DEPARTMENT OF THE INTERIOR
FRANKLIN K. LANE, Secretary

UNITED STATES GEOLOGICAL SURVEY
GEORGE OTIS SMITH, Director

Water-Supply Paper 410

SURFACE WATER SUPPLY OF THE UNITED STATES

1915

PART X. THE GREAT BASIN

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Prepared in cooperation with the States of
UTAH, NEVADA, CALIFORNIA, AND OREGON

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AUTHORIZATION AND SCOPE OF WORK.

This volume is one of a series of 14 reports presenting results of measurements of flow made on streams in the United States during the year ending September 30, 1915.

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, 1895–1916.

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 1916, inclusive	150,000

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 14.

Measurements of stream flow have been made at about 3,800 points in the United States and also at many points in Alaska and the Hawaiian Islands. In July, 1915, 1,350 gaging stations were being maintained by the Survey and the cooperating organizations. Many

miscellaneous discharge measurements are made at other points. In connection with this work data were also collected in regard to precipitation, evaporation, storage reservoirs, river profiles, and water power in many sections of the country and will be made available in water-supply papers from time to time. Information in regard to publications relating to water resources is presented in the appendix to this report.

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 the 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 depth of 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 by the use of the factors given in the tables of convenient equivalents (pp. 9–11).

"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 (depth 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 of inches.

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

The following terms not in common use are here defined:

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

"Control," "controlling section," and "point of control," terms used to designate the section or sections of the stream below the gage which determine the stage-discharge relation at the gage. It should be noted that the control may not be the same section or sections at all stages.

The "point of zero flow" for a given gaging station is that point on the gage—the gage height—to which the surface of the river would fall if there were no flow.

CONVENIENT EQUIVALENTS.

The following is a list of convenient equivalents for use in hydraulic computations:

Table for converting discharge in second-feet per square mile into run-off in depth in inches over the area.

Discharge (second-feet per square mile).	Run-off (depth in inches).				
	1 day.	28 days.	29 days.	30 days.	31 days.
1	0.03719	1.041	1.079	1.116	1.153
2	.07438	2.083	2.157	2.231	2.306
3	.11157	3.124	3.236	3.347	3.459
4	.14876	4.165	4.314	4.463	4.612
5	.18595	5.207	5.393	5.578	5.764
6	.22314	6.248	6.471	6.694	6.917
7	.26033	7.289	7.550	7.810	8.070
8	.29752	8.331	8.628	8.926	9.223
9	.33471	9.372	9.707	10.041	10.376

NOTE.—For part of a month multiply the run-off for one day by number of days.

Table for converting discharge in second-feet into run-off in acre-feet.

Discharge (second-feet).	Run-off (acre-feet).				
	1 day.	28 days.	29 days.	30 days.	31 days.
1	1.983	55.54	57.52	59.50	61.49
2	3.967	111.1	115.0	119.0	123.0
3	5.950	166.6	172.6	178.5	184.5
4	7.934	222.1	230.1	238.0	246.0
5	9.917	277.7	287.6	297.5	307.4
6	11.90	333.2	345.1	357.0	368.9
7	13.88	388.8	402.6	416.5	430.4
8	15.87	444.3	460.2	476.0	491.9
9	17.85	499.8	517.7	535.5	553.4

NOTE.—For part of a month multiply the run-off for one day by the number of days.

Table for converting discharge in second-feet into run-off in millions of cubic feet.

Discharge (second-feet).	Run-off (millions of cubic feet).				
	1 day.	28 days.	29 days.	30 days.	31 days.
1	0.0864	2.419	2.506	2.592	2.678
2	.1728	4.838	5.012	5.184	5.356
3	.2592	7.257	7.518	7.776	8.034
4	.3456	9.676	10.024	10.368	10.712
5	.4320	12.095	12.530	12.960	13.390
6	.5184	14.514	15.036	15.552	16.068
7	.6048	16.933	17.542	18.144	18.746
8	.6912	19.352	20.048	20.736	21.424
9	.7776	21.771	22.554	23.328	24.102

NOTE.—For part of a month multiply the run-off for one day by the number of days.

Table for converting discharge in second-feet into run-off in millions of gallons.

Discharge (second-feet).	Run-off (millions of gallons).				
	1 day.	28 days.	29 days.	30 days.	31 days.
1	0.6463	18.10	18.74	19.39	20.04
2	1.293	36.20	37.48	38.78	40.08
3	1.939	54.30	56.22	58.17	60.12
4	2.585	72.40	74.96	77.56	80.16
5	3.232	90.50	93.70	96.95	100.2
6	3.878	108.6	112.4	116.3	120.2
7	4.524	126.7	131.2	135.7	140.3
8	5.171	144.8	149.9	155.1	160.3
9	5.817	162.9	168.7	174.5	180.4

NOTE.—For part of a month multiply the run-off for one day by the number of days.

Table for converting velocity in feet per second into velocity in miles per hour.

[1 foot per second=0.681818 mile per hour, or two-thirds mile per hour, very nearly; 1 mile per hour=1.4666 feet per second. In computing the table the figures 0.68182 and 1.4667 were used.]

Feet per second (units).	Miles per hour for tenths of foot per second.									
	0	1	2	3	4	5	6	7	8	9
0	0.000	0.068	0.136	0.205	0.273	0.341	0.409	0.477	0.545	0.614
1	.682	.750	.818	.886	.955	1.02	1.09	1.16	1.23	1.30
2	1.36	1.43	1.50	1.57	1.64	1.70	1.77	1.84	1.91	1.98
3	2.05	2.11	2.18	2.25	2.32	2.39	2.45	2.52	2.59	2.66
4	2.73	2.80	2.86	2.93	3.00	3.07	3.14	3.20	3.27	3.34
5	3.41	3.48	3.55	3.61	3.68	3.75	3.82	3.89	3.95	4.02
6	4.09	4.16	4.23	4.30	4.36	4.43	4.50	4.57	4.64	4.70
7	4.77	4.84	4.91	4.98	5.05	5.11	5.18	5.25	5.32	5.39
8	5.45	5.52	5.59	5.66	5.73	5.80	5.86	5.93	6.00	6.07
9	6.14	6.20	6.27	6.34	6.41	6.48	6.55	6.61	6.68	6.75

Table for converting discharge in second-feet into theoretical horsepower per foot of fall.

[1 second-foot=0.1136 theoretical horsepower per foot of fall. Weight of 1 cubic foot of water=62.5 pounds.]

Tens.	Units.									
	0	1	2	3	4	5	6	7	8	9
0	0.00	0.114	0.227	0.341	0.454	0.568	0.682	0.795	0.909	1.02
1	1.14	1.25	1.36	1.48	1.59	1.70	1.82	1.93	2.04	2.16
2	2.27	2.39	2.50	2.61	2.73	2.84	2.95	3.07	3.18	3.29
3	3.41	3.52	3.64	3.75	3.86	3.98	4.09	4.20	4.32	4.43
4	4.54	4.66	4.77	4.88	5.00	5.11	5.23	5.34	5.45	5.57
5	5.68	5.79	5.91	6.02	6.13	6.25	6.36	6.48	6.59	6.70
6	6.82	6.93	7.04	7.16	7.27	7.38	7.50	7.61	7.72	7.84
7	7.95	8.07	8.18	8.29	8.41	8.52	8.63	8.75	8.86	8.97
8	9.09	9.20	9.32	9.43	9.54	9.66	9.77	9.88	10.0	10.1
9	10.2	10.3	10.5	10.6	10.7	10.8	10.9	11.0	11.1	11.2

1 second-foot equals 40 California miner's inches (law of March 23, 1901).

1 second-foot equals 38.4 Colorado miner's inches.

1 second-foot equals 40 Arizona miner's inches.

1 second-foot equals 7.48 United States gallons per second; equals 448.8 gallons per minute; equals 646,317 gallons for one day.

1 second-foot for one year (365 days) covers 1 square mile 1.131 feet or 13.572 inches deep.

1 second-foot for one year (365 days) equals 31,536,000 cubic feet.

1 second-foot equals about 1 acre-inch per hour.

1 second-foot for one day equals 86,400 cubic feet.

1,000,000,000 (1 United States billion) cubic feet equals 11,570 second-feet for one day.
1,000,000,000 cubic feet equals 414 second-feet for one 28-day month.
1,000,000,000 cubic feet equals 399 second-feet for one 29-day month.
1,000,000,000 cubic feet equals 386 second-feet for one 30-day month.
1,000,000,000 cubic feet equals 373 second-feet for one 31-day month.
100 California miner's inches equals 18.7 United States gallons per second.
100 California miner's inches for one day equals 4.96 acre-feet.
100 Colorado miner's inches equals 2.60 second-feet.
100 Colorado miner's inches equals 19.5 United States gallons per second.
100 Colorado miner's inches for one day equals 5.17 acre-feet.
100 United States gallons per minute equals 0.223 second-foot.
100 United States gallons per minute for one day equals 0.442 acre-foot.
1,000,000 United States gallons per day equals 1.55 second-feet.
1,000,000 United States gallons equals 3.07 acre-feet.
1,000,000 cubic feet equals 22.95 acre-feet.
1 acre-foot equals 325,850 gallons.
1 inch deep on 1 square mile equals 2,323,200 cubic feet.
1 inch deep on 1 square mile equals 0.0737 second-foot per year.
1 foot equals 0.3048 meter.
1 mile equals 1.60935 kilometers.
1 mile equals 5,280 feet.
1 acre equals 0.4047 hectare.
1 acre equals 43,560 square feet.
1 acre equals 209 feet square, nearly.
1 square mile equals 2.59 square kilometers.
1 cubic foot equals 0.0283 cubic meter.
1 cubic foot of water weighs 62.5 pounds.
1 cubic meter per minute equals 0.5886 second-foot.
1 horsepower equals 550 foot-pounds per second.
1 horsepower equals 76.0 kilogram-meters per second.
1 horsepower equals 746 watts.
1 horsepower equals 1 second-foot falling 8.80 feet.
1½ horsepower equal about 1 kilowatt.

To calculate water power quickly: $\frac{\text{Sec.-ft.} \times \text{fall in feet}}{11}$ = net horsepower on water wheel realizing 80 per cent of theoretical power.

EXPLANATION OF DATA.

The data presented in this report cover the year beginning October 1, 1914, and ending September 30, 1915. At the first 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 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 a year beginning with October 1 is practically all derived from precipitation in 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 gage or from a water-stage recorder that gives a continuous record of the fluctuations. Measurements of discharge are made with a current meter by the general methods outlined in standard textbooks on the measurement of river discharge. (See Pls. I and II.)

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 discharge from which the daily, monthly, and yearly mean discharge is determined.

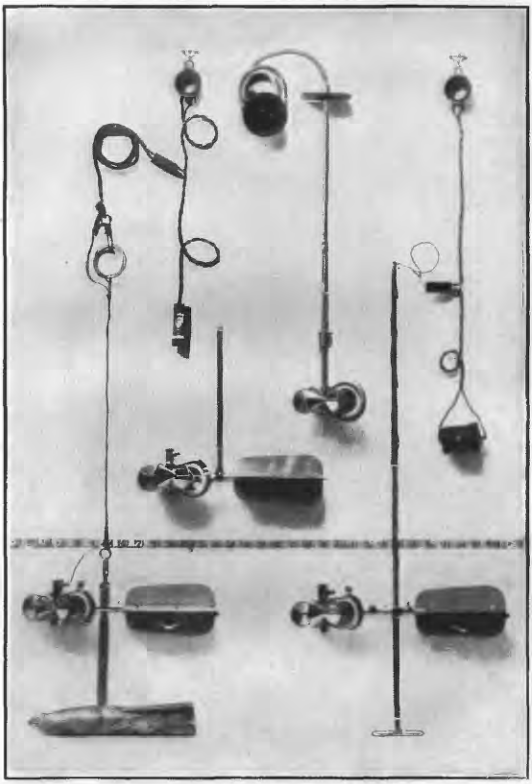
The data presented for each gaging station in the area covered by this report comprise a description of the station, a table giving results of discharge measurements, a table showing the daily discharge of the stream, and a table of monthly and yearly discharge and run-off.

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

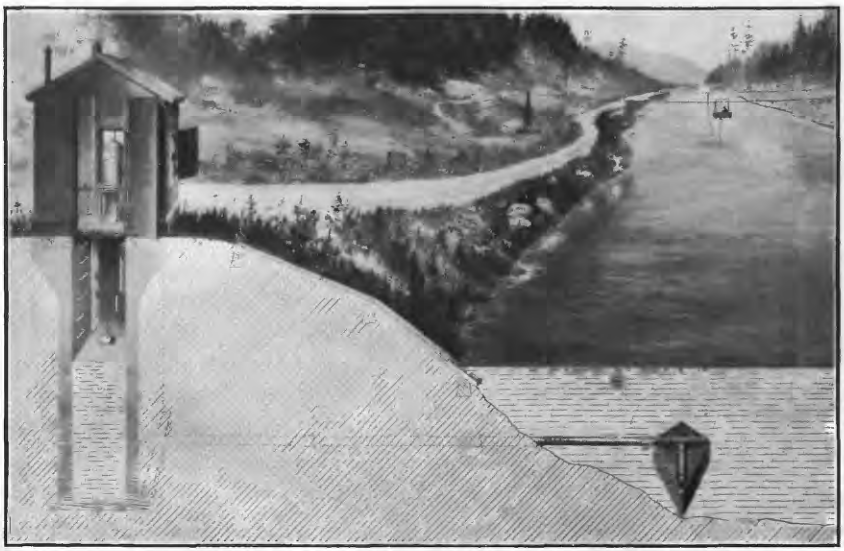
The description of the station gives, in addition to statements regarding location and equipment, information in regard to any conditions that may affect the constancy of the stage-discharge relation, covering such subjects as the occurrence of ice, the use of the stream for log driving, shifting of 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 in general 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 mean daily discharge may be obtained by weighting discharge for parts of the day.

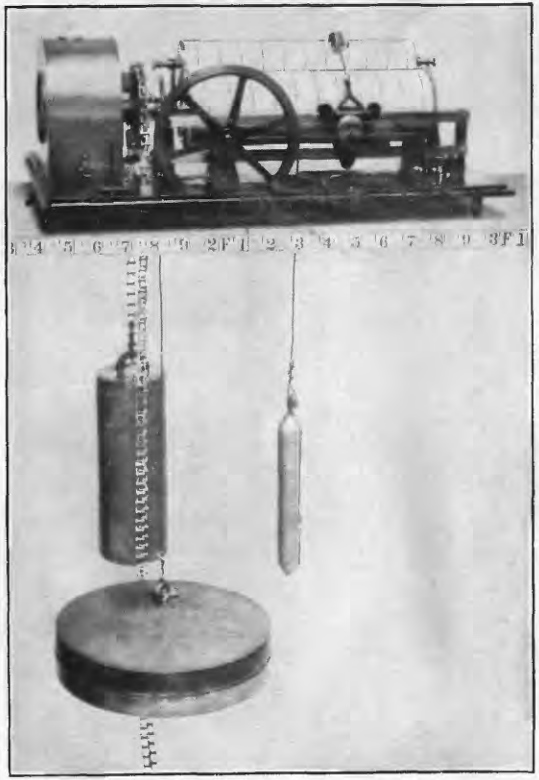
In the table of monthly discharge the column headed "Maximum" gives the mean flow for the day when the mean gage height was highest. As the gage height is the mean for the day it does not indicate correctly the stage when the water surface was at crest height and the corresponding discharge was consequently larger than given in the maximum column. Likewise, in the column headed "Minimum" the quantity given is the mean flow for the day when the mean gage height was lowest. The colmun headed "Mean" is the average flow in cubic feet for each second during the month. On this average flow computations recorded in the remaining columns, which are defined on page 8, are based.



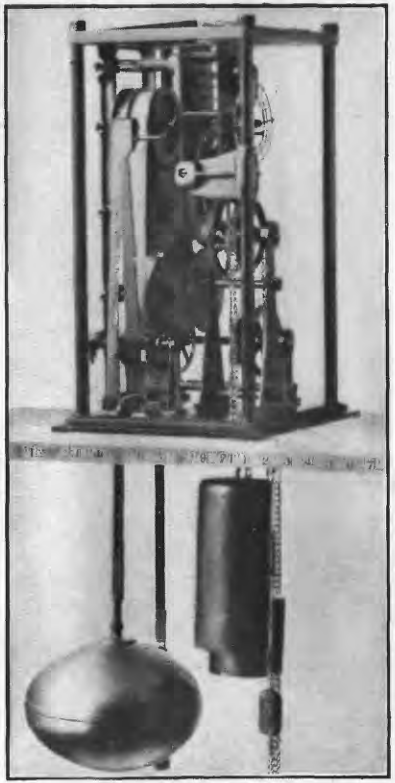
A. PRICE CURRENT METERS.



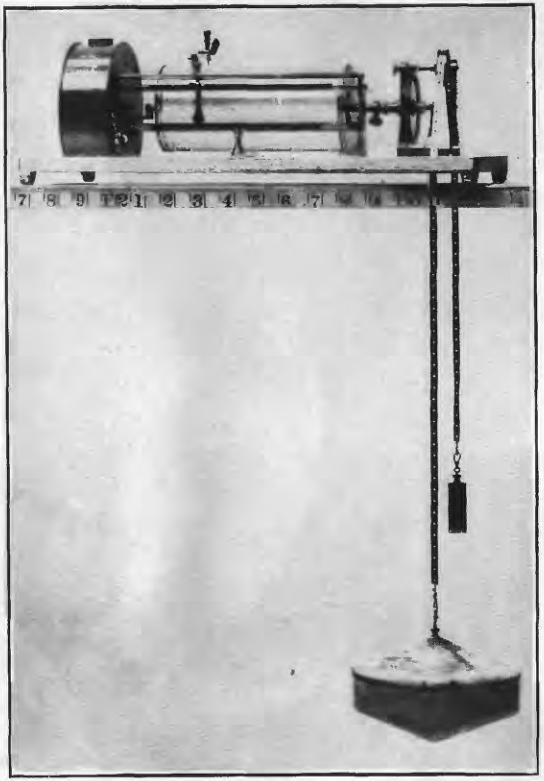
B. TYPICAL GAGING STATION.



A. STEVENS.



B. GURLEY PRINTING.



C. FRIEZ.

WATER-STAGE RECORDERS.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS.

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

Footnotes added to the daily discharge tables give information regarding the probable accuracy of the rating tables used, and an accuracy column is inserted in the monthly discharge table. 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" or "approximate," 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 letter in the column headed "Accuracy," in the table showing monthly discharge, rates the accuracy of the monthly mean and not that of the estimate of maximum or minimum discharge or the discharge for any one day. The rating is determined by considering the accuracy of the rating curve, the probable reliability of the observer, the number of gage readings per day, the range of the fluctuation in stage, and local conditions. In this column, A indicates that the mean monthly flow is probably accurate within 5 per cent; B, within 10 per cent; C, within 15 per cent; D, within 25 per cent. Special conditions are covered by footnotes.

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 noncontributing districts in the measured drainage area, by lack of information concerning water diverted for irrigation or other use, or by inability to interpret the effect of artificial regulation of the flow of the river above the station. "Second-feet per square mile" and "Run-off (depth 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 (depth 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, 1915, the work in Utah, Nevada, California, and Oregon has been done under cooperative agreements between the United States Geological Survey and the respective States.

Cooperation with the States is effected under contracts which are made between the Director of the Federal Survey and the State engineers or other officials and are authorized by legislative acts appropriating moneys. The State contracts are essentially of the same order, the principal provisions being substantially as follows:

1. The United States Geological Survey retains direct supervision of the field work and the preparation of the data for publication.

2. The Federal Survey retains possession of field notes, maps, and other material collected, but this material is open at all times to inspection by the State officials, and if not satisfactory the agreements can be terminated at any time.

3. The salaries of gage observers and engineers and the traveling and field expenses of the engineers are divided between the two parties in some manner agreed upon, the accounts being rendered monthly in accordance with the regulations of the Federal Survey.

4. The streams and localities in which investigations shall be made are determined by conference between the State officials and the representatives of the United States Geological Survey.

5. The cost of publication is borne entirely by the Federal Survey.

In general, the cooperative agreements specify that the United States Geological Survey shall allot from its appropriation a sum equal to that appropriated from State funds.

Special acknowledgments are due to W. D. Beers, State engineer of Utah, W. M. Kearney, State engineer of Nevada, W. F. McClure, State engineer of California, George C. Pardee, chairman California Conservation Commission, and John H. Lewis, State engineer of Oregon, for the very efficient manner in which they have represented their States in the cooperative investigations.

Acknowledgments are also due to the officials and employees of the United States Reclamation Service, the United States Forest Service, the United States Office of Indian Affairs, and the United States Weather Bureau for free use of data collected by them.

Financial assistance has been rendered by Department of Public Service, Los Angeles, Cal.; Southern Pacific Co.; Reno Water, Land & Light Co.; Union Land & Cattle Co.; Beaver County Irrigation Co.; Salt Lake City Corporation; Logan River Water Users' Association; Blacksmith Fork Water User's Association; Uinta Development Co.; Truckee River General Electric Co.; Elko-Lamoille Light & Power Co.; Humboldt-Lovelocks Irrigation, Light & Power Co.;

Chewacan Land & Cattle Co.; Northwest Townsite Co.; Blitzen Valley Land Co.; various canal and reservoir companies operating in Sevier River basin; Prof. Ray B. West, Utah State Agricultural College; George L. Swendsen; Edmund Cazier; G. M. Southward; C. B. McConnell; and Mrs. Morgan Hill.

DIVISION OF WORK.

Data for stations in Idaho were collected and prepared for publication under the direction of G. C. Baldwin, district engineer, assisted by A. B. Purton, A. W. Harrington, L. W. Roush, Miss E. H. Haugse, and H. J. Dean.

For stations in Utah and Nevada the data were collected under the direction of E. A. Porter, district engineer, and prepared for publication under the direction of E. A. Porter and C. C. Jacob, district engineers, assisted by Lynn Crandall, A. B. Purton, L. W. Jordan, J. J. Sanford, C. W. Bennett, and Miss Ruby Christenson.

For stations in California the data were collected and prepared for publication under the direction of H. D. McGlashan, district engineer, assisted by J. E. Jones, H. J. Tompkins, Thad McKay, F. B. Clark, J. H. Morgan, Charles Leidl, J. F. Kunesh, and M. B. Trelease.

For stations in Oregon the data were collected and prepared for publication under the direction of F. F. Henshaw, district engineer, assisted by J. E. Stewart, P. V. Hodges, and C. L. Batchelder.

The manuscript was assembled and reviewed by H. J. Dean and E. L. Williams.

GAGING-STATION RECORDS.

GREAT SALT LAKE BASIN.

GAGES ON GREAT SALT LAKE.

LOCATION.—At Saltair, on the southeastern shore of the lake about 15 miles west of Salt Lake City, and at Midlake, on the Lucin cut-off of the Southern Pacific Railroad, about 30 miles west of Ogden, Weber County.

RECORDS AVAILABLE.—September 14, 1875, to December 15, 1899; March to July, 1904; October 1, 1912, to September 30, 1915. Records have appeared in publications of United States Geological Survey, as follows: Gage heights, September 14, 1875, to January 4, 1890, in Monograph I, Lake Bonneville, by G. K. Gilbert; gage heights September, 1875, to December, 1891, in the Thirteenth Annual Report of the Director, Part III; gage heights, September 14, 1875, to December 15, 1899, in Water-Supply Paper 38; gage heights, March 12 to July 21, 1904, in Water-Supply Paper 133; since October 1, 1912, gage heights have been published in water-supply papers. Chart showing variation in level of Great Salt Lake and monthly and annual precipitation in Great Salt Lake basin from 1850 to 1913, compiled from chart in office of chief engineer of Oregon Short Line Railroad, Salt Lake City, Utah, published by United States Geological Survey in Water-Supply Paper 330.

GAGES.—Midlake gage read August 15, 1902, to September 30, 1915; Saltair gage, July 1, 1903, to September 30, 1915. The first gage was installed at Blackrock in September, 1875, and was used until October, 1877. A gage at Farmington was used from November, 1877, to November, 1879, and one at Lake Shore from November, 1879, to September, 1881. Gages at Garfield Landing were used April, 1881, to December, 1899. In 1916 E. C. LaRue, hydraulic engineer, United States Geological Survey, installed a gage at Lake Point, and by means of comparative readings for one month determined the relation between this gage and the gages at Saltair and Midlake. The elevation of the zero of the gage at Lake Point was determined from United States Geological Survey bench marks, the elevations of which had been adjusted in 1912 by the United States Coast and Geodetic Survey from precise leveling. From the Lake Point gage and the table of elevations given by Mr. Gilbert in Monograph I, Mr. LaRue determined the elevations above mean sea level of the zeros of the various gages to be as follows:

	Feet.
Blackrock gage	4,208.30
Farmington gage	4,206.80
Lake Shore	4,203.00
Garfield Landing (U. S. G. S.)	4,198.40
Garfield (Marcus E. Jones)	4,198.40
Midlake	4,198.01
Saltair	4,196.77

COOPERATION.—Readings on the Midlake gage are furnished by the Southern Pacific Co.; readings on the Saltair gage by the United States Weather Bureau.

Gage height, in feet, of Great Salt Lake, Utah, for the year ending Sept. 30, 1915.

Day.	Gage height.		Day.	Gage height.		Day.	Gage height.	
	Saltair gage.	Midlake gage.		Saltair gage.	Midlake gage.		Saltair gage.	Midlake gage.
Oct. 1	5.5	4.3	Mar. 1	6.0	4.8	Aug. 1	5.5	4.2
15	5.6	4.2	15	6.1	4.9	15	5.3	4.3
Nov. 1	5.6	4.2	Apr. 1	6.2	5.0	Sept. 1	5.0	3.8
15	5.6	4.2	15	6.3	5.1	15	4.8	3.5
Dec. 1	5.5	4.2	May 1	6.3	5.1			
15	5.5	4.2	15	6.3	5.0			
Jan. 1	5.6	4.2	June 1	6.3	5.0			
15	5.6	4.4	15	6.2	5.0			
Feb. 1	5.7	4.5	July 1	6.0	4.8			
15	5.8	4.6	15	5.8	4.5			

BEAR RIVER BASIN.

BEAR RIVER NEAR EVANSTON, WYO.

LOCATION.—In sec. 1, T. 15 N., R. 121 W., 300 feet above highway bridge, and 3½ miles northwest of Evanston, Uinta County. Nearest tributary, a small stream from the southwest half a mile above.

DRAINAGE AREA.—645 square miles, measured on base map of Wyoming and topographic maps.

RECORDS AVAILABLE.—October 26, 1913, to September 30, 1915.

GAGE.—Chain gage on left bank 300 feet above bridge; read twice daily by Mrs. Marion McClure.

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

CHANNEL AND CONTROL.—Bed composed of coarse gravel. Control at riffle a short distance below gage; permanent. Left bank is overflowed at stage of about 5 feet; right bank subject to overflow at stages above 5 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.2 feet at 8.30 a. m. June 2 (discharge, 1,240 second-feet); minimum stage recorded 8.30 a. m. August 15, when observer reported channel nearly dry.

WINTER FLOW.—Stage-discharge relation seriously affected by ice; observations discontinued during winter.

DIVERSIONS.—Prior to December 31, 1916, there were adjudicated diversions of 249 second-feet from Bear River above station. Below there were adjudicated diversions of 516 second-feet.

REGULATIONS.—None.

ACCURACY.—Records considered excellent.

Discharge measurements of Bear River near Evanston, Wyo., during the year ending Sept. 30, 1915.

[Made by R. H. Fletcher.]

Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*
May 11	2.14	265
June 15	3.10	651

Daily discharge, in second-feet, of Bear River near Evanston, Wyo., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	46	100	.....	300	600	695	470	29	25
2	43	112	.....	390	410	1,240	410	30	25
3	72	106	.....	955	350	1,010	410	30	26
4	124	102	.....	1,010	333	1,060	390	28	27
5	119	87	.....	795	316	1,010	370	31	38
6	82	82	.....	430	283	1,060	430	34	34
7	85	85	.....	370	268	795	350	40	33
8	140	90	.....	390	268	745	300	37	34
9	216	74	.....	370	268	845	252	32	34
10	184	57	.....	252	283	1,060	195	31	35
11	187	55	.....	252	268	1,120	209	29	43
12	182	57	.....	252	316	1,060	195	30	127
13	126	53	.....	252	390	900	182	32	217
14	140	60	.....	283	600	745	167	30	53
15	140	47	.....	333	600	645	119	18	53
16	121	36	.....	390	645	845	92	27	51
17	126	.....	.....	390	745	1,060	85	29	62
18	124	.....	.....	450	795	955	66	29	65
19	126	.....	.....	555	795	955	58	26	55
20	117	.....	.....	532	745	900	53	26	52
21	126	.....	.....	510	470	900	41	26	48
22	135	.....	.....	450	430	900	36	26	47
23	117	.....	.....	410	410	1,010	36	25	48
24	112	.....	.....	430	390	1,010	36	25	48
25	108	.....	268	370	510	795	40	26	59
26	108	.....	223	410	470	845	32	22	169
27	114	.....	510	955	430	600	34	23	182
28	119	.....	510	578	390	600	33	26	141
29	114	.....	390	695	510	510	32	23	123
30	100	.....	223	845	695	430	31	25	109
31	100	.....	223	.....	645	.....	30	25	.....

NOTE.—Discharge determined from well-defined rating curve.

Monthly discharge of Bear River near Evanston, Wyo., for the year ending September 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	216	43	121	7,440	A.
November 1–16	112	36	75.1	2,380	B.
March 25–31	510	223	335	4,650	B.
April	1,010	252	487	29,000	A.
May	795	268	472	29,000	A.
June	1,240	430	877	52,200	A.
July	470	30	167	10,300	A.
August	40	18	28.1	1,730	A.
September	217	25	68.8	4,090	A.

BEAR RIVER AT HARER, IDAHO.

LOCATION.—In the SE. ¼ sec. 22, T. 14 S., R. 45 E., about three-fourths mile north of Harer Siding, on the Oregon Short Line Railroad, Bear Lake County, 7 miles by road above Dingle, and 14 miles southeast of Montpelier.

DRAINAGE AREA.—2,780 square miles (determination furnished by Utah Power & Light Co.).

RECORDS AVAILABLE.—June 21, 1913, to September 30, 1915.

GAGE.—Stevens water-stage recorder on right bank; installed August 24, 1914. Inspected by employees of Utah Power & Light Co. Inclined staff on right bank, about 1,500 feet downstream, used prior to August 24, 1914. The gages have different controls.

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

CHANNEL AND CONTROL.—Bed composed of clean hard material; banks subject to overflow at extreme high stages. Control permanent during 1915 and 1916.

WINTER FLOW.—Stage-discharge relation seriously affected by ice from November to March; discharge determined from numerous current-meter measurements and from charts of water-stage recorder.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.34 feet 11 a. m. to 7 p. m. June 7 (discharge 1,120 second-feet); minimum stage, 2.90 feet 2 a. m. to 1 p. m. September 3 (discharge, 127 second-feet).

1913–1915: Maximum stage recorded, 11.12 feet at 9.25 a. m. May 26, 1914 (discharge, 3,450 second-feet); minimum stage, 2.90 feet 2 a. m. to 1 p. m. September 3, 1915 (discharge, 127 second-feet).

DIVERSIONS.—No large diversion above station.

ACCURACY.—Stage-discharge relation permanent except during winter, when it was affected by ice. Rating curve well defined above 300 second-feet, by measurements made in 1916 and those made by Survey engineers in 1915. Operation of recorder satisfactory except for short periods during December to March. Daily discharge ascertained by applying to rating table mean daily gage heights determined by inspection of gage-height graph. Records good except those for November to March, which are subject to error owing to effect of ice.

COOPERATION.—Gage-height record and most of discharge measurements furnished by Utah Power & Light Co.

Discharge measurements of Bear River at Harer, Idaho, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 6	Karl Gilgen	3.61	335	June 1	Karl Gilgen	4.10	580
13	do	3.69	366	7	A. W. Harrington	5.34	1,140
20	do	3.74	389	8	Karl Gilgen	5.19	1,090
29	do	3.70	376	15	do	4.90	955
Nov. 10	do	3.64	337	23	do	4.51	807
24	do	a3.90	335	30	do	4.27	652
Dec. 1	do	a3.84	251	July 10	H. L. Stoner	3.87	453
8	do	a3.81	305	20	Stoner and Gilgen	3.61	360
15	do	a3.59	198	26	Karl Gilgen	3.38	293
24	do	a3.39	165	Aug. 3	do	3.23	239
Jan. 6	do	a3.61	203	10	do	3.16	222
20	do	a3.66	214	17	do	3.09	203
Feb. 3	do	a3.71	217	24	do	3.01	176
17	do	a3.68	226	31	do	2.93	146
Mar. 5	do	a3.84	279	Sept. 7	do	3.06	188
27	do	4.20	623	16	do	3.08	197
Apr. 9	do	4.44	738	23	do	3.04	195
26	do	4.22	637	28	A. W. Harrington	3.28	238
May 10	do	3.99	518	29	Karl Gilgen	3.23	242
15	do	3.63	372				
25	do	4.01	589				

a Stage-discharge relation affected by ice.

NOTE.—H. L. Stoner and Karl Gilgen are employees of Utah Power & Light Co. Measurements made by Gilgen prior to April, 1916, not used in preparing the rating curve, as later measurements indicate that the results obtained by Gilgen were too large.

Daily discharge, in second-feet, of Bear River at Harer, Idaho, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	318	382	.....	579	588	544	615	234	135
2	318	382	.....	592	570	552	579	228	133
3	325	382	.....	592	540	574	544	221	138
4	333	378	.....	615	502	592	519	224	147
5	337	375	.....	615	473	776	502	221	158
6	348	371	.....	615	457	1,010	490	218	166
7	356	363	.....	707	445	1,080	481	221	172
8	363	359	.....	730	449	1,050	477	215	169
9	382	359	.....	707	531	1,030	469	212	215
10	394	363	.....	661	514	1,050	457	203	195
11	398	359	.....	661	445	1,010	481	203	180
12	378	356	.....	661	363	960	552	203	175
13	382	367	.....	638	371	868	490	200	180
14	394	371	.....	615	367	799	453	198	183
15	409	337	.....	615	359	891	429	189	180
16	417	.....	.....	592	359	914	409	189	177
17	417	.....	.....	615	352	868	394	180	175
18	409	.....	363	592	340	822	378	180	174
19	402	.....	378	638	340	730	375	177	173
20	402	.....	445	661	363	730	356	177	171
21	402	.....	445	684	382	845	346	175	169
22	398	.....	490	684	406	753	340	172	167
23	394	.....	535	707	445	730	321	166	166
24	394	.....	580	661	465	730	300	158	163
25	394	.....	630	615	506	730	282	155	180
26	394	.....	680	592	531	684	269	155	218
27	394	.....	660	583	548	638	265	152	249
28	394	.....	638	548	540	638	262	149	234
29	386	.....	579	561	531	638	259	144	221
30	378	.....	570	566	535	615	253	141	218
31	378	.....	566	.....	535	.....	243	135	.....

NOTE.—Gage not working properly Mar. 22–27 and Sept. 18–22; discharge estimated. Stage-discharge relation affected by ice Nov. 16 to Mar. 17; mean discharge estimated from current meter measurements gage-height record, and climatic data, as follows: Nov. 16–30, 320 second-feet; Dec. 1 to Jan. 31, 200 second-feet; Feb. 1–28, 210 second-feet; and Mar. 1–17, 280 second-feet.

Monthly discharge of Bear River at Harer, Idaho, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	417	318	380	23,400	B.
November	.....	.....	a343	20,400	C.
December	.....	.....	a200	12,300	D.
January	.....	.....	a200	12,300	D.
February	.....	.....	a210	11,700	D.
March	680	.....	a397	24,400	D.
April	730	548	630	37,500	B.
May	588	340	457	28,100	B.
June	1,080	544	795	47,300	B.
July	615	243	406	25,000	B.
August	234	135	187	11,500	B.
September	249	133	179	10,700	B.
The year	1,080	133	365	265,000	

a See footnote to table of daily discharge.

BEAR RIVER AT DINGLE, IDAHO.

LOCATION.—In sec. 7, T. 14 S., R. 45 E., 100 yards south of Oregon Short Line Railroad, half a mile southeast of Dingle Station, Bear Lake County, 10 miles above outlet of Bear Lake.

DRAINAGE AREA.—2,890 square miles.

RECORDS AVAILABLE.—May 9, 1903, to December 31, 1914, when station was discontinued.

GAGE.—Inclined staff on right bank; read by M. K. Hopkins.

DISCHARGE MEASUREMENTS.—Made from cable about 30 feet below gage.

CHANNEL AND CONTROL.—Bed composed of gravel; control not permanent. Banks high and not subject to overflow.

WINTER FLOW.—River usually frozen over from December to March; ice smooth and about 15 inches thick; stage-discharge relation seriously affected.

EXTREMES OF DISCHARGE.—1903–1914: Maximum mean daily discharge, 4,050 second-feet May 26 and June 1, 1907; minimum mean daily discharge, 60 second feet January 1, 1904.

DIVERSIONS.—Several canals divert above station for irrigation. During spring of 1911 Telluride Power Co. began to divert about 2 miles above station for storage in a branch of Bear Lake, known as Mud or North Lake. This water, when released, returns to the river above the Alexander Station.

ACCURACY.—Gage read three times a week to half-tenths. Discharge determined by applying gage heights to rating table and interpolating for days on which gage was not read, except December 10–31, when stage-discharge relation was affected by ice. Mean discharge for this period estimated from observer's notes and climatic data. Rating curve fairly well defined. Records for October and November fair and December poor.

No discharge measurements made during the period.

Daily discharge, in second-feet, of Bear River at Dingle, Idaho, for the period Oct. 1 to Sept. 30, 1914.

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1	260	325	232	11	319	302	.....	21	325	276	.....
2	265	325	257	12	314	291	.....	22	325	260	.....
3	270	325	283	13	308	308	.....	23	331	276	.....
4	275	325	308	14	316	325	.....	24	337	291	.....
5	280	325	297	15	325	331	.....	25	343	291	.....
6	286	325	286	16	344	337	.....	26	337	291	.....
7	291	325	275	17	363	343	.....	27	331	291	.....
8	302	325	275	18	350	326	.....	28	325	291	.....
9	314	325	275	19	338	308	.....	29	325	271	.....
10	325	314	.....	20	325	292	.....	30	325	252	.....
								31	325	.....	.....

NOTE.—Gage read three times a week; discharge interpolated for other days, except Dec. 10-31, when stage-discharge relation was affected by ice. Mean discharge Dec. 10–31, estimated 200 second-feet.

Monthly discharge of Bear River at Dingle, Idaho, for the period Oct. 1 to Dec. 31, 1914.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	363	260	316	19,400	B.
November	343	252	306	18,200	B.
December	308	.....	a 222	13,600	D.
The period	.....	.....	.....	51,200	

a See footnote to table of daily discharge.

BEAR RIVER AT ALEXANDER, IDAHO.

LOCATION.—In the NW. ¼ sec. 18, T. 9 S., R. 41 E., about half a mile upstream from the post office at Alexander, Bannock County, 4 miles above intake of Last Chance Canal, 6 miles above plant of Utah Power & Light Co., near Grace, and 30 miles below confluence of Bear Lake Outlet and Bear River.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 27, 1911, to September 30, 1915.

GAGE.—Stevens water-stage recorder on right bank installed September 15, 1914; inspected by employees of Utah Power & Light Co. Gages previously used as follows: March 27 to November 14, 1911, an inclined staff on right bank, 1,000 feet upstream from present gage; November 15, 1911, to September 15, 1914, an inclined and vertical staff at present site. Present gage at same datum as staff gage used November 15, 1911, to September 14, 1914.

DISCHARGE MEASUREMENTS.—Made from cable about 400 feet above gage.

CHANNEL AND CONTROL.—Bed composed of gravel and sand. One channel at all stages. Control permanent during 1915 and 1916.

WINTER FLOW.—Stage-discharge relation seriously affected by ice.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.8 feet at 3 p. m. December 22, 1914 (discharge indeterminate as stage-discharge relation was affected by ice); minimum stage, 5.19 feet at 9 a. m. September 20 (discharge, 410 second-feet).

1911–1915: Maximum stage recorded, 13.8 feet at 3 p. m. December 22, 1914 (maximum discharge of 3,940 second-feet occurred May 25–28, 1914, at gage height of 9.5 feet); minimum stage recorded, 5.19 feet at 9 a. m. September 20, 1915 (discharge, 410 second-feet).

DIVERSIONS.—Water is diverted above station for irrigation and storage for power development.

REGULATION.—Water diverted from Bear River is stored during the spring in North or Mud Lake and released for power development during summer; this water is returned to Bear River about 30 miles above station.

ACCURACY.—Stage-discharge relation permanent except during winter. Operation of water-stage recorder satisfactory except for a few days in December, January, and May. Rating curve well defined between 500 and 3,500 second-feet, by measurements made by power company engineers in 1916 and by Survey engineers in 1913 to 1915. Discharge determined by applying to rating table mean daily gage heights obtained by inspection of recorder charts, except during December to February, when stage-discharge relation was affected by ice. Records good except for December, January, and February.

COOPERATION.—Gage-height record and large number of measurements furnished by Utah Power & Light Co.

Discharge measurements of Bear River at Alexander, Idaho, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 3	Karl Gilgen	6.18	993	Apr. 22	Karl Gilgen	6.42	1,170
10	do	6.32	1,140	23	G. C. Baldwin	6.40	1,090
17	do	6.31	1,110	29	Karl Gilgen	5.70	711
24	do	5.94	859	May 6	do	5.59	646
Nov. 1	do	5.93	873	13	do	5.36	528
14	do	5.92	874	24	do	5.41	550
28	do	5.93	875	29	do	5.43	579
Dec. 5	do	5.93	853	June 5	do	5.39	564
Jan. 9	do	a8.76	976	6	A. W. Harrington	5.64	644
16	do	a8.25	895	12	Karl Gilgen	5.48	595
24	do	a7.04	764	22	do	5.59	675
26	L. W. Roush	a6.64	728	29	do	5.97	866
30	Karl Gilgen	a6.37	848	July 12	H. L. Stoner	6.05	916
Feb. 6	do	a6.14	823	27	G. C. Baldwin	6.05	902
13	do	6.02	924	30	Karl Gilgen	5.90	871
20	do	5.85	865	Aug. 4	do	5.78	786
27	do	5.93	893	13	do	5.69	722
Mar. 9	do	5.78	808	21	do	5.72	776
16	do	6.09	950	28	do	5.69	740
19	do	6.17	991	Sept. 4	do	5.93	858
22	do	6.08	961	14	do	5.51	631
30	do	5.94	882	20	do	5.19	470
Apr. 6	do	5.95	884	24	do	5.34	564
13	do	5.58	682	27	A. W. Harrington	5.51	576

a Stage discharge relation affected by ice.

NOTE.—H. L. Stoner and Karl Gilgen are employees of Utah Power & Light Co. Measurements made by Gilgen prior to April, 1916, not used in preparing the rating curve, as later measurements indicate that the results obtained by Gilgen were too large.

Daily discharge, in second-feet, of Bear River at Alexander, Idaho, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	985	809	770	.....	860	741	741	626	891	770	729
2	985	800	800	.....	891	718	689	729	891	741	724
3	985	800	800	.....	860	741	677	683	922	741	800
4	985	800	860	.....	891	830	677	581	860	741	830
5	985	800	800	.....	891	860	660	543	830	729	800
6	1,020	800	830	.....	891	860	649	632	860	724	729
7	1,050	800	741	.....	891	860	695	706	891	724	700
8	1,020	800	800	.....	860	830	706	741	891	712	609
9	1,050	800	770	.....	830	770	770	666	860	712	609
10	1,080	800	.....	.....	860	735	800	570	891	706	615
11	1,080	800	.....	.....	860	712	718	521	891	695	666
12	1,050	800	.....	.....	860	677	666	552	922	695	666
13	1,050	800	.....	860	860	649	695	672	891	683	609
14	1,050	800	.....	860	830	712	430	689	922	683	587
15	1,050	770	.....	860	891	891	430	615	860	677	587
16	1,050	729	.....	891	954	891	430	559	891	672	570
17	1,050	770	.....	891	922	830	438	581	954	683	506
18	985	800	.....	860	954	800	446	609	954	683	449
19	891	770	.....	860	922	922	454	615	922	706	435
20	860	741	.....	860	891	954	462	604	922	724	425
21	860	800	.....	891	922	1,020	470	587	922	718	415
22	830	860	.....	891	922	1,120	478	683	954	724	415
23	830	860	.....	891	985	1,120	486	891	891	706	449
24	830	830	.....	860	1,020	1,150	495	830	891	706	480
25	830	830	.....	891	1,080	1,050	538	770	891	712	495
26	830	830	.....	891	954	800	581	741	891	695	576
27	830	830	.....	891	830	741	587	770	891	683	581
28	800	830	.....	860	800	712	554	800	860	683	500
29	800	830	.....	.....	860	689	532	830	830	695	435
30	800	800	.....	.....	830	729	516	860	800	735	485
31	800	.....	.....	.....	770	.....	500	.....	770	741	.....

NOTE.—Gage not working May 17–23; discharge interpolated. Discharge estimated because of ice from discharge measurements, recorder graph, and climatic data as follows: Dec. 10–31, 900 second-feet; Jan. 1–31, 850 second-feet; Feb. 1–12, 830 second-feet.

Monthly discharge of Bear River at Alexander, Idaho, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	1,080	800	945	58,100	B.
November	860	729	803	47,800	B.
December	.....	.....	a 870	53,500	D.
January	.....	.....	a 850	52,300	D.
February	.....	.....	a 856	47,500	C.
March	1,080	770	892	54,800	B.
April	1,150	649	837	49,800	B.
May	800	430	573	35,200	B.
June	891	521	675	40,200	B.
July	954	770	887	54,500	B.
August	770	672	710	43,700	B.
September	830	415	583	34,700	B.
The year	.....	415	790	572,000	

a See footnote to table of daily discharge.

BEAR RIVER NEAR PRESTON, IDAHO.

LOCATION.—In sec. 9, T. 15 S., R. 39 E., at Seamon's ranch at Battle Creek highway bridge, about half a mile above mouth of Battle Creek and 4½ miles northwest of Preston, Franklin County.

DRAINAGE AREA.—4,500 square miles.

RECORDS AVAILABLE.—October 11, 1889, to September 30, 1915.

GAGE.—Vertical staff attached to old bridge pile near right bank, installed July 22, 1915; read by O. M. Seamons. Inclined staff, with vertical low-water section, on left bank 50 feet below bridge used December, 1904, to July 21, 1915, with the exception of April 3, 1909, to July 6, 1914, when an inclined staff 500 feet below bridge on right bank was used. Gages used prior to December, 1904, were of vertical staff or wire gage type and attached to old Battle Creek bridge. Exact relation of datum of present gage to that of previous gages not known, but is about 0.5 foot higher than that of gage installed December, 1904.

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

CHANNEL AND CONTROL.—Bed composed of sand, clay, and gravel; control fairly permanent except during flood stages. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.1 feet at 8 a. m. January 25 (discharge not known because of backwater caused by ice jam below gage); minimum stage, 0.1 foot on new gage, about 0.6 foot on gage installed December, 1904, at 6 p. m. August 8 (discharge 235 second-feet).

1889–1915, maximum stage recorded, 5.7 feet June 12, 1907 (discharge, 6,550 second-feet); approximate maximum stage estimated from record at Collinston, Utah, 6.7 feet, June, 1907 (discharge 8,500 second-feet); minimum stage, 0.5 foot August 1–4 and 6–20, 1905 (discharge, 158 second-feet). See paragraph on Gage for changes in gage datum.

WINTER FLOW.—Stage-discharge relation seriously affected at times by backwater from ice.

DIVERSIONS.—Numerous ditches divert water for irrigation above station. Last Chance canal, which diverts about 4 miles below Alexander station, carried 270 second-feet May 25, 1911 (measurement by engineer of Telluride Power Co.). West Cache canal, which heads several miles above station, carried 26 second-feet July 24, 1911, and 5 second-feet August 5, 1911. Water diverted by Telluride Power Co. about 6 miles below the Alexander station is used for power development and returned to the river above this station.

REGULATION.—Flow is partly regulated by release of water from Mud or North lake, about 150 miles above station, and by operation of power plants above station.

ACCURACY.—Gage read twice daily to quarter-tenths. Stage-discharge relation practically permanent during 1915 except December 16 to January 5 and January 22–27, when it was affected by backwater from ice. Daily discharge determined by applying mean daily gage heights to the rating table except for the ice periods, for which it was ascertained from observer's notes and records of precipitation and temperature. Records poor for winter period; fair for remainder of year.

