage.

CHANNEL AND CONTROL.—Control of boulders in gravel drift.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 0.97 foot July 18 (discharge, 18 second-feet); minimum stage, 0.60 foot during latter part of September (discharge, 2 second-feet).

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths occasionally. Daily discharge ascertained by applying daily gage height to rating table; interpolated for days of no gage height. Records only fair, chiefly because of missing gage heights.

Discharge measurements of Cabin Creek near Cheney, Wyo., during the year ending Sept. 30, 1917.

[Made by T. R. Newell.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 22	0.88	11.6	Aug. 7	0.71	4.82	Sept. 3	0.58	2.14
31	.77	6.12	21	.63	2.98	23	.65	3.15

Daily discharge, in second-feet, of Cabin Creek near Cheney, Wyo., for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1		6	3	11		5	3	21	12	3	3
2		6	2	12		4	3	22	12	3	3
3		6	2	13		4	3	23	11	3	3
4		6	2	14		4	3	24	11	3	3
5		6	3	15		4	3	25	10	3	3
6		6	3	16		4	3	26	10	3	2
7		5	3	17		4	3	27	9	3	2
8		5	3	18	18	4	3	28	9	3	2
9		5	3	19	16	3	3	29	8	3	2
10		5	3	20	14	3	3	30	8	3	2
								31	7	3	

NOTE.—Discharge interpolated because of missing gage heights, July 19, 20, 23–30, Aug. 1–6, 8–15, 17–20, 22–30, Sept. 1, 2, 4, 6–15, 17–22, 24–27, and 29.

Monthly discharge of Cabin Creek near Cheney, Wyo., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 18–31	18	7	11.1	308
August	6	3	4.13	254
September	3	2	2.73	162
The period				724

BAILEY CREEK NEAR ALPINE, IDAHO.

LOCATION.—About sec. 33, T. 38 N., R. 116 W. (unsurveyed), in Lincoln County, Wyo., half a mile above mouth and 14 miles above Alpine, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 11 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Stevens continuous water-stage recorder installed July 11, 1917, on right bank. Vertical staff at same site and datum; read by T. R. Newell.

DISCHARGE MEASUREMENTS.—Made by wading near mouth of stream.

CHANNEL AND CONTROL.—Control of rock just below gage; permanent. One channel at all stages. Banks not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 2.98 feet at 4.25 a. m. July 14 (discharge, 31 second-feet); minimum stage, 2.73 feet September 19, 20 (discharge, 21 second-feet).

DIVERSIONS.—None.

REGULATION.—Stream is outlet for Bailey Lake which is spring fed; flow very regular with few fluctuations.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined for stages which occurred during period of record. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph, except for period indicated in footnote to daily-discharge table. Records excellent except for period July14–31, when gage clock stopped.

Discharge measurements of Bailey Creek near Alpine, Idaho, during the year 1917.

[Made by T. R. Newell.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 12	2.86	26.2	Aug. 18	2.80	25.2	Sept. 20	2.75	22.0
Aug. 1	2.86	25.7	Sept. 4	2.80	24.2	Oct. 1	2.77	23.2

Daily discharge, in second-feet, of Bailey Creek near Alpine, Idaho, for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1		26	24	11	26	26	23	21		24	22
2		26	24	12	26	26	22	22		23	22
3		26	24	13	26	26	22	23		23	24
4		26	24	14		26	22	24		23	23
5		26	23	15		25	22	25		23	23
6		25	24	16		25	22	26	27	24	23
7		25	23	17	27	25	22	27		24	24
8		26	23	18		24	22	28		23	24
9		26	23	19		24	22	29		23	23
10		26	23	20		24	22	30		23	23
								31		23	

NOTE.—Discharge July 14–31, estimated.

Monthly discharge of Bailey Creek near Alpine, Idaho, for the year ending Sept. 30, 1917

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 11–31			26.9	1,120
August	26	23	24.7	1,520
September	24	22	22.9	1,360
The period				4,000

WOLF CREEK NEAR ALPINE, IDAHO.

LOCATION.—About sec. 4, T. 37 N., R. 117 W. (unsurveyed), in Lincoln County, Wyo., 700 feet above mouth of creek and 9 miles east of Alpine, Bonneville County. Wolf Creek enters Snake River 8 miles above mouth of Snake River canyon.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 17 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Lietz water-stage recorder on right bank referred to outside vertical staff; installed July 17, 1917; read by T. R. Newell.

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

CHANNEL AND CONTROL.—Bed of stream very rough. Control formed by rocky riffle just below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 2.52 feet at 4 p. m. July 18 (discharge, about 70 second-feet); minimum stage, 1.76 feet September 26, 27, 30 (discharge, 14 second-feet).

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined below 40 second-feet. Daily discharge prior to July 31 based upon rating curve of doubtful accuracy. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspection of recorder graph; interpolated for days of no gage height; estimated September 21–23. Records good.

Discharge measurements of Wolf Creek near Alpine, Idaho, during the year 1917.

[Made by T. R. Newell.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 17	2.47	68.4	Aug. 22	1.89	20.2	Sept. 15	1.79	[a] 15.9
31	2.04	38.8	Sept. 6	1.82	16.8	Oct. 2	1.74	[a] 13.5
Aug. 8	1.97	30.0						

[a] Actual measured discharge reduced by 0.5 second-foot because measurement was made at section below small spring.

Daily discharge, in second-feet, of Wolf Creek near Alpine, Idaho, for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1	.....	36	18	11	.....	26	16	21	61	21	15
2	.....	36	18	12	.....	26	16	22	59	21	16
3	.....	34	17	13	.....	25	17	23	60	22	17
4	.....	33	16	14	.....	24	17	24	58	22	15
5	.....	31	18	15	.....	23	16	25	55	21	15
6	.....	30	18	16	.....	22	16	26	52	21	14
7	.....	30	17	17	68	21	16	27	49	21	14
8	.....	30	17	18	68	21	15	28	47	20	15
9	.....	29	16	19	66	21	15	29	44	20	15
10	.....	28	16	20	64	20	15	30	42	18	14
								31	39	18	.....

NOTE.—Discharge interpolated because of missing gage heights, July 17, 27–30, and Sept. 14–15; estimated Sept. 21–23.

Monthly discharge of Wolf Creek near Alpine, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 17-31	68	39	55.5	1,650
August	36	18	24.9	1,530
September	18	14	16.0	952
The period				4,130

GREYS RIVER NEAR ALPINE, IDAHO.

LOCATION.—About 1¾ miles above mouth of stream, in Lincoln County, Wyo., and 3 miles southeast of Alpine, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 6 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff in two sections on left bank, high-water section installed July 7, 1917, low-water section installed August 10, 1917; read by Mrs. Alice Gillis.

DISCHARGE MEASUREMENTS.—Made from cable 200 feet below gage.

CHANNEL AND CONTROL.—Bed composed of loose rock and boulders; rough. One channel at all stages. Control formed by large boulders in riffle 500 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 2.95 feet July 6 (discharge, 2,520 second-feet); minimum stage recorded, 0.42 foot at 6 p. m. September 30 (discharge, 420 second-feet).

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve for period July 6–26 well defined by measurements referred to high-water gage; for period August 10 to September 30 well defined by measurements referred to low-water gage; discharge for intervening period based upon curve connecting curves defined by measurements referred to low and high water sections. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table, except for periods indicated in footnote to daily-discharge table. Records good.

Discharge measurements of Greys River near Alpine, Idaho, during the year ending Sept. 30, 1917.

[Made by T. R. Newell.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 9	2.80	2,340	Aug. 10	0.98	782	Sept. 7	0.68	567
25	1.64	1,160	24	.75	593	13	.53	483

NOTE.—Measurements in July referred to high-water section and those in August and September to low-water section of gage.

Daily discharge, in second-feet, of Greys River near Alpine, Idaho, for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1	.....	910	538	11	2,140	755	490	21	1,310	615	450
2	.....	910	538	12	2,030	755	490	22	1,310	615	440
3	.....	860	520	13	1,920	741	472	23	1,310	615	508
4	.....	825	520	14	1,810	720	508	24	1,220	615	490
5	.....	825	490	15	1,660	685	490	25	1,160	615	490
6	2,520	815	490	16	1,510	650	460	26	1,070	580	460
7	2,500	805	556	17	1,460	650	460	27	1,010	580	445
8	2,470	795	538	18	1,410	636	455	28	960	580	435
9	2,360	785	520	19	1,360	636	455	29	935	550	430
10	2,300	776	508	20	1,310	636	455	30	935	550	420
								31	935	550	.....

NOTE.—Discharge interpolated because of missing gage heights, July 7 and Aug. 6–9.

Monthly discharge of Greys River near Alpine, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 6–31	2,520	935	1,570	81,000
August	910	550	698	42,900
September	556	420	484	28,800
The period	.....	.....	.....	153,000

SALT RIVER NEAR ALPINE, IDAHO.

LOCATION.—About sec. 4, T. 36 N., R. 119 W. (unsurveyed), in Lincoln County, Wyo., 3 miles south of State line bridge at Alpine, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 1 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Sloping staff on right bank; installed July 4, 1917; read by Glidden McNeel.

DISCHARGE MEASUREMENTS.—Made from cable below gage. Miscellaneous measurements during season of 1916 made by wading. (*See* Water-Supply Paper 443, p. 181.)

CHANNEL AND CONTROL.—Bed composed of coarse gravel and boulders. One channel at all stages. Control formed by riffle 100 feet below gage; permanent during season.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 3.63 feet at 7 p. m. July 1 (discharge, 2,010 second-feet); minimum stage recorded, 2.30 feet September 19–21 (discharge, 801 second-feet).

DIVERSIONS.—Considerable water diverted above gage for irrigation in Salt River valley; amount not determined. No diversions below gage.

REGULATION.—None, except that due to diversions.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table, and interpolating for days of no gage height. Records excellent.

Discharge measurements of Salt River near Alpine, Idaho, during the years 1916 and 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1916.		*Feet.*	*Sec.-ft.*	1917.		*Feet.*	*Sec.-ft.*
Sept. 5	Baldwin and Blossom	2.16	732	Aug. 12	T. R. Newell	2.68	1,100
Oct. 29	C. G. Paulsen	2.00	664	26	do	2.52	918
1917.				Sept. 19	do	2.39	837
July 6	T. R. Newell	3.32	1,670	Oct. 4	do	2.29	817
25	do	2.76	1,140				

Daily discharge, in second-feet, of Salt River near Alpine, Idaho, for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1	2,010	1,170	918	11	1,700	1,170	847	21	1,040	1,100	801
2	1,930	1,170	859	12	1,470	1,070	859	22	1,040	992	836
3	1,850	1,170	859	13	1,400	1,080	859	23	1,120	955	868
4	1,680	1,120	912	14	1,280	1,170	899	24	1,220	955	899
5	1,680	1,120	859	15	1,170	1,170	899	25	1,150	948	872
6	1,680	1,170	912	16	1,240	1,060	885	26	1,080	940	859
7	1,650	1,170	899	17	1,120	1,060	859	27	1,140	985	859
8	1,550	1,170	859	18	1,170	1,080	859	28	1,220	985	859
9	1,550	1,170	859	19	1,080	1,080	801	29	1,220	932	879
10	1,650	1,170	847	20	1,000	1,080	801	30	1,170	925	813
								31	1,260	925	.....

NOTE.—Discharge interpolated because of missing gage heights, July 2, 5, and Sept. 23.

Monthly discharge of Salt River near Alpine, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July	2,010	1,000	1,370	84,200
August	1,170	925	1,070	65,800
September	918	801	863	51,400
The period	.....	.....	.....	201,000

McCOY CREEK NEAR ALPINE, IDAHO.

LOCATION.—In sec. 6, T. 3 S., R. 46 E., half a mile above mouth of creek and 3 miles west of Alpine post office, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 15 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff on right bank, installed July 15, 1917; read by J. T. Nelson.

DISCHARGE MEASUREMENTS.—Made by wading above gage.

CHANNEL AND CONTROL.—Channel composed of clean, coarse gravel and boulders. Control practically permanent during season.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 3.51 feet at 11 a. m. July 15 (discharge, 131 second-feet); minimum stage, 2.98 feet at 6.15 a. m. August 28 (discharge, 24 second-feet).

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths two or three times weekly. Daily discharge ascertained by applying daily gage height to rating table, except for days of no gage height for which it was interpolated. Records good, except for possible inaccuracy due to infrequency of readings.

Discharge measurements of McCoy Creek near Alpine, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
July 15	Anderson and Baldwin.	3.51	130	Sept. 9	T. R. Newell.....	3.00	27.2
27	T. R. Newell.....	3.30	88.4	26	.....do.....	3.02	28.9
Aug. 11	.....do.....	3.15	51.9				
25	.....do.....	3.05	35.9				

Daily discharge, in second-feet, of McCoy Creek near Alpine, Idaho, for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1.....	.....	81	26	11.....	.....	52	30	21.....	103	48	26
2.....	.....	79	26	12.....	.....	44	31	22.....	100	45	28
3.....	.....	76	26	13.....	.....	44	33	23.....	96	41	30
4.....	.....	74	26	14.....	.....	44	35	24.....	92	38	33
5.....	.....	72	26	15.....	131	44	33	25.....	89	35	35
6.....	.....	70	26	16.....	118	44	32	26.....	85	30	30
7.....	.....	68	26	17.....	118	44	30	27.....	85	27	26
8.....	.....	66	26	18.....	111	44	30	28.....	85	24	26
9.....	.....	64	26	19.....	129	44	28	29.....	85	26	26
10.....	.....	56	28	20.....	107	46	26	30.....	85	26	26
								31.....	85	26	.....

NOTE.—Discharge interpolated because of missing gage heights, July 21–25, 28–30, Aug. 2, 3, 5–8, 13, 16–18, 20, 22–24, 27, 30, 31, Sept. 1–6, 8, 10–13, 15, 16, 19, 22–24, 28–30.

Monthly discharge of McCoy Creek near Alpine, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 15–31	131	85	100	3,370
August	81	24	49.1	3,020
September	35	26	28.5	1,700
The period	.....	.....	.....	8,090

INDIAN CREEK NEAR BLOWOUT, IDAHO.

LOCATION.—In SE. ¼ sec. 13, T. 2 S., R. 45 E., 150 yards above mouth, three-quarters of a mile below Alpine hot springs, half a mile south of Blowout post office, and 6 miles northwest of Alpine, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 14 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff on left bank 100 yards below bridge; read by Peter D. Rome.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and small boulders. Control formed by log across stream.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 2.19 feet July 14 (discharge, 125 second-feet); minimum stage, 0.8 foot September 19 and 20 (discharge, 0.5 second-foot).

DIVERSIONS.—Small diversions above, none below.

REGULATION.—None, other than that caused by diversions.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve fairly well defined. Gage read to quarter-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table, except for periods indicated in footnote to daily-discharge table. Records good.

Discharge measurements of Indian Creek near Blowout, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
July 14	Baldwin and Anderson.	2.19	125	Aug. 19	M. D. Anderson	1.05	4.23
24	M. D. Anderson	1.74	61.6	27	do	1.01	3.82
Aug. 2	do	1.60	40.7	Sept. 16	do	.93	2.28
10	do	1.25	16.0				

Daily discharge, in second-feet, of Indian Creek near Blowout, Idaho, for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1		34	2.0	11		5	1.0	21	88	6	1.0
2		36	1.0	12		3	1.0	22	84	7	2.0
3		19	1.0	13		3	1.0	23	81	8	1.0
4		13	1.0	14	125	3	1.0	24	63	19	1.0
5		7	1.0	15	104	2	.9	25	60	19	1.0
6		3	1.0	16	104	3	1.8	26	60	13	1.0
7		3	1.0	17	104	3	1.0	27	54	2.6	1.0
8		10	1.0	18	96	5	1.0	28	52	2	1.0
9		10	1.0	19	96	5	.5	29	48	2	1.0
10		12	1.0	20	96	5	.5	30	43	2	1.0
								31	38	2	

NOTE.—Discharge interpolated because of missing gage heights, Aug. 15–18 and 30; estimated Aug. 20–23.

Monthly discharge of Indian Creek near Blowout, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 14–31	125	38	77.6	2,770
August	36	2	8.54	525
September	2	.5	1.06	63.1
The period				3,360

BIG ELK CREEK NEAR BLOWOUT, IDAHO.

LOCATION.—In sec. 23, T. 1 S., R. 45 E., 100 yards above mouth of creek and 5 miles northwest of Blowout, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 15 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff on right bank; installed July 15, 1917; read by Roy Wilhite, July 15 to August 27, and by Oliver Jacobson for remainder of season.

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

CHANNEL AND CONTROL.—Bed composed of clean, coarse gravel and boulders. Control formed by riffle of same material. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 2.34 feet at 6.45 p. m. July 16 (discharge, 268 second-feet); minimum stage, 1.1 feet at 4.30 p. m. September 29 and 30 (discharge, 64 second-feet).

DIVERSIONS.—Small diversions above during irrigation season.

REGULATION.—None except that due to diversions.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table except for periods indicated in footnote to daily-discharge table. Records good.

Discharge measurements of Big Elk Creek near Blowout, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
July 15	Anderson and Baldwin.	2.32	257	Aug. 28	M. D. Anderson.....	1.28	85.6
24	M. D. Anderson.....	1.90	188	Sept. 6	.....do.....	1.28	81.0
Aug. 2	.....do.....	1.62	131	16	.....do.....	1.16	68.8
10	.....do.....	1.50	108	23	.....do.....	1.25	81.5
19	.....do.....	1.35	91.9				

Daily discharge, in second-feet, of Big Elk Creek near Blowout, Idaho, for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1.....	.....	139	80	11.....	.....	105	76	21.....	198	88	67
2.....	.....	133	77	12.....	.....	101	74	22.....	194	88	67
3.....	.....	130	80	13.....	.....	98	74	23.....	179	88	74
4.....	.....	128	81	14.....	.....	97	76	24.....	181	86	67
5.....	.....	115	83	15.....	264	95	69	25.....	172	88	69
6.....	.....	117	83	16.....	268	97	70	26.....	163	85	67
7.....	.....	116	80	17.....	230	98	69	27.....	172	84	67
8.....	.....	114	80	18.....	236	98	69	28.....	177	81	67
9.....	.....	113	77	19.....	216	94	69	29.....	159	77	64
10.....	.....	112	77	20.....	222	92	67	30.....	154	89	64
								31.....	145	83	.....

NOTE.—Discharge interpolated because of missing gage heights, Aug. 1 and 7–9.

Monthly discharge of Big Elk Creek near Blowout, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 15–31	268	145	196	6,610
August	139	77	101	6,210
September	83	64	72.8	4,330
The period				17,200

LITTLE ELK CREEK NEAR BLOWOUT, IDAHO.

LOCATION.—About sec. 23, T. 1 S., R. 46 E., a short distance above mouth of creek and 5½ miles northwest of Blowout, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 14 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff on left bank.

DISCHARGE MEASUREMENTS.—Made by wading below gage.

CHANNEL AND CONTROL.—Control of gravel and boulders; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 1.40 feet August 31 (discharge, 3.1 second-feet); minimum stage, 1.15 feet August 4 (discharge, 0.7 second-foot).

DIVERSIONS.—Small diversion above.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table, except for periods indicated in footnote to daily-discharge table. Records good.

Discharge measurements of Little Elk Creek near Blowout, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
July 14	Baldwin and Anderson.	1.38	2.98	Aug. 28	M. D. Anderson.....	1.35	2.23
25	M. D. Anderson.....	1.20	.90	Sept. 22	.....do.....	1.30	1.86
Aug. 10	.....do.....	1.21	1.26				

Daily discharge, in second-feet, of Little Elk Creek near Blowout, Idaho, for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1.....	.....	0.7	2.5	11.....	.....	1.3	1.9	21.....	2.1	2.1	1.7
2.....	.....	1.4	2.3	12.....	.....	1.1	1.9	22.....	1.9	2.1	1.7
3.....	.....	1.4	2.3	13.....	.....	1.8	1.9	23.....	1.7	2.1	1.9
4.....	.....	1.4	2.9	14.....	2.9	2.0	2.1	24.....	1.0	2.3	1.7
5.....	.....	1.3	2.5	15.....	2.6	1.8	1.9	25.....	1.0	2.0	1.7
6.....	.....	1.0	2.1	16.....	2.4	1.9	1.9	26.....	1.0	2.5	1.7
7.....	.....	1.0	2.1	17.....	2.1	2.1	1.9	27.....	1.9	2.3	1.9
8.....	.....	1.0	2.5	18.....	2.1	2.1	1.9	28.....	1.8	2.4	1.4
9.....	.....	1.1	2.3	19.....	2.1	2.1	1.9	29.....	2.0	2.3	1.3
10.....	.....	1.1	2.1	20.....	2.0	2.4	1.9	30.....	1.7	2.3	1.3
								31.....	1.4	3.1	.....

NOTE.—Discharge interpolated because of missing gage heights, July 15 and Aug. 7–9.

Monthly discharge of Little Elk Creek near Blowout, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 14–31	2.9	1.0	1.87	66.8
August	3.1	.7	1.79	110
September	2.9	1.3	1.97	117
The period				294

BEAR CREEK NEAR IRWIN, IDAHO.

LOCATION.—In sec. 20, T. 1 S., R. 45 E., at wagon bridge a quarter of a mile above mouth of creek and 7 miles southeast of Irwin, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 23 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff on right bank, at downstream side of Hill's wagon bridge installed July 23, 1917; read by Henry Hill.

DISCHARGE MEASUREMENTS.—Made by wading above bridge.

CHANNEL AND CONTROL.—Bed consists of coarse gravel and boulders. Control shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 2.28 feet July 23 and 24 (discharge, 134 second-feet); minimum stage, 1.70 feet on several days during latter part of September (discharge, 53 second-feet).

DIVERSIONS.—Several small diversions above gage.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Two well-defined rating curves used, one applicable July 23 to August 12 and September 21 to 30, the other August 20 to September 15. Gage read to quarter-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table, except August 13 to 19 and September 16 to 20, for which shifting-control method was used. Records good.

Discharge measurements of Bear Creek near Irwin, Idaho, during the year ending Sept. 30, 1917.

[Made by M. D. Anderson.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 23	2.28	134	Aug. 20	1.93	90.2	Sept. 15	1.70	58.2
Aug. 2	2.08	104	26	1.84	75.9	21	1.70	53.3
12	1.98	89.7	Sept. 6	1.78	70.2			

Daily discharge, in second-feet, of Bear Creek near Irwin, Idaho, for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1	.....	106	75	11	.....	90	66	21	.....	89	53
2	.....	104	74	12	.....	90	66	22	.....	87	53
3	.....	104	72	13	.....	92	69	23	134	86	60
4	.....	104	72	14	.....	89	72	24	134	86	60
5	.....	104	69	15	.....	89	59	25	131	86	53
6	.....	100	69	16	.....	89	58	26	130	80	53
7	.....	100	75	17	.....	90	57	27	125	83	53
8	.....	96	72	18	.....	92	56	28	137	83	53
9	.....	94	69	19	.....	90	55	29	130	79	53
10	.....	93	69	20	.....	90	54	30	125	79	53
								31	107	75	.....

Monthly discharge of Bear Creek near Irwin, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 23–31	134	107	128	2,290
August	106	75	90.9	5,590
September	75	53	62.4	3,710
The period				11,600

PALISADE CREEK NEAR IRWIN, IDAHO.

LOCATION.—In sec. 26, T. 1 N., R. 44 E., at bridge a quarter of a mile above mouth of creek and 3½ miles southeast of Irwin, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 12 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff on upstream side of left abutment of bridge; read by Leo Clark.

DISCHARGE MEASUREMENTS.—Made by wading below gage.

CHANNEL AND CONTROL.—Bed composed of clean, coarse gravel; rough and irregular. Control shifts during high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 3.30 feet July 12 (discharge, 165 second-feet); minimum stage, 2.40 feet at 7 a. m. August 27 (discharge, 44 second-feet).

DIVERSIONS.—Several diversions above gage.

REGULATION.—None, except that due to diversions.

ACCURACY.—Stage-discharge relation not permanent. Two rating curves used; one, fairly well defined, applicable July 12–25; the other, well defined, applicable July 26 to September 30. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

COOPERATION.—Gage-height record and several discharge measurements furnished by State engineer of Idaho.

Discharge measurements of Palisade Creek near Irwin, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Mar. 12	(a)	2.16	26.0	Aug. 19	M. D. Anderson	2.68	66.8
May 8	(a)	2.33	58.0	24	(a)	2.48	56.0
June 22	(a)	4.10	398	28	M. D. Anderson	2.42	46.1
July 14	Anderson and Baldwin.	3.26	154	Sept. 7	....do	2.56	55.8
25	M. D. Anderson	2.95	93.6	23	....do	2.60	61.7
Aug. 1	....do	2.80	77.2				

a Furnished by Idaho State engineer.

Daily discharge, in second-feet, of Palisade Creek near Irwin, Idaho, for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1	.....	77	60	11	.....	62	60	21	105	57	58
2	.....	78	58	12	165	58	58	22	99	55	60
3	.....	76	60	13	154	52	57	23	97	53	60
4	.....	78	57	14	149	52	64	24	88	53	58
5	.....	74	62	15	138	50	60	25	91	52	60
6	.....	74	62	16	133	50	55	26	86	45	60
7	.....	73	60	17	115	47	55	27	84	44	57
8	.....	65	60	18	112	60	57	28	88	46	52
9	.....	65	58	19	109	64	55	29	82	58	53
10	.....	64	60	20	105	58	57	30	78	60	52
								31	78	62	.....

Monthly discharge of Palisade Creek near Irwin, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 12-31	165	78	108	4,280
August	78	44	60.1	3,700
September	64	52	58.2	3,460
The period	.....	.....	.....	11,400

FALL CREEK NEAR SWAN VALLEY, IDAHO.

LOCATION.—In sec. 9, T. 1 N., R. 43 E., 1 mile above mouth of creek and 3 miles above Swan Valley, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 21 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff on right bank; read by Joseph Jones.

DISCHARGE MEASUREMENTS.—Made by wading above gage.

CHANNEL AND CONTROL.—Bed composed of clay and gravel, with some vegetation; control shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 2.94 feet at 4.30 p. m. July 21 (discharge, 58 second-feet); minimum stage, 2.51 feet September 28 to 30 (discharge, 25 second-feet).

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Three fairly well defined rating curves used, applicable during periods July 21 to August 12, August 26 to September 13, and September 14 to 30, respectively. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating tables, except August 13 to 25, for which shifting-control method was used. Records good, except for possible inaccuracy due to shifting control.

Discharge measurements of Fall Creek near Swan Valley, Idaho, during the year ending Sept. 30, 1917.

[Made by M. D. Anderson.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 21	2.94	58.2	Aug. 26	2.55	30.2	Sept. 15	2.55	27.1
Aug. 3	2.70	42.7	Sept. 5	2.50	27.4	21	2.52	25.8
12	2.60	36.1						

Daily discharge, in second-feet, of Fall Creek near Swan Valley, Idaho, for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1		45	28	11		37	26	21	58	32	27
2		43	28	12		37	26	22	57	31	26
3		42	28	13		37	26	23	56	30	26
4		42	28	14		36	28	24	53	30	26
5		41	28	15		36	27	25	52	30	26
6		41	28	16		35	27	26	50	30	26
7		41	27	17		34	27	27	49	29	26
8		40	27	18		34	27	28	54	29	25
9		39	27	19		33	27	29	49	28	25
10		38	27	20		32	27	30	46	28	25
								31	46	28	

Monthly discharge of Fall Creek near Swan Valley, Idaho, for the year ending Sep 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 21–31	58	46	51.8	1,130
August	45	28	35.1	2,160
September	28	25	26.7	1,590
The period				4,880

RAINY CREEK AT SWAN VALLEY, IDAHO.

LOCATION.—In sec. 3, T. 1 N., R. 43 E., 150 yards above wagon bridge and a quarter of a mile east of Swan Valley, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 14 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff on left bank; read by Charlotte Jones.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and clay; considerable vegetation toward last of season.

EXTREMES OF DISCHARGE.—Maximum discharge during period, 64 second-feet July 28 (stage, 1.62 feet); owing to shift of control the maximum stage recorded was 1.65 feet (discharge, 62 second-feet) September 24; minimum stage recorded, 1.40 feet August 23 (discharge, 36 second-feet).

DIVERSIONS.—Several diversions above gage, none below.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent, being seriously affected by growth of vegetation throughout season. Gage read to quarter-tenths at irregular intervals. Fairly well defined rating curve used August 1 to 13. Daily discharge, August 1 to 13, ascertained by applying daily gage height to rating table; for the remainder of the period of record, shifting-control method was used based on measurements throughout season. Discharge interpolated for days of no gage height except September 25–30, for which it was estimated. Records fair.

Discharge measurements of Rainy Creek at Swan Valley, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
July 14	Baldwin and Anderson.	1.54	50.6	Aug. 28	M. D. Anderson.....	1.50	43.1
25	M. D. Anderson.....	1.53	58.4	Sept. 7	.....do.....	1.56	47.2
Aug. 1	.....do.....	1.60	57.6	17	.....do.....	1.57	49.9
9	.....do.....	1.52	50.5	24	.....do.....	1.65	61.8
18	.....do.....	1.50	46.6				

Daily discharge, in second-feet, of Rainy Creek at Swan Valley, Idaho, for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1	.....	58	43	11	.....	45	48	21	54	43	57
2	.....	58	42	12	.....	45	48	22	54	40	59
3	.....	53	41	13	.....	43	49	23	54	36	61
4	.....	51	43	14	51	51	49	24	55	38	62
5	.....	51	46	15	52	48	49	25	58	40	61
6	.....	51	51	16	52	42	49	26	57	44	60
7	.....	53	47	17	52	48	50	27	58	39	59
8	.....	51	48	18	53	46	51	28	64	42	58
9	.....	51	48	19	53	42	53	29	63	43	57
10	.....	53	48	20	53	43	55	30	61	43	56
								31	60	41	.....

NOTE.—Discharge interpolated because of missing gage heights, July 15–23, Sept. 8–16, and 18–23; estimated, Sept. 25–30.

Monthly discharge of Rainy Creek at Swan Valley, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 14–31	64	51	55.8	1,990
August	58	36	46.2	2,840
September	62	41	51.6	3,070
The period				7,900

PINE CREEK NEAR SWAN VALLEY, IDAHO.

LOCATION.—About sec. 16, T. 2 N., R. 43 E., 7 miles below Swan Valley, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 16 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff on left bank about 150 feet above highway bridge; read by Mrs. Frank Soliday.

DISCHARGE MEASUREMENTS.—Made by wading below gage.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders. Considerable growth of vegetation toward latter part of season.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 2.76 feet July 16 (discharge, 64 second-feet); minimum stage recorded, 2.10 feet September 8 (discharge, 16 second-feet).

DIVERSIONS.—Several diversions above gage; none below.

REGULATION.—None except that due to diversions.

ACCURACY.—Stage-discharge relation affected by growth of aquatic plants, but changes are fairly well defined by measurements. Three fairly well defined rating curves used, applicable, respectively, July 16 to August 1, August 9 to September 7, and September 24 to 30. Gage read to quarter-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table except for periods noted in footnote to daily-discharge table. Records good.

Discharge measurements of Pine Creek near Swan Valley, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
July 16	Anderson and Baldwin.	2.76	63.8	Aug. 18	M. D. Anderson	2.28	23.3
21	M. D. Anderson	2.63	55.7	29	do	2.20	19.7
Aug. 1	do	2.45	41.3	Sept. 7	do	2.15	18.1
9	do	2.34	26.6	24	do	2.20	21.5

Daily discharge, in second-feet, of Pine Creek near Swan Valley, Idaho, for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1		42	19	11		24	17	21	54	20	17
2		37	19	12		24	17	22	54	20	18
3		35	18	13		24	17	23	52	20	19
4		35	18	14		24	20	24	56	20	21
5		34	18	15		24	19	25	46	20	22
6		30	17	16	64	24	19	26	45	20	22
7		29	18	17	58	24	19	27	46	20	21
8		30	16	18	60	24	18	28	49	20	20
9		27	17	19	64	24	18	29	45	20	19
10		27	18	20	52	22	17	30	39	20	18
								31	42	19	

NOTE.—Shifting-control method used Aug. 2–8 and Sept. 8–23.

Monthly discharge of Pine Creek near Swan Valley, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 16–31	64	39	51.6	1,640
August	42	19	25.3	1,560
September	22	16	18.5	1,100
The period				4,300

BURNS CREEK NEAR HEISE, IDAHO.

LOCATION.—About sec. 11, T. 3 N., R. 42 E., 500 yards above mouth of creek and 11 miles southeast of Heise, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 20 to September 30, 1917, when station was temporarily discontinued.

GAGE.—Vertical staff on left bank, 100 feet above footbridge; installed July 20, 1917; read by Charles Wheaton.

DISCHARGE MEASUREMENTS.—Made by wading below gage.

CHANNEL AND CONTROL.—Bed rough and irregular. Control formed by large boulders; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 2.60 feet at 8.30 a. m. July 20 (discharge, 30 second-feet); minimum stage, 2.30 feet on several days during middle of September (discharge, 14 second-feet); discharge, September 20, 21, estimated 13 second-feet.

DIVERSIONS.—Diversions above gage to irrigate about 100 acres.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths twice daily until September 18, one reading only after that date. Discharge ascertained by applying mean daily gage height to rating table, except for periods indicated in footnote to daily-discharge table. Records good, except after September 18.

Discharge measurements of Burns Creek near Heise, Idaho, during the year ending Sept. 30, 1917.

[Made by M. D. Anderson.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 20	2.60	30.6	Aug. 8	2.42	19.8	Sept. 8	2.32	15.8
31	2.48	22.9	17	2.40	19.7	18	2.30	14.4
			30	2.37	16.8			

Daily discharge, in second-feet, of Burns Creek near Heise, Idaho, for the year ending Sept. 30, 1917.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1	.....	24	17	11	.....	22	15	21	26	17	13
2	.....	22	17	12	.....	22	15	22	20	17	14
3	.....	22	17	13	.....	22	15	23	29	17	17
4	.....	22	16	14	.....	22	18	24	27	17	19
5	.....	22	15	15	.....	19	15	25	29	17	18
6	.....	22	17	16	.....	20	15	26	27	17	18
7	.....	22	15	17	.....	20	15	27	21	17	17
8	.....	21	15	18	.....	19	14	28	29	17	17
9	.....	22	15	19	.....	19	14	29	25	17	16
10	.....	22	15	20	30	18	13	30	24	17	16
								31	24	17	.....

NOTE.—Discharge estimated Sept. 19–23 and 25–30.

Monthly discharge of Burns Creek near Heise, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 20–31	30	20	25.9	516
August	24	17	19.7	1,210
September	19	13	15.8	940
The period				2,770

HENRYS FORK NEAR REXBURG, IDAHO.

LOCATION.—In sec. 30, T. 6 N., R. 39 E., just below highway bridge 1 mile below mouth of south channel of Teton River, 7 miles below mouth of main channel of Teton River, and 7 miles due west of Rexburg, below all tributaries.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 13, 1909, to September 30, 1917.

GAGE.—Friez water-stage recorder on right bank about 250 feet below bridge; read by H. G. Sorensen. Prior to April 5, 1913, vertical staff on right bank about 25 feet farther downstream. Datum of gage used prior to January 1, 1912, 0.67 foot higher than that of present gage.

DISCHARGE MEASUREMENTS.—Made from cable a quarter of a mile below gage, from highway bridge above, or by wading.

CHANNEL AND CONTROL.—Stream bed composed of mud, sand, and fine gravel; shifting. Except at bridge left bank is overflowed at high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.01 feet at 11 a. m. May 31 (discharge, 8,750 second-feet); minimum stage, 3.21 feet at 6 a. m. August 4 (discharge, 978 second-feet).

1909–1917: Maximum stage recorded, as stated above; minimum stage, 1.90 feet at 6 p. m. August 10, 1915 (discharge, 481 second-feet).

ICE.—Stage-discharge relation seriously affected by ice. Observations discontinued during winter.

DIVERSIONS.—Irrigation canals divert above the station, but definite information as to the number of canals and quantity of water diverted is not available.

REGULATION.—None except that due to opening and closing of headgates of irrigation canals.

ACCURACY.—Stage-discharge relation not permanent. Standard rating curve well defined; several parallel curves used. Operation of water-stage recorder satisfactory. Mean daily gage height obtained by inspecting recorder graph. Daily discharge ascertained by applying mean daily gage height to rating table or by shifting-control method. Records good.