COOPERATION.—Gage-height record and one measurement furnished by Utah-Idaho Sugar Co., one measurement furnished by Utah Power & Light Co.

Records derived from observations at this station show practically the amount of water passing from Idaho into Utah and will be of value in the final adjudication of water rights.

Discharge measurements of Bear River near Preston, Idaho, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
May 22	W. E. Phelps [a]	1.17	839	Aug. 6	G. C. Baldwin	0.33	293
July 22	H. L. Stoner [b]	.94	563				

[a] Employee of Utah-Idaho Sugar Co. [b] Employee of Utah Power & Light Co.

Daily discharge, in second-feet, of Bear River near Preston, Idaho, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	998	1,090	1,180	.....	1,130	1,130	1,040	1,040	580	752	490	791
2	1,090	1,090	1,790	.....	1,130	1,090	871	1,040	611	645	490	645
3	1,130	1,090	1,270	.....	1,130	1,090	955	998	645	716	414	490
4	1,180	1,040	1,230	.....	1,130	1,130	1,090	912	791	679	328	302
5	1,180	1,040	1,280	.....	1,180	1,090	580	871	716	871	314	349
6	1,180	1,040	1,320	1,230	1,090	1,090	645	871	611	791	296	752
7	1,230	1,040	1,270	1,180	1,130	1,130	912	912	548	871	271	611
8	1,180	1,040	1,230	1,180	998	1,130	1,230	912	548	955	249	611
9	1,270	1,040	1,180	1,180	1,040	1,130	1,180	912	548	716	349	679
10	1,370	1,040	998	1,180	1,130	1,090	830	871	548	716	332	548
11	1,420	1,040	752	1,180	1,130	998	611	912	490	548	346	519
12	1,370	1,040	791	1,180	1,180	912	645	912	464	490	342	548
13	1,420	1,090	871	1,180	1,130	912	679	791	464	490	314	580
14	1,470	1,090	912	1,180	1,130	1,130	830	679	490	580	752	679
15	1,570	1,090	912	1,130	1,090	1,130	955	580	437	548	390	679
16	1,470	1,040	.....	1,130	1,090	1,130	1,090	548	464	519	752	645
17	1,370	1,090	.....	1,130	1,090	1,130	1,090	548	490	519	519	519
18	1,370	1,130	.....	1,130	1,130	1,130	1,040	519	490	519	752	645
19	1,270	830	.....	1,180	1,180	1,090	998	548	437	548	284	580
20	1,230	830	.....	1,180	1,230	1,130	1,090	645	390	548	611	548
21	1,130	912	.....	1,130	1,180	1,130	1,230	716	390	548	548	710
22	830	912	.....	.....	1,180	1,230	1,320	716	390	580	611	871
23	1,090	1,180	.....	.....	1,180	1,270	1,420	716	414	580	679	871
24	1,090	1,230	.....	.....	1,180	1,270	1,320	645	414	679	548	679
25	1,090	1,230	.....	.....	1,130	1,230	1,090	679	464	716	464	580
26	998	1,180	.....	.....	1,130	1,180	1,180	716	437	679	548	548
27	998	1,180	.....	.....	1,180	1,180	1,090	716	437	679	548	290
28	1,090	1,180	.....	2,260	1,130	1,130	998	716	414	645	580	328
29	1,090	1,180	.....	1,470	.....	1,130	955	679	370	611	519	580
30	1,090	1,180	.....	1,090	.....	1,040	1,040	611	414	611	548	519
31	1,090	.....	.....	1,130	.....	1,040	.....	611	.....	519	548	.....

NOTE.—Stage-discharge relation affected by ice Dec. 16 to Jan. 5 and Jan. 22–27; mean discharge estimated as follows: Dec. 16–31, 900 second-feet; Jan. 1–5, 1,100 second-feet; Jan. 22–24, 940 second-feet; Jan. 25–27, 1,000 second-feet.

Monthly discharge of Bear River near Preston, Idaho, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	1,570	830	1,200	73,800	B.
November	1,230	830	1,070	63,700	B.
December	1,790	.....	[a] 1,010	62,100	D.
January	2,260	.....	[a] 1,160	71,300	D.
February	1,230	998	1,130	62,800	C.
March	1,270	912	1,120	68,900	C.
April	1,420	580	1,000	59,500	C.
May	1,040	519	759	46,700	C.
June	791	370	497	29,600	B.
July	955	490	641	39,400	B.
August	752	249	475	29,200	B.
September	871	290	590	35,100	B.
The year	2,260	249	888	642,000	

[a] See footnote to table of daily discharge.

BEAR RIVER NEAR COLLINSTON, UTAH.

LOCATION.—In the W. ½ sec. 34, T. 13 N., R. 2 W., about a quarter of a mile below the Wheelon plant of the Utah Power & Light Co., at railroad siding called Wheelon, 4 miles north of Collinston, Boxelder County. Below all large tributaries except Little Malad River, which enters about 20 miles below station.

DRAINAGE AREA.—6,000 square miles.

RECORDS AVAILABLE.—July 1, 1889, to September 30, 1915.

GAGE.—Gurley 8-day water-stage recorder on left bank about 12 feet above cable; used February 26, 1914, to September 30, 1915; Friez recorder used November 8, 1913, to February 25, 1914. Gage installed July 1, 1889, and read to February 9, 1905, was a vertical iron bar driven into bed of stream on right bank directly opposite present gage; gage used February 10, 1905, to November 7, 1913, was an inclined staff on right bank. Datum of gage in well, to which recording gage is referred, is 0.05 foot higher than that of vertical and inclined gages.

DISCHARGE MEASUREMENTS.—Made from cable.

CHANNEL AND CONTROL.—Bed composed of gravel and sand. Left bank high and not subject to overflow; right bank moderately high, but might be overflowed by exceptionally high floods. Control not well defined, but practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, from water-stage recorder, 3.11 feet at 9 a. m. February 11 (discharge, 2,610 second-feet); minimum stage, 0.38 foot at 7.15 a. m. August 10 (discharge, 71 second-feet).

1889–1915: Maximum stage recorded, 7.7 feet June 7–10, 1909 (discharge, 11,600 second-feet); minimum stage, —0.55 foot August 4–12, 1905 (discharge, 10 second-feet).

WINTER FLOW.—Stage-discharge relation not seriously affected by ice. Open water rating curve is applicable except for short periods.

DIVERSIONS.—West side canal and Hammond (East Side) canal divert water by means of a low dam about 2 miles above station and near the upper end of Bear River Canyon. Water can be used from either of these canals

to supply the Wheelon power plant and can be siphoned across at the plant from one canal to the other. Water passing the Wheelon penstocks is used for irrigation or can be wasted into the river.

REGULATION.—Flow at station regulated to some extent by operation of power plant.

ACCURACY.—Records good.

Discharge measurements of Bear River near Collinston, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 12	L. C. Monson [a]	2.65	1,900	June 29	Lynn Crandall	0.45	86
Mar. 16	do	2.40	1,620	July 22	L. C. Monson [a]	.99	336
May 14	Lynn Crandall	1.93	1,090	Aug. 27	L. W. Jordan	.84	236
28	L. C. Monson [a]	2.35	1,550				

[a] Employee of Utah Power & Light Co.

Daily discharge, in second-feet, of Bear River near Collinston, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	940	1,480	1,710	.....	1,630	1,720	1,590	1,590	1,410	78	216	144
2	1,000	1,490	1,780	.....	1,640	1,670	1,550	1,640	1,670	75	176	208
3	1,390	1,500	2,080	.....	1,690	1,630	1,540	1,750	1,630	80	180	306
4	1,550	1,520	1,700	.....	1,750	1,610	1,630	1,720	1,640	95	200	372
5	1,580	1,560	1,570	.....	1,670	1,590	1,760	1,590	1,830	140	188	312
6	1,560	1,560	1,700	.....	1,590	1,590	1,410	1,460	1,800	418	140	300
7	1,690	1,540	1,750	.....	1,560	1,600	1,370	1,390	1,690	461	92	624
8	1,780	1,510	1,710	.....	1,520	1,590	1,790	1,280	1,590	474	82	787
9	1,846	1,510	1,590	.....	1,510	1,590	1,920	1,230	1,300	378	73	680
10	1,910	1,720	1,560	.....	1,780	1,590	1,890	1,250	1,340	372	71	704
11	1,880	1,540	1,510	.....	2,610	1,560	1,700	1,180	1,330	336	78	672
12	1,970	1,490	1,370	.....	2,280	1,420	1,400	1,190	1,290	235	78	648
13	1,950	1,540	1,410	.....	2,130	1,450	1,320	1,130	1,220	225	82	608
14	1,940	1,540	1,220	.....	2,080	1,500	1,350	1,080	1,130	112	75	624
15	2,020	1,550	1,170	.....	1,940	1,630	1,460	1,020	1,030	100	80	688
16	2,010	1,540	1,320	.....	1,810	1,600	1,510	890	832	108	100	769
17	1,950	1,550	1,320	.....	1,710	1,610	1,780	736	704	108	104	769
18	1,840	1,510	1,330	.....	1,830	1,610	2,040	728	600	108	128	696
19	1,780	1,510	1,370	1,510	1,840	1,610	1,970	796	460	104	200	656
20	1,740	1,340	1,560	1,390	1,840	1,570	1,950	900	184	104	100	680
21	1,690	1,270	.....	1,390	1,840	1,570	2,100	1,380	138	104	90	672
22	1,600	1,400	.....	1,550	1,800	1,600	2,180	1,476	128	136	92	672
23	1,390	1,600	.....	1,500	1,760	1,670	2,280	1,510	112	176	164	680
24	1,520	1,690	.....	1,470	1,710	1,760	2,130	1,500	90	188	192	930
25	1,540	1,710	.....	1,480	1,700	1,790	2,060	1,490	85	188	156	940
26	1,520	1,710	1,590	1,470	1,700	1,780	1,910	1,520	85	270	216	900
27	1,540	1,700	.....	1,510	1,710	1,780	1,710	1,550	85	324	240	960
28	1,590	1,700	.....	1,590	1,710	1,750	1,500	1,540	80	245	240	640
29	1,340	1,720	.....	1,610	.....	1,760	1,360	1,510	90	220	235	640
30	1,450	1,720	.....	1,590	.....	1,800	1,420	1,490	82	330	235	640
31	1,480	.....	.....	1,660	.....	1,750	.....	1,460	.....	330	200	.....

NOTE.—Discharge determined from well-defined rating curve. Estimated, on account of ice, as follows: Dec. 21–25, 1,570 second-feet; Dec. 27–31, 1,500 second-feet; Jan. 1–18, 1,520 second-feet.

Monthly discharge of Bear River near Collinston, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	2,020	940	1,640	101,000	A.
November	1,720	1,270	1,560	92,800	A.
December	2,080	.....	1,540	94,700	B.
January	1,610	.....	1,520	93,500	B.
February	2,610	1,510	1,800	100,000	A.
March	1,800	1,420	1,640	101,000	A.
April	2,280	1,320	1,720	102,000	A.
May	1,750	728	1,320	81,200	A.
June	1,830	80	855	50,900	A.
July	481	75	214	13,200	A.
August	240	71	145	8,920	A.
September	940	144	630	37,500	A.
The year	2,610	71	1,210	877,000	

SODA CREEK NEAR SODA SPRINGS, IDAHO.

LOCATION.—In sec. 24, T. 8 S., R. 41 E., at George Schmidt's ranch, one-eighth mile below confluence of two branches of creek, about 5 miles north of Soda Springs, Bannock County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 5, 1913, to September 30, 1915.

GAGE.—Vertical staff on left bank, about one-fourth mile south of ranch house, installed August 1, 1913; read by George Schmidt. Gage used March 5 to July 30, 1913, was 30 feet upstream, but had same control. Datum of old gage between 0.1 and 0.2 feet above that of present gage.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of lava rock; control is a reef about 15 feet below gage. Stage-discharge relation affected by aquatic growth during summer. During 1915 stage-discharge relation affected by extension of a wing dam at head of small ditch which takes water from right bank at control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.4 feet at 3 p. m. March 28 (discharge, 108 second-feet); minimum stage, 4.05 feet March 8–13 (minimum discharge of 45 second-feet occurred July 3 and Aug. 16 to Sept. 11).

1913–1915: Maximum stage recorded, 5.3 feet April 6, 1913 (discharge, 324 second-feet); minimum stage, 4.02 feet on several days in January, February, and March, 1914; minimum discharge of 45 second-feet occurred July 3 and August 16 to September 11, 1915.

WINTER FLOW.—Stage-discharge relation not affected by ice.

DIVERSIONS.—Practically no water diverted above station; a small ditch takes water just below gage.

ACCURACY.—Stage-discharge relation not permanent on account of effect of aquatic growth; not affected by ice. Gage read to quarter-tenths daily. Records good.

Discharge measurements of Soda Creek near Soda Springs, Idaho, during the year ending Sept. 30, 1915.

Date	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft*			*Feet.*	*Sec.-ft.*
Nov. 6	L. W. Roush	4.21	70	June 6	A. W. Harrington	4.12	57
Jan. 26	.....do	4.05	60	July 27	G. C. Baldwin	4.13	46
Apr. 27	G. C. Baldwin	4.11	59	Sept. 27	A. W. Harrington	4.14	48.5

Daily discharge, in second-feet, of Soda Creek near Soda Springs, Idaho, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	82	73	63	60	58	58	74	59	63	46	48	45
2	85	73	63	60	58	58	74	61	59	46	48	45
3	85	73	63	60	58	58	71	66	59	45	48	45
4	85	73	63	60	58	58	77	61	59	47	48	45
5	88	70	63	60	58	58	74	61	56	47	48	45
6	94	70	63	60	58	58	74	61	58	47	48	45
7	94	70	63	60	58	58	71	61	56	46	48	45
8	88	70	63	60	58	54	71	59	54	46	48	45
9	88	70	63	60	58	54	71	59	54	48	48	45
10	85	70	60	60	58	54	67	59	54	52	48	45
11	88	70	60	60	58	54	63	58	54	50	48	45
12	88	70	60	60	58	54	60	58	53	50	48	48
13	85	70	60	60	58	54	60	58	53	47	48	48
14	82	71	60	60	58	58	60	58	53	47	48	48
15	82	71	60	60	58	58	60	58	53	46	48	48
16	77	68	60	60	58	58	60	58	53	46	45	46
17	77	68	60	58	58	58	60	58	52	46	45	46
18	73	69	60	58	58	58	60	60	52	46	45	46
19	73	69	60	58	58	58	60	64	52	46	45	46
20	73	69	60	58	58	58	63	64	52	48	45	46
21	73	69	60	58	58	58	63	64	50	48	45	46
22	73	69	58	58	58	60	67	64	50	48	45	46
23	73	66	58	58	58	67	67	67	50	48	45	46
24	73	66	58	58	58	71	67	67	50	48	45	46
25	73	66	58	58	58	77	63	67	49	48	45	46
26	73	66	58	58	58	87	60	67	49	48	45	49
27	73	63	58	58	58	90	60	67	47	48	45	49
28	73	63	58	58	58	108	59	63	47	48	45	49
29	73	63	58	58	.....	104	59	63	46	48	45	49
30	73	63	58	58	.....	90	59	63	46	48	45	49
31	73	.....	58	58	.....	82	.....	63	.....	48	45	.....

NOTE.—Discharge ascertained by applying gage heights to several rating tables and by indirect method or shifting control.

Monthly discharge of Soda Creek near Soda Springs, Idaho, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	94	73	79.8	4,910	A.
November	73	63	68.7	4,090	A.
December	63	58	60.2	3,700	B.
January	60	58	59.0	3,630	B.
February	58	58	58.0	3,220	B.
March	108	54	65.5	4,030	A.
April	77	59	65.1	3,870	A.
May	67	58	61.8	3,800	A.
June	63	46	52.8	3,140	B.
July	52	45	47.4	2,910	B.
August	48	45	46.7	2,870	A.
September	49	45	46.4	2,760	A.
The year	108	45	59.3	42,900	

LOGAN RIVER ABOVE STATE DAM, NEAR LOGAN, UTAH.

LOCATION.—In sec. 36, T. 12 N., R. 1 E., at the Logan plant of the Utah Power & Light Co., 125 feet above the confluence of the tailrace with the river and 2½ miles above Logan, Cache County.

DRAINAGE AREA.—218 square miles (practically the same as at old station on Logan River near Logan, Utah).

RECORDS AVAILABLE.—May 7, 1913, to September 30, 1915; at old station a quarter of a mile downstream, June 1, 1896, to July 17, 1903, and April 14, 1904, to December 31, 1912; flow at station plus that of tailrace comparable to that at old station.

GAGE.—Stevens continuous water-stage recorder on right bank about 100 feet west of power house.

DISCHARGE MEASUREMENTS.—Made by wading at gage; high-water measurements must be made from footbridge at the switchrack about 1,200 feet below, and flow in the tailrace deducted.

CHANNEL AND CONTROL.—Banks fairly high, clean, and probably not subject to overflow; right bank is a dry rubble retaining wall. Control is a concrete cut-off wall about 6 feet below gage. Stage of zero flow, 0.45 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.82 feet at 9.45 p. m. June 2 (discharge, 375 second-feet): minimum stage, 0.80 foot December 7 (discharge, 13 second-feet).

1913–1915: Maximum stage, probably about 4.4 feet June 4, 1914 (recording gage not working properly; discharge estimated 1,200 second-feet); minimum stage, 0.36 foot September 18, 1913 (discharge, 16 second-feet); minimum discharge, 11 second-feet September 28, 1913 (stage 0.77 foot). Artificial control installed September 24–26, 1913, and stage-discharge relation thereby changed.

WINTER FLOW.—Stage-discharge relation not affected by ice, but recording gage is occasionally out of commission.

DIVERSIONS.—The Utah Power & Light Co. diverts water above station for power, and the Logan, Hyde Park, and Smithfield canal diverts for irrigation. The city of Logan has a municipial power plant about 2 miles above station, but water is returned to river above the two diversions noted.

REGULATION.—Some diurnal fluctuation is caused at times by the operation of the two power plants.

ACCURACY.—Rating curve well defined above 25 second-feet. Conditions for measuring poor at lower stages, but as control is of concrete and stage of zero flow is definitely fixed the rating curve is reasonably well defined at the lower end.

Discharge measurements of Logan River above State dam, near Logan, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 11	J. J. Sanford	0.85.	18.4	July 15	Lynn Crandall	1.43	66
Jan. 28	L. W. Jordan	1.59	90	Aug. 5	do	1.23	44.9
Apr. 3	J. J. Sanford	1.78	125	26	do	1.08	32.0
May 13	Lynn Crandall	1.96	140	Sept. 8	L. W. Jordan	.96	20.1

Daily discharge, in second-feet, of Logan River above State dam, near Logan, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	29	26	22	92	86	86	117	248	301	95	42	26
2	32	24	22	94	88	88	112	269	365	90	47	29
3	37	22	22	96	88	85	127	266	346	88	45	36
4	34	22	25	100	86	81	140	279	271	82	43	30
5	35	21	22	96	86	78	138	261	318	76	44	29
6	39	20	16	94	75	89	136	224	321	78	46	26
7	36	25	13	95	86	83	140	210	309	81	45	25
8	36	25	19	94	76	85	152	197	312	78	43	25
9	41	21	18	96	83	85	144	186	324	79	40	25
10	66	20	20	96	100	86	144	200	339	75	33	25
11	47	19	23	94	94	89	150	193	303	70	33	27
12	41	21	25	98	92	88	160	190	263	70	37	33
13	39	20	27	98	94	90	177	177	284	70	36	28
14	37	19	25	96	92	92	190	224	245	66	36	28
15	37	17	30	100	90	89	214	200	214	63	35	27
16	37	20	17	86	92	92	235	190	190	61	35	25
17	35	19	25	89	94	92	263	193	193	56	34	25
18	37	19	32	88	92	92	279	186	177	60	45	26
19	37	24	21	92	90	90	298	204	142	58	36	24
20	35	20	25	89	90	90	321	243	124	56	35	25
21	34	20	22	89	89	90	355	248	107	55	34	25
22	34	21	26	53	90	89	352	253	131	54	32	25
23	34	21	27	57	89	98	324	243	114	52	33	25
24	31	19	27	71	90	107	303	261	109	51	32	25
25	30	20	48	74	90	110	287	274	131	49	32	26
26	30	18	27	76	92	109	266	284	120	48	32	30
27	30	18	30	89	86	112	271	284	112	50	30	30
28	29	20	27	88	86	112	258	248	104	48	26	27
29	30	25	28	86	.....	127	263	248	102	45	25	26
30	27	22	27	90	.....	120	287	248	100	42	26	26
31	27	.....	45	88	.....	117	.....	269	.....	41	25	.....

NOTE.—Discharge determined from well-defined rating curve. Discharge Nov. 1 and 2 interpolated, as recording gage was out of commission. Discharge Nov. 19, Dec. 31, Jan. 22, and Sept. 12 determined as mean of hourly discharge on account of variations in stage during the day.

Monthly discharge of Logan River above State dam, near Logan, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	66	27	35.6	2,190	B.
November	26	18	20.9	1,240	B.
December	48	13	25.3	1,560	B.
January	100	53	88.5	5,440	B.
February	100	75	88.8	4,930	B.
March	127	78	94.9	5,840	A.
April	355	112	220	13,100	B.
May	284	177	232	14,300	B.
June	365	100	216	12,900	B.
July	95	41	64.1	3,940	A.
August	47	25	36.0	2,210	A.
September	36	24	27	1,610	B.
The year	365	13	95.6	69,300	

LOGAN RIVER BELOW STATE DAM, NEAR LOGAN, UTAH.

LOCATION.—In sec. 36, T. 12 N., R. 1 E., about 250 feet below State dam and 2 miles above Logan, Cache County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 29, 1913, to October 31, 1914, when station was discontinued. November, 1914, to July, 1915, discharge measurements. On July 26, 1915, a new station was established a few hundred feet below head of Logan Northern canal; flow at new station plus that of the Logan Northern canal approximately the same as at this station.

GAGE.—Stevens water-stage recorder on the left bank, 100 feet above the heading of the Logan Northern canal, 100 feet below the confluence of the State tailrace with the main river.

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

CHANNEL AND CONTROL.—Bed composed of gravel and boulders. Banks high, not subject to overflow. One channel at all stages. Concrete cut-off wall, constructed September 28, 1913, acts as control for low stages. Stage of zero flow, about 2.8 feet.

WINTER FLOW.—Stage-discharge relation not affected by ice.

DIVERSIONS.—Water diverted by Logan, Hyde Park, and Smithfield canal, about 2 miles above station, is used for irrigation and is not returned to the river.

REGULATION.—Operation of three power plants above station causes diurnal fluctuations, especially during low-water periods.

ACCURACY.—Records fair.

Discharge measurements of Logan River below State dam, near Logan, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 11	J. J. Sanford	3.68	125	May 13	Lynn Crandall	3.58	194
Jan. 28	L. W. Jordan	3.63	115	July 1	E. A. Porter		172
Apr. 3	J. J. Sanford	3.65	117				

NOTE.—Control blasted out and channel completely changed after Apr. 11. On July 1 measured in two channels—river and tailrace.

Daily discharge, in second-feet, of Logan River below State dam, near Logan, Utah, for October, 1914.

Day.	Oct.	Day.	Oct.	Day.	Oct.
1	133	11	159	21	149
2	135	12	156	22	147
3	142	13	156	23	147
4	140	14	156	24	147
5	138	15	156	25	144
6	142	16	154	26	144
7	144	17	152	27	147
8	142	18	152	28	147
9	152	19	149	29	144
10	159	20	149	30	144
				31	142

NOTE.—Discharge determined from fairly well-defined rating curve.

LOGAN RIVER BELOW LOGAN NORTHERN CANAL, NEAR LOGAN, UTAH.

LOCATION.—In the NW. ¼ sec. 36, T. 12 N., R. 1 E., about 500 feet below heading of Logan Northern canal, 850 feet below State dam, and 2 miles above Logan, Cache County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 26 to September 30, 1915.

GAGE.—Stevens water-stage recorder on left bank about 200 feet southwest of the bridge by which State road crosses Logan Northern canal.

DISCHARGE MEASUREMENTS.—Made by wading or from cable 125 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 4.64 feet at 7.30 a. m. September 25 (discharge, 108 second-feet); minimum stage, 4.05 feet at 1 p. m. September 2 (discharge, 39 second-feet).

DIVERSIONS.—Logan, Hyde Park, and Smithfield canal and Logan Northern canal divert water above station for irrigation.

REGULATION.—Operation of power plants above causes some diurnal fluctuation at times during low-water periods.

ACCURACY.—Records good.

Discharge measurements of Logan River below Logan Northern canal near Logan, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Aug. 2	Eugene Schaub [a]	4.50	89	Aug. 25	R. B. West [b]	4.35	71
4	R. B. West [b]	4.56	82	26	Lynn Crandall	4.36	72
4	Eugene Schaub [a]	4.46	81	29	R. B. West [b]	4.31	70
5	Lynn Crandall	4.43	78	Sept. 8	L. W. Jordan	4.42	77

[a] Civil and hydraulic engineer, Logan, Utah.
[b] Professor of irrigation engineering at Utah Agricultural College.

Daily discharge, in second-feet, of Logan River below Logan Northern canal for the year ending Sept. 30, 1915.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1		85	65	11		72	80	21		72	99
2		90	70	12		70	80	22		71	97
3		88	88	13		71	80	23		70	97
4		82	79	14		74	80	24		70	97
5		80	77	15		74	77	25		72	99
6		79	81	16		75	80	26	85	69	105
7		82	80	17		75	77	27	85	66	90
8		76	79	18		75	77	28	84	65	79
9		75	77	19		75	76	29	82	65	76
10		75	77	20		74	81	30	84	65	76
								31	84	65	

NOTE.—Discharge determined from rating curve well defined for range of stage. Recording gage stopped Sept. 30; discharge estimated.

Monthly discharge of Logan River below Logan Northern canal near Logan, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
July 26–31	85	82	84.0	1,000	A.
August	90	65	74.1	4,560	A.
September	105	65	82.5	4,910	A.
The period				10,500	

UTAH POWER & LIGHT CO.'S TAILRACE NEAR LOGAN, UTAH.

LOCATION.—In the NE. ¼ sec. 36, T. 12 N., R. 1 E., 100 feet below power house at plant of Utah Power & Light Co., about 2½ miles above Logan, Cache County.

RECORDS AVAILABLE.—May 7, 1913, to September 30, 1915.

GAGE.—Friez water-stage recorder on right bank just above weir.

DISCHARGE MEASUREMENTS.—Made from a footbridge just above gage.

CHANNEL AND CONTROL.—A rectangular wooden weir, with a metal crest strip just below gage acts as control. Capacity of channel above gage not sufficient to eliminate all velocity of approach. Stage of zero flow, zero on gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.75 feet at 6 p. m. November 3 (discharge, 158 second-feet); no flow October 10, February 10, March 9, and August 18.

1913–1915: Maximum stage recorded, 1.77 feet on May 8, 1914 (discharge 162 second-feet); minimum discharge, zero on April 3, 20, August 17, 1914, October 10, February 10, March 9, and August 18, 1915.

WINTER FLOW.—Stage-discharge relation not affected by ice.

REGULATION.—Flow at station affected by operation of power plant.

ACCURACY.—Records fair.

Canal diverts water from right bank of Logan River in sec. 30, T. 13 N., R 2 E. Water is returned to river 150 feet below gaging station at plant of Utah Power & Light Co. in the N. ¼ sec. 36, T. 12 N., R. 1 E. Water is used for power development.

Discharge measurements of Utah Power & Light Co.'s tailrace near Logan, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 11	J. J. Sanford	1.46	127	July 26	L. C. Monson [b]	1.23	90
Jan. 28	L. W. Jordan	.46	18.1	Aug. 5	Lynn Crandall	1.23	87
Apr. 2	J. J. Sanford	.38	13.9	26	do	1.22	84
July 1	Porter and West	1.28	95	Sept. 8	L. W. Jordan	1.26	86
15[a]	Lynn Crandall	1.23	83				

[a] Measurement made 150 feet below regular section.
[b] Employee of Utah Power & Light Co.

Daily discharge, in second-feet, of Utah Power & Light Co.'s tailrace near Logan, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	122	132	119	18	20	17	16	14	49	91	89	88
2	136	132	114	20	20	17	16	14	14	94	88	87
3	136	135	120	19	19	17	14	14	16	95	88	87
4	139	135	118	20	19	19	14	15	58	94	88	87
5	135	132	120	19	18	21	14	15	14	94	88	87
6	126	134	114	20	22	20	15	16	14	94	86	87
7	136	134	116	21	18	16	15	16	15	94	85	87
8	136	134	118	20	31	17	16	8.2	14	94	86	87
9	136	138	112	19	22	12	15	11	21	92	90	87
10	106	135	108	17	15	15	14	14	14	92	97	87
11	129	130	116	18	15	15	14	14	51	92	97	87
12	132	132	106	17	16	14	15	14	60	88	90	86
13	132	134	95	17	16	14	15	44	13	85	88	88
14	131	135	88	17	14	14	16	43	56	88	88	88
15	132	131	90	17	16	16	16	29	68	89	88	89
16	132	127	91	16	17	16	15	35	86	96	89	89
17	132	130	94	16	17	16	15	49	91	97	89	39
18	132	130	96	16	17	16	14	54	91	90	73	89
19	132	118	92	17	17	16	14	28	92	90	85	90
20	132	125	86	19	17	14	14	12	92	89	85	90
21	132	124	80	20	17	14	14	12	88	88	85	90
22	134	120	82	34	17	14	14	12	81	88	86	90
23	134	122	89	41	17	14	14	10	88	88	86	90
24	134	121	90	20	16	14	14	12	90	86	86	90
25	131	122	60	23	16	14	13	30	88	86	86	85
26	132	124	84	20	15	13	14	30	92	86	86	86
27	132	124	90	20	17	13	14	26	90	88	86	88
28	132	122	91	19	17	14	14	35	89	88	88	89
29	131	108	91	19	.....	16	14	48	88	88	88	90
30	132	119	92	19	.....	16	14	63	88	89	88	90
31	132	.....	93	18	.....	16	.....	40	.....	89	88	.....

NOTE.—Discharge determined from two fairly well defined rating curves, one nsed Oot. 1 to May 14 and the other May 15 to Sept. 27. Discharge Oct. 10, Dec. 31, Jan. 22 and 23, Feb. 6, 8, and 10, May 8, 13–19, and 25–31, June 1, 4, 9, 11, 12, 14, and 15, and Aug. 18 computed as mean of determinations of hourly discharge on account of fluctuations in stage. Discharge Sept. 2–11 and 28–30 obtained by indirect method for shifting control.

Monthly discharge of Utah Power & Light Co.'s tailrace near Logan, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	139	106	132	8,120	A.
November	138	108	128	7,620	A.
December	120	60	97.6	6,000	A.
January	41	16	19.9	1,220	B.
February	31	14	17.8	989	B.
March	21	12	15.5	953	B.
April	16	13	14.5	863	B.
May	63	8.2	25.1	1,540	B.
June	92	13	60.4	3,590	A.
July	97	85	90.4	5,560	A.
August	97	73	87.4	5,370	A.
September	90	86	88.1	5,240	A.
The year	139	3.2	65.0	47,100	

LOGAN, HYDE PARK, AND SMITHFIELD CANAL NEAR LOGAN, UTAH.

LOCATION.—In the NE. ¼ sec. 31, T. 12 N., R. 2 E., at concrete rating flume about half a mile below head of canal, 1 mile below city power plant, 1 mile above plant of Utah Power & Light Co., and 3½ miles from Logan, Cache County.

RECORDS AVAILABLE.—Fragmentary records 1904–1912. Fairly continuous records April 22, 1912, to September 30, 1915.

GAGE.—Stevens continuous water-stage recorder on right bank near lower end of rating flume; installed June 6, 1913. Records April 22, 1912, to March 31, 1913, obtained from vertical staff gage at point about 1½ miles below present gage; two wasteways between the two points. Prior to April 22, 1912, gages were maintained at various points.

DISCHARGE MEASUREMENTS.—Made by wading or from a foot plank at the flume.

CHANNEL AND CONTROL.—Rectangular concrete rating flume. Stage of zero flow, after control board was installed in April, 1915. 0.35 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.36 feet at 11 a. m. May 6 (discharge, 107 second-feet); minimum stage recorded, 0.23 foot at 10 a. m. April 17 (discharge, 4 second-feet).

1912–1915: Maximum stage recorded, 2.46 feet July 24, 1914 (discharge, 114 second-feet); minimum discharge probably zero (while canal is being cleaned).

WINTER FLOW.—Recording gage usually removed during winter. A small flow of water is maintained for domestic use.

DIVERSIONS.—None above the gage.

REGULATION.—Flow regulated by headgates at diversion works.

ACCURACY.—Records good.

Logan, Hyde Park, and Smithfield canal diverts water from Logan River near corner of secs. 29, 30, 31, and 32, T. 12 N., R. 2 E., for irrigation and domestic use in the territory north of Logan. The water is not returned to the stream.

Discharge measurements of Logan, Hyde Park, and Smithfield canal near Logan, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 11	J. J. Sanford	0.70	16.4	July 15	Lynn Crandall	1.46	49.9
Jan. 28	L. W. Jordan	.84	22.0	Aug. 5	....do	1.18	33.9
May 13	Lynn Crandall	1.85	73	26	....do	1.11	32.9
July 1	Porter and West	1.61	66	Sept. 8	L. W. Jordan	1.04	28.0

Daily discharge, in second-feet, of Logan, Hyde Park, and Smithfield canal near Logan, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Apr.	May.	June.	July.	Aug.	Sept.
1	28	19	.....	87	82	60	42	30
2	28	19	.....	63	82	60	35	30
3	28	19	6	43	81	58	35	32
4	28	19	6	22	79	58	35	30
5	28	16	5	35	79	58	35	30
6	28	17	5	54	79	55	35	28
7	28	17	5	55	78	51	36	28
8	28	17	5	63	78	51	37	27
9	18	16	5	69	79	51	38	26
10	13	16	5	64	80	52	37	26
11	13	16	5	73	79	51	37	28
12	16	.....	5	73	79	51	37	28
13	19	.....	5	86	78	51	36	28
14	19	.....	5	100	78	51	33	26
15	19	.....	5	98	76	51	32	26
16	19	.....	4	96	76	46	33	24
17	19	.....	5	98	77	44	32	24
18	19	.....	5	99	78	43	33	23
19	19	.....	5	97	76	43	32	22
20	19	.....	5	84	95	43	32	22
21	19	.....	5	78	104	43	32	22
22	19	.....	5	77	90	43	32	22
23	19	.....	4	76	91	42	32	22
24	19	.....	22	76	78	42	32	21
25	18	.....	34	78	63	42	31	22
26	19	.....	46	38	62	42	30	37
27	19	.....	64	31	61	42	30	36
28	19	.....	92	78	61	42	30	28
29	19	.....	99	78	61	42	30	27
30	19	.....	88	79	60	45	30	26
31	19	.....	.....	79	.....	46	30	.....

NOTE.—Discharge determined from two fairly well defined rating curves, one applicable Oct. 1 to Apr. 21 and the other Apr. 23 to Sept. 30. Recording gage out Nov. 12 to Apr. 2 and no records were kept; probably some water running in the canal all winter for domestic use. Discharge Apr. 22, the day on which control board was probably installed, determined by using the first rating table part of the day and the second for the remainder. Discharge Apr. 24, 26, 27, and 30, May 2, 4, 5, 10, 13, 20, 26, and 27, and June 20, 22, and 24 determined as the mean of determinations of hourly discharge on account of fluctuations in head.

Monthly discharge of Logan, Hyde Park, and Smithfield canal near Logan, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	28	13	20.8	1,280	B.
November 1–11	19	16	17.4	380	B.
April 3–30	99	4	19.6	1,090	B.
May	100	22	71.8	4,410	A.
June	104	60	77.3	4,600	A.
July	60	42	48.4	2,980	B.
August	42	30	33.6	2,070	B.
September	37	21	26.7	1,590	B.

LOGAN NORTHERN CANAL NEAR LOGAN, UTAH.

LOCATION.—In sec. 36, T. 12 N., R. 1 E., at upper end of the timber-lined section, about 800 feet below head of canal, and 2 miles above Logan, Cache County.

RECORDS AVAILABLE.—June 6, 1913, to September 30, 1914; May 13 to December 31, 1915.

GAGE.—Stevens continuous water-stage recorder on right bank immediately above lined section of canal.

DISCHARGE MEASUREMENTS.—Made by wading or from foot plank.

CHANNEL AND CONTROL.—Bed at the gage is composed of earth and gravel; immediately below is a timber-lined rectangular section which contracts the width very slightly. A low control board has been installed at the upper end of this section, making stage of zero flow 0.45 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.51 feet at 10 a. m. June 22 (discharge, 99 second-feet) (canal dry part of year). 1913–1915: Maximum stage recorded, 2.58 feet July 15, 1913 (discharge, 103 second-feet). (Canal dry most of nonirrigation seasons.)

WINTER FLOW.—No record kept during winter; canal usually dry.

DIVERSIONS.—Above all diversions.

REGULATION.—Flow regulated by head gates at point of diversion.

ACCURACY.—Records only fair.

The Logan Northern canal heads in the right bank of Logan River in the SW. ¼ NW. ¼ sec. 36, about 350 feet below the State dam. The water is used primarily for irrigation and is not returned directly to the stream.

Discharge measurements of Logan Northern canal near Logan, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
May. 13	Lynn Crandall	1.39	45.2	Aug. 5	Lynn Crandall	1.40	38.8
July 1	Porter and West	1.95	70	26	do	1.25	31.5
15	Lynn Crandall	1.66	52	Sept. 8	L. W. Jordan	1.01	22.2

Daily discharge, in second-feet, of Logan Northern canal near Logan, Utah, for 1915.

Day	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		40	70	38	31	22	25	6
2		40	66	35	31	22	25	6
3		15	62	35	31	22	25	6
4		1	60	37	31	22	24	6
5		1	58	39	30	22	24	6
6		1	57	38	23	22	24	6
7		0	54	39	22	22	26	6
8		32	54	39	22	22	30	6
9		50	52	38	23	22	30	6
10		50	54	38	23	22	30	21
11		50	52	37	23	22	26	4
12		50	52	37	23	22	23	4
13	20	49	52	36	23	22	23	3
14	56	49	53	35	22	22	20	3
15	70	49	52	35	22	22	29	3
16	71	49	52	33	22	22	32	3
17	72	51	46	33	22	22	24	3
18	68	61	47	34	22	22	24	3
19	51	79	52	34	21	22	22	2
20	39	88	46	33	15	30	6	2
21	30	90	45	33	0	56	5	1
22	30	96	44	33	0	56	4	.5
23	30	92	43	32	0	56	4	0
24	30	70	44	32	0	56	11	0
25	31	68	44	32	0	56	12	0
26	18	70	43	31	0	41	8	0
27	1	71	44	31	10	22	5	0
28	15	70	44	31	22	22	5	0
29	41	70	44	31	22	22	5	0
30	40	70	41	31	22	18	5	1
31	40	.....	41	31	.....	25	.....	2

NOTE.—Discharge determined from poorly defined rating curves, used as follows: May 13 to July 1, Aug. 26 to Sept. 26, Sept. 27 to Oct. 19, Oct 21 to Dec. 31. Discharge July 2 to Aug. 25 and Oct. 20 determined by indirect method for shifting control; May 12, 26 and 28, June 3 and 8, Sept. 20, 27, Oct. 26, 30, Nov. 15, 16, and 19, and Dec. 10 determined by using the mean of determinations of hourly discharge, on account of sudden changes in flow.

Monthly discharge of Logan Northern canal near Logan, Utah, for 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
May 12-31	72	0	37.6	1,490	C.
June	96	0	52.4	3,120	C.
July	70	41	50.6	3,110	B.
August	39	31	34.5	2,120	B.
September	31	0	18.6	1,110	C.
October	56	18	28.3	1,740	C.
November	32	4	18.5	1,100	C.
December	21	0	3.53	217	D.
The period				14,000	

BLACKSMITH FORK ABOVE UTAH POWER & LIGHT CO.'S DAM, NEAR HYRUM, UTAH.

LOCATION.—In the NE. ¼ sec. 8, T. 10 N., R. 2 E., 1 mile above the diversion dam of Utah Power & Light Co., 3½ miles above power plant, and 6 miles from Hyrum, Cache County.

DRAINAGE AREA.—260 square miles (measured on topographic maps and map of Cache National Forest).

RECORDS AVAILABLE.—July 19, 1900, to December 31, 1902; November 28, 1913, to September 30, 1915.

GAGE.—Stevens continuous water-stage recorder on left bank 500 feet above wagon bridge and nearly a mile above dam installed November 28, 1913. A gage at old toll gate in mouth of canyon 3½ miles downstream was used July 19, 1900, to December 31, 1902. Flow about the same at both points.

DISCHARGE MEASUREMENTS.—Made by wading about three-eighths mile above gage or from a cable a quarter of a mile above gage. Conditions at wading section good; at cable poor, especially at high stages.

CHANNEL AND CONTROL.—Bed rough but fairly permanent; one channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.71 feet, at 1 p. m. October 1 (discharge, 124 second-feet); minimum stage, 1.1 feet, at 8 a. m. January 23 (discharge, 53 second-feet).

1913–1915; Maximum stage recorded, 3.39 feet, April 21, 1914 (discharge, 669 second-feet); minimum stage, 1.1 feet January 23, 1915 (discharge, 53 second-feet).

WINTER FLOW.—Stage-discharge relation not seriously affected, as current is swift and turbulent. Open-channel rating curve assumed applicable.

DIVERSIONS.—Above all important diversions.

REGULATION.—None.

ACCURACY.—Records fair.

Discharge measurements of Blacksmith Fork above Utah Power & Light Co.'s dam, near Hyrum, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 10	J. J. Sanford	1.58	103	May 27	L. C. Monson	1.55	106
Jan. 29	L. W. Jordan	1.45	94	June 30	E. A. Porter	1.46	91
Mar. 15	L. C. Monson [a]	1.45	97	July 26	L. C. Monson	1.40	76
Apr. 2	J. J. Sanford	1.50	88	Aug. 6	Lynn Crandall	1.39	73
May 12	Lynn Crandall	1.54	96	25	do	1.37	71

[a] Employee of Utah Power & Light Co.

Daily discharge, in second-feet, of Blacksmith Fork above Utah Power & Light Co.'s dam, near Hyrum, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	122	96	112	100	94	89	86	100	102	90	75	70
2	120	94	108	98	94	90	86	100	104	90	75	72
3	120	94	112	99	98	92	99	99	102	90	74	83
4	119	94	112	96	94	92	107	99	100	90	72	76
5	120	98	112	96	93	92	100	98	102	87	71	77
6	119	102	112	96	90	92	99	99	105	86	74	74
7	114	102	112	96	96	92	102	99	102	86	72	72
8	117	100	108	96	96	92	114	98	100	83	74	72
9	115	102	107	96	96	92	107	98	100	84	72	71
10	114	102	105	96	99	92	102	99	100	83	72	72
11	114	102	107	96	96	92	102	100	99	83	71	80
12	112	102	107	98	96	92	100	99	104	83	71	81
13	110	102	107	98	93	96	102	96	102	83	71	78
14	110	102	104	96	93	96	104	99	100	83	69	78
15	110	99	104	100	92	98	104	98	99	83	69	77
16	108	99	100	100	94	98	108	94	98	83	70	76
17	107	100	105	108	94	96	114	99	98	82	69	74
18	107	100	108	89	94	94	110	104	98	82	70	74
19	105	102	105	94	94	93	110	102	98	80	71	76
20	105	102	102	96	94	92	108	102	96	80	70	76
21	102	104	90	96	92	90	108	102	94	82	69	74
22	102	104	96	69	92	90	107	107	93	82	68	74
23	104	105	117	69	92	90	107	105	93	80	69	76
24	98	105	104	68	92	93	105	104	93	80	70	76
25	107	107	104	70	92	93	102	107	92	80	71	78
26	107	107	104	104	92	90	100	105	90	76	70	86
27	104	108	104	96	90	90	100	105	90	75	69	81
28	98	108	104	92	89	89	100	100	90	75	70	81
29	99	107	104	96	.....	90	100	102	90	74	69	80
30	99	110	104	96	.....	87	100	100	92	74	69	80
31	98	.....	102	96	.....	84	.....	99	.....	74	70	.....

Monthly discharge of Blacksmith Fork above Utah Power & Light Co.'s dam, near Hyrum, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	122	98	109	6,700	C.
November	110	94	102	6,070	B.
December	117	90	106	6,520	B.
January	108	68	93.4	5,740	B.
February	99	89	93.6	5,200	B.
March	98	84	91.9	5,650	B.
April	114	86	103	6,130	B.
May	107	94	101	6,210	B.
June	105	90	97.5	5,800	B.
July	90	74	82.0	5,040	B.
August	75	68	70.8	4,350	B.
September	86	70	76.5	4,550	B.
The year	122	68	93.9	68,000	

BLACKSMITH FORK AT UTAH POWER & LIGHT CO.'S PLANT NEAR HYRUM, UTAH.

LOCATION.—In sec. 11, T. 10 N., R. 1 E., immediately above wagon bridge, 300 feet above confluence of the Utah Power & Light Co.'s tailrace with main stream, and 2½ miles east of Hyrum, Cache County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 15, 1914, to September 30, 1915.

GAGE.—Stevens continuous water-stage recorder on right bank.

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

CHANNEL AND CONTROL.—Bed composed of gravel overgrown with aquatic plants. Concrete cut-off wall installed about 10 feet below gage forms control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.63 feet at 6 a. m. October 5 (discharge, 117 second-feet); minimum stage, 3.79 feet June 24–27 (discharge, 9 second-feet).

1914–1915: Maximum stage recorded, 6.20 feet April 21, 1914 (discharge, about 500 second-feet); minimum stage, 3.79 feet June 24–27, 1915 (discharge, 9 second-feet).

WINTER FLOW.—Stage-discharge relation not affected by ice, as low-water flow is maintained by springs a short distance above gage.

DIVERSIONS.—Water diverted for power development by Utah Power & Light Co. 2½ miles above station, is returned to stream 300 feet below gage. During low-water periods entire flow is diverted, and the records obtained at the gage represent inflow from springs between diversion dam and gage. The Hyrum city power canal diverts water 300 feet below gage at the mouth of tailrace of the Utah Power & Light Co. Station is above all diversions for irrigation.

REGULATION.—See diversions.

ACCURACY.—Records good.

Discharge measurements of Blacksmith Fork at Utah Power & Light Co.'s plant near Hyrum, Utah, during the year ending Sept. 30, 1195.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 10	J. J. Sanford	3.86	12.5	May 12	Lynn Crandall	3.83	10.6
Jan. 29	L. W. Jordan	3.83	12.8	Aug. 6	....do	3.82	10.7
Apr. 2	J. J. Sanford	3.84	12.0				

Daily discharge, in second-feet, of Blacksmith Fork at Utah Power & Light Co.'s plant near Hyrum, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	15	23	13	11	9.6	13	11	12	11	9.0	9.6	9.6
2	14	20	13	11	9.6	13	11	12	11	9.0	10	9.6
3	14	17	12	11	9.6	13	12	12	11	9.0	10	9.6
4	79	17	12	11	10	12	17	12	10	9.0	10	10
5	89	17	12	11	10	12	14	12	10	9.0	10	10
6	57	15	12	11	10	12	13	11	10	9.0	10	10
7	58	15	12	11	10	12	14	11	10	9.0	10	10
8	62	17	12	11	11	12	20	11	10	9.0	10	10
9	54	16	11	11	11	12	15	11	10	9.0	10	10
10	53	13	11	11	11	12	13	10	10	9.0	10	10
11	47	14	11	11	11	12	13	11	10	9.0	10	10
12	44	15	11	11	12	12	14	11	10	9.0	10	11
13	33	19	11	11	11	13	14	11	9.6	9.0	10	10
14	30	17	11	11	13	12	13	10	9.6	9.0	10	10
15	28	17	11	11	12	12	13	10	9.6	9.0	10	10
16	27	13	11	11	12	11	15	10	9.0	9.0	10	10
17	26	13	12	11	11	11	17	10	9.0	9.0	10	10
18	23	13	14	11	12	11	15	10	9.6	9.0	10	9.6
19	20	11	16	12	12	11	16	10	9.6	9.0	10	9.6
20	21	12	14	12	12	11	14	10	9.0	9.0	9.6	10
21	21	12	14	12	13	11	14	10	9.0	9.0	9.6	10
22	21	13	11	12	13	11	14	10	9.0	9.0	9.6	9.6
23	21	13	12	12	13	11	14	10	9.0	9.6	9.6	9.6
24	23	13	13	11	13	11	13	11	8.6	9.6	9.6	9.6
25	23	13	13	11	13	11	13	11	8.6	9.6	9.6	10
26	24	13	13	12	13	11	13	11	8.6	9.6	9.6	11
27	25	13	13	11	13	11	13	11	8.6	9.6	9.6	11
28	21	13	12	11	13	11	13	11	8.6	9.6	9.6	11
29	21	13	12	11	.....	11	13	11	9.0	9.6	9.6	11
30	23	13	11	9.6	.....	11	13	11	9.0	9.6	9.6	11
31	24	.....	11	9.6	.....	11	.....	11	.....	9.6	9.6	.....