Discharge measurements of Henrys Fork near Rexburg, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Apr. 21	William Kessler	4.46	2,160	July 29	Baldwin and Vance [a]	3.80	1,300
May 23	Kessler and Baldwin	9.62	8,160	Aug. 20	C. H. Wallis [a]	3.46	1,320
June 23	William Kessler	9.38	7,760	Sept. 10	G. C. Baldwin	4.18	1,860
July 12	G. C. Baldwin	7.99	5,170				

[a] Vance and Wallis were employees of Idaho State engineer.

Daily discharge in second-feet, of Henrys Fork near Rexburg, Idaho, for the year ending Sept. 30, 1917.

Day.	Apr.	May.	June.	July.	Aug.	Sept.
1		2,710	8,390	6,620	1,120	1,870
2		2,540	7,880	6,130	1,070	1,870
3		2,380	7,540	5,660	1,000	1,830
4		2,290	7,370	5,210	1,010	1,830
5		2,210	6,880	5,190	1,020	1,790
6			6,250	5,600	1,060	1,830
7			5,520	5,890	1,130	1,940
8			4,770	5,730	1,140	1,940
9		2,880	4,460	5,860	1,160	1,900
10			4,880	5,840	1,170	1,900
11			5,800	5,550	1,210	1,900
12		3,780	6,720	5,120	1,190	1,870
13		4,260	6,560	4,660	1,140	1,870
14		4,770	5,660	4,150	1,160	1,980
15		5,800	4,660	3,760	1,110	2,140
16		7,200	4,260	3,380	1,090	2,210
17		7,880	4,660	3,020	1,100	2,140
18		7,710	5,520	2,750	1,170	2,100
19		7,540	6,560	2,490	1,250	2,060
20		7,710	7,200	2,320	1,320	1,940
21	2,100	8,050	7,370	2,150	1,320	1,900
22	2,290	8,220	7,540	1,990	1,360	1,870
23	2,540	8,050	7,710	1,900	1,370	2,100
24	2,790	8,220	7,510	1,750	1,370	2,210
25	2,960	8,050	7,300	1,700	1,380	2,290
26	3,140	8,050	7,440	1,590	1,390	2,460
27	3,140	8,050	7,080	1,410	1,460	2,380
28	3,050	8,050	6,720	1,340	1,570	2,290
29	2,790	8,390	6,530	1,300	1,680	2,210
30	2,710	8,390	6,500	1,240	1,720	2,210
31		8,560		1,150	1,790	

NOTE.—No record Oct. 1 to Apr. 20. Discharge interpolated because of lack of gage heights June 27. Discharge estimated because of lack of gage heights May 6–11.

Monthly discharge of Henrys Fork near Rexburg, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
April 21–30	3,140	2,100	2,750	54,500
May	8,560		5,680	349,000
June	8,390	4,260	6,440	383,000
July	6,620	1,150	3,630	223,000
August	1,790	1,000	1,260	77,500
September	2,460	1,790	2,030	121,000
The period				1,210,000

WILLOW CREEK NEAR RIRIE, IDAHO.

LOCATION.—In T. 3 N., R. 40 E., 3 miles above mouth of canyon, at Cutler ranch, 6 miles southeast of Ririe, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—December 23, 1916, to September 30, 1917.

GAGE.—Vertical staff on right bank; read by Pearl Cutler. Gage used prior to May 1, 1917, was a vertical staff on right bank a quarter of a mile upstream.

DISCHARGE MEASUREMENTS.—Made by wading or from cable, installed April 15, 1917, 200 feet downstream from gage.

CHANNEL AND CONTROL.—Stream bed composed of boulders in gravel drift; fairly permanent. Left bank is overflowed at high stages; both banks are brush covered.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year (determined by levels), 16.3 feet in p. m. May 15 (discharge, 4,200 second-feet); minimum stage recorded, 2.53 feet at 11 a. m. January 13 (discharge, estimated 34 second-feet).

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

DIVERSIONS.—No irrigation canals of any consequence above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Two rating curves used; one fairly well defined, referred to original gage; the other well defined, referred to new gage. Gage read to hundredths daily. Daily discharge ascertained as stated in footnote to daily-discharge table. Records prior to May 15, fair; subsequent records, good.

Discharge measurements of Willow Creek near Ririe, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Dec. 23	A. W. Harrington	[a]2.60	[b]47.3	May 22	G. C. Baldwin	12.55	2,840
Feb. 9	T. R. Newell	[a]2.80	[b]50.6	25	William Kessler	12.39	2,710
28	do	[a]2.96	[b]44.4	June 23	T. R. Newell	6.33	754
Apr. 15	William Kessler	[a]2.84	116	July 28	G. C. Baldwin	3.75	203
28	do	4.48	388	Sept. 11	do	2.78	67.8

[a] Gage height read on upper or original gage. [b] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Willow Creek near Ririe, Idaho, for the year ending Sept. 30, 1917.

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	.....	42	48	46	91	382	2,720	526	165	72
2	.....	45	45	45	101	329	2,360	502	157	72
3	.....	48	51	44	93	329	2,260	490	165	68
4	.....	52	57	44	81	329	2,120	479	150	68
5	.....	56	60	44	94	350	2,020	456	157	68
6	.....	58	64	44	99	340	1,910	433	150	70
7	.....	62	60	45	95	415	1,780	411	142	75
8	.....	61	55	45	113	604	1,710	411	134	72
9	.....	55	51	47	131	810	1,680	389	127	75
10	.....	52	51	47	121	920	1,680	367	127	75
11	.....	51	49	45	131	1,210	1,650	346	120	68
12	.....	42	51	39	133	1,750	1,550	325	113	68
13	.....	34	54	50	119	2,570	1,450	325	113	72
14	.....	36	58	58	119	3,380	1,330	304	113	77
15	.....	34	54	60	116	4,200	1,230	304	106	82
16	.....	36	46	63	107	4,120	1,140	284	113	77
17	.....	35	49	58	112	3,630	1,080	284	120	72
18	.....	34	50	63	108	3,110	1,030	264	127	72
19	.....	35	48	68	104	2,970	998	245	127	68
20	.....	41	48	70	104	2,830	946	245	113	67
21	.....	46	45	78	111	2,900	895	226	106	66
22	.....	47	51	75	133	2,830	844	208	100	66
23	47	48	52	70	157	2,720	792	226	94	72
24	47	51	50	78	195	2,680	759	226	94	77
25	47	53	78	83	275	2,750	726	226	88	86
26	46	55	74	77	313	2,720	674	208	82	86
27	46	64	59	66	342	3,080	649	190	82	82
28	46	63	44	92	398	3,010	624	208	88	77
29	46	60	.....	139	421	2,790	599	226	88	72
30	45	51	.....	197	413	3,040	550	190	82	70
31	43	51	.....	123	.....	3,010	.....	173	75	.....

NOTE.—Stage-discharge relation affected by ice Dec. 23 to Apr. 12. Discharge interpolated, May 13, 14, 19, June 20–22, 24, 27, Sept. 13, 20, 23 and 30. Discharge estimated from observer's notes and temperature and precipitation records, Dec. 24 to Feb. 8, Feb. 10 to 27, Mar. 1 to Apr. 12, and June 2 to 6.

Monthly discharge of Willow Creek near Ririe, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
December 23–31	47	43	45.9	819
January	64	34	48.3	2,970
February	78	44	53.6	2,980
March	197	39	67.8	4,170
April	421	81	164	9,760
May	4,200	329	2,130	131,000
June	2,720	550	1,330	79,100
July	526	173	313	19,200
August	165	75	117	7,190
September	86	66	73.1	4,350
The period				262,000

WILLOW CREEK NEAR IONA, IDAHO.

LOCATION.—In sec. 19, T. 3 N., R. 38 E., at concrete bridge on main road 9 miles east of Idaho Falls. Boomer canal crosses in a flume 600 feet above station.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—December 22, 1916, to September 30, 1917.

GAGE.—Vertical staff attached to downstream face of right abutment of concrete arch bridge; read by C. N. Kemper.

DISCHARGE MEASUREMENTS.—Made from highway bridge, footbridge 50 feet downstream, or by wading.

CHANNEL AND CONTROL.—Stream bed composed of mud, sand, and gravel; shifting. Banks are overflowed at very high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.8 feet at noon May 16 and at 7 a. m. May 17 (discharge, 610 second-feet; does not include considerable overflow); minimum stage recorded, 1.02 feet January 14, 15, 19, 20, and 21 (discharge estimated, 4 second-feet).

ICE.—Stage-discharge relation seriously affected by ice; monthly discharge estimated from discharge measurements, observer's notes, and weather records; data inadequate for determination of daily discharge during ice period.

DIVERSIONS.—Sand Creek diverts above station; also irrigation canals, but definite information as to the number of canals and quantity of water diverted is not available.

REGULATION.—Several irrigation canals waste water into this channel.

ACCURACY.—Stage-discharge relation not permanent. Standard rating curve fairly well defined; several parallel curves used. Gage read to hundredths once daily. Daily discharge ascertained as noted in footnote to daily-discharge table. Records fair during open water.

Discharge measurements of Willow Creek near Iona, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Dec. 22	A. W. Harrington	[a]1.53	12.2	May 21	G. C. Baldwin	7.39	553
Feb. 8	T. R. Newell	[a]3.40	30.4	June 22	T. R. Newell	4.58	229
27	do	[a]2.92	23.1	July 11	G. C. Baldwin	3.24	142
Apr. 7	William Kessler	[a]5.85	55.4	Sept. 11	do	1.56	40.8

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Willow Creek near Iona, Idaho, for the year ending Sept. 30, 1917.

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1						81	540	183	87	83
2						72	526	171	102	83
3						72	526	167	100	82
4					77	66	513	151	90	82
5			20			72	513	137	90	82
6						69	500	132	89	51
7					55	80	487	155	90	46
8			30			119	461	153	79	41
9						170	461	147	77	40
10						223	461	145	78	36
11						275	454	143	78	39
12						354	442	140	78	38
13						442	412	136	78	39
14						554	376	138	78	40
15					41	596	321	139	78	39
16						610	300	146	80	36
17						610	265	101	79	36
18			26			568	223	102	91	36
19						568	187	113	91	46
20						554	338	132	85	39
21						554	275	134	91	36
22	12					540	232	121	100	34
23					32	540	228	134	97	34
24					42	540	187	136	99	32
25					40	540	162	136	92	30
26					59	540	108	139	85	28
27	15		23		69	554	94	124	85	28
28			27		75	554	475	119	84	26
29					94	554	175	124	84	21
30					75	554	171	128	83	20
31						554		109	83	

NOTE.—Stage-discharge relation affected by ice Dec. 22 to April 22. Discharge estimated from available gage heights, observer's notes, and temperature and precipitation records as follows: Dec. 23–31; Jan. 1–31; Feb. 1–7, 9–26, 28; Mar. 1–31; Apr. 1–6, 8–22.

Monthly discharge of Willow Creek near Iona, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
December 22–31			14.7	292
January			14.5	892
February			24.6	1,370
March			27.4	1,680
April			53.9	3,210
May	610	66	393	24,200
June	540	94	347	20,600
July	183	101	137	8,420
August	102	77	86.5	5,320
September	83	20	43.4	2,580
The period				68,600

NOTE.—See footnote to daily-discharge table.

GRAYS LAKE OUTLET NEAR HERMAN, IDAHO.

LOCATION.—In sec. 15, T. 3 S., R. 42 E., 3 miles below bridge at outlet of lake and 3¼ miles west of Herman, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 5, 1916, to August 5, 1917.

GAGE.—Vertical staff on right bank; read by W. C. Handy and A. C. Morris.

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

ICE.—At times flow from lake is practically shut off by ice but springs probably keep channel free from ice near gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during season, 5.9 feet at 9 a. m. May 15 (discharge, 1,350 second-feet); minimum stage not definitely known but during early part of April discharge was about 1.0 second-foot.

1916-1917: Both maximum and minimum stages occurred in 1917.

DIVERSIONS.—No diversions between lake and station. Diversions for irrigation are made above the lake, but amount of water diverted is not known.

REGULATION.—No artificial regulation above station.

Accuracy.—Stage-discharge relation practically permanent. Gage read to tenths once daily May 1–28 and to quarter-tenths thereafter. Two well-defined rating curves used, one applicable October 1 to November 4, the other May 1 to August 5. Daily discharge ascertained by applying daily gage height to rating table, except for days of no gage reading for which it was interpolated. Records good.

Discharge measurements of Grays Lake outlet near Herman, Idaho, during the year ending Sept. 30, 1917.

[Made by G. C. Baldwin.]

Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*
Nov. 3	0.97	8.42
May 30	4.82	766
Aug. 5	1.29	27.0

Daily discharge, in second-feet, of Grays Lake outlet near Herman, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	May.	June.	July.	Aug.
1	3.7	8.7	10	659	132	28
2	4.6	8.6	10	659	126	27
3	11	8.5	15	613	120	27
4	17	9.0	21	591	114	28
5	16	.....	21	569	108	28
6	16	.....	28	528	103	.....
7	14	.....	43	489	103	.....
8	13	.....	52	453	98	.....
9	12	.....	71	436	90	.....
10	11	.....	226	419	83	.....
11	11	.....	569	388	79	.....
12	11	.....	756	374	73	.....
13	10	.....	1,070	359	71	.....
14	9.9	.....	1,290	346	69	.....
15	9.0	.....	1,350	333	66	.....
16	9.0	.....	1,240	322	63	.....
17	9.0	.....	1,120	289	61	.....
18	9.4	.....	1,070	271	61	.....
19	9.9	.....	1,020	248	56	.....
20	10	.....	1,020	226	54	.....
21	11	.....	909	212	52	.....
22	11	.....	857	199	50	.....
23	11	.....	857	186	48	.....
24	11	.....	857	186	45	.....
25	10	.....	806	180	43	.....
26	9.9	.....	806	174	41	.....
27	9.9	.....	806	174	39	.....
28	9.9	.....	756	150	39	.....
29	9.0	.....	806	144	35	.....
30	8.9	.....	756	138	34	.....
31	8.8	.....	756	.....	29	.....

NOTE.—Discharge interpolated, Oct. 1, 3, 5, 7, 9, 11, 13, 16, 18, 20, 23, 25, 27, 30, 31, Nov. 1, 2, and Aug. 3, 4. Very small flow Nov. 5 to April 30; no record obtained.

Monthly discharge of Grays Lake outlet near Herman, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	17	3.7	10.5	646
November 1–4	9.0	8.5	8.70	69.0
May	1,350	10	644	39,600
June	659	138	344	20,500
July	132	29	70.5	4,330
August 1–5	28	27	27.6	274

IDAHO (GOVERNMENT) CANAL NEAR SHELLEY, IDAHO.

LOCATION.—In sec. 31, T. 1 N., R. 37 E., Bingham County, 600 feet below canal headgates, 1½ miles southwest of Shelley, and 10 miles above point where Sand Creek crosses canal.

RECORDS AVAILABLE.—June 20, 1912, to September 30, 1917. No water diverted during 1913 because of break in the canal.

GAGE.—Inclined staff on the right bank set in the concrete of the rating section; read by J. A. Vaughn. Bristol water-stage recorder has been operated at times, but records were not satisfactory; inclined staff always used as standard reference gage.

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

CHANNEL AND CONTROL.—Trapezoidal concrete rating section. Growth of weeds and brush causes changes in the stage-discharge relation, but bottom of rating section evidently furnishes a permanent point of zero flow at about 0.0 foot gage height.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.45 feet at 10 a. m. July 6 (discharge, 218 second-feet); minimum flow probably zero when headgates are closed, but has not been definitely determined, as no records are obtained when gates are closed.

1912–1917: Maximum stage recorded, 3.7 feet July 29, 1912 (discharge, 308 second-feet); minimum as stated above.

DIVERSIONS.—None.

REGULATION.—Flow controlled at the headgates 600 feet above.

ICE.—Canal not operated during winter.

ACCURACY.—Stage-discharge relation sometimes affected by growth of vegetation. Rating curve well defined for open water; changes not defined by discharge measurements. Gage read to hundredths once daily. Daily discharge determined by applying daily gage height to rating table except as noted in footnote to daily-discharge table. Records fair.

Idaho canal diverts water from left bank of Snake River in sec. 31, T. 1 N., R 37 E., and discharges into Blackfoot River in sec. 27, T. 2 S., R. 36 E. The canal also receives water from Sand Creek about 10 miles below station.

Discharge measurements of Idaho (Government) canal near Shelley, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
June 23	G. C. Baldwin	1.25	90.9	July 10	G. C. Baldwin	2.34	206
July 2	S. E. Vance, jr.[a]	2.15	186	22	S. E. Vance, jr	2.20	191

[a] Employee of Idaho State engineer.

Daily discharge, in second-feet, of Idaho (Government) canal near Shelley, Idaho, for the year ending Sept. 30, 1917.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1	.....	191	208	24	11	.....	209	191	20	21	67	191	191	.....
2	.....	189	205	24	12	.....	202	193	19	22	95	191	161	.....
3	.....	200	206	23	13	.....	202	195	19	23	93	191	130	.....
4	.....	193	208	20	14	.....	200	195	18	24	93	191	130	.....
5	.....	196	206	20	15	.....	200	198	7	25	107	197	107	.....
6	.....	213	210	19	16	.....	199	195	.....	26	118	202	83	.....
7	.....	216	191	20	17	.....	198	195	.....	27	118	207	83	.....
8	.....	213	198	20	18	.....	196	193	.....	28	131	211	49	.....
9	.....	213	191	20	19	.....	195	193	.....	29	186	211	28	.....
10	.....	209	193	20	20	23	195	195	.....	30	191	211	26	.....
										31	.....	211	26	.....

NOTE.—Discharge June 20–21, 25, 28, July 4–6, 25, 28, and Sept. 15 computed from available gage heights and observer's notes concerning time of head gate changes.

Monthly discharge of Idaho (Government) canal near Shelley, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 20–30	191	23	111	2,420
July	216	189	201	12,400
August	210	26	160	9,840
September 1–15	24	7	19.5	580
The period	.....	.....	.....	25,200

BLACKFOOT RIVER ABOVE RESERVOIR, NEAR HENRY, IDAHO.

LOCATION.—About sec. 9, T. 7 S., R. 42 E., at Cully's ranch, 1½ miles above flow line of Blackfoot-Marsh reservoir, 7 miles south of Henry, Bannock County, and 13 miles north of Soda Springs.

DRAINAGE AREA.—360 square miles (measured on United States Land Office map).

RECORDS AVAILABLE.—March 25, 1914, to September 30, 1917.

GAGE.—Vertical staff on right bank about half a mile above Cully's house and 200 feet below the shearing plant; read by Mrs. T. W. Cully until May 1, and Mrs. A. C. Swanson for remainder of year. The original gage used March 25 to September 30, 1914, was a vertical staff attached to streamward side of right bridge pier about three-fourths of a mile above.

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

CHANNEL AND CONTROL.—One channel at all stages, although the right bank near gage is probably subject to overflow at high stages. Bed of stream is rough; composed of loose rocks and boulders and some gravel. Control is of loose rock; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, estimated from high-water mark above gage, about 6.8 feet, May 16 (discharge, 2,060 second-feet); maximum stage recorded during year, 6.1 feet at 1 p. m. May 17 (discharge, 1,680 second-feet); minimum stage recorded, 1.65 feet at 10.30 a. m. November 13 (measured discharge, 52 second-feet); minimum discharge may have occurred during winter when stage-discharge relation was affected by ice.

1914–1917: Maximum stage recorded May 16, 1917 (see above); minimum stage recorded, 1.40 feet at 9.30 a. m. September 1, 1915 (discharge, 55 second-feet). Minimum discharge probably occurred during winter.

ICE.—Stage-discharge relation seriously affected by ice. Observations discontinued during winter.

DIVERSIONS.—A few small ranch diversions are made above gage.

REGULATION.—None. The entire flow passing gage is impounded in the Blackfoot-Marsh reservoir 1½ miles below.

ACCURACY.—Stage-discharge relation permanent, except as affected by ice. Two fairly well-defined rating curves used, one applicable October 1 to November 5, the other April 23 to September 30, except as noted in footnote to daily-discharge table. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table, except as indicated in footnote to daily-discharge table. Records good, except for November, for which they are poor.

Discharge measurements of Blackfoot River above reservoir, near Henry, Idaho, during the year ending Sept. 30, 1917.

[Made by G. C. Baldwin.]

Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*
Nov. 13	1.62	52.2
Apr. 27	2.91	350
June 1	4.70	991
Aug. 6	2.15	163

Daily discharge, in second-feet, of Blackfoot River above reservoir, near Henry, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Apr.	May.	June.	July.	Aug.	Sept.
1	94	76	.....	304	992	362	182	121
2	101	76	.....	318	860	347	172	121
3	108	76	.....	332	780	304	163	114
4	108	76	.....	318	743	318	172	114
5	94	76	.....	332	743	276	163	114
6	88		.....	347	672	263	163	137
7	76	70	.....	408	637	263	163	154
8	76		.....	503	603	276	154	129
9	76		.....	637	603	250	146	137
10	76		.....	707	569	238	163	121
11	76	60	.....	860	603	250	154	121
12	76		.....	1,040	707	238	163	114
13	76	52	.....	1,180	672	203	146	114
14	76	.....	.....	1,280	637	192	154	137
15	82	.....	.....	1,800	603	192	146	114
16	82	.....	.....	2,060	536	203	163	114
17	82	.....	.....	1,680	503	214	146	121
18	82	.....	.....	1,180	503	182	146	114
19	82	.....	.....	1,130	503	192	154	99
20	82	.....	.....	1,080	503	182	129	92
21	82	.....	.....	1,230	503	192	146	92
22	76	.....	.....	1,230	471	182	129	86
23	76	.....	318	992	439	192	129	106
24	76	.....	290	903	439	203	114	114
25	76	.....	263	903	439	182	121	121
26	76	.....	318	860	408	172	114	114
27	76	.....	347	903	377	182	146	99
28	76	.....	290	992	362	182	129	99
29	76	.....	295	947	362	226	137	99
30	70	.....	299	992	377	214	137	106
31	70	.....	.....	1,230	.....	203	114	.....

NOTE.—Discharge estimated because of ice Nov. 6–9, 10–12; estimated May 15, 16; interpolated Apr. 29–30.

Monthly discharge of Blackfoot River above reservoir, near Henry, Idaho, for the year ending Sept. 30, 1917.

[Drainage area, 360 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Inches.	Acre-feet.
October	108	70	81.4	0.226	0.26	5,010
November 1–13	.....	.....	68.6	.191	.09	1,770
April 23–30	347	263	302	.839	.25	4,790
May	2,060	304	925	2.57	2.96	56,900
June	992	362	572	1.59	1.77	34,000
July	362	172	228	.633	.73	14,000
August	182	114	147	.408	.47	9,040
September	154	86	115	.319	.36	6,840

BLACKFOOT-MARSH RESERVOIR NEAR HENRY, IDAHO.

LOCATION.—In sec. 12, T. 5 S., R. 40 E., 12 miles northwest of Henry, Bannock County.

RECORDS AVAILABLE.—January 1, 1912, to September 30, 1917.

GAGE.—Vertical staff near spillway at right end of dam; read to hundredths twice daily by J. B. Curtis, October 1, 1915, to May 31, 1916; and by B. B. Reynolds thereafter. Zero of gage, 6,100 feet above sea level.

EXTREMES OF STAGE.—Maximum stage recorded during year, 58.70 feet June 20; minimum stage recorded, 42.02 feet December 13 and 14.

1912–1917: Maximum stage recorded, 68.60 feet June 27–30, 1912; minimum stage recorded December 13 and 14, 1916.

ACCURACY.—Gage affected by action of ice; records therefore may not be referred to correct datum.

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

Daily gage height, in feet, of Blackfoot-Marsh reservoir near Henry, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	43.85	42.42	42.05	42.10	42.18	43.45	45.78	48.72	56.63	58.39	56.25	54.06
2	43.92	42.40	42.05	42.11	42.18	43.56	45.82	48.95	56.80	58.32	56.12	53.98
3	44.20	42.41	42.04	42.11	42.18	43.75	45.86	49.11	56.96	58.24	55.98	53.94
4	44.22	42.40	42.05	42.11	42.18	43.88	45.90	49.25	57.10	58.18	55.89	53.89
5	44.12	42.40	42.04	42.12	42.18	43.98	45.94	49.38	57.31	58.13	55.91	53.84
6	43.92	42.42	42.04	42.12	42.19	44.07	45.98	49.50	57.50	58.06	55.86	53.79
7	43.82	42.39	42.03	42.12	42.19	44.17	46.03	49.64	57.64	58.01	55.78	53.75
8	43.60	42.36	42.03	42.12	42.19	44.28	46.08	49.88	57.77	57.95	55.70	53.70
9	43.30	42.34	42.03	42.12	42.19	44.37	46.12	50.14	57.88	57.89	55.62	53.64
10	42.85	42.33	42.03	42.12	42.19	44.47	46.16	50.50	57.98	57.85	55.57	53.60
11	42.62	42.33	42.03	42.12	42.19	44.56	46.21	50.85	58.08	57.80	55.52	53.54
12	42.88	42.34	42.03	42.12	42.20	44.64	46.24	51.22	58.16	57.72	55.46	53.49
13	42.98	42.34	42.02	42.13	42.20	44.69	46.28	51.44	58.28	57.66	55.38	53.46
14	42.85	42.34	42.02	42.14	42.20	44.74	46.32	51.79	58.36	57.58	55.32	53.42
15	42.72	42.34	42.03	42.14	42.20	44.79	46.38	52.10	58.46	57.48	55.26	53.37
16	42.69	42.34	42.03	42.14	42.21	44.84	46.46	52.52	58.53	57.36	55.18	53.33
17	42.66	42.34	42.03	42.14	42.22	44.89	46.52	53.05	58.55	57.26	55.10	53.29
18	42.62	42.34	42.03	42.15	42.24	44.98	46.57	53.34	58.59	57.18	55.02	53.25
19	42.61	42.31	42.04	42.15	42.28	45.07	46.64	53.55	58.64	57.12	54.96	53.20
20	42.62	42.28	42.05	42.15	42.37	45.16	46.72	53.75	58.70	57.05	54.91	53.16
21	42.63	42.24	42.06	42.15	42.55	45.24	46.82	53.95	58.68	56.98	54.85	53.13
22	42.58	42.20	42.06	42.16	42.67	45.28	46.92	54.22	58.66	56.92	54.81	53.08
23	42.52	42.17	42.06	42.16	42.76	45.31	47.02	54.59	58.62	56.86	54.77	53.14
24	42.46	42.14	42.07	42.16	42.87	45.34	47.15	55.00	58.58	56.80	54.72	53.12
25	42.41	42.11	42.08	42.16	43.02	45.38	47.35	55.41	58.55	56.72	54.64	53.08
26	42.46	42.10	42.09	42.16	43.12	45.42	47.55	55.66	58.52	56.62	54.58	53.02
27	42.50	42.09	42.10	42.17	43.22	45.48	47.68	55.83	58.50	56.58	54.52	52.94
28	42.48	42.08	42.10	42.17	43.32	45.54	47.80	56.00	58.48	56.59	54.42	52.85
29	42.44	42.05	42.10	42.17	.....	45.60	48.10	56.15	58.46	56.54	54.32	52.74
30	42.41	42.05	42.10	42.17	.....	45.66	48.42	56.28	58.45	56.46	54.23	52.64
31	42.40	.....	42.10	42.17	.....	45.72	.....	56.43	.....	56.36	54.14	.....

BLACKFOOT RIVER NEAR HENRY, IDAHO.

LOCATION.—In sec. 11, T. 5 S., R. 40 E., 200 feet below wagon bridge at Rockyford crossing, 1 mile below Blackfoot-Marsh dam of United States Indian Service and 12 miles northwest of Henry, Bannock County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 15, 1908, to September 30, 1917.

GAGE.—Friez water-stage recorder installed September 18, 1912, in wooden shelter on left bank; referred to outside vertical staff. Prior to September 18, 1912, gage was a vertical staff a few feet downstream from present gage. The datum of original gage lowered 0.11 foot between July 15, 1908, and May 25, 1912; and the datum of the present gage is the same as original gage on May 25, 1912. B. B. Reynolds makes daily staff gage readings and inspects the Friez recorder.

DISCHARGE MEASUREMENTS.—Made from cable about 600 feet above gage or by wading.

CHANNEL AND CONTROL.—One channel at all stages. Stream bed consist of lava rock, boulders, and gravel. Control is fairly permanent. Growth of moss at times affects stage-discharge relation.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.04 feet June 21 and morning of June 22 (discharge, 822 second-feet), minimum stage, 0.50 foot afternoon of May 11 and morning of May 12 (discharge, about 1 second-foot).

1908–1917: Maximum stage recorded, 4.15 feet May 14, 1909 (discharge, 1,640 second-feet); minimum stage recorded May 11, 12, 1917.

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

DIVERSIONS.—Only a few small diversions are made for purposes of irrigation from the river and its tributaries above the reservoir.

REGULATION.—Flow past station consists entirely of stored water from reservoir and is controlled by gates at the dam.

ACCURACY.—Stage-discharge relation affected by growth of aquatic plants. Two well-defined rating curves used. Recorder not operating November 6 to June 22; stage determined from daily readings on staff gage; mean daily gage heights for rest of year obtained by inspecting recorder graph. Daily discharge ascertained by applying daily gage height to rating table, except as indicated in footnote to daily-discharge table. Open-water records good; winter records fair.

Discharge measurements of Blackfoot River, near Henry, Idaho, during the year ending Sept. 30, 1917.

[Made by G. C. Baldwin.]

Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*
Nov. 12	1.64	163
Aug. 4	2.80	678

Daily discharge, in second-feet, of Blackfoot River, near Henry, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	343	206				38	45	13	6	741	684	574
2	321	206				38	45	13	6	741	656	574
3	343	202				38	45	13	6	684	656	574
4	343	202				38	45	14	6	628	684	574
5	343	199				38	45	14	6	628	684	574
6	321	196				40	45	14	6	628	684	574
7	321	196				40	45	15	6	656	684	574
8	305	192			110	40	45	16	6	712	684	548
9	305	189				40	45	17	6	712	684	548
10	284	182				40	47	18	6	712	684	545
11	272	176				40	47	5	6	770	684	548
12	265	163				40	47	3	6	799	684	548
13	261					40	47	7	6	799	684	548
14	253					40	47	8	6	770	656	548
15	246					42	47	8	5	770	656	548
16	246		100	90	95	42	47	7	6	770	656	522
17	246				35	42	47	7	192	712	656	522
18	234				35	42	47	6	192	656	656	522
19	236				35	42	47	6	378	684	628	522
20	238				35	42	47	7	799	684	601	522
21	238	140			37	42	47	6	799	684	601	522
22	227				37	42	47	6	770	684	601	522
23	231				37	42	47	6	684	684	601	522
24	231				37	42	47	6	684	656	574	522
25	231				37	44	47	6	684	656	522	522
26	231				37	44	47	7	684	656	574	522
27	227				37	44	47	7	684	656	574	522
28	227				38	44	47	7	497	684	574	522
29	216				.....	44	13	7	741	684	574	522
30	209				.....	44	13	7	741	684	574	522
31	206	.....			.....	44	.....	6	.....	684	574	.....

NOTE.—Shifting-control method used Oct. 8–27. Discharge estimated, Nov. 13–30, Dec. 1–31, Jan. 1–31, Feb. 1–15.

Monthly discharge of Blackfoot River, near Henry, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	343	206	265	16,300
November	206	.....	161	9,580
December	.....	.....	100	6,150
January	.....	.....	90	5,530
February	.....	35	77.9	4,330
March	44	38	41.2	2,530
April	47	13	44.1	2,620
May	18	3	9.10	560
June	799	5	287	17,100
July	799	628	699	43,000
August	684	522	635	39,000
September	574	522	541	32,200
The year	799	3	247	179,000

BLACKFOOT RIVER NEAR SHELLEY, IDAHO.

LOCATION.—In sec. 7, T. 2 S., R. 38 E., Bingham County, 1½ miles above mouth of canyon, 3 miles above N. A. Just ranch, 10 miles southeast of Shelley, and 18 miles northeast of Blackfoot. Below all important tributaries.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—June 26, 1909, to September 30, 1917. From April 17, 1903, to December 31, 1909, records were obtained near Presto, about 5 miles below site of present station. No tributaries enter between the two sites, but during the irrigation season several ditches divert probably 50 second-feet.

GAGE.—Friez water-stage recorder on right bank; observer, Rufus E. Reid.

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

CHANNEL AND CONTROL.—Bed rocky and rough. One channel at all stages. Control somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage for the year from water-stage recorder, 5.49 feet at 4.30 a. m. June 21 (discharge, 1,060 second-feet); minimum stage recorded, 3.00 feet at 12.30 p. m. January 6 (discharge, estimated less than 45 second-feet; exact discharge uncertain on account of ice).

1909–1917: Maximum stage recorded, 5.80 feet at 11.45 p. m. April 1, 1913 (discharge, 1,370 second-feet); minimum stage, 3.00 feet at 12.30 p. m. January 6, 1917 (discharge, estimated less than 45 second-feet).

ICE.—Stage-discharge relation seriously affected by ice; flow estimated from observer's notes, temperature records, discharge measurements, and comparison with record of flow at station near Henry.

DIVERSIONS.—Only a few small diversions made for irrigation from river and tributaries above reservoir.

REGULATION.—Flow regulated largely by storage in Blackfoot-Marsh reservoir of United States Indian Service, about 40 miles upstream.

ACCURACY.—Stage-discharge relation changed during ice period. Rating curves well defined for open water. Operation of water-stage recorder satisfactory except during winter when occasional staff observations were made. Daily discharge ascertained as noted in footnote to daily-discharge table. Records good during periods of open water.

Discharge measurements of Blackfoot River near Shelley, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 19	C. G. Paulsen	4.05	291	Apr. 5	William Kessler	[a] 3.68	158
Feb. 24	T. R. Newell	3.53	127	July 31	G. C. Baldwin	5.05	806

[a] Stage-discharge relation slightly affected by ice.

Daily discharge, in second-feet, of Blackfoot River near Shelley, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	443	258	180				140	279	483	913	797	623
2	452	258	160				145	267	464	883	797	618
3	475	254	151				149	251	456	883	769	618
4	461	250	118				154	279	442	797	769	618
5	457	247	57				158	263	415	769	769	623
6	443	243	84				151	287	393	769	764	623
7	434	243	101				148	367	380	769	764	623
8	425						158	451	380	825	764	623
9	402						178	492	380	825	764	618
10	376						178	511	371	825	764	613
11	363						174	535	367	854	764	613
12	337				145		181	554	358	883	764	613
13	320		130				161	540	350	854	764	618
14	311						168	623	333	883	758	618
15	303						164	758	320	883	758	613
16	290			120		125	151	731	316	883	753	613
17	286						161	579	333	854	753	613
18	295						155	502	389	769	747	613
19	282	200	123				164	478	492	797	747	608
20	290		89				168	516	1,000	825	699	608
21	290		84				188	579	1,040	825	673	608
22	286		170				195	530	1,040	825	668	613
23	270		250				225	469	943	825	668	628
24	274		220		127		287	464	913	825	663	628
25	270		94				337	460	913	825	623	623
26	270		123		114		420	511	913	797	633	613
27	270						398	638	913	797	613	613
28	270						337	608	731	825	638	608
29	266		100		.....		341	603	825	797	633	608
30	262				.....		320	618	913	797	628	613
31	262	.....			.....		.....	550	.....	797	623	.....

NOTE.—Stage-discharge relation affected by ice, Nov. 8 to Dec. 1, Dec. 8–18, Dec. 27 to Feb. 23, and Feb. 25 to Apr. 6. Discharge estimated from available gage heights, observer's notes, temperature and precipitation records, as follows: Nov. 8–30; Dec. 8–18, 27–31; Jan. 1–31; Feb. 1–23, 25–28; and Mar. 1–31. Discharge estimated, Dec. 1, Apr. 1–4, and 6.

Monthly discharge of Blackfoot River near Shelley, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	475	262	337	20,700
November	258	.....	212	12,600
December	250	.....	127	7,810
January	.....	.....	120	7,380
February	.....	.....	140	7,780
March	.....	.....	125	7,690
April	420	140	208	12,400
May	758	251	493	30,300
June	1,040	316	586	34,900
July	913	769	828	50,900
August	797	623	720	44,300
September	628	608	616	36,700
The year	1,040	.....	378	273,000

BLACKFOOT RIVER NEAR BLACKFOOT, IDAHO.

LOCATION.—In sec. 27, T. 3 S., R. 34 E., Bingham County, at old Jarvis ranch, 2 miles above junction of Blackfoot River with Snake River and 8 miles southwest of Blackfoot, Bingham County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 27, 1913, to September 30, 1917. Records usually obtained only during portions of year when stored water from Jackson Lake is being carried in Snake River.

GAGE.—Inclined staff on right bank half a mile south of the Jarvis ranch house; read by Ardell Olmstead.

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

CHANNEL AND CONTROL.—Bed composed of gravel. Control presumably of the same material; fairly permanent. One channel at all stages. Banks covered with heavy growth of brush and willows, which may affect stage-discharge relation at high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.03 feet at 2.30 p. m. May 31 (discharge, 671 second-feet); minimum stage, 4.5 feet at 8.10 p. m. June 29 (discharge, estimated 65 second-feet).

1913–1917: Maximum stage recorded, 9.03 feet May 31, 1917; maximum discharge recorded, 673 second-feet September 21–22, 1914; water below gage at 7.20 p. m. June 17, 1915 (discharge, estimated 40 second-feet).

ICE.—No records obtained during winter.

DIVERSIONS.—Principal diversions above gage are the Fort Hall canals near Blackfoot, but several smaller diversions are made near Blackfoot.

REGULATION.—Flow regulated by storage in the Blackfoot-Marsh reservoir of the United States Indian Service, and by manipulation of headgates of Fort Hall canals near Blackfoot.

ACCURACY.—Stage-discharge relation permanent during period of record. Rating curve well defined above 120 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Blackfoot River near Blackfoot, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Apr. 26	William Kessler	7.61	441	June 21	G. C. Baldwin	6.10	243
May 19	G. C. Baldwin	8.73	641	Sept. 13	.....do	5.89	215

Daily discharge, in second-feet, of Blackfoot River near Blackfoot, Idaho, for the year ending Sept. 30, 1917.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Day.	Apr.	May.	June.	July.	Aug.	Sept.
1	.....	440	666	178	203	178	16	216	635	190	339	297	367
2	.....	425	650	117	178	190	17	216	666	144	339	269	367
3	.....	367	635	178	155	190	18	203	635	133	311	311	353
4	.....	353	635	160	150	166	19	216	620	70	255	311	339
5	.....	395	650	178	166	178	20	216	620	138	269	339	339
6	.....	367	635	144	178	166	21	229	635	242	283	255	311
7	.....	381	620	144	216	160	22	283	650	311	283	216	283
8	.....	485	575	144	255	160	23	297	635	325	283	178	255
9	.....	575	500	203	269	178	24	311	635	216	339	160	311
10	.....	575	500	203	283	190	25	425	620	203	311	150	367
11	.....	605	500	229	297	190	26	455	620	190	269	155	425
12	.....	605	440	255	339	216	27	635	635	178	216	178	381
13	.....	620	395	255	425	229	28	545	635	144	203	178	381
14	.....	620	353	255	440	229	29	440	650	65	229	178	410
15	.....	620	242	325	297	269	30	440	650	138	255	178	425
							31	.....	666	.....	242	190	.....

NOTE.—No record obtained Oct. 1 to Apr. 15.

Monthly discharge of Blackfoot River near Blackfoot, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
April 16–30	635	203	342	10,200
May	666	353	569	35,000
June	666	65	356	21,200
July	339	117	239	14,700
August	440	150	239	14,700
September	425	160	273	16,200
The period	.....	.....	.....	112,000

LITTLE BLACKFOOT RIVER AT HENRY, IDAHO.

LOCATION.—In sec. 10, T. 6 S., R. 42 E., on Skinner's ranch, at Henry, Bannock County, a short distance above flow line of Blackfoot-Marsh reservoir.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 24, 1914, to September 30, 1917.

GAGE.—Vertical staff fastened to log across the stream just below Skinner's barn; read by Mrs. James Chester.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed is rocky, with deposits of sand and gravel. Control is rock crest of an 8-foot falls. Stage-discharge relation affected by growth of aquatic plants.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.80 feet at 6.30 p. m. May 14 (discharge, 191 second-feet); minimum discharge, 11 second-feet April 5–10.

1914–1917: Maximum stage recorded, 3.5 feet at 8 p. m. April 19, 1914 (discharge from extension of rating curve, about 292 second-feet); minimum stage recorded, 1.20 feet March 24, April 1 and 2 and July 4 at 6 p. m. to July 7, 1914 (minimum discharge determined by shifting-control method, 7 second-feet on July 5, 6, and 7. 1914).

ICE.—Stage-discharge relation not affected by ice because of warm springs.

DIVERSIONS.—A ditch for watering stock diverts about 300 feet above station and a small ditch diverts between station and reservoir.

REGULATION.—No artificial regulation.

ACCURACY.—Stage-discharge relation affected by growth of aquatic plants. Fairly well defined standard rating curve and shifting-control method used. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, except October 1 to November 3, for which discharge was estimated because readings were made from a temporary gage. Records fair.

Discharge measurements of Little Blackfoot River at Henry, Idaho, during the year ending Sept. 30, 1917.

[Made by G. C. Baldwin.]

Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*
Nov. 4	1.33	13.1
Apr. 25	1.36	17.8
May 25	1.70	52.9
Aug. 6	1.81	26.4

Daily discharge, in second-feet, of Little Blackfoot River at Henry, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1		13	13	16	14	16	16	25	46	30	32	22
2		13	13	14	14	16	16	28	44	30	31	22
3		13	13	14	14	16	15	24	46	29	28	22
4		13	13	14	14	14	14	24	44	28	25	19
5		14	13	14	14	16	12	23	40	28	25	19
6		14	13	14	14	16	11	32	37	33	26	22
7		14	15	15	15	18	11	43	37	33	25	22
8		14	14	16	14	16	11	62	36	33	25	20
9		14	14	16	16	16	11	170	36	32	25	19
10		12	14	16	17	16	11	166	37	31	25	19
11		12	13	16	16	16	12	163	41	30	25	19
12		12	14	16	14	16	12	147	37	30	25	19
13		12	14	14	15	16	12	142	40	29	25	19
14		12	14	16	16	16	11	177	36	28	25	19
15		13	14	16	15	16	12	138	35	26	25	19
16	14	13	14	14	16	16	12	91	34	27	25	19
17		13	16	14	16	16	12	61	33	26	25	19
18		13	15	14	16	16	12	57	33	27	25	19
19		14	16	14	16	16	12	54	32	26	24	19
20		14	15	14	16	15	12	74	32	25	22	19
21		12	15	14	16	14	12	105	31	26	22	19
22		12	14	14	16	16	13	65	30	28	22	18
23		13	16	16	15	16	13	55	32	29	19	18
24		13	16	14	15	14	16	55	32	28	19	19
25		13	17	14	14	16	18	53	31	28	19	19
26		14	16	14	14	16	19	59	30	27	19	20
27		12	16	15	15	15	25	79	28	26	22	19
28		14	16	14	16	15	27	68	29	33	20	17
29		13	15	14	.....	14	31	88	32	33	19	16
30		14	16	14	.....	13	28	90	31	33	22	16
31		.....	14	14	.....	12	.....	59	.....	31	22	.....

NOTE.—Discharge estimated because readings were made from temporary gage, Oct. 1–31, and Nov. 1–3. Discharge estimated because of snow, Feb. 20, 23, and 24. Shifting-control method used Mar. 4–20, May 6–8, June 15 to July 27, and Sept. 21–30.

Monthly discharge of Little Blackfoot River at Henry, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October			14.0	861
November	14	12	13.1	780
December	17	13	14.5	892
January	16	14	14.6	898
February	17	14	15.1	839
March	18	12	15.5	953
April	31	11	15.0	893
May	177	23	79.9	4,910
June	46	28	35.4	2,110
July	33	25	29.1	1,790
August	32	19	23.8	1,460
September	22	16	19.2	1,140
The year	177	11	24.2	17,500

MEADOW CREEK NEAR HENRY, IDAHO.

LOCATION.—In sec. 3, T. 6 S., R. 42 E., half a mile above flow line of Blackfoot-Marsh reservoir, three-quarters of a mile below Goose Lake or Pelican Slough, and 1½ miles northeast of Henry, Bannock County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 17, 1914, to September 30, 1917.

GAGE.—Stevens continuous water-stage recorder installed June 27, 1914, on left bank; inspected by Ray Christensen. Vertical staff at same location and datum used April 17 to June 26, 1914.

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

CHANNEL AND CONTROL.—Control consisted originally of an old rock diversion dam about 100 feet below gage, but this was torn out August 17–19, 1915, and stage-discharge relation completely changed. New control is of rocks and gravel; somewhat shifting. One channel at all stages, but banks are covered with brush and stage-discharge relation may be affected.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.81 feet at 12.10 a. m. May 17 (discharge, 424 second-feet); minimum stage recorded, 1.83 feet at 2 p. m. September 22 (discharge, 11 second-feet).

1914–1917: Maximum stage recorded May 17, 1917; minimum stage recorded, about 1.06 feet July 17, 1916 (discharge, about 0.4 second-foot).

ICE.—Stage-discharge relation seriously affected by ice. Observations discontinued during winter.

DIVERSIONS.—None above gage.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Two fairly well defined rating curves used, one applicable October 1 to November 11 and May 1 to June 13, the other June 14 to September 30. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph, except for winter and the periods indicated in footnote to daily-discharge table. Records fair.

Discharge measurements of Meadow Creek near Henry, Idaho, during the year ending Sept. 30, 1917.

[Made by G. C. Baldwin.]

Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*
Nov. 2	1.88	15.9
May 31	3.94	211
Aug. 3	2.09	19.5

Daily discharge, in second-feet, of Meadow Creek near Henry, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	May.	June.	July.	Aug.	Sept.
1	18	16	225	186	24	24	14
2	25	15	203	160	22	23	13
3	29	16	144	139	20	20	13
4	29	15	178	128	18	20	13
5	28	15	151	120	17	19	14
6	26	16	155	108	18	19	15
7	24	17	157	102	20	18	15
8	22	14	172	95	20	18	15
9	20	17	195	91	20	18	15
10	19	17	225	89	19	18	15
11	19	14	264	86	18	17	16
12	19	.....	305	85	16	17	15
13	19	.....	324	83	16	17	14
14	18	.....	342	79	15	17	14
15	18	.....	382	75	15	18	14
16	18	.....	408	71	15	22	14
17	18	.....	408	67	16	22	14
18	18	.....	369	63	16	25	13
19	18	.....	314	60	16	29	12
20	18	.....	276	58	19	28	12
21	18	.....	257	55	20	27	11
22		.....	248	53	20	26	11
23		.....	225	50	19	24	13
24		.....	207	49	18	22	18
25		.....	192	46	18	22	18
26	17	.....	180	42	18	22	18
27		.....	174	38	18	22	17
28		.....	178	34	24	19	15
29		.....	190	30	22	14	14
30		.....	207	27	20	14	13
31		.....	210	.....	22	14	.....

NOTE.—Discharge interpolated Oct. 15–20; estimated Oct. 22–31 and Nov. 1.

Monthly discharge of Meadow Creek near Henry, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	29	.....	19.7	1,210
November 1–11	17	14	15.6	340
May	408	144	241	14,800
June	186	27	79.0	4,700
July	24	15	18.7	1,150
August	29	14	20.5	1,260
September	18	11	14.3	851

IDAHO (GOVERNMENT) CANAL NEAR FIRTH, IDAHO.

LOCATION.—In sec. 13, T. 2 S., R. 36 E., Bingham County, 100 feet above double metal flume by which canal crosses Eastern Idaho Slough, a quarter of a mile below nearest highway bridge, 1½ miles below point where Sand Creek crosses canal, and 5 miles southeast of Firth.

RECORDS AVAILABLE.—March 29, 1914, to September 30, 1917.

GAGE.—Friez water-stage recorder on left bank; read by Vaughn, Jensen, and Kaiser.

DISCHARGE MEASUREMENTS.—Made by wading or from one of the highway bridges above.

CHANNEL AND CONTROL.—Bed composed of silt, sand, and fine gravel; probably shifts slightly but flume heading just below furnishes what should be a permanent control for high stages. Point of zero flow at about 0.5 or 0.6 foot gage height.

EXTREMES OF DISCHARGE.—Maximum stage during the year from water-stage recorder, 4.53 feet at 9 a. m. August 19 (discharge, 315 second-feet); minimum stage, 0.53 foot at 9 a. m. April 20 (discharge, estimated as no flow); observer reported no flow March 14 to 28.

1914–1917: Maximum stage recorded, 5.30 feet at 3.35 p. m. June 21, 1916 (discharge, 428 second-feet); minimum stage as above stated.

ICE.—Stage-discharge relation seriously affected by ice. Data inadequate for determination of winter discharge.

DIVERSIONS.—None.

REGULATION.—Flow partly regulated by Snake River headgates, about 12 miles above, and partly by gates at the Sand Creek crossing, about 1½ miles above.

ACCURACY.—Stage-discharge relation changed slightly September 18 to 21, and was affected by ice during winter. Rating curve well defined for open water. Operation of water-stage recorder unsatisfactory at times; supplemented by daily staff readings during part of year. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph, except as noted in footnote to table of daily discharge. Records good for periods for which daily discharge is given.

Idaho (Government) canal diverts water from left bank of Snake River in sec. 31. T. 1 N., R. 37 E., and discharges into Blackfoot River in sec. 24, T. 2 S., R. 36 E. The canal receives water from Sand Creek just above this station.

Discharge measurements of Idaho (Government) canal near Firth, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 17	C. G. Paulsen	2.25	71.2	Apr. 6	William Kessler	[a] 2.29	0.72
Dec. 20	A. W. Harrington	[a] 2.63	32.0	25	do	2.17	63.6
Feb. 6	T. R. Newell	[a] 2.96	2.03	May 18	G. C. Baldwin	4.12	263
23	do	[a] 2.93	.65	Aug. 1	do	3.48	191

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Idaho (Government) canal near Firth, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	150	59	27					88	293	191	194	83
2	172	56	30					81	293	199	210	26
3	140	52	33				0.7	73	231	206	200	53
4	140	37	36					66	269	214	205	36
5	110	35	33					69	275	222	200	46
6	106	33	29		2.0		.7	69	269	194	194	53
7	92	43	22					70	269	222	161	53
8	60	32	15					97	263	251	161	92
9	63	34						125	263	275	161	107
10	66	25						161	263	239	183	85
11	70							188	269	287	227	83
12	73	12						216	263	263	269	88
13	76							238	257	233	239	57
14	79	12	20				.5	239	233	275	194	56
15	75	15						245	200	293	188	96
16	75	24						257	135	293	194	145
17	71	41						269	140	275	227	172
18	73	47						269	48	257	227	164
19	76	44						245	5	233	299	141
20	77	37	32					269	15	257	251	74
21	74	35					3	275	60	251	227	15
22	68	32					7	281	89	216	140	1
23	69	35	25		.7		40	275	84	222	92	14
24	66	31					60	263	98	205	135	49
25	66	28					67	263	112	172	150	51
26	66	32					103	269	126	156	125	5
27	61	28					178	275	141	183	125	5
28	60	28	10				118	275	155	205	120	9
29	63	25					85	287	169	216	83	14
30	56	21					88	299	183	263	88	46
31	58							299		227	77	

NOTE.—Stage-discharge relation probably affected by ice Nov. 11–13, Dec. 9–19, Dec. 21 to April 20. Discharge interpolated because of lack of gage heights Oct. 9–13, June 24–29, July 1–4, and estimated June 19–21. Discharge estimated Nov. 11–13; Dec. 9–19, 21–25, 26–31; Apr. 1–5, 7–20. Discharge not computed Jan. 1 to Mar. 31; very small flow.

Monthly discharge of Idaho (Government) canal near Firth, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	172	56	82.3	5,060
November	59		31.9	1,900
December			21.4	1,320
April	178		25.3	1,510
May	299	66	206	12,700
June	293	5	184	10,900
July	293	156	232	14,300
August	299	77	179	11,000
September	172	1	64.0	3,810

NOTE.—See footnote to daily-discharge table.

SAND CREEK NEAR FIRTH, IDAHO.

LOCATION.—In sec. 7, T. 2 S., R. 37 E., Bingham County, 400 feet downstream from point where Idaho (Government) canal crosses creek and 4 miles east of Firth.

RECORDS AVAILABLE.—December 21, 1916, to September 30, 1917.

GAGE.—Vertical staff on left bank on upstream side of highway bridge. Prior to May 17, 1917, vertical staff on left bank, 300 feet upstream; read by J. A. Vaughn.

DISCHARGE MEASUREMENTS.—Made by wading, from highway bridge, or from small flume crossing creek 50 feet downstream.

CHANNEL AND CONTROL.—Bed composed of silt, sand, and fine gravel; probably not permanent. Banks clean; subject to overflow at high stages. Point of zero flow, about 0.8 foot gage height.

EXTREMES OF DISCHARGE.—Maximum discharge, estimated 211 second-feet, May 24 and 29; minimum discharge, no flow, April 27, June 19 to July 3, July 28–29, and Aug. 2–4.

ICE.—Stage-discharge relation seriously affected by ice. Data inadequate for determination of daily discharge during ice period.

DIVERSIONS.—None below Idaho (Government) canal crossing and above the station.

REGULATION.—The Idaho (Government) canal has been constructed directly across the channel of the creek above the station. The canal receives the entire flow of the creek as tributary and regulates the flow returned to creek channel below by means of headgates. Above this point, numerous canal systems utilize the creek channel as a waste ditch.

ACCURACY.—Stage-discharge relation at both gages permanent for period except as affected by ice. Rating curves fairly well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table except as noted in footnote to daily-discharge table. Records fair.

Discharge measurements of Sand Creek near Firth, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Dec. 21	A. W. Harrington	[a] 3.00	37.5	Apr. 25	William Kessler	2.09	66.5
Feb. 6	T. R. Newell	[a] 2.10	18.3	May 17	G. C. Baldwin	[b] 3.21	195
25	do	[a] 1.88	9.97	18	do	[b] 3.17	184
Apr. 6	William Kessler	[a] 2.49	6.94	Aug. 1	do	[b] 1.02	3.15
25	do	1.35	28.6	1	do	[b] 1.48	28.4
25	do	1.82	53.6				

[a] Stage-discharge relation affected by ice. [b] Gage heights read on lower gage.

Daily discharge, in second-feet, of Sand Creek near Firth, Idaho, for the year ending Sept. 30, 1917.

Date.	Apr.	May.	June.	July.	Aug.	Sept.	Date.	Apr.	May.	June.	July.	Aug.	Sept.
1		112	210	0	4	68	16	16	187	86	150	51	145
2		108	206	0	0	68	17	16	193	86	145	51	144
3		108	205	0	0	68	18	21	204	26	145	30	122
4		100	205	4	0	66	19	24	192	0	22	68	99
5		104	205	4	34	68	20	20	201	0	22	68	76
6		104	193	4	34	68	21	23	202	0	90	76	54
7	12	106	192	4	30	72	22	37	204	0	16	105	70
8		112	192	4	30	79	23	48	206	0	16	92	86
9		116	198	81	30	88	24	84	211	0	58	72	81
10		132	198	81	34	88	25	71	205	0	58	54	81
11		164	199	10	38	115	26	39	205	0	16	44	46
12		169	199	81	54	110	27	0	208	0	15	42	46
13		179	198	81	68	115	28	59	206	0	0	46	54
14	23	185	198	90	54	116	29	112	211	0	0	46	58
15	16	184	160	115	54	116	30	119	210	0	10	50	76
							31	.....	206	.....	58	68	.....

NOTE.—Stage-discharge relation affected by ice Dec. 21 to Apr. 13. Discharge estimated from available gage heights, actual measurements, observer's notes, and temperature records Dec. 21–31; Feb. 1–28; Mar. 1–31; Apr. 1–13. Discharge estimated Apr. 25–26 and 28. Discharge interpolated because of lack of gage heights, Sept. 18–20 and Sept. 22.

Monthly discharge of Sand Creek near Firth, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
December 21–31	.....	.....	24.5	535
January	.....	.....	13.8	848
February	.....	.....	17.4	966
March	.....	.....	14.3	879
April	119	0	29.5	1,760
May	211	100	169	10,400
June	210	0	105	6,250
July	150	0	44.5	2,740
August	105	0	46.0	2,830
September	145	46	84.8	5,050
The period	.....	.....	.....	32,300

NOTE.—See footnote to daily-discharge table.

FORT HALL UPPER CANAL NEAR BLACKFOOT, IDAHO.

LOCATION.—In sec. 13, T. 3 S., R. 35 E., Bingham County, 500 feet below headgates and 3½ miles southeast of Blackfoot.

RECORDS AVAILABLE.—May 8, 1912, to September 30, 1917.

GAGE.—Vertical staff in stilling well on right bank and sloping gage painted on right side about midway of concrete rating section. Bristol water-stage recorder used during 1912 and parts of 1913 and 1914. All gages set to same datum and at practically same site. Gage read by ditch rider and gate tender.

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

CHANNEL AND CONTROL.—Concrete trapezoidal rating section.

EXTREMES OF DISCHARGE.—1912–1917: Maximum stage recorded, 4.90 feet at 7 p. m. July 28, 1917; maximum discharge recorded at 6 p. m. July 20, 1917, 407 second-feet; minimum flow occurs during winter when a very small quantity of water is run for stock.

ICE.—Observations discontinued during winter.

DIVERSIONS.—None above station or for several miles below.

REGULATION.—Flow regulated at headgates 500 feet above.

ACCURACY.—Stage-discharge relation changed during winter; affected by moss during July, August, and September. Rating curves well defined for open water both before and after change. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, and by shifting-control method. Records fair.

Fort Hall upper canal diverts water from left bank of Blackfoot River in sec. 12, T. 3 S., R. 35 E. Water is used for irrigation on Fort Hall Indian Reservation.

Discharge measurements of Fort Hall upper canal near Blackfoot, Idaho, during the year ending Sept. 30, 1917.

[Made by G. C. Baldwin.]

Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*
May 19	0.80	13.5
June 21	3.34	241
Aug. 2	4.76	384

Daily discharge, in second-feet, of Fort Hall upper canal near Blackfoot, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	May.	June.	July.	Aug.	Sept.	Day.	Oct.	May.	June.	July.	Aug.	Sept.
1	157	.....	69	370	377	293	16	.....	.....	161	394	329	223
2	143	.....	67	382	389	305	17	.....	.....	194	393	341	234
3	105	.....	65	370	377	293	18	.....	.....	183	392	341	223
4	86	.....	82	370	377	269	19	.....	13	161	402	353	223
5	86	.....	20	370	365	305	20	.....	23	227	401	353	223
6	86	.....	73	370	365	305	21	.....	33	238	400	341	223
7	86	.....	75	381	365	293	22	.....	60	262	399	341	223
8	86	.....	110	380	365	293	23	.....	77	322	398	329	223
9	86	.....	130	378	365	281	24	.....	8	334	396	329	234
10	86	.....	130	377	365	281	25	.....	18	346	395	341	179
11	86	.....	140	388	353	245	26	.....	44	346	394	305	$15\frac{7}{8}$
12	86	.....	150	387	317	234	27	.....	48	346	393	293	$15\frac{7}{8}$
13	86	.....	150	386	329	223	28	.....	63	346	392	317	$14\frac{6}{8}$
14	86	.....	140	384	317	234	29	.....	70	346	390	293	$12\frac{1}{8}$
15	33	.....	150	395	317	234	30	.....	70	370	389	293	$12\frac{1}{8}$
							31	.....	70	.....	377	293	.....

NOTE.—No record obtained Oct. 16 to May 18; only small amount of water run for stock. Discharge Oct. 2-3, Oct. 15 and June 5 computed from available gage heights and observer's notes concerning headgate changes.

Monthly discharge of Fort Hall upper canal near Blackfoot, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October 1-15	157	33	92.3	2,750
May 19-31	77	8	45.9	1,180
June	370	20	191	11,400
July	402	370	387	23,800
August	389	293	340	20,900
September	305	121	233	13,900

FORT HALL LOWER CANAL NEAR BLACKFOOT, IDAHO.

LOCATION.—In sec. 15, T. 3 S., R. 35 E., Bingham County, 200 feet below ford where road to headgates half a mile above crosses canal and $2\frac{1}{2}$ miles southeast of Blackfoot.

RECORDS AVAILABLE.—May 15, 1912, to September 30, 1917.

GAGE.—Inclined staff on right bank near center of concrete rating section; read by ditch rider for the United States Indian Service. Bristol water-stage recorder at same site, but referred to datum 1.53 feet lower than that of staff gage was used from 1912 to 1914.

DISCHARGE MEASUREMENTS.—Made from suspension footbridge at gage.

CHANNEL AND CONTROL.—Channel at gage is trapezoidal concrete rating section at sides of which sand and silt have been deposited. Principal control is a wooden check across canal about a third of a mile below gage. Variations in amount of water carried in a large lateral that diverts between the gage and the check and the growth of moss and weeds in the canal caused several changes in stage-discharge relation during season.

EXTREMES OF DISCHARGE.—1912-1917: Maximum stage recorded during period, 3.15 feet at 7.40 a. m. July 21, 1917 (discharge, 224 second-feet); canal reported dry on numerous dates.

ICE.—No records obtained during winter. Small quantities of water are run at times for use of stock, but during most of winter the headgates are closed.

DIVERSIONS.—None above gage; one large and one small lateral divert between the gage and the check that acts as the main control.

REGULATION.—Flow regulated at the headgates half a mile above gage.

ACCURACY.—Stage-discharge relation not permanent; affected by variation in quantity of water diverted immediately below gage, by changes at the control, and by growth of aquatic vegetation. Two fairly well defined rating curves and one parallel curve used. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table and by shifting-control method except as noted in footnote to daily-discharge table. Records good.

Fort Hall lower canal diverts water from left bank of Blackfoot River in sec. 11, T. 3 S., R. 35 E. Water is used for irrigation on Fort Hall Indian Reservation.

Discharge measurements of Fort Hall lower canal near Blackfoot, Idaho, during the year ending Sept. 30, 1917.

[Made by G. C. Baldwin.]

Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*
May 19	1.99	47.3
June 21	2.43	147
July 18	3.08	215
Aug. 2	2.86	181
Sept. 13	2.73	177

Daily discharge, in second-feet, of Fort Hall lower canal near Blackfoot, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	May.	June.	July.	Aug.	Sept.	Day.	Oct.	May.	June.	July.	Aug.	Sept.
1	50	.....	97	127	185	174	16	.....	.....	94	207	163	207
2	50	.....	100	147	185	163	17	.....	.....	90	218	152	196
3	21	.....	98	142	174	163	18	.....	.....	84	218	163	185
4	3	.....	91	152	174	163	19	.....	47	71	207	174	163
5	3	.....	84	163	185	163	20	.....	58	112	218	185	152
6	3	.....	84	152	185	163	21	.....	70	142	185	185	132
7	3	.....	92	174	174	152	22	.....	73	147	174	174	132
8	3	.....	100	185	50	163	23	.....	67	142	195	163	132
9	3	.....	97	196	}	174	24	.....	57	142	205	163	132
10	3	.....	97	185	}	163	25	.....	68	147	204	163	122
11	3	.....	97	196	0	185	26	.....	79	163	203	152	102
12	3	.....	100	207	}	185	27	.....	82	163	180	185	102
13	3	.....	107	207	}	174	28	.....	90	152	178	185	82
14	3	.....	107	207	}	185	29	.....	93	102	188	185	132
15	1	.....	97	207	80	196	30	.....	91	163	198	185	107
							31	.....	94	.....	197	174	.....

NOTE.—No record obtained Oct. 16 to May 18. Headgates closed most of time prior to May 2. Discharge estimated because of lack of gage heights May 2–15 and 16–18. Discharge estimated from observer's notes regarding headgate changes Oct. 3, 15, and Aug. 8–15. Discharge interpolated May 20.

Monthly discharge of Fort Hall lower canal near Blackfoot, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October 1–15	50	1	10.3	306
May 19–31	94	47	74.5	1,920
June	163	71	112	6,660
July	218	127	188	11,600
August	185	0	134	8,240
September	207	82	155	9,220

PORTNEUF RIVER AT POCATELLO, IDAHO.

LOCATION.—In sec. 27, T. 6 S., R. 34 E., 20 feet above old slaughter house bridge at foot of Carson Street, in west end of Pocatello, Bannock County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—August 31, 1911, to September 30, 1917. For station about a mile upstream, May 18, 1897, to October 14, 1899.

GAGE.—Vertical staff on left bank just below highway bridge; constructed in 1914; read by W. S. Hutson. The gage in use 1897–99 was a vertical staff spiked to pier of wagon bridge one-eighth of a mile below plant of Pocatello Electric Light Co.

DISCHARGE MEASUREMENTS.—Made by wading or from upstream side of old slaughter house bridge.

CHANNEL AND CONTROL.—Bed of stream at gage and measuring section consists of rocks and medium-sized boulders; very rough. One channel except at extremely high stages when left bank is overflowed. Control fairly permanent, although it shifts within well-defined limits.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.2 feet at 1 p. m. April 13 (discharge, 1,150 second-feet); estimated discharge of more than 2,000 second-feet during period May 13 to June 14, when left bank was overflowed; minimum stage recorded, 2.6 feet at 8 a. m. July 29 (discharge, 129 second-feet).

1911–1917: Maximum stage recorded, 6.4 feet May 23 and 24, 1912 (discharge, 1,240 second-feet); estimated maximum discharge of more than 2,000 second-feet occurred during period May 13 to June 14, 1917, when left bank was overflowed; minimum stage recorded, 2.0 feet July 4, 1915 (discharge, 52 second-feet).

1897–1899: Maximum stage recorded, 12.80 feet May 18, 1897 (discharge, 1,880 second-feet); minimum stage recorded, 6.10 feet July 4–11, 13, and 17–18, 1898 (discharge, 14 second-feet).

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

DIVERSIONS.—Numerous ranch diversions are made above the gage. The largest single diversion is that made by the canal of the Portneuf-Marsh Valley Canal Co., which diverts water for use in irrigating lands in the vicinity of Downey.

REGULATION.—None below the head of the Portneuf-Marsh Valley Co.'s canal. The storage reservoir of this company is near Chesterfield and has a capacity of about 28,000 acre-feet.

ACCURACY.—Stage-discharge relation not permanent; affected by ice during winter. Rating curves, fairly well defined, used October 1 to December 31 and March 2 to September 30. Gage read to half-tenths thrice weekly. Daily discharge ascertained by applying daily gage height to rating table and interpolating for days of no gage height, except during January and February when stage-discharge relation was affected by ice, and during period May 13 to 14 when stage over-topped the gage. Records fair.

Discharge measurements of Portneuf River at Pocatello, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Feb. 2	T. R. Newell	3.94	227
Mar. 1	....do	3.99	294
Sept. 14	G. C. Baldwin	2.97	189

Daily discharge, in second-feet, of Portneuf River at Pocatello, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	174	249	264	294	398	892	.....	398	222	136
2	185	249	268	268	398	873	.....	364	268	136
3	194	254	273	230	404	854	.....	329	268	140
4	203	259	278	240	410	835	.....	309	268	144
5	203	259	278	250	416	816	.....	289	268	144
6	203	259	278	259	422	798	.....	269	255	144
7	203	259	278	276	470	836	.....	249	243	148
8	221	259	278	292	518	873	.....	240	230	151
9	226	259	278	308	640	892	.....	243	218	151
10	230	264	278	318	762	911	.....	246	206	151
11	235	268	278	329	911	1,030	.....	249	194	155
12	240	259	275	322	1,070	1,070	.....	256	185	159
13	250	268	271	315	1,150	.....	.....	262	176	172
14	259	278	268	308	1,110	.....	.....	268	160	185
15	259	278	266	308	1,070	.....	1,110	231	144	188
16	259	278	264	308	1,030	.....	1,030	194	149	191
17	259	298	261	308	911	.....	896	194	154	194
18	259	285	259	295	835	.....	762	194	159	194
19	259	272	259	281	798	.....	762	194	151	194
20	259	259	259	268	762	.....	762	190	166	194
21	259	259	259	273	762	.....	727	185	180	194
22	268	259	256	278	798	.....	693	159	194	212
23	268	259	252	283	835	.....	658	154	188	230
24	268	259	249	288	873	.....	606	149	182	243
25	268	259	246	304	911	.....	554	144	176	256
26	268	259	243	320	950	.....	503	141	176	268
27	264	259	240	336	989	.....	475	139	160	275
28	259	259	237	351	989	.....	436	136	144	281
29	259	259	233	366	950	.....	398	129	144	288
30	254	259	230	382	911	.....	398	152	144	288
31	249	.....	230	398	.....	.....	.....	176	140	.....

NOTE.—Left bank was overflowed May 13 to June 14; discharge not determined. Maximum discharge estimated as greater than 2,000 second-feet.

Monthly discharge of Portneuf River at Pocatello, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	268	174	241	14,800
November	298	249	263	15,600
December	278	230	261	16,000
January	.....	.....	a 230	14,100
February	.....	.....	a 256	14,200
March	398	230	302	18,600
April	1,150	398	782	46,500
May 1–12	1,070	798	890	21,200
June 15–30	1,110	398	673	21,400
July	398	129	220	13,500
August	268	140	191	11,700
September	288	136	194	11,500

a Estimated.

NORTH SIDE MINIDOKA CANAL NEAR MINIDOKA, IDAHO.

LOCATION.—In sec. 1, T. 9 S., R. 25 E., 650 feet below Minidoka dam, 6 miles south of Minidoka, Minidoka County.

RECORDS AVAILABLE.—May 1, 1909, to September 30, 1917.

GAGE.—Friez water-stage recorder on left bank, 300 feet below site of gage used prior to October 31, 1914; read by Horne and Glendenning.

DISCHARGE MEASUREMENTS.—Made from suspension footbridge a few feet above present gage.

CHANNEL AND CONTROL.—Rock cut; practically permanent but rough.

ICE.—Observations discontinued during winter.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.32 feet August 8 (discharge, 1,500 second-feet); no flow at times during period of no record.

1909–1917: Maximum stage recorded, 9.44 feet May 20, 1914 (discharge, 1,520 second-feet); no flow at various times when head gates were closed.

DIVERSIONS.—None above station and none close enough below to affect stage-discharge relation.

REGULATION.—Flow controlled by headgates at Minidoka dam.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Records good.

COOPERATION.—Records furnished by United States Reclamation Service.

North Side Minidoka canal diverts from the right bank of Snake River in sec. 1, T. 9 S., R. 25 E. Water is used for irrigating the North Side Minidoka project of United States Reclamation Service. Project has about 20 miles of main canal and about 260 miles of laterals.

Discharge measurements of North Side Minidoka canal near Minidoka, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 2	F. Schlapkohl	6.31	753	July 20	F. Schlapkohl	9.27	1,500
Apr. 29	Hugh Crawford	3.01	227	27	do	9.27	1,500
May 14	do	5.74	680	Aug. 7	do	9.28	1,490
22	F. Schlapkohl	9.00	1,400	23	do	8.41	1,270
June 9	do	9.23	1,480	31	do	8.92	1,440
19	T. R. Newell	9.28	1,490	Sept. 11	do	7.41	1,000
20	F. Schlapkohl	9.28	1,490	29	Hugh Crawford	5.01	525
July 13	do	9.28	1,500				

NOTE.—All measurements furnished by United States Reclamation Service except that of June 19 by T. R. Newell.

Daily discharge, in second-feet, of North Side Minidoka canal near Minidoka, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Apr.	May.	June.	July.	Aug.	Sept.
1	806	.....	217	908	1,486	1,488	1,382
2	786	.....	219	910	1,491	1,486	1,382
3	671	.....	220	912	1,491	1,486	1,385
4	596	.....	242	980	1,488	1,488	1,335
5	565	.....	247	1,089	1,488	1,494	1,324
6	505	.....	272	1,225	1,491	1,481	1,330
7	234	.....	276	1,441	1,410	1,488	1,322
8	.....	.....	275	1,486	1,404	1,500	1,245
9	.....	.....	327	1,477	1,441	1,494	1,161
10	.....	.....	370	1,486	1,460	1,491	1,126
11	.....	.....	447	1,486	1,491	1,491	1,041
12	.....	.....	515	1,480	1,488	1,488	998
13	.....	.....	557	1,477	1,486	1,491	944
14	.....	.....	627	1,481	1,486	1,491	925
15	.....	.....	779	1,486	1,488	1,486	927
16	.....	.....	847	1,488	1,491	1,486	929
17	.....	.....	938	1,488	1,494	1,449	929
18	.....	.....	1,089	1,491	1,491	1,435	935
19	.....	.....	1,201	1,491	1,491	1,430	933
20	.....	.....	1,314	1,494	1,488	1,349	931
21	.....	.....	1,354	1,488	1,488	1,322	927
22	.....	.....	1,388	1,486	1,488	1,271	923
23	.....	.....	1,407	1,488	1,488	1,251	873
24	.....	.....	1,410	1,488	1,491	1,308	779
25	.....	86	1,305	1,488	1,488	1,332	693
26	.....	104	1,081	1,486	1,491	1,335	593
27	.....	160	964	1,486	1,491	1,335	548
28	.....	220	973	1,486	1,491	1,330	538
29	.....	221	977	1,488	1,491	1,327	541
30	.....	219	931	1,491	1,494	1,371	551
31	.....	.....	912	.....	1,491	1,390	.....