NOTE.—Discharge determined from a fairly well defined rating curve.

Monthly discharge of Blacksmith Fork at Utah Power & Light Co.'s plant near Hyrum, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	89	14	33.6	2,070	B.
November	23	11	14.8	881	B.
December	16	11	12.2	750	B.
January	12	9.6	11.1	682	B
February	13	9.6	11.6	644	B.
March	13	11	11.6	713	B.
April	20	11	13.9	827	B.
May	12	10	10.8	664	B.
June	11	8.6	9.53	567	C.
July	9.6	9.0	9.17	564	B.
August	10	9.6	9.83	604	B.
September	11	9.6	10.1	601	B.
The year	89	8.6	13.2	9,570	

BLACKSMITH FORK BELOW UTAH POWER & LIGHT CO.'S PLANT NEAR HYRUM, UTAH.

LOCATION.—In sec. 2, T. 10 N., R. 1 E., six or seven hundred feet below heading of Hyrum city power canal and mouth of Utah Power & Light Co.'s tailrace, and about 2½ miles east of Hyrum, Cache County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 16, 1904, to December 31, 1910; April 15, 1914, to September 30, 1915.

GAGE.—Stevens's continuous water-stage recorder on right bank; installed April 15, 1915. Gage used 1904–1910 was a vertical staff about 300 feet above present site and at different datum.

DISCHARGE MEASUREMENTS.—Made by wading at various sections or from cable about 100 feet below gage. Conditions for measuring poor and there are springs all along this section of the river.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; steep. Banks low and covered with willows, but will probably not be overflowed except during extraordinary floods. Concrete wall about 10 feet below gage acts as control. Stage of zero flow, 4.4 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.40 feet at 4.30 p. m. May 24 (discharge, 84 second-feet); minimum stage, 4.60 feet at 5 p. m. March 13 (discharge, 6 second-feet).

1904–1910, and 1914–15: Maximum stage recorded, 6.8 feet April 16, 1907 (discharge, 1,810 second-feet); minimum stage, 4.60 feet March 13, 1915 (discharge, 6 second-feet). New datum in 1915. See gage.

WINTER FLOW.—Stage-discharge relation not usually affected by ice, on account of springs in the vicinity.

DIVERSIONS.—Water diverted above station by Hyrum city power canal is returned to stream about a quarter of a mile downstream. The Utah Power & Light Co. diverts about 2½ miles upstream, but the tailrace of this plant enters just above head of city canal.

REGULATION.—Flow at gage affected by operation of the two plants.

ACCURACY.—Records poor.

Discharge measurements of Blacksmith Fork below Utah Power & Light Co.'s plant near Hyrum, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 10[a]	J. J. Sanford	4.89	21.6	May 12[a]	Lynn Crandall	4.84	12.7
10	do	4.89	22.5	June 30	E. A. Porter	4.76	13.4
Jan. 29[a]	L. W. Jordan	4.73	8.5	Aug. 6[a]	Lynn Crandall	4.74	14.1
29	do	4.73	16.0	Aug. 25[a]	do	4.68	11.5
Apr. 2[a]	J. J. Sanford	4.60	4.9				

[a] Measured above gage. Inflow between this point and cable section.

Daily discharge, in second-feet, of Blacksmith Fork below Utah Power & Light Co.'s plant near Hyrum, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	39	28	21	16	13	11	10	24	22	15	13	10
2	39	24	20	16	13	12	10	24	22	15	14	10
3	39	27	20	15	14	11	11	24	21	16	14	12
4	23	27	20	15	14	12	15	22	21	16	14	10
5	31	25	20	17	14	12	12	21	22	15	13	11
6	29	25	20	15	13	11	13	20	22	15	14	10
7	30	24	19	15	14	11	14	20	22	15	12	10
8	32	24	19	15	12	10	17	20	23	14	13	10
9	30	24	18	14	13	10	18	20	24	14	13	10
10	31	23	17	13	13	10	17	20	23	14	14	10
11	33	21	19	14	13	10	15	20	23	15	12	11
12	33	21	18	14	13	10	16	21	24	14	12	12
13	32	23	17	13	14	10	17	23	24	12	12	11
14	32	20	17	13	12	9	17	18	24	14	12	11
15	31	23	15	12	12	10	19	19	24	17	14	10
16	30	22	13	12	11	10	21	20	23	12	12	10
17	30	26	12	12	11	10	23	20	24	11	12	10
18	31	28	12	12	12	10	26	21	26	13	13	10
19	30	17	12	12	12	10	23	20	26	12	13	10
20	29	17	12	13	11	9	22	20	26	14	13	10
21	29	20	12	19	11	9	22	28	26	14	12	10
22	28	21	14	15	11	9	23	34	25	15	11	10
23	27	21	14	13	11	10	22	34	24	15	11	10
24	27	21	13	17	11	9	23	50	23	15	10	10
25	27	21	14	18	11	10	27	39	15	14	10	10
26	27	21	14	23	11	10	23	22	15	14	10	14
27	27	22	16	18	11	10	23	22	14	14	10	11
28	30	22	16	14	11	10	24	21	14	14	10	10
29	24	21	16	13	.....	10	24	21	15	14	10	10
30	25	21	15	14	.....	9	24	24	15	14	10	10
31	25	.....	17	14	.....	10	.....	22	.....	15	10	.....

NOTE.—Discharge determined from a poorly defined rating curve.

Monthly discharge of Blacksmith Fork below Utah Power & Light Co.'s plant near Hyrum, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	39	23	30.0	1,840	C.
November	28	17	22.7	1,350	C.
December	21	12	16.2	996	C.
January	23	12	14.7	904	C.
February	14	11	12.2	678	D.
March	12	9	10.1	621	D.
April	27	10	19.0	1,130	D.
May	50	18	23.7	1,460	D.
June	26	14	21.7	1,290	D.
July	17	11	14.2	873	C.
August	14	10	12.0	738	C.
September	14	10	10.4	619	C.
The year	50	9	17.3	12,500	

HYRUM CITY POWER CANAL NEAR HYRUM, UTAH.

LOCATION.—In sec. 2, T. 10 N., R. 1 E., about 300 feet below head of canal which diverts immediately below confluence of Utah Power & Light Co.'s tailrace with main stream; about 2½ miles east of Hyrum, Cache County.

RECORDS AVAILABLE.—1904–1910, and April 15, 1914, to September 30, 1915. Records from 1904–1910 were published under head "Blacksmith Fork (or Hyrum) power plant race near Hyrum, Utah."

GAGE.—Stevens continuous water-stage recorder on right bank immediately below footbridge. Gage used 1904–1910 was a vertical staff at approximately same site but different datum.

DISCHARGE MEASUREMENTS.—Made from footbridge or by wading.

CHANNEL AND CONTROL.—Bed composed of earth and gravel. Right bank covered with willows. Control not clearly defined.

EXTREMES OF DISCHARGE.—1904–1910, 1914–15: Maximum stage recorded, 6.5 feet at 6 p. m. April 3, 1915 (discharge, 128 second-feet); minimum stage, 4.48 feet at 7.30 a. m. August 15, 1915 (discharge, 9 second-feet).

WINTER FLOW.—Stage-discharge relation not seriously affected by ice; open-water rating curve used to determine discharge.

DIVERSIONS.—None.

REGULATION.—Flow regulated by gates at head of canal.

ACCURACY.—Records good.

Canal diverts water from left side of Blacksmith Fork in sec. 2, T. 10 N., R. 1 E., immediately below tailrace of Utah Power & Light Co. Water is used for power development at the Hyrum city power plant and is returned to the river.

Discharge measurements of Hyrum city power canal near Hyrum, Utah, during the year ending Sept. 30 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 10	J. J. Sanford	6.19	99	May 12	Lynn Crandall	6.15	92
Jan. 29	L. W. Jordan	6.08	86	Aug. 6	do	5.83	66
Apr. 2	J. J. Sanford	6.07	94	25	do	5.88	70

Daily discharge, in second-feet, of Hyrum city power canal near Hyrum, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	99	101	90	94	80	84	88	104	84	70	65	68
2	99	99	93	93	80	88	88	104	87	68	65	71
3	99	100	94	94	86	88	92	99	84	68	66	83
4	94	99	94	94	88	88	100	97	84	68	64	74
5	98	99	94	99	85	86	97	97	82	67	63	76
6	102	97	90	97	83	86	97	97	84	67	68	71
7	102	95	94	96	84	85	98	95	85	68	66	69
8	102	95	90	96	84	85	107	94	84	68	65	69
9	100	97	90	94	88	85	107	95	95	66	65	69
10	101	98	88	91	84	85	104	94	80	67	65	70
11	100	95	88	92	88	84	102	94	82	68	63	74
12	100	94	88	92	87	85	102	94	83	66	63	75
13	98	95	88	92	91	84	105	104	84	65	62	74
14	98	94	88	91	80	89	105	90	81	66	62	72
15	97	95	88	92	88	87	106	86	97	83	60	71
16	96	94	94	94	84	88	109	90	78	66	63	70
17	97	101	94	94	84	86	111	94	76	63	64	67
18	98	97	94	94	88	88	105	90	73	65	64	68
19	98	87	93	93	84	86	108	90	72	65	66	70
20	97	85	94	92	82	86	107	88	69	65	65	68
21	98	91	90	93	85	84	107	72	70	65	65	67
22	97	91	86	80	84	86	106	74	68	66	63	67
23	97	91	86	70	86	84	105	73	67	66	65	68
24	98	90	86	75	84	88	105	54	68	76	68	68
25	99	90	89	77	85	88	98	70	68	63	71	69
26	99	91	92	88	85	88	105	87	68	64	70	82
27	99	91	92	94	84	89	104	86	69	64	69	74
28	102	92	93	92	83	88	104	86	69	64	69	69
29	97	92	93	90	.....	90	104	85	70	64	68	69
30	99	91	94	88	.....	88	104	80	70	64	68	68
31	98	.....	94	88	.....	91	.....	85	.....	62	68	.....

NOTE.—Discharge determined from a rating curve well defined between 50 and 110 second-feet. Recording gage not operating properly Oct. 5, Dec. 11–14, 21, 23, 25, and 31, and July 4; discharge interpolated.

Monthly discharge of Hyrum city power canal near Hyrum, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	102	94	98.6	6,090	B.
November	101	85	94.2	5,610	B.
December	94	86	91.0	5,600	B.
January	99	70	90.5	5,560	B.
February	91	80	84.8	4,710	B.
March	91	84	86.7	5,330	B.
April	111	88	103	6,130	B.
May	104	54	88.6	5,450	B.
June	97	67	77.7	4,620	B.
July	83	62	66.7	4,100	B.
August	71	60	65.4	4,020	B.
September	83	67	71.0	4,220	B.
The year	111	54	84.8	61,400	

WEST SIDE CANAL NEAR COLLINSTON, UTAH.

LOCATION.—In the NW. ¼ sec. 34, T. 13 N., R. 2 W., at Wheelon siding on the Oregon Short Line Railroad, about 600 feet below the penstock of the Utah Power & Light Co.'s Wheelon plant, 1,000 feet northwest of gaging station on Bear River and 4 miles north of Collinston, Boxelder County.

RECORDS AVAILABLE.—June 1, 1912, to September 30, 1915.

GAGE.—Friez water-stage recorder on left bank installed May 22, 1914, at same site and datum as inclined staff gage used prior to that time.

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

CHANNEL AND CONTROL.—Bed composed of earth and gravel; banks steep and clean. Control not well defined, but seems fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.5 feet June 21 (discharge, 516 second-feet); canal dry April 8–25.

1912–1915: Maximum stage recorded, 7.86 feet July 1, 1912 (discharge, 563 second-feet); canal dry February 17–24, April 7–29, 1913, and April 8–25, 1915.

WINTER FLOW.—Stage-discharge relation seriously affected at times by ice; discharge not determined.

DIVERSIONS.—Water is taken out of canal, about 600 feet above gage, for the power plant, and, if necessary, water can also be siphoned across the river to the Hammond canal.

REGULATION.—Flow can be regulated at the head gates and also at the forebay of the power plant.

ACCURACY.—Records good.

Canal diverts water from west side of Bear River in the SW. ¼ sec. 23, T. 13 N., R. 2 W., by means of a low diversion dam. Part of the water is used through the Wheelon plant of the Utah Power & Light Co. about 1½ miles below; the rest is used for irrigation on west side of river. When cleaning or repairing the Hammond canal in the canyon water can be siphoned across the river at the power plant from the West Side canal.

Discharge measurements of West Side canal near Collinston, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 12	Utah Power & Light Co.	4.40	154	June 30	Lynn Crandall	6.95	457
Mar. 16	do	1.80	20.5	July 27	Utah Power & Light Co.	7.10	453
May 14	Lynn Crandall	4.01	135	27	L. W. Jordan	6.80	431
28	Utah Power & Light Co.	3.94	128				

Daily discharge, in second-feet, of West Side canal near Collinston, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	168	139	48	.....	21	15	24	105	477	425	451
2	168	135	50	.....	20	14	24	111	477	425	451
3	183	128	50	.....	22	15	24	108	451	425	399
4	183	124	49	.....	20	15	24	111	490	399	361
5	183	117	52	.....	20	14	24	93	490	399	.....
6	178	93	50	.....	19	14	24	87	503	361	.....
7	164	103	49	.....	18	4	35	99	464	349	.....
8	164	93	50	.....	18	.....	41	111	464	325	.....
9	164	84	49	.....	19	.....	69	136	464	301	.....
10	168	81	48	.....	18	.....	90	168	451	325	.....
11	173	84	48	.....	19	.....	90	188	451	361	225
12	164	84	46	.....	20	.....	93	168	451	373	225
13	155	84	45	.....	20	.....	93	225	464	386	220
14	151	81	45	.....	20	.....	125	262	503	386	220
15	155	90	.....	.....	20	.....	172	274	503	425	225
16	155	78	.....	.....	20	.....	176	325	490	477	210
17	147	78	.....	.....	20	.....	176	361	490	477	225
18	147	84	.....	.....	20	.....	164	361	490	490	230
19	147	90	.....	.....	19	.....	164	503	490	477	235
20	151	81	.....	.....	19	.....	164	503	503	464	230
21	151	75	.....	18	19	.....	164	516	503	464	220
22	143	75	.....	19	17	.....	160	516	490	464	220
23	143	78	.....	18	15	.....	160	503	490	464	220
24	143	75	.....	23	15	.....	156	503	490	438	206
25	139	75	.....	19	15	.....	136	490	503	438	197
26	139	72	.....	18	13	10	118	490	477	425	192
27	143	69	.....	18	13	18	122	490	464	438	188
28	143	50	.....	17	12	24	136	477	477	438	180
29	139	50	.....	.....	13	25	132	490	477	425	192
30	139	48	.....	.....	15	25	132	464	464	425	168
31	139	.....	.....	.....	15	.....	114	.....	451	425	.....

NOTE.—Discharge determined from two well-defined rating curves, one used Oct. 1 to Dec. 14, the other Feb. 21 to Sept. 30. Canal frozen Dec. 15 to Feb. 20; discharge not determined. Canal dry Apr. 8–25. Gage not operating Sept. 5–10; mean flow estimated at 293 second-feet.

Monthly discharge of West Side canal near Collinston, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	183	139	156	9,590	B.
November	139	48	86.6	5,150	B.
December 1-14	52	45	48.5	1,350	B.
February 21-28	23	17	18.8	298	B.
March	22	12	17.9	1,100	B.
April	25	0	6.43	383	B.
May	176	24	107	6,580	A.
June	516	87	308	18,300	A.
July	503	451	479	29,500	A.
August	490	301	416	25,600	A.
September	451	168	255	15,200	A.

HAMMOND (EAST SIDE) CANAL NEAR COLLINSTON, UTAH.

LOCATION.—In the NW. ¼, sec. 34, T. 13 N., R. 2 W., at Wheelon siding on the Oregon Short Line Railroad, about 400 feet below the penstock of the Utah Power & Light Co. and 4 miles north of Collinston, Boxelder County.

RECORDS AVAILABLE.—June 1, 1912, to September 30, 1915.

GAGE.—Friez water-stage recorder on right bank, installed May 22, 1914, at same site and datum as inclined staff used until that date.

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

CHANNEL AND CONTROL.—Bed composed of earth and gravel. Control not well defined. Canal subject to small slides which no doubt affect stage-discharge relation.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.35 feet August 27 (discharge, 102 second-feet). Canal dry October 16. No record during winter.

1912–1915: Maximum stage recorded, 4.50 feet July 18, 1912, and June 11, 1913 (discharge, 113 second-feet). Canal dry at times every year.

WINTER FLOW.—No record was kept during winter, but canal was dry at least part of the time.

DIVERSIONS.—Water is taken from this canal about 400 feet above the gage for the power plant.

REGULATION.—Flow can be regulated at the head gates and by means of a wasteway at the power plant forebay. Is also affected by the operation of the plant.

ACCURACY.—Records good.

Canal diverts water on the east side of Bear River in SW. ¼ sec. 23 at the same diversion dam as the West Side canal. Part of the water is used by the Wheelon plant of the Utah Power & Light Co., and the rest is either wasted into the river or is used for irrigation.

Discharge measurements of Hammond (East Side) canal near Collinston, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
May 14	Lynn Crandall	3.48	70	June 29	Lynn Crandall	4.00	90
28	Employees of Utah Power & Light Co.	1.90	16.8	July 27	Employees of Utah Power & Light Co.	4.27	95
30	do	2.80	45.6	Aug. 27	L. W. Jordan	4.35	103

Daily discharge, in second-feet, of Hammond (East Side) canal near Collinston, Utah, during the year ending Sept. 30, 1915.

Day.	Oct.	Apr.	May.	June.	July.	Aug.	Sept.
1	48	.....	73	44	86	103	103
2	48	.....	70	45	86	103	103
3	52	.....	41	43	83	108	103
4	54	.....	33	44	86	103	45
5	50	.....	50	44	90	103	47
6	48	.....	50	44	86	103	39
7	50	.....	50	44	93	98	39
8	38	.....	48	44	93	93	38
9	22	.....	50	45	88	65	37
10	23	.....	51	46	93	38	38
11	23	.....	52	45	93	38	32
12	23	.....	62	45	93	38	25
13	23	.....	73	44	93	38	25
14	22	.....	70	44	93	39	25
15	6.5	.....	68	86	93	41	25
16	0	19	68	63	96	53	25
17	.....	19	68	62	93	65	25
18	.....	19	70	61	96	96	47
19	.....	19	70	82	93	96	51
20	.....	19	47	88	93	96	51
21	.....	43	13	95	93	96	51
22	.....	52	6	99	96	98	51
23	.....	52	6	93	96	103	51
24	.....	52	5	90	96	103	53
25	.....	51	7	88	98	103	51
26	.....	50	16	83	103	103	38
27	.....	50	16	88	103	106	27
28	.....	50	16	86	106	103	27
29	.....	50	17	88	106	103	25
30	.....	50	30	86	106	103	17
31	.....	.....	44	.....	103	103	.....

NOTE.—Discharge determined from three fairly well defined rating curves, one applicable Oct. 1–16, another Apr. 16 to June 14, and the third from June 23 to Sept. 30. Discharge June 15–22 determined by indirect method for shifting control. No records obtained Oct. 17 to Apr. 15, but canal was probably dry most if not all of the time.

Monthly discharge of Hammond (East Side) canal near Collinston, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October 1-16	54	0	33.4	1,050	B.
April 16-30	52	19	39.7	1,180	B.
May	73	5	43.2	2,660	B.
June	99	43	64.3	3,830	B.
July	106	83	94.4	5,800	B.
August	106	38	85.0	5,230	B.
September	103	17	43.8	2,610	B.

WEBER RIVER BASIN.

WEBER RIVER NEAR OAKLEY, UTAH.

LOCATION.—In the NE. ¼ sec. 15, T. 1 S., R. 6 E., near mouth of canyon about 3 miles above Oakley, Summit County. South Fork of Weber River enters 2 miles above station and Beaver or Kamas Creek 6 miles below.

DRAINAGE AREA.—163 square miles.

RECORDS AVAILABLE.—October 22, 1904, to September 30, 1915.

GAGE.—Inclined staff on left bank about a quarter of a mile above the upper canal diverting from Weber River; ready daily by John Franson.

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

CHANNEL AND CONTROL.—Bed composed of gravel and boulders. One channel at all stages; steep and rough, but apparently fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.3 feet at 7 a. m. June 11 (discharge, 1,230 second-feet); minimum stage, 4.05 feet August 20 to September 2, September 9, 10, 21–25 (discharge, 62 second-feet).

1904–1915: Maximum stage recorded, 8.5 feet July 6, 1907, and June 5–7, 1909 (discharge, 4,010 second-feet); minimum stage, 4.0 feet for periods during February and March, 1908 (discharge, 46 second-feet).

WINTER FLOW.—River freezes at this station and stage-discharge relation is also affected by slush and anchor ice. Winter flow is, however, fairly constant and winter discharge has been determined by comparison with record of flow at Devils Slide.

DIVERSIONS.—None above station, but several canals take out below for irrigation around Oakley and between Oakley and Kamas.

REGULATION.—None.

ACCURACY.—Open-water records fair.

Discharge measurements of Weber River near Oakley, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Apr. 21	L. W. Jordan	4.88	312
Aug. 16	Lynn Crandall	4.10	70

Daily discharge, in second-feet, of Weber River near Oakley, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	103	103	80	91	91	365	770	415	91	62
2	103	103	80	91	91	320	770	390	91	62
3	103	103	80	91	91	280	705	365	91	91
4	115	103	80	91	91	280	672	342	91	80
5	115	103	80	91	103	280	640	320	91	80
6	115	103	80	91	103	260	640	300	91	80
7	129	103	78	84	103	240	640	280	91	70
8	129	91	75	77	115	222	640	260	91	70
9	143	91	70	70	115	240	770	240	91	62
10	143	91	75	70	115	280	1,070	222	80	62
11	143	91	85	70	143	320	1,230	205	80	148
12	129	91	91	70	143	365	990	205	80	115
13	129	91	91	70	173	440	770	189	80	103
14	129	91	91	70	173	492	705	189	80	103
15	129	.....	91	70	189	580	738	173	80	91
16	129	.....	91	70	205	640	840	158	70	91
17	129	.....	91	70	260	705	1,070	143	70	80
18	129	.....	91	70	260	770	990	143	70	80
19	129	.....	91	70	280	640	990	129	70	70
20	115	.....	91	70	300	465	990	129	62	70
21	115	.....	91	91	320	415	952	129	62	62
22	115	.....	91	91	320	415	915	129	62	62
23	115	.....	91	91	300	415	840	115	62	62
24	115	.....	91	91	280	415	770	115	62	62
25	115	.....	91	91	280	415	705	115	62	62
26	115	.....	91	91	280	440	640	115	62	143
27	115	.....	91	91	365	465	580	103	62	129
28	115	.....	91	91	465	520	520	103	62	129
29	115	.....	.....	91	580	580	465	103	62	115
30	103	.....	.....	91	415	640	440	103	62	103
31	103	.....	.....	91	.....	705	.....	91	62	.....

NOTE.—Discharge determined from a fairly well defined rating curve. Mean flow estimated on account of ice as follows: Nov. 15–30, 80 second-feet; Dec. 1–31, 75 second-feet; Jan. 1–31, 80 second-feet. Gage read only twice a week Feb. 1 to Mar. 19; discharge interpolated for days on which gage was not read.

Monthly discharge of Weber River near Oakley, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	143	103	120	7,380	B.
November	103	.....	87.9	5,230	B.
December	.....	.....	[a]75	4,610	C.
January	.....	.....	[a]80	4,920	C.
February	91	70	86.1	4,780	C.
March	91	70	82.2	5,050	B.
April	580	91	225	13,400	B.
May	770	222	439	27,000	B.
June	1,230	440	782	46,500	B.
July	415	91	194	11,900	B.
August	91	62	74.9	4,610	B.
September	143	62	86.5	5,150	B.
The year	1,230	.....	194	141,000	

[a] Estimated.

WEBER RIVER AT DEVILS SLIDE, UTAH.

LOCATION.—In the SW. ¼ sec. 19, T. 4 N., R. 4 E., about 300 feet back of hotel, half a mile east of railroad station at Devils Slide, Morgan County, and 2,000 feet upstream from lower Union Pacific Railroad bridge. Lost Creek enters from the right a quarter of a mile above station.

DRAINAGE AREA.—1,090 square miles.

RECORDS AVAILABLE.—February 1, 1905, to September 30, 1915.

GAGE.—Vertical staff on left bank just above cable installed September 21, 1915, at same site and datum as the inclined staff used March 9, 1912, to September 20, 1915. Original gage, used February 1, 1905, to March 8, 1912, was an inclined staff at the same datum but on the opposite bank of river; read once daily by A. E. Lucas.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and sand; shifting. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.20 feet at 1 p. m. June 11 (discharge, 1,430 second-feet); minimum stage, 1.78 feet at 1 p. m. September 1 (discharge, 48 second feet).

1905–1915: Maximum stage recorded, 7.0 feet May 28 and June 4–8, 1909 (discharge, 5,120 second-feet); minimum stage, 1.4 feet July 29, to August 10 and August 14 to September 2, 1905 (discharge, 50 second-feet). Stage-discharge relation in 1905 and 1915 not the same.

WINTER FLOW.—Stream does not freeze at this point, but there is occasionally a little shore ice; stage, discharge relation not seriously affected; open-water rating assumed applicable.

DIVERSIONS.—A number of canals divert water from Weber River and its tributaries in the vicinity of Oakley and Kamas for use for irrigation and domestic supply.

REGULATION.—None.

ACCURACY.—Records good.

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Discharge measurements of Weber River at Devils Slide, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 13	J. J. Sanford	2.40	235	Aug. 17	Lynn Crandall	1.88	64
Jan. 14	L. W. Jordan	2.28	184	Sept. 21	L. W. Jordan	2.15	132
Apr. 22	do	3.41	771				

Daily discharge, in second-feet, of Weber River at Devils Slide, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	152	244	152	158	215	215	380	786	947	273	68	48
2	152	235	132	142	215	215	380	721	1,270	246	68	50
3	158	235	227	158	219	215	501	640	1,180	224	68	73
4	271	227	215	195	219	188	635	568	924	224	68	110
5	244	203	215	165	188	215	501	500	1,180	233	68	105
6	235	195	203	158	195	227	462	434	1,270	224	75	97
7	235	215	195	215	203	215	446	407	1,070	212	75	97
8	330	227	132	142	215	195	545	370	963	193	68	97
9	545	227	126	195	215	188	534	330	1,120	162	75	97
10	424	215	105	203	235	203	462	320	1,340	139	75	97
11	391	215	142	176	258	215	479	301	1,430	118	75	124
12	370	227	142	195	280	215	462	273	1,360	105	75	172
13	340	235	142	176	235	235	496	273	1,090	87	75	172
14	320	235	113	195	195	235	540	301	924	75	75	155
15	290	203	100	195	176	258	545	402	849	68	75	155
16	290	176	121	176	235	305	605	386	820	64	75	155
17	280	158	132	165	244	280	695	417	924	68	64	148
18	280	165	176	158	235	305	719	598	924	64	68	148
19	280	176	176	142	215	280	738	568	849	59	64	139
20	271	188	165	142	219	271	770	511	780	59	64	139
21	258	176	152	158	219	305	780	488	753	59	59	133
22	258	176	121	142	215	320	773	455	753	59	59	133
23	258	176	113	142	203	380	721	444	702	64	55	118
24	258	235	132	142	195	462	659	434	659	68	55	118
25	258	227	195	148	203	501	659	511	580	75	55	148
26	258	203	203	195	215	617	610	580	511	75	55	155
27	258	203	195	219	215	605	610	511	461	68	55	182
28	258	215	176	235	176	501	628	455	412	68	55	175
29	258	195	158	235	.....	617	721	539	355	64	55	165
30	244	165	188	219	.....	446	849	715	320	64	50	165
31	244	.....	176	219	.....	380	.....	715	.....	64	50	.....

NOTE.—Discharge determined from two well-defined curves; one applicable Oct. 1 to Apr. 12, the other Apr. 21 to Sept. 30; indirect method for shifting channels used Apr. 13–20. Some shore ice during winter, but stage-discharge relation apparently not affected.

Monthly discharge of Weber River at Devils Slide, Utah, for the year ending Sept. 30 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	545	152	280	17,200	A.
November	244	158	206	12,300	A.
December	227	100	159	9,780	B.
January	235	142	178	10,900	B.
February	280	176	216	12,000	A.
March	617	188	316	19,400	B.
April	849	380	597	35,500	B.
May	786	273	482	29,600	A.
June	1,430	320	891	53,000	A.
July	273	59	117	7,190	A.
August	75	50	65.2	4,010	B.
September	182	48	129	7,680	B.
The year	1,430	48	302	219,000	

WEBER RIVER NEAR PLAIN CITY, UTAH.

LOCATION.—In the SE. ¼ sec. 5, T. 6 N., R. 2 W., at county highway bridge on road to Ogden, Weber County, a mile from Plain City, about a mile below mouth of Fourmile Creek, 2 miles below Mill Creek, 6 miles below Ogden River, and 6 miles above point where Weber River empties into the Great Salt Lake.

DRAINAGE AREA.—2,060 square miles.

RECORDS AVAILABLE.—May 14, 1905, to September 30, 1915. Records were obtained at this point in 1904 by the State of Utah under the direction of the State engineer.

GAGE.—Chain gage on upstream side of highway bridge installed November 12, 1914, at same datum as old gage. Gage used 1904 to November 11, 1914, was painted on upstream side of middle pier of bridge.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading; conditions fair.

CHANNEL AND CONTROL.—Bed composed of sand and mud, shifting. One channel at all stages; banks moderately high.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.3 feet at 11 a. m. April 21 (discharge, 1,880 second-feet); minimum stage, 1.95 feet at 6 a. m. July 14 and 8 a. m. July 15 (discharge, zero second-feet).

1904–1915: Maximum stage recorded, 19.1 feet June 6, 1909 (discharge, 7,580 second-feet); minimum stage, 1.95 feet July 14 and 15, 1915 (discharge, zero).

WINTER FLOW.—River occasionally freezes over during very cold weather; discharge for such periods determined by comparison with record of flow at Devils Slide.

DIVERSION.—In the summer practically the entire flow of Weber River above station is used for irrigation.

REGULATION.—None.

ACCURACY.—Records fair.

Discharge measurements of Weber River near Plain City, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 12	J. J. Sanford	4.78	514	Apr. 23	L. W. Jordan	8.99	1,730
Jan. 13	L. W. Jordan	a 5.14	314	Aug. 17	Lynn Crandall	2.00	b .1

a Stage-discharge relation affected by ice.
b Estimated.

Daily discharge, in second-feet, of Weber River near Plain City, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	210	470	445	.....	600	470	898	1,290	538	16	0.1	0.1
2	210	470	445	.....	590	520	868	1,510	616	14	.1	.1
3	229	470	445	.....	580	520	1,090	1,400	1,150	6	.1	2
4	248	470	445	.....	570	495	1,500	1,260	1,360	2	.1	2
5	308	470	445	.....	545	470	1,190	1,120	1,220	2	.1	2
6	352	470	470	.....	570	495	1,090	896	1,290	2	.1	2
7	445	445	470	.....	495	495	1,020	806	1,360	2	.1	1
8	570	445	420	.....	420	495	1,190	668	1,190	2	.1	.1
9	700	445	396	.....	470	470	1,330	564	986	2	.1	.1
10	726	445	352	.....	622	470	1,220	486	866	.1	.1	2
11	754	445	352	.....	596	470	1,120	370	986	.1	.1	5
12	754	470	352	.....	648	470	1,120	266	1,020	.1	.1	7
13	700	445	.....	.....	648	520	1,080	190	866	.1	.1	190
14	648	445	.....	.....	596	596	1,050	190	694	.0	.1	266
15	622	445	.....	.....	520	622	1,330	154	486	.0	.1	306
16	596	445	.....	.....	520	726	1,510	120	370	.1	.1	348
17	596	445	.....	.....	520	700	1,580	120	392	.1	.1	266
18	622	445	.....	.....	596	674	1,730	172	414	.1	.1	246
19	596	352	.....	.....	570	648	1,800	486	392	.1	.1	256
20	570	396	.....	.....	495	622	1,800	462	348	1.	.1	190
21	570	420	.....	.....	520	648	1,880	462	306	1	.1	168
22	545	396	.....	.....	520	648	1,800	462	286	2	.1	140
23	495	420	.....	.....	520	754	1,770	486	226	2	.1	128
24	495	445	.....	.....	495	838	1,620	414	190	1	.1	107
25	520	445	.....	.....	495	898	1,400	392	104	.1	.1	104
26	520	495	.....	.....	545	1,190	1,330	438	32	.1	.1	208
27	495	520	.....	340	520	1,190	1,190	438	58	.1	.1	366
28	495	470	.....	450	520	1,090	1,050	392	22	.1	.1	266
29	495	420	.....	550	.....	1,150	926	348	44	.1	.1	256
30	495	420	.....	590	.....	1,190	1,050	414	22	.1	.1	246
31	470	.....	.....	600	.....	1,090	.....	438	.....	.1	.1	.....

NOTE.—Discharge determined from two poorly defined rating curves, one used Oct. 1 to Apr. 4 and the other Apr. 7 to Sept. 30. Indirect method for shifting control used Apr. 5 and 6. Mean discharge estimated on account of ice as follows: Dec. 13–31, 315 second-feet; Jan. 1–26, 310 second-feet; Jan. 27 to Feb. 3 as in table.

Monthly discharge of Weber River near Plain City, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	754	210	518	31,900	C.
November	520	352	446	26,500	C.
December	470	.....	356	21,900	D.
January	600	.....	342	21,000	D.
February	648	420	547	30,400	C.
March	1,190	470	698	42,900	B.
April	1,880	868	1,320	78,600	B.
May	1,510	120	555	34,100	C.
June	1,360	22	594	35,300	C.
July	16	0	1.82	112	
August	.1	.1	.10	6	
September	348	.1	133	7,910	C.
The year	1,880	0	456	331,000	

JORDAN RIVER BASIN.

JORDAN RIVER NEAR LEHI, UTAH.

LOCATION.—In sec. 25, T. 5 S., R. 1 W., about 800 feet below pump house at outlet of Utah Lake and 4 miles southwest of Lehi, Utah County.

DRAINAGE AREA.—2,570 square miles.

RECORDS AVAILABLE.—May 30 to December 31, 1904, and July 22, 1913, to September 30, 1915.

GAGE.—Vertical staff in stilling well on right bank about 25 feet above bridge, January 6, 1914, to September 30, 1915; read twice daily by W. A. Knight. Gage used May 30 to December 31, 1904, and July 22, 1913, to January 5, 1914, was vertical staff nailed to upstream side of right bridge abutment; same datum 1904–15.

DISCHARGE MEASUREMENTS.—Made from cable about 400 feet above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of clay and hardpan. Banks clean and low; not subject to overflow. One channel at gage. Area slightly constricted below by highway bridge. Slope is very flat, and stage-discharge relation may be slightly affected when flashboards are in place at the old impounding dam in Jordan Narrows, about 6 miles north of the station (about 12 miles by river).

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.50 feet at 8.30 a. m., July 17 (discharge, 755 second-feet); minimum stage, 1.98 feet October 15 to December 16 (discharge, 112 second-feet).

1904, 1913–1915: Maximum stage recorded, 5.78 feet May 31, 1914 (discharge, 794 second-feet); minimum stage, 0.75 foot October 17–22, 1904 (discharge, 23 second-feet).

WINTER FLOW.—Stage-discharge relation seldom seriously affected by ice. During unusually cold weather, however, the river sometimes freezes over below station and the open-channel rating is not applicable.

DIVERSIONS.—None above station. In the Narrows about 6 miles north (several miles farther by river) a number of large canals divert for irrigation in Salt Lake Valley and for use by the smelters, etc., in the vicinity of Garfield.

REGULATION.—During the irrigation season when the natural flow from Utah Lake is inadequate for the demands below, water is pumped from the lake into Jordan River. A pumping plant with a capacity of about 800 cubic feet per second is at outlet of lake, 800 feet above gage, and is owned and operated by various canal companies interested in the stream.

ACCURACY.—Records good. Wind has a very marked effect on the flow of river and records may be subject to error at times on that account.

Discharge measurements of Jordan River near Lehi, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Apr. 7	J. J. Sanford[a]	5.05	614
Aug. 5	L. W. Jordan[b]	5.12	667
14	Lynn Crandall[b]	5.03	660

[a] Gravity flow. [b] Pumps running.

Daily discharge, in second-feet, of Jordan River near Lehi, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	331	112	112	450	488	596	636	646	572	702	644	640
2	352	112	112	454	484	600	638	646	614	702	676	640
3	338	112	112	450	493	604	636	521	589	702	674	618
4	318	112	112	476	497	610	631	631	583	699	674	526
5	326	112	112	455	497	608	636	625	594	699	674	478
6	323	112	112	457	499	610	636	629	583	702	654	552
7	299	112	112	457	499	612	638	631	577	697	570	566
8	321	112	112	459	499	614	638	629	572	695	431	566
9	338	112	112	459	509	617	636	625	572	695	578	566
10	346	112	112	463	517	619	463	625	585	697	602	556
11	323	112	112	465	533	619	463	646	579	697	650	506
12	346	112	112	465	549	619	562	583	472	697	630	510
13	345	112	112	465	558	621	646	614	640	697	644	472
14	228	112	112	469	566	621	642	610	583	697	656	433
15	112	112	112	465	568	621	625	608	680	727	658	433
16	112	112	112	471	572	619	636	604	685	744	660	433
17	112	112	200	471	575	623	633	606	678	755	660	435
18	112	112	390	471	575	627	642	610	680	691	662	435
19	112	112	446	472	575	631	640	614	680	706	660	433
20	112	112	446	474	575	629	625	614	685	727	664	433
21	112	112	446	474	577	631	642	614	680	739	664	433
22	112	112	446	474	577	636	636	610	674	733	662	433
23	112	112	444	476	579	636	631	606	674	725	662	433
24	112	112	450	482	579	640	633	425	689	722	660	433
25	112	112	452	476	583	639	638	521	704	720	656	359
26	112	112	452	472	587	637	646	602	704	722	666	260
27	112	112	454	474	591	636	650	602	710	720	666	247
28	112	112	454	474	594	642	652	591	704	695	662	276
29	112	112	455	478	.....	642	656	614	702	680	662	282
30	112	112	457	482	.....	625	646	577	702	676	660	282
31	112	.....	457	484	.....	640	.....	572	.....	662	636	.....

NOTE.—Discharge determined from two well-defined rating curves, one applicable Oct. 1 to June 12, the other June 13 to Sept. 30. Discharge Oct. 14 and Mar. 25 and 26 interpolated.

Monthly discharge of Jordan River near Lehi, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	352	112	208	12,800	B.
November	112	112	112	6,660	B.
December	457	112	266	16,400	B.
January	484	450	468	28,800	B.
February	594	484	546	30,300	B.
March	642	596	623	38,300	B.
April	656	463	624	37,100	B.
May	646	425	602	37,000	B.
June	710	472	642	38,200	B.
July	755	662	707	43,500	B.
August	676	431	644	39,600	B.
September	640	247	456	27,100	B.
The year	755	112	491	356,000	

SUMMIT CREEK NEAR SANTAQUIN, UTAH.

LOCATION.—In sec. 12, T. 10 S., R. 1 E., at power plant of Utah Power & Light Co. about a mile from Santaquin, Utah County.

DRAINAGE AREA.—27.5 square miles.

RECORDS AVAILABLE.—March 8, 1910, to September 30, 1915.

GAGE.—Hook gage at a 4-foot, rectangular, sharp-crested weir with complete end contractions, in the power-plant tailrace, and a vertical staff above a similar 5-foot weir in the main creek; there is also a vertical staff fastened to a cottonwood tree on left bank of creek, about 250 yards above power house.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of rocks and coarse gravel; may shift slightly; banks high and clean. Controls for both gages formed by weirs. One channel at all stages at upper gage in creek.

EXTREMES OF DISCHARGE.—Maximum discharge reported during year, 48.9 second-feet May 14; minimum discharge reported, 4.2 second-feet February 4. 1910–1915: Maximum discharge reported, 150 second-feet May 10, 1910; minimum discharge reported, 2.3 second-feet November 11, 1911.

WINTER FLOW.—Stage-discharge relation not seriously affected by ice; minimum discharge usually occurs during winter.

DIVERSIONS.—Above all irrigation diversions.

REGULATION.—Flow may be affected at times by operation of power plant.

COOPERATION.—Records furnished by Utah Power & Light Co.

The following discharge measurement was made by L. C. Monson, of the Utah Power & Light Co.:

May 15, 1915: Gage height, 1.08 feet; discharge, 20.3 second-feet. Measurement made at staff gage in creek about 250 yards above power house.

Daily discharge, in second-feet, of Summit Creek near Santaquin, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	11.1	10.4	8.5	7.7	6.6	5.5	8.2	27.5	45.1	16.1	10.9	9.5
2	10.9	10.3	8.5	7.2	7.0	5.6	8.2	26.5	44.8	15.9	11.0	9.5
3	22.5	10.2	8.8	7.2	5.4	5.6	9.7	26.5	35.3	16.5	10.9	9.5
4	13.5	10.2	9.0	7.7	4.2	5.5	10.4	25.4	39.2	16.0	10.6	9.8
5	11.4	10.1	9.2	7.2	5.0	5.5	11.4	20.9	37.6	16.8	10.0	9.9
6	11.1	9.9	9.2	8.0	5.1	5.2	11.6	20.2	34.4	16.7	10.9	9.7
7	11.6	9.9	8.7	8.0	5.5	5.5	12.0	20.0	33.2	14.9	11.0	9.5
8	14.1	9.9	8.0	7.5	6.0	5.5	14.4	20.0	34.1	15.1	11.0	9.4
9	15.4	9.9	6.4	7.4	6.0	5.5	14.0	19.7	39.0	13.7	11.0	9.2
10	11.8	9.7	8.0	7.4	4.9	5.5	14.0	21.9	41.8	13.5	10.9	9.2
11	11.1	9.5	13.1	7.2	6.4	5.5	14.4	26.2	38.3	13.3	10.6	9.5
12	10.9	9.5	5.8	7.2	5.5	5.5	17.6	28.8	37.0	13.7	10.5	9.5
13	10.9	9.4	7.3	6.9	6.3	5.5	19.0	36.9	32.8	13.4	10.9	9.2
14	10.9	9.2	5.5	6.9	5.0	5.5	20.0	48.9	28.2	12.7	10.5	9.2
15	10.7	9.2	5.5	6.2	4.8	5.5	20.2	47.7	27.4	12.7	10.2	9.4
16	10.5	9.0	5.5	5.8	5.9	5.8	22.6	44.1	27.4	12.8	10.4	9.2
17	10.3	9.0	6.4	6.9	5.6	6.0	22.6	43.6	26.5	12.9	10.4	9.2
18	10.1	8.8	8.8	7.0	5.6	6.0	27.7	44.9	26.4	11.9	10.0	9.4
19	10.1	8.7	7.8	7.2	5.5	6.0	28.0	45.1	25.4	11.9	10.0	9.4
20	10.1	8.7	7.8	7.0	5.5	6.0	34.9	37.7	24.6	14.2	9.7	8.5
21	10.1	8.7	7.7	7.4	5.5	6.0	36.6	34.3	23.3	11.9	9.5	9.2
22	10.1	8.5	7.4	4.9	5.5	6.0	33.5	33.2	21.8	11.4	9.8	8.8
23	10.1	8.3	7.7	4.6	5.5	6.3	33.2	31.2	21.7	11.7	9.7	8.7
24	9.9	8.5	7.4	5.8	5.5	6.3	28.2	31.3	21.8	11.7	9.5	9.0
25	10.1	8.7	7.4	7.2	5.5	6.3	27.0	32.6	20.5	11.6	9.5	9.0
26	9.9	8.5	7.5	7.0	5.5	6.8	26.2	32.1	19.1	11.4	9.7	9.0
27	10.8	8.5	7.5	6.6	5.5	7.0	29.4	30.9	18.0	11.2	9.5	8.5
28	10.5	8.5	8.0	6.6	5.5	7.5	33.5	31.8	17.8	11.2	9.3	8.5
29	10.5	8.5	7.5	6.8	.....	7.8	35.4	37.2	16.7	11.0	9.3	9.0
30	10.6	8.2	7.4	7.2	.....	8.0	33.5	46.2	16.3	10.9	9.7	8.7
31	10.6	.....	7.4	7.0	.....	8.2	.....	37.6	.....	11.0	9.2	.....

NOTE.—Monthly Discharge represents the combined flow of tailrace and main creek.

Monthly discharge of Summit Creek near Santaquin, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
October	15.4	9.9	11.4	701
November	10.4	8.2	9.21	548
December	13.1	5.5	7.76	477
January	8.0	4.6	6.93	426
February	7.0	4.2	5.56	309
March	8.2	5.2	6.08	374
April	36.6	8.2	21.9	1,300
May	48.9	19.7	32.6	2,000
June	45.1	16.3	29.2	1,740
July	16.8	10.9	13.2	812
August	11.0	9.2	10.2	627
September	9.9	8.5	9.20	547
The year	48.9	4.2	13.6	9,860

NOTE.—Monthly discharge computed by engineers of the United States Geological Survey.

PETEETNEET CREEK NEAR PAYSON, UTAH.

LOCATION.—In the SE. ¼ SW. ¼ sec. 29, T. 9 S, R. 2 E., about half a mile above power canal intake and 3 miles above Payson, Utah County.

DRAINAGE AREA.—28 square miles.

RECORDS AVAILABLE.—August 1, 1910, to September 30, 1915; miscellaneous measurements, 1909–10.

GAGE.—Inclined staff on left bank.

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

CHANNEL AND CONTROL.—Bed composed of rocks and gravel; may shift during extreme high water. Banks high and not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.20 feet April 24 (discharge, 98.0 second-feet); minimum stage, 2.10 feet January 22 (discharge, 4.3 second-feet).

1910–1915: Maximum stage recorded, 4.02 feet May 10, 1914 (discharge, 200 second-feet); minimum stage, 1.44 feet December 28, 1912 (discharge, 1.7 second-feet).

WINTER FLOW.—Stage discharge relation affected by ice for short periods. Open-water rating curves can generally be used except for a few days.

DIVERSIONS.—None above station.

REGULATION.—City of Payson has constructed several small reservoirs above station which regulate the flow to some extent.

COOPERATION.—Since January 1, 1911, records have been furnished by the United States Reclamation Service.