NOTE.—No record obtained Oct. 8 to Apr. 24.

Monthly discharge of North Side Minidoka canal near Minidoka, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October 1-7	806	234	595	8,260
April 25-30	221	86	168	2,000
May	1,410	217	770	46,888
June	1,494	908	1,390	82,469
July	1,494	1,404	1,480	90,953
August	1,500	1,251	1,420	87,247
September	1,385	538	982	58,311

SOUTH SIDE MINIDOKA CANAL NEAR MINIDOKA, IDAHO.

LOCATION.—In sec. 12, T. 9 S., R. 25 E., Cassia County, 300 yards below headgates at Minidoka dam, 6 miles south of Minidoka.

RECORDS AVAILABLE.—April 21, 1909, to September 30, 1917.

GAGE.—Friez water-stage recorder on right bank. Prior to irrigation season of 1910 gage was 200 or 300 feet upstream. Datum unchanged since spring of 1910.

DISCHARGE MEASUREMENTS.—Made from suspension footbridge a few feet above gage.

CHANNEL AND CONTROL.—Canal section is in earth; may shift. Stage-discharge relation affected by growth of aquatic plants.

ICE.—No records obtained during winter.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.66 feet August 7 (discharge, 1,057 second-feet); probably no flow during period of no record.

1909-1917: As stated above.

DIVERSIONS.—None above gage.

REGULATION.—Flow controlled by headgates at Minidoka dam.

ACCURACY.—Stage-discharge relation affected by growth of aquatic plants. Rating curve well defined by a large number of measurements. Records good.

COOPERATION.—Records furnished by United States Reclamation Service.

South Side Minidoka canal diverts from the left bank of Snake River in sec. 1, T. 9 S., R. 25 E. Water is used for irrigating the South Side Minidoka project of the United States Reclamation Service. Project has about 13 miles of main canal and about 20 miles of laterals.

Discharge measurements of South Side Minidoka canal near Minidoka, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
May 28	F. Schlapkohl	3.97	628	Aug. 7	F. Schlapkohl	5.66	1,060
June 9	do	5.00	888	16	do	5.54	988
20	do	5.27	961	23	do	5.28	892
July 13	do	5.44	965	31	do	5.38	871
20	do	5.52	993	Sept. 10	do	4.96	762
27	do	5.67	1,010	29	Hugh Crawford	3.08	396

NOTE.—All measurements furnished by United States Reclamation Service.

Daily discharge, in second-feet, of South Side Minidoka canal, near Minidoka, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	May.	June.	July.	Aug.	Sept.
1	469	144	.....	625	987	1,034	868
2	467	144	.....	625	984	1,023	876
3	473	144	.....	638	976	1,009	881
4	475	144	.....	680	968	1,009	884
5	437	145	.....	749	949	1,023	884
6	321	144	.....	790	954	1,043	887
7	326	144	.....	798	935	1,057	881
8	325	144	.....	819	938	1,046	837
9	313	147	.....	860	933	1,046	806
10	248	147	.....	884	927	1,037	777
11	202	142	.....	898	938	1,023	751
12	194	136	.....	922	965	1,006	705
13	189	77	.....	917	960	1,006	663
14	211	.....	.....	911	965	998	635
15	227	.....	.....	906	962	998	630
16	227	.....	.....	914	960	995	591
17	227	.....	.....	927	971	984	551
18	230	.....	194	952	992	960	561
19	226	.....	274	960	992	946	572
20	226	.....	358	954	992	930	572
21	226	.....	383	965	998	919	572
22	228	.....	423	968	1,009	887	565
23	224	.....	549	965	1,020	876	565
24	224	.....	606	957	1,020	834	513
25	226	.....	628	954	1,015	827	478
26	226	.....	630	965	1,015	821	439
27	170	.....	620	984	1,009	819	408
28	145	.....	613	995	1,018	798	400
29	144	.....	625	1,004	1,018	795	398
30	145	.....	633	992	1,023	821	402
31	145	.....	625	.....	1,029	860	.....

NOTE.—No record obtained Nov. 14 to May 17. Discharge estimated Nov. 13.

Monthly discharge of South Side Minidoka canal near Minidoka, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	475	144	262	16,100
November 1–13	147	77	139	3,580
May 18–31	633	194	512	14,179
June	1,004	625	883	52,426
July	1,029	927	981	60,236
August	1,057	795	949	58,271
September	887	398	652	38,713

NORTH SIDE TWIN FALLS CANAL AT MILNER, IDAHO.

LOCATION.—In sec. 20, T. 10 S., R. 21 E., Minidoka County, at highway bridge half a mile north of Milner post office and three-fourths of a mile below headgates at Milner dam.

RECORDS AVAILABLE.—May 10, 1909, to September 30, 1917.

GAGE.—Vertical staff attached to downstream side of bridge near left bank; read by F. W. Deming, November 12, 13, 21, 23, December 9 to May 6; rest of year Stevens 8-day water-stage recorder at slightly different site and datum. Datum of gage practically unchanged since establishment of station. A slide gage installed on bridge in 1911 and set to read same as staff gage was discontinued in 1913. A Lietz water-stage recorder, which was installed in 1912 in a shelter over the staff gage, never operated entirely satisfactorily and was abandoned in 1913.

DISCHARGE MEASUREMENTS.—Made from cable 150 feet below bridge gage.

CHANNEL AND CONTROL.—Channel is a permanent concrete-lined section. Moss growth is heavy during summer and stage-discharge relation is seriously affected. Control apparently indeterminate.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 8.31 feet at 6.15 p. m. July 26 (discharge, 2,930 second-feet); canal dry February 7 to 9 and April 10 to May 2.

1909–1917: Maximum discharge as noted above; canal reported dry during various periods.

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

DIVERSIONS.—None between gage and headgates and none for some distance below. Surplus water may be discharged into river through waste gates about 200 feet below head of canal.

REGULATION.—Flow regulated by head and waste gates.

ACCURACY.—Stage-discharge relation not permanent, changes being due largely to growth of aquatic plants. Several well-defined parallel rating curves used. Staff gage read to half-tenths once daily, December 9 to May 6; operation of water-stage recorder satisfactory for rest of year, except November 12, 13, 21, and 23, when staff readings were substituted. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph or by shifting-control method. Records for periods in which gage-height record was taken from water-stage recorder excellent; those for other periods fair.

COOPERATION.—Some discharge measurements furnished by State engineer of Idaho; gage-height record and some measurements furnished by Twin Falls North Side Land & Water Co.

The North Side Twin Falls canal diverts water from the north side of Snake River at the Milner dam and furnishes water for stock and irrigation for about 240,000 acres in Minidoka, Lincoln, and Gooding counties. The distribution system comprises about 100 miles of main canal and 625 miles of laterals.

Discharge measurements of North Side Twin Falls canal at Milner, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 5	McConnel and Crandall.	6.75	2,290	Aug. 11	L. H. Perrine	8.10	2,780
5	do	6.77	2,270	13	Finkelnburg and Perrine	8.05	2,790
6	do	7.17	2,530	15	L. H. Perrine	8.07	2,680
6	do	7.30	2,540	18	W. N. McConnel	8.14	2,810
16	E. A. Finkelnburg	6.66	2,280	18	McConnel and Perrine	8.14	2,880
Nov. 15	do	4.42	1,150	20	L. H. Perrine	8.10	2,720
18	C. G. Paulsen	4.03	985	20	E. A. Finkelnburg	8.11	2,740
Feb. 5	E. A. Finkelnburg	[a] 3.71	763	22	L. H. Perrine	8.05	2,640
16	T. R. Newell	[a] 3.36	680	24	do	8.05	2,730
May 3	E. A. Finkelnburg	[a] 5.52	1,570	27	do	8.02	2,650
15	do	4.80	1,310	30	do	8.14	2,670
24	do	6.92	2,220	31	do	8.07	2,590
28	do	7.64	2,510	Sept. 1	do	8.23	2,610
June 6	do	7.76	2,450	2	do	8.08	2,560
15	W. N. McConnel	7.74	2,470	4	Finkelnburg and Perrine	8.18	2,620
25	E. A. Finkelnburg	7.80	2,670	6	L. H. Perrine	8.09	2,580
July 9	do	8.07	2,790	8	do	8.08	2,560
15	do	7.94	2,770	10	do	8.20	2,640
23	do	8.04	2,780	12	do	8.17	2,600
29	L. H. Perrine	8.06	2,940	15	do	8.20	2,590
30	E. A. Finkelnburg	7.92	2,720	17	do	8.13	2,570
Aug. 1	L. H. Perrine	7.88	2,770	19	do	8.07	2,530
7	E. A. Finkelnburg	7.99	2,710				
8	Baldwin and Perrine	8.13	2,840				

[a] Reading on staff gage at bridge.

NOTE.—McConnel and Perrine were employees of the Idaho State engineer; Crandall and Finkelnburg of the Twin Falls North Side Land & Water Co.

Daily discharge, in second-feet, of North Side Twin Falls canal at Milner, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	2,040	1,070	914	886	2,060	426	140	0	2,410	2,720	2,710	2,620
2	2,290	1,230	910	867	2,060	426	153	0	2,420	2,720	2,710	2,590
3	2,330	1,250	901	867	2,060	440	153	1,560	2,430	2,750	2,770	2,620
4	2,200	1,250	922	886	2,060	426	153	1,440	2,420	2,720	2,750	2,610
5	2,210	1,200	972	886	1,420	426	128	1,440	2,380	2,720	2,760	2,610
6	2,460	1,250	897	886	253	400	128	1,400	2,420	2,750	2,760	2,560
7	2,440	1,250	873	901	0	400	128	1,420	2,350	2,750	2,750	2,610
8	2,140	1,250	881	924	0	1,080	128	1,420	2,400	2,770	2,790	2,560
9	1,640	1,230	1,040	924	0	924	140	1,360	2,430	2,800	2,800	2,570
10	1,680	1,130	982	886	774	597	0	1,580	2,390	2,800	2,760	2,590
11	1,810	1,300	982	867	774	597	0	1,790	2,460	2,750	2,800	2,580
12	1,610	1,390	700	848	774	508	0	1,840	2,540	2,750	2,770	2,600
13	1,540	1,310	614	848	774	453	0	1,960	2,550	2,750	2,760	2,550
14	1,680	1,220	630	811	756	426	0	1,630	2,450	2,750	2,770	2,570
15	2,330	1,140	630	792	756	440	0	1,270	2,450	2,740	2,770	2,600
16	2,360	989	614	774	693	566	0	1,330	2,470	2,730	2,770	2,570
17	2,080	985	597	756	700	597	0	1,320	2,440	2,750	2,780	2,560
18	2,060	1,070	597	737	700	630	0	1,310	2,530	2,720	2,800	2,590
19	2,310	1,200	597	682	700	664	0	1,830	2,570	2,710	2,720	2,560
20	2,360	1,300	597	682	682	664	0	2,070	2,590	2,710	2,720	2,530
21	1,140	1,260	614	848	682	566	0	2,040	2,580	2,750	2,700	2,570
22	1,140	1,240	962	1,330	682	566	0	1,720	2,600	2,760	2,680	2,120
23	1,340	1,260	982	1,500	682	664	0	1,460	2,610	2,780	2,670	1,970
24	1,510	1,140	982	1,500	718	630	0	2,360	2,610	2,750	2,660	1,810
25	1,460	1,110	982	900	322	630	0	2,460	2,670	2,700	2,710	1,810
26	1,410	980	924	848	364	737	0	2,500	2,620	2,760	2,620	1,590
27	1,270	873	962	848	364	700	0	2,500	2,670	2,760	2,670	1,450
28	1,090	914	962	830	426	700	0	2,510	2,700	2,830	2,710	1,220
29	1,100	901	962	830	.....	737	0	2,480	2,720	2,780	2,710	1,230
30	1,070	918	962	848	.....	153	0	2,460	2,750	2,720	2,730	814
31	1,070	.....	924	848	.....	153	.....	2,400	.....	2,670	2,590	.....

NOTE.—Canal reported dry Feb. 7–9 and April 10 to May 2. Discharge estimated or interpolated because of lack of gage heights Nov. 1, 14, and January 25.

Monthly discharge of North Side Twin Falls canal at Milner, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	2,460	1,070	1,780	109,000
November	1,390	873	1,150	68,400
December	1,040	597	841	51,700
January	1,500	682	898	55,200
February	2,060	0	794	44,100
March	1,080	153	559	34,400
April	153	0	41.7	2,480
May	2,510	0	1,710	105,000
June	2,750	2,350	2,520	150,000
July	2,830	2,670	2,750	169,000
August	2,800	2,590	2,730	168,000
September	2,620	814	2,270	135,000
The year	2,830	0	1,510	1,090,000

SOUTH SIDE TWIN FALLS CANAL AT MILNER, IDAHO.

LOCATION.—In sec. 29, T. 10 S., R. 21 E., at wagon bridge one-eighth of a mile below headgates at Milner, in Twin Falls County.

RECORDS AVAILABLE.—May 10, 1909, to September 30, 1917.

GAGE.—Vertical staff in two sections; read by L. H. Perrine and F. W. Deming. The main or upper section of the gage is on the left bank of the canal about 100 feet upstream from the highway bridge, to the lower side of which the low-water section is fastened. This low-water section is the original gage, but on account of the difficulty in making readings accurately at high stages the high-water section was installed early in the summer of 1912 and has since been used exclusively for stages above 5.3 feet. The two sections read practically the same, although the datum of the upstream section is about 0.1 foot higher than the other. A Friez water-stage recorder is installed opposite the upper staff gage; used June 9–16, June 23 to July 14, July 16 to August 4, August 18–25, August 27 to September 15, 1917.

DISCHARGE MEASUREMENTS.—Made from highway bridge and suspension bridge 150 feet upstream.

CHANNEL AND CONTROL.—Channel at gage is blasted out of rock; practically permanent. Occasionally slight changes in control are due to washing in and deposition of silt.

EXTREMES OF DISCHARGE.—Maximum discharge during year, 3,690 second-feet October 16 and at 10 a. m. July 24; minimum stage, 1.20 feet May 17, 18, and 19 (discharge, 23 second-feet).

1909–1917: Maximum stage as stated above; minimum stage recorded, 0.8 foot April 7, 1913 (discharge, 11 second-feet).

ICE.—Stage-discharge relation affected by ice in canal below waste gates. Information insufficient to warrant computation for winter.

DIVERSIONS.—None above gage and none of consequence for several miles below.

REGULATION.—Flow regulated by headgates.

ACCURACY.—Stage-discharge relation changed by ice during winter and by closing waste gates below station in March. Rating curve well defined for normal position of waste gates; fairly well defined for open waste gates. Gage read to tenths once daily except during short period when operation of water-stage recorder was satisfactory. Daily discharge ascertained by applying daily gage height to rating table except for periods noted in footnote to daily-discharge table. Records for October and November, fair; April to September, good.

COOPERATION.—Gage-height record and part of discharge measurements furnished by the Twin Falls Canal Co. and by the State engineer of Idaho.

The South Side Twin Falls canal diverts water from the south side of Snake River at the Milner dam. This canal furnishes water for stock and for irrigation of about 200,000 acres near Twin Falls. The distribution system comprises about 110 miles of main canal and 590 miles of laterals.

Discharge measurements of South Side Twin Falls canal at Milner, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 18	C. G. Paulsen	[a] 6.31	1,900	Aug. 23	L. H. Perrine	10.37	3,590
Feb. 16	T. R. Newell	[a] 6.06	1,470	27	do	9.45	2,980
Aug. 2	L. H. Perrine	10.22	3,600	Sept. 4	McConnel and Perrine	9.41	2,990
9	G. C. Baldwin	10.51	3,640	7	L. H. Perrine	9.42	3,050
14	L. H. Perrine	10.47	3,590	20	do	9.60	3,070
15	do	10.47	3,610				

[a] Stage-discharge relation affected by waste gates below station.

NOTE.—McConnel and Perrine were employees of the Idaho State engineer.

Daily discharge, in second-feet, of South Side Twin Falls canal at Milner, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Apr.	May.	June.	July.	Aug.	Sept.
1	2,720	2,600	1,650	413	1,840	3,620	3,490	3,370
2	2,720	2,600	877	413	2,650	3,620	3,430	3,250
3	2,720	2,260	877	572	2,760	3,620	3,560	3,000
4	3,440	2,260	877	572	944	3,620	3,490	2,940
5	3,380	2,210	877	572	2,710	3,620	3,430	2,940
6	2,840	2,210	877	572	2,590	3,620	3,430	2,940
7	2,840	2,210	877	572	2,820	3,620	3,430	2,940
8	2,840	2,260	877	572	3,060	3,620	3,430	2,940
9	2,600	2,260	718	749	3,190	3,620	3,620	2,940
10	2,600	2,150	272	749	3,310	3,620	3,620	2,940
11	2,490	2,260	272	749	3,370	3,620	3,620	2,940
12	2,260	2,260	272	1,430	3,370	3,620	3,620	2,940
13	2,000	2,150	272	718	3,310	3,620	3,620	2,940
14	1,750	2,150	272	718	3,370	3,620	3,560	3,000
15	3,630	2,050	1,650	572	3,490	3,620	3,560	3,190
16	3,690	2,050	230	572	3,560	3,620	3,560	3,250
17	3,570	1,950	171	23	3,560	3,620	2,360	3,250
18	2,100	1,900	1,160	23	3,430	3,620	3,250	3,250
19	2,100	1,850	1,050	23	3,560	3,620	2,710	3,310
20	2,100	1,950	1,050	718	3,560	3,620	3,250	3,060
21	2,430	2,050	749	718	3,560	3,620	3,560	3,120
22	2,430	2,100	749	877	3,560	3,620	3,560	2,940
23	2,540	2,050	749	1,160	3,560	3,620	3,560	3,120
24	2,540	2,050	749	1,160	3,560	3,680	3,490	3,120
25	2,540	2,100	944	1,700	3,560	3,680	3,490	3,000
26	3,380	2,100	944	1,390	3,560	3,680	3,310	877
27	3,380	2,210	944	1,890	3,560	2,530	3,060	91
28	3,020	2,210	944	1,890	3,620	2,760	3,310	2,200
29	3,080	2,210	413	1,890	3,620	3,310	3,310	1,650
30	2,960	2,210	413	2,040	3,620	3,620	3,310	1,650
31	2,960	.....	.....	2,040	.....	3,620	3,310	.....

NOTE.—Stage-discharge relation affected by ice Dec. 1 to Mar. 31; daily and monthly discharge not computed. Discharge June 9–16, June 23 to July 14, July 16 to Aug. 4, Aug. 18–25, and Aug. 27 to Sept. 15, ascertained by applying to rating table mean daily gage height obtained by inspection of recorder graph.

Monthly discharge of South Side Twin Falls canal at Milner, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	3,690	1,750	2,760	170,000
November	2,600	1,850	2,160	129,000
April	1,650	171	759	45,200
May	2,040	23	905	55,600
June	3,620	944	3,210	191,000
July	3,680	2,530	3,550	218,000
August	3,620	2,360	3,400	209,000
September	3,370	91	2,770	165,000

BIG WOOD RIVER NEAR GOODING, IDAHO.

LOCATION.—In sec. 21, T. 6 S., R. 14 E., at Cleek's ranch, 3½ miles above bridge on upper road between Bliss and Hagerman, 5 miles above diversion dam for King Hill project, and 6 miles southwest of Gooding, Gooding County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 26, 1916, to September 30, 1917.

GAGE.—Vertical staff on right bank bolted to rock ledge; read by L. J. DeLea and Mrs. I. P. Cleek.

DISCHARGE MEASUREMENTS.—Made by wading or from cable a short distance above the gage.

CHANNEL AND CONTROL.—Bed of lava rock, boulders, and coarse gravel. Control practically permanent during year. One channel at gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period of record, 7.60 feet May 26, 1917 (discharge, 2,320 second-feet); the stream was reported dry January 17–22, 1917, during ice period.

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

DIVERSIONS.—Below all diversions of the Twin Falls North Side Land & Water Co. and above Big Malad Springs. Justice and Croco ditches (combined capacity about 15 second-feet) divert about 3 miles below gage; a few second-feet are occasionally wasted into river about 2 miles below gage.

REGULATION.—Flow regulated by dams and diversions above the station.

ACCURACY.—Stage-discharge relation practically permanent except as affected by ice. Rating curve well defined below 1,900 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, except for periods noted in footnote to daily-discharge table and for period when stage-discharge relation was affected by ice, for which it was ascertained by applying to rating table daily gage height corrected for ice effect by means of one discharge measurement and weather records. Records good.

COOPERATION.—Records furnished by the Twin Falls North Side Land & Water Co.

Discharge measurements of Big Wood River near Gooding, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Feb. 18	C. W. Kief [a]	2.56	38.4	July 25	C. W. Kief	1.44	51.2
May 21	do	6.57	1,780	Aug. 28	S. H. Chapman	.63	6.2
July 9	S. H. Chapman [b]	1.21	29.5	Sept. 5	do	.54	4.4
17	do	.96	18.2	7	C. W. Kief	.75	9.2
21	do	.86	12.4				

[a] Employee of Twin Falls North Side Land & Water Co.
[b] Employee of Idaho State engineer.

Daily discharge, in second-feet, of Big Wood River near Gooding, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	115	67	18	5	8	33	520	389	1,820	202	28	6
2	83	66	15	7	10	33	547	351	1,600	115	16	6
3	43	63	14	8	13	33	320	242	1,620	389	10	5
4	44	57	13	10	21	33	332	287	1,470	1,060	10	6
5	14	57	11	13	29	33	415	258	1,330	1,100	12	6
6	6	49	10	15	32	33	1,180	260	1,240	945	15	8
7	5	52	9	18	33	33	1,220	238	1,110	189	18	9
8	6	59	8	20	35	33	1,270	341	1,090	29	17	10
9	11	62	8	19	37	33	1,480	1,150	1,090	36	17	10
10	27	43	7	11	37	33	1,110	1,520	1,150	9	15	13
11	28	46	6	7	37	33	788	1,750	1,450	4	15	19
12	28	31	6	6	37	33	1,300	1,980	1,530	10	16	18
13	27	11	6	5	37	33	1,010	2,030	1,320	6	19	18
14	15	12	6	4	37	33	705	2,060	836	12	19	18
15	43	15	6	3	37	33	705	2,130	592	13	18	18
16	115	21	6	2	38	33	315	2,160	452	16	16	21
17	198	27	6	0	38	33	300	2,190	602	13	17	18
18	272	35	6	0	38	32	229	2,160	1,100	18	15	14
19	336	35	5	0	38	87	370	1,990	1,150	6	14	9
20	358	35	5	0	39	158	698	1,770	1,340	7	13	8
21	291	35	5	0	40	220	899	1,760	1,150	14	15	13
22	207	35	5	0	44	291	1,140	1,690	849	22	12	15
23	204	33	5	13	45	296	1,060	1,670	993	32	6	16
24	156	32	5	18	46	341	722	1,840	812	28	10	22
25	140	30	5	25	47	389	736	2,030	634	54	3	27
26	102	27	4	35	33	360	611	2,320	556	52	4	29
27	88	24	4	47	33	336	488	1,950	460	22	5	30
28	63	20	4	68	33	608	441	1,800	224	36	7	27
29	67	19	4	59	.....	971	399	1,700	289	41	9	25
30	70	18	4	24	.....	1,010	346	1,890	244	47	8	22
31	66	.....	5	15	.....	874	.....	1,360	.....	42	7	.....

NOTE.—Stage-discharge relation affected by ice Nov. 14 to Mar. 22. Discharge interpolated Apr. 7 and Aug. 27.

Monthly discharge of Big Wood River near Gooding, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	358	5	104	6,400
November	67	11	37.2	2,210
December	18	4	7.13	438
January	68	0	14.7	904
February	47	8	34.0	1,890
March	1,010	33	211	13,000
April	1,480	229	722	43,000
May	2,320	242	1,460	89,800
June	1,820	224	1,000	59,500
July	1,100	4	147	9,040
August	28	3	13.1	806
September	30	5	15.5	922
The year	2,320	0	315	228,000

NOTE.—Monthly discharge table computed by United States Geological Survey.

RATTLESNAKE CREEK NEAR MOUNTAIN HOME, IDAHO.

LOCATION.—In sec. 16, T. 3 S., R. 7 E., half a mile above Mountain Home reservoir and 2 miles northeast of Mountain Home.

DRAINAGE AREA.—27.2 square miles (measured on map of Mountain Home Cooperative Irrigation Co.).

RECORDS AVAILABLE.—February 24 to July 9, 1917, when station was discontinued.

GAGE.—McConnel water-stage recorder; inspected by C. E. Tappan, employee of Idaho State engineer.

DISCHARGE MEASUREMENTS.—Made by wading or from footbridge short distance below gage.

CHANNEL AND CONTROL.—Bed of sand and gravel. Control not permanent.

EXTREMES OF DISCHARGE.—Maximum stage estimated 1.10 feet April 2 (discharge, 30 second-feet); stream dry after July 9.

ICE.—Stage-discharge relation affected by ice prior to March 31.

DIVERSIONS.—Practically none.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve fairly well defined. Operation of water-stage recorder generally unsatisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph, except for periods indicated in footnote to daily-discharge table. Records only fair, owing chiefly to poor operation of recording gage.

COOPERATION.—Station operated and maintained by State engineer of Idaho.

Discharge measurements of Rattlesnake Creek near Mountain Home, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Mar. 10	C. E. Tappan [a]	0.78	0.4	Apr. 18	C. E. Tappan	0.88	10.1
22	do	1.40	10.0	24	do	.95	15.8
23	do	1.05	7.1	27	do	.93	13.7
26	do	.92	7.9	May 1	do	.98	17.7
27	do	.74	4.3	15	do	.84	7.2
28	do	1.05	19.8	21	do	.74	3.4
30	do	1.06	26.4	28	do	.79	5.7
Apr. 4	do	.89	10.9	June 4	do	.78	5.1
6	do	.92	14.7	11	do	.72	2.9
9	G. C. Baldwin	.90	11.7	18	do	.68	2.2
13	C. E. Tappan	.90	11.5	25	do	.60	.7
16	do	.90	11.3	July 2	do	.59	.6

[a] Employee of Idaho State engineer.

Daily discharge, in second-feet, of Rattlesnake Creek near Mountain Home, Idaho, for the year ending Sept. 30, 1917.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Day.	Feb.	Mar.	Apr.	May.	June.	July.
1		6	13	18	4	0.6	16			12	4	2	
2		1	30	14	1	.6	17			12	4	2	
3			28	12	3	.1	18			12	4	2	
4			20	12	4	.0	19		0.2	11	3	.1	
5			24	12	3	.0	20			12	3	.3	
6			22	12	3	.0	21			17	4	.4	
7			20	13	.8	.3	22		10	17	5	.7	
8			18	13	.0	.6	23		7	17	9	1	
9		.2	12	11	1	.3	24		10	15	9	1	
10			12	10	2		25		13	10	16	8	.7
11			12	8	2		26		13	8	15	7	.9
12			17	8	2		27		9	4	13	6	1
13			13	8	1		28		8	20	14	4	2
14			11	8	1		29			10	16	4	1
15			10	6	2		30			26	23	4	.6
							31			16		4	

NOTE.—Discharge estimated on account of ice Mar. 3-21. Discharge based on current-meter measurements Mar. 22, 23, 26, 27, 28, and 30; for other days prior to Mar. 31 estimated because of ice, from observer's notes and weather records. Discharge estimated because of poor operation of automatic gage Apr. 1-4, 13-15, 19, 21-23, 30, May 4-7, 19-20, June 2, 7-9, 13, 16, 17, 19, July 3-7, 9. Stream dry after July 9.

Monthly discharge of Rattlesnake Creek near Mountain Home, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
February 25–28	13	8	10.8	85.7
March	26		4.25	261
April	30	10	16.1	958
May	18	3	7.97	490
June	4	0	1.52	90.4
July 1–9	.6	0	.278	4.96
The period				1,890

CANYON CREEK NEAR MOUNTAIN HOME, IDAHO.

LOCATION.—In sec. 25, T. 2 S., R. 6 E., a quarter of a mile above canal diversion and 5 miles north of Mountain Home.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 1 to December 23, 1917, when station was discontinued.

GAGE.—McConnel water-stage recorder and inclined staff on left bank; read by C. E. Tappan, employee of Idaho State engineer.

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

CHANNEL AND CONTROL.—Bed composed of sand, gravel, and cobbles. One channel at all stages. Control not permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 4.8 feet April 24 (discharge, 305 second-feet); minimum stage recorded, 1.71 feet October 1–2 (discharge, 2.4 second-feet).

DIVERSIONS.—Greater portion of flow diverted about one-fifth of a mile below gage; amount not definitely known.

REGULATION.—Some regulation due to storage in Long Tom reservoir.

ACCURACY.—Stage-discharge relation not permanent. Two fairly well defined rating curves used. Operation of water-stage recorder fairly satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph, except for periods indicated in footnote to daily-discharge table. Records fair.

COOPERATION.—Station operated and maintained by Idaho State engineer.

Discharge measurements of Canyon Creek near Mountain Home, Idaho, during 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Mar. 9	C. E. Tappan [a]	0.88	9.3	June 4	C. E. Tappan	2.77	59.6
13	do	.90	10.6	11	do	2.87	66.2
16	do	.88	11.3	18	do	3.04	82.6
19	do	.85	8.5	25	do	3.00	77.6
23	do	1.12	21.4	July 2	do	2.97	78.1
28	do	3.42	173	9	do	3.00	82.8
29	do	2.64	125	16	do	2.97	78.8
31	do	1.88	60.0	23	do	2.93	74.7
Apr. 4	do	1.73	43.5	30	do	3.22	101
5	do	1.91	56.1	Aug. 6	do	2.94	76.6
7	do	2.37	93.5	13	do	2.72	59.5
9	G. C. Baldwin	3.17	150	20	G. C. Baldwin	2.84	73.7
11	C. E. Tappan	3.02	153	27	C. E. Tappan	2.76	64.4
13	do	3.30	172	Sept. 3	do	2.70	59.4
16	do	3.08	151	10	do	2.65	59.8
18	do	2.87	129	17	do	2.64	57.3
20	do	2.88	125	24	do	1.92	9.4
24	do	4.73	294	Oct. 1	do	1.71	2.3
27	do	4.54	258	30	do	1.86	6.5
May 1	do	4.40	218	Nov. 6	do	1.80	4.2
8	do	4.40	210	13	do	2.08	16.5
9	G. C. Baldwin	4.26	189	27	do	1.95	10.2
15	C. E. Tappan	3.77	149	Dec. 4	do	1.84	6.1
21	do	3.24	98.4				

[a] Employee of the Idaho State engineer.

Daily discharge, in second-feet, of Canyon Creek near Mountain Home, Idaho, for 1917.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		53	219	66	83	90	62	2.4	6.6	11
2		66	221	64	81	85	62	2.4	6.6	9.0
3		46	223	62	81	82	58	2.6	5.4	6.6
4		51	227	60	81	81	41	2.8	4.7	5.8
5	9	65	219	58	81	79	44	3.0	4.3	5.7
6		85	202	65	81	77	49	3.0	4.1	5.6
7		99	218	65	85	77	51	3.2	4.1	5.5
8		144	216	65	85	72	53	3.2	4.1	5.4
9	10	170	188	67	84	68	55	3.2	5.1	5.3
10	10	160	170	68	85	64	56		13	5.2
11	10	153	163	68	85	62	56		15	5.1
12	10	195	159	68	84	62	56		16	
13	10	179	154	70	83	62	56		17	
14	9	181	154	70	81	62	56	3.2	17	
15	10	174	146	70	81	62	56		17	12
16	10	154	130	77	81	69	56		17	
17	10	149	117	81	81	76	56		17	
18	9	134	106	80	81	77	52	5.2	20	13
19	9	132	100	79	81	75	31		19	14
20	11	137	96	79	81	70	11		18	18
21	14	164	93	79	80	69	6.6	7.3	17	19
22	14	173	85	79	78	68	5.8		14	19
23	18	242	85	78	77	68	7.3		11	19
24	30	305	92	77	84	66	9.0	7.3	11	.....
25	37	278	97	77	91	64	7.7	7.3	11	.....
26	9	289	93	76	91	64	4.7	7.3	11	.....
27	20	268	89	74	92	64	3.0	7.3	9.9	.....
28	154	242	79	71	105	63	3.0	7.0	11	.....
29	135	203	73	71	104	63	3.0	7.0	15	.....
30	86	210	70	80	100	63	2.8	6.6	13	.....
31	66	.....	68	.....	99	62	.....	6.6	.....	.....

NOTE.—Discharge estimated because of missing gage heights, Mar. 1–8, Oct. 10–23, and Dec. 12–17; Mar. 28–29 and June 1–3 because of uncertain gage heights. Shifting-control method used Mar. 24–27, Apr. 1–3, 25–26, 28–30, May 2–7, 16–19, and June 30; estimated June 6–10 and Aug. 15–19 on basis of State hydrographer's records on weir and waste below. Interpolated Dec. 5–10.

Monthly discharge of Canyon Creek near Mountain Home, Idaho, for 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
March	154	.....	24.9	1,530
April	305	46	163	9,700
May	227	68	140	8,610
June	81	58	71.5	4,250
July	105	77	85.4	5,250
August	90	62	69.9	4,300
September	62	2.8	35.7	2,120
October	.....	.....	4.82	296
November	20	4.1	11.8	702
December 1–23	.....	.....	10.6	484
The period	.....	.....	.....	37,200

NOTE.—Run-off in February estimated as 192 acre-feet.

LONG TOM CREEK BELOW LONG TOM RESERVOIR, NEAR BENNETT, IDAHO.

LOCATION.—In sec. 2, T. 2 S., R. 7 E., a short distance below Long Tom reservoir of Mountain Home Cooperative Irrigation Co., and 10 miles southwest of Bennett, Elmore County

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 31 to December 6, 1917, when station was discontinued.

GAGE.—McConnel water-stage recorder and a reference point on side of float well; read by C. E. Tappan, employee of the Idaho State engineer.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed of clean gravel. Control not permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 4.58 feet July 28 (discharge, 106 second-feet); minimum stage recorded, 3.50 feet September 26–27 (discharge, 1.2 second-feet).

DIVERSIONS.—None.

REGULATION.—Flow regulated by headgates at Long Tom reservoir.

ACCURACY.—Stage-discharge relation not permanent. Standard rating curve fairly well defined. Operation of water-stage recorder generally satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph, except for periods indicated in footnote to daily-discharge table. Records fair.

COOPERATION.—Station operated and maintained by Idaho State engineer.

Discharge measurements of Long Tom Creek below Long Tom reservoir, near Bennett, Idaho, during 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
June 6	C. E. Tappan [a]	4.29	43.0	Aug. 14	C. E. Tappan	4.31	59.0
13	do	4.33	54.6	21	G. C. Baldwin	4.34	69.0
19	G. C. Baldwin	4.40	71.0	28	C. E. Tappan	4.31	66.4
26	C. E. Tappan	4.39	73.4	Sept. 4	do	4.09	32.1
July 3	do	4.42	76.7	11	do	4.26	57.2
10	do	4.44	81.5	18	do	4.21	47.8
17	do	4.41	79.5	25	do	3.67	5.1
24	do	4.50	88.9	Oct. 2	do	3.53	1.7
31	do	4.52	96.5	Nov. 1	do	3.64	4.6
Aug. 7	do	4.39	71.8	8	do	3.57	3.0

[a] Employee of the Idaho State engineer.

Daily discharge, in second-feet, of Long Tom Creek below Long Tom reservoir, near Bennett, Idaho, for 1917.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	33	78	85	63	1.6	4.4	4.9
2	.....	33	78	81	61	1.9	4.2	3.2
3	.....	33	78	79	46	2.1	3.9	2.5
4	.....	33	78	78	36	2.3	3.7	2.5
5	.....	39	78	78	45	2.5	3.4	2.7
6	.....	45	81	76	57	2.7	3.2	2.7
7	.....	44	81	74	57	3.0	2.9	.....
8	.....	44	81	67	57	3.0	2.7	.....
9	.....	46	81	62	57	3.0	8.8	.....
10	.....	48	81	60	57	3.0	12	.....
11	.....	48	81	60	57	3.0	13	.....
12	.....	51	81	59	57	3.0	13	.....
13	.....	54	81	59	57	3.0	13	.....
14	.....	57	79	59	57	3.0	13	.....
15	.....	62	79	59	57	3.0	13	.....
16	.....	74	78	72	57	3.0	12	.....
17	.....	74	76	82	57	5.4	14	.....
18	.....	74	76	80	39	5.4	16	.....
19	.....	72	76	77	7.0	5.4	14	.....
20	.....	72	74	73	4.9	5.4	12	.....
21	.....	72	74	70	4.4	5.4	10	.....
22	.....	72	74	68	4.4	5.4	7.3	.....
23	.....	72	74	68	5.2	5.4	7.0	.....
24	.....	72	92	66	5.2	5.4	7.0	.....
25	.....	72	92	66	3.9	5.4	7.3	.....
26	.....	72	90	66	1.2	5.4	6.6	.....
27	.....	71	97	65	1.2	5.2	6.3	.....
28	.....	71	106	65	1.4	5.1	7.3	.....
29	.....	72	103	65	1.6	4.9	7.7	.....
30	.....	78	99	63	1.6	4.7	6.6	.....
31	33	.....	92	63	.....	4.6	.....	.....