Discharge measurements of Petectneet Creek near Payson, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 16	B. M. Hall, jr	2.20	7.0	Apr. 21	B. M. Hall, jr	3.16	86
Feb. 9	do	2.14	6.7	May 8	R. M. Adams	2.58	29.3
Mar. 18	do	2.15	7.1	13	do	2.59	30.3
31	do	2.20	8.3	18	do	2.69	35.6
Apr. 14	do	2.57	27.5	June 17	do	2.36	12.5
20	do	3.02	75	July 14	do	2.30	9.8
21	do	3.13	87	Sept. 6	do	2.25	7.8

Daily discharge, in second-feet, of Petectneet Creek near Payson, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	8.1	6.6	7.8	6.8	6.3	6.8	7.2	38.6	26.5	12.4	10.0	9.4
2	8.2	6.3	8.1	6.8	6.0	6.5	7.7	36.2	27.3	11.7	10.0	9.7
3	8.4	6.3	8.0	6.8	5.8	6.3	8.0	37.2	28.1	11.0	10.0	10.0
4	8.4	6.3	7.8	7.1	5.6	5.6	8.4	38.1	28.9	11.0	10.0	10.0
5	8.4	6.6	7.8	7.4	5.3	6.8	9.2	38.6	29.7	11.0	9.7	10.0
6	8.6	6.8	7.8	7.1	5.3	6.3	10.0	39.0	29.7	10.5	9.4	9.7
7	8.7	6.8	7.4	6.8	5.3	5.8	11.3	33.6	29.7	10.0	9.4	9.4
8	8.4	6.8	7.1	6.7	5.3	5.5	12.6	28.1	28.5	10.0	9.4	9.4
9	8.1	6.6	7.2	6.6	5.3	5.3	13.9	29.8	27.3	10.0	9.2	9.4
10	7.8	6.3	7.4	6.6	5.6	5.0	15.1	31.6	26.5	10.5	9.0	9.2
11	7.4	6.3	7.9	6.6	5.8	4.8	17.8	29.0	25.8	11.0	9.5	9.0
12	6.9	6.3	8.4	6.8	5.7	4.8	20.5	26.5	23.8	10.5	10.0	8.4
13	6.8	6.2	8.2	7.1	5.6	4.8	23.9	26.9	21.8	10.0	10.0	7.8
14	6.8	6.1	8.1	7.2	5.7	5.1	27.3	27.3	20.4	10.0	10.0	7.3
15	6.8	6.4	8.0	7.4	5.8	5.3	28.5	31.8	19.1	10.0	10.2	6.8
16	7.1	6.6	7.8	7.0	6.0	5.4	29.7	36.2	17.8	9.7	10.5	6.6
17	7.4	6.6	7.4	7.0	6.1	5.6	35.4	37.6	16.5	9.4	10.1	6.3
18	7.1	6.6	7.1	7.0	5.8	5.6	41.0	39.0	15.8	9.4	9.7	6.3
19	6.8	6.7	7.0	7.0	5.6	5.6	55.5	37.0	15.1	9.4	9.6	6.3
20	6.6	6.8	6.8	7.5	5.9	5.7	70.0	35.3	14.6	9.7	9.4	6.6
21	6.3	7.0	6.8	4.6	6.1	5.8	78.6	33.4	14.1	10.0	9.4	6.8
22	6.6	7.1	6.8	4.3	6.2	6.1	87.1	31.6	13.4	10.0	9.4	7.1
23	6.8	7.4	7.1	5.4	6.3	6.3	90.0	30.6	12.6	10.0	9.0	7.4
24	7.1	7.7	7.4	6.9	6.3	6.3	93.0	29.7	12.0	10.2	8.7	7.8
25	7.4	7.7	7.0	7.0	6.3	6.3	66.0	28.1	11.5	10.5	8.7	8.1
26	7.4	7.7	6.6	6.8	6.6	6.6	39.0	26.5	12.0	10.0	8.7	8.4
27	7.4	7.6	6.8	6.4	6.8	6.8	50.6	24.9	12.5	9.4	8.6	8.7
28	7.6	7.4	7.1	6.4	6.8	6.8	62.3	23.4	11.8	9.7	8.4	9.1
29	7.7	7.4	6.8	6.4	.....	6.8	51.6	23.4	11.0	10.0	8.6	9.4
30	7.2	7.4	6.6	6.9	.....	6.8	41.0	23.4	11.7	10.0	8.7	9.0
31	7.8	.....	6.7	6.7	.....	6.8	.....	24.9	.....	10.0	9.1	.....

NOTE.—Discharge Jan. 16–31 determined by comparison with record of flow at station on Summit Creek.

Monthly discharge of Petectneet Creek near Payson, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
October	8.7	6.3	7.5	461
November	7.7	6.1	6.8	405
December	8.4	6.6	7.4	455
January	7.5	4.3	6.7	412
February	6.8	5.3	5.9	328
March	6.8	4.8	6.0	369
April	93.0	7.2	37.1	2,208
May	39.0	23.4	31.5	1,937
June	29.7	11.0	19.8	1,178
July	12.4	9.4	10.2	627
August	10.0	8.4	9.4	578
September	10.0	6.3	8.3	494
The year	93.0	4.3	13.1	9,452

SPANISH FORK AT THISTLE, UTAH.

LOCATION.—In the SW. ¼ SW. ¼ sec. 28, T. 9 S., R. 4 E., in the town of Thistle, Utah County, about 800 feet below point at which Soldier Fork and Thistle Creek unite to form Spanish Fork, and 3 miles above Diamond Fork.

DRAINAGE AREA.—490 square miles.

RECORDS AVAILABLE.—December 3, 1907, to September 30, 1915.

GAGE.—Inclined staff on right bank 10 feet below cable. Used May 4 to September 30, 1915; read daily by Mrs. Effie Gordon. November 21, 1912, to May 3, 1915, a vertical staff on right bank at same site and datum. December 3, 1907, to November 20, 1912, a vertical staff on left bank about a mile downstream.

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

CHANNEL AND CONTROL.—Bed composed of gravel and sand. Control a gravel bar about 30 feet below gage; shifts. One channel at all stages. Left bank low and subject to overflow; right bank high and partly wooded. Channel straight for 100 feet above and 600 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.98 feet May 3 (discharge, 320 second-feet); minimum stage, 3.79 feet August 27 (discharge, 19.7 second-feet).

1907–1915: Maximum discharge recorded, 920 second-feet May 10, 1914; minimum discharge, 18.5 second-feet December 20, 1913.

WINTER FLOW.—Stage-discharge relation affected by ice for short periods.

DIVERSIONS.—No important diversions above station.

REGULATION.—None.

COOPERATION.—Records since January 1, 1911, furnished by United States Reclamation Service.

Discharge measurements of Spanish Fork at Thistle, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 14	B. M. Hall, jr.	3.82	75	May 3	R. M. Adams.	4.66	203
Jan. 19	do.	[a] 4.16	56	19	do.	4.53	170
Feb. 19	do.	4.03	59	June 7	do.	4.39	161
Mar. 17	do.	4.08	70	29	do.	4.13	77
30	do.	4.19	88	July 19	do.	3.93	38.0
Apr. 16	do.	4.47	162	31	do.	3.90	37.0
23	Adams and Hall.	4.68	208	Aug. 28	do.	3.84	27.4

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Spanish Fork at Thistle, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	84.0	76.0	57.0	93.3	52.0	56.0	85.9	237.0	148.0	67.6	30.0	26.1
2	84.0	76.0	57.0	81.8	52.0	56.0	91.0	237.0	148.0	71.6	31.4	38.9
3	109.0	76.0	63.2	81.8	52.0	56.0	121.0	320.0	146.0	75.6	32.7	61.8
4	72.8	76.0	68.0	93.3	52.0	52.1	111.7	193.0	156.0	79.8	32.7	43.7
5	72.8	76.0	68.0	116.4	48.6	52.1	116.4	193.0	186.0	59.8	32.7	35.6
6	72.8	74.4	63.2	104.8	52.0	52.1	105.0	150.0	163.0	61.8	37.2	35.6
7	76.0	74.4	63.2	93.3	61.8	56.0	111.7	150.0	160.0	61.8	34.0	32.7
8	100.5	68.0	57.0	93.3	67.6	61.8	121.0	136.0	153.0	63.7	30.0	32.7
9	100.5	68.0	52.0	93.3	61.8	61.8	116.4	136.0	143.0	61.8	28.7	30.0
10	84.0	68.0	57.0	93.3	52.0	61.8	111.7	136.0	136.0	57.9	28.7	31.4
11	84.0	68.0	63.2	93.3	56.0	61.8	116.4	138.0	133.0	57.9	28.7	35.6
12	76.0	68.0	68.0	88.0	61.8	61.8	121.0	136.0	131.0	57.9	26.1	38.9
13	76.0	69.6	55.0	81.8	67.6	71.6	140.0	140.0	128.0	54.1	20.8	34.0
14	79.2	69.6	57.0	81.8	61.8	61.8	146.0	140.0	119.0	54.1	20.8	35.6
15	76.0	72.8	50.0	81.8	56.0	71.6	153.0	140.0	107.0	48.6	22.1	35.6
16	76.0	72.8	50.0	81.8	52.1	75.6	153.0	140.0	97.9	45.3	38.9	34.0
17	76.0	63.2	50.0	81.8	52.1	75.6	160.0	138.0	93.3	45.3	28.7	38.9
18	76.0	60.0	60.0	75.6	52.1	81.8	178.0	148.0	93.3	35.6	27.4	38.9
19	76.0	55.0	70.0	75.6	56.0	75.6	190.0	138.0	88.0	35.6	27.4	37.2
20	76.0	55.0	65.0	75.6	56.0	81.8	243.0	158.0	85.9	35.6	24.8	38.9
21	76.0	55.0	70.0	75.6	56.0	67.6	243.0	168.0	81.8	35.6	24.8	37.2
22	76.0	58.0	70.0	93.3	56.0	111.7	216.0	156.0	79.8	35.6	24.8	35.6
23	76.0	60.0	70.0	111.7	61.8	111.7	237.0	140.0	73.6	35.6	26.1	35.6
24	76.0	60.0	70.0	140.0	52.1	116.4	211.0	143.0	73.6	71.6	27.4	34.0
25	76.0	60.0	75.0	166.0	54.1	116.4	166.0	166.0	69.5	43.7	28.7	42.1
26	76.0	60.0	75.0	166.0	52.1	111.7	166.0	170.0	67.6	38.9	24.8	46.9
27	76.0	60.0	60.0	116.4	52.1	116.4	211.0	160.0	73.6	38.9	19.7	42.1
28	76.0	68.0	60.0	52.0	56.0	111.7	230.0	160.0	73.6	35.6	22.1	42.1
29	76.0	68.0	60.0	52.0	.....	121.0	230.0	160.0	71.6	28.7	22.1	42.1
30	76.0	58.0	60.0	56.0	.....	85.9	243.0	153.0	71.6	28.7	22.1	42.1
31	76.0	.....	65.0	56.0	.....	93.3	.....	148.0	.....	30.0	26.1	.....

Monthly discharge of Spanish Fork at Thistle, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
October	109.0	72.8	79.5	4,888
November	76.0	55.0	66.5	3,957
December	75.0	50.0	62.2	3,824
January	166.0	52.0	91.8	5,645
February	67.6	48.6	55.8	3,099
March	121.0	52.1	79.0	4,858
April	243.0	85.9	161.5	9,610
May	320.0	136.0	162.2	9,973
June	186.0	67.6	111.7	6,646
July	79.8	28.7	50.1	3,075
August	37.2	19.7	27.5	1,691
September	61.8	26.1	37.9	2,314
The year	320.0	19.7	82.1	59,580

SPANISH FORK NEAR SPANISH FORK, UTAH.

LOCATION.—In the SW. ¼ SW. ¼ sec. 2, T. 9 S., R. 3 E., about half a mile below the United States Reclamation Service diversion dam of the Strawberry Valley project, and half a mile above intake of East Bench canal, 5 miles southeast of town of Spanish Fork, Utah County.

DRAINAGE AREA.—670 square miles.

RECORDS AVAILABLE.—May 23, 1900, to November 30, 1901; March 26, 1903, to September 30, 1915.

GAGE.—Inclined staff on right bank, half a mile below United States Reclamation Service diversion dam January 1, 1913, to September 30, 1915; original gage inclined staff on right bank about 600 feet above East Bench canal heading, May 23, 1900, to November 30, 1901, and March 26, 1903, to July 31, 1912; temporary gage one-fourth mile above original gage, August 1 to December 31, 1912.

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

CHANNEL AND CONTROL.—Bed composed of gravel and rocks; one channel at all stages; straight for about 200 feet above and 150 feet below gage. Banks high and may cave off during floods. Water is turbulent and control generally shifts during high water.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.88 feet April 30 (discharge, 283 second-feet); minimum stage, 3.9 feet August 31 and September 1 (discharge, 16.0 second-feet).

1900–1915: Maximum stage recorded, 6.0 feet May 21, 1907 (discharge, 1,970 second-feet); minimum stage, river dry at several different times when entire flow was being diverted at Reclamation Service dam.

WINTER FLOW.—Stage-discharge relation affected by ice at times; flow determined from the records of Diamond Fork and Spanish Fork near Thistle.

DIVERSIONS.—Above all important diversions except the United States Reclamation Service power canal which supplies the high-line canal, the power plant, and the Salem Canal; water can also be returned to the river at the power plant. In 1915 this canal diverted about 46,000 acre-feet.

The Strawberry reservoir (present capacity about 250,000 acre-feet) has been constructed to store the waters of Strawberry River, a stream in the Colorado River basin; this water can be diverted to the Spanish Fork basin by means of a tunnel.

REGULATION.—Natural flow affected by diversion by the United States Reclamation Service half a mile above station, and will also be affected whenever water is supplied from the Strawberry Valley reservoir.

COOPERATION.—Since January 1, 1911, records have been furnished by the United States Reclamation Service.

Discharge measurements of Spanish Fork near Spanish Fork, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-Ft.*
Oct. 13	B. M. Hall, jr.	4.16	52.0	May 21	R. M. Adams	5.43	226
Jan. 22	do	4.02	22.6	June 16	do	4.84	100
Feb. 16	do	4.23	36.7	29	do	4.90	111
Mar. 15	do	4.26	45.1	July 7	do	5.00	125
30	do	4.53	87	19	do	4.93	116
Apr. 9	do	4.64	114	22	do	4.65	77
16	do	5.06	155	Aug. 1	do	4.20	27.6
22	do	5.60	242	30	do	4.10	17.3
May 7	R. M. Adams	5.28	197	Sept. 29	do	4.16	21.4

Daily discharge, in second feet, of Spanish Fork near Spanish Fork, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	50.0	46.8	35.0	67.0	23.7	35.0	79.1	265.0	167.6	106.9	72.5	16.0
2	50.0	46.8	34.3	54.0	25.5	34.1	81.7	248.0	163.2	118.0	72.5	19.5
3	90.2	46.8	43.6	55.0	27.4	34.1	97.0	235.0	157.4	116.6	72.5	45.1
4	57.2	46.8	42.8	55.0	25.5	30.2	101.2	223.5	185.5	121.2	70.0	48.5
5	53.6	46.8	42.0	68.0	17.4	37.0	99.8	213.0	200.5	120.8	70.0	39.5
6	53.6	46.0	43.6	77.0	18.2	35.0	99.8	200.5	178.0	119.4	72.5	37.3
7	53.6	46.8	42.0	68.0	20.1	31.2	97.0	190.0	166.1	122.6	75.0	31.0
8	70.0	45.2	37.8	67.0	23.7	35.0	116.6	184.0	125.0	137.0	72.5	25.0
9	80.0	42.0	27.5	65.0	27.7	34.1	101.2	182.5	116.6	135.5	70.0	25.0
10	61.7	45.2	32.2	67.0	29.3	36.0	97.0	184.0	106.9	132.5	63.8	22.2
11	58.1	43.6	38.5	72.0	39.0	38.0	99.8	191.5	102.9	134.0	62.5	21.3
12	57.2	41.3	40.6	61.0	37.0	193.0	102.6	193.0	97.5	126.5	62.5	26.9
13	55.4	43.6	43.6	57.0	31.2	44.0	112.4	193.0	96.2	131.0	56.6	21.3
14	54.5	45.2	28.7	55.0	29.3	43.0	122.2	191.5	93.8	125.0	54.2	26.0
15	53.6	37.8	28.3	55.0	27.4	47.4	120.8	191.5	85.0	122.6	54.2	26.9
16	52.7	37.8	27.9	55.0	31.2	53.4	145.0	188.5	104.2	119.4	58.9	27.9
17	52.7	40.6	27.5	60.0	33.0	51.0	144.3	188.5	92.5	119.4	62.5	26.9
18	52.7	35.7	30.8	59.0	33.0	57.0	154.5	202.0	87.5	116.6	61.2	26.9
19	50.0	33.6	32.2	48.0	31.2	51.0	193.0	202.0	93.8	111.0	62.5	29.0
20	48.4	33.6	28.0	49.0	39.0	53.4	239.5	203.5	91.2	109.6	60.0	26.9
21	48.4	35.0	28.7	41.0	31.2	54.6	239.5	216.0	90.0	109.6	60.0	24.1
22	48.4	32.9	29.4	68.0	32.1	58.8	241.0	191.5	83.7	112.4	58.9	22.2
23	47.6	35.0	31.5	89.0	31.2	75.2	223.5	185.5	77.5	111.0	60.0	20.4
24	47.6	33.6	34.0	96.0	32.1	84.4	220.5	184.0	75.0	111.0	33.1	16.8
25	47.6	39.9	36.4	135.0	34.1	106.2	220.5	188.5	71.3	113.8	29.0	25.0
26	47.6	39.2	28.0	135.0	35.0	99.8	220.5	197.5	76.2	113.8	32.1	25.0
27	48.4	39.2	26.0	85.0	31.2	112.4	217.5	185.5	111.0	119.4	29.0	25.0
28	48.4	42.0	28.0	32.0	16.5	97.0	223.5	184.0	115.2	108.3	29.0	23.2
29	48.4	43.6	29.4	20.0	.....	111.0	245.0	179.5	111.0	90.0	29.0	23.2
30	47.6	39.2	29.4	28.0	.....	83.0	283.0	176.5	112.4	82.5	23.2	21.3
31	47.6	.....	29.4	27.0	.....	83.0	.....	169.0	.....	82.5	16.0	.....

Monthly discharge of Spanish Fork near Spanish Fork, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
October	90.2	47.6	54.3	3,339
November	46.8	32.9	41.1	2,446
December	43.6	26.0	33.5	2,060
January	135.0	20.0	63.6	3,909
February	39.0	16.5	29.0	1,611
March	193.0	30.2	62.5	3,843
April	283.0	79.1	158.0	9,402
May	265.0	169.0	197.7	12,156
June	200.5	71.3	114.5	6,813
July	137.0	82.5	116.1	7,139
August	75.0	16.0	55.0	3,383
September	48.5	16.0	26.5	1,577
The year	283.0	16.0	79.7	57,678

SPANISH FORK AT LAKE SHORE, UTAH.

LOCATION.—In the NE. ¼ sec. 15, T. 8 S., R. 2 E., about a mile east of Lake Shore, 3 miles above the mouth, and about 3 miles northwest of Spanish Fork, Utah County; below all tributaries and diversions.

DRAINAGE AREA.—700 square miles.

RECORDS AVAILABLE.—December 10, 1903, to July 10, 1907; March 10, 1909, to September 30, 1915.

GAGE.—Inclined staff with vertical low-water extension, on right bank about half a mile below highway bridge March 10, 1909, to September 30, 1915; original gage vertical staff on left bank immediately below bridge December 10, 1903, to May 25, 1904; gage at old cable 800 feet above bridge May 26, 1904, to July 10, 1907.

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

CHANNEL AND CONTROL.—Bed soft; fairly permanent. One channel at all stages; banks of earth, high and clean.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.95 feet April 22 (discharge, 336 second-feet); minimum stage, 1.70 feet August 16 to September 2 and September 6–24 (discharge, 2.2 second-feet).

1903–1915: Maximum stage recorded, 16.0 feet May 11, 1909 (discharge, 1,430 second-feet); minimum stage recorded, 0.95 foot August 6, 1909 (discharge, 2.5 second-feet); minimum discharge recorded, 0.9 second-foot July 26 to August 31, 1911 (stage, 1.15 feet).

WINTER FLOW.—Stage discharge relation affected by ice for short periods.

DIVERSIONS.—Entire flow is diverted above station during last part of irrigation season; only waste and return waters pass the gage at that time.

REGULATION.—Natural flow affected by the diversions above station.

COOPERATION.—Since January 1, 1911, records have been furnished by the United States Reclamation Service.

Discharge measurements of Spanish Fork at Lake Shore, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Mar. 3	Quinn and Hall	4.20	111	Apr. 22	B. M. Hall, jr.	6.80	313
Apr. 3	B. M. Hall, jr.	4.90	161	May 5	R. M. Adams	3.32	68
17	do	6.00	254	11	do	1.74	2

Daily discharge, in second-feet, of Spanish Fork at Lake Shore, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	3.0	129.0	97.0	82.0	107.0	114.0	149.0	149.0	19.2	3.0	3.0	2.2
2	3.0	128.0	97.0	88.3	110.0	116.0	149.0	146.0	19.2	3.0	3.0	2.2
3	7.2	126.5	100.0	94.7	114.0	118.0	156.0	142.0	21.1	3.0	3.0	4.1
4	11.5	125.0	103.0	101.0	98.0	120.0	163.0	85.0	23.0	3.0	3.0	6.0
5	10.0	122.0	104.0	99.5	82.0	121.0	170.0	88.0	33.7	3.0	3.0	4.1
6	8.5	119.0	105.0	98.0	87.3	121.0	182.0	76.0	44.3	3.0	3.0	2.2
7	7.0	123.0	106.0	98.0	93.0	121.0	193.0	71.0	55.0	3.0	3.0	2.2
8	81.5	127.0	104.5	98.0	98.0	121.0	221.0	31.0	47.5	3.0	3.0	2.2
9	156.0	131.0	103.0	96.7	102.5	122.0	193.0	15.0	40.0	3.0	3.0	2.2
10	145.7	125.0	103.0	95.3	107.0	124.0	193.0	12.0	23.0	2.9	3.0	2.2
11	135.4	119.0	103.0	94.0	135.0	124.0	193.0	4.3	6.0	2.7	3.0	2.2
12	125.0	108.0	101.0	95.5	163.0	124.0	193.0	4.3	5.0	2.6	3.0	2.2
13	123.5	97.0	99.0	107.0	139.0	127.7	209.0	4.3	4.0	2.6	3.0	2.2
14	122.0	96.0	97.0	105.5	115.0	131.4	225.0	4.3	3.0	2.6	2.7	2.2
15	128.0	95.0	95.5	104.0	91.0	135.0	248.0	4.3	3.0	2.6	2.5	2.2
16	134.0	94.0	94.0	109.7	107.5	138.0	271.0	4.3	3.0	2.6	2.2	2.2
17	135.0	91.0	98.5	115.3	124.0	140.0	267.0	4.3	3.0	2.7	2.2	2.2
18	136.0	88.0	103.0	121.0	124.0	140.0	263.0	4.3	3.0	2.9	2.2	2.2
19	137.0	88.0	95.0	132.0	124.0	140.0	260.0	4.3	3.0	3.0	2.2	2.2
20	138.7	88.0	87.0	142.0	124.0	142.0	298.0	31.2	3.0	3.0	2.2	2.2
21	140.5	90.0	79.0	124.0	124.0	144.0	326.0	58.0	3.0	3.0	2.2	2.2
22	140.5	92.0	77.5	106.0	124.0	146.0	336.0	52.7	3.0	3.0	2.2	2.2
23	140.5	94.0	76.0	88.0	122.0	156.0	312.0	47.4	3.0	3.0	2.2	2.2
24	139.3	100.0	79.0	86.5	121.0	166.0	259.0	42.0	3.0	3.0	2.2	2.2
25	138.1	106.0	82.0	85.0	120.0	142.0	209.0	46.0	3.0	3.0	2.2	2.3
26	137.0	101.5	82.0	101.5	118.0	118.0	209.0	48.0	3.0	3.0	2.2	2.4
27	134.0	97.0	82.0	118.0	116.7	136.7	149.0	48.0	3.0	3.0	2.2	2.6
28	131.0	97.0	82.0	111.0	115.4	145.3	138.0	48.0	3.0	3.0	2.2	2.6
29	131.0	97.0	83.5	104.0	.....	174.0	121.0	38.4	3.0	3.0	2.2	2.6
30	131.0	97.0	85.0	105.5	.....	162.0	170.0	28.8	3.0	3.0	2.2	2.6
31	130.0	.....	85.0	106.2	.....	149.0	.....	19.2	.....	3.0	2.2	.....

Monthly discharge of Spanish Fork at Lake Shore, Utah, for the year ending Sept. 30, 1915.

[Drainage area, 700 square miles.]

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
October	156.0	3.0	104.5	6,425
November	131.0	88.0	106.4	6,331
December	106.0	76.0	93.2	5,731
January	142.0	82.0	103.6	6,374
February	163.0	82.0	114.5	6,764
March	174.0	114.0	134.8	8,839
April	336.0	121.0	214.8	13,543
May	149.0	4.3	43.9	4,702
June	55.0	3.0	13.0	1,722
July	3.0	2.6	2.9	172
August	3.0	2.2	2.5	160
September	6.0	2.2	2.4	244
The year	336.0	2.2	77.7	61,507

DIAMOND FORK NEAR THISTLE, UTAH.

LOCATION.—In the NE. ¼ SE. ¼ sec. 17, T. 9 S., R. 4 E., at footbridge about 200 yards above mouth, and 2½ miles below Thistle, Utah County.

DRAINAGE AREA.—157 square miles.

RECORDS AVAILABLE.—December 2, 1907, to September 30, 1915.

GAGE.—Inclined staff on left bank about 5 feet above footbridge.

DISCHARGE MEASUREMENTS.—Made from footbridge or by wading.

CHANNEL AND CONTROL.—Bed composed of small gravel; shifts. One channel at all stages; straight for 100 feet above and below gage. Banks covered with cottonwood trees; subject to overflow during extreme floods.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.90 feet July 17 (discharge, 124 second-feet); minimum stage, 2.80 feet December 25 (discharge, 9.0 second-feet).

1907–1915: Maximum stage recorded, 5.6 feet May 7, 1909 (discharge, 715 second-feet); maximum discharge, 735 second-feet May 9, 1909 (stage, 5.5 feet); minimum stage recorded, 2 feet August 27–30 (discharge, 20 second-feet); minimum discharge, 6 second-feet January 29, 1909 (stage, 2.8 feet).

WINTER FLOW.—Stage-discharge relation affected by ice for short periods.

DIVERSIONS.—No diversions of importance above or below station.

REGULATION.—Natural flow affected by any water supplied from the Strawberry Valley reservoir.

COOPERATION.—Since January 1, 1911, all records have been furnished by the United States Reclamation Service.

During 1915 about 9,900 acre-feet were supplied from the Strawberry Valley reservoir.

Discharge measurements of Diamond Fork near Thistle, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 14	B. M. Hall, r	3.21	31.6	June 21	R. M. Adams	3.35	49.0
Jan. 18	do	2.91	13.4	28	do	3.60	73
Feb. 19	do	3.09	26.8	29	do	3.60	73
Mar. 17	do	3.16	32.0	July 18	do	3.83	110
31	do	3.23	41.1	28	S. J. Anderson	3.79	103
Apr. 17	do	3.45	64	31	R. M. Adams	3.68	84
23	Adams and Hall	3.53	73	Aug. 18	do	3.58	69
May 3	R. M. Adams	3.52	75	27	do	3.57	70
19	do	3.49	62	31	do	3.55	65
June 7	do	3.45	58	Sept. 21	do	3.16	32.1

Daily discharge, in second-feet, of Diamond Fork near Thistle, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	30.2	29.4	28.6	16.5	21.6	28.9	45.1	70.4	70.4	72.0	94.2	65.8
2	30.2	29.4	28.6	16.5	23.2	28.9	46.0	69.2	66.9	87.0	90.6	65.8
3	30.2	29.4	28.6	18.6	23.2	28.0	51.5	70.4	68.0	84.0	87.0	73.5
4	32.8	29.4	28.6	17.2	21.6	27.2	45.1	70.4	69.2	84.0	84.0	75.0
5	31.9	29.4	28.6	17.2	18.6	27.2	46.0	69.2	66.9	82.0	84.0	75.0
6	31.9	29.4	28.6	15.8	17.2	28.0	48.2	70.4	65.8	87.0	82.5	68.2
7	32.8	29.4	28.6	18.6	15.8	28.9	49.3	70.4	65.8	96.0	79.5	68.2
8	38.2	29.4	28.6	18.6	18.6	29.8	54.8	70.4	64.7	105.0	79.5	69.5
9	42.0	28.6	28.6	17.2	21.6	28.9	48.2	69.2	64.7	114.0	79.5	68.2
10	32.8	28.6	28.6	18.6	23.2	28.0	49.3	69 2	65.8	116.0	72.0	68.2
11	32.8	28.6	28.6	18.6	30.7	28.0	48.2	68.0	65.8	118.0	70.8	59.5
12	32.8	28.6	28.6	17.2	31.5	27.2	50.4	65.8	63.6	120.0	70.8	50.9
13	32.8	28.6	28.6	18.6	28.0	28.0	50.4	64.7	63.6	114.0	57.5	41.0
14	31.9	28.6	28.6	18.6	26.4	29.8	51.5	63.6	61.4	118.0	59.5	41.8
15	31.9	28.6	28.6	18.6	23.2	30.7	54.8	61.4	60.3	111.0	59.5	41.8
16	31.0	28.6	27.0	16.5	21.6	31.6	59.2	59.2	57.0	111.0	60.8	41.8
17	30.2	29.4	24.2	16.5	23.2	33.4	59.2	59.2	54.8	124.0	69.5	40.3
18	30.2	29.4	21.4	13.7	28.0	33.4	58.1	65.8	53.7	111.0	70.8	39.6
19	30.2	29.4	18.6	13.7	28.0	34.3	59.2	66.9	52.6	109.0	69.5	39.6
20	30.2	29.4	15.8	16.5	28.0	34.3	68.0	68.0	51.5	111.0	72.0	38.9
21	30.2	29.4	13.1	14.4	29.8	33.4	69.2	69.2	50.4	114.0	65.8	38.9
22	30.2	29.4	10.5	13.7	31.6	34.3	70.4	69.2	52.0	111.0	69.5	38.9
23	30.2	29.4	10.2	13.7	32.5	35.2	71.6	66.9	49.0	109.0	69.5	38.9
24	29.4	29.4	9.6	14.4	28.0	35.2	71.6	66.9	49.0	113.0	72.0	38.9
25	29.4	29.4	9.0	15.8	28.9	36.1	70.4	65.8	46.0	114.0	70.8	36.8
26	29.4	29.4	10.5	14.4	27.2	36.1	69.2	66.9	41.0	111.0	70.8	34.0
27	30.2	28.6	16.0	14.4	28.0	37.0	68.0	68.0	82.0	109.0	70.8	32.6
28	29.4	28.6	15.0	15.8	28.0	38.8	68.0	68.0	78.0	103.0	69.5	31.2
29	29.4	28.6	16.0	13.0	.....	39.7	71.6	66.9	82.5	101.0	69.5	27.7
30	29.4	28.6	16.0	18.6	.....	45.1	71.6	65.8	72.0	87.0	59.5	27.0
31	29.4	.....	14.5	18.6	.....	44.2	.....	65.8	.....	91.0	65.8	.....

Monthly discharge of Diamond Fork near Thistle, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
October	42.0	29.4	31.4	1,931
November	29.4	28.6	29.1	1,732
December	28.6	9.0	21.8	1,340
January	18.6	13.0	16.4	1,008
February	32.5	21.6	25.2	1,400
March	45.1	27.2	35.8	2,201
April	71.6	45.1	58.1	3,457
May	70.4	59.2	67.1	4,126
June	82.5	41.0	61.8	3,677
July	124.0	72.0	104.4	6,415
August	94.2	57.5	74.7	4,593
September	75.0	27.0	49.2	2,928
The year	124.0	9.0	47.6	34,800

UNITED STATES RECLAMATION SERVICE POWER CANAL NEAR SPANISH FORK, UTAH.

LOCATION.—In the SW. ¼ SW. ¼ sec. 2, T. 9 S., R. 3 E., near mouth of canyon, half a mile below canal head gates and about 5 miles southeast of Spanish Fork.

RECORDS AVAILABLE.—January 1, 1909, to September 30, 1915.

GAGE.—Inclined staff on right bank graduated to tenths from zero to 5 feet.

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

CHANNEL AND CONTROL.—Concrete lined section; bottom width 4.0 feet, side slopes 1:1, and maximum depth of water will be about 6 feet. Control not permanent owing to earth and rock slides below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.89 feet September 3 (discharge, 101.3 second-feet); minimum stage, 1.87 feet June 29 (discharge, 40 second-feet).

1909–1915: Maximum stage recorded, 3.75 feet June 2, 1909 (discharge, 188 second-feet). Canal dry at times for cleaning and repairs.

WINTER FLOW.—Stage-discharge relation is sometimes affected by ice.

DIVERSIONS.—None above station.

REGULATION.—Flow controlled by head gates half a mile above gage.

ACCURACY.—Records published as received from the Reclamation Service.

COOPERATION.—Since January 1, 1911, all records have been furnished by the United States Reclamation Service.

This canal, which is designed for a capacity of 500 second-feet, diverts on the left bank of Spanish Fork in the SE. ¼ sec. 2, T. 9 S., R. 3 E. About 3 miles below the head is the forebay of the power plant. Here part of the water can be carried on in the High-line canal to irrigate lands at the south end of the project and the remainder used to supply the power plant or turned down the wasteway. The tailrace water and that going down the wasteway is used to supply the Salem canal or returned to the river.

Discharge measurements of United States Reclamation Service power canal near Spanish Fork, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 13	B. M. Hall, jr	2.68	75	May 21	R. M. Adams	2.42	59
Dec. 10	do	2.37	55	June 1	do	2.35	53
Jan. 22	do	2.36	56	16	do	2.10	42.2
Feb. 16	do	2.50	66	29	do	2.06	40.0
Mar. 15	do	2.63	76	July 7	do	2.12	44.0
30	do	2.62	73	19	do	2.10	41.9
Apr. 9	do	2.68	79	Aug. 1	do	2.40	58
16	do	2.84	87	24	do	2.70	76
22	do	2.18	48.2	30	do	2.98	93
May 10	R. M. Adams	2.29	53	Sept. 29	do	2.53	64

Daily discharge, in second-feet, of United States Reclamation Service power canal near Spanish Fork, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	73.3	72.7	65.9	63.0	67.1	70.8	75 9	59.1	51.6	41.2	56.4	95.0
2	73.3	72.7	65.9	64.2	67.7	70.2	77.3	57.5	51.0	42.6	56.9	95.0
3	92.8	72.7	70.2	64.8	70.2	70.2	82.0	55.4	49.5	43.0	56.9	101.3
4	77.3	72.7	69.6	65.4	67.1	70.2	75.9	56.9	50.5	41.6	55.9	92.8
5	74.6	72.7	69.6	65.4	63.6	69.0	77.9	57.5	49.1	43.4	59.1	95.0
6	74.6	72.1	69.6	63.6	61.9	68.3	76.6	58.1	44.4	43.9	56.9	95.0
7	74.6	72.1	69.0	64.2	64.2	65.9	75.9	54.8	43.9	43.4	58.1	96.6
8	82.7	70.8	68.3	65.4	64.8	67.1	91.3	52.6	45.2	44.8	56.9	98.2
9	86.2	68.3	62.5	65.4	67.1	67.7	78.6	52.6	45.2	44.4	55.9	98.2
10	77.3	70.8	62.5	65.4	69.6	67.7	75.9	52.1	43.9	44.4	53.2	95.9
11	75.9	68.3	68.3	59.7	72.7	69.0	76.6	54.3	44.8	43.4	52.6	95.0
12	74.6	70.2	61.3	64.2	73.3	69.6	78.6	52.6	44.8	44.4	52.6	95.9
13	74.6	70.8	63.0	63.0	69.6	73.3	83.4	51.6	46.2	40.8	50.5	74.6
14	73.3	70.8	61.3	65.4	65.4	72.7	84.8	53.2	44.4	41.6	49.1	71.4
15	72.7	65.9	54.9	65.4	60.8	75.3	84.8	53.2	43.9	42.6	49.1	71.4
16	72.1	65.9	54.9	63.0	69.6	76.6	84.1	53.2	43.4	43.4	51.6	66.5
17	72.1	67.1	58.1	57.5	69.6	76.6	82.7	51.6	43.0	43.0	52.6	65.9
18	72.1	64.8	63.6	60.2	69.6	76.6	86.2	58.1	42.6	42.6	53.2	64.2
19	73.3	62.5	64.8	61.3	71.4	73.9	61.9	56.9	42.6	41.6	52.6	63.6
20	75.3	63.6	61.3	61.9	75.3	74.6	47.1	55.9	40.8	41.6	52.6	65.9
21	75.9	63.6	62.5	63.0	72.7	74.6	47.6	57.5	41.6	41.2	52.1	64.8
22	75.3	62.5	62.5	58.6	72.1	76.6	47.1	51.0	40.8	42.1	51.6	64.8
23	74.6	64.2	59.7	58.1	72.1	81.3	48.1	49.1	40.4	41.6	52.1	61.9
24	74.6	63.6	58.1	56.4	77.3	75.3	49.1	50.5	43.9	42.1	70.8	62.5
25	74.6	67.1	61.3	59.1	69.6	73.3	49.1	51.0	43.0	43.0	94.3	65.4
26	74.6	67.1	63.6	65.4	77.3	73.3	48.1	51.0	44.4	42.6	86.9	66.5
27	74.6	68.3	62.5	65.4	69.6	75.3	51.0	53.2	42.1	44.4	85.6	65.9
28	74.0	70.2	62.5	65.9	67.1	74.6	52.6	52.1	40.8	41.6	84.8	65.4
29	73.3	70.8	62.5	67.7	.....	84.8	51.0	52.1	40.0	41.2	84.8	64.2
30	73.3	68.3	63.6	67.1	.....	74.6	47.1	50.5	40.4	41.6	88.4	62.5
31	73.3	.....	63.6	68.3	.....	74.6	.....	48.1	.....	41.6	92.8	.....

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Monthly discharge of United States Reclamation Service power canal near Spanish Fork, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
October	92.8	72.1	75.5	4,642
November	72.7	62.5	68.4	4,070
December	70.2	54.9	63.5	3,904
January	65.9	58.1	63.3	3,894
February	77.3	60.8	69.2	3,843
March	84.8	65.9	73.0	4,489
April	91.3	47.1	68.3	4,064
May	59.1	48.1	53.6	3,296
June	51.6	40.0	44.8	2,636
July	44.8	40.8	42.6	2,619
August	94.3	49.1	62.2	3,824
September	101.3	61.9	78.0	4,641
The year	101.3	40.0	63.4	45,922

HOBBLE CREEK NEAR SPRINGVILLE, UTAH.

LOCATION.—In sec. 7, T. 8 S., R. 4 E., about 150 feet below Springville power plant, 1 mile above mouth of canyon, and 4 miles southeast of Springville, Utah County.

DRAINAGE AREA.—120 square miles.

RECORDS AVAILABLE.—March 23, 1904, to September 30, 1915.

GAGE.—Vertical staff fastened to large tree on right bank, 75 feet below cable, June 1, 1909, to September 30, 1915; original gage, vertical staff about 1,000 feet below, installed March 23, 1904, washed out by flood April 2, 1907; temporary gage, vertical staff at same site as original gage, installed June 1, 1907, washed out by flood about May 1, 1909.

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

CHANNEL AND CONTROL.—Bed composed of boulders and coarse gravel; fairly permanent. One channel at all stages; banks high and wooded.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.30 feet April 22 and 23 (discharge, 118.5 second-feet); minimum stage, 3.15 feet August 27 and September 23 (discharge, 21.2 second-feet).

1909–1915: Maximum discharge recorded, 820 second-feet May 6–8, 1909 (estimated from high-water marks); minimum discharge, 7 second-feet October 7 and 8 and December 10, 1905.

WINTER FLOW.—Largely from springs; stage-discharge relation not seriously affected by ice.

DIVERSIONS.—The only diversion above station is the power canal, and this water is returned to the stream about 150 feet above gage.

REGULATION.—Low-water flow may be somewhat affected by operation of power plant.

COOPERATION.—Since January 1, 1911, all records have been furnished by the United States Reclamation Service.

Discharge measurements of Hobble Creek near Springville, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 15	B. M. Hall, jr.	3.35	28.3	Apr. 1	B. M. Hall, jr.	3.53	36.6
Jan. 20	do.	3.24	23.1	12	do.	4.05	97
Feb. 17	do.	3.32	25.7	19	do.	4.20	105
Mar. 16	do.	3.37	27.9	May 4	R. M. Adams.	3.90	70
Apr. 1	do.	3.53	36.0	June 18	do.	3.50	35.4

Daily discharge, in second-feet, of Hobble Creek near Springville, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	27.1	26.5	29.7	25.0	25.4	26.4	36.8	81.0	64.4	34.8	23.6	22.3
2	28.3	26.5	28.7	25.0	25.8	27.1	41.6	87.1	64.4	34.8	23.6	23.9
3	29.5	27.6	28.7	25.0	23.8	26.0	54.7	75.2	64.4	34.8	23.6	25.5
4	30.7	28.7	28.7	25.0	21.8	25.0	64.4	69.5	69.5	33.4	23.6	27.1
5	32.0	28.1	28.7	25.0	22.3	25.0	69.5	69.5	69.5	32.0	24.3	26.0
6	31.5	27.5	28.2	25.0	22.8	25.0	69.5	75.2	59.4	29.2	25.0	25.0
7	31.0	25.9	27.8	25.0	23.5	25.0	75.2	81.0	54.7	29.2	24.5	24.3
8	30.2	26.2	27.4	25.0	24.3	25.0	93.2	75.2	54.7	30.6	24.0	23.6
9	29.4	26.5	27.0	25.0	25.0	25.0	81.0	81.0	50.0	32.0	23.6	24.1
10	28.7	27.6	26.5	25.0	26.0	25.0	75.2	75.2	50.0	29.2	23.6	24.6
11	28.7	28.7	26.3	25.0	27.1	25.0	81.0	69.5	45.8	29.2	23.6	25.0
12	28.7	28.7	26.1	24.7	27.1	25.4	87.1	69.5	45.8	29.2	23.6	24.5
13	28.7	28.7	25.9	24.4	27.1	25.8	87.1	75.2	45.8	27.1	23.6	24.0
14	28.7	28.4	25.9	24.1	26.4	26.5	93.2	69.5	45.8	29.2	23.6	23.6
15	28.7	28.1	25.9	23.8	25.8	27.2	93.2	69.5	41.6	28.2	23.6	23.6
16	28.7	27.8	26.2	23.6	25.8	27.9	105.4	64.4	38.2	27.1	23.6	23.6
17	29.0	27.2	26.5	23.3	25.8	27.5	105.4	64.4	34.8	27.1	23.6	23.6
18	29.3	26.5	26.5	23.0	26.2	27.1	99.3	75.2	34.8	27.1	23.6	23.6
19	29.7	26.5	26.5	22.8	26.7	28.6	105.4	75.2	34.8	27.1	23.6	23.6
20	29.7	26.5	26.5	23.6	27.1	29.2	112.0	75.2	34.8	27.1	23.6	23.6
21	29.7	26.7	26.5	23.4	27.1	29.2	112.0	69.5	38.2	27.1	23.6	23.6
22	29.9	26.9	27.0	23.3	27.1	29.2	118.5	69.5	38.2	26.0	22.9	22.4
23	30.1	27.1	27.4	23.1	26.4	29.2	118.5	64.4	41.6	25.0	22.3	21.2
24	30.4	27.4	27.1	23.1	25.7	29.2	93.2	64.4	41.6	25.0	22.1	22.4
25	30.7	27.8	26.8	23.1	25.0	30.6	93.2	59.4	38.2	25.0	21.8	23.6
26	31.0	28.2	26.5	23.6	25.0	32.0	81.0	69.5	38.2	25.0	21.5	25.4
27	29.8	28.7	26.5	24.2	25.0	34.8	81.0	69.5	41.6	25.0	21.2	27.1
28	28.7	28.7	26.5	24.2	25.7	34.8	75.2	64.4	41.6	24.3	22.3	25.0
29	27.6	28.7	26.5	24.2	.....	34.8	64.4	64.4	38.2	23.6	22.3	25.0
30	26.5	28.7	26.5	24.6	.....	38.2	75.2	64.4	34.8	24.3	22.3	25.0
31	26.5	.....	26.5	25.0	.....	38.2	.....	64.4	.....	25.0	22.3	.....

Monthly discharge of Hobble Creek near Springville, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
October	32.0	26.5	29.3	1,802
November	28.7	25.9	27.6	1,642
December	28.7	25.9	27.0	1,660
January	25.0	22.0	24.2	1,488
February	27.1	21.8	25.5	1,414
March	38.2	25.0	28.5	1,755
April	118.5	36.8	85.0	5,043
May	87.1	59.4	73.0	4,487
June	69.5	34.8	46.5	2,768
July	34.8	23.6	28.6	1,731
August	25.0	21.2	24.0	1,475
September	27.1	21.2	24.2	1,440
The year	118.5	21.2	36.7	26,705

PROVO RIVER AT FORKS, UTAH.

LOCATION.—In sec. 26, T. 5 S., R. 3 E., at Vivian Park, summer resort just above Forks, Utah County, about 200 feet above highway bridge, 600 feet above mouth of South Fork of Provo River, which enters on the left, about a mile below mouth of North Fork, entering on the right, a mile above the Utah Power & Light Co.'s diversion dam, and 12 miles up Provo Canyon from Provo, on the highway and railroad from Provo to Heber.

DRAINAGE AREA.—600 square miles.

RECORDS AVAILABLE.—November 17, 1911, to September 30, 1915; also at various points below the mouth of South Fork since 1890.

GAGE.—Inclined staff on left bank 10 feet upstream from cable; read once daily by J. F. Carter.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Bed composed of small gravel; shifts. One channel at all stages; banks fairly high and not subject to overflow; maximum depth of water, 1.7 feet at gage height 1 foot. Gage height of zero flow about —0.5 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.20 feet at 9.30 a. m. June 2 (discharge, 714 second-feet); minimum stage, 0.64 feet at 9.30 a. m. September 1 (discharge, 155 second-feet).

1911–1915: Maximum stage recorded, 4.03 feet June 8, 1912 (discharge, 2,110 second-feet); minimum stage, 0.64 foot September 1, 1915 (discharge, 155 second-feet).

WINTER FLOW.—Stage-discharge relation not seriously affected by ice; open-water rating curve used.

DIVERSIONS.—Station is below diversions for irrigation in Heber Valley and above those in the vicinity of Provo.

REGULATION.—Flow is regulated to some extent by a number of small lakes near the headwaters which have been utilized as storage reservoirs.

ACCURACY.—Records good.

Discharge measurements of Provo River at Forks, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 31	J. J. Sanford	1.12	300	June 11	E. A. Porter	2.25	736
Feb. 16	Utah Power & Light Co.	.94	254	July 22	Utah Power & Light Co.	.78	237
Apr. 6	J. J. Sanford	1.32	379	Aug. 13	Lynn Crandall	.72	172
9	Utah Power & Light Co.	1.37	373	Sept. 25	Utah Power & Light Co.	.77	206
May 14	do	.62	175	30	T. F. Wentz[a]	.81	208

[a] Water commissioner Provo River.

Daily discharge, in second-feet, of Provo River at Forks, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	236	298	262	244	257	267	384	528	438	255	175	155
2	236	298	267	252	257	267	341	484	714	255	175	164
3	284	298	284	265	262	267	260	410	685	252	180	175
4	298	298	298	265	249	267	380	360	516	255	178	187
5	298	284	298	265	232	273	391	298	588	255	178	185
6	298	284	298	267	224	267	367	242	528	255	175	178
7	284	284	298	262	257	267	374	226	548	252	178	168
8	284	284	298	267	257	260	387	219	508	252	173	164
9	394	284	270	267	257	262	384	194	508	250	170	164
10	328	284	244	262	262	260	347	187	528	250	168	192
11	412	298	270	267	262	265	354	180	693	248	173	205
12	394	284	270	267	284	265	354	175	714	245	170	210
13	394	284	232	265	270	270	360	170	548	245	168	196
14	377	284	232	267	244	270	384	170	528	245	168	194
15	313	284	229	267	242	298	408	219	430	242	168	192
16	319	284	224	252	249	313	441	222	430	242	168	187
17	325	284	216	219	257	313	449	265	419	240	168	187
18	328	284	244	219	284	328	449	412	460	235	173	187
19	328	270	244	209	262	328	492	363	438	240	168	187
20	328	270	222	209	267	328	500	322	438	235	166	189
21	328	270	226	222	267	344	528	328	430	232	164	187
22	328	270	224	199	267	360	548	290	362	235	164	192
23	328	270	222	199	267	394	516	270	330	230	166	187
24	328	270	216	212	267	430	488	239	308	220	168	187
25	298	265	206	232	265	449	500	254	301	220	168	201
26	298	262	212	236	265	508	457	301	250	215	168	228
27	298	257	236	249	267	508	468	278	280	210	168	225
28	298	254	242	249	265	508	488	257	270	195	166	212
29	298	262	254	257	.....	568	520	257	260	185	168	210
30	298	265	257	257	.....	488	630	334	262	180	168	210
31	298	.....	257	262	.....	449	.....	374	.....	178	168	.....

NOTE.—Discharge determined from several fairly well defined rating curves applicable as follows: Oct. 1 to June 21, July 1–22, Aug. 4 to Sept. 9, and Sept. 12–30. Discharge June 22–30, July 23 to Aug. 2, and Sept. 10 and 11 determined by indirect method for shifting control.