NOTE.—Shifting-control method used June 7–12, 14–15, 22–25, and Aug. 16. Discharge estimated Sept. 2–10 and 24; interpolated Oct. 27–31, and Nov. 2–7.

Monthly discharge of Long Tom Creek below Long Tom reservoir, near Bennett, Idaho, for 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June	78	33	58.7	3,490
July	106	74	82.9	5,100
August	85	59	69.2	4,250
September	63	1.2	33.9	2,020
October	5.4	1.6	3.92	241
November	16	2.7	8.51	506
December 1–6	4.9	2.7	3.08	36.7
The period				15,600

WILLOWDALE CREEK NEAR BENNETT, IDAHO.

LOCATION.—In sec. 35, T. 1 S., R. 7 E., about one-fourth mile northwest of Long Tom reservoir and 10 miles southwest of Bennett, Elmore County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 14 to December 6, 1917, when station was discontinued.

GAGE.—Staff gage read to one-sixteenth of an inch, June 26 to August 3 and August 7. McConnel water-stage recorder at same site installed August 9; read by C. E. Tappan, an employee of the Idaho State engineer.

DISCHARGE MEASUREMENTS.—The flow of the stream is measured by a 6-foot Cippoletti weir.

EXTREMES OF DISCHARGE.—Maximum stage during periods, 0.77 foot May 4 (discharge, 13.64 second-feet); minimum stage, 0.08 foot November 15–27 (discharge, 0.46 second-foot).

DIVERSIONS.—None.

ACCURACY.—Records good.

COOPERATION.—Station operated and maintained by Idaho State engineer.

Daily discharge, in second-feet, of Willowdale Creek near Bennett, Idaho, for 1917.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1			3.83	2.23	1.29	0.84	0.54	0.74
2			3.83	2.23	1.29	.84	.54	
3		7.00	3.83	2.23	1.29	.84	.54	.64
4	13.64		3.65	2.16	1.17	.84	.54	
5			3.65	2.08	1.17	.84	.54	
6		6.50	3.48	2.01	1.17	.84	.54	.54
7			3.48	1.94	1.17	.84	.54	
8			3.32	1.94	1.17	.84	.54	
9			3.32	1.94	1.17	.84	.54	
10			3.15	1.94	1.17		.54	
11			3.15	1.94	1.17		.54	
12		5.80	3.15	1.94	1.17		.54	
13			2.99	1.80	1.17		.54	
14			2.99	1.67	1.17		.54	
15			2.83	1.67	1.17		.46	
16			2.83	1.67	1.06		.46	
17	11.57		2.83	1.67	1.06	.74	.46	
18			2.83	1.67	1.06		.46	
19		5.10	2.83	1.54	1.06		.46	
20			2.68	1.54	1.06		.46	
21			2.68	1.54	1.06		.46	
22		4.64	2.68	1.54	1.06		.46	
23			2.52	1.41	1.29		.46	
24			2.52	1.41	1.17		.46	
25			2.52	1.41	1.06	.64	.46	
26		4.18	2.37	1.41	.95	.64	.46	
27		4.36	2.23	1.41	.95	.64	.46	
28		4.36	2.23	1.41	.95	.64	.54	
29		4.36	2.23	1.41	.95	.64	.74	
30		4.18	2.23	1.29	.95	.64	.74	
31	7.57		2.23	1.29		.54		

NOTE.—Braced figures show estimated discharge for periods included.

Monthly discharge of Willowdale Creek near Bennett, Idaho, for 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June	.....	.....	5.52	328
July	3.83	2.23	2.94	181
August	2.23	1.29	1.72	106
September	1.29	.95	1.12	66.6
October	.....	.54	.743	45.7
November	.74	.46	.519	30.9
December 1–6	.....	.....	.640	7.6
The period	.....	.....	.....	766

SYRUP CREEK NEAR MOUNTAIN HOME, IDAHO.

LOCATION.—In sec. 31, T. 1 S., R. 7 E., a short distance above mouth of creek and 12 miles north of Mountain Home, Elmore County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—June 23 to November 20, 1917, when station was discontinued.

GAGE.—McConnel water-stage recorder with outside staff of Steward type; read by C. E. Tappan, an employee of Idaho State engineer.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed of stream composed of clean gravel. Control practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 0.86 foot June 23 (discharge, 6.3 second-feet); minimum discharge, 0.3 second-foot September 16, 17, 21, and 22.

DIVERSIONS.—Almost entire flow diverted during irrigation season.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Operation of water-stage recorder generally satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspection of recorder graph, except for periods indicated in footnote to daily-discharge table. Records good.

COOPERATION.—Station operated and maintained by the Idaho State engineer.

Discharge measurements of Syrup Creek near Mountain Home, Idaho, during 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
June 23	C. E. Tappan [a]	0.86	6.21	Aug. 20	G. C. Baldwin	0.51	0.54
30	do	.76	3.72	27	C. E. Tappan	.55	.94
July 13	do	.68	2.07	Sept. 3	do	.45	.34
20	do	.66	1.68	10	do	.52	.58
27	do	.62	1.35	17	do	.42	.32
30	do	.62	1.40	24	do	.46	.43
Aug. 6	do	.60	1.25	Oct. 1	do	.46	.37
13	do	.57	.93				

[a] Employee of State engineer of Idaho.

Daily discharge, in second-feet, of Syrup Creek near Mountain Home, Idaho, for 1917.

Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Day.	June.	July.	Aug.	Sept.	Oct.	Nov.
1	.....	3.5	1.1	0.5	0.4	0.5	16	.....	2.0	0.9	0.3		
2	.....	3.4	1.1	.5	.5	.5	17	.....	2.0	1.1	.3		1.2
3	.....	3.2	1.1	.4	.5	.5	18	.....	2.0	.9	.4		
4	.....	3.0	1.2	.4	.5	.6	19	.....	2.0	.7	.4		
5	.....	2.8	1.3	.4	.5	.7	20	.....	1.8	.6	.4	0.6	1.1
6	.....	2.7	1.2	.5	.5	.8	21	.....	1.5	.6	.3		.....
7	.....	2.5	1.3	.6	.5	.8	22	.....	1.6	.6	.3		.....
8	.....	2.0	1.5	.8	.5	1.0	23	6.3	1.6	.5	.4		.....
9	.....	2.1	1.3	.9		1.1	24		1.4	.5	.4	.7	.....
10	.....	2.1					25		1.3	.6		.8	.....
			.8	.6		1.2							
11	.....	2.1	.8	.6		1.2	26	5.0	1.3	.9		.7	.....
12	.....	2.0	1.1	.6	.6	1.2	27		1.4	1.0	.4	.7	.....
13	.....	2.1	1.0	.6		1.2	28		1.4	.8		.7	.....
14	.....	2.0	1.1	.4			29		1.4	.8		.6	.....
15	.....	2.1	1.1	.4		1.2	30	3.7	1.3	.7		.5	.....
							31	.....	1.2	.5	.....	.5	.....

NOTE.—Discharge estimated because of missing gage heights, June 24–29; Sept. 25–30; Oct. 9–23; Nov. 14–19; interpolated July 1–6.

Monthly discharge of Syrup Creek near Mountain Home, Idaho, for 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 23–30	.....	.....	5.00	79.3
July	3.5	1.2	2.03	125
August	1.5	.5	.926	56.9
September	.9	.....	.460	27.4
October	.....	.....	.584	35.9
November 1–20	.....	.....	.980	38.9
The period	.....	.....	.....	363

BRUNEAU RIVER NEAR ROWLAND, NEV.

LOCATION.—In sec. 29, T. 47 N., R. 56 E., at Hiram Salls' ranch, half a mile below Taylor Creek, 1½ miles above McDonald Creek and Rowland post office, Elko County, and 100 miles north of Elko, the nearest railroad point.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 19, 1913, to September 30, 1917.

GAGE.—Vertical staff gage in two sections spiked to left abutment of footbridge; read by Mrs. Hiram Salls.

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

CHANNEL AND CONTROL.—Bed composed of gravel and large boulders. Right bank fairly high; left bank might be overflowed at extremely high stages. Control has remained permanent. Point of zero flow at gage height 1.0 foot ± 0.1 foot.

EXTREMES OF DISCHARGE.—Maximum stage during year, 7.0 feet (estimated from observer's notes regarding height of water above top of gage) in afternoon May 14 (discharge estimated by prolonging rating curve, 1,440 second-feet); minimum stage, 0.66 foot August 25–26 (discharge, 12 second-feet).

1913–1917: Maximum stage occurred in 1917; minimum discharge, 6.5 second-feet, August 30 and 31, 1915.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—A few small ranch ditches divert water above the station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent except as affected by ice November 14–18, December 25 to January 2, January 11 to February 12, and March 1–3. Rating curve well defined below 800 second-feet and poorly defined for extremely high stages when left bank is overflowed. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, except for periods indicated in footnote to daily-discharge table. Records obtained by use of rating table excellent, except for extremely high stages for which the rating curve is poorly defined; other records fair.

Discharge measurements of Bruneau River near Rowland, Nev., during the year ending Sept. 30, 1917.

[Made by L. W. Jordan.]

Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*
Nov. 3	0.90	24.4
June 5	3.62	[a]567
6	3.63	[a]580

[a] Measured at highway bridge 2½ miles above gage.

Daily discharge, in second-feet, of Bruneau River near Rowland, Nev., for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	19	23	31	26		93	75	511	735	288	36	16
2	19	23	31				84	463	735	264	33	16
3	19	24	31	27			87	463	685	242	33	15
4	19	25	33	27			96	463	635	231	33	14
5	20	27	34	27			102	463	610	220	31	14
6	20	27	35	27	36		126	463	585	209	31	14
7	20	27	33	27			126	487	535	187	27	14
8	20	25	33	27			187	511	511	176	24	14
9	21	25	33	27			334	635	610	166	22	14
10	21	24	33	27		68	345	710	685	156	21	14
11	21	24	33				391	985	635	146	20	14
12	21	24	33				585	1,010	560	136	20	15
13	22	24	33		33		635	1,060	487	126	19	19
14	22		33		33		635	1,900	415	107	18	22
15	22		33		33		560	1,180	391	96	17	20
16	22	24	33		33		391	1,110	487	96	17	19
17	23		31		33		310	985	511	96	20	19
18	23		31		33	44	276	860	535	93	21	19
19	23	24	30		33	44	253	785	511	126	23	18
20	23	24	30		35	44	276	735	511	96	20	17
21	24	24	30	24	37	47	368	635	487	84	18	17
22	24	25	31		37	47	487	585	463	77	17	17
23	24	25	31		35	48	635	710	439	70	16	19
24	24	27	31		44	49	735	760	439	64	14	19
25	25	27	31		75	52	885	785	415	56	12	19
26	25	27			89	56	985	860	391	52	12	19
27	25	28			91	63	885	835	368	54	14	19
28	25	30			93	75	835	835	345	53	16	19
29	25	31	26		.....	82	735	835	322	50	16	19
30	24	31			.....	103	610	885	299	45	16	19
31	23	.....			.....	68	.....	785	.....	41	16	.....

NOTE.—Stage-discharge relation affected by ice, and discharge estimated: Nov. 14–18; Dec. 26 to Jan. 2; Jan. 11–31; Feb. 1–12; and Mar. 1–3. No gage-height record, and discharge interpolated: Oct. 1–25, as in table; Mar. 4–17, 68 second-feet; and Sept. 27–30, as in table.

Monthly discharge of Bruneau River near Rowland, Nev., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	25	19	22.2	1,360
November	31	23	25.5	1,520
December	35	.....	30.9	1,900
January	.....	.....	24.9	1,530
February	93	33	42.8	2,380
March	103	.....	66.2	4,070
April	985	75	434	25,800
May	1,300	463	764	47,000
June	735	299	511	30,400
July	288	41	126	7,750
August	36	12	21.1	1,300
September	22	14	17.1	1,020
The year	1,300	.....	174	126,000

OWYHEE RIVER NEAR GOLD CREEK, NEV.

LOCATION.—In W. ½ sec. 24, T. 44 N., R. 54 E., one-eighth of a mile below Wild Horse dam site, 9 miles west of Gold Creek, Elko County, and 65 miles north of Elko.

DRAINAGE AREA.—209 square miles (measured on map compiled by Office of Indian Affairs).

RECORDS AVAILABLE.—March 26, 1916, to September 30, 1917.

GAGE.—Stevens continuous water-stage recorder on left bank; inspected by H. W. Naylor.

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

CHANNEL AND CONTROL.—Bed composed of rocks and loose sand. Control is rock riffle in each of two channels where stream is divided by small island about 500 feet below gage; subject to change by work of beavers. Left bank high and rocky; right bank is overflowed at extremely high stages; dense growth of willows along banks.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 8.5 feet at 3 a. m. May 14 (discharge estimated by prolonging rating curve, 1,380 second-feet); minimum stage from water-stage recorder, 1.36 feet September 3 and 4 (discharge, 1.2 second-feet).

1916–1917: Maximum and minimum stages occurred in 1917.

ICE.—No definite information. Records not secured during winter.

DIVERSIONS.—Wild-hay meadows above station irrigated during flood season.

REGULATION.—None.

ACCURACY.—Stage-discharge relation affected by beaver dams during the fall and winter; permanent for remainder of year. Rating curve well defined below 500 second-feet; extended above. Operation of water-stage recorder satisfactory except for period November 12 to April 17 when float was frozen in well. Daily discharge ascertained by applying to rating table mean daily gage height taken from graph by inspection, except for period when stage-discharge relation was changed by the building of beaver dams. Records of discharge below 500 second-feet, excellent; others fair.

Discharge measurements of Owyhee River near Gold Creek, Nev., during the year ending Sept. 30, 1917.

[Made by L. W. Jordan.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Nov. 2	[a] 2.15	7.5	June 7	3.74	199	Sept. 11	1.52	3.4
Apr. 18	3.59	168	July 2	2.07	30.7			

[a] Stage-discharge relation affected by backwater from beaver dam.

Daily discharge, in second-feet, of Owyhee River near Gold Creek, Nev., for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Apr.	May.	June.	July.	Aug.	Sept.
1	6.6	6.9	.....	414	312	30	4.2	1.4
2	7.6	7.2	.....	351	284	30	3.8	1.3
3	8.0	7.2	.....	361	266	27	3.8	1.2
4	7.6	7.2	.....	470	240	24	4.8	1.2
5	6.9	7.6	.....	403	223	22	3.5	1.4
6	6.9	8.0	.....	541	215	21	3.2	2.0
7	9.0	7.2	.....	788	196	20	3.2	2.7
8	8.6	5.0	.....	843	188	18	3.0	2.8
9	7.6	5.8	.....	899	182	15	2.6	3.0
10	7.2	6.6	.....	871	201	9.4	2.6	3.0
11	7.6	5.0	.....	899	217	9.0	2.2	3.5
12	7.6	5.2	.....	983	169	9.0	2.1	3.8
13	7.2	5.4	.....	955	137	7.6	2.1	4.2
14	7.2	5.5	.....	1,100	121	6.6	2.1	4.5
15	6.9	.....	.....	1,010	110	5.5	2.0	5.2
16	6.6	.....	.....	655	104	6.6	2.0	5.2
17	6.6	.....	.....	553	98	10	2.1	5.2
18	6.9	.....	156	529	92	9.0	2.2	5.2
19	6.9	.....	144	505	90	10	2.2	5.0
20	6.9	.....	192	425	82	8.6	2.2	5.0
21	6.9	.....	392	351	77	9.0	2.1	4.8
22	7.2	.....	578	331	70	9.0	1.8	5.2
23	6.9	.....	843	529	64	8.0	1.4	5.2
24	6.6	.....	1,010	578	59	6.9	1.3	5.5
25	6.6	.....	1,100	448	55	6.2	1.3	5.8
26	7.2	.....	1,120	529	50	5.2	2.2	6.2
27	7.2	.....	788	470	45	6.2	3.5	6.6
28	7.2	.....	553	414	44	6.9	3.0	6.6
29	6.9	.....	414	436	39	5.5	2.4	6.6
30	6.9	.....	436	414	36	5.0	1.8	6.6
31	6.9	.....	.....	351	.....	4.5	1.5	.....

NOTE.—No gage-height record secured Nov. 15 to Apr. 17, discharge not determined.

Monthly discharge of Owyhee River near Gold Creek, Nev., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	9.0	6.6	7.19	442
November 1–14	8.0	5.0	6.41	178
April 18–30	1,120	144	594	15,300
May	1,100	331	594	36,500
June	312	36	136	8,090
July	30	4.5	12.0	738
August	4.8	1.3	2.52	155
September	6.6	1.2	4.20	250

OWYHEE RIVER NEAR OWYHEE, NEV.

LOCATION.—In sec. 21, T. 46 N., R. 53 E., 40 feet above mouth of Jones Brook, half a mile above J. P. Jones' ranch, 8 miles southeast of Owyhee, Elko County, and about 14 miles above Nevada-Idaho State line; 5,550 feet above sea level.

DRAINAGE AREA.—380 square miles (measured on Forest Service maps).

RECORDS AVAILABLE.—November 29, 1913, to September 30, 1917.

GAGE.—Stevens continuous water-stage recorder on right bank; inspected by Charles Mickleright.

DISCHARGE MEASUREMENTS.—Made by wading or from cable 125 feet above gage.

CHANNEL AND CONTROL.—Bed consists of ledge rock and boulders filled in with sand and gravel; fairly permanent. One channel at all stages. Banks covered with brush; both subject to overflow. At low stages control is riffle between gage and Jones Brook; at high stages rapids below brook may become control.

EXTREMES OF DISCHARGE.—Maximum discharge during year, 1,750 second-feet on May 15, estimated from hydrographic comparison with Owyhee River near Gold Creek; minimum stage from water-stage recorder, 1.61 feet at midnight August 25 (discharge, 9 second-feet).

1913–1917; Maximum stage occurred in 1917; minimum discharge, 7.5 second-feet, August 23, 1915.

ICE.—Stage-discharge relation affected by ice; record discontinued during winter.

DIVERSIONS.—No important diversions above gage.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined up to 1,500 second-feet. Operation of water-stage recorder satisfactory, except for breaks in record, as shown in footnote to daily-discharge table. Daily discharge ascertained by use of discharge integrator, except for breaks in gage-height record, for which discharge was interpolated or estimated from hydrographic comparison with Owyhee River near Gold Creek. Records obtained by use of integrator below 1,500 second-feet, good; others fair.

Discharge measurements of Owyhee River near Owyhee, Nev., during the year ending Sept. 30, 1917.

[Made by L. W. Jordan.]

Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*
June 8	5.84	604
Sept. 14	1.75	13.7

Daily discharge, in second-feet, of Owyhee River near Owyhee, Nev., for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Apr.	May.	June.	July.	Aug.	Sept.
1	14			826	833	147	22	14
2	16			768	786	137	22	
3	18			731	748	130	22	
4	18			796	716	121	22	
5	19			809	677	114	22	
6	19			845	651	106	22	
7	22			1,140	633	94	21	
8	27			1,420	628	88	22	
9	24			1,430	644	80	21	
10	22			1,470	660	68	19	
11	24			1,500	670	62	18	
12	24	31		1,610	585	57	18	
13		28		1,610	498	52	18	
14		24		1,700	411	48	17	14
15		26		1,750	379	44	17	14
16		31		1,510	375	36	17	14
17		36		1,240	377	40	17	14
18		37		1,070	375	43	16	13
19		39		1,030	358	40	15	13
20		37		913	336	39	15	13
21				832	316	38	14	13
22				794	300	35	13	13
23			1,250	888	280	36	11	12
24			1,490	1,160	258	35	11	13
25			1,610	986	244	31	10	14
26			1,650	957	225	30	11	15
27			1,450	1,050	208	28	12	16
28			1,070	956	195	27	13	15
29			844	964	180	26	14	15
30			785	985	166	24	14	14
31				922		23	14	

NOTE.—No record Nov. 21 to Apr. 22. Discharge interpolated because of no gage height record: Oct. 13–31, 25 second-feet; Nov. 1–11, 30 second-feet; June 9 and 13, and July 26–29, as in table; Sept. 2–13, 14 second-feet. Discharge estimated from hydrographic comparison with Owyhee River near Gold Creek April 23–27, and May 12–16, as in table.

Monthly discharge of Owyhee River near Owyhee, Nev., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October			23.9	1,470
November 1–20			31.0	1,230
April 23–30	1,650	785	1,270	20,200
May	1,750	731	1,120	68,900
June	833	166	457	27,200
July	147	23	60.6	3,730
August	22	10	16.8	1,030
September	16	12	13.9	827

JACK CREEK NEAR TUSCARORA, NEV.

LOCATION.—In sec. 35, T. 42 N., R. 52 E., at R. M. Woodward's ranch, on Elko-Mountain City stage road, 8 miles above confluence with South Fork of Owyhee River, and 12 miles northeast of Tuscarora, Elko County.

DRAINAGE AREA.—31 square miles (measured on Forest Service maps).

RECORDS AVAILABLE.—May 15, 1913, to September 30, 1917.

GAGE.—Vertical staff on left bank about 500 feet below Woodward's house; read by R. M. Woodward. Datum raised 1.50 feet September 1, 1914.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Bed composed of coarse gravel and small boulders. Banks low and lined with willows; may be overflowed to some extent during high water.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.6 feet (depth of water over 3.0 foot mark on gage estimated by observer) at 6 p. m. May 14 (discharge, 465 second-feet); minimum stage recorded, 0.25 foot September 16 (discharge by meter measurement, 1.9 second-feet); flow estimated between 0.5 and 1.0 second-foot from August 26 to September 12.

1913–1917: Maximum stage occurred in 1917; minimum discharge according to statement of observer occurred August 26 to September 12, 1917.

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

DIVERSIONS.—No important diversions above gage.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed during high water in May; affected by ice December 8 to March 3. Rating curve used October 1 to May 6 well defined below 120 second-feet; curve used May 16 to September 30 fairly well defined below 250 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table except when stage-discharge relation was affected by ice or shifting control. Records obtained by use of rating tables good; others fair.

COOPERATION.—Gage-height record furnished by R. M. Woodward.

Discharge measurements of Jack Creek near Tuscarora, Nev., during the year ending Sept. 30, 1917.

[Made by L. W. Jordan.]

	Gage height.	Discharge.
	Feet.	*Sec.-ft.*
Nov. 5	0.44	3.9
June 9	2.14	[a] 208
July 3	1.37	87
Sept. 16	.25	1.9

[a] Does not include 3 to 5 second-feet flowing outside of measuring section.

Daily discharge, in second-feet, of Jack Creek near Tuscarora, Nev., for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	3.2	5.8	5.8				7.4	73	161	113	11	
2	3.6	5.8	5.8			5.2	7.4	66	161	107	9.6	
3	4.0	5.8	5.8		3.0		7.4	66	153	107	8.2	
4	4.4	5.8	5.8			5.8	6.9	73	153	99	6.7	
5	4.8	5.8	5.8			5.8	7.4	196	153	93	56	
6	5.2	6.3	5.8			5.8	8.0	164	153	87	4.8	1.0
7	5.6	6.3	5.8	3.0		5.8	9.4	193	153	82	4.4	
8	5.8	6.3				5.8	14	225	161	73	4.4	
9	5.8	6.3				5.8	15	252	201	65	4.0	
10	6.3	6.3				5.8	16	321	201	60	4.0	
11	6.3	6.3				5.8	29	269	185	55	4.0	
12	6.3	5.8				5.8	22	339	153	52	4.0	
13	5.8	5.8				5.8	29	357	107	50	4.0	2.0
14	5.8	5.8				5.8		465	137	45	4.0	
15	5.8	5.8			5.2	5.8		357	145	40	3.7	
16	5.2	5.8		2.2		6.3		235	185	38	3.7	1.9
17	5.2	5.8				6.3		201	218	34	3.7	
18	5.2	5.8				6.3	115	185	218	30	3.7	1.9
19	5.2	5.8				6.3		169	218	29	3.4	
20	5.2	5.8	4.1			6.3		128	210	27	3.0	
21	5.2	5.8		3.0		5.8		128	201	25	2.7	1.9
22	5.2	5.8				5.8	204	137	201	22		1.9
23	5.2	5.8				5.8	204	137	193	22	1.5	1.9
24	5.2	5.8				6.0	212	130	185	18		1.9
25	5.2	5.8				6.1	212	137	169	18		1.9
26	5.2	5.8				6.3	180	137	169	18		2.0
27	5.2	5.8				6.9	180	145	153	16		2.0
28	5.2	5.8		4.1	4.1	6.9	164	153	145	15	1.0	2.0
29	5 2	5.8				7.4	148	169	134	14		2.0
30	5.2	5.8				7.4	102	169	122	13		2.2
31	5.2	.....			.....	7.4	.....	161	.....	12		.....

NOTE.—Stage-discharge relation affected by ice Dec. 8 to Mar. 3; discharge estimated from observer's notes and weather records, as follows: Dec. 8–31, Jan. 1–4, 15–19, 20–24, 25–31, Feb. 1–5, 6–25, 26–28, and Mar. 1–3. Discharge estimated for periods of no gage-height record, as follows: Oct. 1–7, Mar. 24–25, May 7–8, by interpolation, as in table; Apr. 14–21, by interpolation; and from observer's notes and one discharge measurement, Aug. 22–25, Aug. 26 to Sept. 12, Sept. 13–15, and 17–20.

Monthly discharge of Jack Creek near Tuscarora, Nev., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	6.3	.....	5.22	321
November	6.3	5.8	5.90	351
December	5.8	.....	4.48	275
January	.....	.....	3.12	192
February	.....	.....	4.69	260
March	7.4	.....	6.08	374
April	212	6.9	90.2	5,370
May	465	66	191	11,700
June	218	107	170	10,100
July	113	12	47.7	2,930
August	11	.....	3.60	221
September	.....	.....	1.57	93.4
The year	465	.....	44.6	32,200

JORDAN CREEK NEAR JORDAN VALLEY, OREG.

LOCATION.—In sec. 9, T. 30 S., R. 45 E., in canyon at lower end of Jordan Valley, 9 miles below Jordan Valley post office, Malheur County. Cow Creek enters Jordan Creek 7 miles below station.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 28, 1911, to September 30, 1917.

GAGE.—Inclined staff on right bank one-eighth of a mile below upper end of the canyon; read by Marcos Renteria.

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

CHANNEL AND CONTROL.—One channel. Control consists of lava rock; probably permanent. During the summer growth of moss frequently affects the stage-discharge relation to a marked degree.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 12.3 feet April 26 (discharge, 3,620 second-feet); minimum discharge, practically no flow September 10–25.

1911–1917: Maximum stage recorded, April 26, 1917; creek reported dry for periods of several weeks in 1911, 1914, 1915, 1916, and 1917.

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

DIVERSIONS.—Practically the entire summer flow of the stream is used by the many small diversions in valley above gage. Flood water is also diverted into Antelope reservoir.

REGULATION.—None, except that due to diversions.

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined. Gage read to hundredths thrice weekly except during winter when it was read once weekly. Daily discharge ascertained by applying daily gage height to rating table and interpolating for days of no gage heights, except for periods when stage-discharge relation was affected by ice, for which it was ascertained by means of observer's notes and weather records. Open-water records good; winter records poor.

The following discharge measurement was made by T. R. Newell:

June 10, 1917: Gage height, 7.02 feet; discharge, 826 second-feet.

Daily discharge, in second-feet, of Jordan Creek near Jordan Valley, Oreg., for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	.....	3.2	20					1,620	1,000	176	8.8	0.6
2	.....	5.0	20					1,520	938	168	7.2	.6
3	.....	6.9	22		10			1,370	877	160	5.6	.5
4	.....	7.5	22				650	1,400	814	153	5.2	.4
5	.....	8.1	22					1,420	752	145	4.9	.3
6	.....	9.4	14					1,420	689	138	4.5	.2
7	2.5	11					837	1,630	689	127	3.4	.2
8	3.0	12					878	1,840	689	116	2.4	.1
9	3.4	13					919	2,050	689	105	1.9	.1
10	2.8						960	2,000	798	92	1.8	.0
11	2.3						1,270	2,050	877	80	1.6	.0
12	2.8					100	1,580	2,270	741	67	1.5	.0
13	4.2						1,890	2,270	606	60	1.5	.0
14	4.0						1,830	2,240	470	53	1.4	.0
15	3.9	10					1,690	2,220	442	49	1.2	.0
16	3.9			8			1,560	2,100	442	45	1.1	.0
17	4.3				45		1,420	1,840	456	45	1.1	.0
18	4.7						1,090	1,570	470	43	1.1	.0
19	4.1		10				760	1,320	456	39	1.2	.0
20	3.5						1,030	1,180	442	46	1.4	.0
21	2.9						1,300	1,090	415	54	1.6	.0
22	2.3						1,570	1,090	389	48	1.9	.0
23	2.3						2,320	1,070	364	43	2.1	.0
24	2.3						3,080	1,050	328	33	1.9	.0
25	4.6						3,500	1,050	282	29	1.7	.0
26	6.9	15					3,620	1,050	251	24	1.5	.4
27	4.2					450	3,060	960	220	20	1.4	.4
28	4.0						2,500	1,020	211	16	1.2	.5
29	3.9				.....		1,940	1,090	202	14	1.1	.5
30	4.6				.....		1,720	1,110	193	12	1.0	.5
31	5.3				.....		.....	1,130	.....	10	.8	.....

NOTE.—Discharge estimated on account of ice, Nov. 10–20, 21–30, Dec. 1–2, 7–31, Jan. 1–31, Feb. 1–5, 6–28, Mar. 1–23, 24–31, Apr. and 1–6.

Monthly discharge of Jordan Creek near Jordan Valley, Oreg., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October 7-31	6.9	2.3	3.71	184
November		3.2	11.2	666
December			11.9	732
January			8.0	492
February			38.8	2,150
March			190	11,700
April	3,620		1,540	91,600
May	2,270	960	1,520	93,500
June	1,000	193	540	32,100
July	176	10	71.3	4,380
August	8.8	.8	2.43	149
September	.6	.0	.177	10.5
The period				238,000

BOISE RIVER NEAR TWIN SPRINGS, IDAHO.

LOCATION.—On unsurveyed land, about in sec. 23, T. 4 N., R. 6 E., a quarter of a mile above Birch Creek, 1½ miles above flow line of Arrowrock reservoir, 4 miles below Twin Springs, Boise County, and 18 miles above Arrowrock.

DRAINAGE AREA.—830 square miles (measured on topographic maps).

RECORDS AVAILABLE.—March 22, 1911, to September 30, 1917.

GAGE.—Friez water-stage recorder on right bank installed April 4, 1915; read by Roy Call. March 22, 1911, to April 1, 1915, inclined staff, and April 2 to 3, 1915, vertical staff, at practically the same location and set to the same datum.

DISCHARGE MEASUREMENTS.—Made by wading or from cable about 50 feet above gage.

CHANNEL AND CONTROL.—Bed of stream composed of gravel and boulders. Control practically permanent except under unusually severe ice and flood conditions. Banks not subject to overflow. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.82 feet at 3 a. m. May 15 (discharge, 9,430 second-feet); minimum stage, 1.73 feet at 10.30 p. m. November 13, 1916 (discharge, about 142 second-feet); lower flow may have occurred during winter.

1911–1917: Maximum stage recorded, May 15, 1917; minimum stage recorded, November 13, 1916.

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

DIVERSIONS.—No important diversions above station and none between it and the Dowling station below.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Two well-defined rating curves used, one applicable October 1 to May 15 except for periods during winter when discharge was estimated because of no gage heights and ice; the other applicable from May 16 to September 30. Operation of water-stage recorder satisfactory except during winter. Discharge ascertained by applying to rating table mean daily gage height obtained from inspection of recorder graph, except as previously noted. Records fair November to February; good for March; excellent for remainder of year.

Discharge measurements of Boise River near Twin Springs, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
May 3	G. C. Baldwin	3.59	1,690
July 25	Keener and Steward [a]	2.93	947
Aug. 16	G. C. Baldwin	2.35	448

[a] Employees of the United States Reclamation Service.

Daily discharge, in second-feet, of Boise River near Twin Springs, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	451		310			296	579	1,710	4,620	4,170	697	382
2	478		308			296	564	1,550	4,710	4,080	672	382
3	471					296	506	1,710	4,440	4,170	655	376
4	458					430	514	1,910	4,170	4,350	672	369
5	451		350			437	616	1,910	3,810	4,170	623	363
		420										
6	444					430	700	2,440	3,900	3,720	608	357
7	471					424	847	2,940	4,260	3,720	584	357
8	492					424	1,010	3,900	4,710	3,540	568	351
9	458					424	1,190	4,170	5,840	3,360	546	340
10	451					437	1,220	4,440	6,410	3,020	524	334
					300							
11	471	345				404	1,330	4,810	5,270	2,610	516	346
12	458	284				378	1,440	5,460	4,260	2,370	494	351
13	444	175				390	1,360	6,030	3,720	2,140	480	351
14	437					378	1,220	7,590	3,720	1,990	474	394
15	430					371	1,120	8,390	4,620	1,780	460	363
				280								
16	424					378	980	6,220	6,220	1,640	467	346
17	430					378	899	4,710	6,990	1,570	487	334
18	444					397	864	3,900	7,390	1,540	516	328
19	437		300			410	839	3,540	6,790	1,390	509	317
20	430	280				417	943	3,450	6,600	1,310	494	311
21	437				308	417	1,160	3,720	6,410	1,190	474	305
22	430				335	404	1,580	4,350	6,220	1,080	460	317
23	417				363	410	2,050	4,710	5,650	991	453	363
24	424				390	424	2,360	4,890	5,460	953	440	407
25	444				370	410	2,770	5,080	5,080	924	426	357
26	444	296			349	410	3,020	5,270	4,890	858	413	340
27	444				328	410	3,110	5,080	5,080	858	433	340
28	444	290			308	478	2,520	5,270	5,080	839	407	340
29	444				.....	579	2,050	5,650	5,270	793	401	340
30	444				.....	677	1,840	5,460	4,620	758	394	340
31	444	.....			.....	623	.....	4,800	.....	731	388	.....

NOTE.—Discharge estimated because of missing gage heights Oct. 29–31, Nov. 1–10; estimated on account of ice Nov. 14–25, Dec. 7–31, Jan. 1–31, Feb. 1–20; estimated because of questionable gage readings Nov. 27–30, Dec. 1.

Monthly discharge of Boise River near Twin Springs, Idaho, for the year ending Sept. 30, 1917.

[Drainage area, 830 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Inches.	Acre-feet.
October	492	417	447	0.539	0.62	27,500
November			327	.394	.44	19,500
December			307	.370	.43	18,900
January			280	.337	.39	17,200
February			313	.377	.39	17,400
March	677	296	421	.507	.58	25,900
April	3,110	506	1,370	1.65	1.84	81,500
May	8,390	1,550	4,360	5.25	6.05	268,000
June	7,390	3,720	5,210	6.28	7.01	310,000
July	4,350	731	2,150	2.59	2.99	132,000
August	697	388	508	.612	.71	31,200
September	407	305	350	.422	.47	20,800
The year	8,390		1,340	1.61	21.92	970,000

BOISE RIVER AT DOWLING'S RANCH, NEAR ARROWROCK, IDAHO.

LOCATION.—In sec. 15, T. 3 N., R. 4 E., at Dowling station on Boise & Arrowrock Railroad, Elmore County, three-quarters of a mile above Moore Creek, 2 miles below Highland power dam, and 4 miles below Arrowrock.

DRAINAGE AREA.—2,230 square miles (measured on topographic maps).

RECORDS AVAILABLE.—March 13, 1911, to September 30, 1917.

GAGE.—Friez water-stage recorder on left bank installed March 19, 1915, to replace an inclined staff set to same datum and at practically the same location; read by Miss F. E. Dowling and Al Davis.

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

CHANNEL AND CONTROL.—Bed of stream composed of gravel and boulders. One channel at all stages. Control subject to slight changes.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.82 feet at 5 p. m. June 22 (discharge, 11,400 second-feet); minimum stage recorded, 1.59 feet at noon April 5 (discharge, 123 second-feet).

1911–1917: Maximum stage recorded, 8.7 feet June 13, 1911 (discharge, 15,100 second-feet); minimum stage recorded, April 5, 1917.