Monthly discharge of Provo River at Forks, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	412	236	318	19,600	B.
November	298	254	279	16,600	B.
December	298	206	250	15,400	B.
January	267	199	246	15,100	B.
February	284	224	259	14,400	B.
March	508	260	341	21,000	B.
April	630	341	435	25,900	A.
May	528	170	285	17,500	A.
June	714	250	457	27,200	B.
July	255	178	234	14,400	B.
August	180	164	170	10,500	B.
September	228	155	190	11,300	B.
The year	714	155	288	209,000	

SOUTH FORK OF PROVO RIVER AT FORKS, UTAH.

LOCATION.—In sec. 26, T. 5 S., R. 3 E., at Vivian Park summer resort, just above Forks, Utah County, about a quarter of a mile above confluence of South Fork with Provo River, and 12 miles up Provo Canyon from Provo on highway and railroad from Provo to Heber.

DRAINAGE AREA.—30 square miles.

RECORDS AVAILABLE.—November 17, 1911, to September 30, 1915.

GAGE.—Vertical staff nailed to cottonwood tree on right bank, June 15, 1913, to September 30, 1915; read once daily by J. F. Carter. Datum raised 2 feet on June 12, 1915. Original gage, vertical staff about 150 feet above mouth of stream, November 17, 1911, to June 14, 1913.

DISCHARGE MEASUREMENTS.—Made from foot log near gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel; shifting, but stage-discharge relation remained fairly permanent during 1915. One channel at all stages; banks high and not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.70 feet at 9.30 a. m. October 4, December 4 and 6 (discharge, 44 second-feet); minimum stage, 2.42 feet at 9.30 a. m. May 16 (discharge, 22 second-feet).

1911–1915: Maximum stage recorded, 4.05 feet June 10, 1912 (discharge, 74 second-feet); minimum stage, 2.42 feet May 16, 1915 (discharge, 22 second-feet).

WINTER FLOW.—Stage-discharge relation not affected by ice. Open-channel rating curve used.

DIVERSIONS.—Below all diversions.

REGULATION.—None.

ACCURACY.—Gage is difficult to read owing to rough water. Records fair.

Discharge measurements of South Fork of Provo River at Forks, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 31	J. J. Sanford	2.72	46.1	June 22	E. A. Porter	2.53	33.3
Feb. 16	Employees of Utah Power & Light Co.	2.56	32.7	July 22	Employees of Utah Power & Light Co.	.46	24.7
Apr. 6	J. J. Sanford	2.58	36.5	Aug. 13	Lynn Crandall	.56	31.2
9	Employees of Utah Power & Light Co.	2.58	30.4	Sept. 25	Employees of Utah Power & Light Co.	.56	29.2
May 14	do	2.49	26.1	30	T. F. Wentz[a]	.58	35.6

[a] Water commissioner Provo River.

Daily discharge, in second-feet, of South Fork of Provo River, at Forks, Utah, for the year ending Sept. 30, 1915.

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

NOTE.—Discharge determined from a fairly well defined rating curve.

Monthly discharge of South Fork of Provo River at Forks, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	44	38	40.2	2,470	B.
November	40	40	40.0	2,380	B.
December	44	34	38.4	2,360	B.
January	38	34	35.5	2,180	B.
February	35	30	33.2	1,840	B.
March	36	33	33.9	2,080	B.
April	42	33	36.1	2,150	B.
May	36	22	30.8	1,890	B.
June	34	23	28.8	1,710	B.
July	36	24	27.6	1,700	B.
August	36	24	30.2	1,860	B.
September	39	31	34.4	2,050	B.
The year	44	22	34.1	24,709	

AMERICAN FORK NEAR AMERICAN FORK, UTAH.

LOCATION.—In sec. 30, T. 4 S., R. 3 E., at the ranger station about 50 feet above mouth of South Fork, 3 miles above the Utah Power & Light Co.'s American Fork plant No. 2, 4½ miles above plant No. 1 at mouth of canyon, and 11½ miles from town of American Fork, Utah County.

DRAINAGE AREA.—Approximately 43 square miles.

RECORDS AVAILABLE.—February 15, 1912, to September 30, 1915 (fragmentary).

GAGE.—Inclined staff on left bank 50 feet above mouth of South Fork; read occasionally by forest ranger.

DISCHARGE MEASUREMENTS.—Made from bridge just below mouth of South Fork or by wading.

CHANNEL AND CONTROL.—Bed rocky; permanent except during floods. One channel at all stages. Gage height of zero flow about 1.2 feet.

EXTREMES OF DISCHARGE.—Records too incomplete to be of value in determining extremes of stage or discharge.

WINTER FLOW.—Stage-discharge relation not seriously affected by ice. Minimum flow probably occurs during winter.

DIVERSIONS.—Above all diversions.

REGULATION.—None.

Daily discharge not determined, as no current-meter measurements were made during the year.

Daily gage height, in feet, of American Fork near American Fork, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	1.90									1.79
2	1.90									
3	2.28					2.30	2.40			
4							2.38		1.96	1.84
5							2.36		1.96	
6	1.92							2.29	1.95	
7	1.94								1.93	1.84
8	1.96						2.48		1.92	1.82
9	1.96							2.16		1.82
10	1.96									
11	1.96					2.40	2.60		1.90	2.20
12						2.40	2.48			1.96
13							2.42		1.88	1.88
14						2.60			1.87	1.88
15	1.98									1.86
16	1.98							2.08	1.90	
17		1.84						2.06		
18										
19		1.84	1.80					2.00	1.84	
20				1.78				2.02	1.83	
21						2.34		2.00	1.82	
22						2.30			1.82	
23							2.50		1.82	
24							2.60	1.98		
25							2.40	1.98	1.82	
26										
27	1.90							1.98		
28	1.90							1.97		
29								2.00		
30										
31										

SOUTH FORK OF AMERICAN FORK NEAR AMERICAN FORK, UTAH.

LOCATION.—In sec. 30, T. 4 S., R. 3 E., at the ranger station about 150 feet above confluence with American Fork, 3 miles above Utah Power & Light Co.'s American Fork plant No. 2, 4½ miles above plant No. 1 at mouth of canyon, and 11½ miles from town of American Fork, Utah County.

DRAINAGE AREA.—About 5.8 square miles.

RECORDS AVAILABLE.—February 15, 1912, to September 30, 1915 (fragmentary).

GAGE.—Vertical staff on right bank; read occasionally by forest ranger.

DISCHARGE MEASUREMENTS.—Made from bridge near gage or by wading.

CHANNEL AND CONTROL.—Bed composed of course, clean gravel; fairly permanent. One channel at all stages.

EXTREMES OF DISCHARGE.—Data insufficient to determine extremes of flow. Minimum flow probably occurs during winter.

WINTER FLOW.—Stage-discharge relation not seriously affected by ice. Flow very low when stream freezes near its source.

DIVERSIONS.—None.

REGULATION.—None.

Daily discharge not determined, as no current-meter measurements were made during year.

Daily gage height, in feet, of South Fork of American Fork near American Fork, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	0.60								0.62
2	.60								
3	.76				0.82	0.94			
4						.92		0.70	.62
5						.96		.70	
6	.60						0.98	.70	
7	.60							.68	.62
8	.60					.96		.67	.61
9	.60						.90		.60
10	.60								
11	.60				.82	1.30		.67	.64
12					.80	1.30			.62
13						1.08		.67	.64
14					.86			.66	.62
15	.60								.60
16	.60						.80	76	
17		0.52					.78		
18									
19		1.75					.76	.67	
20			0.45				.78	.66	
21					.92		.76	.65	
22					.90			.65	
23						1.14		.65	
24						1.20	.72		
25						1.12	.72	.64	
26									
27	.46						.72		
28	.46						.70		
29							.70		
30									
31									

SEVIER LAKE BASIN.

SEVIER RIVER AT HATCH, UTAH.

LOCATION.—In the SE. ¼ sec. 28, T. 36 S., R. 5 W., at county bridge a quarter of a mile east of J. C. Barnhurst's house at Hatch, Garfield County, and 1½ miles below site of Hatchtown Dam, which was washed out in May, 1914.

DRAINAGE AREA.—260 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 3 to November 4, 1911; December 10, 1911, to September 30, 1915.

GAGE.—Stevens water-stage recorder, 50 feet below bridge, August 23, 1914, to September 30, 1915; original gage, about one-eighth mile upstream, June 3 to November 4, 1911, and December 10, 1911, to May 7, 1912; vertical staff on middle pier of bridge, May 8, 1912, to May 6, 1914; Stevens water-stage recorder about 1½ miles above bridge, May 7 to May 25, 1914, when Hatchtown reservoir dam broke, releasing 11,600 acre-feet of stored water. This gage was reinstalled at site below bridge August 23, 1914.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; fairly permanent; one channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.00 feet at 8 a. m. June 2 (discharge, 770 second-feet); minimum stage, 0.62 foot March 10–16 (discharge, 79 second-feet).

1911–1915: Maximum stage recorded, 5.8 feet June 5, 1912 (discharge, 1,210 second-feet); minimum stage, 1.0 foot March 18 to April 2, 1912 (discharge, 10 second-feet).

WINTER FLOW.—Stage-discharge relation affected by ice for short periods.

DIVERSIONS.—Above all diversions except Hatch Bench canal and Panguitch Lake ditch, which divert a small quantity of water from Mammoth Creek. Hillsdale ditch diverts about 4 miles downstream, and several other canals about 7 miles below for irrigation in Panguitch Valley.

REGULATION.—Entire flow controlled by gates in Hatchtown reservoir dam before May 25, 1914.

ACCURACY.—Records good.

Discharge measurements of Sevier River, at Hatch, Utah, during the year ending Sept. 30, 1915.

[Made by J. J. Sanford.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Jan. 15	[a] 0.78	96	May 30	2.72	670	Aug. 24	.84	114
Mar. 15	.62	75	June 16	2.20	503	Sept. 24	.84	112
May 1	1.86	426	July 2	1.35	257			
18	2.84	723	28	1.08	169			

[a] Stage-discharge relation affected by ice.

Discharge, in second-feet, of Sevier River at Hatch, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	130	118	106	.....	84	142	410	722	266	158	148
2	130	118	106	.....	84	158	362	754	260	155	198
3	130	118	106	.....	84	163	362	700	257	150	252
4	130	118	106	.....	84	168	356	645	254	150	361
5	130	118	106	.....	84	164	392	594	241	150	168
6	130	118	97	.....	84	160	377	594	232	150	150
7	130	118	97	93	84	156	365	594	227	150	142
8	125	130	88	88	84	156	359	674	216	150	138
9	125	130	93	84	84	168	356	706	211	150	132
10	120	130	94	93	79	183	362	738	209	132	130
11	120	130	95	93	79	209	392	754	201	132	125
12	120	130	96	84	79	211	453	738	193	132	122
13	120	130	97	84	79	203	546	706	188	135	122
14	120	130	97	84	79	193	610	690	188	138	125
15	120	130	97	84	79	216	658	610	188	135	128
16	120	130	97	84	79	240	690	530	183	188	128
17	120	130	97	84	84	263	706	515	183	150	125
18	120	130	.....	88	86	286	722	512	180	140	122
19	120	130	.....	84	84	288	674	496	178	130	118
20	120	130	.....	84	88	326	594	459	178	122	115
21	120	130	.....	88	90	320	562	431	178	120	115
22	120	130	.....	88	93	335	540	404	234	115	112
23	120	130	.....	84	99	365	515	386	168	112	110
24	120	130	.....	84	104	392	530	353	171	110	112
25	118	130	.....	84	108	303	578	338	259	110	112
26	118	130	102	88	108	303	594	326	186	112	112
27	118	130	97	93	111	303	610	315	189	128	112
28	118	130	102	84	118	303	642	300	166	118	110
29	118	106	.....	.....	122	320	674	283	163	112	110
30	118	106	.....	.....	127	320	674	274	160	112	110
31	111	.....	.....	.....	132	.....	690	.....	158	110	.....

NOTE.—Discharge determined from two well-defined curves, applicable Oct. 1 to July 21 and July 23 to Sept. 30. Staff gage used Oct 1 to Mar. 16 and a few days when clock of water-stage recorder stopped. Discharge estimated because of ice Dec. 10–12, as in table; Dec. 18–25, and 29–31, 97 second-feet; Jan. 1–31, 96 second-feet; Feb. 1–6, 90 second-feet. Clock stopped, discharge determined from range of stage Apr. 5–6, 15–17, June 3–4, Sept. 17–19, 24–30.

Monthly discharge of Sevier River at Hatch, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	130	111	122	7,500	B.
November	130	106	126	7,500	C.
December	106	88	98.2	6,040	C.
January	.....	.....	a 96.0	5,900	C.
February	93	84	87.3	4,850	C.
March	132	79	92.4	5,680	B.
April	392	142	244	14,500	B.
May	722	356	528	32,500	B.
June	754	274	538	32,000	B.
July	266	158	202	12,400	B.
August	188	110	134	8,240	A.
September	361	110	139	8,270	B.
The year	754	79	201	145,000	

a Estimated.

SEVIER RIVER NEAR CIRCLEVILLE, UTAH.

LOCATION.—Approximately in sec. 29, T. 31 S., R. 4 W., 2½ miles above mouth of Pine Creek, and 8 miles southwest of Circleville, Piute County.

DRAINAGN AREA.—950 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 10 to September 19, 1912; April 23, 1914, to September 30, 1915.

GAGE.—Stevens water-stage recorder, with outside and inside staff gages, about a mile below old gage, April 23, 1914, to September 30, 1915; vertical staff on bridge abutment during irrigation season of 1912; flow practically the same at both places.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and rocks; fairly permanent. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.6 feet at 4.30 p. m. May 18 (discharge, 786 second-feet); minimum stage, 2.50 feet at 5 p. m. July 16 (discharge, 65 second-feet).

1912, 1914–15: Maximum stage recorded, 3.7 feet May 30, 1912 (discharge, 860 second-feet); minimum stage, 2.50 feet July 16, 1915 (discharge, 65 second-feet).

WINTER FLOW.—Stage-discharge relation seriously affected by ice.

DIVERSIONS.—Above all diversions for Circle Valley; below several diversions for Hatchtown project and Panguitch Valley.

REGULATION.—Flow was affected somewhat by operation of Hatchtown reservoir until the dam broke, May 25, 1914.

ACCURACY.—Records good for periods in which gage was in operation; poor for other periods.

Discharge measurements of Sevier River near Circleville, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 21	J. J. Sanford	3.12	127	June 15	J. J. Sanford	4.30	422
Dec. 5	....do	3.36	168	July 1	.....do	2.94	129
Jan. 14	.....do	3.20	148	14	Porter and Sanford	2.58	75
Mar. 18	.....do	3.50	193	27	J. J. Sanford	3.62	253
May 4	.....do	4.52	498	Aug. 10	.....do	2.64	82
17	.....do	5.40	728	23	.....do	2.72	88
29	.....do	4.98	603				

Daily discharge, in second-feet, of Sevier River near Circleville, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	184	116	155	.....	151	.....	215	531	613	132	150	135
2	197	119	158	.....	151	.....	228	526	613	127	141	157
3	188	120	180	.....	156	.....	238	505	644	134	132	259
4	184	120	188	.....	150	.....	257	492	699	128	124	295
5	175	141	180	.....	151	.....	257	510	641	144	115	287
6	188	131	182	.....	151	.....	247	518	574	137	108	216
7	170	.....	166	.....	151	.....	234	518	558	139	102	204
8	161	.....	141	.....	150	.....	244	484	531	139	92	200
9	165	.....	150	.....	148	158	242	484	596	116	83	186
10	151	.....	153	151	163	165	242	484	619	102	78	188
11	144	.....	165	148	173	172	244	495	568	100	82	184
12	144	.....	161	143	165	179	262	531	518	89	77	181
13	144	.....	151	138	155	184	270	580	474	83	77	178
14	141	.....	141	141	161	189	282	619	448	77	78	181
15	138	.....	155	.....	161	221	293	670	432	74	86	186
16	141	.....	161	.....	161	228	288	702	396	68	89	181
17	138	.....	158	.....	158	201	273	728	358	70	109	181
18	130	.....	156	.....	158	197	307	763	344	70	97	179
19	130	.....	151	.....	161	195	340	740	370	78	85	188
20	131	138	146	.....	160	194	370	684	309	94	83	177
21	128	151	151	.....	158	193	390	624	286	150	85	173
22	127	156	.....	.....	156	.....	420	596	258	144	86	160
23	125	158	.....	.....	155	.....	425	582	230	192	89	160
24	124	158	.....	.....	.....	.....	430	582	211	195	89	155
25	122	166	.....	.....	.....	.....	435	582	197	170	90	148
26	122	161	.....	.....	.....	.....	440	599	185	240	89	152
27	116	163	.....	.....	.....	.....	445	582	166	252	89	157
28	113	170	.....	.....	.....	230	470	619	159	203	93	155
29	112	172	.....	.....	.....	205	585	607	152	175	96	152
30	114	166	.....	.....	.....	207	585	619	144	163	94	138
31	113	.....	.....	.....	.....	215	.....	613	.....	157	104	.....

NOTE.—Discharge determined from four well-defined curves, applicable Oct. 1 to Apr. 18, Apr. 29 to July 22, July 27 to Sept. 2, and Sept. 6–30, respectively. Gage not working and discharge estimated Nov. 7–19, 135 second-feet; Mar. 19–20, as in table; and Mar. 22–27, 205 second-feet. Stream frozen and mean flow estimated Dec. 22 to Jan. 9, 150 second-feet; Jan. 15–31, 145 second-feet; Feb. 24–28, 156 second-feet; Mar. 1–8, 157 second-feet; estimates based on climatic data and comparison with record of flow of Sevier River at Kingston. Discharge estimated Apr. 19–28, July 23–26, and by indirect method for shifting control Sept. 3–5.

Monthly discharge of Sevier River near Circleville, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	197	112	144	8,850	B.
November	172	.....	142	8,450	B.
December	188	.....	156	9,590	B.
January	.....	.....	146	8,980	C.
February	173	.....	157	8,720	C.
March	.....	.....	188	11,600	C.
April	585	215	332	19,800	C.
May	763	484	586	36,000	A.
June	699	144	410	24,400	A.
July	252	68	134	8,240	A.
August	150	77	96.5	5,930	A.
September	295	138	183	10,900	B.
The year	763	68	223	161,000	

SEVIER RIVER NEAR KINGSTON, UTAH.

LOCATION.—In the NE. ¼ sec. 9 T., 30 S., R. 3 W., just below highway bridge on road from Kingston to Junction, 1¼ miles above mouth of East Fork and 1½ miles northwest of Kingston, Piute County.

DRAINAGE AREA.—1,110 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 12, 1914, to September 30, 1915; also several miscellaneous measurements in 1911, published in Water-Supply Paper 310 as "South Fork near Junction, Utah."

GAGE.—Stevens water-stage recorder on left bank near bridge, with outside and inside staff gages, August 7, 1914, to September 30, 1915; temporary Stevens water-stage recorder 300 feet downstream, June 12 to July 15, 1914.

DISCHARGE MEASUREMENTS.—Made from cable 300 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; shifting. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge during year, May 17 (estimated 790 second-feet); minimum mean daily discharge, June 28 to July 1 (estimated 20 second-feet).

1914–15: Same as above.

WINTER FLOW.—Stage-discharge relation seriously affected by ice.

DIVERSIONS.—Below all diversions above mouth of East Fork.

REGULATION.—Flow affected by diversions for irrigation upstream.

ACCURACY.—Records fair.

Discharge measurements of Sevier River near Kingston, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 20	J. J. Sanford	1.42	113	June 17	J. J. Sanford	3.07	212
Dec. 9	do	1.98	167	July 3	do	1.34	35
Jan. 18[a]	do	1.88	179	16	Porter and Sanford	1.07	23.7
Mar. 13	do	2.20	204	29	J. J. Sanford	2.20	99
Apr. 27	do	2.92	266	Aug. 10	do	1.16	27.3
May 4	do	5.24	463	25	do	1.34	42
15	do	6.02	570	Sept. 6	do	3.25	205
28	do	5.38	482	6	do	3.25	201

[a] Stream partly frozen.

Daily discharge, in second-feet, of Sevier River near Kingston, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	192	136	180	191	203	209	485	485	20	45	48
2	187	136	176	215	198	217	485	498	25	42	94
3	189	130	198	214	196	223	492	576	38	37	199
4	186	120	214	188	202	251	455	650	37	37	320
5	175	120	208	178	204	271	485	580	40	44	300
6	167	123	208	175	196	258	504	492	48	43	208
7	167	123	197	174	195	232	504	485	61	36	187
8	164	120	187	184	195	240	449	449	39	29	175
9	173	120	187	193	205	240	449	498	32	28	168
10	162	120	178	203	205	236	437	537	33	28	163
11	152	124	183	218	204	246	425	480	30	26	152
12	147	127	177	213	203	251	449	433	26	25	140
13	144	138	177	203	205	252	485	390	26	24	142
14	139	145	152	180	214	253	518	351	24	26	142
15	134	147	150	166	249	262	576	317	24	30	145
16	131	145	150	173	292	254	596	281	24	35	136
17	127	152	178	191	243	246	790	212	23	35	132
18	119	157	184	194	227	286	720	215	23	40	135
19	117	151	189	192	242	321	670	224	24	35	135
20	114	156	195	195	230	369	589	204	24	30	129
21	115	168	172	207	217	379	537	183	26	28	109
22	117	167	.....	196	218	394	498	164	35	28	104
23	120	167	.....	195	228	411	473	100	44	31	97
24	121	177	.....	203	232	368	485	40	92	34	100
25	117	184	.....	205	234	356	511	30	55	38	100
26	113	189	.....	205	237	320	498	40	71	48	90
27	111	192	.....	193	231	270	461	48	154	47	80
28	111	192	.....	193	230	298	480	20	138	47	70
29	111	195	.....	.....	227	423	461	20	104	43	60
30	131	197	.....	.....	214	518	473	20	75	46	50
31	136	.....	.....	.....	216	.....	485	.....	53	45	.....

NOTE.—Discharge determined from a number of fairly well defined curves and indirect method for shifting control. Stream partly frozen Dec. 22 to Jan. 28; mean flow estimated, 155 second-feet, by comparison with record of flow at Junction. Gage stopped Dec. 15–16, Feb. 14, May 17–19, June 5, 23–26, 28–30, July 1–2, Sept. 24–30; discharge estimated by comparison with record of flow of Sevier River near Junction, East Fork of Sevier River near Kingston, and Kingston canal.

Monthly discharge of Sevier River near Kingston, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	192	111	142	8,730	A.
November	197	120	151	8,980	A.
December	214	.....	a 174	10,700	B.
January	.....	.....	a 159	9,780	C.
February	218	166	194	10,800	B.
March	292	195	219	13,500	B.
April	518	209	295	17,600	B.
May	790	425	514	31,600	B.
June	650	20	307	18,300	B.
July	154	20	47.4	2,910	B
August	48	24	35.8	2,200	B
September	320	48	137	8,150	B.
The year	790	20	197	143,000	

a Estimated.

SEVIER RIVER NEAR JUNCTION, UTAH.

LOCATION.—In the SE. ¼ sec. 34, T. 29 S., R. 3 W., at Harris's ranch, about one-fourth mile below the junction of East Fork, and 1½ miles east of Junction, Piute County.

DRAINAGE AREA.—2,390 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 1 to September 2, 1911; May 1, 1912, to September 30, 1915.

GAGE.—Friez water-stage recorder on left bank, May 20 to September 30, 1915; October 20, 1914, to May 20, 1915, Friez water-stage recorder on right bank 400 feet downstream; August 26 to October 19, 1914, vertical staff, original datum; August 3 to 25, 1914, Friez water-stage recorder, original place and datum; June 20 to August 2, 1914, temporary vertical staff on left bank about 100 feet upstream; May 1, 1912, to May 25, 1914, Friez water-stage recorder, original datum; June 1 to September 2, 1911, original gage, inclined staff, on right bank.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel; shifts during high stages. Rating affected by backwater from Piute reservoir when full.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.66 feet (4.18 feet, new datum) May 16 (discharge determined by indirect method for shifting control, 1,230 second-feet); minimum stage from water-stage recorder, 0.91 foot (new datum), at midnight September 30 (discharge, 79 second-feet).

1911–1915: Maximum discharge occurred when gage was washed out on May 27, 1914, due to the failure of the Hatchtown dam (mean daily discharge estimated, 5,600 second-feet): minimum stage recorded, —0.25 foot, June 3 to 5, 1913 (discharge, 33 second-feet).

WINTER FLOW.—Stage-discharge relation somewhat affected by ice.

DIVERSIONS.—Several irrigation diversions above station.

REGULATION.—Flow largely controlled by the operation of gates in dam of Otter Creek reservoir on East Fork and of the Hatchtown reservoir before it went out on May 25, 1914.

ACCURACY.—Records fair.

Discharge measurements of Sevier River near Junction, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 20	J. J. Sanford	0.28	123	June 14	J. J. Sanford	1.84	355
Dec. 8	do	.73	212	17	do	1.48	228
Jan. 18[a]	do	.40	145	July 3	do	1.92	383
Mar. 18	do	.94	254	16	Porter and Sanford	1.80	306
Apr. 26	do	1.20	317	16	do	1.80	313
May 4	do	1.98	581	30	J. J. Sanford	2.14	427
15	do	3.00	979	Aug. 10	do	1.94	370
20	do	[b]2.50	727	26	do	1.71	285
28	do	2.60	614	Sept. 20	do	1.68	278
31	do	2.62	617				

[a] Some shore ice.

[b] New gage read 3.02.

Daily discharge, in second-feet, of Sevier River near Junction, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	200	160	196	159	198	202	237	694	618	353	376	275
2	204	159	192	166	224	204	381	664	618	370	362	310
3	213	148	220	166	222	202	401	612	646	380	352	362
4	211	147	235	192	200	204	443	579	783	387	349	478
5	180	150	226	180	184	204	466	608	756	380	359	512
6	173	155	222	162	186	198	460	660	708	380	369	441
7	169	159	211	176	186	200	429	656	645	387	366	424
8	180	155	200	166	184	200	423	612	596	346	362	403
9	184	152	194	184	190	209	426	615	578	326	366	400
10	171	152	186	184	220	207	426	612	618	329	356	383
11	162	159	194	166	240	207	426	634	582	326	349	379
12	162	160	196	176	231	207	300	721	490	326	345	373
13	155	171	184	184	211	213	384	812	418	329	342	362
14	162	176	170	200	200	226	406	908	370	323	349	356
15	145	171	155	194	196	273	404	988	322	320	352	342
16	145	175	159	173	198	318	390	1,230	286	313	352	297
17	145	176	184	152	215	290	376	1,205	226	320	356	294
18	131	192	209	145	220	270	398	1,070	202	320	362	291
19	131	188	222	162	211	270	440	928	197	329	356	291
20	128	184	209	173	215	266	500	790	186	326	284	278
21	133	211	180	180	213	251	522	660	164	326	268	275
22	136	196	152	184	204	242	532	620	148	336	265	268
23	140	207	155	148	200	249	538	580	322	345	262	259
24	145	209	159	131	207	256	497	578	316	403	259	252
25	145	211	159	180	211	256	381	614	302	386	268	252
26	145	215	180	162	211	254	326	600	289	407	281	240
27	145	222	209	148	196	242	282	549	283	478	272	234
28	145	213	226	200	194	237	282	596	283	458	265	216
29	135	220	196	207	.....	231	426	600	322	430	268	123
30	159	218	171	211	.....	220	679	603	346	413	272	93
31	162	.....	166	211	.....	218	.....	621	.....	386	278	.....

NOTE.—Discharge determined from a number of well-defined curves. Some shore ice exists for short periods during winter; measurements and climatic data indicate no effect of backwater; open-water rating curve used.

Monthly discharge of Sevier River near Junction, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	213	128	159	9,780	B.
November	222	147	180	10,700	B.
December	235	152	191	11,700	A.
January	211	131	175	10,800	B.
February	240	184	206	11,400	B.
March	318	198	233	14,300	A.
April	679	237	419	24,900	B.
May	1,230	549	717	44,100	A
June	783	148	421	25,100	A
July	478	313	363	22,300	A.
August	376	259	323	19,900	A.
September	512	93	315	18,700	A.
The year	1,230	93	309	224,000	

SEVIER RIVER BELOW PIUTE DAM, NEAR MARYSVALE, UTAH.

LOCATION.—In sec. 34, T. 28 S., R. 3 W., about 700 yards below the dam of the Piute reservoir, 11 miles south of Marysvale, Piute County.

DRAINAGE AREA.—2,440 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 17 to August 31, 1911; May 1, 1912, to September 30, 1915.

GAGE.—Friez water-stage recorder about 500 feet below site of former gage, May 4, 1912, to September 30, 1915, new datum; sloping gage on right bank, May 17 to August 31, 1911.

DISCHARGE MEASUREMENTS.—Made from cable 100 yards above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and loam. Control is a riffle of heavy gravel and rocks located at the gage; practically permanent, shifting only slightly in 1915. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.15 feet April 19–24 (discharge, 706 second-feet); minimum stage, —0.06 foot December 19 and January 16 (discharge, 30 second-feet).

1911–1915: Maximum stage recorded, 3.0 feet May 27, 1914 (discharge, 1,380 second-feet); minimum stage, —0.52 foot October 25, 1913 (discharge, 2.6 second-feet).

WINTER FLOW.—Stage-discharge relation not seriously affected by ice; open-water rating curves used.

DIVERSIONS.—No water diverted between this station and that near Junction.

REGULATION.—Flow past station controlled absolutely by operation of gates in dam above.

ACCURACY.— Records excellent. Sufficient current-meter measurements were made to give well-defined rating curves between the periods of slight shifts in control and to determine the flow during shifting periods.

Discharge measurements of Sevier River below Piute dam, near Marysvale, Utah, during the year ending Sept. 30, 1915.

[Made by J. J. Sanford.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Dec. 9	1.28	254	Apr. 26	2.08	627	July 30	2.01	611
Jan. 16	—0.06	32	26	2.08	650	Aug. 18	1.93	567
19	[a] 0.10	29	June 2	1.78	463	26	1.67	408
Mar. 10	.17	36.7	17	1.36	524			

[a] Changed control, raising gage height from —0.06 to 0.10.

Daily discharge, in second-feet, of Sevier River below Piute dam, near Marysvale, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	398	258	262	.....	33	37	188	655	477	550	608	407
2	398	255	286	.....	33	36	318	655	472	550	601	398
3	398	252	276	.....	34	38	322	655	466	543	601	410
4	388	249	272	.....	34	38	326	655	472	601	595	408
5	384	249	276	.....	35	38	326	649	477	649	595	406
6	380	243	268	.....	35	39	326	642	477	649	588	404
7	375	240	265	.....	35	39	326	642	477	642	588	402
8	371	240	252	.....	35	39	326	615	477	642	582	400
9	367	237	246	.....	35	38	326	595	477	642	582	402
10	367	237	225	.....	35	37	326	595	477	628	575	400
11	367	234	258	.....	35	38	326	595	477	563	575	398
12	362	231	246	.....	35	39	397	595	477	588	569	396
13	362	262	243	.....	35	40	450	595	477	635	569	396
14	354	297	268	.....	35	40	450	595	477	635	563	396
15	350	279	276	.....	35	40	450	595	507	628	563	396
16	346	265	313	.....	36	40	450	595	513	628	556	396
17	346	252	204	.....	36	40	489	601	513	628	556	396
18	337	240	37	.....	36	41	575	608	519	628	556	391
19	333	237	30	30	37	41	669	615	525	628	556	387
20	321	231	.....	30	37	41	706	628	531	628	501	387
21	317	234	.....	30	37	41	706	628	531	621	402	387
22	309	234	.....	30	37	42	706	543	525	628	402	387
23	301	240	.....	30	37	42	706	483	525	621	407	378
24	293	243	.....	30	37	44	706	483	525	621	407	368
25	290	243	.....	31	37	44	684	489	525	615	407	368
26	286	249	.....	31	37	45	655	495	550	615	407	368
27	279	252	.....	31	37	45	655	495	563	615	412	368
28	276	258	.....	32	37	45	655	495	556	615	412	368
29	272	262	.....	32	.....	45	655	489	556	615	412	368
30	265	262	.....	32	.....	44	655	477	550	608	407	364
31	262	.....	.....	32	.....	57	.....	477	.....	608	407	.....

NOTE.—Discharge determined as follows: Oct. 1 to Dec. 19, Jan. 19 to Sept. 1, and Sept. 12–30, from three well-defined curves; Sept. 2–11, by indirect method for shifting control. Gates at dam reported not changed Dec. 20 to Jan. 18, mean flow estimated 30 second-feet.

Monthly discharge of Sevier River below Piute dam, near Marysvale, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	398	262	334	20,500	A.
November	297	231	249	14,800	A.
December	313	30	157	9,650	A.
January	32	30	30.4	1,870	B.
February	37	33	35.6	1,980	A.
March	57	37	41.1	2,530	A.
April	706	188	495	29,500	A.
May	655	477	579	35,600	A.
June	563	466	506	30,100	A.
July	649	543	615	37,800	A.
August	608	402	515	31,700	A.
September	410	364	390	23,200	A.
The year	706	30	330	239,000	

SEVIER RIVER AT SEVIER, UTAH.

LOCATION.—In the E. ½ sec. 32, T. 25 S., R. 4 W., at the town of Sevier, Sevier County, about 100 yards above the railroad bridge on the Y-spur 50 yards west of the main-line track of the Denver & Rio Grande Railroad, and 45 yards above mouth of Clear Creek.

DRAINAGE AREA.—2,700 square miles.

RECORDS AVAILABLE.—May 20, 1911, to September 30, 1915.

GAGE.—Friez water-stage recorder on right bank, May 16, 1912, to September 30, 1915; original gage, vertical staff nailed to cottonwood tree, May 20,

1911, to January 7, 1912, when carried out by ice; temporary gage, January 8 to February 23, 1912; inclined staff at same site as Friez water-stage recorder, February 24 to May 15, 1911.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Permanent except at sudden high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.44 feet at 4 p. m. May 19 (discharge, 696 second-feet); minimum stage, 1.48 feet at 1 a. m. February 21 (discharge, 46 second-feet).

1911–1915: Maximum stage recorded, 4.75 feet June 3, 1914 (discharge, 1,600 second-feet); minimum stage, 1.29 feet October 26, 1913 (discharge, 15 second-feet).

WINTER FLOW.—Stage-discharge relation affected by ice for short periods.

DIVERSIONS.—A few small ditches divert between station and Piute dam.

REGULATION.—Flow past the station practically controlled by operation of gates in Piute reservoir dam, about 27 miles above.

ACCURACY.—Records good.

Discharge measurements of Sevier River at Sevier, Utah, during the year ending Sept. 30, 1915.

[Made by J. J. Sanford.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Oct. 24	2.74	329	May 26	3.17	543	Aug. 9	3.23	574
Dec. 11	2.62	328	June 7	3.18	568	" 21	3.22	575
Jan. 13[a]	1.85	60	12	3.25	599	31	2.87	420
Mar. 4	1.56	57	28	3.35	626	Sept. 17	2.88	404
Apr. 24	3.36	645	July 6	3.42	681			
May 13	3.31	638	26	3.37	638			

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Sevier River at Sevier, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	413	279	298	.....	56	64	653	582	632	648	444
2	413	276	329	.....	57	255	653	622	622	638	449
3	409	272	308	.....	57	329	653	592	612	627	457
4	405	272	315	.....	58	333	653	592	612	612	449
5	396	266	315	.....	59	336	664	582	674	612	440
6	388	260	312	.....	58	336	664	577	679	612	440
7	388	256	305	.....	59	340	664	562	685	612	436
8	388	256	298	.....	58	340	664	562	685	612	432
9	388	256	282	.....	59	340	617	572	679	607	432
10	384	256	247	.....	59	344	612	607	664	607	428
11	380	256	322	.....	59	336	612	607	602	602	420
12	376	256	275	.....	59	347	617	602	592	592	422
13	372	260	275	48	61	436	622	587	638	597	415
14	368	302	295	48	62	444	632	572	653	592	408
15	364	302	300	48	64	444	632	572	653	602	402
16	364	289	320	48	64	444	648	597	648	602	402
17	364	276	260	48	64	444	658	607	643	597	402
18	360	266	90	48	61	496	664	612	643	587	402
19	360	256	90	48	61	577	690	638	643	587	402
20	356	250	.....	48	61	643	685	612	643	587	402
21	352	240	.....	56	64	648	685	622	643	487	402
22	345	245	.....	56	62	653	664	622	643	444	398
23	341	250	.....	54	61	653	562	612	648	444	394
24	513	260	.....	54	61	653	558	602	664	449	394
25	302	265	.....	53	59	653	558	587	653	453	394
26	306	275	.....	53	59	653	553	582	658	449	398
27	302	280	.....	48	58	653	548	627	664	440	402
28	299	285	.....	56	56	653	543	643	658	436	398
29	292	295	.....	.....	56	653	558	638	658	436	394
30	289	295	.....	.....	53	653	558	632	653	424	390
31	285	.....	.....	.....	53	.....	562	.....	643	436	.....

NOTE.—Discharge determined from three well-defined curves, applicable Oct. 1 to Nov. 20, Nov. 29 to Sept. 11, and Sept. 16 to 30, respectively. Mean flow estimated on account of ice Dec. 20 to Jan. 31, 60 second-feet, Feb. 1-12, 55 second-feet. Discharge estimated by comparison with record of flow at Piute dam, owing to ice Nov. 21–28, and owing to stopping of clock Dec. 12–18, Mar. 2-3.

Monthly discharge of Sevier River at Sevier, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	413	285	357	22,000	A.
November	302	240	268	15,900	B.
December	329	.....	192	11,800	B.
January	.....	.....	a60	3,690	B.
February	.....	.....	52.6	2,920	B.
March	64	53	59.3	3,650	B.
April	653	64	472	28,100	A.
May	690	543	623	38,300	A.
June	643	562	601	35,800	A.
July	685	592	648	39,800	A.
August	646	424	549	33,800	A.
September	457	390	415	24,700	B.
The year	690	48	360	260,000	

a Estimated.

SEVIER RIVER NEAR VERMILION, UTAH.

LOCATION.—In the NE. ¼ sec. 19, T. 22 S., R. 1 W., at highway bridge half a mile below Rockyford dam, 2 miles below Vermilion, Sevier County, and 4 miles above mouth of Lost Creek.

DRAINAGE AREA.—3,340 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 15 to September 28, 1912; July 31, 1914, to September 30, 1915.

GAGE.—Vertical staff on right bank, July 31, 1914, to September 30, 1915; original gage used in 1912, one-fourth mile below.

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

CHANNEL AND CONTROL.—Fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.50 feet at 5 p. m., November 24 (discharge, 658 second-feet); minimum stage, 3.10 feet July 9, 10, 28, 31, and August 1 (discharge, 2 second-feet).

1912, 1914–15: Same as above.

WINTER FLOW.—Stage-discharge relation not affected by ice in 1915.

DIVERSIONS.—Entire flow diverted above station during low-water season; flow past the station at such times represents seepage and return flow from canals.

REGULATION.—Flow past station regulated to a large extent by dams and reservoirs above.

ACCURACY.—Records good.

Discharge measurements of Sevier River near Vermilion, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 28	J. J. Sanford	4.74	258	June 1	J. C. Dort	3.80	45.6
Dec. 12	do	5.02	416	11	J. J. Sanford	4.08	88
Jan. 22	do	4.46	201	23	do	3.25	5.5
Feb. 7	E. A. Porter	4.48	216	July 9	do	3.10	2.4
Mar. 24	J. J. Sanford	4.24	125	20	do	3.12	a3.0
May 6	J. C. Dort	4.33	137	Aug. 14	do	3.20	a5.0
7	J. J. Sanford	4.36	156	23	J. C. Dort	a3.12	a2.0

a Discharge estimated.

Daily discharge, in second-feet, of Sevier River near Vermilion, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	201	239	522	196	202	229	85	33	54	3	2	3
2	204	232	449	194	219	225	74	35	44	3	8	3
3	210	226	413	196	252	212	78	74	35	3	8	5
4	226	216	445	205	235	210	78	92	28	3	8	7
5	259	213	454	196	219	209	123	130	28	3	8	8
6	265	210	459	196	208	197	123	139	28	3	8	7
7	265	207	464	202	210	196	110	148	28	3	8	7
8	272	201	464	216	219	200	104	148	316	3	8	7
9	279	204	464	205	229	190	104	148	130	2	8	7
10	279	196	426	202	248	182	76	130	51	2	8	7
11	283	64	408	205	262	170	71	121	76	4	8	7
12	283	23	408	202	262	168	64	108	62	4	8	7
13	265	149	382	202	245	166	65	92	26	3	8	7
14	265	331	373	199	238	152	60	92	8	3	6	7
15	265	315	311	196	226	147	59	92	8	3	6	7
16	265	319	327	202	226	148	59	96	8	3	6	7
17	265	315	331	194	232	148	59	108	7	7	6	72
18	265	323	364	176	226	144	59	74	7	7	4	59
19	259	323	327	180	229	139	56	88	7	3	3	46
20	252	339	255	202	232	134	10	144	7	3	3	46
21	242	339	242	205	229	130	10	226	7	3	3	46
22	252	339	222	202	238	130	13	245	7	3	3	74
23	252	352	210	163	219	126	15	245	6	3	3	74
24	259	502	188	202	229	121	17	239	7	3	3	68
25	265	436	202	202	248	108	15	239	7	3	3	74
26	272	390	202	202	255	104	35	144	5	3	3	74
27	262	390	205	194	245	100	38	134	3	3	3	74
28	255	390	202	199	229	104	37	125	3	2	3	74
29	252	413	196	202	.....	104	33	62	3	3	3	46
30	248	417	186	216	.....	102	33	58	3	3	3	46
31	245	.....	194	210	.....	96	.....	54	.....	2	3	.....

NOTE.—Discharge determined from two well-defined curves, one applicable Oct. 1 to Nov. 12, Mar. 16 to Sept. 30, the other, Nov. 13 to Mar. 1. Indirect method for shifting control used Mar. 2-15. Discharge Mar. 23 and May 30 interpolated. Some shore ice reported occasionally during December and January, but there is no indication of backwater at such times, and the open-water rating curve has been used.

Monthly discharge of Sevier River near Vermilion, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	283	201	256	15,700	A.
November	502	23	287	17,100	B.
December	522	186	332	20,400	A.
January	216	163	199	12,200	B.
February	262	202	233	12,900	B.
March	229	96	155	9,530	B.
April	123	10	58.8	3,500	B.
May	245	33	125	7,690	A.
June	316	3	33.6	2,000	B.
July	7	2	3.2	197	C.
August	8	2	5.3	326	C.
September	74	3	32.5	1,930	B.
The year	522	2	143	103,000	

SEVIER RIVER NEAR GUNNISON, UTAH.

LOCATION.—About 60 rods west of the southeast corner of sec. 14, T. 19 S., R. 1 W., near the bridge on the county road from Gunnison to West View precinct, about 3 miles west of Gunnison post office, Sanpete County. San Pitch River enters from the east about half a mile below station.

DRAINAGE AREA.—3,990 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 29, 1900, to September 30, 1915.

GAGE.—Stevens water-stage recorder on right bank 200 feet below bridge, May 19, 1914, to September 30, 1915; vertical staff on right bridge abutment, June 29, 1900, to May 18, 1914; datum lowered 1 foot in September, 1910.

DISCHARGE MEASUREMENTS.—Made from cable about 450 feet above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of fine sand and gravel; shifts at high stages. One channel at all stages. Stage-discharge relation affected at times by backwater from San Pitch River.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.37 feet at 2.30 a. m. December 2 (discharge, 559 second-feet); minimum stage, 1.97 feet July 19, 20, and 26 (discharge, 61 second-feet).

1900–1915: Maximum stage recorded, 6.34 feet May 28, 1906 (discharge 2,240 second-feet); minimum stage 1.10 feet April 30, 1911 (discharge zero).

WINTER FLOW.—Stage-discharge relation not affected by ice in 1915.

DIVERSIONS.—During the irrigation season the greater part of flow is diverted above station.

REGULATION.—Flow at gage is affected by the operation of the Piute reservoir gates and numerous irrigation diversions above.

ACCURACY.—Frequent discharge measurements were made to determine changes in stage-discharge relation. Records good.

Discharge measurements of Sevier River near Gunnison, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 6	R. W. Davenport	2.86	378	May 7	J. C. Dort	2.79	215
29	J. J. Sanford	2.88	395	26	do	3.45	401
Dec. 12	do	3.02	436	June 12	do	2.48	150
Jan. 22	do	2.66	340	26	do	2.10	77
Feb. 23	E. A. Porter	2.74	339	July 9	Porter and Dort	2.04	69
Mar. 6	L. W. Jordan	2.70	323	Aug. 2	J. C. Dort	2.10	81
22	J. J. Sandford	a4.30	272	31	do	2.10	77
23	do	a4.30	266	Sept. 14	do	2.48	142
Apr. 22	J. C. Dort	2.17	88				

a Stage-discharge relation affected by backwater from San Pitch River.

Daily discharge, in second-feet, of Sevier River near Gunnison, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	301	368	523	275	301	332	289	115	286	72	68	78
2	294	358	548	275	311	336	278	104	278	72	72	82
3	298	350	520	272	340	325	275	115	202	73	92	110
4	336	358	498	278	361	318	280	144	256	71	105	157
5	365	336	516	275	340	325	290	180	336	69	108	136
6	379	325	520	266	311	318	330	229	246	65	110	124
7	408	329	520	272	301	311	330	220	220	65	105	121
8	437	318	527	272	308	308	325	223	212	73	104	121
9	444	311	505	284	322	308	294	215	294	69	96	117
10	448	300	484	281	332	308	256	223	272	69	83	128
11	444	210	473	278	358	304	225	217	159	69	85	146
12	444	174	437	278	379	304	207	223	144	68	85	140
13	433	220	426	278	372	304	197	238	136	68	82	142
14	419	272	422	284	343	302	184	238	123	68	75	144
15	419	390	426	287	332	300	168	251	117	66	81	142
16	426	390	451	287	329	298	136	249	104	66	85	144
17	448	390	426	294	340	296	142	278	89	71	86	150
18	455	390	401	304	347	290	126	292	83	72	85	180
19	448	390	448	332	347	285	136	264	79	65	82	180
20	437	390	426	343	347	280	130	292	72	61	75	175
21	415	390	361	291	342	275	114	339	71	65	72	168
22	408	390	332	318	337	272	96	401	75	71	72	163
23	412	401	361	329	332	266	89	432	73	73	69	159
24	408	422	361	248	336	270	92	426	71	87	71	146
25	408	494	358	291	340	275	89	416	73	102	75	140
26	404	489	294	318	365	280	78	401	75	87	82	146
27	397	462	284	347	358	270	83	365	72	89	81	150
28	390	434	278	284	347	270	85	339	65	72	79	157
29	383	516	275	284	.....	280	85	325	66	68	78	148
30	372	502	269	298	.....	280	124	303	71	66	78	146
31	365	.....	263	301	.....	280	.....	300	.....	68	79	.....

NOTE.—Discharge determined from two well-defined curves applicable Oct. 1 to Mar. 12 and Apr. 1 to Sept. 30. Discharge estimated by comparison with records of flow of Sevier River near Vermilion, and at Clark's bridge, and San Pitch near Gunnison, Nov. 10–13, 15–17, 19–21, Feb. 21–22, Sept. 13 owing to clock stopping, and Mar. 13–31, Apr. 4–7, owing to backwater from San Pitch River. Stage-discharge relation not affected by ice.

Monthly discharge of Sevier River near Gunnison, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	455	294	401	24,700	A.
November	516	174	370	22,000	B.
December	548	263	417	25,600	B.
January	347	266	291	17,900	B.
February	379	301	338	18,800	B.
March	336	266	296	18,200	C.
April	330	78	184	10,900	A.
May	432	104	269	16,500	A.
June	336	65	147	8,750	A.
July	102	61	71.6	4,400	A.
August	110	68	83.8	5,150	A.
September	180	78	141	8,390	A.
The year	548	61	251	181,000	

SEVIER RIVER AT CLARK'S BRIDGE, NEAR FAYETTE, UTAH.

LOCATION.—In the SW. ¼ sec. 13, T. 18 S., R. 1 W., at Clark's bridge, about 1½ miles northwest of Fayette, Sanpete County.

DRAINAGE AREA.—4,960 square miles (measured on topographic maps).

RECORDS AVAILABLE.—March 17 to September 30, 1914; March 8 to September 30, 1915.

GAGE.—May 8 to September 30, 1915, Stevens water-stage recorder on right bank immediately below bridge. Previous to May 8, 1915, vertical staff gage fastened to downstream side of right bridge abutment.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of fine gravel, sand, and clay; shifting. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.87 feet at 8 a. m. March 21 (discharge, 903 second-feet); minimum stage 0.70 feet midnight July 19 (discharge, 77 second-feet).

1914–15: Maximum stage recorded, 6.7 feet June 8, 1914 (discharge, 2,090 second-feet); minimum stage, 0.70 feet July 19, 1915 (discharge, 77 second-feet).

WINTER FLOW.—Observations discontinued at end of irrigation season.

DIVERSIONS.—Below all diversions above Sevier bridge reservoir.

REGULATION.—Flow at station is affected by operation of Piute reservoir gates and by numerous irrigation diversions.

ACCURACY.—Records considered good, owing to frequency of current-meter measurements.

COOPERATION.—Gage record and many current-meter measurements furnished by lower Sevier River water users.

Discharge measurements of Sevier River at Clark's bridge, near Fayette, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Mar. 8	L. W. Jordan	2.34	373	June 18	J. C. Dort	1.10	108
23	J. J. Sanford	3.85	886	25	do	.98	103
Apr. 23	J. C. Dort	1.15	118	July 1	do	.89	86
May 10	do	1.87	267	9	Porter and Dort	.84	86
14	do	1.88	272	26	J. C. Dort	.95	115
14	do	1.86	248	Aug. 3	do	.85	99
26	do	2.70	436	25	do	.78	96
June 4	do	1.89	250	31	do	.82	94
12	do	1.50	180	Sept. 17	do	1.39	166

Daily discharge, in second-feet, of Sevier River at Clark's bridge, near Fayette, Utah, for the year ending Sept. 30, 1915.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	.....	337	164	323	90	89	93
2	.....	332	156	310	93	86	97
3	.....	321	147	251	93	104	130
4	.....	437	174	203	89	120	166
5	.....	491	216	400	85	128	172
6	.....	506	248	326	83	130	151
7	.....	476	265	280	83	125	147
8	378	464	258	252	85	123	154
9	378	461	243	305	85	115	151
10	378	337	260	354	89	109	160
11	380	268	250	209	78	104	180
12	430	240	248	182	77	104	170
13	446	231	239	170	77	101	175
14	492	231	266	158	80	92	165
15	592	214	270	146	79	96	159
16	658	198	259	131	80	106	160
17	778	176	296	116	84	104	163
18	820	153	323	108	89	101	190
19	830	162	297	107	84	99	191
20	880	172	338	100	78	92	184
21	900	152	365	100	85	87	176
22	880	122	435	103	89	87	170
23	882	113	452	104	93	85	170
24	805	118	452	98	103	85	153
25	805	124	436	100	123	89	147
26	600	116	435	98	115	92	156
27	436	98	385	98	107	97	170
28	500	114	360	95	97	93	180
29	492	131	360	87	89	92	170
30	500	148	340	92	83	92	160
31	490	.....	323	.....	86	94	.....

NOTE.—Discharge determined from a series of parallel rating curves and indirect method for shifting control. Clock stopped Apr. 21–22, 29–30; discharge interpolated.

Monthly discharge of Sevier River at Clark's bridge, near Fayette, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
March 8–31	900	378	613	29,200	B.
April	506	98	248	14,800	B.
May	452	147	299	18,400	A.
June	400	87	182	10,800	A.
July	123	77	88.5	5,440	A.
August	130	85	100	6,170	A.
September	191	93	161	9,580	A.
The period				94,400	

SEVIER RIVER NEAR JUAB, UTAH.

LOCATION.—In the NE. ¼ sec. 2, T. 17 S., R. 2 W., about 1,600 feet downstream from the Sevier bridge dam, and 14 miles southwest of Juab, Juab County.

DRAINAGE AREA.—5,120 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 23, 1911, to September 30, 1915.

GAGE.—Stevens water-stage recorder on left bank, 500 feet below old gage, April 16, 1914, to September 30, 1915; inclined staff about 1,000 feet below Sevier bridge dam, on right bank, September 23, 1911, to April 15, 1914.

DISCHARGE MEASUREMENTS.—Made from cable 600 feet above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of sand, clay, and fine gravel. One channel at all stages. Artificial control of rocks about 40 feet below gage; permanent except during high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.46 feet at 1 to 6 a. m. June 22 (discharge, 1,079 second-feet); minimum mean daily discharge, 3 second-feet November 22–23.

1911–1915: Maximum stage recorded, 7.8 feet May 28–29, June 4–12, 1914, discharge 2,030 second-feet; minimum mean daily discharge, 0.5 second-foot October 14, 1911.

WINTER FLOW.—Stage-discharge relation not affected by ice.

DIVERSIONS.—None between this station and that near Gunnison.

REGULATION.—Flow controlled by gates in dam just above station.

ACCURACY.—Records good.

COOPERATION.—Gage-height record and many discharge measurements furnished by lower Sevier River Water Users.

Discharge measurements of Sevier River near Juab, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 7	R. W. Davenport	3.70	516	June 10	J. C. Dort	2.66	271
Nov. 17	J. J. Sanford	1.30	4.2	18	do	3.83	590
Dec. 13	do	1.38	5.9	July 24	do	3.32	434
Jan. 23	do	1.56	17.6	Sept. 1	F. W. Cottrell	2.22	175
Feb. 19	F. W. Cottrell	1.58	18.3	17	J. C. Dort	1.92	111
Mar. 10	L. W. Jordan	a 1.20	4.6	22	F. W. Cottrell	2.43	228
May 15	J. C. Dort	4.40	734	23	do	2.51	240
June 4	do	2.12	145				

a Gage read 1.30 before changing control below gage.

Daily discharge, in second-feet, of Sevier River near Juab, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	506	503	6	16	13	4	740	836	215	612	413	168
2	439	503	6	16	13	4	432	772	215	584	408	164
3	500	500	6	16	13	4	76	740	213	584	405	162
4	516	500	6	16	13	4	100	740	179	570	403	126
5	516	497	6	16	13	4	311	710	146	570	400	126
6	516	497	6	17	13	4	438	652	144	570	398	135
7	516	494	6	18	13	4	415	624	154	556	392	171
8	522	490	6	18	13	4	220	624	174	484	390	239
9	519	487	6	18	13	4	237	624	220	516	387	275
10	519	484	6	18	13	4	254	624	271	530	385	263
11	519	478	6	18	13	4	240	652	341	530	377	219
12	522	458	6	18	13	5	328	680	451	516	374	225
13	519	708	6	18	13	5	331	680	502	516	369	171
14	519	518	6	18	13	5	316	710	530	516	366	84
15	516	43	6	18	13	5	324	740	556	516	361	91
16	516	18	6	18	13	5	316	740	530	502	336	101
17	516	4	6	18	13	5	318	740	530	489	334	104
18	516	4	7	18	19	5	318	772	584	486	331	81
19	516	4	7	18	19	5	451	772	423	481	331	66
20	513	4	7	18	13	5	486	710	597	478	346	107
21	513	4	7	18	13	5	489	597	742	476	348	186
22	513	3	7	18	4	5	489	597	1,060	473	369	191
23	513	3	7	18	4	255	476	584	937	457	312	214
24	513	4	7	18	4	772	654	570	740	443	235	235
25	510	4	7	18	4	820	996	489	710	438	210	253
26	510	5	7	18	4	820	906	451	710	432	208	316
27	510	6	7	18	4	820	804	435	680	430	208	384
28	510	6	7	18	4	823	836	408	652	424	208	451
29	510	6	7	18	.....	820	868	405	652	422	207	473
30	506	6	16	13	.....	820	900	310	624	418	182	476
31	506	.....	16	13	.....	817	.....	215	.....	416	168	.....

NOTE.—Discharge determined from two well-defined curves, one applicable prior to Mar. 10, when control was changed; the other after that date. Clock stopped Nov. 25-26, Dec. 7-12, 14-19, Aug. 23-28; discharge estimated by comparison with record of flow at Mills. Water-stage recorder not working Nov. 27 to Mar. 10; discharge determined from staff gage read once daily.

Monthly discharge of Sevier River near Juab, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	522	439	512	31,500	B.
November	708	3	241	14,300	B.
December	16	.....	7.03	432	C.
January	18	13	17.3	1,060	C.
February	19	4	11.2	622	C.
March	823	4	221	13,600	B.
April	996	78	469	27,900	A.
May	836	215	619	38,100	A.
June	1,060	144	483	28,700	A.
July	612	416	498	30,600	A.
August	413	168	327	20,100	A.
September	476	66	208	12,400	A.
The year	1,060	3	303	219,000	

SEVIER RIVER NEAR MILLS, UTAH.

LOCATION.—In the SW. ¼ sec. 36, T. 14 S., R. 3 W., opposite milepost 682 on the Los Angeles & Salt Lake Railroad (Lynndyl cut-off), and about 7 miles below Mills post office, Juab County.

DRAINAGE AREA.—5,800 square miles.

RECORDS AVAILABLE.—April 22, 1914, to September 30, 1915.

GAGE.—Stevens water-stage recorder, with outside and inside staff gages, on left bank 500 feet above railroad bridge.

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

CHANNEL AND CONTROL.—Bed composed of heavy gravel and rock; permanent; one channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.71 feet (9 hours) on June 23 (discharge, 1,058 second-feet); minimum stage recorded, 3.26 feet December 22 and 23 (discharge, 38 second-feet).

1914–15: Maximum stage recorded, 6.71 feet May 27, 1914 (discharge, 1,910 second-feet); minimum stage, 3.26 feet December 22 and 23, 1914 (discharge, 38 second-feet).

WINTER FLOW.—Stage-discharge relation seriously affected by ice.

REGULATION.—Flow affected by operation of several dams and irrigation diversions above.

ACCURACY.—Records excellent.

COOPERATION.—Gage record and some discharge measurements furnished by lower Sevier River Water Users.

Discharge measurements of Sevier River near Mills, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 9	R. W. Davenport	4.98	583	May 15	J. C. Dort	5.29	742
Nov. 19	J. J. Sanford	3.48	55	.....do	...do	4.22	212
Dec. 14	.....do	3.50	64	July 19	...do	4.88	515
Feb. 8	Lynn Crandall	3.36	54	29	L. W. Jordan	4.78	435
Mar. 13	L. W. Jordan	3.42	54	Sept. 5	J. C. Dort	4.08	165
Apr. 27	J. C. Dort	5.38	782				

Daily discharge, in second-feet, of Sevier River near Mills, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	344	.....	54	.....	54	823	900	240	645	420	195
2	484	.....	53	.....	52	678	858	240	612	415	195
3	506	.....	52	.....	52	195	802	240	606	410	208
4	560	.....	52	.....	52	134	746	254	606	410	198
5	.....	.....	52	.....	52	224	725	211	606	405	165
6	.....	.....	52	.....	51	450	704	198	606	400	171
7	.....	.....	52	.....	50	467	664	192	599	395	164
8	.....	.....	52	54	49	329	664	204	536	390	287
9	.....	.....	51	.....	49	269	670	217	524	386	269
10	.....	.....	52	.....	49	281	677	289	548	382	305
11	.....	.....	52	.....	50	277	684	301	548	377	289
12	.....	.....	60	.....	50	328	697	400	542	377	251
13	.....	520	56	.....	52	350	711	500	536	277	287
14	.....	720	62	.....	52	350	718	512	530	379	172
15	.....	460	58	.....	52	341	753	506	524	372	116
16	.....	104	53	.....	51	350	760	548	518	364	127
17	.....	95	54	.....	51	341	767	536	506	346	130
18	.....	71	54	81	49	341	760	573	494	341	120
19	.....	60	54	74	50	425	788	524	489	341	102
20	.....	60	53	74	50	494	795	518	489	346	110
21	.....	61	53	70	49	506	711	612	494	350	165
22	.....	62	46	64	49	500	606	948	489	368	217
23	.....	62	46	62	48	494	612	1,050	484	377	230
24	.....	57	53	57	710	590	612	816	472	341	265
25	.....	55	59	54	851	970	542	739	462	258	265
26	.....	55	60	55	858	970	467	725	450	240	305
27	.....	54	57	56	858	816	456	704	445	237	350
28	.....	55	58	55	858	823	425	677	425	237	460
29	.....	58	58	.....	858	865	416	677	430	237	500
30	.....	57	59	.....	858	900	403	651	425	234	510
31	.....	.....	58	.....	851	.....	262	.....	420	204	.....

NOTE.—Discharge determined from a well-defined rating curve. Inlet pipe clogged with mud Oct. 5 to Nov. 16 and frozen Dec. 31 to Feb. 17. Mean flow estimated Oct. 5–31, 555 second-feet; Nov. 1–12, 540 second-feet; Feb. 1–7, 9–17, 55 second-feet. Discharge Sept. 13–20 determined from gage heights which were estimated from observer's readings and range of stage (clock stopped). Discharge estimated by comparison with record of flow at Juab Nov. 13–16, Dec. 31, May 2–3, 5, Sept. 28–30, owing to clogged inlet pipe and defective operation of clock.

Monthly discharge of Sevier River near Mills, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	844	.....	561	34,500	B.
November	720	54	305	18,100	B.
December	62	46	54.2	3,330	B.
January	.....	.....	60.0	3,690	C.
February	81	.....	58.4	3,240	C.
March	858	48	254	15,600	B.
April	970	134	496	29,500	A.
May	900	262	656	40,300	A.
June	1,050	192	495	29,500	A.
July	645	420	518	31,900	A.
August	420	204	345	21,200	A.
September	510	100	234	13,900	A.
The year	1.050	.....	338	245,000	

SEVIER RIVER NEAR LYNNDYL, UTAH.

LOCATION.—In the SE. ¼ sec. 27, T. 15 S., R. 5 W., at homestead of P. J. Flahive, 3½ miles southwest of Lynndyl, Millard County.

DRAINAGE AREA.—6,270 square miles (measured on topographic maps.)

RECORDS AVAILABLE.—April 25, 1914, to September 30, 1915.

GAGE.—Stevens water-stage recorder on right bank, with inside and outside staff gages, 1½ miles below highway bridge.

DISCHARGE MEASUREMENTS.—Made by wading or from cable one-fourth mile above gage.

CHANNEL AND CONTROL.—Bed composed of fine gravel; control permanent except for high stages; one channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.38 feet at 4.30 a. m. June 24 (discharge, 923 second-feet); minimum stage, 1.76 feet at 8 p. m. March 12 (discharge, 40 second-feet).

1914-15: Maximum mean daily discharge June 9, 1914 (estimated, 1,820 second-feet); minimum stage, 1.76 feet March 12, 1915 (discharge, 40 second-feet).

WINTER FLOW.—Stage-discharge relation seriously affected by ice.

DIVERSIONS.—Numerous diversions above station.

REGULATION.—Flow affected by storage and irrigation diversions above station.

ACCURACY.—Rating curve well defined.

COOPERATION.—Gage-height record furnished by Lower Sevier River Water Users.

Discharge measurements of Sevier River near Lynndyl, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 9	R. W. Davenport	4.15	524	June 6	J. C. Dort	2.47	138
Dec. 15	J. J. Sanford	a 1.96	61	July 21	J. W. Thurston	3.54	384
Feb. 8	Lynn Crandall	a 2.64	60	Aug. 20	Lynn Crandall	2.98	223
Mar. 13	L. W. Jordan	1.78	41.3	Sept. 6	J. C. Dort	2.46	139
Apr. 28	J. C. Dort	4.76	728				

a Stage-discharge relation affected by ice.

Daily discharge, in second feet, of Sevier River near Lynndyl, Utah, for the year ending Sept. 30, 1915.

Day	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.	May.	June.	July	Aug.	Sept.
1	874	442	81	.....	46	798	798	191	516	322	151
2	753	440	71	.....	46	706	766	180	502	320	146
3	427	440	68	.....	46	676	706	176	474	317	157
4	455	440	69	.....	45	180	676	191	474	317	159
5	479	442	69	.....	45	137	646	199	474	310	153
6	466	442	68	.....	45	204	631	146	461	308	139
7	461	442	81	.....	44	383	586	128	461	308	135
8	455	445	74	.....	43	396	558	123	461	305	146
9	513	442	62	.....	43	276	558	128	409	300	174
10	463	437	67	.....	42	226	558	132	396	298	215
11	455	440	.....	.....	42	232	558	184	409	293	255
12	450	445	.....	.....	41	217	558	206	396	291	237
13	448	419	.....	.....	42	264	572	310	409	291	210
14	445	575	.....	.....	42	291	572	396	396	286	206
15	445	591	61	.....	42	284	601	409	396	284	110
16	448	341	.....	.....	41	264	646	461	396	284	110
17	448	189	.....	.....	43	252	661	448	383	284	112
18	448	135	.....	71	46	241	706	448	370	264	114
19	448	107	.....	66	48	248	736	488	370	257	112
20	448	96	63	68	48	291	782	408	370	252	104
21	445	85	.....	67	81	358	706	449	370	246	90
22	442	79	.....	64	67	370	586	520	370	250	102
23	445	79	.....	61	55	370	558	868	370	269	146
24	445	72	.....	56	56	370	558	896	370	279	160
25	445	69	.....	55	620	396	558	646	358	255	182
26	442	69	.....	54	782	896	488	601	346	208	202
27	442	69	.....	51	800	830	422	586	346	188	241
28	442	71	.....	48	800	721	409	558	336	182	310
29	442	107	.....	.....	800	721	370	544	329	176	350
30	442	71	.....	.....	800	766	358	544	322	174	406
31	442	.....	.....	.....	800	.....	303	.....	322	168	.....

NOTE.—Discharge determined from two well-defined rating curves, applicable Oct. 1 to Mar. 24, Mar. 26 to Sept. 30, respectively. Stream frozen Dec. 11 to Feb. 17. Mean flow estimated Dec. 11–14, 62 second-feet; Dec. 16–19, 62 second-feet; Dec. 21–31, 60 second-feet; Jan 1–31, 65 second-feet; Feb. 1–8, 60 second-feet; Feb. 9–17, 62 second-feet from measurements and comparison with records of flow at other stations. Gage stopped, discharge estimated as in table, by comparison with records obtained at other stations Mar. 27–31, Apr. 17, Sept. 15–17, Sept. 28–30. Determinations of discharge Apr. 1–3 based on one staff reading daily.

Monthly discharge of Sevier River near Lynndyl, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	874	442	474	29,100	A.
November	591	69	284	16,900	B
December	81	.....	64.2	3,950	B.
January	.....	.....	65.0	4,000	B
February	.....	.....	60.7	3,370	B.
March	800	41	211	13,000	B.
April	896	137	412	24,500	A.
May	798	303	587	36,100	A.
June	896	123	385	22,900	A.
July	516	322	399	24,500	A.
August	322	168	267	16,400	A.
September	406	90	178	10,600	A.
The year	896	41	284	205,000	

SEVIER RIVER NEAR DELTA, UTAH.

LOCATION.—In the NW. ¼ sec. 27, T. 16 S., R. 6 W., 1½ miles below Delta spillway, and 6½ miles northeast of Delta, Millard County.

DRAINAGE AREA.—7,380 square miles.

RECORDS AVAILABLE.—May 16 to September 24, 1912; March 1, 1913, to September 30, 1915.

GAGE.—Gurley water-stage recorder on left bank at same datum as the inclined staff gage used prior to March 1, 1913.

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

CHANNEL AND CONTROL.—Bed composed of firm clay and hardpan; right bank may overflow at extremely high stages; one channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.28 feet at 7 a. m. March 31 (discharge, 802 second-feet); minimum mean daily discharge, 30 second-feet November 24.

1912–1915: Maximum stage recorded, 6.82 feet May 31, 1914 (discharge, 1,468 second-feet); minimum mean daily discharge, 15 second-feet July 26, 1914.

WINTER FLOW.—Stage-discharge relation affected by ice at times.

DIVERSION.—Canal A of the Delta project takes out water 1½ miles above station.

REGULATION.—Flow at station controlled by regulation of the Delta spillway and Sevier bridge reservoir.

ACCURACY.—Records good.

COOPERATION.—Some discharge measurements furnished by the Delta Land & Water Co.

Discharge measurements of Sevier River near Delta, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 21	J. J. Sanford	1.07	60	July 21	J. C. Dort	1.66	179
Dec. 16	do	1.07	55	Aug. 20	Lynn Crandall	1.12	78
Feb. 7	Lynn Crandall	1.06	69	Sept. 4	J. C. Dort	1.13	88
May 2	J. C. Dort	2.56	359	20	F. W. Cottrell	1.02	70
June 9	do	.97	59	27	do	1.33	110
July 1	J. W. Thurston	2.18	282				

Daily discharge, in second-feet, of Sevier River near Delta, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	550	192	170	52	74	64	778	310	227	258	136	72
2	440	202	170	50	77	63	748	360	113	229	127	72
3	186	209	111	49	86	63	692	371	83	184	120	83
4	93	209	88	49	89	63	481	342	89	180	111	77
5	143	208	80	54	89	62	270	314	95	178	103	78
6	204	213	76	56	84	62	180	329	100	214	95	78
7	216	214	76	50	77	62	223	318	90	293	89	73
8	188	209	80	55	80	59	289	174	74	304	84	83
9	233	201	77	52	80	57	279	200	60	264	82	78
10	259	192	69	54	84	56	206	229	62	231	76	78
11	230	186	70	60	110	54	162	202	57	190	72	77
12	188	196	72	54	122	54	142	198	50	176	82	84
13	176	204	65	56	122	53	154	212	47	156	89	82
14	196	270	60	58	111	53	162	208	48	146	84	73
15	220	380	59	.....	105	53	95	210	53	156	98	73
16	228	245	59	.....	98	53	102	227	102	178	82	77
17	216	94	61	.....	95	51	105	242	158	196	73	73
18	218	101	65	.....	97	53	108	254	142	182	72	72
19	211	98	65	.....	98	54	100	283	125	176	73	69
20	201	70	58	.....	95	57	89	424	115	176	77	72
21	189	59	53	.....	95	59	103	570	97	178	77	74
22	180	46	54	.....	89	74	118	413	106	186	65	89
23	173	37	50	.....	84	77	122	335	262	192	67	92
24	173	60	69	.....	80	70	111	413	402	196	83	88
25	176	115	60	.....	76	184	94	470	268	198	82	102
26	180	130	49	.....	77	544	246	458	140	194	86	115
27	184	94	50	.....	73	706	371	371	186	188	77	116
28	184	140	53	67	67	757	346	279	240	182	73	111
29	188	194	54	72	.....	784	335	321	176	168	82	116
30	191	132	53	78	.....	799	266	314	194	156	74	174
31	191	.....	53	74	.....	796	.....	268	.....	148	70	.....

NOTE.—Discharge determined from two curves, one well defined below 250 second-feet and poorly defined above that discharge, applicable Oct. 1 to Jan. 14; the other well defined below 400 second-feet and fairly well defined above, applicable Jan. 28 to Sept. 30. Stage-discharge relation affected by anchor ice Jan. 15–27 and mean flow, estimated 60 second-feet.

Monthly discharge of Sevier River near Delta, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	550	93	213	13,100	A.
November	380	37	163	9,700	B.
December	170	49	71.9	4,420	B.
January	78	.....	58.7	3,610	C.
February	122	67	89.8	4,990	C.
March	799	51	193	11,900	B.
April	778	89	249	14,860	B.
May	570	174	310	19,100	A.
June	402	47	132	7,860	A.
July	304	146	195	12,000	A.
August	136	65	85.8	5,280	A.
September	174	69	86.7	5,160	A.
The year	799	37	155	112,000	

SEVIER RIVER AT OASIS, UTAH.

LOCATION.—In the E. ½ sec. 33, T. 17 S., R. 7 W., about three-fourths mile northwest of Oasis, Millard County, 1½ miles below county bridge locally known as Hinckley bridge.

DRAINAGE AREA.—8,080 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 13, 1913, to September 30, 1915.

GAGE.—Stevens water-stage recorder on left bank, April 24, 1914, to September 30, 1915; vertical staff on county bridge, in the SW. ¼ sec. 22, T. 17 S., R. 7 W., April 13, 1913, to April 23, 1914; datum of vertical staff raised 0.15 foot December 19, 1913.

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

CHANNEL AND CONTROL.—Bed composed of sand; shifts occasionally. Two channels at extreme high water; some vegetation in channel.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.97 feet at 7.30 p. m., March 24 (discharge, 1,041 second-feet); minimum stage, 1.55 feet from 11 a. m. to 6 p. m. September 16 (discharge, 13.5 second feet).

1912–1915: Maximum stage recorded, 9.45 feet, June 12, 1914 (discharge, 1,580 second-feet); minimum stage, 2.0 feet May 13–19, 1912 (discharge, 0.5 second-foot).

WINTER FLOW.—Stage-discharge relation at times affected by ice.

DIVERSIONS.—Numerous diversions above station take practically entire flow during irrigation season; water passing gage at such time is largely seepage or return water entering below Gunnison Bend reservoir.

REGULATION.—Flow controlled by storage reservoirs and diversion dams above station.

ACCURACY.—Records good.

COOPERATION.—Some discharge measurements furnished by lower Sevier River Water Users.

Discharge measurements of Sevier River at Oasis, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 11	R. W. Davenport	3.85	196	July 3	J. W. Thurston	1.70	17.7
Nov. 21	J. J. Sanford	3.55	160	16	....do	1.74	19.2
Feb. 6	Lynn Crandall	2.86	87	30	L. W. Jordan	1.74	18.4
Mar. 12	L. W. Jordan	2.54	62	Aug. 21	Lynn Crandall	1.66	15.4
May 2	J. C. Dort	3.72	174	Sept. 7	J. C. Dort	1.70	17
June 5	J. W. Thurston	2.33	38				

Daily discharge, in second-feet of Sevier River at Oasis, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	637	127	130	61	76	87	865	126	405	18	19	18
2	532	155	130	61	81	84	865	119	132	17	19	18
3	454	151	140	64	86	80	806	212	79	18	20	18
4	400	149	150	61	88	78	748	184	49	18	18	18
5	300	145	140	64	88	76	437	101	40	18	18	17
6	200	140	129	63	86	75	97	82	33	17	18	16
7	200	135	109	66	84	73	112	115	25	16	18	18
8	200	130	98	66	83	70	106	85	23	16	18	20
9	200	127	96	64	82	69	164	32	23	16	18	20
10	200	130	94	69	82	70	95	31	23	17	17	17
11	198	130	92	66	122	70	89	29	23	17	18	16
12	186	130	90	67	131	66	84	24	21	20	18	16
13	153	130	88	67	129	66	79	21	22	22	17	17
14	134	130	83	68	127	66	71	22	22	22	17	15
15	124	160	83	70	117	61	43	24	23	20	17	15
16	123	190	88	71	113	61	43	24	22	19	18	14
17	122	190	88	74	112	60	46	23	21	19	17	14
18	123	181	88	79	110	61	49	24	20	19	16	15
19	125	170	88	74	105	61	52	29	19	20	16	15
20	127	160	73	74	105	60	44	42	18	18	16	16
21	121	159	61	80	107	61	35	42	19	18	16	15
22	81	158	61	85	102	60	26	42	18	18	17	15
23	47	158	61	90	100	62	27	43	17	21	17	16
24	54	157	61	98	98	499	22	43	18	24	18	16
25	69	160	62	81	94	562	23	113	21	23	18	17
26	70	153	62	68	94	312	20	204	18	22	18	16
27	68	146	62	70	92	532	20	204	20	22	17	17
28	73	141	59	72	90	705	20	204	22	20	17	18
29	103	135	60	74	.....	806	23	204	19	20	18	18
30	106	130	60	76	.....	850	60	212	18	18	18	18
31	107	.....	60	76	.....	865	.....	208	.....	18	18	.....

NOTE.—Discharge determined from two curves well defined below 200 second-feet, applicable Oct. 1 to Mar. 31, and Apr. 1 to Sept. 30 respectively. Clock stopped and discharge estimated from range of stage and comparison with records of Sevier River near Delta, considered in connection with fluctuations of Gunnison Bend reservoir, Oct. 4–10, Nov. 5–8, 10–17, 19–20, 23, 26–27, 30, Dec. 1–5, 9–11, 22–25, Jan. 21–23, 27–31, Apr. 17–18, 20–21.

Monthly discharge of Sevier River at Oasis, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	637	47	182	11,200	B.
November	190	127	148	8,810	C.
December	150	59	88.6	5,450	B.
January	98	61	71.6	4,400	B.
February	131	76	99.4	5,520	B.
March	865	60	214	13,200	B.
April	865	20	172	10,200	B.
May	212	21	92.5	5,690	B.
June	405	17	41.1	2,450	B.
July	24	16	19.1	1,170	B.
August	20	16	17.6	1,080	B.
September	20	14	16.6	988	B.
The year	865	14	96.9	70,200	

EAST FORK OF SEVIER RIVER AT COYOTO, UTAH.

LOCATION.—In the NW. ¼ sec. 15, T. 31 S., R. 2 W., immediately below mouth of Coyoto Creek, half a mile below diversion to Otter Creek reservoir, about half a mile southeast of Coyoto schoolhouse, Garfield County.

RECORDS AVAILABLE.—December 7, 1914, to August 15, 1915.

GAGE.—Vertical staff fastened to post on right bank March 12 to August 15, 1915; original gage vertical staff on left bank fastened to old bridge abutment just above present gage, to different datum.

DISCHARGE MEASUREMENTS.—Made by wading near station.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; shifting at high stages. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.45 feet at 4.05 p. m. May 15 (discharge, 385 second-feet); minimum stage, 0.70 foot June, July, and August (discharge, 2 second-feet).

WINTER FLOW.—Stage-discharge relation not seriously affected by ice.

DIVERSIONS.—Canals divert for irrigation and storage above station.

REGULATION.—None, other than by diversions above mentioned.

ACCURACY.—Records fair.

Discharge measurements of East Fork of Sevier River at Coyoto, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Dec. 8	J. J. Sanford	1.08	5.6	June 1	J. J. Sanford	1.30	35
Jan. 17	do	.96	2.2	18	do	.68	1.9
Mar. 12	do	1.00	5.1	July 3	do	.70	[a] 2.0
Apr. 27	do	1.45	36.1	15	Porter and Sanford	.70	2.1
May 16	do	2.35	344				

[a] Discharge estimated.

Daily discharge, in second-feet, of East Fork of Sevier River at Coyoto, Utah, for the year ending Sept. 30, 1915.

Day.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1	.....	3.2	3.2	5.1	2.0	43	40	2.0	2.0
2	.....	3.2	3.2	5.1	2.5	60	46	2.0	2.0
3	.....	3.2	2.1	4.0	3.0	60	40	2.0	2.0
4	.....	3.2	2.1	4.0	7.3	70	40	2.0	2.0
5	.....	3.2	3.2	5.1	9.5	70	35	2.0	2.0
6	.....	3.2	3.2	5.1	18	80	30	2.0	2.0
7	.....	3.2	4.7	5.1	26	118	25	2.0	2.0
8	5.6	3.2	4.7	7.3	14	164	20	2.0	2.0
9	5.6	3.2	3.2	7.3	20	182	15	2.0	2.0
10	5.6	3.2	3.2	7.3	21	200	10	2.0	2.0
11	5.6	3.2	4.7	5.1	26	248	5.0	2.0	2.0
12	5.3	3.2	4.7	4.9	219	290	2.0	2.0	2.0
13	5.3	3.2	3.8	4.7	238	340	2.0	2.0	2.0
14	4.7	3.2	4.4	5.1	219	355	2.0	2.0	2.0
15	4.7	3.2	4.6	5.1	219	385	2.0	2.0	2.0
16	4.7	3.2	4.4	5.1	200	372	2.0	2.0	.....
17	3.2	2.8	4.6	5.1	182	364	2.0	2.0	.....
18	3.2	3.2	4.0	5.1	182	364	2.0	2.0	.....
19	4.7	3.2	4.0	5.1	182	344	2.0	2.0	.....
20	4.7	3.2	5.1	5.1	238	304	2.0	2.0	.....
21	5.6	3.2	5.1	5.1	238	264	2.0	2.0	.....
22	3.2	3.2	4.0	4.0	219	206	2.0	2.0	.....
23	4.7	3.2	4.7	4.0	219	206	2.0	2.0	.....
24	4.7	3.2	4.7	3.0	30	170	2.0	2.0	.....
25	4.7	3.2	4.0	3.0	30	136	2.0	2.0	.....
26	5.6	4.7	4.0	3.0	30	122	2.0	2.0	.....
27	3.2	4.7	5.1	2.5	36	107	2.0	2.0	.....
28	3.2	4.7	5.1	2.5	43	107	2.0	2.0	.....
29	3.2	3.2	.....	2.0	43	94	2.0	2.0	.....
30	3.2	3.2	.....	2.0	52	82	2.0	2.0	.....
31	3.2	4.7	.....	2.0	.....	82	.....	2.0	.....

NOTE.—Discharge determined from three rather poorly defined curves applicable Dec. 8 to Feb. 12, Feb. 18 to May 10, and May 15 to Aug. 15, respectively. No observations June 6–12, owing to sand washing around gage; discharge interpolated.

Monthly discharge of East Fork of Sevier River at Coyote, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
December 7–31	5.6	3.2	4.48	213	C.
January	4.7	2.8	3.38	208	C.
February	5.1	2.1	4.06	225	C.
March	7.3	2.0	4.48	275	C.
April	238	2.0	98.9	5,880	B.
May	385	43	193	11,900	B.
June	46	2.0	11.5	684	C.
July	2.0	2.0	2.0	123	C.
August 1–15	2.0	2.0	2.0	60	C.
The period				19,600	

EAST FORK OF SEVIER RIVER NEAR KINGSTON, UTAH.

LOCATION.—In the SW. ¼ sec. 13, T. 30 S., R. 3 W., about a mile below highway bridge and 2 miles east of Kingston, Piute County.

DRAINAGE AREA.—1,260 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 29, 1914, to September 30, 1915. Records obtained about 1½ miles above Rockyford Bridge, in the SW. ¼ sec. 16, T. 30 S., R. 2½ W., March 27, 1913, to April 28, 1914; also at gage three-fourths mile north of Kingston, in the NE. ¼ sec. 10, T. 30 S., R. 3 W., May 11 to September 20, 1912.

GAGE.—Stevens water-stage recorder on right bank, a mile below highway bridge, April 24, 1914, to September 30, 1915; vertical staff 1½ miles above bridge March 27, 1913, to April 28, 1914.

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

CHANNEL AND CONTROL.—Bed composed of gravel, shifts during floods; one channel at medium and low stages; right bank overflows at high water.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.33 feet at 4.30 p. m. May 14 (discharge, 578 second-feet); minimum stage, 2.42 feet at 9 a. m. February 23 (discharge, 15 second-feet).

1913–1915: Maximum stage recorded, 4.33 feet May 14, 1915 (discharge, 578 second-feet); minimum stage, 1.0 foot September 19, 20, and 21, 1913 (discharge, 8 second-feet).

WINTER FLOW.—Stage-discharge relation seriously affected by ice; flow determined from discharge measurements.

DIVERSIONS.—Present station above all diversions in vicinity of Kingston; original site below all diversions.

REGULATION.—Flow affected by operation of gates in the Otter Creek reservoir dam 8 miles above.

ACCURACY.—Records fair.

Discharge measurements of East Fork of Sevier River near Kingston, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 20	J. J. Sanford	2.62	23.2	July 3	J. J. Sanford	3.94	368
Dec. 9	do	2.70	30.6	16	Porter and Sanford	3.92	362
Jan. 18	do	a 3.32	13.3	29	J. J. Sanford	3.94	370
Mar. 12	do	2.58	23.2	Aug. 10	do	3.96	379
Apr. 27	do	2.93	64	25	do	3.70	242
May 16	do	3.98	424	Sept. 6	do	3.68	241
June 1	do	3.40	152	20	do	3.42	155
18	do	2.58	31				

a Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of East Fork of Sevier River near Kingston, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	34	28	23	.....	23	61	187	171	366	366	246
2	38	28	23	.....	23	198	158	165	362	370	246
3	38	26	23	.....	23	198	125	162	366	378	254
4	39	28	23	.....	22	209	118	174	366	374	250
5	30	26	23	.....	23	213	131	165	370	374	246
6	29	32	22	.....	23	217	152	160	362	374	242
7	30	30	23	.....	22	213	155	150	362	370	242
8	31	28	23	.....	23	213	149	138	358	366	246
9	31	28	24	.....	23	217	155	133	358	374	246
10	30	28	.....	.....	23	213	171	128	366	374	242
11	29	28	.....	.....	23	202	206	110	362	378	246
12	29	28	.....	.....	23	73	274	53	362	378	250
13	29	28	.....	.....	25	165	370	45	358	370	246
14	29	26	.....	.....	28	194	462	45	362	366	246
15	27	25	.....	.....	37	194	444	46	362	366	222
16	27	27	.....	.....	38	187	444	44	362	370	162
17	27	27	.....	.....	32	177	394	36	362	374	159
18	27	26	.....	.....	30	184	345	33	362	360	159
19	27	.....	.....	.....	28	198	263	32	362	349	159
20	26	.....	.....	22	28	202	190	31	366	267	159
21	25	.....	.....	21	27	213	158	31	366	250	165
22	27	.....	.....	21	27	213	131	38	366	250	162
23	27	.....	.....	21	28	209	92	242	370	250	156
24	27	.....	.....	21	30	191	110	290	374	246	153
25	27	.....	.....	20	30	96	125	298	374	246	150
26	28	.....	.....	21	30	80	105	298	370	250	156
27	28	23	.....	22	29	64	92	294	366	250	153
28	28	21	.....	22	28	65	146	306	366	250	143
29	28	23	.....	.....	27	115	168	346	366	246	61
30	28	23	.....	.....	27	187	162	362	374	246	35
31	28	.....	.....	.....	27	.....	177	.....	370	254	.....

NOTE.—Discharge determined from three curves well defined above and fairly well defined below 100 second-feet, applicable Oct. 1 to May 16, May 21 to Aug. 17, and Aug. 21 to Sept. 30, respectively. Mean flow estimated because of ice Nov. 19–26, 24 second-feet; Dec. 2–3, 23 second-feet; Dec. 10–31, 21 second-feet; Jan. 1–31, 20 second-feet; Feb. 1–19, 22 second-feet; and by indirect method for shifting control May 17–20.

Monthly discharge of East Fork of Sevier River near Kingston, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	39	25	29.3	1,800	B.
November	32	.....	26.0	1,550	B.
December	.....	.....	a 21.6	1,330	C.
January	.....	.....	a 20.0	1,230	D.
February	.....	.....	a 21.8	1,210	D.
March	38	22	26.8	1,650	B.
April	217	61	172	10,200	A.
May	462	92	205	12,600	B.
June	362	31	151	8,980	A.
July	374	358	365	22,400	A.
August	378	246	324	19,900	A.
September	254	35	193	11,500	B.
The year	462	.....	130	94,400	

a Estimated.

OTTER CREEK ABOVE RESERVOIR NEAR COYOTO, UTAH.

LOCATION.—In sec. 25, T. 29 S., R. 2 W., about three-fourths mile above Otter Creek reservoir.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—January 17 to August 10, 1915.

GAGE.—Vertical staff on right bank.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; shifting. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.7 feet at 10 a. m. March 25 (discharge, 78 second-feet); stream dry May 29, June 13, and August 10.

WINTER FLOW.—Stage-discharge relation affected by ice.

DIVERSIONS.—Canals divert for irrigation upstream.

REGULATION.—One reservoir storing water for irrigation upstream. Capacity unknown.

ACCURACY.—Records fair.

Discharge measurements of Otter Creek above reservoir near Coyoto, Utah, during the year ending Sept. 30, 1915.

[Made by J. J. Sanford.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Jan. 17	[a] 3.02	15.7	Apr. 27	1.46	18.8	June 1	1.20	4.9
Mar. 11	2.48	45	May 16	1.48	21.4	18	.60	[b] .7

[a] Relation of gage height to discharge affected by ice. [b] Discharge estimated.

Daily discharge in second-feet of Otter Creek above reservoir near Coyoto, Utah, for year ending Sept. 30, 1915.

Day.	Mar.	Apr.	May.	June.	Day.	Mar.	Apr.	May.	June.
1	.....	65	33	3.2	16	62	30	18	4.7
2	.....	62	38	2.4	17	59	28	14	.7
3	.....	60	40	10	18	67	29	12	1.5
4	.....	61	44	11	19	65	32	47	1.8
5	.....	62	42	9.2	20	65	33	20	.....
6	.....	60	56	7.0	21	64	30	20	.....
7	34	60	66	5.3	22	70	30	21	.....
8	49	61	36	4.5	23	75	31	21	.....
9	44	62	35	4.9	24	77	32	20	.....
10	44	61	22	6.8	25	78	30	19	.....
11	42	53	23	2.6	26	67	24	15	.....
12	44	43	24	.7	27	73	19	12	.....
13	43	36	22	0	28	70	17	9	.....
14	45	31	19	4.7	29	66	19	0	.....
15	48	30	18	2.6	30	64	33	2.0	.....
					31	67	.....	1.5	.....

NOTE.—Discharge determined from a fairly well-defined rating curve. Discharge May 30 to June 9, estimated from rating curve through one measurement made while temporary dam obstructed the control. Mean flow estimated because of ice, Jan. 17-31, 16 second-feet; Feb. 1-28, 18 second-feet; Mar. 1-6, 25 second-feet; and because of changes in stream bed, June 20-30, 0.7 second-foot; July 1-31, 0.5 second-foot; Aug. 1-9, 0.2 second-foot.

Monthly discharge of Otter Creek above reservoir near Coyoto, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
January 17-31	.....	.....	[a] 16	476	C.
February	.....	.....	[a] 18	1,000	D.
March	78	.....	52.6	3,230	B.
April	65	17	40.8	2,430	B.
May	66	0	24.8	1,520	B.
June	11	0	3.04	181	D.
July	.....	.....	[a] .5	31	D.
August 1-9	.....	.....	[a] .2	4	D.
The period	.....	.....	.....	8,870	

[a] Estimated.

OTTER CREEK NEAR COYOTO, UTAH.

LOCATION.—In the W. ½ sec. 28, T. 30 S., R. 2 W., just below outlet of Otter Creek reservoir, 5 miles northwest of Coyoto, Garfield County, and about 12 miles east of Kingston.

DRAINAGE AREA.—Indeterminate; 400 square miles of Otter Creek basin is tributary to reservoir; the reservoir also receives water from East Fork of Sevier River.

RECORDS AVAILABLE.—June 21 to September 12, 1913; May 28 to September 21, 1914; March 12 to September 28, 1915.

GAGE.—Stevens water-stage recorder on left bank, with outside staff gage.

DISCHARGE MEASUREMENTS.—Made by wading just below gage.

CHANNEL AND CONTROL.—Bed composed of gravel. Broad-crested concrete weir just below gage serves as permanent control. One channel at all stages.

WINTER FLOW.—Gates of reservoir are usually closed after irrigation season, allowing only a small amount of seepage—approximately 2 second-feet—to pass the station.

DIVERSIONS.—Some diversions for irrigation above reservoir.

REGULATION.—Flow past station controlled by operation of outlet gates of reservoir just above.

ACCURACY.—Records excellent.

Discharge measurements of Otter Creek near Coyoto, Utah, during the year ending Sept. 30, 1915.

[Made by J. J. Sanford.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Mar. 12	0.26	a4.7	July 29	2.61	376	Sept. 20	1.56	155
June 1	1.23	102	Aug. 26	2.02	247			

a Measurement made below mouth of seepage slough just below gage; measured as 8.3 second-feet and seepage deducted to give discharge past gage.

Daily discharge, in second feet, of Otter Creek near Coyoto, Utah, for the year ending Sept. 30, 1915.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	.....	89	2	100	381	361	250
2	.....	187	2	99	376	365	248
3	.....	187	3	107	374	367	254
4	.....	187	7	111	370	367	250
5	.....	187	7	110	367	365	246
6	.....	185	7	110	365	365	248
7	.....	185	7	108	363	365	250
8	.....	185	7	105	363	370	254
9	.....	185	7	102	374	374	250
10	.....	185	7	97	374	370	248
11	.....	133	8	65	372	367	250
12	5	10	9	24	370	365	246
13	5	9	10	24	372	365	240
14	5	7	9	24	376	365	238
15	5	8	10	24	374	363	189
16	6	10	10	20	374	363	154
17	6	10	12	12	374	361	152
18	6	10	13	11	376	356	148
19	6	10	13	11	378	297	146
20	7	10	13	12	376	244	152
21	7	10	15	12	383	248	154
22	7	10	15	136	383	246	152
23	7	10	15	294	381	242	148
24	7	5	15	298	376	242	144
25	7	2	15	296	372	246	144
26	7	2	15	296	374	250	152
27	7	2	26	294	376	248	152
28	7	2	70	341	372	246	73
29	7	2	70	381	372	246	2
30	7	2	83	385	370	252	2
31	8	.....	102	.....	365	252	.....

NOTE.—Discharge determined from a very well defined curve. Gage not working Apr. 19 to May 2 owing to construction work on new gage house and discharge has been estimated by comparison with Kingston record and observer's notes. Head gates at dam closed down Sept. 28 and discharge estimated Sept. 29–30.

Monthly discharge of Otter Creek near Coyoto, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
March 12–31	8	5	6.45	256	B.
April	187	2	67.5	4,020	A.
May	102	2	19.5	1,200	A.
June	385	11	134	7,970	A.
July	383	363	373	22,900	A.
August	374	242	317	19,500	A.
September	254	2	185	11,000	A.
The period	.....	.....	.....	66,800	

CLEAR CREEK AT SEVIER, UTAH.

LOCATION.—In the SE. ¼ sec. 32, T. 25 S., R. 4 W., at the town of Sevier, Sevier County, about 100 yards above Sevier River. Dry Creek enters from the right about 2½ miles above and Mill Creek about 8 miles above station.

DRAINAGE AREA.—150 square miles (measured on topographic maps).

RECORDS AVAILIBLE.—February 23, 1912, to September 30, 1915.

GAGE.—Stevens water-stage recorder on right bank, April 4, 1914, to September 30, 1915; vertical staff at same site February 23, 1912, to April 3, 1914; both gages at same datum.

DISCHARGE MEASUREMENTS.—Made by wading or from log bridge just above gage.

CHANNEL AND CONTROL.—Bed composed of sand and gravel. Concrete cut-off wall, installed just below gage August 31, 1914, serves as permanent control. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.26 feet at 5 p. m. June 2 (discharge, 138 second-feet); minimum stage 0.73 foot, August 29–30 (discharge, 2 second-feet).

1912–1915: Maximum discharge recorded, 3.15 feet May 24, 1914 (discharge, 240 second-feet); stream dry August 26, 1913.

WINTER FLOW.—Stage-discharge relation affected by ice occasionally for short periods.

DIVERSIONS.—Cove canal heads about three-fourths mile above station.

REGULATION.—None.

ACCURACY.—Records good.

Discharge measurements of Clear Creek at Sevier, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 24	J. J. Sanford	1.00	8.0	June 8	do	1.82	78
Dec. 11	do	1.00	8.7	12	do	1.99	104
Jan. 13	do	1.12	14.2	28	do	1.64	59
Mar. 6	do	1.14	15	July 6	do	1.52	49.4
Apr. 25	do	1.14	18	13	Porter and Sanford	1.14	18
May 13	do	1.58	54	26	J. J. Sanford	1.15	18.4
13	do	1.58	57	Aug. 9	do	.84	3.9
26	do	1.89	94				

Daily discharge, in second feet, of Clear Creek at Sevier, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	3	6	3	12	16	16	19	31	85	45	8	3
2	3	4	5	12	16	14	25	25	104	41	7	3
3	3	5	8	13	16	15	32	20	108	37	6	4
4	4	5	8	16	16	13	35	20	98	40	6	5
5	5	5	8	16	13	16	35	20	85	43	4	6
6	5	5	8	15	13	15	32	24	76	46	4	7
7	5	5	8	18	16	15	29	26	72	43	5	3
8	5	4	8	16	14	14	35	28	79	34	4	7
9	7	4	7	18	16	16	28	29	90	25	4	7
10	7	4	7	17	17	16	24	32	100	22	4	7
11	9	4	8	14	18	16	28	36	108	22	4	7
12	9	4	8	17	18	16	27	41	102	20	3	6
13	9	4	9	16	17	16	26	55	90	16	3	6
14	8	3	9	16	15	16	24	67	79	12	3	7
15	8	3	9	16	14	17	16	69	70	10	3	7
16	8	3	10	16	19	19	16	69	69	8	3	7
17	7	3	12	12	18	18	16	82	68	7	3	7
18	7	3	14	14	17	19	17	114	70	10	3	7
19	7	3	16	15	17	17	18	93	73	8	3	6
20	7	3	16	14	17	17	19	112	78	8	3	6
21	7	3	15	13	17	16	20	114	74	8	3	6
22	8	3	12	12	17	17	19	98	70	8	3	6
23	8	3	13	11	16	19	15	92	76	10	2	6
24	8	3	12	12	16	21	14	87	73	15	2	5
25	8	3	12	14	16	24	14	104	66	13	2	5
26	6	3	13	14	16	23	13	90	68	17	2	5
27	5	3	13	14	16	20	16	90	62	16	2	5
28	6	3	13	16	14	14	18	86	59	16	2	5
29	5	3	12	17	.....	15	31	82	53	13	2	5
30	6	3	12	17	.....	14	38	80	49	12	2	6
31	7	.....	12	17	.....	16	.....	81	.....	10	2	.....