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

DIVERSIONS.—No large diversions above station. The New York canal of the Boise project, United States Reclamation Service, diverts about 10 miles below and has a maximum capacity of about 2,500 second-feet. A number of smaller canals, total capacity 2,500 second-feet, divert below the New York canal.

REGULATION.—Beginning February 21, 1915, flow was regulated at Arrowrock dam, 4 miles upstream. Arrowrock reservoir has a storage capacity of 280,000 acre-feet. Water is stored during winter and spring and released during the irrigation season.

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

COOPERATION.—Several current-meter measurements furnished by United States Reclamation Service and Idaho State engineer.

Discharge measurements of Boise River at Dowling's ranch, near Arrowrock, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 3	A. W. Harrington	3.58	1,360	May 2	G. C. Baldwin	6.09	6,020
13	do	3.18	991	June 13	T. R. Newell	7.32	9,690
Nov. 8	do	2.52	502	July 28	Keener and Steward [a]	5.12	3,700
Mar. 14	William Kessler	3.52	1,310	Aug. 15	G. C. Baldwin	4.90	3,310
14	do	3.44	1,210	22	Tallman[b] and Steward	4.91	3,340

[a] Employees of the United States Reclamation Service.
[b] Deputy of the Idaho State engineer.

Daily discharge, in second-feet, of Boise River at Dowling's ranch, near Arrowrock, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	1,470	438	621	614	627	1,230	1,080	6,200	9,660	7,620	3,600	2,860
2	1,390	480	687	614	627	1,260	443	6,060	9,660	6,610	3,600	2,860
3	1,370	485	687	614	627	1,310	335	6,060	9,660	6,200	3,600	2,860
4	1,370	485	687	614	627	1,220	281	5,930	9,660	6,470	3,500	2,770
5	1,350	491	694	621	634	1,250	129	5,930	9,660	6,060	3,500	2,680
6	1,280	496	701	730	634	1,290	129	5,930	9,660	6,200	3,500	2,600
7	1,240	502	701	942	634	1,280	339	5,930	9,660	5,670	3,400	2,600
8	1,200	507	701	951	634	1,270	851	5,930	9,660	5,670	3,310	2,520
9	1,200	507	577	951	634	1,100	908	6,060	9,660	4,920	3,310	2,360
10	1,200	513	577	859	634	1,010	1,010	6,200	9,660	5,160	3,220	2,290
11	1,150	513	577	716	647	1,050	1,240	6,890	9,660	4,800	3,220	2,220
12	1,040	519	584	634	708	1,050	1,270	8,540	9,660	4,340	3,220	2,070
13	977	519	590	614	708	1,050	1,460	9,010	9,660	4,120	3,220	2,000
14	977	524	590	608	708	1,080	1,680	9,330	9,660	4,020	3,220	1,870
15	977	524	596	608	708	1,090	1,680	9,330	9,660	3,700	3,310	1,870
16	708	524	596	608	654	1,230	1,680	9,660	9,010	3,800	3,310	1,870
17	614	530	596	602	654	1,310	1,680	9,660	8,690	4,020	3,310	1,800
18	614	530	596	602	716	1,290	1,680	9,660	9,330	4,120	3,310	1,740
19	614	530	596	602	744	1,300	1,680	9,660	9,990	4,120	3,310	1,680
20	542	530	596	602	744	1,310	1,620	9,330	10,300	4,020	3,310	1,610
21	470	536	602	602	751	1,280	1,680	9,330	9,990	4,020	3,310	1,570
22	480	536	602	602	766	1,290	1,680	9,330	11,000	4,020	3,310	1,500
23	480	536	602	614	819	1,470	1,740	9,330	10,700	4,020	3,220	1,380
24	480	542	608	614	934	1,470	1,740	9,330	10,300	4,020	3,220	1,300
25	464	542	614	614	1,040	1,440	1,800	9,330	9,660	4,020	3,120	1,260
26	438	547	614	614	1,070	1,420	1,870	9,330	9,010	4,020	3,220	1,200
27	443	553	608	614	1,120	1,420	3,310	9,330	8,380	4,020	3,120	1,110
28	438	553	614	621	1,130	1,410	6,200	9,330	8,690	3,910	3,120	1,070
29	438	559	614	621	.....	1,410	6,200	9,660	9,010	3,700	3,030	1,030
30	438	559	614	614	.....	1,410	6,200	9,660	8,540	3,700	2,940	994
31	438	.....	614	621	.....	1,410	.....	9,660	.....	3,600	2,860	.....

Monthly discharge of Boise River at Dowling's ranch, near Arrowrock, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	1,470	438	848	52,100
November	559	438	520	30,900
December	701	577	621	38,200
January	951	602	660	40,600
February	1,130	627	748	41,500
March	1,470	1,010	1,270	78,100
April	6,200	129	1,790	107,000
May	9,660	5,930	8,220	505,000
June	11,000	8,380	9,580	570,000
July	7,620	3,600	4,670	287,000
August	3,600	2,860	3,280	202,000
September	2,860	994	1,920	114,000
The year	11,000	129	2,850	2,070,000

COTTONWOOD CREEK NEAR ARROWROCK, IDAHO.

LOCATION.—In sec. 35, T. 4 N., R. 5 E., Boise County, 200 feet above bridge where Twin Springs-Arrowrock road crosses creek, one-fourth of a mile north of south boundary of Boise National Forest, 1½ miles above mouth of creek, and 13 miles from Arrowrock by road.

DRAINAGE AREA.—23 square miles (measured on topographic maps).

RECORDS AVAILABLE.—March 7, 1914, to September 30, 1917.

GAGE.—Vertical staff installed in stilling well September 29, 1916, just below and at same datum as vertical staff with enamel face spiked to large cottonwood on left bank; read by Mrs. Eldora Hedrick. From May 19 to July 4, 1916, readings were made on temporary vertical staff 6 feet downstream set to about the same datum.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed of stream rough; composed of gravel and boulders. One channel at all stages. A reinforced concrete artificial control was constructed about 15 feet below gage October 24, 1915.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.30 feet at 4 p. m. April 26 (discharge, 166 second-feet); minimum stage recorded, 0.73 foot afternoon of August 25–31 and September 9–11, 15–21 (discharge, 0.9 second-foot).

1914–1917: Maximum stage recorded April 26, 1917; minimum stage, 0.03 foot August 12–15, 1915 (discharge, 0.4 second-foot).

ICE.—Stage-discharge relation affected by ice during January and February.

DIVERSIONS.—No large diversions made above gage. One small ranch diversion made at a brush dam 250 feet below.

REGULATION.—No artificial regulation.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined below 120 second-feet. Gage read to hundredths once daily until March 1 and twice daily for remainder of year. Daily discharge ascertained by applying mean daily gage height to rating table, except for periods indicated in footnote to daily discharge table. Records good.

Discharge measurements of Cottonwood Creek near Arrowrock, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
May 4	G. C. Baldwin	1.79	66.8
July 25	Keener and Steward [c]	[a] .89 / [b] .93	4.4
Aug. 16	G. C. Baldwin	.80	1.5

[a] From gage in stilling well.
[b] From outside gage.
[c] Employees of United States Reclamation Service.

Daily discharge, in second-feet, of Cottonwood Creek near Arrowrock, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	3.7	3.2	3.7	3.2		9.5	8.6	77	62	16	2.5	1.1
2	3.7	3.2	3.9	3.2		17	9.5	69	58	15	2.4	1.2
3	3.4	3.4	5.5	3.2	3.0	25	8.6	55	58	14	2.2	1.2
4	3.2	3.4	4.8	3.2		35	8.6	65	56	12	2.2	1.2
5	3.2	4.1	4.4	3.2	3.2	5.5	12	69	55	9.9	2.2	1.2
6	3.2	4.1	3.9	3.2	3.7	5.5	17	72	55	8.3	2.2	1.2
7	3.9	4.1	3.7	3.2	4.4	8.6	24	77	55	7.0	2.2	1.2
8	3.7	4.1	3.7	3.2	4.4	5.5	22	99	53	6.7	2.2	1.2
9	3.4	3.9	3.7	3.2	3.7	13	33	89	50	6.1	2.2	1.1
10	3.4	3.9	3.2	3.0	3.7	11	62	94	49	6.1	2.2	1.1
11	3.4	3.9	3.2	3.0	3.9	5.5	49	103	47	6.1	2.2	1.1
12	3.4	3.7	3.7	3.0	3.9	8.0	58	134	43	6.1	2.2	1.5
13	3.2	3.7	4.1	3.0	3.9	5.5	58	113	43	5.8	2.2	1.2
14	3.2	3.4	4.1	2.7	3.9	7.0	62	113	41	5.5	2.0	1.0
15	3.2	3.2	4.1	2.9	4.1	6.1	43	94	39	5.5	1.8	1.0
16	3.2	3.2	3.9	2.9	4.4	5.5	35	85	39	5.3	1.7	1.0
17	3.2	3.4	3.9		4.6	7.0	33	94	39	5.0	2.2	1.0
18	3.0	3.7	3.7		4.4	7.0	35	85	39	5.0	2.5	1.0
19	3.2	3.7	3.4		4.4	8.0	41	103	36	4.6	1.8	1.0
20	3.2	3.7	3.4		4.4	11	45	82	31	4.6	1.8	1.0
21	3.2	3.7	3.4		4.4	8.0	43	69	27	4.6	1.5	1.0
22	3.2	3.7	3.4		4.4	5.5	77	94	24	4.1	1.5	1.1
23	3.2	3.7	3.2		4.1	8.0	94	123	21	4.1	1.3	1.2
24	3.2	3.7	3.0	3.0	4.1	12	103	103	19	4.0	1.2	1.2
25	3.2	4.1	3.0		5.5	5.5	103	94	18	3.9	1.1	1.3
26	3.2	4.4	3.0		7.0	5.5	155	82	17	3.7	1.1	1.3
27	3.2	3.9	3.2		5.5	8.6	144	71	17	3.5	1.1	1.4
28	3.2	3.7	3.2		7.0	12	123	72	17	3.3	1.0	1.7
29	3.2	3.7	3.2		.....	6.1	107	82	16	3.1	1.0	1.8
30	3.2	3.7	3.2		.....	7.0	94	77	16	2.9	1.0	2.0
31	3.2	.....	3.2		.....	8.6	.....	77	.....	2.7	1.0	.....

NOTE.—Discharge estimated on account of ice, Jan. 17 to Feb. 4; interpolated July 24–31.

Monthly discharge of Cottonwood Creek near Arrowrock, Idaho, for the year ending Sept. 30, 1917.

[Drainage area, 23 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Inches.	Acre-feet.
October	3.9	3.0	3.30	0.143	0.16	203
November	4.4	3.2	3.71	.161	.18	221
December	5.5	3.0	3.65	.159	.18	224
January	.....	.....	3.04	.132	.15	187
February	7.0	.....	4.25	.185	.19	236
March	35	5.5	9.45	.411	.47	581
April	155	8.6	56.9	2.47	2.76	3,390
May	134	55	87.6	3.81	4.39	5,390
June	62	16	38.0	1.65	1.84	2,260
July	16	2.7	6.27	.273	.31	386
August	2.5	1.0	1.80	.078	.09	111
September	2.0	1.0	1.22	.053	.06	72.6
The year	155	1.0	18.3	.796	10.78	13,300

SOUTH FORK OF BOISE RIVER NEAR LENOX, IDAHO.

LOCATION.—In sec. 24, T. 2 N., R. 6 E., in canyon at R. S. Sandlin's ranch, 1 mile above mouth of Smith Creek, 4 miles above flow line of Arrowrock reservoir, 14 miles above mouth of South Fork, 18 miles above Arrowrock dam, and 7 miles south of Lenox post office, Elmore County. Station was formerly called "South Fork of Boise River near Prairie, Idaho."

DRAINAGE AREA.—1,090 square miles (measured on topographic maps).

RECORDS AVAILABLE.—March 24, 1911, to September 30, 1917.

GAGE.—Friez water-stage recorder on right bank in wooden shelter and well, referred to inside and outside vertical staff gages; installed April 11, 1915, at same datum but about 25 feet below original inclined gage; read by R. S. Sandlin. Records from March 24, 1911, to April 10, 1915, refer to the inclined gage.

DISCHARGE MEASUREMENTS.—Made from a cable about 100 feet upstream from gage, or by wading at a section about 150 feet below gage.

CHANNEL AND CONTROL.—Bed of stream consists of mud and gravel. Control of coarse gravel and rock of practically permanent character. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.53 feet at 11 a. m. May 15 (discharge 9,200 second-feet); minimum discharge probably somewhat less than 300 second-feet during January.

1911–1917: Maximum stage recorded on May 15, 1917 (see above); minimum stage recorded, 1.94 feet at 1 p. m. December 16, 1915 (discharge, 197 second-feet).

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—No important diversions above gage and none below.

REGULATION.—No artificial regulation.

ACCURACY.—Stage-discharge relation practically permanent. Two rating curves used, one applicable October 1 to January 30, except for several periods estimated because of ice; the other applicable February 25 to September 30. Discharge during periods of ice effect based on observer's notes and records of temperature. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspection of recorder graph, except for periods indicated in footnote to daily discharge table. Open-water records excellent; winter records fair to good.

Discharge measurements of South Fork of Boise River near Lenox, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
May 6	G. C. Baldwin	5.96	2,970
July 27	Keener and Steward [a]	3.42	772
Aug. 17	G. C. Baldwin	2.85	498

[a] Employees of the United States Reclamation Service.

Daily discharge, in second-feet, of South Fork of Boise River near Lenox, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	378	389	360			494	457	2,210	5,160	3,540	667	360
2	435	389	415			532	477	2,160	5,160	3,400	638	356
3	407	392	464	330		403	445	2,420	4,980	3,270	619	381
4	396	392	464			469	437	2,700	4,810	3,270	609	360
5	392	389	419			494	473	2,640	4,470	3,270	595	353
6	385	411	400	404		477	532	2,950	4,470	3,010	581	350
7	419	392	360	385		457	604	3,400	4,640	2,880	577	343
8	472	381	312	357		461	712	3,990	4,980	2,640	563	337
9	439	389	374	350		441	815	4,300	5,880	2,530	532	337
10	423	419	385	354		429	931	4,470	6,620	2,420	506	330
11	451	396	400			429	1,060	4,640	5,880	2,160	485	330
12	480	331	451		320	429	1,160	5,520	4,810	1,970	477	330
13	443		464			429	1,160	5,880	4,140	1,880	469	330
14	423		419			429	1,060	7,190	3,990	1,700	465	333
15	411		378			429	1,090	8,740	4,470	1,490	453	374
16	407	347	392			429	992	7,570	5,700	1,370	449	363
17	404		419			429	902	5,880	6,240	1,300	469	356
18	400		445			445	844	4,810	6,810	1,260	519	350
19	404		472			461	844	4,470	6,620	1,190	502	343
20	396		411	300		465	962	4,140	6,240	1,120	461	340
21	392	354	396			473	1,220	4,470	6,060	1,060	437	327
22	392	343	385			437	1,530	4,810	5,880	992	410	321
23	385	354	385			426	1,970	5,160	5,340	931	399	367
24	374	350	385			437	2,370	5,880	5,160	872	392	453
25	385	324	360		311	449	2,880	5,520	4,810	844	377	441
26	389	364			311	407	3,140	5,340	4,470	810	374	392
27	389	381			302	407	2,950	5,160	4,300	771	395	377
28	389	389	310		327	433	2,880	5,340	4,300	771	410	370
29	389	364		360	.....	506	3,530	5,880	4,300	744	385	360
30	385	347		354	.....	537	2,370	5,880	3,840	718	374	356
31	392	.....		340	.....	498	.....	5,520	.....	692	363	.....

NOTE.—Discharge estimated because of ice, Nov. 13–20, Dec. 26–31, Jan. 1–5, 11–28, 31, Feb. 1–24. Discharge interpolated Mar. 11 to 16 on account of missing gage heights.

Monthly discharge of South Fork of Boise River near Lenox, Idaho, for the year ending Sept. 30, 1917.

[Drainage area, 1,090 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Inches.	Acre-feet.
October	480	374	407	0.373	0.43	25,000
November	419	.....	367	.337	.38	21,800
December	472	.....	386	.354	.41	23,700
January	.....	.....	321	.294	.34	19,700
February	.....	.....	319	.293	.31	17,700
March	537	403	453	.416	.48	27,900
April	3,140	437	1,330	1.22	1.36	79,100
May	8,740	2,160	4,810	4.41	5.08	296,000
June	6,810	3,840	5,150	4.72	5.27	306,000
July	3,540	692	1,770	1.62	1.87	109,000
August	667	363	482	.442	.51	29,600
September	453	321	356	.327	.36	21,200
The year	8,740	.....	1,350	1.24	16.80	977,000

LITTLE CAMAS CREEK BELOW RESERVOIR, NEAR BENNETT, IDAHO.

LOCATION.—In sec. 4, T. 1 S., R. 9 E., a short distance below Camas reservoir and 1 mile north of Bennett, Elmore County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 22 to June 30, 1917, when station was discontinued.

GAGE.—McConnel recording gage on right bank; read by C. E. Tappan, an employee of Idaho State engineer.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed of sand and fine gravel; probably shifting.

EXTREMES OF DISCHARGE.—Maximum discharge during period, 80 second-feet June 1 and 2; minimum discharge during period, estimated 0.7 second-foot June 30.

DIVERSIONS.—None between station and Camas reservoir.

REGULATION.—Flow regulated by headgates on Camas reservoir and indicates amount wasting into South Fork of Boise River.

ACCURACY.—Stage-discharge relation practically permanent. Operation of water-stage recorder unsatisfactory. Rating curve well defined. Daily discharge ascertained by applying to rating table mean daily gage height obtained from inspection of recorder graph, and interpolation and estimates based on amount diverted through canal above. Records only fair, chiefly on account of poor gage-height record.

COOPERATION.—Station operated and maintained by Idaho State engineer.

Discharge measurements of Little Camas Creek below reservoir, near Bennett, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
May 26	C. E. Tappan [a]	2.44	67.2	June 16	C. E. Tappan	0.29	7.2
June 1	do	2.66	80.6	18	G. C. Baldwin	−.01	1.0
7	do	1.89	55.6	21	C. E. Tappan	−.05	.9
14	do	1.20	30.1	28	do	−.05	.7

[a] Employee of the Idaho State engineer.

Daily discharge, in second-feet, of Little Camas Creek below reservoir, near Bennett, Idaho, for the year ending Sept. 30, 1917.

Day.	May.	June.	Day.	May.	June.	Day.	May.	June.
1		80	11		31	21		0.8
2		80	12		30	22	30	.8
3		71	13		30	23	39	.8
4		64	14		30	24	65	.8
5		61	15		28	25	72	.8
6		59	16		15	26	72	.8
7		53	17		5.6	27	73	.8
8		52	18		1.0	28	74	.8
9		51	19		.9	29	75	.8
10		40	20		.9	30	76	.7
						31	78	

NOTE.—Discharge estimated from imperfect gage-height record and comparison with canal record, May 22-25, 30, 31, June 3-6 and 10-13; interpolated June 19-20, 22-28, and 30.

Monthly discharge of Little Camas Creek below reservoir, near Bennett, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
May 22-31	78	30	65.4	1,300
June	80	.7	26.4	1,570
The period				2,870

LITTLE CAMAS CANAL AT HEADING, NEAR BENNETT, IDAHO.

LOCATION.—In sec. 9, T. 1 S., R. 9 E., a short distance below Camas reservoir and a quarter of a mile north of Bennett, Elmore County.

RECORDS AVAILABLE.—June 1 to November 28, 1917, when station was discontinued.

GAGE.—McConnel recording gage; read by C. E. Tappan, employee of Idaho State engineer.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of hard cemented gravel. Control poorly defined and shifting.

EXTREMES OF DISCHARGE.—Maximum discharge during period, 68 second-feet July 9, 10, and 12; minimum stage recorded, 0.30 foot November 1 (discharge, no flow); no flow estimated on August 7.

DIVERSIONS.—None.

REGULATION.—The flow past station is regulated by headgates at Camas reservoir.

ACCURACY.—Stage-discharge relation not permanent; seriously affected by growth of aquatic vegetation. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying daily gage height to rating table, by estimating, and by shifting-control method during period when stage-discharge relation was affected by vegetation. Records fair.

COOPERATION.—Station operated and maintained by the Idaho State engineer.

Little Camas canal diverts water from Little Camas Creek, in Boise River basin, to Canyon Creek basin through Long Tom Creek. The canal draws water from Little Camas reservoir in sec. 9, T. 1 S., R. 9 E., and discharges into Loug Tom Creek in sec. 27, T. 1 S., R. 8 E. The capacity of the canal is about 65 second-feet.

Discharge measurements of Little Camas canal at heading, near Bennett, Idaho, during 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
June 7	C. E. Tappan[a]	1.31	23.3	Aug. 2	C. E. Tappan	0.84	7.4
14	do	1.79	37.1	2	do	1.76	25.6
16	do	1.99	46.8	9	do	2.17	47.1
18	G. C. Baldwin	1.96	46.4	16	do	2.49	63.9
21	C. E. Tappan	2.35	60.9	21	G. C. Baldwin	2.48	63.1
28	do	2.36	60.2	28	C. E. Tappan	2.52	60.8
July 5	do	2.49	65.4	Sept. 11	do	2.42	54.8
12	do	2.61	67.7	Nov. 8	do	1.78	41.2
19	do	2.76	67.5	15	do	.66	6.2
26	do	2.72	54.0				

[a] Employee of the Idaho State engineer.

Daily discharge, in second-feet, of Little Camas canal at heading, near Bennett, Idaho, for 1917.

Day.	June.	July.	Aug.	Sept.	Nov.	Day.	June.	July.	Aug.	Sept.	Nov.
1	0.1	63	36	61	0	16	45	67	64	55	6.3
2	.1	65	33	61	.....	17	47	67	63	34	6.3
3	8.0	65	52	32	.....	18	46	67	63	2	6.3
4	16	65	52	55	.....	19	55	64	63	.....	6.3
5	18	65	53	55	.....	20	61	62	63	.....	6.3
6	19	65	37	55	.....	21	61	64	63	.....	6.3
7	24	65	0	55	.....	22	61	64	63	.....	6.0
8	24	67	7	55	20	23	61	63	63	.....	6.0
9	24	68	45	55	41	24	61	63	63	.....	6.0
10	33	68	53	55	41	25	61	61	62	.....	6.0
11	38	67	56	55	21	26	61	54	61	.....	6.0
12	39	68	56	55	6.3	27	60	54	61	.....	6.0
13	39	67	56	55	6.3	28	60	54	61	.....	2.0
14	40	67	56	55	6.3	29	60	54	61	.....	.....
15	41	67	60	55	6.3	30	60	54	61	.....	.....
						31	.....	50	61	.....	.....

NOTE.—Discharge determined by shifting-control method or estimated on basis of reported changes in reservoir-outlet gates, June 1–3, July 27 to Aug. 2, Aug. 6–8, Aug. 29 to Sept. 7, Sept. 17–18, and Nov. 11–15, 28; by shifting-control method using parallel curves through actual measurements June 23–26, July 7–11, 13–18, 20–25, Aug. 10–13, 25–27. No record Sept. 19 to Nov. 7; probably no flow.

Monthly discharge of Little Camas canal at heading, near Bennett, Idaho, for 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June	61	0.1	40.8	2,430
July	68	50	63.0	3,870
August	64	.0	53.2	3,270
September 1–18	61	2.0	50.3	1,800
November 8–28	41	2.0	10.7	446

LITTLE CAMAS CANAL ABOVE TUNNEL NO. 9, NEAR BENNETT, IDAHO.

LOCATION.—In sec. 22, T. 1 S., R. 8 E., 3 miles northeast of Bennett, Elmore County.

RECORDS AVAILABLE.—June 1 to November 29, 1917, when station was discontinued.

GAGE.—McConnel recording gage with outside staff gage of Steward type; read by C. E. Tappan, employee of Idaho State engineer.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed of canal composed of gravel. Control shifting.

EXTREMES OF DISCHARGE.—Maximum discharge during period, 56 second-feet July 6, 7, and 9–19; minimum stage recorded, 0.34 foot August 8 (discharge, no flow).

DIVERSIONS.—None.

REGULATION.—Flow regulated by headgates at Camas reservoir.

ACCURACY.—Stage-discharge relation not permanent. Rating curve fairly well defined. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height ascertained by inspection of recorder graph, except for periods when stage-discharge relation changed for which it was ascertained by the shifting-control method. Records fair.

COOPERATION.—Station operated and maintained by the Idaho State engineer.

Discharge measurements of Little Camas canal above tunnel No. 9, near Bennett, Idaho, during 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
June 6	C. E. Tappan [a]	1.44	16.6	July 31	C. E. Tappan	2.24	41.9
13	do	1.94	31.2	Aug. 14	do	2.36	49.0
19	G. C. Baldwin	2.11	39.2	21	G. C. Baldwin	2.52	55.0
26	C. E. Tappan	2.46	51.0	28	C. E. Tappan	2.54	53.3
July 3	do	2.55	54.6	Sept. 4	do	2.36	45.4
10	do	2.60	56.9	11	do	2.40	49.0
17	do	2.60	55.5	18	do	.62	1.9
24	do	2.56	54.2	Nov. 16	do	.92	5.3

[a] Employee of Idaho State engineer.

Daily discharge, in second-feet, of Little Camas canal above tunnel No. 9, near Bennett, Idaho, for 1917.

Day.	June.	July.	Aug.	Sept.	Nov.	Day.	June.	July.	Aug.	Sept.	Nov.
1	2.7	52	42	51	.....	16	34	56	54	49	6.4
2	2.6	54	42	51	.....	17	38	56	54	49	5.3
3	2.7	54	44	37	.....	18	38	56	54	33	5.3
4	14	55	47	39	.....	19	42	56	54	.....	5.3
5	17	55	46	49	.....	20	51	51	54	.....	5.6
6	18	56	48	49	.....	21	51	54	54	.....	5.4
7	21	56	11	49	.....	22	51	55	55	.....	5.0
8	22	55	0	49	5	23	51	55	54	.....	5.0
9	22	56	12	49	37	24	51	54	54	.....	5.0
10	24	56	44	49	38	25	50	53	53	.....	5.0
11	32	56	48	49	38	26	51	48	53	.....	5.0
12	32	56	48	49	36	27	51	48	52	.....	6.1
13	33	56	48	49	30	28	52	48	52	.....	5.3
14	33	56	49	49	18	29	51	48	52	.....	2.6
15	33	56	50	49	15	30	51	48	52	.....	.....
						31	.....	42	51	.....	.....

NOTE.—Shifting-control method used June 22–25, July 11–16, Aug. 7–9, 22–27, and Sept. 9. Discharge stimated Sept. 3–4, 18, and Nov. 8–9 and 29. No record Sept. 19 to Nov. 7; probably no flow.

Monthly discharge of Little Camas canal above tunnel No. 9, near Bennett, Idaho, for 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June	52	2.6	34.1	2,030
July	56	42	53.5	3,290
August	55	0	46.2	2,840
September 1–18	51	33	47.1	1,680
November 8–29	38	2.6	13.2	576

SMITH CREEK NEAR LENOX, IDAHO.

LOCATION.—In sec. 12, T. 2 N., R. 6 E., at lower crossing, half a mile above mouth and 5 miles northwest of Lenox, Elmore County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—January 1, 1916, to September 30, 1917. A few measurements were made by the United States Reclamation Service prior to 1916.

GAGE.—Vertical staff on right bank 40 feet above bridge; read by R. S. Sandlin.

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

CHANNEL AND CONTROL.—Bed composed of lava bedrock and large lava boulders with some sand and gravel. Control practically permanent. One channel except at very high stages, when creek may overflow around right end of bridge. Stream turbulent in spring.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 4.2 feet May 15 (discharge, 401 second-feet); minimum discharge, 0.2 second-foot July 27.

1916–1917: Maximum stage recorded, May 15, 1917; minimum discharge, 0.2 second-foot August 23–30, 1916, and July 27, 1917.

ICE.—Stage-discharge relation affected by ice during winter.

DIVERSIONS.—Practically entire summer flow of creek diverted above station for irrigation on Smith Prairie and by Krall's ditch, which heads one-eighth of a mile above gage. No diversions below gage.

REGULATION.—Artificial regulation to a very slight extent by several small storage reservoirs on headwaters of stream.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve fairly well defined below 250 second-feet. Gage read to quarter-tenths or hundredths (the degree depending on the stage), two or three times weekly. Daily discharge ascertained by applying daily gage height to rating table and interpolating for days when gage was not read. On account of infrequent gage readings, record is considered only fair.

Discharge measurements of Smith Creek near Lenox, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
May 6	G. C. Baldwin	2.73	166
July 27	Steward and Keener [a]	—.21	.4

[a] Employees of the United States Reclamation Service.

Daily discharge, in second-feet, of Smith Creek near Lenox, Idaho, for the year ending Sept. 30, 1917.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1		16	20	149	209	99	0.4	0.4
2		17	21	144	199	88	.4	.4
3		18	23	138	188	77	.4	.4
4		18	25	152	178	71	.4	.4
5		18	33	167	168	66	.4	.5
6		18	40	181	178	60	.4	.7
7	12	25	48	210	188	53	.4	.8
8		23	51	239	199	46	.4	.8
9		20	78	246	209	38	.4	.8
10		18	105	254	191	31	.4	.8
11		18	132	270	173	29	.4	.8
12		18	127	286	155	27	.4	.8
13	12	18	121	324	151	25	.4	.8
14	13	18	116	363	147	22	.4	.8
15	13	18	126	401	143	20	.4	.8
16	13	19	136	317	156	18	.4	.8
17	14	19	145	233	169	16	.4	.8
18	14	18	155	149	182	12	.4	.8
19	14	16	181	154	195	9	.4	.8
20	14	15	181	158	186	5	.4	.8
21	15	14	181	163	177	4	.4	.8
22	16	14	209	168	168	4	.4	.8
23	17	15	302	172	160	3	.4	.8
24	18	15	239	177	151	2	.4	.8
25	17	15	270	181	143	1.4	.4	.8
26	16	15	302	196	138	.8	.4	.9
27	15	14	263	210	132	.2	.4	1.0
28	16	14	224	224	126	.3	.4	1.0
29	.....	14	168	239	121	.3	.4	1.1
30	.....	16	158	229	110	.4	.4	1.1
31	.....	18	.....	219	.....	.4	.4	.....

NOTE.—Discharge Feb. 1–12, estimated.

Monthly discharge of Smith Creek near Lenox, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
February	18	.....	13.6	755
March	25	14	17.2	1,060
April	302	20	139	8,270
May	401	138	217	13,300
June	209	110	166	9,880
July	99	.2	26.7	1,640
August	.4	.4	.40	24.6
September	1.1	.4	.77	45.8
The period	.....	.....	.....	35,000

RATTLESNAKE CREEK NEAR LENOX, IDAHO.

LOCATION.—In secs. 27 and 28, T. 3 N., R. 6 E., half a mile above mouth of creek, 13 miles (by water) southeast of Arrowrock, and 13 miles (by wagon road) northwest of Lenox, Elmore County.

DRAINAGE AREA.—46 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1915, to September 30, 1917. Several discharge measurements were made by engineers of the United States Reclamation Service during summer and fall of 1915.

GAGE.—Prior to June 29, 1916, a vertical staff attached to downstream corner of right abutment of bridge one-fourth of a mile above mouth; since that date a vertical staff on left bank, about 300 feet farther upstream, and above the influence of backwater; read by S. F. Kesl and C. Aulbach.

DISCHARGE MEASUREMENTS.—Made by wading at all but extremely high stages, when measurements may be made from highway bridge, though conditions are unfavorable.

CHANNEL AND CONTROL.—Control for both gages composed of small boulders, coarse gravel, and sand. Since the recession of backwater from old gage, the control has been so changed by deposits of sand as to render records from this gage valueless. Control for upper gage probably fairly permanent. Channel of stream winding. Banks fairly high and covered with brush. Stream turbulent.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 2.40 feet April 12 (discharge, 167 second-feet); minimum stage recorded, 1.15 feet September 21 (discharge, 6 second-feet).

1915–1917: Maximum stage recorded, 2.9 feet March 21, 1916 (discharge, 182 second-feet); minimum stage recorded September 21, 1917.

ICE.—Stage-discharge relation affected by ice November 11–27 and February 22 to March 8.

DIVERSIONS.—Kesl's ditch diverts from right side of creek about 3 miles above gage, but the average amount of water diverted probably did not exceed 1 second-foot. A few small diversions are made from tributaries farther upstream.

REGULATION.—None other than slight effect of diversions.

ACCURACY.—Stage-discharge relation practically permanent for both gages. Rating curve fairly well defined. Gage read to hundredths at rather irregular intervals averaging about thrice weekly. Daily discharge ascertained by applying daily gage height to rating table and interpolating for days of no gage heights, except for periods indicated in footnote to daily-discharge table. Records fair December to March because of meager data; good for remainder of year.

Discharge measurements of Rattlesnake Creek near Lenox, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
May 5	G. C. Baldwin	1.95	98.2
July 26	W. G. Steward [a]	1.35	21.4
Aug. 17	G. C. Baldwin	1.24	10.2

[a] Employee of the United States Reclamation Service.

Daily discharge, in second-feet, of Rattlesnake Creek near Lenox, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	12	14	14	19	14		62	106	115	59	14	9
2	13	14	15	20	14		58	103	112	59	14	8
3	13	14	16	18	13		51	100	109	60	14	8
4	14	14	18	16	13		44	99	106	57	14	7
5	14	15	20	15	13	25	38	98	103	53	14	8
6	14	15	20	14	12		33	109	108	50	14	9
7	14	15	19	14	12		60	118	112	48	14	10
8	14	16	18	13	12		87	127	116	47	14	10
9	14	16	17	13	13	38	114	127	121	46	14	10
10	14	16	16	13	13	37	132	127	112	44	14	9
11	14		14	12	13	37	149	130	103	42	14	9
12	14		16	12	13	36	167	133	94	40	14	9
13	13		17	12	13	36	132	138	92	38	14	9
14	13		19	11	14	37	98	143	90	37	14	9
15	14		20	12	14	38	87	148	88	35	14	9
16	14		20	13	14	39	76	131	88	33	13	8
17	14		15	14	13	45	66	114	88	31	13	8
18	14		14	16	14	50	55	97	88	29	13	8
19	14		14	16	14	56	62	88	88	26	13	7
20	14	16	13	15	14	63	70	98	85	24	13	7
21	14		11	14	15	70	74	99	83	24	13	6
22	14		9	14	16	74	77	100	80	24	12	8
23	14		11	16		77	92	102	75	24	12	10
24	14		13	18		82	106	104	71	24	12	12
25	14		13	17		86	121	106	66	22	12	11
26	14		14	16	30	91	159	110	64	21	12	11
27	14		14	16		94	142	115	62	24	12	11
28	14	33	15	15		98	136	120	60	21	11	11
29	14	26	16	14	.....	84	132	124	58	17	11	10
30	14	20	17	14	.....	70	128	121	59	14	10	9
31	14	.....	18	14	.....	66	.....	118	.....	14	10	.....

NOTE.—Discharge estimated because of probable ice effect, Nov. 11–27, Feb. 22, 23–28, Mar. 1–8; interpolated for days of no gage height. Shifting-control method used Aug. 29 to Sept. 3.

Monthly discharge of Rattlesnake Creek near Lenox, Idaho, for the year ending Sept. 30, 1917.

[Drainage area, 46 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Inches.	Acre-feet.
October	14	12	13.8	0.300	0.35	848
November	.....	.....	16.7	.363	.40	994
December	20	9	15.7	.341	.39	965
January	20	11	14.7	.320	.37	904
February	.....	12	17.0	.370	.39	944
March	98	.....	51.7	1.12	1.29	3,180
April	167	33	93.6	2.03	2.26	5,570
May	148	97	115	2.50	2.88	7,070
June	121	58	89.9	1.95	2.18	5,350
July	60	14	35.1	.763	.88	2,160
August	14	10	13.0	.283	.33	799
September	12	6	9.00	.196	.22	536
The year	167	6	40.5	.880	11.94	29,300

WILLOW CREEK NEAR LENOX, IDAHO.

LOCATION.—In sec. 1, T. 2 N., R. 5. E., 100 feet above extreme backwater from Arrowrock dam, three-eighths of a mile above mouth of creek, and 17 miles northwest of Lenox, Elmore County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 1, 1916, to September 30, 1917. A few discharge measurements were made by employees of United States Reclamation Service during the summer and fall of 1915.

GAGE.—Graduations to feet and tenths chiseled on sloping face of granite boulder on right bank; read by S. F. Kesl. From November 19, 1915, to May 16, 1916, gage was 250 feet below, and consisted of graduations chiseled on two large lava boulders. No relation between the two gages.

DISCHARGE MEASUREMENTS.—At low and medium stages made by wading; no equipment for high-stage measurements.

CHANNEL AND CONTROL.—Bed composed of large boulders and rocks, with cobbles and sand; very rough. Rock in control probably permanent, but stage-discharge relation may be affected by scour and deposition of sand. Banks high. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.95 feet May 12 (discharge, 234 second-feet); minimum stage recorded, −0.10 foot August 25 (discharge, 0.5 second-foot).

1916–1917: Maximum and minimum stages occurred in 1917.

ICE.—Stage-discharge relation undoubtedly affected by ice, though observer made few notes.

DIVERSIONS.—Many diversions made for irrigation from Willow Creek and Wood Creek above station.

REGULATION.—None other than that due to effect of diversions.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve fairly well defined. Gage read to hundredths once weekly. Daily discharge ascertained by applying gage height to rating table and interpolating for days of no gage height, except for periods when stage-discharge relation was affected by ice, for which it was estimated. Records only fair because of infrequent gage readings.

Discharge measurements of Willow Creek near Lenox, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
May 5	G. C. Baldwin	1.57	147
July 26	Steward and Keener [a]	.14	1.9

[a] Employees of the United States Reclamation Service.

Daily discharge, in second-feet, of Willow Creek near Lenox, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	4.0	5.8	7.4	9.7	8.4	12	26	142	98	9.5	1.6	0.9
2	4.5	5.9	7.5	9.7	8.4	10	27	134	91	8.0	1.6	1.0
3	5.0	5.9	7.7	9.8	8.5	11	29	126	83	6.5	1.5	1.0
4	4.9	6.0	7.8	9.9	8.7	11	30	119	76	5.0	1.5	1.0
5	4.8	6.1	8.0	10	8.8	11	31	111	68	4.6	1.4	1.1
6	4.6	6.2	8.1	9.9	9.0	11	32	129	61	4.2	1.4	1.1
7	4.5	6.2	8.3	9.9	9.1	11	49	146	53	3.8	1.4	1.1
8	4.4	6.3	8.4	9.9	9.3	11	66	164	46	3.7	1.3	1.2
9	4.3	6.4	8.2	9.8	9.4	12	83	181	38	3.6	1.3	1.3
10	4.2	6.5	8.0	9.8	9.5	13	99	199	35	3.5	1.3	1.4
11	4.2	6.5	7.8	9.8	9.6	14	116	216	33	3.4	1.2	1.5
12	4.2	6.6	7.7	9.7	9.7	15	133	234	30	3.3	1.1	1.7
13	4.3	6.3	7.5	9.6	9.7	15	150	227	27	3.2	1.1	1.8
14	4.3	5.9	7.3	9.5	9.8	16	141	221	24	3.1	1.1	1.9
15	4.4	5.6	7.1	9.4	9.9	17	132	214	22	3.0	1.0	2.0
16	4.5	5.6	7.2	9.3	10	18	123	208	19	2.9	1.0	2.0
17	4.6	5.6	7.3	9.2		21	114	201	18	2.8	1.0	2.0
18	4.7	5.6	7.4	9.1		23	105	195	18	2.8	1.0	2.0
19	4.7	5.6	7.5	9.0		26	96	188	18	2.7	.9	2.0
20	4.8	6.0	7.6	8.9	12	29	87	182	17	2.6	.8	2.0
21	4.9	6.5	7.7	8.8		32	99	175	17	2.5	.8	2.0
22	5.0	7.0	7.8	8.7		34	111	169	17	2.4	.7	2.0
23	5.1	7.5	8.0	8.7	20	37	123	162	16	2.3	.6	2.1
24	5.1	8.0	8.3	8.6		35	136	156	15	2.2	.6	2.1
25	5.2	8.4	8.5	8.5		33	148	149	15	2.1	.5	2.2
26	5.3	8.2	8.7	8.4	16	31	160	143	14	2.0	.6	2.2
27	5.4	8.1	8.9	8.4		30	172	136	13	1.9	.6	2.2
28	5.5	7.9	9.2	8.4		28	164	128	12	1.9	.7	2.3
29	5.5	7.7	9.4	8.4	.....	26	157	121	12	1.8	.7	2.4
30	5.6	7.6	9.5	8.4	.....	24	149	113	11	1.8	.8	2.4
31	5.7	.....	9.6	8.4	.....	25	.....	106	.....	1.7	.8	.....

NOTE.—Discharge estimated on account of ice, Feb. 17-22, 23, 24-28, and Mar. 1.

Monthly discharge of Willow Creek near Lenox, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	5.7	4.0	4.78	294
November	8.4	5.6	6.58	392
December	9.6	7.1	8.05	495
January	10	8.4	9.21	566
February	.....	.....	11.4	633
March	37	10	20.7	1,270
April	172	26	103	6,130
May	234	106	164	10,100
June	98	11	33.9	2,020
July	9.5	1.7	3.38	208
August	1.6	.5	1.03	63.3
September	2.4	.9	1.73	103
The year	234	.5	30.8	22,300

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MOORE CREEK NEAR ARROWROCK, IDAHO.

LOCATION.—In sec. 21, T. 3 N., R. 4 E., Boise County, a quarter of a mile above highway bridge on Boise-Arrowrock road, half a mile above mouth of creek, and 5 miles southwest of Arrowrock.

DRAINAGE AREA.—426 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1914, to September 30, 1917; discharge measurements only prior to December 1, 1915.

GAGE.—Graduations to feet and tenths chiseled on face of a rock ledge on left bank of stream and marked with white paint; read by A. P. Webb.

DISCHARGE MEASUREMENTS.—Made by wading near gage or from highway bridge one-fourth of a mile below.

CHANNEL AND CONTROL.—Bed consists of boulders, cobbles, and sand. Control shifts frequently owing to deposition of sand at low stages and cutting out at high stages. Stream usually carries much sand and silt as a result of placer operations in Boise Basin. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.65 feet on the morning of May 15 (discharge, 2,430 second-feet); minimum stage recorded, 0.86 foot September 11 and 12 (discharge, 28 second-feet).

1915-1917: Maximum stage, 6.3 feet April 11, 1916 (discharge, 3,140 second-feet); minimum stage recorded, 0.67 foot August 30, 1915 (measured discharge, 17.8 second-feet).

ICE.—Stage-discharge relation ordinarily not seriously affected by ice, probably because of group of hot springs just above station.

DIVERSIONS.—No important diversions above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Bed of stream changes constantly, but variations in stage-discharge relation are not great. Well-defined rating curves, based chiefly on previous season's measurements, were used during the year. On account of rough water, especially at the higher stages, it is difficult to read gage with refinement. Gage read to quarter-tenths once daily during high water and to hundredths during low-water period. Daily discharge ascertained by applying daily gage height to rating table and interpolating for days of no gage height. Records good.

COOPERATION.—Several discharge measurements made by employees of United States Reclamation Service.

Discharge measurements of Moore Creek near Arrowrock, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 8	A. W. Harrington.....	1.38	73.2	June 13	T. R. Newell.....	3.90	809
Mar. 14	Wm. Kessler.....	1.56	119	July 28	Keener and Steward [a]..	1.38	88.4
15	.....do.....	1.58	128	Aug. 15	G. C. Baldwin.....	1.02	37.1
May 2	G. C. Baldwin.....	4.6	1,320	22	Tallman [b] and Steward.	1.07	50.1

[a] Employees of the United States Reclamation Service.
[b] A deputy of the Idaho State engineer.

Daily discharge, in second-feet, of Moore Creek near Arrowrock, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	60	80	84	73	73	132	266	1,580	1,310	470	73	31
2	73	84	108	101	73	140	278	1,400	1,230	404	70	31
3	80	87	124	113	80	101	255	1,480	1,150	338	66	31
4	80	84	132	101	80	101	266	1,480	1,080	313	66	31
5	76	87	149	101	80	132	313	1,480	1,080	313	66	31
6	76	87	149	101	87	132	392	1,580	1,000	289	60	31
7	87	101	101	94	80	124	536	1,760	1,000	266	60	31
8	94	88	76	73	80	124	628	2,170	1,000	255	54	31
9	87	101	87		80	124	708	2,170	1,080	223	54	30
10	80	101	94	66	80	124	798	2,060	1,080	223	49	30
11	80	80	94		80	101	929	2,060	1,000	203	49	28
12	80	79	116	60	84	94	1,230	2,060	929	184	49	28
13	80	79		63	87	101	1,150	2,170	862	175	44	31
14	80	78		66	87	106	1,080	2,380	862	166	44	39
15	80	77		49	87	107	862	2,380	798	158	42	39
16	80	77			87	101	680	1,960	862	149	39	35
17	80	76			87	101	680	1,480	929	140	39	35
18	78	60			108	108	680	1,310	1,000	132	39	33
19	75	80			116	124	737	1,230	1,000	124	49	31
20	73	70		45	116	132	862	1,230	862	108	44	31
21	73	66			116	149	1,150	1,230	862	101	44	31
22	80	70	70		101	132	1,400	1,400	798	101	45	31
23	80	66			108	132	1,760	1,400	737	101	44	39
24	80	66		73	108	132	1,960	1,400	680	94	41	80
25	80	66		80	116	166	2,170	1,400	628	87	39	73
26	84	73		80	213	149	2,170	1,480	558	87	37	73
27	84	80		80	184	166	2,380	1,580	536	87	37	66
28	87	80		80	166	184	1,960	1,480	516	83	37	66
29	87	80		87	.....	223	1,760	1,480	516	80	35	60
30	87	80		80	.....	289	1,580	1,480	536	80	35	60
31	87	.....		80	.....	266	.....	1,310	.....	73	33	.....

NOTE.—Discharge interpolated Oct. 18, 19, Nov. 12–16, Jan. 13, July 1, 2; estimated Dec. 13–31, Jan. 9–11, and 16–23.

Monthly discharge of Moore Creek near Arrowrock, Idaho, for the year ending Sept. 30, 1917.

[Drainage area, 426 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Inches.	Acre-feet.
October	94	60	80.3	0.188	0.22	4,940
November	101	60	79.4	.186	.21	4,720
December	149	.....	85.3	.200	.23	5,240
January	113	.....	70.7	.166	.19	4,350
February	213	73	102	.239	.25	5,660
March	289	94	139	.326	.38	8,550
April	2,380	255	1,050	2.46	2.74	62,500
May	2,380	1,230	1,650	3.87	4.46	101,000
June	1,310	516	883	2.07	2.31	52,500
July	470	73	181	.425	.49	11,100
August	73	33	47.8	.112	.13	2,940
September	80	28	40.6	.095	.11	2,420
The year	2,380	28	368	.864	11.72	266,000

MALHEUR RIVER AT WARM SPRINGS RESERVOIR SITE, NEAR RIVERSIDE, OREG.

LOCATION.—In sec. 7, T. 23 S., R. 37 E., 500 feet above dam site of proposed Warm Springs reservoir, 2 miles south of Armstrong's house, 4 miles above mouth of South Fork, and 5 miles northwest of Riverside, Malheur County.

DRAINAGE AREA.—About 1,100 square miles.

RECORDS AVAILABLE.—December 9, 1914, to July 24, 1917, when station was discontinued. From January 3, 1906, to March 31, 1907, and from December 15, 1908, to May 25, 1910, records were obtained at a station about 4 miles below.

GAGE.—Stevens continuous water-stage recorder on left bank; read by E. L. Armstrong. Staff gage about 200 feet above mouth of South Fork, used 1906 to 1910.

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

CHANNEL AND CONTROL.—Gravel and small stones; likely to shift in floods. One channel for medium and high stages, but during low stages water crosses riffle in two or more channels.

EXTREMES OF DISCHARGE.—Maximum stage from water-stage recorder, 4.60 feet at 11.30 a. m. February 26 (discharge, 1,780 second-feet); minimum stage recorded, 0.89 foot at 7 a. m. December 13 (discharge, 15 second-feet).

1906–1917: Maximum discharge, 5,490 second-feet for a stage of 10 feet on lower gage March 2, 1910; minimum discharge, 2 second-feet August 5 to 30, 1909.

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

DIVERSIONS.—A large area of bottom land is irrigated with flood water above this station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed during year; affected by ice December 5 to February 25. Rating curve used October 1 to April 12 fairly well defined between 5 and 100 second-feet and well defined between 100 and 1,500 second-feet; curve used April 13 to July 24 well defined above 150 second-feet and fairly well defined below. Gage read twice weekly during winter. Recorder operated satisfactorily October 1 to November 15 and February 26 to July 4. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspecting recorder graph, except for period when stage-discharge relation was affected by ice, for which it was ascertained by means of discharge measurements, observer's notes, and weather records. Records good for October and March to July; fair for November; poor December to February.

Discharge measurements of Malheur River at Warm Springs reservoir site, near Riverside, Oreg., during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Dec. 13	A. W. Harrington	1.35	71	May 27	F. F. Henshaw	2.31	479
Mar. 1	William Kessler	1.65	206	27	do	2.30	477
Apr. 13	G. C. Baldwin	3.81	1,160	July 24	R. C. Briggs	.91	26.2
May 26	F. F. Henshaw	2.40	516				

Daily discharge, in second-feet, of Malheur River at Warm Springs reservoir site, near Riverside, Oreg., for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1	42	.....	111			254	254	795	455	140
2	41	.....	100			202	226	755	416	136
3	39	.....	89			190	230	755	396	133
4	48	.....	78			166	238	795	376	121
5	52	42				162	410	840	357	.....
6	55	42				170	670	840	338	.....
7	57	42		75		174	750	930	300	.....
8	59	44			35	162	670	1,040	300	.....
9	63	44	68			127	670	1,230	281	.....
10	63	42				150	750	1,160	300	.....
11	63	41				120	750	1,100	357	.....
12	66	41				127	1,300	1,040	376	.....
13	66	28				102	1,160	1,230	357	.....
14	66	28				127	795	1,300	319	.....
15	63	28				102	655	1,160	281	.....
16	61					94	495	1,160	262	.....
17	57					94	396	980	243	.....
18	57	30	75			91	357	840	243	.....
19	55					91	338	795	262	.....
20	55					114	416	675	262	.....
21	52	46			75	166	555	635	262	.....
22	52	46		35		178	715	555	262	.....
23	52	46				140	840	515	262	.....
24	55					270	930	515	235	26
25	55					890	1,040	555	224	.....
26	55	60	63		1,530	410	1,040	515	216	.....
27	57				590	270	1,160	475	209	.....
28	59				330	450	1,160	435	186	.....
29	59				.....	840	1,040	435	167	.....
30	58				.....	840	885	416	153	.....
31	55	.....			.....	430	.....	435	.....	.....

NOTE.—Discharge estimated Nov. 16–20, 24–30, Dec. 5–13, 14–22, 23–31, Jan. 1–12, Jan. 13 to Feb. 15, and Feb. 16–25.

Monthly discharge of Malheur River at Warm Springs reservoir site, near Riverside, Oreg., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	66	39	56.0	3,440
November	.....	.....	43.3	2,580
December	111	.....	70.5	4,330
January	.....	.....	50.5	3,110
February	1,530	.....	133	7,390
March	890	91	248	15,200
April	1,300	226	697	41,500
May	1,300	416	803	49,400
June	455	153	289	17,200
The period	.....	.....	.....	144,000

MALHEUR RIVER NEAR NAMORF, OREG.

LOCATION.—In sec. 2, T. 21 S., R. 40 E., at F. J. Froman's ranch, 1 mile south of east portal of tunnel No. 1 on Oregon & Eastern Railroad, 3 miles west of Namorf flag station, and 15 miles west of Harper post office, Malheur County. North Fork of Malheur River enters near Juntura, 20 miles above.

DRAINAGE AREA.—2,560 square miles (measured on Land Office map).

RECORDS AVAILABLE.—May 24, 1913, to September 30, 1917.

GAGE.—Inclined staff on right bank, 300 feet above Froman's house; read by F. J. Froman.

DISCHARGE MEASUREMENTS.—Low-stage measurements made by wading; medium and high stage measurements made from a flume about 400 feet above gage.

CHANNEL AND CONTROL.—Control, 400 feet below gage, consists of cobbles and coarse gravel; clean. Channel between riffle and gage and above gage is wide and current is sluggish. One channel at all stages at the gage. Stage of zero flow estimated August 30, 1915, at gage height 1.88 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.1 feet at 3 p. m. February 26 (discharge, 6,750 second-feet); river full of floating ice but probably no backwater at gage; minimum stage recorded, 2.30 feet August 22 to 30 (discharge, 16 second-feet).

1913–1917: Maximum stage, 10.7 feet February 6, 1916 (discharge indeterminate on account of ice jam); maximum stage recorded during open water, 9.1 feet February 7, 1916 during night (discharge, 8,450 second-feet); minimum discharge, 15 second-feet August 8 to 10, 1914 (gage height, 2.40 feet).

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

DIVERSIONS.—Many small diversions are made from the river and its branches above gage, the largest being near Drewsey and from North Fork near Juntura.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent except as affected by backwater from ice November 11 to 18, December 6 to 9, 16 to 19, and December 28 to February 4. Rating curve well defined between 50 and 4,000 second-feet. Gage read to quarter-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table except for periods when stage-discharge relation was affected by ice, for which it was ascertained by means of discharge measurements, observer's notes, and weather records. Open-water records good; winter records fair.

Discharge measurements of Malheur River near Namorf, Oreg., during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Dec. 14	A. W. Harrington	3.18	261
Mar. 2	William Kessler	3.17	251
2	....do	3.17	249

Daily discharge, in second-feet, of Malheur River near Namorf, Oreg., for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	78	132	178	132	235	359	617	1,520	786	282	23	18
2	78	132	170	132	212	258	476	1,360	786	258	20	20
3	78	132	170	132	191	282	476	1,300	742	235	25	25
4	78	132	212	132	212	268	510	1,300	698	212	23	25
5	78	132	258	170	307	249	1,190	1,360	658	204	23	23
6	78	132	212	212	307	258	2,430	1,300	543	191	20	20
7	99	132	151	212	307	249	2,020	1,520	476	170	20	20
8	116	132	170	191	307	249	1,760	1,640	476	170	25	20
9	116	151	151	170	307	162	1,300	1,890	543	151	20	18
10	116	151	162	170	317	178	1,300	1,890	543	132	23	20
11	116	132	204	162	307	191	2,290	1,890	580	99	20	20
12	116	99	170	132	282	191	2,860	1,760	617	86	20	18
13	116	99	170	116	258	178	2,290	1,760	617	78	20	20
14	116	99	187	99	268	191	1,890	2,150	543	73	20	25
15	116	99	125	86	268	212	1,520	2,020	510	69	20	27
16	116	99	132	69	268	221	1,080	1,890	476	63	20	37
17	116	99	116	69	282	170	786	1,760	476	57	20	40
18	116	99	132	53	307	151	786	1,520	476	57	23	45
19	116	116	158	63	333	170	786	1,300	510	63	25	45
20	116	106	170	73	333	235	786	1,640	543	63	23	45
21	116	106	140	99	307	249	880	1,520	543	63	20	45
22	116	116	132	132	258	297	1,190	1,080	510	63	16	45
23	116	178	132	132	282	268	1,760	980	476	53	16	50
24	116	99	132	170	307	307	1,890	930	446	50	16	73
25	116	204	132	170	415	1,760	1,890	880	415	50	16	73
26	125	191	132	170	4,410	880	2,020	880	387	50	16	73
27	125	178	132	212	1,080	476	2,150	880	359	40	16	69
28	125	178	132	258	580	1,520	1,890	833	333	37	16	73
29	125	170	132	307	.....	2,020	1,890	786	317	31	16	63
30	132	204	132	258	.....	2,290	1,640	786	307	25	16	53
31	132	.....	132	249	.....	1,300	.....	833	.....	23	18	.....

Monthly discharge of Malheur River near Namorf, Oreg., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	132	73	110	6,760
November	204	99	134	7,970
December	258	116	157	9,650
January	307	53	153	9,410
February	4,410	191	473	26,300
March	2,290	151	509	31,300
April	2,860	476	1,480	88,100
May	2,150	786	1,390	85,500
June	786	307	523	31,100
July	282	23	103	6,330
August	25	16	19.8	1,220
September	73	18	38.3	2,280
The year	4,410	16	423	306,000

BULLY CREEK AT WARM SPRINGS, NEAR VALE, OREG.

LOCATION.—In sec. 4, T. 18 S., R. 43 E., a quarter of a mile east of Warm Springs stage station on Vale-Westfall road, a quarter of a mile below mouth of Cottonwood Creek, and 14 miles west of Vale, Malheur County.

DRAINAGE AREA.—569 square miles (measured on Land office map).

RECORDS AVAILABLE.—August 11, 1903, to March 10, 1904; January 24, 1905, to March 31, 1907; January 1, 1911, to May 31, 1917, when station was discontinued. Records are also available for a station about 12 miles below from April 8, 1904, to December 31, 1905.

GAGE.—Two-section staff gage on left bank; upper section inclined, lower vertical; read by Walter Keele. Several gages have been in use at this station; they have been maintained at present datum since June, 1911, and probably since 1905.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Bed consists of coarse gravel; shifts during high stages. One channel at all stages. Stage-discharge relation seriously affected during summer by the heavy growth of aquatic plants in the channel.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.4 feet at 3 p. m. May 11 (discharge, 675 second-feet); minimum stage recorded, 0.85 foot October 1 to 3 (discharge, 4 second-feet).

1903–1917: Maximum stage recorded, 8.6 feet March 1, 1910 (discharge, estimated from extension of rating curve, 6,240 second-feet). Creek dry March 19 to 23, 1915, owing to water being held back by dam above; water standing in pools August 2 to September 15, 1911, and the discharge at gage during this and other periods probably zero.

ICE.—Stage-discharge relation seldom affected by ice since dam was built above station.

DIVERSIONS.—Numerous small ranch diversions are made both above and below the gage. The reservoir of the Vale-Oregon Irrigation Co. is about 3 miles above gage, but no diversions have yet been made into the company's canals.

REGULATION.—Flow regulated to a certain extent by dam of Vale-Oregon Irrigation Co. since early part of 1915, the effect apparently being to increase the natural summer flow by storage and gradual release of flood waters.

ACCURACY.—Stage-discharge relation remained practically permanent throughout year. Rating curve fairly well defined. Gage read to quarter-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good except for February, for which month they are uncertain because only one daily gage reading was obtained during the high water on the 25th and 26th, and for October and May, for which the use of the rating curve is doubtful.

Discharge measurements of Bully Creek at Warm Springs, near Vale, Oreg., during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Dec. 16	A. W. Harrington	0.92	5.7	Mar. 3	William Kessler	1.67	86
Mar. 3	William Kessler	1.76	99	Apr. 14	G. C. Baldwin	2.42	280

Daily discharge, in second-feet, of Bully Creek at Warm Springs, near Vale, Oreg., for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.
1	4.0	9.0	9.0	7.0	7.0	89	89	104
2	4.0	9.0	8.2	8.2	5.0	130	72	89
3	4.0	9.0	9.0	8.2	5.0	104	72	80
4	4.6	9.0	9.0	8.2	7.0	89	80	72
5	4.6	8.2	12	9.0	9.0	89	155	64
6	4.6	8.2	15	9.0	9.0	89	250	64
7	7.0	8.2	7.0	9.0	8.2	98	235	60
8	7.0	7.0	7.0	9.0	8.2	69	205	89
9	5.8	8.2	7.0	8.2	8.2	60	250	72
10	5.0	8.2	7.0	5.8	8.2	57	235	72
11	5.0	8.2	7.0	5.8	9.0	57	265	335
12	5.0	8.2	9.0	5.8	9.0	54	335	89
13	5.0	7.0	9.0	5.8	9.0	54	300	75
14	5.0	5.8	12	5.8	9.0	50	265	72
15	5.0	7.0	9.0	5.8	9.0	50	235	80
16	5.0	9.0	6.6	6.0	10	47	192	72
17	5.8	9.0	8.2	6.3	10	47	168	68
18	5.8	9.0	7.0	6.5	15	47	130	64
19	5.8	8.2	5.8	6.8	12	47	130	57
20	5.8	1.5	7.0	7.0	12	54	168	57
21	5.8	1.5	7.0	5.8	15	42	162	57
22	5.8	9.0	7.0	5.8	12	42	155	57
23	7.0	9.0	9.0	5.0	12	38	180	57
24	7.0	1.5	9.0	5.0	12	38	180	57
25	7.0	9.0	7.0	5.0	335	50	180	57
26	7.0	9.0	7.0	5.0	495	50	192	57
27	7.0	9.0	7.0	5.0	180	50	180	57
28	7.0	9.0	9.0	7.0	108	50	168	57
29	9.0	15	8.2	8.2	.....	89	142	57
30	9.0	9.0	8.2	9.0	.....	180	119	57
31	9.0	.....	8.2	8.2	.....	155	.....	57

Monthly discharge of Bully Creek at Warm Springs, near Vale, Oreg., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	9.0	4.0	5.95	366
November	15	5.8	9.28	552
December	15	6.6	8.30	510
January	9.0	5.0	6.85	421
February	495	5.0	48.1	2,670
March	180	38	69.8	4,290
April	335	72	183	10,900
May	335	57	76.2	4,690
The period	.....	.....	.....	24,400

NORTH FORK OF PAYETTE RIVER AT LARDO, IDAHO.

LOCATION.—In sec. 8, T. 18 N., R. 3 E., a quarter of a mile below Lardo, Boise County, and outlet of Big Payette Lake. No tributaries enter between lake and gage.

DRAINAGE AREA.—131 square miles (measured on topographic and Land Office maps).

RECORDS AVAILABLE.—September 1, 1908, to June 30, 1917, when station was discontinued.

GAGE.—Inclined staff on left bank installed July 25, 1911; read by Neal Boydstun. Original temporary gage (used Sept. 1 to Oct. 8, 1908) was about 1 mile below site of present gage; permanent vertical staff gage (used until July 25, 1911) was installed October 14, 1908, on left bank about 30 feet below present site. Gage datum unchanged since October 14, 1908.

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

CHANNEL AND CONTROL.—Bed of stream and control consists of cobbles and gravel; slightly shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.6 feet June 20 (discharge, 2,980 second-feet); minimum stage recorded, 1.60 feet November 22–28 (discharge, 21 second-feet).

1908–1917: Maximum stage recorded, 7.5 feet June 5, 1909 (discharge, 4,250 second-feet); minimum stage recorded, 1.1 feet October 21 and 22, 1911 (discharge, 3 second-feet).

ICE.—Stage-discharge relation affected by ice, presumably because of the proximity of the station to Big Payette Lake.

DIVERSIONS.—None above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent during year. Rating curve is based on measurements during 1919 and shape of previous curves, and is well defined. Gage read to hundredths once daily for low stages and to half-tenths and tenths for medium and high stages. Daily discharge ascertained by applying daily gage height to rating table. Records fair, chiefly because no measurements were made during year.

Daily discharge, in second-feet, of North Fork of Payette River at Lardo, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
1	50	30	24	40	42	58	58	78	1,680
2	47	30	27	40	42	58	58	86	1,590
3	47	30	27	40	42	58	58	86	1,510
4	44	30	27	40	42	58	58	86	1,420
5	44	30	27	40	42	58	58	94	1,340
6	44	28	28	40	42	58	58	94	1,340
7	42	28	28	40	42	58	58	112	1,340
8	42	28	30	40	42	58	58	132	1,510
9	42	28	30	42	42	58	58	155	1,680
10	42	28	30	42	42	58	58	196	1,950
11	42	27	33	44	42	58	58	259	2,040
12	40	27	33	44	42	58	58	351	2,040
13	40	27	34	44	42	58	58	532	1,950
14	40	26	34	44	42	58	58	761	1,860
15	38	26	36	47	42	58	58	962	2,040
16	38	26	36	47	42	58	58	1,110	2,410
17	38	24	36	47	42	58	58	1,070	2,690
18	38	24	38	47	42	58	58	1,070	2,780
19	36	22	38	47	44	58	58	1,030	2,880
20	36	22	38	47	44	58	58	1,030	2,980
21	36	22	38	44	44	52	58	962	2,880
22	34	21	40	44	47	52	58	1,030	2,780
23	34	21	40	44	50	52	64	1,180	2,690
24	34	21	40	44	52	52	64	1,340	2,600
25	33	21	40	44	52	52	71	1,510	2,500
26	33	21	40	44	52	52	71	1,680	2,410
27	33	21	40	44	54	52	78	1,770	2,320
28	33	21	40	44	58	58	78	1,860	2,220
29	33	22	40	44	.....	58	78	1,770	2,130
30	30	22	40	42	.....	58	78	1,680	2,040
31	30	.....	40	42	.....	58	.....	1,680	.....

Monthly discharge of North Fork of Payette River at Lardo, Idaho, for the year ending Sept. 30, 1917.

[Drainage area, 131 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Inches.	Acre-feet.
October	50	30	38.5	0.294	0.34	2,370
November	30	21	25.1	.192	.21	1,490
December	40	24	34.6	.264	.30	2,130
January	47	40	43.3	.331	.38	2,660
February	58	42	44.8	.342	.36	2,490
March	58	52	56.6	.432	.50	3,480
April	78	58	61.9	.472	.53	3,680
May	1,860	78	831	6.34	7.31	51,100
June	2,980	1,340	2,120	16.2	18.1	126,000
The period						195,000

SOUTH FORK OF BURNT RIVER AT HARDMAN RANCH, NEAR UNITY, OREG.

LOCATION.—In NW. ¼ sec. 27, T. 13 S., R. 36 E., at ranch of J. R. Hardman, 8 miles southwest of Unity, Baker County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 13, 1916, to September 30, 1917.

GAGE.—Vertical staff on upstream end of right abutment of private wagon bridge; read by O. M. Hardman.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Gravel; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.7 feet May 15 (discharge, 83 second-feet); minimum stage recorded, 0.70 foot October 1 to 13 (discharge, 15 second-feet).

1916–1917: Maximum and minimum stages occurred in 1917.

ICE.—Stage-discharge relation never affected by ice.

DIVERSIONS.—The Eldorado ditch diverts water from most of the tributaries of South Fork above station and carries it over Beam Creek divide into Willow Creek where it is used for irrigation. This ditch carried water during the spring until about July 1 but obtained most of its supply from streams which enter the river below the gaging station. The Fleetwood or Lancaster ditch diverts about 7 second-feet past the gage during irrigation season.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined between 14 and 50 second-feet. Gage read to quarter-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

The following discharge measurement was made by R. C. Briggs:

July 30, 1917: Gage height, 0.82 foot; discharge, 21 second-feet.

Daily discharge, in second-feet, of South Fork of Burnt River at Hardman ranch, near Unity, Oreg., for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	15	18	23	23	23	23	23	50	54	32	19	19
2	15	18	23	23	23	23	23	46	52	29	18	19
3	15	18	23	23	23	23	26	46	52	29	18	19
4	15	18	23	23	23	23	26	50	50	29	18	19
5	15	18	23	23	23	23	28	50	50	29	18	20
6	15	18	23	23	23	23	28	50	49	29	18	20
7	15	18	23	23	23	23	28	52	50	29	18	20
8	15	18	23	23	23	23	28	58	60	29	19	20
9	15	18	23	23	23	23	28	64	58	28	18	20
10	15	16	23	23	23	23	29	66	58	26	18	18
11	15	16	23	23	23	23	29	72	58	24	19	18
12	15	16	23	22	23	23	29	74	50	24	18	18
13	15	17	23	22	23	23	29	74	50	22	18	19
14	18	17	23	22	23	23	29	78	50	20	18	19
15	18	17	23	22	23	23	29	83	50	19	18	18
16	18	18	23	22	23	23	29	76	50	19	18	18
17	18	18	23	22	23	23	29	66	50	19	18	18
18	18	18	23	22	23	23	29	58	50	23	18	20
19	18	19	23	22	23	23	29	54	50	18	18	19
20	17	22	23	22	23	23	28	54	50	18	18	19
21	17	20	23	22	23	23	29	54	50	18	18	19
22	16	20	23	22	23	23	36	52	50	18	17	20
23	16	23	23	22	23	23	40	50	50	18	17	20
24	16	23	23	22	23	23	43	50	50	19	17	20
25	17	23	23	28	23	23	50	58	50	19	18	20
26	18	23	23	23	23	23	56	58	49	18	18	20
27	18	23	23	23	23	23	56	56	44	18	18	20
28	18	23	23	23	23	23	54	58	43	18	18	20
29	18	23	23	23	.....	23	50	66	36	18	18	20
30	18	23	23	23	.....	23	50	60	36	18	18	20
31	18	.....	23	23	.....	23	.....	56	.....	19	19	.....

Monthly discharge of South Fork of Burnt River at Hardman ranch, near Unity, Oreg., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	18	15	16.5	1,010
November	23	16	19.3	1,150
December	23	23	23.0	1,410
January	23	22	22.6	1,390
February	23	23	23.0	1,280
March	23	23	23.0	1,410
April	56	23	34.0	2,020
May	83	46	59.3	3,650
June	58	36	50.0	2,980
July	32	18	22.5	1,380
August	19	17	18.0	1,110
September	20	18	19.3	1,150
The year	83	15	275	19,900

SALMON RIVER AT WHITEBIRD, IDAHO.

LOCATION.—In sec. 22, T. 28 N., R. 1 E., at Canfield ferry at Whitebird, Idaho County, just below Whitebird Creek and below all important tributaries.

DRAINAGE AREA.—13,600 square miles (measured on General Land Office map, edition of 1909).

RECORDS AVAILABLE.—August 18, 1910, to September 30, 1917, when station was discontinued.

GAGE.—Inclined staff in two sections on left bank beneath ferry cable; installed October 4, 1915; read by M. C. and R. E. Shuck. Temporary gage used December 31, 1916, January 1, 2, and 15–20, 1917, when stage was below gage on left bank. Gage used prior to October 4, 1915, consisted of low-water section on right bank at ferry landing and high-water section on left bank 75 feet below cable, at same datum.

DISCHARGE MEASUREMENTS.—Made from ferry cable.

CHANNEL AND CONTROL.—Channel straight for a quarter of a mile below gage, but slightly curved immediately above; one channel at all stages. Banks not subject to overflow. Control composed of large boulders 1,000 feet below gage; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 18.6 feet June 18 and 19 (discharge, 77,000 second-feet); minimum stage on November 15 when water was below gage, estimated at 0.8 foot (discharge, 2,500 second-feet).

1910–1917: Maximum stage recorded, 20.05 feet at 6 p. m. June 19, 1916 (discharge, 85,100 second-feet); minimum stage recorded on November 15, 1916.

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

DIVERSIONS.—Amount of water diverted for irrigation above station inconsiderable.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent; not affected by ice during year. Rating curve well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records excellent.

Discharge measurements of Salmon River at Whitebird, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 26	J. E. Stewart	2.64	4,840	May 20	C. G. Paulsen	9.37	27,700
May 19–20	C. G. Paulsen	9.47	27,400	21	do	9.34	27,800

Daily discharge, in second-feet, of Salmon River at Whitebird, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	4,880	4,880	4,100	3,100	3,690	3,960	5,240	10,100	41,800	53,600	9,800	4,880
2	4,880	4,720	4,250	3,320	3,440	3,820	4,720	9,500	38,700	52,500	9,500	4,720
3	5,060	4,720	4,560	3,820	3,440	3,960	4,560	8,900	36,200	51,400	8,900	4,720
4	5,060	4,720	4,720	4,100	3,560	3,820	4,400	8,340	33,700	50,300	8,900	4,720
5	5,060	5,060	4,720	4,400	3,820	3,820	4,560	8,620	30,800	48,200	8,620	4,560
6	5,060	4,880	4,560	4,400	3,960	3,960	5,060	8,900	28,400	47,600	8,340	4,560
7	5,240	4,720	4,400	4,560	4,100	4,100	5,620	10,100	29,800	45,500	8,060	4,560
8	5,420	4,720	4,100	4,400	4,100	3,960	5,820	13,400	35,200	43,900	7,780	4,400
9	5,420	4,720	3,820	4,250	3,960	3,960	6,040	16,600	43,900	42,900	7,780	4,400
10	5,240	4,720	3,560	4,250	3,820	3,960	6,260	18,500	51,400	41,300	7,260	4,400
11	5,240	4,560	3,960	4,100	3,820	3,960	6,740	21,000	53,600	36,700	7,000	4,560
12	5,240	4,250	3,960	4,100	3,820	3,960	7,260	21,400	47,100	33,700	6,740	4,720
13	5,240	3,320	4,250	3,820	3,960	3,820	7,780	28,000	41,800	30,300	6,740	4,720
14	5,240	2,790	4,400	3,560	3,960	3,820	7,520	33,700	40,800	28,000	6,500	4,720
15	5,240	2 500	4,100	3,100	3,960	3,820	7,260	40,800	44,900	26,100	6,260	4,880
16	5,060	3,560	3,820	2,790	3,820	3,960	6,740	44,900	60,800	28,000	6,260	4,880
17	5,060	3,960	3,560	2,690	3,820	3,960	6,040	36,700	71,400	21,800	6,260	4,720
18	5,060	3,960	4,100	2,690	3,960	3,820	5,820	32,200	77,000	20,500	6,040	4,560
19	5,060	4,560	4,400	2,890	3,820	3,820	5,620	28,400	77,000	19,300	6,040	4,400
20	5,060	4,720	4,720	3,100	3,820	3,960	5,820	28,000	74,800	18,500	6,040	4,400
21	4,880	4,560	4,560	3,320	3,820	3,960	6,260	28,000	73,700	17,400	5,820	4,400
22	4,880	4,250	4,400	3,440	3,820	4,100	7,780	28,400	72,500	16,200	5,820	4,400
23	4,880	4,250	4,400	3,690	3,820	4,100	9,200	29,400	70,300	15,100	5,620	4,880
24	4,720	4,400	4,100	3,820	3,820	4,100	11,000	32,700	68,100	14,100	5,420	5,820
25	4,720	4,400	3,960	3,820	4,100	4,100	12,000	36,700	66,900	13,400	5,240	6,040
26	4,720	4,250	3,820	3,960	4,400	4,100	13,400	39,700	65,800	12,700	5,240	5,620
27	4,720	4,400	3,320	4,100	4,250	3,960	15,100	42,900	63,000	12,000	5,060	5,420
28	4,880	4,560	3,320	4,100	4,400	3,820	14,100	43,400	61,300	11,400	4,880	5,060
29	4,880	4,560	3,100	4,100	.....	4,250	12,000	47,600	62,500	10,700	4,880	4,880
30	4,880	4,400	2,750	3,960	.....	5,620	11,000	50,900	56,900	10,400	5,060	4,720
31	4,880	.....	3,100	3,820	.....	6,040	.....	46,000	.....	10,100	4,880	.....