NOTE.—Discharge determined from a fairly well defined rating curve. Interpolated June 30, July 1–3, 4–5, Aug. 10–13.

Monthly discharge of Clear Creek at Sevier, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	9	3	6.45	397	C.
November	6	3	3.67	218	C.
December	16	3	10.3	633	C.
January	18	11	14.8	910	B.
February	19	13	16.1	894	B.
March	24	13	16.8	1,030	B.
April	38	13	23.2	1,380	B.
May	114	20	64.4	3,960	A.
June	108	49	78.5	4,670	A.
July	46	7	20.5	1,260	B.
August	8	2	3.45	212	D.
September	8	3	5.90	351	D.
The year	114	2	22.0	15,900	

SALINA CREEK AT SALINA, UTAH.

LOCATION.—In the NW. ¼ sec. 25, T. 21 S., R. 1 W., at bridge south of hotel at Salina, Sevier County, about a mile above confluence with Sevier River.

DRAINAGE AREA.—298 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 25, 1914, to September 30, 1915. July 1 to December 31, 1900, at vertical staff gage about 5 miles southeast of Salina.

GAGE.—March 23 to September 30, 1915, vertical staff nailed to right bridge abutment a quarter of a mile south of hotel; April 25, 1914, to March 22, 1915, vertical staff nailed to right abutment of bridge on depot road in SE. ¼ sec. 23.

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

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

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.6 feet at 8.30 a. m. May 17 (discharge, 176 second-feet) dry part of year.

1914–15: Maximum stage recorded, 5.20 feet May 22, 1914 (discharge, 270 second-feet); minimum zero flow.

WINTER FLOW.—Stage-discharge relation seriously affected by ice. Observations discontinued.

DIVERSION.—Below all diversions.

REGULATION.—Not known.

ACCURACY.—Records fair.

Discharge measurements of Salina Creek at Salina, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 28	J. J. Sanford	2.25	a 2.0	June 1	J. C. Dort	2.04	82.2
Jan. 22	do		5.9	11	J. J. Sanford	1.55	30.4
Mar. 23	do	.86	5.4	July 8	Porter and Dort	.82	a 1.8
May 6	J. C. Dort	1.12	11.2	Sept. 13	J. C. Dort	.64	.1

a Discharge estimated.

Daily discharge, in second-feet, of Salina Creek at Salina, Utah, for year ending Sept. 30, 1915.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1		15	7.0	91	3.0	0.3	0.3
2		37	8.9	70	1.5	.3	1.0
3		19	11	70	1.0	.3	1.0
4		42	12	73	1.0	.3	1.5
5		58	11	78	1.5	.3	.6
6		63	11	70	1.2	.3	.3
7		46	11	73	1.0	.3	.3
8		78	9.2	51	.7	.3	.3
9		11	11	40	.8	.3	0
10		27	12	35	.6	.3	0
11		17	12	33	0	.3	.3
12		14	12	20	0	.3	.3
13		16	47	9.5	0	0	.2
14		10	88	7.0	.6	0	.3
15		6.8	57	6.0	1.5	0	.3
16		9.2	70	6.0	.6	.6	.3
17		9.2	120	6.0	1.5	.3	.3
18		21	98	5.0	.3	.3	.3
19		32	119	5.2	.3	.3	.3
20		20	77	5.2	.3	.3	.3
21		13	106	5.2	.6	.3	.3
22		9.2	81	4.5	1.5	.3	.3
23	5.1	8.3	84	4.5	.3	.3	.6
24	8.3	7.8	98	6.0	1.0	.0	.3
25	11	7.6	74	4.5	.3	.0	.3
26	14	8.9	83	1.0	.6	.3	.3
27	13	11	63	5.2	.3	.3	.3
28	17	13	73	4.5	.3	.3	.3
29	14	64	80	3.9	1.0	0	.3
30	14	40	84	4.5	.3	0	.3
31	10	.....	97	.....	0	0	.....

NOTE.—Discharge determined from two fairly well defined curves, one applicable Mar. 23 to July 1, the other July 2 to Sept. 30. Shift caused by small dam placed across stream.

Monthly discharge of Salina Creek at Salina, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
March 23–31	17	5.1	11.8	211	C.
April	78	6.8	24.5	1,460	B.
May	120	7.0	54.1	3,330	B.
June	91	1.0	26.6	1,580	B.
July	3	.0	.76	47	C.
August	.6	.0	.23	14	C.
September	1.5	.0	.38	23	C.
The period	.....	.....	.....	6,660	

SAN PITCH RIVER NEAR GUNNISON, UTAH.

LOCATION.—In the NW. ¼ SW. ¼ sec. 13, T. 19 S., R. 1 W., about one-fifth mile below a small diversion dam, half a mile above confluence with Sevier River, and 3 miles west of Gunnison, Sanpete County.

DRAINAGE AREA.—886 square miles (measured on topographic maps).

RECORDS AVAILABLE.—February 21, 1912, to September 30, 1915; June 30, 1900, to December 31, 1905, at a point about 4 miles northeast of Gunnison.

GAGE.—Stevens water-stage recorder on right bank, at new datum, May 18, 1914, to September 30, 1915; vertical staff on left bank, about one-fifth mile below small diversion dam, February 21, 1912, to May 17, 1914.

DISCHARGE MEASUREMENT.—Made from cable about 10 feet below gage, from bridge just below gage, or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; shifting. Right bank high; left bank low and subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.85 feet at 3.30 a. m. March 22 (discharge, 608 second-feet); minimum stage, 1.58 feet at 3 a. m. December 8 (discharge, 1.3 second-feet).

1912–1915: Maximum discharge, 608 second-feet, March 22, 1915; minimum discharge, 0.1 second-foot, June 20–24, July 1–6, 1912.

WINTER FLOW.—Stage-discharge relation seriously affected by ice; flow determined from discharge measurements, observer's notes, and records of precipitation and temperature. Ice forms in layers because of alternate freezing and flooding, and the water flows between. Records roughly approximate.

DIVERSIONS.—In years of normal flow practically all the water of this stream is used for irrigation in the San Pete Valley and in the vicinity of Gunnison. Winter and spring run-off is stored in the Gunnison reservoir, about 7 miles above Gunnison. At times part of the water flowing past the gage is waste from the Kearns-Robbins (Fayette) canal (diverting from Sevier River), which crosses the San Pitch about half a mile above gage.

REGULATION.—Flow controlled by Gunnison reservoir. See Diversions.

ACCURACY.—Records considered fair from March to November; winter records roughly approximate owing to effects of ice and unreliable gage-height record.

Discharge measurements of San Pitch River near Gunnison, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 6	R. W. Davenport	2.02	21.5	Apr. 22	J. C. Dort	1.40	3.6
Dec. 12[a]	J. J. Sanford	1.72	5.2	May 7	do	1.52	7.2
Jan. 26[b]	do	3.46	19	June 2	do	1.54	6.8
Feb. 9[b]	E. A. Porter	3,3	12.5	26	do	1.30	[c]2.5
Mar. 6	L. W. Jordan	2.12	29.1	July 8	Porter and Dort	1.22	[c]1.8
22	J. J. Sanford	3.73	554				

[a] Some ice in stream. [b] Stage-discharge relation affected by ice. [c] Discharge estimated.

Daily discharge, in second-feet, of San Pitch River near Gunnison, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	4.7	1.5	10	.....	.....	36	20	8.0	2.2	2.1	2.2
2	5.0	1.5	12	.....	.....	30	12	7.6	2.1	2.2	2.1
3	19	1.5	8.2	.....	.....	46	9.2	12	1.9	2.2	2.2
4	19	1.5	7.8	.....	.....	170	11	6.0	1.8	2.2	2.2
5	21	1.5	7.8	.....	.....	159	13	2.9	1.7	2.2	2.1
6	22	1.5	7.4	.....	31	123	8.8	2.8	1.7	2 2	2.2
7	21	1.6	3.3	.....	32	84	8.4	2.8	1.7	2.2	2.2
8	23	1.6	1.5	.....	32	37	7.2	3.0	1.7	2.2	2.2
9	23	1.6	5.4	12	34	24	6.0	9.2	.....	2.2	2.1
10	21	1.6	7.4	12	38	14	7.2	6.4	.....	2.1	2.1
11	20	1.6	4.7	14	52	6.0	7.2	3.9	.....	2.0	2.2
12	18	1.6	5.2	16	70	8.0	5.4	3.0	.....	1.8	2.5
13	18	1.6	5.0	18	106	5.1	3.9	3.0	.....	1.7	2.5
14	17	1.6	8.0	26	123	3.3	4.8	5.4	.....	1.6	2.5
15	16	3.0	11	29	190	3.9	5.4	2.5	.....	1.9	2.5
16	15	2.6	14	27	270	2.5	7.2	2.3	.....	2.1	2.4
17	14	3.0	14	26	360	3.6	5.7	2.3	.....	2.0	2.4
18	9.0	3.0	14	30	410	10	5.1	2.2	1.6	1.8	2.4
19	3.0	3.3	15	27	450	25	4.5	2.1	.....	1.8	2.4
20	3.0	3.0	.....	26	457	23	4.8	2.1	.....	1.8	2.4
21	2.0	4.3	.....	26	541	10	3.6	2.2	.....	1.7	2.4
22	1.9	4.0	.....	25	564	4.5	5.1	2.2	.....	1.7	2.4
23	1.9	20	.....	25	497	4.5	4.2	2.2	.....	2.2	2.4
24	1.9	40	.....	24	420	4.5	5.1	2.3	.....	2.4	2.4
25	1.9	30	.....	24	400	4.8	12	2.3	1.9	2.4	2.4
26	1.9	10	.....	24	260	3.6	14	2.2	2.1	2.4	2.4
27	1.9	9.5	.....	23	202	6.8	15	2.2	2.1	2.4	2.5
28	1.6	9.5	.....	24	258	3.0	17	2.3	1.9	2.2	2.5
29	1.6	10	.....	.....	202	3.9	12	2.3	2.0	2.2	2.5
30	1.6	10	.....	.....	251	31	12	2.2	2.0	2.2	2.5
31	1.5	.....	.....	.....	187	.....	10	.....	2.1	2.2	.....

NOTE.—Discharge determined from two fairly well defined curves applicable Oct. 1 to Mar. 14 and Mar. 20 to Sept. 30, respectively. Stream frozen, discharge estimated as follows. Dec. 20–31, 15 second-feet; Jan. 1–31, 18 second-feet; Feb. 1–8, 14 second-feet; Dec. 12, 14–15, Feb. 9–13 as in table. Clock stopped and discharge estimated Feb. 20–22, 24–26, 28, Mar. 15–19, 24–26, as in table, by comparison with records on Sevier near Gunnison and Fayette, and Mar. 1–5, 27 second-feet; July 9–17, 1.6 second-feet; July 19–24, 1.8 second-feet, from range of stage indicated by automatic pencil.

Monthly discharge of San Pitch River near Gunnison, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	23	1.5	10.7	658	B.
November	40	1.5	6.23	371	B.
December	.....	1.5	11.0	676	C.
January	.....	.....	a18.0	1,110	D.
February	30	.....	20.4	1,130	C.
March	564	.....	212	13,000	C.
April	170	2.5	29.7	1,770	B.
May	20	3.6	8.61	529	B.
June	12	2.1	3.73	222	C.
July	.....	.....	1.80	111	C.
August	2.4	1.6	2.07	127	C.
September	2.5	2.1	2.34	139	
The year	564	1.5	27.4	19,800	

a Estimated.

BEAVER RIVER BASIN.

BEAVER RIVER NEAR BEAVER, UTAH.

LOCATION.—In the SE. ¼ sec. 13, T. 29 S., R. 7 W., half a mile above city diversion dam at mouth of canyon, 3 miles above Beaver, Beaver County.

DRAINAGE AREA.—82 square miles. (Measured on topographic maps.)

RECORDS AVAILABLE.—June 15 to September 26, 1906; March 15, 1914, to September 30, 1915.

GAGE.—Stevens continuous water-stage recorder on right bank November 14, 1914, to September 30, 1915; Lietz recorder March 30 to November 13, 1914. Datum of recording gages 0.03 foot lower than that of old vertical staff gage at same site, used prior to March 30, 1914.

DISCHARGE MEASUREMENTS.—Made from footbridge 70 feet above gage or by wading.

CHANNEL AND CONTROL.—Bed is composed of boulders and coarse gravel; fairly permanent. One channel; left bank overflows at extremely high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.07 feet at 8.30 p. m. June 1 (discharge, 448 second-feet); minimum stage, 2.80 feet at 11 a. m. February 27 (discharge, 16 second-feet).

1914–15: Maximum stage recorded, 5.48 feet May 21, 1914 (discharge, 650 second-feet); minimum stage, 2.80 feet February 27, 1915 (discharge, 16 second-feet).

WINTER FLOW.—Stage-discharge relation seriously affected by ice.

DIVERSIONS.—Above all irrigation diversions. Above the station is a small storage reservoir known as Cants Lake. Water is diverted by the Beaver River Power Co. but returned to the stream several miles above station.

REGULATION.—Flow probably not affected by operation of Beaver River Power Co.'s plant, but is affected by the Cants Lake storage reservoir.

ACCURACY.—Rating curve fairly well defined. Open water-records good.

Discharge measurements of Beaver River near Beaver, Utah, during the year ending Sept. 30, 1915.

[Made by Lynn Crandall.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Nov. 23	2.84	19.5	May 18	4.31	217
Jan. 26	a 3.27	24.4	July 30	3.15	45.1

a Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Beaver River near Beaver, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	36	39	27	26	25	22	31	115	359	98	48	30
2	39	39	27	25	24	22	36	102	326	93	48	29
3	40	38	31	25	22	23	44	96	257	86	46	48
4	52	37	30	26	24	22	46	90	218	86	46	45
5	42	38	29	25	22	22	50	87	190	85	45	28
6	42	38	29	25	22	22	47	85	190	78	43	29
7	44	38	24	25	20	22	46	82	207	74	45	20
8	44	35	26	24	20	21	51	87	236	74	42	24
9	47	34	.....	24	21	21	55	90	279	73	38	28
10	42	34	.....	24	21	21	62	101	290	71	38	28
11	44	33	.....	24	22	22	70	125	273	72	38	28
12	43	33	.....	23	22	22	76	156	229	75	37	29
13	46	33	.....	22	22	22	86	207	196	76	35	30
14	42	24	.....	22	22	24	80	241	183	71	36	30
15	38	10	.....	22	23	25	73	254	177	68	39	29
16	38	33	.....	.....	25	28	74	276	175	65	39	30
17	38	34	.....	.....	25	27	82	270	173	66	39	29
18	42	16	.....	.....	25	28	87	224	175	70	37	31
19	43	16	.....	.....	24	27	96	190	170	68	35	31
20	42	16	.....	.....	24	27	108	171	163	66	34	30
21	39	16	.....	.....	23	28	107	156	156	63	30	31
22	40	16	.....	.....	22	29	99	151	151	62	29	32
23	43	28	.....	.....	24	33	92	171	145	63	32	33
24	40	26	.....	.....	24	35	88	198	140	62	35	34
25	42	28	.....	.....	23	34	91	213	134	60	31	33
26	42	28	.....	.....	22	35	99	202	128	72	30	32
27	42	28	.....	.....	20	35	111	205	119	67	31	26
28	40	29	.....	23	21	36	124	236	117	60	30	26
29	39	29	.....	23	.....	36	145	276	107	49	28	24
30	39	26	.....	24	.....	35	131	296	103	51	28	23
31	38	.....	.....	24	.....	34	.....	305	.....	50	28	.....

NOTE.—Discharge determined from a fairly well defined rating curve. Discharge estimated on account of ice as follows: Dec. 9–31, 26 second-feet; Jan. 16–27, 22 second-feet; Jan. 5–7, 10–11, and Feb. 5–6, as in table.

Monthly discharge of Beaver River near Beaver, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	47	36	41.5	2,550	A.
November	39	16	29.1	1,730	B.
December	31	.....	26.5	1,630	C.
January	26	.....	19.4	1,190	C.
February	25	20	22.6	1,260	B.
March	36	21	27.1	1,670	B.
April	145	31	79.6	4,740	B.
May	305	82	176	10,800	A
June	359	103	192	11,400	A.
July	98	49	70.1	4,310	B.
August	48	28	36.8	2,260	A.
September	48	20	30.0	1,780	A.
The year	359	16	62.7	45,300	

BEAVER RIVER AT ADAMSVILLE, UTAH.

LOCATION.—In the S. ½ sec. 30, T. 29 S., R. 8 W., 100 yards below highway bridge on road from Milford to Beaver, one-fourth mile above mouth of Indian Creek, and three-fourths mile south of Adamsville, Beaver County.

DRAINAGE AREA.—272 square miles (measured on topographic maps).

RECORDS AVAILABLE.—December 16, 1913, to September 30, 1915.

GAGE.—Stevens continuous water-stage recorder on right bank, 5 feet below cable March 13, 1914, to September 30, 1915; Friez water-stage recorder at same site December 16, 1913, to March 12, 1914.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Bed composed of fine gravel; shifting. Banks covered with willows; overflowed at extreme high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.03 feet at 4 a. m. June 2 (discharge, 254 second-feet); minimum stage, 1.32 feet at 4 p. m. July 14 (discharge, 8.6 second-feet).

1914–15: Maximum stage recorded, 4.26 feet at 5 a. m. June 3, 1914 (discharge, 544 second-feet); minimum stage, 1.32 feet at 4 p. m. July 14, 1915 (discharge, 8.6 second-feet).

WINTER FLOW.—Stage-discharge relation seriously affected by ice for short periods.

DIVERSIONS.—No diversions between the station and the storage reservoir of the Beaver County Irrigation Co. There are a number of canals above the station supplying the Adamsville and Beaver districts.

REGULATION.—Low-water flow affected by irrigation diversions.

ACCURACY.—Records poor owing to shifting control.

Discharge measurements of Beaver River at Adamsville, Utah, during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec-ft.*			*Feet.*	*Sec.-ft.*
Nov. 24	Lynn Crandall	1.74	45.1	May 30	Lynn Crandall	2.80	210
Jan. 27	do	a 1.88	24.3	July 30	Crandall and Gilbert	1.80	32.4
May 19	do	2.53	179				

a Stream frozen over. Stage-discharge relation affected by ice.

Daily discharge, in second feet, of Beaver River at Adamsville, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	27	43	49	.....	38	50	43	136	225	27	28	10
2	26	43	51	.....	44	49	45	125	235	28	22	12
3	28	44	49	.....	54	48	49	114	214	34	12	97
4	34	44	50	.....	45	48	54	104	223	30	10	55
5	33	43	50	.....	46	49	56	103	200	30	11	38
6	32	44	50	.....	50	49	56	107	178	31	17	36
7	35	44	49	.....	45	49	59	99	177	36	22	31
8	45	43	50	.....	49	49	62	88	173	32	18	30
9	53	43	49	.....	51	50	62	87	191	27	14	31
10	50	45	49	.....	54	50	63	86	204	25	14	32
11	50	45	49	.....	60	52	66	93	204	21	15	31
12	50	44	46	.....	53	50	71	100	177	17	15	31
13	46	44	45	.....	51	49	79	118	154	13	12	29
14	49	44	44	.....	56	50	90	160	134	10	12	31
15	46	45	41	.....	58	50	88	179	105	11	16	31
16	45	45	40	.....	49	50	78	185	85	11	18	32
17	45	46	39	.....	49	45	76	194	74	11	19	33
18	45	44	38	.....	49	45	78	176	66	12	18	32
19	45	43	37	.....	49	43	81	179	65	13	17	33
20	44	44	36	.....	49	41	90	174	59	13	15	31
21	43	50	.....	.....	50	40	93	159	58	12	14	29
22	45	53	.....	.....	49	41	84	138	53	11	15	29
23	45	51	.....	.....	49	41	82	137	48	33	14	28
24	44	49	.....	.....	49	42	78	143	46	31	14	27
25	45	51	.....	.....	50	44	68	148	43	28	12	25
26	45	53	.....	.....	51	44	66	159	40	78	10	26
27	45	53	.....	.....	52	43	63	161	37	84	12	25
28	43	52	.....	.....	51	43	64	163	32	47	14	25
29	43	51	.....	36	.....	51	86	180	29	40	13	24
30	43	51	.....	39	.....	48	136	204	27	33	10	22
31	43	.....	.....	41	.....	45	.....	218	.....	28	10	.....

NOTE.—Discharge determined from four poorly defined rating curves applicable as follows: Oct. 1 to Apr. 1 and June 26 to July 22; Apr. 15 to May 19; May 23 to June 11; and July 24 to Sept. 30. Indirect method for shifting control used Apr. 2–14, May 20–22, June 12–25, and July 23. Flow estimated because of ice as follows: Daily discharge Dec. 9–20 and Jan. 29 and 30; mean flow Dec. 21–31, 32 second-feet; Jan. 1–15, 33 second-feet; and Jan. 16–28, 25 second-feet. Recording gage out of commission and discharge Feb. 18, 19, 25, 26, and 28 and Mar. 1, 2, 4, and 5 interpolated.

Monthly discharge of Beaver River at Adamsville, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	53	26	42.3	2,600	B.
November	53	43	46.5	2,770	B.
December	51	.....	40.7	2,500	C.
January	.....	.....	30.2	1,860	C.
February	60	38	50.0	2,780	B.
March	52	40	46.7	2,870	B.
April	136	43	72.2	4,300	C.
May	218	86	142	8,730	B.
June	235	27	119	7,080	C.
July	78	10	27.6	1,700	C.
August	28	10	14.9	916	C.
September	97	10	31.5	1,870	C.
The year	235	10	55.0	40,000	

BEAVER RIVER AT ROCKYFORD DAM, NEAR MINERSVILLE, UTAH.

LOCATION.—In the NE. ¼ sec. 11, T. 30 S., R 9 W., 1,000 feet below Rockyford dam and 4¼ miles above Minersville, Beaver County.

DRAINAGE AREA.—512 square miles (measured on topographic maps).

RECORDS AVAILABLE.—December 18, 1913, to September 30, 1915.

GAGE.—Friez water-stage recorder on right bank.

DISCHARGE MEASUREMENTS.—Made by wading or from bridge 800 feet above gage. There are a few springs between this bridge and gage.

CHANNEL AND CONTROL.—Bed composed of rocks and boulders. Rocks embedded in concrete, 15 feet below gage serve as control. One channel. Right bank high; left bank low. Stage of zero flow about 1.9 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.49 feet at 4.30 p. m. July 12 (discharge, 202 second-feet); minimum stage, 1.93 feet October 25 (discharge, 1.3 second-feet).

1914–15: Maximum stage recorded, 5.37 feet June 6, 1914 (discharge, 366 second-feet); minimum stage, 1.68 feet March 19 and 20, 1914 (discharge, estimated, 0.3 second-foot).

WINTER FLOW.—Stage-discharge relation not affected by ice.

DIVERSIONS.—None between dam and station.

REGULATION.—Flow controlled by operation of gates at Rockyford dam.

ACCURACY.—Records good, except for period in winter when gage was not in operation.

Discharge measurements of Beaver River at Rockyford dam, near Minersville, Utah, during the year ending Sept. 30, 1915.

[Made by Lynn Crandall.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Nov. 24[a]	2.66	14.5	May 19[c]	2.65	10.6
Jan. 27[b]	2.38	11.5	30[c]	3.81	98
May 19[c]	3.65	73			

[a] Made at gage; flow increased by opening gates at dam before beginning measurement.
[b] Made 20 feet below gage; some seepage between gage and measuring section.
[c] Made at highway bridge just below tunnel outlet 600 feet above gage.

Daily discharge, in second-feet, of Beaver River at Rockyford dam, near Minersville, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	166	1.7	15	8	.....	9	76	9	133	191	92	20
2	98	1.9	15	8	.....	9	50	9	133	191	97	21
3	49	12	15	8	.....	9	50	9	133	188	97	73
4	46	25	15	9	.....	9	50	9	133	174	95	109
5	45	20	9	9	.....	9	50	17	130	145	95	85
6	42	17	3	9	.....	9	46	25	111	142	94	52
7	44	20	3	9	.....	9	44	25	108	134	91	48
8	55	.....	8	10	.....	9	27	29	106	153	95	40
9	69	.....	3	10	.....	9	18	32	106	186	104	40
10	62	.....	4	10	.....	9	18	32	108	194	102	38
11	60	.....	4	11	.....	16	19	40	127	193	111	40
12	58	.....	4	11	.....	19	26	58	150	191	116	34
13	55	.....	4	11	.....	19	36	58	150	152	115	22
14	56	.....	4	11	.....	21	43	58	150	53	108	25
15	54	.....	5	11	.....	25	50	66	150	164	108	26
16	53	.....	5	11	.....	26	50	69	148	183	91	35
17	52	.....	5	11	.....	27	50	76	148	180	6	43
18	52	.....	5	12	.....	30	49	76	148	159	19	43
19	51	.....	5	12	.....	32	46	61	148	97	18	43
20	32	.....	5	12	9	32	44	50	164	97	17	44
21	7	.....	5	12	9	32	44	69	166	97	21	45
22	10	.....	5	12	9	32	43	84	182	95	20	43
23	15	.....	5	12	9	32	42	84	166	80	19	42
24	1.3	12	5	10	9	31	42	84	42	9	21	38
25	1.3	15	6	8	9	44	47	84	175	85	22	30
26	1.6	15	6	8	9	75	54	84	174	101	33	29
27	1.4	15	6	8	9	83	55	83	190	98	102	30
28	1.5	15	6	8	9	97	57	78	198	83	70	30
29	1.6	15	7	8	.....	97	66	84	198	85	30	30
30	1.7	15	7	8	.....	95	41	99	194	91	21	29
31	1.6	.....	7	8	.....	95	.....	116	.....	90	20	.....

NOTE.—Discharge determined from a well-defined rating curve. Water-stage recorder not operating Nov. 8 to Feb. 19; discharge ascertained from discharge measurements and information furnished by observer regarding operation of outlet gates at dam, Nov. 8–23, 10 second-feet; Feb. 1–19, 9 second-feet; Nov. 24 to Jan. 31, as in table. Discharge determined from mean of hourly discharge Oct. 20–23, Nov. 3 and 5. Mar. 11 and 25, Apr. 1, 8, and 30, May 5, 11, 19, and 21, June 23 and 24, July 13, 14, 18, and 23, Aug. 16–18, 26, and 28, Sept. 3, 10, 12, 13, 16, and 26.

Monthly discharge of Beaver River at Rockyford dam, near Minersville, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	166	1.3	40.1	2,470	A.
November	25	1.7	12.0	714	C.
December	15	3	6.32	389	D.
January	12	8	9.84	605	D.
February	.....	.....	9.00	500	C.
March	97	9	33.9	2,080	A.
April	76	18	44.4	2,640	A.
May	116	9	56.7	3,490	A.
June	198	42	146	8,690	A.
July	194	9	132	8,120	A.
August	116	6	66.1	4,060	A.
September	109	20	40.9	2,430	A.
The year	198	1.3	49.9	36,200	

INDIAN CREEK AT ADAMSVILLE, UTAH.

LOCATION.—In sec. 30, T. 29 S., R. 8 W., at highway bridge just east of Adamsville, Beaver County, about three-fourths mile above confluence with Beaver River.

DRAINAGE AREA.—180 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 26 to August 31, 1906; March 16, 1914, to September 30, 1915.

GAGE.—Vertical staff nailed to left bridge abutment; read once daily by W. A. Rees.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of rocks, gravel, and sand; rock control, semipermanent. One channel at all stages. Banks high and not subject to overflow under ordinary conditions.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.3 feet during night of September 2 (discharge, not estimated); minimum stage, 2.0 feet September 6 and 9 (discharge, 0.2 second-foot).

1914–15: Maximum stage recorded, 6.3 feet night of September 2, 1915 (discharge, not estimated); minimum stage, 1.70 feet March 24–28 and April 1–2, 1914 (discharge, zero).

WINTER FLOW.—Stream freezes over, but flow is usually very small.

DIVERSIONS.—Below all diversions. At certain seasons a small amount of seepage (probably not exceeding 1 or 2 second-feet) enters between gage and mouth of creek.

REGULATION.—Flow affected by small storage reservoir and irrigation diversions above.

ACCURACY.—Determinations of discharge on days of floods are roughly approximate.

Discharge measurements of Indian Creek at Adamsville, Utah, during the year ending Sept. 30, 1915.

[Made by Lynn Crandall.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Nov. 24	1.94	[a] 0.2	May 30	2.72	4.9
Jan. 27 [b]	2.20	.6	July 30	2.11	1.0
May 19	2.79	5.0			

[a] Estimated.

[b] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Indian Creek at Adamsville, Utah, for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	4.5	2.0	0.2	0.4	0.3	0.4	2.6	4.8	3.0	1.2	0.7	0.4
2	4.3	2.0	.4	.8	.5	.4	2.6	7.8	3.0	1.2	.4	.5
3	4.1	1.7	.3	.6	.4	.4	2.8	6.2	3.8	1.1	.6	45
4	4.1	1.4	.3	.5	.4	.4	2.8	6.2	5.7	1.2	1.2	.6
5	3.6	1.6	.3	.4	.4	.4	2.6	8.7	6.9	1.2	1.1	.4
6	4.0	1.6	.3	.4	.4	.4	3.0	7.8	3.4	1.1	1.1	.2
7	5.6	1.7	.3	.8	.4	.4	3.2	5.4	3.2	1.3	.4	.5
8	6.7	1.6	.5	.4	.6	.4	3.4	4.3	2.0	1.2	.5	.2
9	6.3	1.6	.4	.4	1.2	.4	3.3	4.0	1.6	1.2	.5	.2
10	5.6	1.7	.4	.4	1.2	1.4	3.5	3.4	.8	1.2	.5	.3
11	4.5	1.6	.6	.4	1.4	1.2	3.6	3.0	1.2	1.1	.5	.4
12	4.5	1.7	.7	.4	.4	1.1	4.1	2.3	1.4	1.0	.4	.4
13	4.0	1.7	.3	.4	.4	2.9	3.9	2.5	1.4	.9	.4	.4
14	3.6	1.6	.4	.4	.4	3.3	4.5	2.8	1.3	.8	.4	.5
15	3.6	2.0	.....	.4	.4	1.6	4.3	3.0	1.6	.8	.4	.5
16	3.2	2.8	.....	.4	.4	4.7	3.8	2.3	1.4	.8	.4	.5
17	8.6	2.7	.....	.....	.4	2.5	3.4	2.6	1.3	.8	.4	.5
18	2.9	2.7	.....	.....	2.5	1.3	3.8	3.8	1.2	.8	.4	1.1
19	3.2	2.7	.....	.....	1.1	1.3	4.1	5.4	1.3	.9	.4	.6
20	3.1	.4	.....	.....	.4	1.7	4.3	9.8	1.4	.8	.4	.5
21	3.1	.3	.....	.....	.4	2.4	3.8	11	1.4	.9	.4	.6
22	2.7	.4	.....	.....	.4	2.6	4.1	12	1.3	.9	.4	.6
23	2.9	.3	.....	.....	.6	2.6	4.1	11	1.3	42	.4	.5
24	3.1	.3	.....	.....	.6	2.7	4.3	11	1.4	1.2	18	.5
25	3.2	.3	.....	.....	.8	2.8	4.1	8.3	1.3	.8	.4	.4
26	3.2	.3	.....	.....	.4	2.8	3.8	4.3	1.3	37	.4	.4
27	2.7	.3	.....	.6	.4	3.0	2.6	2.3	1.2	4.3	.4	.4
28	2.7	.3	.....	.6	.4	3.0	1.8	4.5	1.2	1.6	.4	.6
29	2.7	.3	.....	.4	.....	3.4	2.9	4.6	1.3	1.0	.4	.8
30	2.6	.2	.....	.4	.....	2.6	3.0	4.3	1.8	.8	.4	.9
31	2.3	.....	.....	.2	.....	2.5	.....	8.4	.....	.8	.4	.....

NOTE.—Discharge determined from three rating curves poorly defined above 8 second-feet, applicable as follows: Oct. 1 to Dec. 7, Dec. 8 to Sept. 2, and Sept. 4–30. Mean flow estimated on account of ice as follows: Dec. 15–31, 0.4 second-foot, and Jan. 17–26, 0.5 second-foot. Indirect method for shifting control used to obtain discharge on Sept. 3.

Monthly discharge of Indian Creek at Adamsville, Utah, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	6.7	2.3	3.75	231	D.
November	2.7	.2	1.31	78	D.
December			.39	24	D.
January			.47	29	D.
February	2.5	.3	.63	35	D.
March	4.7	.4	1.84	113	D.
April	4.5	1.8	3.44	205	D.
May	12	2.3	5.57	342	C.
June	6.9	.8	2.00	119	D.
July	42	.8	3.61	222	D.
August	18	.4	1.07	66	D.
September	45	.2	1.98	118	D.
The year	45	.2	2.17	1,580	

COAL CREEK NEAR CEDAR CITY, UTAH.

LOCATION.—In the E. ¼ sec. 13, T. 36 S., R. 11 W., about 500 feet above the power plant and about 1¾ miles southeast of Cedar City, Iron County.

DRAINAGE AREA.—About 92.5 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 28 to September 30, 1915.

GAGE.—Vertical staff on right bank July 29 to September 30. Read twice during times of considerable diurnal fluctuation, and once daily at other times by Joseph T. Wilkinson. Original gage 150 feet upstream, used May 28 to July 24, rendered useless by shift in channel on July 24.

DISCHARGE MEASUREMENTS.—Made from highway bridge about a mile below or by wading.

CHANNEL AND CONTROL.—Bed composed of coarse gravel and boulders; shifting

EXTREMES OF STAGE.—Maximum stage recorded, 4.2 feet July 24 on the old gage (determined from water marks); discharge not determined; minimum stage, 0.60 foot on new gage, September 22–30. Stream is subject to violent floods.

WINTER FLOW.—No information.

DIVERSION.—The only important diversion above station is power canal, which returns the water to the stream about 500 feet below gage. This diversion is fairly constant, 6 or 7 second-feet, and should be added to obtain the total flow above Cedar City.

Data inadequate for determination of daily discharge.

Discharge measurements of Cedar Electric Co. power plant tailrace near Cedar City, Utah, during the year ending Sept. 30, 1915.

[Made by Lynn Crandall.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
May 28	2.30	448	July 29	[a] 0.94	19.9
29	1.63	264			

[a] New gage installed this date 150 feet below old gage.

Discharge measurements of Cedar Electric Co. power plant tailrace near Cedar City, Utah, during the year ending Sept. 30, 1915.

[Made by Lynn Crandall.]

Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*
May 28	0.95	6.1
July 29	1.00	7.2

Daily gage height, in feet, of Coal Creek near Cedar City, Utah, for the period May 28 to Sept. 30, 1915.

Day.	May.	June.	July.	Aug.	Sept.	Day.	May.	June.	July.	Aug.	Sept.
1	.....	1.87	0.30	0.88	1.16	16	.....	0.94	−0.11	0.80	0.62
2	.....	.....	.28	.88	.98	17	.....	.....	−.12	.80	.62
3	.....	1.49	.38	.86	.98	18	.....	.....	−.13	.78	.62
4	.....	1.33	.28	.86	.74	19	.....	.....	−.14	.77	.64
5	.....	1.22	.22	.84	.68	20	.....	.78	−.16	.77	.68
6	.....	1.26	.18	1.04	.66	21	.....	.76	−.17	.77	.62
7	.....	1.25	.16	.88	.70	22	.....	.70	1.7	.77	.61
8	.....	1.29	.08	.84	.68	23	.....	.70	3.0	.77	.60
9	.....	1.35	.04	.82	.66	24	.....	.65	4.2	.77	.60
10	.....	1.32	.02	.81	.64	25	.....	.60	.....	.76	.60
11	.....	1.28	.0	.80	.64	26	.....	.54	.....	.94	.60
12	.....	1.26	−.02	.80	.62	27	.....	.50	.....	.82	.60
13	.....	1.09	−.06	.79	.62	28	2.30	.44	.....	.76	.60
14	.....	.96	−.08	.80	.62	29	1.94	.36	.92	.76	.60
15	.....	.93	−.10	.80	.62	30	1.96	.32	.90	.88	.60
						31	1.54	.....	.89	.80	.....

MINOR BASINS IN NEVADA.

SNAKE CREEK NEAR BAKER, NEV.

LOCATION.—In the N. ½ sec. 13, T. 12 N., R. 69 E., in White Pine County, at the Tilford tungsten mine, 2½ miles below junction of North and South forks, 9 miles west of Garrison, Utah, about 16 miles from Baker, Nev., and 70 miles southeast of Ely, White Pine County.

DRAINAGE AREA.—Thirty square miles (measured on maps issued by Forest Service).

RECORDS AVAILABLE.—August 13, 1913, to September 30, 1915 (fragmentary). Station discontinued.

GAGE.—Vertical staff on right bank opposite mine foreman's residence; read twice daily by J. D. Tilford.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of coarse gravel and boulders; steep gradient. One channel. Banks high, not subject to overflow. Control permanent except during extreme floods. Gage height of zero flow about 1.4 feet on September 6, 1915.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.32 feet June 17–20 (discharge, 39 second-feet); minimum stage, 1.69 feet September 29 and 30 (discharge, 1.6 second-feet).

1913–1915: Maximum stage recorded, 2.60 feet June 7, 1914 (discharge, 85 second-feet); minimum stage, 1.20 feet December 20, 1913 (discharge, 0.5 second-foot).

WINTER FLOW.—Stage-discharge relation at times seriously affected by ice.
DIVERSIONS.—None of any importance above station.
REGULATION.—None.
ACCURACY.—Records fair.

Discharge measurements of Snake Creek near Baker, Nev., during the year ending Sept. 30, 1915.

[Made by A. B. Purton.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
May 2	1.77	3.1	July 11	2.03	12.3
July 11	2.03	13.2	Sept. 6	1.71	2.0

Daily discharge, in second-feet, of Snake Creek near Baker, Nev., for the year ending Sept. 30, 1915.

Day.	May.	June.	July.	Aug.	Sept.	Day.	May.	June.	July.	Aug.	Sept.
1		9.0	25	6.9	2.6	16	6.9	36	11	3.8	2.1
2	3.2	9.8	25	6.9	2.5	17	6.9	39	11	3.8	1.9
3		11	25	6.9	2.3	18	9.0	39	11	3.8	1.9
4		11	23	6.9	2.2	19	9.0	39	11	3.8	1.9
5		14	11	6.9	2.1	20	7.7	39	11	3.8	1.9
6		16	21	6.9	1.9	21	6.9	36	10	3.8	1.9
7		17	17	6.9	1.9	22	6.9	34	10	3.8	1.9
8		23	17	6.3	1.9	23	6.9	34	9.0	3.7	1.9
9		36	16	5.4	1.7	24	6.9	34	9.0	3.6	1.9
10		36	16	5.4	1.9	25	9.0	30	9.0	3.5	1.9
11		32	14	4.7	11	26	6.9	30	8.5	3.4	1.7
12		25	14	4.7	8.5	27	6.9	30	8.1	3.2	1.7
13		32	14	4.4	4.7	28	6.9	30	7.7	3.1	1.7
14		35	14	3.8	3.4	29	9.0	29	6.9	3.0	1.7
15		36	13	3.8	2.8	30	8.1	25	6.9	2.9	1.6
						31	9.0		6.9	2.8	

NOTE.—Discharge determined from a fairly well defined rating curve. Discharge Aug. 23 to Sept. 4 interpolated because of uncertainty of gage readings during period.

Monthly discharge of Snake Creek near Baker, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
May 16–31	9.0		7.68	244	B.
June	39	9.0	28.2	1,680	C.
July	25	6.9	13.6	836	B.
August	6.9	2.8	4.60	223	B.
September	11	1.6	2.63	156	C.
The period				3,200	

BAKER CREEK NEAR BAKER, NEV.

LOCATION.—In sec. 14, T. 13 N., R. 69 E., about 200 feet below the mouth of Quinn Young Creek, 1¼ miles below Pole Creek, 1½ miles below the Narrows, and about 4 miles west of Baker, White Pine County.

DRAINAGE AREA.—About 10 square miles (measured on maps issued by Forest Service).

RECORDS AVAILABLE.—August 12, 1913, to November 30, 1915 (fragmentary); station discontinued.

GAGE.—Staff gage with one inclined and two vertical sections, on right bank; read twice a week by W. H. Kious.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and large stones; fairly permanent. Channel rough and steep. Banks moderately low; right bank subject to overflow at extreme high stages; small overflow channel on right side.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.2 feet June 11 and 18 (discharge, 100 second-feet); minimum stage, 1.32 feet September 6 and 9 (discharge, 4.4 second-feet).

1913–1915; maximum stage recorded, 3.0 feet June 2 and 5, 1914 (discharge, 170 second-feet); minimum mean daily discharge, 2 second-feet January 6 and 9, 1914 (stage, 1.4 feet).

WINTER FLOW.—Stage-discharge relation seriously affected by ice gorges; gage-height observations discontinued during winter.

DIVERSIONS.—None above station.

REGULATION.—None so far as known.

ACCURACY.—Records fair; impracticable to obtain daily gage readings, and the readings themselves are uncertain at times.

Discharge measurements of Baker Creek near Baker, Nev., during the period May 1, 1915, to June 22, 1916.

Date.	Made by—	Gage height.	Discharge.
1915.		*Feet.*	*Sec.-ft.*
May 1	A. B. Purton	1.50	8.6
July 10	do	1.68	27.5
10	do	1.68	26.0
Sept 6	do	1.32	4.4
1916.			
June 22a	L. W. Jordan	1.80	39.2

a A new canal diverting above the gage was carrying 7.8 second-feet on this date.

Daily discharge, in second-feet, of Baker Creek near Baker, Nev., for the period Oct. 1, 1914, to Nov. 30, 1915.

Day.	Oct.	Nov.	Dec.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1						8.6	70					4.0
2	8.6	8.6			8.6							
3						8.0			8.6	5.1		
4			8.6				85				5.8	
5									8.6			4.0
6	8.6	8.6			8.6	8.6						
7												
8			8.6				70				4.4	4.0
9	8.6				8.6					4.4		
10		8.6						26	8.6			4.0
11			8.6			8.6	100					
12											4.4	2.7
13	8.6								5.8			
14						17				6.4		
15		8.6		8.6			85				4.4	
16	8.6				8.6							
17		8.6					100			5.8		2.7
18						29						
19				8.6							4.0	2.7
20	8.6	8.6						17				
21						29				5.8		
22	8.6			8.6	8.6		85					
23	8.6	8.6						17				
24									5.8	5.8		2.7
25						29						
26				8.6							4.0	4.0
27	8.6	8.6			8.6			13	5.4	5.8		
28						29						
29											4.0	
30	8.6	8.6		8.6	8.6			8.6		5.8		4.0
31									5.4			

NOTE.—Discharge determined from a fairly well-defined rating curve. Record discontinued Dec. 16, 1914, to Mar. 14, 1915.

Monthly discharge of Baker Creek near Baker, Nev., for the period Oct. 1, 1914, to Nov. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
1914–15.					
October	8.6	8.6	8.57	527	
November	8.6	8.6	8.60	512	
December 1–15	8.6	8.0	8.50	253	
March 15–31	8.6	8.6	8.60	290	
April	8.6	8.6	8.60	512	D.
May	29	8.0	21.7	1,330	C.
June	100	70	81.9	4,870	C.
July	26	8.6	24.7	1,520	C.
August	8.6	5.4	6.72	413	D.
September	6.4	4.4	5.50	327	D.
October	5.8	4.0	4.46	274	D.
November	4.0	2.7	3.40	202	D.

NOTE.—Mean determined by interpolating daily discharge for days on which gage was not read. Maxima and minima only represent discharge on days when gage was read.

CLEVELAND CREEK NEAR OSCEOLA, NEV.

LOCATION.—In sec. 19, T. 16 N., R. 67 E., about 1½ miles southwest of the Cleveland ranch buildings, 3 miles below mouth of canyon, 7 miles below junction of North and South forks, about 12 miles northwest of Osceola, White Pine County, and 45 miles by road southeast of Ely.

DRAINAGE AREA.—About 32 square miles (measured on maps issued by Forest Service).

RECORDS AVAILABLE.—May 29, 1914, to September 30, 1915.

GAGES.—No. 1 or lower gage is vertical staff on left bank about 500 feet above diverson dam for main irrigation ditches, installed July 10, 1915, at same site, but datum 0.92 foot higher than inclined staff installed August 10, 1913. No. 2, or upper gage, is vertical staff on right bank about a mile above gage No. 1 and 200 feet above a ditch that is used intermittently.

On account of its accessibility, gage No. 1 is read except when water is being carried in the upper ditch; readings are obtained about three times a week by L. Snyder (for dates that each gage was used see footnote to table of daily discharge).

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of coarse gravel and small boulders with steep gradient; fairly permanent, but likely to shift during high water. Conditions are similar at the two gages, but the control for the upper one is more permanent. Banks moderately low, with a fringe of willows; subject to overflow at extremely high stages.

EXTREMES OF DISCHARGE.—Maximum discharge for year, 30 second-feet June 8–10 (stage, lower gage, 1.25 feet); minimum discharge, 5.0 second-feet September 28–30 (stage, lower gage, 0.96 foot).

1914–15: Maximum discharge, 44 second-feet June 3, 1914 (stage, upper gage, 1.40 feet); minimum discharge, 5.0 second-feet September 28–30, 1915 (stage, lower gage, 0.96 foot).

WINTER FLOW.—Stage-discharge relation seriously affected by ice at times; flow determined from observer's notes and climatic data. Water is usually diverted between gages during winter.

DIVERSIONS.—Gage No. 2 is above all diversions.

REGULATION.—Discharge as given shows the natural flow of stream, as the lower gage is not read when water is being diverted between the gages.

ACCURACY.—Records only fair, owing to impossibility of obtaining daily gage readings.

Discharge measurements of Cleveland Creek near Osceola, Nev., during the year ending Sept. 30, 1915.

[Made by A. B. Purton.]

At Gage No. 1 (lower gage.)

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
May 1[a]	1.27	15.2	Sept. 5	1.04	6.6
July 10	1.15	11.9			

At Gage No. 2 (upper gage).

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Apr. 30[a]	1.09	19.2	Sept. 5	0.88	7.6
July 9	.99	12.7			

[a] Water being diverted between the two gages.

Daily discharge, in second-feet, of Cleveland Creek near Osceola, Nev., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1		9.7									8.3	
2	8.5		9.7				11	16	28			
3					8.3	8.3						6.2
4		9.7	8.3				11		28		7.2	
5	9.0				8.3	8.3		17				6.6
6		8.3							28			6.6
7	9.0				8.3	7.6	11	18			8.2	
8		8.3							30		7.5	
9							11	17				6.6
10	9.0			8.3	8.3	8.3			30	12	8.0	6.2
11		9.7					11			9.8	7.5	
12	9.0				7.2	8.3		18				6.6
13		9.7		8.3					26		7.5	
14	8.5				7.2	8.3	12	21		9.8		
15		8.3		7.6							7.8	6.6
16	8.5						14	24	20	9.5		
17				8.3	8.3	8.3		25				6.6
18	8.5	9.7					14		18	9.5	7.2	
19					8.3	8.3		22				6.2
20		9.7		8.3			14		13		6.8	
21	8.5			8.3	8.3	8.3	14	22		9.2		
22		7.6									6.5	5.7
23	8.5						16	22	13	8.8		
24				8.3	8.3	8.3						5.4
25	9.0	9.7					16		12	9.2	6.5	
26					7.2	8.3		19				5.4
27		9.7		8.3			16		12	9.2	6.2	
28	9.0				8.3	8.3		16		8.5		5.0
29		6.6		9.2			18				6.2	
30							18			7.6		5.0
31	8.5			8.3		9.2		22			6.8	

NOTE.—Discharge determined from two poorly defined curves at lower gage, one used Oct. 2–31, May 5–16, and July 10, the other Sept. 3–30, and one well defined at upper gage used Nov. 1 to May 2, May 17 to June 27, July 25–27, and July 30 to Aug. 1. Indirect method for shifting control used July 11–24, 28, and Aug. 4–31. Mean discharge estimated, on account of ice, Dec. 5–31, 7 second-feet; and Jan. 1–9, 7.5 second-feet; mean flow estimated 12 second-feet, June 28 to July 9, on account of uncertainties in the gage-height record. Allowance should be made for probable difference in flow past the two gages even when no water is being diverted between them. (See list of measurements.)