NOTE.—Water below gage Nov. 14, 15, Dec. 30, 31, Jan. 1, 2, and 15–20; observer estimated gage height on Nov. 14 and 15, read old gage on right bank on Dec. 30 and read a temporary gage, which was later referred to correct datum, Dec. 31, Jan. 1, 2, and 15–20.

Monthly discharge of Salmon River at Whitebird, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	5,420	4,720	5,030	309,000
November	5,060	2,500	4,340	258,000
December	4,720	2,750	4,030	248,000
January	4,560	2,690	3,730	229,000
February	4,400	3,440	3,900	217,000
March	6,040	3,820	4,080	251,000
April	15,100	4,400	7,690	458,000
May	50,900	8,340	27,600	1,700,000
June	77,000	28,400	54,000	3,210,000
July	53,600	10,100	28,500	1,750,000
August	9,800	4,880	6,670	410,000
September	6,040	4,400	4,790	285,000
The year	77,000	2,500	12,900	9,320,000

TUCANNON RIVER NEAR STARBUCK, WASH.

LOCATION.—In sec. 23, T. 12 N., R. 38 E., half a mile below Pataha Creek and 6 miles east of Starbuck, Columbia County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—November 8, 1914, to September 30, 1917, when station was discontinued.

GAGE.—Inclined staff in two sections on left bank; read by Wesley and Oswald Martin.

DISCHARGE MEASUREMENTS.—Made by wading near gage or from bridge 1 mile below gage.

CHANNEL AND CONTROL.—Bed composed of solid rock. Channel straight for 100 feet above and below gage. Banks of light soil; wooded; left bank high; overflows right bank at gage height 5.5 feet. Control is vertical drop of 2 feet over solid rock, 100 feet below gage. Stage-discharge relation affected by cutting low bank at bend at control and by building diversion dam below gage. Stage of zero flow, according to measurements made September 28, 1915, gage height 0.60 ± 0.1 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.50 feet at 4 p. m. May 14 (discharge, 1,940 second-feet); minimum discharge, 58 second-feet September 2 and 9.

1914–1917: Maximum stage recorded, 8.5 feet at 7 p. m. February 10, 1916 (discharge, 5,740 second-feet); minimum stage recorded, 1.60 feet August 24–31, 1915 (discharge, 39 second-feet).

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

DIVERSIONS.—Many small irrigation ditches divert water above gage; amount diverted probably 10 per cent of usual flow during July and August. A large part of the diverted water seeps back to river above gage.

REGULATION.—None.

ACCURACY.—Stage-discharge relation affected by logs and varying amount of débris on control October 1 to November 23; affected by ice November 12–19, December 26 to January 1, and January 14–23; changed at medium high water April 26; affected by building of log and brush diversion dam below gage on or about July 27. Rating curve used prior to change on April 26 well defined between 100 and 1,500 second-feet; curves used April 26 to July 26 and September 1–30 fairly well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating tables, except for period when stage-discharge relation was affected by ice for which it was ascertained by means of observer's notes and weather records. Shifting-control method used October 1 to November 23. Discharge for July 27–31 and monthly mean discharge for August, when stage-discharge relation was affected by varying amount of backwater from diversion dam, estimated by hydrographic comparison with flow of Mill Creek near Walla Walla. Records good except for periods noted when stage discharge was affected by backwater from ice or varying amount of débris on control.

Discharge measurements of Tucannon River near Starbuck, Wash., during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 10	G. L. Parker	2.13	70.9	June 29	John McCombs	2.56	313
Mar. 10	C. G. Paulsen	2.18	141	July 2	.....do	2.43	263
Apr. 9	John McCombs	3.49	802	Sept. 13	C. G. Paulsen	2.06	70.8

Daily discharge, in second-feet, of Tucannon River near Starbuck, Wash., for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Sept.
1	78	118	149	160	180	126	270	740	1,020	288	63
2	82	118	146	168	290	129	270	665	900	268	58
3	84	122	156	174	565	131	270	628	900	247	68
4	84	124	161	191	360	144	270	590	780	247	70
5	84	131	161	232	290	270	310	628	590	247	61
6	81	135	163	204	218	204	670	590	555	236	63
7	76	149	168	191	232	174	785	665	590	219	67
8	75	135	154	180	214	161	1,110	1,340	665	212	63
9	68	129	154	168	197	144	860	1,160	740	200	58
10	70	129	149	168	191	146	785	1,250	900	185	65
11	72	131	149	156	168	142	635	1,440	900	179	67
12	72	.....	156	158	211	133	600	1,340	740	166	65
13	72	.....	232	154	191	137	530	1,540	665	161	70
14	72	.....	197	.....	177	140	565	1,840	590	156	78
15	74	110	156	.....	171	133	460	1,640	520	154	68
16	74	.....	158	.....	174	126	425	1,340	520	147	63
17	78	.....	158	.....	197	129	360	980	555	140	68
18	78	.....	171	120	188	158	310	940	555	138	69
19	81	.....	163	.....	180	129	270	820	520	131	68
20	84	116	168	.....	168	133	270	820	485	125	69
21	89	120	174	.....	168	140	270	780	450	114	65
22	91	118	177	.....	158	135	270	740	420	110	74
23	94	118	168	.....	154	122	785	665	389	112	87
24	94	120	168	126	144	600	1,110	702	389	108	122
25	96	122	177	140	135	335	1,390	740	362	108	112
26	96	140	.....	218	135	204	1,690	740	335	108	120
27	101	154	.....	166	126	600	1,440	740	335	.....	109
28	107	251	120	425	129	392	1,120	740	335	.....	120
29	105	218	.....	135	.....	310	1,070	1,160	312	95	94
30	112	156	.....	135	.....	290	860	1,440	288	.....	86
31	116	.....	.....	166	.....	270	.....	1,160	.....	.....	.....

Monthly discharge of Tucannon River near Starbuck, Wash., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	116	68	85.2	5,240
November	251	.....	131	7,800
December	232	.....	157	9,650
January	425	.....	162	9,960
February	565	126	204	11,300
March	600	122	206	12,700
April	1,690	270	668	39,700
May	1,840	590	986	60,600
June	1,020	288	577	34,300
July	288	.....	161	9,900
August	.....	.....	70.0	4,300
September	122	58	77.0	4,580
The year	1,840	58	290	210,000

NOTE.—Mean discharge for August estimated by hydrographic comparison with flow of Mill Creek near Walla Walla.

PALOUSE RIVER NEAR POTLATCH, IDAHO.

LOCATION.—A quarter of a mile above Kennedy Ford, three-quarters of a mile below Deep Creek, and 3½ miles below Potlatch, in Latah County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 24, 1914, to September 30, 1917.

GAGE.—Stevens continuous water-stage recorder on right bank.

DISCHARGE MEASUREMENTS.—Made from bridge three-fourths mile below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of boulders and solid rock; practically permanent. At extremely high stages water flows around gage on right bank.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 12.26 feet at 4 p. m. April 24 (discharge, 3,670 second-feet); minimum stage recorded, 0.13 foot at 7 a. m. August 21 (discharge, 1.7 second-feet).

1914–1917: Maximum stage recorded, 13.98 feet at 9.15 a. m. March 21, 1916 (discharge, 5,090 second-feet); minimum stage recorded, 0.02 foot at 3 a. m. December 21, 1914 (discharge, about 1 second-foot).

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

DIVERSIONS.—None.

REGULATION.—Flow affected by regulation of Potlatch Lumber Co.'s reservoir, 5 miles above station.

ACCURACY.—Stage-discharge relation practically permanent; affected by ice December 25 to January 7, January 12 to 25, and January 30 to February 1. Rating curve well defined. Operation of water-stage recorder satisfactory except November 6–9 and November 28 to December 23. Daily discharge ascertained by use of discharge integrator, except for periods indicated in footnote to daily-discharge table. Records excellent except for extremely low water, and periods during which recorder was not operating, or stage-discharge relation was affected by ice.

Discharge measurements of Palouse River near Potlatch, Idaho, during the year ending Sept. 30, 1917.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Dec. 15	C. G. Paulsen	0.80	27.7	May 14	C. G. Paulsen	10.01	2,450
Mar. 19	do	.84	33.0	Sept. 28	John McCombs	.66	19.4

Daily discharge, in second-feet, of Palouse River near Potlatch, Idaho, for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	16	11			56	66	341	1,780	746	67	17	5.4
2	15	13	53		58	67	299	1,650	707	57	15	9.3
3	14	15			65	66	313	1,550	697	59	17	4.4
4	15	15	60		106	54	514	1,560	685	61	15	4.4
5	15	16		25	185	59	1,270	1,430	585	54	21	6.0
6	14		47		128	56	1,780	1,350	552	51	11	5.4
7	13	20			42	58	2,100	1,700	510	53	14	7.0
8	15			25	52	53	3,040	1,910	490	54	16	4.4
9	13			41	55	54	3,110	2,580	458	32	13	4.6
10	14	22	34	45	82	50	2,680	2,730	412	27	14	6.4
11	14	15		34	129	53	3,110	2,730	386	16	13	7.1
12	14	44	31		183	45	2,940	2,880	348	17	12	5.8
13	14	32			103	44	2,540	2,830	298	21	11	4.0
14	14	33			103	44	2,400	2,440	217	20	10	8.3
15	15	18	28	27	78	42	1,970	2,310	231	23	9.3	7.0
16	13	16	27		118	46	1,450	2,270	250	18	11	7.4
17	14	17	26		118	41	1,110	1,600	215	22	7.7	9.6
18	16	15			124	42	1,040	1,090	215	25	9.8	7.4
19	12	21			134	40	1,030	943	196	28	10	8.4
20	13	14	28		149	45	1,220	1,080	190	30	8.2	6.9
21	14	16		28	117	42	2,070	1,120	180	21	6.0	9.3
22	13	15			87	43	2,780	1,030	165	20	6.0	5.4
23	12	16			67	48	3,170	993	89	19	7.7	14
24	15	15	30		64	72	3,630	1,180	74	19	8.8	6.4
25	12	19			87	134	3,170	1,560	119	18	7.3	11
26	13	28		47	120	183	2,990	1,490	103	20	7.2	11
27	14	39	25	53	68	321	2,780	1,760	98	17	5.6	14
28	13			51	50	398	2,680	1,890	86	17	7.8	14
29	15	46		52	.....	533	2,360	1,550	85	19	3.6	18
30	13			52	.....	487	2,060	1,230	65	16	7.7	16
31	11	.....		52	.....	434	.....	944	.....	20	5.0	.....

NOTE.—Operation of water-stage recorder Nov. 6–9 and Nov. 28 to Dec. 23 not satisfactory; discharge estimated from occasional gage readings and study of weather records. Stage-discharge relation affected by ice Dec. 25 to Jan. 7, Jan. 12 to 25, and Jan. 30 to Feb. 1; discharge estimated from observer's notes and weather records.

Monthly discharge of Palouse River near Potlatch, Idaho, for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	16	11	13.8	848
November	.....	11	22.8	1,360
December	.....	.....	34.4	2,120
January	53	.....	34.9	2,150
February	185	42	97.4	5,410
March	533	40	120	7,380
April	3,630	299	2,060	123,000
May	2,880	944	1,710	105,000
June	746	65	315	18,700
July	67	16	30.4	1,870
August	21	3.6	10.6	652
September	18	4.0	8.28	493
The year	3,630	3.6	372	269,000

PALOUSE RIVER NEAR WINONA, WASH.

LOCATION.—In sec. 5, T. 16 N., R. 39 E., 1,000 feet below Rock Creek, 7 miles southwest of Winona, in Whitman County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—December 16, 1914, to September 30, 1917, when station was discontinued.

GAGE.—Inclined staff on right bank; installed November 30, 1915; read by Theodore McDougall. Prior to November 30, 1915, inclined and vertical staff on right bank about 200 feet below Rock Creek.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.[2]

CHANNEL AND CONTROL.—Bed composed of gravel; shifting. Right bank high; left bank subject to overflow at high stages. Stage of zero flow, according to measurements made October 8, 1917, gage height 0.60 foot ±0.02 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 12.9 feet from high-water mark, between 5. p. m. April 8 and 5 p. m. April 9 (discharge, 11,800 second-feet); minimum stage recorded, 1.43 feet September 27 (discharge, 14 second-feet).

1914–1917: Maximum stage occurred in 1917; minimum stage recorded, 0.48 foot September 27, 1915 (discharge, 9 second-feet).

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

DIVERSIONS.—Several irrigation ditches divert water above gage; though individually small they probably take in the aggregate a large proportion of the extreme low-water flow.

REGULATION.—Flow slightly regulated by splash dams in Idaho.

ACCURACY.—Stage-discharge relation changed during high water February 6; not affected by ice. Rating curve used prior to change well defined; curve used after change well defined below and fairly well defined above 1,500 second-feet. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table, except for days of no gage reading for which it was interpolated. Records good.

Discharge measurements of Palouse River near Winona, Wash., during the period Oct. 1, 1916, to Oct. 8, 1917.

[Made by John McCombs.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Feb. 21	4.70	985	Apr. 11	9.92	6,000
22	4.46	840	June 27	2.97	210
22	4.49	879	Oct. 8	1.55	21.1

[2] For measurements of discharge of Rock Creek at mouth and of Palouse River above mouth of Rock Creek see miscellaneous measurements, p. 164.

Daily discharge, in second-feet, of Palouse River near Winona, Wash., for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	44	49	154	92	226	465	3,450	2,870	1,470	154	48	24
2	44	51	129	99	226	420	3,150	2,870	1,160	137	45	24
3	44	59	121	106	562	420	3,250	2,510	1,160	129	44	23
4	42	52	675	106	725	465	3,350	2,350	1,040	121	44	22
5	49	44	454	192	1,660	442	5,230	2,270	1,040	118	44	21
6	40	56	213	236	2,600	442	5,970	2,110	930	114	41	22
7	40	54	137	192	2,430	465	5,810	1,960	820	114	40	23
8	43	54	106	213	2,350	510	7,330	2,350	820	106	42	24
9	36	56	137	348	2,110	510	10,500	2,510	765	106	38	21
10	36	57	121	364	1,470	510	7,330	3,150	765	99	38	20
11	31	55	129	348	1,400	465	5,970	3,150	660	99	37	19
12	28	52	121	317	1,280	465	6,610	3,150	635	92	38	21
13	33	61	121	261	1,160	488	5,650	3,550	560	86	36	24
14	40	59	121	202	1,040	488	4,810	3,350	465	80	31	24
15	33	57	114	182	1,100	465	5,370	2,960	465	64	34	22
16	49	57	114	154	1,160	510	5,090	2,780	360	64	34	22
17	41	56	114	146	2,270	560	3,850	2,780	360	64	36	23
18	28	54	121	121	1,820	765	3,050	2,430	340	63	35	22
19	35	59	129	121	1,340	710	2,780	1,820	290	59	31	20
20	33	49	114	121	1,100	710	2,780	1,470	290	60	30	18
21	40	55	106	114	985	710	3,550	1,540	275	58	28	18
22	39	59	137	114	875	560	3,850	1,540	275	57	28	17
23	43	59	121	114	820	875	3,970	1,470	275	55	27	17
24	40	51	114	121	660	2,510	4,810	1,820	245	59	25	16
25	39	59	114	985	585	2,870	4,950	2,030	194	59	28	16
26	36	69	80	675	560	2,600	4,450	2,270	146	60	27	16
27	36	141	64	630	535	2,780	4,450	1,960	206	59	28	14
28	34	213	69	775	535	4,810	3,970	2,030	146	56	25	15
29	31	317	92	454	.....	4,950	3,750	2,270	129	49	25	17
30	35	213	92	348	.....	3,850	3,250	1,960	137	47	24	18
31	34	.....	92	261	.....	3,550	.....	1,610	.....	46	25	.....

NOTE.—Gage not read Nov. 27, Feb. 5, and July 5; discharge interpolated.

Monthly discharge of Palouse River near Winona, Wash., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	49	28	37.9	2,330
November	317	44	77.6	4,620
December	675	64	146	8,980
January	985	92	275	16,900
February	2,600	226	1,200	66,600
March	4,950	420	1,300	79,900
April	10,500	2,780	4,740	282,000
May	3,550	1,470	2,350	144,000
June	1,470	129	547	32,500
July	154	46	81.7	5,020
August	48	24	34.1	2,100
September	24	14	20.1	1,200
The year	10,500	14	894	646,000

ROCK CREEK NEAR EWAN, WASH.[3]

LOCATION.—In sec. 13, T. 19 N., R. 40 E., at county bridge 200 feet below outlet of Rock Lake and 1½ miles north of Ewan, in Whitman County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 15, 1903, to September 30, 1905 (published as "Rock Creek near St. John, Wash."); March 30, 1914, to September 30, 1917, when station was discontinued.

GAGE.—Vertical staff on downstream caisson of second bridge pier from left bank; read by Herbert and Elizabeth Babcock. Gage used from October 15, 1903, to September 30, 1905, was vertical staff on fifth pile bent of left approach to bridge at outlet of Rock Lake, at different datum.

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

CHANNEL AND CONTROL.—Bed of stream composed of solid rock covered with sharp volcanic débris. Right bank high; left bank low and subject to overflow at gage height 5.0 feet, when stream flows in two channels. Control for stages up to gage height 2 feet is rock riffle 100 feet below gage; for stages above 2 feet it is unfinished earth and loose rock dam half a mile below gage; low-water control permanent; high-water control changeable. Stage of zero flow, according to measurements made October 29, 1914, gage height 0.35±0.05 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.95 feet March 29 (discharge, 1,450 second-feet); minimum stage recorded, 0.68 foot September 30 (discharge, 2.7 second-feet).

1903–1905 and 1914–1917: Maximum stage recorded, 15.60 feet March 9, 1904 (discharge, 1,980 second-feet); minimum stage recorded, 10.00 feet September 23 to October 25, 1904, 9.76 feet September 24–30, 1905; 0.30 foot September 4–9, 1914; 0.20 foot September 10–30, 1914; and 0.30 foot October 1–17, 1914 (discharge during these periods practically zero).

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

DIVERSIONS.—None.

REGULATION.—Gates in low dam at outlet of Rock Lake are seldom changed.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Rock Creek near Ewan, Wash., during the year ending Sept. 30, 1917.

[Made by John McCombs.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Feb. 19	3.72	384	June 27	1.30	35.0
Apr. 5	5.80	975	July 2	1.25	31.8

[3] For discharge of Rock Creek at mouth see miscellaneous measurements, p. 164.

Daily discharge, in second-feet, of Rock Creek near Ewan, Wash., for the year ending Sept. 30, 1917.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	12.6	8.0	28	26	40	185	1,050	230	150	32	20	9.1
2	12.2	8.0	28	27	45	171	905	215	150	30	19	8.8
3	11.8	8.0	28	28	66	157	835	185	144	31	18	8.8
4	11.8	8.4	28	29	56	144	870	185	144	32	18	8.4
5	10.8	8.8	28	29	92	138	1,050	185	144	33	18	8.4
6	10.0	9.1	29	30	275	118	1,170	185	131	34	18	8.0
7	9.5	9.5	29	30	620	105	1,050	185	131	34	17	8.0
8	9.1	9.5	29	30	680	118	1,050	171	131	34	16	8.0
9	9.1	10.0	29	30	650	105	1,210	171	131	33	16	7.6
10	9.1	10.4	29	30	595	105	1,090	171	124	31	16	7.6
11	8.8	10.8	29	31	545	105	975	164	124	31	16	7.6
12	8.8	11.3	29	32	495	105	975	164	118	30	15	7.3
13	8.8	11.8	30	33	450	105	800	164	112	30	14	6.9
14	8.8	8 0	30	33	450	105	740	164	98	30	14	6.9
15	8.8	8.0	30	33	410	105	710	157	92	30	14	6.5
16	8.8	7.6	29	34	410	105	680	157	80	29	14	6.2
17	8.4	7.6	28	34	410	105	650	157	80	29	13.6	5.8
18	8.0	7.6	28	34	410	118	595	157	66	28	13.6	5.8
19	8.0	7.6	27	34	390	131	495	157	55	27	13.1	5.5
20	8.0	7.6	27	34	370	157	430	157	45	26	13.1	5.2
21	7.6	7.3	27	34	350	171	430	157	44	25	12.6	5.0
22	7.6	7.3	26	34	330	185	430	157	42	25	12.6	4.7
23	7.6	7.3	26	34	290	595	390	157	38	25	12.2	4.4
24	7.6	9.1	18	34	260	680	370	157	35	24	12.2	4.1
25	7.3	9.5	20	34	245	770	330	157	35	24	11.8	3.8
26	7.3	11.8	20	34	230	940	310	157	35	23	11.3	3.6
27	7.3	12.6	20	34	230	1,130	290	150	35	22	11.3	3.3
28	7.3	14	20	34	200	1,290	275	150	35	22	10.8	3.0
29	7.6	19	20	35	.....	1,450	260	150	34	22	10.4	2.8
30	7.6	26	21	37	.....	1,410	245	150	34	21	10.0	2.7
31	7.6	.....	22	39	.....	1,210	.....	150	.....	20	9.5	.....

Monthly discharge of Rock Creek near Ewan, Wash., for the year ending Sept. 30, 1917.

Month.	Discharge in second-feet.			Run-off in acre feet.
	Maximum.	Minimum.	Mean.	
October	12.6	7.3	8.83	543
November	26	7.3	10.0	595
December	30	18	26.2	1,610
January	39	26	32.4	1,990
February	680	40	343	19,000
March	1,450	105	397	24,400
April	1,210	245	689	41,000
May	230	150	167	10,300
June	150	34	87.2	5,190
July	34	20	28.0	1,720
August	20	9.5	14.2	873
September	9.1	2.7	6.13	365
The year	1,450	2.7	148	108,000

MISCELLANEOUS DISCHARGE MEASUREMENTS.

Discharge measurements of streams in the Snake River basin at points other than regular gaging stations, made during the year ending September 30, 1917, are listed in the following table:

Miscellaneous discharge measurements in Snake River drainage basin during the year ending Sept. 30, 1917.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
Sept. 24	Snake River	Columbia River	1 mile above mouth of Flat Creek near Cheney, Wyo.		1,630
July 17	Spring Creek	Snake River	NW. ¼ sec. 9, T. 44 N., R 114 W., at Wolff's ranch 3¾ miles south of Elk post office, Wyo.		6.8
Aug. 5	do	do	do		6.6
8	do	do	do		7.7
22	do	do	do		3.6
29	do	do	do		2.9
July 22	do	do	NE ¼ sec. 24, T. 44 N., R 115 W., at mouth, 1½ miles southeast of Cunningham's ranch, and 8 miles southwest of Elk, Wyo.	2.35	12.2
Aug. 8	do	do	do	2.90	15.9
Sept. 13	do	do	do		3.9
July 5	Ditch Creek	do	Sec. 30, T. 43 N., R. 115 W., ½ mile above mouth, 2 miles west of Grovont, Wyo.	2.02	68.9
14	do	do	do	1.30	[a] 2.4
16	do	do	do	1.10	[a] .6
22	do	do	do	1.09	[a] .4
Aug. 4	do	do	do	1.22	[a] 1.8
9	Reserve Creek	do	Sec. 3, T. 42 N., R. 116 W., ½ mile above mouth, 2½ miles north of Teton post office, Wyo.		3.6
23	do	do	do		4.2
9	Stewart Creek	do	NW. ¼ sec. 3, T. 42 N., R. 116 W., ½ mile above mouth, 2 miles north of Teton post office, Wyo.		5.0
23	do	do	do		1.4
July 24	Owl Ditch	do	NE. ¼ sec. 21, T. 42 N., R. 116 W., 4 miles north of Zenith post office, Wyo.		10.0
Aug. 3	do	do	do		4.4
10	do	do	do		5.2
19	do	do	do		[b] .5
July 24	Spring Creek	do	SW. ¼ sec. 21, T. 42 N., R. 116 W., 3 miles north of Zenith post office, Wyo.		5.9
Aug. 3	do	do	do		3.8
10	do	do	do		2.1
19	do	do	do		[b] 1.0
24	do	do	do		[b] .6
July 24	do	do	NE. ¼ sec. 5, T. 41 N., R. 116 W., ½ mile above mouth, at West Gros Ventre Butte, Wyo.	2.74	31.2
Aug. 3	do	do	do	2.73	22.7
11	do	do	do	2.88	22.3
18	do	do	do	2.65	20.5
24	do	do	do	2.63	19.8
Sept. 6	do	do	do	2.65	18.8
Aug. 9	Phelps Lake outlet	Fish Creek	About sec. 5, T. 42 N., R. 116 W., 10 miles northeast of Wilson, Wyo.		60.4
9	Granite Canyon Outlet.	do	About sec. 7, T. 42 N., R. 116 W., 8 miles northeast of Wilson, Wyo.		3.3
5	Branch of Fish Creek	do	About sec. 2, T. 41 N., R. 117 W., 4 miles northeast of Wilson, Wyo.		15.3
20	do	do	do		15.2
Sept. 2	do	do	do		14.8
18	do	do	do		10.9

[a] Float measurements. [b] Estimated.

Miscellaneous discharge measurements in Snake River drainage basin during the year ending Sept. 30, 1917—Continued.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
Aug. 16	Blue Crane Creek	Snake River	Sec. 13, T. 40 N., R. 117 W., 2 miles west of Cheney post office, Wyo.	1.96	8.7
Sept. 4	do	do	do	1.90	6.6
21	do	do	do	1.74	5.3
Aug. 16	Big Spring Creek	do	Sec. 24, T. 40 N., R. 117 W., 1 mile above mouth, 2 miles west of Cheney post office, Wyo.	2.05	62.4
Sept. 3	do	do	do	1.95	51.1
4	do	do	do	1.95	52.4
21	do	do	do	1.90	47.7
July 20	Sewell and Taylor Creek.	do	Ford near house on Sewell ranch, 7 miles south of Cheney, Wyo.	1.25	3.2
Aug. 4	do	do	do	1.28	3.2
19	do	do	do	1.38	6.6
Sept. 1	do	do	do	1.32	4.8
19	do	do	do	1.27	3.4
17	Little Squaw Creek	do	Edge of Sewell ranch, 7 miles below Cheney, Wyo.	.....	.4
July 8	Game Creek	Flat Creek	SE. ¼ sec. 26, T. 40 N., R. 116 W., 1 mile above mouth, 2 miles southeast of Cheney post office, Wyo.	4.78	6.4
11	do	do	do	4.68	6.5
27	do	do	do	4.69	5.1
28	do	do	do	4.68	5.5
Aug. 15	do	do	do	4.63	4.0
Sept. 1	do	do	do	4.60	3.5
20	do	do	do	4.60	3.0
July 8	Squaw Creek	Snake River	NW. ¼ sec. 35, T. 40 N., R. 116 W., 3 miles southeast of Cheney post office, Wyo.	.....	.5
11	do	do	do	.....	.4
15	do	do	do	.....	[b].3
Sept. 1	do	do	do	.....	[b].3
20	do	do	do	.....	[b].3
July 8	Porcupine Creek	do	NW. ¼ NE. ¼ sec. 11, T. 39 N., R. 116 W., 5 miles southeast of Cheney post office, Wyo.	4.15	2.4
11	do	do	do	4.23	2.8
27	do	do	do	4.08	1.8
28	do	do	do	4.12	1.9
Aug. 15	do	do	do	3.92	1.3
Sept. 1	do	do	do	3.96	1.2
20	do	do	do	3.94	1.2
July 13	Martin Creek	do	Right bank above Ely's ranch, 20 miles south of Cheney, Wyo.	2.42	6.0
Aug. 18	Martin and Spring Canyon creeks.	do	Near mouth, 21 miles south of Cheney, Wyo.	.88	5.8
Sept. 4	do	do	do	.37	4.9
20	do	do	do	.....	3.6
July 22	Table Creek	do	700 feet above mouth. Table Creek enters Snake River 13 miles above mouth of Snake River Canyon near Alpine, Idaho.	.90	.8
31	do	do	do	.84	.5
Aug. 7	do	do	do	.82	.4
21	do	do	do	.79	.2
Sept. 16	do	do	do	.80	.2
July 12	Pine Bar Creek	do	Near mouth of creek, Pine Bar Creek enters Snake River 14 miles below mouth of Hoback River.	1.88	7.6
Aug. 2	do	do	do	1.74	3.6
17	do	do	do	1.68	2.2
Sept. 4	do	do	do	1.65	1.5
21	do	do	do	1.63	1.3

[b] Estimated.

Miscellaneous discharge measurements in Snake River drainage basin during the year ending Sept. 30, 1917—Continued.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
July 22	Trail Creek	Snake River	Near mouth of creek and 12 miles above mouth of Snake River Canyon near Alpine, Idaho.	1.50	0.8
31	do	do	do	1.42	.4
Aug. 7	do	do	do	1.37	.3
22	do	do	do	1.35	.2
Sept. 16	do	do	do	1.34	.2
July 22	Station Creek	do	Mouth of creek. Creek enters Snake River 11 miles above Snake River Canyon near Alpine, Idaho.	1.29	.7
31	do	do	do	1.25	.5
Aug. 8	do	do	do	1.23	.4
22	do	do	do	1.20	.2
Sept. 16	do	do	do	1.20	.2
July 22	Red Creek	do	Short distance above mouth. Red Creek enters Snake River 5 miles above mouth of Snake River Canyon near Alpine, Idaho.	1.68	7.9
30	do	do	do	1.29	2.5
Aug. 8	do	do	do	1.10	.9
22	do	do	do	1.00	.3
Sept. 24	do	do	do	1.00	.3
July 22	Cottonwood Creek	do	¼ mile above mouth of creek. Cottonwood Creek enters Snake River 4 miles above mouth of Snake River Canyon near Alpine, Idaho.	2.46	11.8
30	do	do	do	2.25	5.3
Aug. 8	do	do	do	1.95	1.6
15	do	do	do	1.67	.2
July 27	Trout Creek	Salt River	Near mouth of creek. Trout Creek enters Salt River about ½ mile above its mouth.	1.83	6.8
Aug. 11	do	do	do	1.75	4.4
26	do	do	do	1.69	3.3
Sept. 10	do	do	do	1.64	2.4
26	do	do	do	1.58	2.1
July 23	Williams Creek	do	3 miles west of Alpine on south side of Snake River.	1.58	2.0
Aug. 11	do	do	do	1.50	1.6
Sept. 22	do	do	do	1.50	1.7
July 24	Alpine hot springs	Indian Creek	Near mouth of creek and 5 miles west of Alpine, Idaho.		11.5
Aug. 27	do	do	do		6.7
Sept. 16	do	do	do		4.9
6	Edward's Creek	Snake River	About sec. 14, T. 2 S., R. 45 E., near mouth of creek.		1.2
22	do	do	do		1.2
Aug. 8	Hansen Springs	do	Near mouth of creek 3 miles northwest of Blowout, Idaho.		5.0
11	Summitt Creek	do	About sec. 18, T. 2 S., R. 45 E., 1 mile below Blowout, Idaho.		2.5
20	do	do	do		1.1
July 14	Big Sheep Creek	do	About sec. 5, T. 1 S., R. 45 E., near mouth of creek, 5 miles above Irwin, Idaho.		1.2
Sept. 23	do	do	do		1.8
Aug. 3	Indian Creek	do	Near mouth of creek at Adam's ranch, 2 miles southwest of Irwin, Idaho.		3.8
July 16	Upper Spring Creek	Rainy Creek	Short distance above mouth of creek, near Swan Valley, Idaho.		3.0
Aug. 1	do	do	do		3.2
Sept. 17	do	do	do		3.4
July 16	Lower Spring Creek	do	Short distance above mouth of creek, near Swan Valley, Idaho.		9.7
Aug. 1	do	do	do		8.3
Sept. 17	do	do	do		7.0

Miscellaneous discharge measurements in Snake River drainage basin during the year ending Sept. 30, 1917—Continued.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
July 26	Pritchard Creek	Snake River	¾ mile west of Snake River ranger station and 5 miles west of Swan Valley, Idaho.		5.4
Aug. 21	do	do	do		3.0
July 26	Granite Creek	do	Near mouth of creek 6 miles east of Antelope post office, Idaho.	1.28	1.0
Aug. 25	do	do	do	1.14	.9
Sept. 14	do	do	do	1.04	.3
July 20	Black Canyon Creek	do	½ mile above mouth of creek and 8 miles below Swan Valley, Idaho.	1.20	7.9
Aug. 8	do	do	do	1.10	3.9
30	do	do	do	1.04	3.1
Sept. 8	do	do	do	.99	3.1
Aug. 30	Indian Rock Springs	do	On north side of Snake River, ¼ mile above Burns Creek, and 16 miles above Heise, Idaho.		40.3
Sept. 18	do	do	do		43.9
July 19	Mud Creek	do	3 miles west of mouth of Burns Creek, and 12 miles east of Heise, Idaho.		3.3
31	do	do	do		1.8
Aug. 7	do	do	do		2.0
12	do	do	do		2.4
30	do	do	do		1.9
Sept. 24	do	do	do		1.7
July 26	Antelope Creek	do	⅛ mile below road and 2 miles west of Antelope post office, Idaho.	.82	1.1
Aug. 25	do	do	do	.82	1.2
Sept. 20	do	do	do	.85	.8
June 23	Long Tom Creek	Canyon Creek	Sec. 30, T. 1 S., R. 8 E., 13 miles northeast of Mountain Home, Elmore County.	1.84	71.7
30	do	do	do	1.88	74.4
July 13	do	do	do	1.72	77.9
20	do	do	do	1.61	73.4
27	do	do	do	1.68	87.4
30	do	do	do	1.52	100
Aug. 6	do	do	do	.94	77.5
13	do	do	do	.65	62.9
20	do	do	do	.69	71.3
27	do	do	do	.60	63.6
Sept. 3	do	do	do	.56	62.2
10	do	do	do	.51	56.7
17	do	do	do	.50	58.3
24	do	do	do	—.34	7.9
June 19	Little Cow Creek	Long Tom Creek	About sec. 30, T. 1 S., R. 8 E., near mouth of creek and 7 miles west of Bennett, Elmore County.		2.0
Aug. 21	do	do	do		.4
Apr. 6	Little Wood Creek	Wood Creek	About sec. 30, T. 1 N., R. 10 E., 5 miles from Bennett, Elmore County.	3.23	*b* 2
May 8	do	do	do	3.56	2.5
5	Long Gulch Creek	South Fork of Boise River.	Sec. 2, T. 2 N., R. 6 E., ⅛ mile above mouth of creek, and 8 miles northwest of Lenox, Elmore County.	.95	20.3
July 27	do	do	do	.76	.2
Sept. 12	South Fork of Clearwater River.[c]	Clearwater River	Former gaging station near Grangeville, Idaho.	1.95	162
Feb. 21	Palouse River	Snake River	Above Rock Creek near Winona, Wash.		535
22	do	do	do		484
22	do	do	do		464
June 27	Rock Creek	Palouse River	Mouth, near Winona, Wash.		49.5

b Estimated.

c Measurement furnished by United States Forest Service.

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