Monthly discharge of Cleveland Creek near Osceola, Nev., for the year ending Sept. 30, 1915.

[Drainage area, 32 square miles.]

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	9.0	8.5	8.76	539	C.
November	9.7	6.6	8.97	534	B.
December	9.7		7.25	446	D.
January	9.2		8.09	497	D.
February	8.3	7.2	8.05	447	B.
March	9.2	7.6	8.30	510	B.
April	18	11	13.3	791	B.
May	25	16	19.5	1,200	B.
June	30		20.7	1,230	B.
July		7.6	10.1	621	C.
August	8.3	6.2	7.19	442	C.
September	6.6	5.0	6.10	363	C.
The year	30	5.0	10.5	7,620	

NOTE.—Monthly totals obtained by interpolating discharge for days on which gage was not read. Maxima and minima only for days on which gage was read.

CURRANT CREEK NEAR CURRANT, NEV.[1]

LOCATION.—In sec. 25, T. 11 N., R. 58 E., at highway bridge at Cazier's ranch, on road from Ely to Tonopah, 2 miles above Currant, Nye County, and 2½ miles below inflow from Cazier's reservoir.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 5 to September 30, 1913; May 25, 1914, to September 30, 1915.

GAGE.—Vertical staff nailed to downstream side of right abutment; read once daily by Edmund Cazier.

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

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; will probably scour. One channel at all stages. Banks high and clean. Control was changed in April, 1914, by riprap walls built to protect bridge.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.5 feet April 30 and May 1 (discharge, 24 second-feet); minimum discharge, 2.6 second-feet September 28 (stage, 2.6 feet).

1913–1915: Maximum occurred in 1915 (see preceding paragraph); minimum discharge, 2.6 second-feet September 3, 1913, and September 28, 1915.

WINTER FLOW.—Stage-discharge relation not seriously affected by ice; open-channel rating curve used; fed by springs in canyon about half a mile above gage.

DIVERSIONS.—Three small irrigation canals divert water above gage; total capacity 3 to 5 second-feet.

REGULATION.—Flow somewhat affected by inflow from Cazier's reservoir and by changes in irrigation canals above gage.

ACCURACY.—Records fair.

Discharge measurements of Currant Creek near Currant, Nev., during the year ending Sept 30, 1915.

[Made by A. B. Purton.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 8	2.94	10.4	Sept. 7	2.55	4.2
8	2.94	10.7			

[1] Called Currant Creek at Cazier's ranch in previous reports.

Daily discharge, in second-feet, of Currant Creek near Currant, Nev., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	3.6	5.6	5.6	5.6	5.6	5.6	5.6	24	14	12	5.6	5.6
2	3.6	5.6	5.6	5.6	5.6	5.6	5.6	22	14	12	5.6	5.6
3	3.6	5.6	5.6	5.6	5.6	5.6	5.6	22	12	12	5.6	5.6
4	3.6	5.6	5.6	5.6	5.6	5.6	5.6	22	12	12	5.6	5.6
5	4.8	5.6	5.6	5.6	5.6	5.6	5.6	21	12	12	5.6	5.2
6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	19	12	12	5.6	4.7
7	5.6	5.6	5.6	5.6	5.6	5.6	5.6	18	12	12	5.6	4.2
8	5.6	5.6	5.6	5.6	5.6	5.6	5.6	18	12	11	5.6	4.2
9	5.6	5.6	5.6	5.6	5.6	5.6	5.6	16	14	10	5.6	4.2
10	5.6	5.6	5.6	5.6	5.6	5.6	5.6	15	13	10	5.6	4.1
11	5.6	5.6	5.6	5.6	5.6	5.6	5.6	15	12	9.0	5.6	4.0
12	5.6	5.6	5.6	5.6	5.6	5.6	5.6	12	12	9.0	5.6	3.9
13	5.6	5.6	5.6	5.6	5.6	5.6	5.6	12	12	10	5.6	3.9
14	5.6	5.6	5.6	5.6	5.6	5.6	7.2	12	12	10	5.6	3.8
15	5.6	5.6	5.6	5.6	5.6	5.6	8.1	12	12	9.0	5.6	3.7
16	5.6	5.6	5.6	5.6	5.6	5.6	9.0	12	12	9.0	6.4	3.6
17	5.6	5.6	5.6	5.6	5.6	5.6	9.0	11	14	10	9.0	3.5
18	5.7	5.6	5.6	5.6	5.6	5.6	12	21	14	9.0	8.1	3.4
19	5.7	5.6	5.6	5.6	5.6	5.6	12	21	12	9.0	7.2	3.4
20	5.8	5.6	5.6	5.6	5.6	5.6	12	21	12	8.1	7.2	3.3
21	5.8	5.6	5.6	5.6	5.6	5.6	12	14	10	8.1	7.2	3.2
22	5.9	5.6	5.6	5.6	5.6	5.6	13	12	10	8.1	6.4	3.1
23	5.9	5.6	5.6	5.6	5.6	5.6	16	12	10	8.1	5.6	8.0
24	6.0	5.6	5.6	5.6	5.6	5.6	16	12	10	8.1	5.6	2.9
25	6.0	5.6	5.6	5.6	5.6	5.6	16	11	10	8.1	5.6	2.8
26	6.1	5.6	5.6	5.6	5.6	5.6	16	11	10	8.1	5.6	2.8
27	5.6	5.6	5.6	5.6	5.6	5.6	15	10	10	8.1	5.6	2.7
28	5.6	5.6	5.6	5.6	5.6	5.6	16	10	10	7.2	5.6	2.6
29	5.6	5.6	5.6	5.6	.....	5.6	20	10	10	6.4	5.6	5.0
30	5.6	5.6	5.6	5.6	.....	5.6	24	10	12	5.6	5.6	5.0
31	5.6	.....	5.6	5.6	.....	5.6	.....	12	.....	5.6	5.6	.....

NOTE.—Discharge obtained from two curves; one fairly well defined between 4 and 16 second-feet, applicable Oct. 1 to Sept. 9; the other, poorly defined, applicable Sept. 29 and 30. Discharge Sept. 10–28 interpolated on account of shift in control. Increased discharge Sept. 29 was due to closing head gates of canals diverting above gages. Discharge interpolated for days on which gage was not read.

Monthly discharge of Currant Creek near Currant, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	6.1	3.6	5.40	332	C.
November	5.6	5.6	5.60	333	C.
December	5.6	5.6	5.60	344	C.
January	5.6	5.6	5.60	344	C.
February	5.6	5.6	5.60	311	C.
March	5.6	5.6	5.60	344	C.
April	24	5.6	10.2	607	C.
May	24	10	15.2	935	C.
June	14	10	11.8	702	C.
July	12	5.6	9.31	572	B.
August	9.0	5.6	6.00	369	B.
September	5.6	2.6	3.95	235	C.
The year	24	2.6	7.49	5,430	

SALTON SEA BASIN.

SALTON SEA NEAR SALTON, CAL.

LOCATION.—Near the mouth of Salt Creek, about a mile west of Durmid, about 2½ miles east of Salton, Riverside County, and 7 miles east of Mecca.

RECORDS AVAILABLE.—November, 1904, to September 30, 1915.

GAGE.[1]—Vertical staff in several sections fastened to piling. Gage is graduated to feet and inches and is inverted (reads down), with its zero at 6.1 feet above mean sea level, United States Geological Survey datum. To obtain depths, subtract reading from 279.6 feet, because the lowest point in bottom of Salton Sea is at 273.5 feet below mean sea level, United States Geological Survey datum. Gage is read by an employee of Southern Pacific Co. Original gage, November 1, 1904, to February 26, 1906, was established by New Liverpool Salt Co. at a point about 3½ miles northwest of Salton; it reads depths directly. First Survey gage, March 2, 1906, to June 5, 1906, half a mile west of Salton, also reads depths directly. First Southern Pacific Co.'s gage, June 6, 1906, to July 5, 1909, was at present site, with its zero at 6.8 feet above mean sea level, United States Geological Survey datum; readings from its inverted scale, subtracted from 280.35 feet, gave depths in Salton Sea. Second Survey gage, July 6, 1909, to April 21, 1914, located at the same place, read elevations below mean sea level, United States Geological Survey datum; readings subtracted from 273.5 feet gave depths. The present gage has been read since April 24, 1914.

EXTREMES OF DEPTH.—Maximum depth during year, 42.45 feet October 2; minimum depth, 38.25 feet September 24.

1904–1915: Maximum depth, 76.0 feet February 10 to March 29, 1907; minimum depth, no water at gage November 1 to 14, 1904.

COOPERATION.—The Southern Pacific Co. has furnished the record since June 30, 1914.

Area of sea was 443 square miles January 1, 1909.

Practically all the water now received by Salton Sea enters by Alamo and New rivers, chiefly the former. These rivers run through Imperial Valley and are drainage channels for excess and waste waters from the irrigation system and from the power plants. The following table shows the depth of Salton Sea:

[1] History of gages previously published in water-supply papers incomplete and some statements regarding datums erroneous.

Daily depth, in feet, of Salton Sea near Salton, Cal., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1				41.75								
2	42.45						41.1			39.95		
3												38.6
4			41.85						40.25			
5					41.5	41.35						
6		41.95									39.2	
7								40.7				
8				41.7								
9	42.25						41.0			39.75		
10												38.6
11			41.85						40.25			
12					41.5	41.3						
13		41.85									39.0	
14								40.6				
15				41.65								
16	42.2						40.95			39.6		
17												38.45
18			41.8						40.2			
19					41.45	41.25						
20		41.85									38.85	
21								40.5				
22				41.6								
23	42.1						40.85			39.45		
24												38.35
25			41.75						40.1			
26					41.4	41.2						
27		41.85									38.75	
28								40.45				
29				41.6								
30	42.0						40.75			39.35		
31												

OWENS LAKE BASIN.

OWENS RIVER NEAR ROUND VALLEY, CAL.

LOCATION.—In the SE. ¼ sec. 10, T. 6 S., R. 31 E., near Sheep bridge, 700 feet above mouth of Rock Creek, and 2 miles north of Round Valley, Inyo County.

DRAINAGE AREA.—About 450 square miles.

RECORDS AVAILABLE.—August 4, 1903, to September 30, 1915.

GAGE.—Vertical staff on left bank 85 feet below bridge; read by William Roberts; datum differs from that of the prevous gage, used prior to May 29, 1907, which was 100 feet above the present one.

DISCHARGE MEASUREMENTS.—Made from cable at gage.

CHANNEL AND CONTROL.—Stream bed composed of a rock and boulders; fairly permanent. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.95 feet at 10.30 a. m. June 30 (discharge, 508 second-feet); minimum stage recorded, 1.83 feet at 10.27 a. m. January 16 (discharge, 156 second-feet).

1913–1915: Maximum stage recorded, 4.0 feet June 30, 1907 (discharge, 1,190 second-feet); minimum discharge, 120 second-feet September 21, 1913.

WINTER FLOW.—Shore ice exists at times, but ordinarily does not affect stage-discharge relation.

DIVERSIONS.—No water is diverted above station.

REGULATION.—None.

ACCURACY.—Records considered good.

COOPERATION.—Gage heights and discharge measurements furnished by the city of Los Angeles.

Discharge measurements of Owens River near Round Valley, Cal., during the year ending Sept. 30, 1915.

[Made by J. E. Jones.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Nov. 11	2.00	196	May 26	2.15	211	June 18	2.70	415
Dec. 15	1.95	174	May 27	2.20	241	Aug. 18	2.10	226
16	2.09	200	June 17	2.70	396	Aug. 19	2.12	222
Apr. 7	2.30	264						

Daily discharge, in second-feet, of Owens River near Round Valley, Cal., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	a 332	256	a 192	170	a 184	216	285	300	425	465	335	216
2	405	a 249	192	a 165	177	a 196	a 278	a 300	a 380	a 455	a 344	204
3	a 370	242	a 192	160	170	177	270	300	335	445	352	192
4	335	a 242	192	a 165	192	170	a 278	300	a 318	465	a 344	a 204
5	a 326	242	a 192	170	a 181	a 174	285	335	300	a 445	335	216
6	318	a 236	192	a 174	170	177	a 278	a 310	a 309	425	a 344	a 193
7	a 302	229	a 186	177	a 170	a 174	270	285	318	a 438	352	170
8	285	a 229	181	a 174	170	170	a 278	a 285	a 302	a 452	a 326	a 176
9	285	229	a 181	170	192	a 170	285	285	285	465	300	181
10	a 278	a 210	181	160	a 184	170	a 278	a 270	a 285	a 455	a 292	a 186
11	270	192	a 179	a 162	177	a 170	270	256	285	445	285	192
12	a 278	a 204	177	164	a 174	170	a 270	a 263	a 257	a 455	a 264	192
13	285	216	a 184	a 166	170	170	270	270	229	465	242	a 186
14	a 278	a 204	192	168	a 170	a 170	a 263	a 263	a 205	a 455	242	181
15	270	192	181	a 162	170	170	256	256	181	445	a 249	a 186
16	270	a 192	192	156	a 178	a 174	a 263	285	a 293	a 445	256	192
17	270	192	170	168	185	177	270	242	405	445	a 236	a 186
18	a 278	a 192	a 165	a 169	a 181	181	a 263	a 249	405	a 435	216	181
19	285	192	160	170	177	a 176	256	256	425	425	216	a 186
20	a 270	a 192	170	a 170	a 174	170	a 263	242	a 398	425	229	192
21	256	192	a 174	170	170	a 174	270	a 249	370	445	a 222	181
22	270	a 192	177	a 169	170	177	a 256	256	a 408	a 445	216	a 176
23	a 256	192	a 174	168	a 170	a 172	242	a 249	445	445	a 222	170
24	242	a 184	170	170	170	168	a 249	242	a 445	a 455	229	a 170
25	a 249	177	a 169	a 174	a 170	a 172	256	a 236	445	465	a 222	170
26	256	a 184	168	177	170	177	a 256	229	a 465	a 418	216	a 170
27	a 249	192	a 169	a 174	a 170	a 172	256	242	485	370	a 236	176
28	242	a 190	170	170	170	168	a 263	242	a 485	a 352	256	a 170
29	242	188	160	170	.....	a 169	270	242	485	335	a 249	170
30	a 256	192	a 165	a 181	.....	170	a 285	a 324	508	a 335	242	170
31	270	.....	170	192	.....	177	.....	405	.....	335	a 229	.....

a Interpolated.

NOTE.—Discharge determined from a fairly well-defined rating curve; discharge interpolated when gage heights were not available.

Monthly discharge of Owens River, near Round Valley, Cal., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	405	242	283	17,400	B.
November	256	177	207	12,300	B.
December	192	160	178	10,900	B.
January	192	156	170	10,500	B.
February	192	170	175	9,720	B.
March	216	168	175	10,800	B.
April	235	242	268	15,900	B.
May	405	229	273	16,800	B.
June	508	181	363	21,600	B.
July	465	335	431	26,500	B.
August	352	216	268	16,500	B.
September	216	170	184	10,900	B.
The year	508	156	248	180,000	

OWENS RIVER NEAR BIG PINE, CAL.

LOCATION.—In sec. 2, T. 11 S., R. 34 E., at Charlies Butte, about 11 miles southeast of Big Pine, Inyo County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—September 20, 1906, to September 30, 1915.

GAGE.—Vertical staff on left bank; read once daily by J. I. Jones.

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

CHANNEL AND CONTROL.—Stream bed composed of sand and gravel; slightly shifting. Right bank high; left bank subject to overflow during floods.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.2 feet at 11 a. m. July 7 (discharge, 805 second-feet); minimum stage, 0.70 foot at 3 p. m. May 29 (discharge, 86 second-feet).

1906–1915: Maximum stage recorded, 11.2 feet January 26, 1914 (approximate discharge determined from extension of rating curve, 3,220 second-feet); minimum stage, —0.05 foot June 13, 14, 15, and 16, 1908 (discharge, 36 second-feet).

WINTER FLOW.—Stage-discharge relation not affected by ice.

DIVERSIONS.—On account of diversions above station, the record does not indicate the total run-off from the drainage area.

REGULATION.—Flow is partially regulated by diversions.

ACCURACY.—Records considered excellent.

COOPERATION.—Gage heights and discharge measurements furnished by the city of Los Angeles.

Discharge measurements of Owens River near Big Pine, Cal., during the year ending Sept. 30, 1915.

[Made by J. E. Jones.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Oct. 1	2.49	409	Apr. 9	2.00	293	June 19	2.80	453
Nov. 10	2.70	433	26	.90	108	Aug. 6	1.39	176
13	2.72	451	May 24	.88	103	16	.85	101
Dec. 14	2.75	422	28	.75	90	20	.89	100
Mar. 20	2.51	387	June 3	2.46	407	26	.75	98
Apr. 5	2.90	494	15	2.80	490	Sept. 24	1.00	127

Daily discharge, in second-feet, of Owens River near Big Pine, Cal., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	396	440	440	533	605	533	418	418	194	605	275	99
2	396	463	440	533	605	581	418	396	247	630	256	99
3	396	463	440	557	605	557	418	440	375	705	238	99
4	418	440	463	557	605	509	486	463	375	730	229	99
5	418	440	509	557	605	486	486	463	354	755	220	99
6	418	440	509	557	605	463	463	605	333	780	185	99
7	418	440	486	533	581	463	375	509	333	805	169	99
8	418	440	463	533	557	463	396	486	396	680	162	99
9	418	440	463	509	557	463	294	418	418	630	146	99
10	418	440	463	509	557	463	275	396	463	605	139	99
11	418	440	463	509	630	463	256	375	557	557	139	112
12	396	440	486	509	655	463	247	333	557	630	132	112
13	396	440	486	509	605	463	238	333	509	705	118	112
14	396	463	463	509	605	440	194	266	463	705	118	112
15	418	463	440	509	557	463	185	238	463	655	118	112
16	396	463	463	463	557	440	169	229	440	605	106	112
17	418	463	463	463	581	418	154	238	440	557	99	112
18	418	440	463	463	581	418	139	256	463	486	106	118
19	418	440	486	486	557	418	118	185	463	486	99	125
20	418	440	486	486	533	396	132	154	463	463	99	125
21	418	440	486	509	509	396	125	146	463	440	92	125
22	440	463	463	509	486	396	125	139	463	418	92	125
23	463	463	463	509	509	396	118	125	486	509	92	125
24	440	463	463	509	486	396	112	112	509	557	92	125
25	440	463	463	509	463	375	112	99	557	557	92	139
26	440	463	486	509	486	375	112	92	509	605	92	211
27	418	463	509	509	463	396	112	99	509	605	92	275
28	418	463	533	509	486	418	118	92	509	581	92	294
29	463	463	533	557	.....	463	139	86	557	440	92	284
30	463	440	509	605	.....	486	294	112	581	418	92	294
31	440	.....	509	605	.....	463	.....	146	.....	375	92	.....

NOTE.—Discharge determined from a well-defined rating curve.

Monthly discharge of Owens River near Big Pine, Cal., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	463	396	421	25,900	A.
November	463	440	451	26,800	A.
December	533	440	477	29,300	A.
January	605	463	520	32,000	A.
February	655	463	558	31,000	A.
March	581	375	449	27,600	A.
April	486	112	241	14,300	A.
May	605	86	273	16,800	A.
June	581	194	448	26,700	A.
July	805	375	590	36,300	A.
August	275	92	134	8,240	A.
September	294	99	138	8,210	A.
The year	805	86	391	283,000	

OWENS RIVER NEAR LONE PINE, CAL.

LOCATION.—In the NW. ¼ sec. 23, T. 15 S., R. 36 E., at Mount Whitney highway bridge, about 2½ miles northeast of Lone Pine, Inyo County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—January 1, 1909, to September 30, 1915.

GAGE.—Vertical staff fastened to a pile at downstream side of bridge; read once daily by G. F. Marsh. The high water, January 27–29, 1914, raised the pier to which gage was fastened 1.83 feet; gage has not been reset.

DISCHARGE MEASUREMENTS.—Made from cable about 1,000 feet below bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand; fairly permanent. One channel at low stages; three or more during floods.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.1 feet at 9.30 a. m. February 3 (discharge, 729 second-feet); minimum stage, 1.80 feet August 17 and 18 (discharge, 38 second-feet).

1909–1915: Maximum stage recorded, 10.6 feet July 7, 1909 (discharge, 2,050 second-feet); minimum stage, 2.6 feet June 27 to July 4 and July 12 to 19, 1913 (discharge, 6 second-feet).

WINTER FLOW.—Shore ice sometimes forms at the station during very cold weather, but probably does not affect the stage-discharge relation; no ice during 1914–15.

DIVERSIONS.—Record does not show total run-off from drainage area on account of diversions above station. The Los Angeles Aqueduct, which has its intake above the station, was formally opened February 13, 1913.

REGULATION.—Flow is partially regulated by the diversions above.

ACCURACY.—Records considered good.

COOPERATION.—Gage heights and discharge measurements furnished by the city of Los Angeles.

Discharge measurements of Owens River near Lone Pine, Cal., during the year ending Sept. 30, 1915.

[Made by J. E. Jones.]

Date	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Oct. 26	4.10	328	Apr. 27	2.82	134	July 28	3.80	284
Nov. 2	4.10	328	May 17	3.30	200	Aug. 9	2.68	125
Dec. 7	4.35	357	21	3.00	153	27	2.13	67
12	4.10	333	June 7	3.70	264	Sept. 25	2.30	75
Mar. 22	4.25	366	12	4.30	372			

Daily discharge, in second-feet, of Owens River near Lone Pine, Cal., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	104	349	384	499	707	384	354	181	144	384	203	61
2	128	421	384	519	707	384	354	238	174	402	188	61
3	140	499	384	519	729	384	249	249	197	459	174	61
4	160	519	384	519	663	384	218	281	220	479	188	61
5	233	519	384	539	641	332	203	349	242	499	210	61
6	249	539	384	539	641	315	196	315	265	539	188	61
7	281	539	384	539	619	315	188	384	265	539	167	61
8	281	539	384	519	619	315	188	402	249	384	147	61
9	281	539	384	519	619	315	188	421	249	599	128	61
10	281	519	384	519	619	315	174	449	281	599	89	61
11	265	499	384	539	599	298	147	384	298	499	79	61
12	281	421	384	539	599	233	147	315	315	499	74	61
13	281	421	384	539	579	281	140	281	384	499	61	61
14	298	402	384	539	499	315	122	249	384	499	53	66
15	315	402	384	539	440	315	122	233	384	519	53	70
16	315	402	402	539	421	349	110	218	366	519	45	70
17	315	402	402	539	402	349	110	203	366	539	38	79
18	315	402	402	539	384	349	99	203	349	519	38	79
19	315	402	402	539	384	366	99	189	332	499	70	79
20	315	402	402	559	384	384	89	174	384	499	79	79
21	315	402	421	559	384	384	79	160	366	402	70	79
22	315	402	440	559	384	366	79	157	349	233	70	79
23	315	421	559	559	366	349	99	155	349	233	61	84
24	315	421	499	559	366	349	140	153	349	218	61	84
25	315	402	459	559	366	281	140	150	421	233	53	84
26	332	402	479	539	384	281	134	147	421	233	70	84
27	332	402	519	499	384	298	134	128	421	249	64	79
28	349	402	539	499	384	315	134	109	421	281	61	79
29	349	384	519	539	.....	315	140	89	402	265	61	147
30	349	384	519	619	.....	332	160	84	402	249	61	174
31	349	.....	519	707	.....	384	.....	114	.....	226	61	.....

NOTE.—Discharge determined from a well-defined rating curve. Discharge May 19, 20, 22–25, 27, 28, 31, June 1, and 3–5, interpolated when gage heights were not available.

Monthly discharge of Owens River near Lone Pine, Cal., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	349	104	283	17,400	A.
November	539	349	439	26,100	A.
December	559	384	427	26,300	A.
January	707	499	543	33,400	A.
February	729	366	519	28,300	A.
March	384	233	333	20,500	A.
April	384	79	160	9,520	A.
May	440	84	231	14,200	B.
June	421	144	325	19,300	B.
July	599	218	413	25,400	A.
August	210	38	95.6	5,880	A.
September	174	61	76.3	4,540	A.
The year	729	38	319	231,000	

OWENS LAKE NEAR LONE PINE,[1] CAL.

LOCATION.—On the west shore of Owens Lake, 1 mile north of Brier Siding on California & Nevada Railroad (Southern Pacific Co.), and about 9 miles south of Lone Pine, Inyo County.

RECORDS AVAILABLE.—March, 1908, to September 30, 1915.

[1] Formerly known as "near Olancha."

GAGE.—Vertical staff, installed November 1, 1911, at a boulder point east of railroad culvert No. 507B; read once a day by an employee of the city of Los Angeles. Original gage, vertical staff near the old Smith ranch, was submerged in July, 1911, and an upper section was installed. Gage datum before July 29, 1913, 3,564.90 feet above sea level, United States Geological Survey datum; after that date, 3,561.90 feet. January 12, 1915, gage was washed out but was replaced at same location and datum.

EXTREMES OF STAGE.—1911–1915: Maximum stage recorded, 8.75 feet March 16 and April 7, 1912; minimum stage, 4.3 feet November 22 and December 4, 1913.

COOPERATION.—Records furnished by City of Los Angeles.

Elevation, in feet, of Owens Lake near Lone Pine, Cal., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1												6.50
2		6.25	6.50			7.74			7.55	7.35	7.10	
3				6.60								
4								7.75				
5							7.85					
6	6.35											
7												
8		6.30	6.52						7.52			6.30
9										7.30		
10						7.79					6.90	
11												
12			6.50					7.75				
13												6.10
14	6.30											
15							7.75				6.81	
16												
17		6.35			7.59	7.84			7.45			
18												6.20
19										7.25		
20	6.32											
21								7.65				
22			6.50				7.75					
23					7.64							
24		6.45				7.87				7.20		6.30
25												6.00
26												
27	6.30		6.60									
28												
29		6.48				7.79	7.70		7.38			
30								7.60				
31												

NOTE.—To reduce elevations to mean sea level (U. S. Geological Survey datum), add 3,570 feet.

ROCK CREEK NEAR ROUND VALLEY, CAL.

LOCATION.—In the NE. ¼ SE. ¼ sec. 9, T. 6. S., R. 31 E., below highway bridge a short distance above mouth of Pine Creek, and 2 miles northwest of Round Valley, Inyo County.

DRAINAGE AREA.—Approximately 46 square miles.

RECORDS AVAILABLE.—August 3, 1903, to September 30, 1915.

GAGE.—Vertical staff on left bank about 600 feet below bridge; read by William Roberts; prior to July, 1906, gage at highway bridge.

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

CHANNEL AND CONTROL.—Bed composed of sand and cobblestones; somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.3 feet at 10 a. m. June 23 (discharge, 111 second-feet); minimum discharge, 19 second-feet March 28, 31, and April 23.

1903–1915: Maximum stage recorded, 5.0 feet January 25, 1914 (discharge, 360 second-feet); minimum stage, 1.0 foot April 20–23, 1905 (discharge, 14 second-feet).

WINTER FLOW.—Shore ice forms, but probably does not affect stage-discharge relation.

DIVERSIONS.—Water for irrigation is diverted above station.

REGULATION.—Flow partially regulated by diversions.

ACCURACY.—Records fair.

COOPERATION.—Gage-height records and current-meter measurments furnished by the city of Los Angeles.

Discharge measurements of Rock Creek near Round Valley, Cal., during the year ending Sept. 30, 1915.

[Made by J. E. Jones.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Nov. 11	1.50	33	May 27	1.40	28	Aug. 19	1.28	28
Dec. 15	1.45	29	June 17	2.12	96			
Apr. 8	1.30	24	Aug. 18	1.20	24			

Daily discharge, in second-feet, of Rock Creek near Round Valley, Cal., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	a 52	41	a 31	29	a 34	46	21	28	93	94	40	24
2	50	a 38	29	a 29	33	a 46	a 21	a 32	a 90	a 86	a 40	a 24
3	a 46	35	a 30	30	36	45	22	37	86	78	40	23
4	43	a 34	32	a 28	46	43	a 24	46	a 82	a 77	a 39	a 24
5	a 42	33	a 32	27	a 40	a 40	25	61	78	76	38	24
6	40	a 32	33	a 30	35	37	a 25	a 45	a 72	a 73	a 36	a 23
7	a 38	30	a 32	32	a 35	a 36	25	29	66	70	35	22
8	37	a 29	30	a 30	36	34	25	a 26	a 68	a 72	a 32	a 23
9	37	29	a 28	29	46	a 32	27	24	70	74	29	24
10	a 40	a 31	27	30	a 40	31	a 26	a 23	a 66	a 70	a 28	a 24
11	42	33	a 28	a 28	33	a 30	25	22	63	66	26	24
12	a 47	a 33	29	27	a 34	28	a 25	a 23	a 68	a 68	a 25	26
13	52	33	a 30	a 28	35	31	25	24	72	70	24	a 28
14	a 54	a 33	30	29	a 38	a 28	a 25	a 26	a 77	a 68	24	29
15	57	33	27	a 28	42	25	25	27	82	66	a 25	a 30
16	65	a 32	a 27	27	a 44	a 25	a 23	29	a 88	a 65	26	32
17	55	30	27	39	46	25	21	27	94	64	a 25	a 32
18	a 54	a 32	a 27	a 30	a 42	28	a 21	a 28	a 96	a 61	24	32
19	52	33	26	30	39	a 26	21	29	98	58	28	35
20	a 46	a 32	27	a 32	a 37	25	a 21	27	a 100	55	26	a 35
21	41	30	a 27	33	35	a 27	22	a 27	102	58	a 26	35
22	39	a 29	27	a 33	33	29	a 20	27	a 106	a 56	26	a 35
23	a 36	29	a 27	33	a 33	a 26	19	a 27	111	55	a 26	35
24	33	a 28	26	33	33	22	a 20	27	a 104	a 58	26	a 35
25	a 42	27	a 25	a 33	a 33	a 24	22	a 24	98	62	a 25	35
26	50	a 28	24	33	33	25	a 22	22	a 98	a 54	24	a 35
27	a 52	30	a 26	a 32	a 34	a 22	22	27	98	47	a 24	35
28	53	a 28	27	30	35	19	a 24	27	a 96	a 45	24	a 34
29	46	27	24	36	.....	a 20	25	29	94	43	a 26	34
30	a 47	33	a 26	a 36	.....	22	a 26	a 36	98	a 42	29	35
31	48	.....	27	36	.....	19	.....	42	.....	41	a 26	.....

a Interpolated.

NOTE.—Discharge determined from six rating curves as follows: Oct. 1–16, well defined; Oct. 17 to Mar. 1, fairly well defined below 60 second-feet; Mar. 2 to May 5, poorly defined; May 6 to June 1, fairly well defined below 60 second-feet; June 2–23, poorly defined; June 24 to Sept. 30, fairly well defined below 60 second-feet; discharge interpolated for days when gage heights were not available.

Monthly discharge of Rock Creek near Round Valley, Cal., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	65	33	46.3	2,850	C.
November	41	27	31.5	1,870	B.
December	33	24	28.0	1,720	B.
January	36	27	30.7	1,890	B.
February	46	33	37.1	2,060	C.
March	46	19	29.5	1,810	C.
April	27	19	23.2	1,380	C.
May	61	22	29.9	1,840	B.
June	111	63	87.1	5,180	C.
July	94	41	63.6	3,910	C.
August	40	24	28.8	1,770	B.
September	35	22	29.5	1,760	B.
The year	111	19	38.7	28,000	

PINE CREEK NEAR ROUND VALLEY, CAL.

LOCATION.—In the NE. ¼ SE. ¼ sec. 9, T. 6 S., R. 31 E., 300 feet above highway bridge, about 600 feet above junction with Rock Creek, and 2 miles northwest of Round Valley, Inyo County.

DRAINAGE AREA.—About 32 square miles above mouth of canyon.

RECORDS AVAILABLE.—August 3, 1903, to September 30, 1915.

GAGE.—Vertical staff on left bank; read by William Roberts. Prior to May 13, 1908, gage was 150 feet below highway bridge.

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

CHANNEL AND CONTROL.—Bed composed of lava rock and sand; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.3 feet in mornings of June 27, 30, and July 1 (discharge, 140 second-feet); minimum stage, 3.25 feet at 4.25 p. m. April 27 and 7.40 a. m. April 29 (discharge, 0.6 second-foot).

1903–1915: Maximum discharge, 370 second-feet June 22, 1911; minimum stage recorded, 3.2 feet June 15, 1913 (discharge, 0.2 second-foot).

WINTER FLOW.—Ice occasionally forms at station, but probably does not affect stage-discharge relation.

DIVERSIONS.—Water is diverted above station for irrigation.

REGULATION.—Diversions probably affect the flow.

ACCURACY.—Records fair.

COOPERATION.—Gage heights and discharge measurements furnished by the city of Los Angeles.

Discharge measurements of Pine Creek near Round Valley, Cal., during the year ending Sept. 30, 1915.

[Made by J. E. Jones.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Nov. 11	3.62	6.2	June 17	4.88	100
Dec. 15	3.55	4.5	18	5.10	122
Apr. 8	3.50	3.9	Aug. 18	3.50	3.4
May 27	3.63	5.8			

Daily discharge, in second-feet, of Pine Creek near Round Valley, Cal., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	a12	4.5	a3.2	3.2	a4.9	13	3.9	1.4	124	140	6.8	2.4
2	9.0	a4.2	3.2	a3.6	4.0	a8.0	a3.9	a3.3	a102	a132	a6.0	a2.0
3	a8.2	4.0	a3.2	4.0	7.4	3.0	3.9	5.2	80	124	5.3	1.5
4	7.4	a4.9	3.2	a3.6	13	2.0	a3.9	10	a76	a126	a4.9	a1.8
5	a8.2	5.8	a3.2	3.2	a9.4	a2.0	3.9	19	71	129	4.5	2.0
6	9.0	a4.5	3.2	a3.0	5.8	2.0	a3.9	a14	a66	a118	a3.8	a1.8
7	a7.4	3.2	a2.6	2.9	a5.8	a2.0	3.9	8.1	62	108	3.2	1.5
8	5.8	a2.4	2.0	a3.0	5.8	2.0	3.9	a5.4	a58	a116	a2.4	a1.5
9	10	1.5	a1.8	3.2	13	a2.0	3.9	2.6	53	124	1.5	1.5
10	a8.4	a4.9	1.5	3.2	a9.4	2.0	a3.4	a2.2	a60	a116	a1.5	a1.5
11	6.8	6.4	a1.8	a3.0	5.8	a2.5	3.0	1.8	66	108	1.5	1.5
12	a7.1	a4.8	2.0	2.9	a5.2	3.0	a3.4	a1.8	a80	a113	a1.8	2.0
13	7.4	3.2	a1.8	a3.0	4.5	2.0	3.9	1.8	94	118	2.0	a1.8
14	a6.6	a3.8	1.5	3.2	a3.8	a2.0	a3.4	a1.4	a101	a104	a1.8	1.5
15	5.8	4.5	4.5	a2.4	3.2	2.0	3.0	1.0	108	89	1.5	a1.8
16	7.4	a3.8	a3.0	1.5	a4.5	a2.3	a3.2	1.5	a103	a80	1.5	2.0
17	3.2	3.2	1.5	1.5	5.8	2.6	3.5	1.0	98	71	a2.4	a1.8
18	a3.8	a3.6	a2.0	a1.8	a5.2	3.9	a3.2	a1.2	118	a71	3.2	1.5
19	4.5	4.0	2.4	2.0	4.5	a3.0	3.0	1.5	118	71	a3.8	2.0
20	a3.8	a3.6	1.5	a1.8	a4.2	2.0	a2.5	1.0	a113	62	4.5	a1.8
21	3.2	3.2	a1.5	1.5	4.0	a2.3	2.0	a1.0	108	71	a3.8	1.5
22	3.2	a3.2	1.5	a1.8	3.2	2.6	a1.4	1.0	a118	a94	3.2	a1.5
23	a3.2	3.2	a1.8	2.0	a2.6	a2.3	.8	a1.0	129	118	a3.6	1.5
24	3.2	a3.2	2.0	3.2	2.0	2.0	a1.1	1.0	a129	a104	4.0	a1.4
25	a3.2	3.2	a1.8	a3.2	a1.8	a2.3	1.4	a1.8	129	89	a3.6	1.3
26	3.2	a3.6	1.5	3.2	1.5	2.6	a1.0	2.6	a134	a49	3.2	a1.4
27	a3.2	4.0	a1.5	a3.2	a2.0	a2.3	.6	5.9	140	9.0	a3.6	1.5
28	3.2	a3.4	1.5	3.2	2.4	2.0	a .6	2.6	a137	a9.5	4.0	a1.5
29	3.2	2.9	1.1	4.5	.....	a2.0	.6	3.8	134	10	a4.6	1.5
30	a3.2	3.2	a1.3	a5.2	.....	2.0	a1.0	b7.0	140	a9.5	5.3	1.5
31	3.2	.....	1.5	5.8	.....	2.0	.....	102	.....	9.0	a3.8	.....

a Interpolated. b Estimated.

Monthly discharge of Pine Creek near Round Valley, Cal., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	12	3.2	5.71	351	B.
November	6.4	1.5	3.77	224	B.
December	4.5	1.1	2.13	131	B.
January	5.8	1.5	2.99	184	B.
February	13	1.5	5.17	287	D.
March	13	2.0	2.83	174	C.
April	3.9	.6	2.70	161	C.
May	102	1.0	6.93	426	C.
June	140	53	102	6,070	B.
July	140	9.0	86.8	5,340	B.
August	6.8	1.5	3.44	212	B.
September	2.4	1.3	1.66	99	B.
The year	140	.6	18.8	13,700	

MONO LAKE BASIN.

MONO LAKE NEAR MONO LAKE, CAL.

LOCATION.—In lot 6, SE. ¼ NE. ¼ sec. 31, T. 2 N., R. 26 E., about 2 miles south of Mono Lake post office, Mono County.

RECORDS AVAILABLE.—June 15, 1912, to September 30, 1915; fragmentary.

GAGE.—Vertical staff fastened to willow tree about 400 feet from Hammon's store; read by F. B. Clark.

EXTREMES OF STAGE.—1912–1915: Maximum stage recorded, 13.30 feet May 27, 1915; minimum stage recorded, 7.93 feet December 11, 1913.

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

Gage height, in feet, of Mono Lake near Mono Lake, Cal., for the year ending Sept. 30, 1915.

Date.	Gage height.	Date.	Gage height.	Date.	Gage height.
Oct. 4	10.33	Mar. 12	10.60	May 4	12.70
31	10.18	31	10.70	8	12.76
Dec. 30	10.05	Apr. 10	10.72	14	13.10
Jan. 26	10.10	24	10.75	27	13.30
Feb. 25	10.56				

LEEVINING CREEK NEAR MONO LAKE, CAL.

LOCATION.—In the SE. ¼ SE. ¼ sec. 17, T. 1 N., R. 26 E., at ranger station in Mono National Forest, about 3¼ miles above the mouth, and 4 miles south of Mono Lake post office, Mono County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—November 17, 1910, to June 25, 1915; fragmentary.

GAGE.—Vertical staff fastened to cottonwood tree on left bank, 250 feet below ranger station; read by F. B. Clark.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Bed composed of gravel; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.0 feet at 8 a. m., June 12 (discharge, 356 second-feet); minimum stage, 2.10 feet at 12.30 p. m. January 30 (discharge, 18 second-feet).

1910–1915: Maximum stage recorded, 4.9 feet June 19, 1911 (discharge, 750 second-feet); minimum stage, 2.04 feet March 2, 1912 (discharge, 12 second-feet).

WINTER FLOW.—Stage-discharge relation affected by ice.

DIVERSIONS.—Water diverted above this station for irrigating less than 100 acres.

REGULATION.—No information.

ACCURACY.—Records good for periods in which gage is read. Rating curve, which has been used since 1910, is assumed to apply this year, as current-meter measurements have not been made since June, 1914.

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

Daily discharge, in second-feet, of Leevining Creek near Mono Lake, Cal., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	June.
1	a 39	23	19					
2	39	22						
3	38	22						
4	37	21	19					
5	36	21					29	
6	36	20						
7	a 35	20	19					
8	34	a 20				22		
9	31	20						326
10	29	a 20						
11	28	20						
12	26	a 20						356
13	26	20						
14	25	a 20						341
15	24	a 20						
16	a 23	20						
17	23	20						
18	23	a 19			29			
19	23	a 19						
20	23	19					29	
21	26	19						326
22	25	a 19				22		
23	23	19						
24	23	a 19						
25	23	19						312
26	23	a 19						
27	23	19						
28	23	a 19					31	
29	23	a 19						
30	23	19		18				
31	23							

a Interpolated.

NOTE.—Discharge determined from a well-defined rating curve (see remarks under Accuracy in the station description). Stage-discharge relation affected by ice Dec. 14-30. From December to June no discharge record published when gage was not read. Mean flow, for October, 27.6 second-feet (total run-off, 1,700 acre-feet); for November, 19.9 second-feet (total run-off, 1,180 acre-feet).

WALKER LAKE BASIN.

EAST WALKER RIVER NEAR MASON, NEV.

LOCATION.—In sec. 26, T. 12 N., R. 25 E., at highway bridge 2½ miles above junction with West Walker River, and 7 miles above Mason, Lyon County.

DRAINAGE AREA.—1,230 square miles.

RECORDS AVAILABLE.—November 21, 1910, to September 15, 1912; July 5, 1913, to September 30, 1915. From 1902 to 1908 a station was maintained at Ross ranch, a short distance above present station.

GAGE.—Inclined staff on left bank 50 feet below highway bridge, August 1, 1914, to September 30, 1915; read by Mrs. J. H. Hillbun. Original gage, vertical staff on left bank, November 21, 1910, to September 15, 1912, and July 5, 1913, to September 30, 1913; inclined staff on right bank set at 0.31 foot lower datum, October 1, 1913, to June 22, 1914; temporary staff on left bank 25 feet below highway bridge, July 1 to July 31, 1914.

DISCHARGE MEASUREMENTS.—Made from highway bridge 50 feet above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of loose sand. Banks cave in at high stages. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.3 feet at 10 a. m. July 5 (discharge, 374 second-feet); minimum stage, 0.1 foot August 12–18 (discharge, 1.5 second-feet).

1910–1915: Maximum stage recorded, 8.3 feet January 26, 1914 (discharge, 1,470 second-feet); minimum stage, 1.6 feet August 6, 1913 (discharge, zero).

WINTER FLOW.—Stage-discharge relation affected by ice for short periods; flow estimated from observer's notes.

DIVERSIONS.—Water to irrigate about 10,000 acres is diverted above station.

REGULATION.—Only the irrigation diversions.

ACCURACY.—Records poor; rating curves not well defined.

Discharge measurements of East Walker River near Mason, Nev., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec-ft.*			*Feet.*	*Sec.-ft.*
Oct. 14	L. W. Jordan	1.90	94	May 5	L. W. Jordan	1.98	130
Dec. 8	do	2.20	89	June 19	do	2.30	184
Feb. 11	do	2.71	94	Aug. 24	A. B. Purton	.32	5.3

Daily discharge, in second-feet, of East Walker River near Mason, Nev., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	94	120	112	112	130	93	260	96	35	251	29	19
2	94	120	123	109	130	82	270	96	41	290	24	24
3	106	120	120	107	130	82	260	108	48	310	15	29
4	106	106	117	104	117	82	251	108	56	331	11	35
5	106	106	114	113	117	82	242	134	65	374	8	35
6	106	106	113	111	117	82	232	134	85	352	5	35
7	106	106	88	108	117	82	232	134	108	310	3	35
8	121	106	88	105	104	72	214	134	121	290	3	35
9	121	106	88	102	104	72	214	134	134	270	3	35
10	121	106	88	99	104	72	214	134	163	251	3	35
11	106	106	88	108	95	72	196	121	179	232	3	35
12	106	106	88	105	93	72	196	121	232	232	1.5	35
13	106	106	78	91	93	72	196	121	270	214	1.5	35
14	94	106	78	88	93	72	179	108	270	214	1.5	48
15	94	106	78	64	93	72	179	108	251	196	1.5	41
16	106	106	68	54	93	72	179	96	232	179	1.5	41
17	106	106	68	54	93	85	163	96	232	148	1.5	35
18	106	106	68	54	93	90	148	85	214	134	1.5	29
19	120	104	68	54	93	96	148	85	188	121	5	29
20	120	101	60	54	93	102	148	85	179	108	11	24
21	120	99	60	46	93	121	134	75	179	96	11	24
22	136	102	60	46	93	141	134	65	179	85	11	24
23	135	106	60	46	93	163	121	56	163	96	11	24
24	135	104	51	46	93	188	121	48	163	108	8	29
25	120	114	51	46	93	232	121	41	163	121	8	48
26	120	112	51	72	93	260	108	35	163	108	8	48
27	120	109	58	93	93	270	108	35	163	75	11	41
28	120	120	65	104	93	260	108	35	163	56	11	41
29	135	117	72	117	.....	251	108	35	179	48	15	41
30	135	114	80	117	.....	260	108	29	214	41	15	41
31	135	.....	89	117	.....	251	.....	29	.....	35	19	.....

NOTE—Discharge determined from four poorly defined rating curves applicable Oct. 1 to Nov. 18; Dec. 6–26; Jan. 16 to Mar. 16; and Apr. 6 to Sept. 30; and by indirect method for shifting control for all other days.

Monthly discharge of East Walker River near Mason, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	135	94	115	7,070	B.
November	120	99	108	6,430	C.
December	123	51	80.3	4,940	B.
January	117	46	85.4	5,250	C.
February	130	93	102	5,660	B.
March	270	72	129	7,930	C.
April	270	108	176	10,500	C.
May	134	29	87.8	5,400	B.
June	270	35	161	9,580	B.
July	374	35	183	11,300	B.
August	29	1.5	8.44	519	D.
September	48	19	34.3	2,040	D.
The year	374	1.5	106	76,600	

WALKER RIVER AT MASON, NEV.

LOCATION.—In sec. 33, T. 13 N., R. 25 E., at highway bridge at Mason, in Lyon County, and about 4½ miles below junction of East and West Walker rivers.

DRAINAGE AREA.—2,370 square miles.

RECORDS AVAILABLE.—November 21, 1910, to September 15, 1912; July 3, 1913, to September 30, 1915.

GAGE.—Vertical staff fastened to downstream pile of second bent from right end of bridge; read twice daily by H. C. Hansen.

DISCHARGE MEASUREMENTS.—Made from bridge at gage.

CHANNEL AND CONTROL.—Bed composed of loose sand; control is rock and brush diversion dam about 400 feet downstream from gage; small canal heads just above right end of dam; occasional changes in dam affect stage-discharge relation. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.1 feet at 8 a. m. and 5 p. m. June 10 (discharge, 1,530 second-feet); minimum stage, 4.2 feet August 26–31 (discharge, 27 second-feet).

1910–1915: Maximum stage recorded, 8.85 feet June 21–22, 1914 (discharge, 3,410 second-feet); minimum stage, 2.8 feet May 3–7, 1912 (discharge, 25 second-feet).

WINTER FLOW.—Stage-discharge relation slightly affected by ice.

DIVERSIONS.—A large part of the flow of the East and West Walker rivers is diverted for irrigation.

REGULATION.—Flow affected by irrigation diversions.

ACCURACY.—Records poor owing to unstable condition of dam, parts of which were washed away and replaced at different times during year.

Discharge measurements of Walker River at Mason, Nev., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 13	L. W. Jordan	4.68	194	June 20	L. W. Jordan	6.20	943
Dec. 8	do	4.65	209	Aug. 25	A. B. Purton	4.21	28.3
May 4	do	5.60	418				

Daily discharge, in second-feet, of Walker River at Mason, Nev., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	117	261	264	.....	163	222	343	462	901	1,000	148	32
2	117	262	250	.....	174	236	311	462	1,180	1,000	129	36
3	117	262	250	.....	174	222	311	462	1,130	1,000	104	41
4	126	263	236	.....	174	222	343	419	1,080	1,070	82	44
5	135	264	236	.....	174	197	361	462	781	1,140	82	46
6	135	264	222	.....	174	197	343	508	741	1,200	82	47
7	144	265	210	.....	174	187	311	484	932	938	82	47
8	154	266	197	.....	174	197	279	419	1,150	816	82	48
9	154	266	185	.....	174	187	250	462	1,300	730	82	44
10	165	267	174	174	197	174	295	399	1,530	787	76	45
11	176	268	174	174	210	174	279	399	1,480	846	67	45
12	187	268	174	174	210	174	311	419	1,340	816	55	46
13	187	269	174	174	197	174	326	484	1,140	816	44	47
14	200	270	174	174	197	174	326	484	938	758	41	48
15	200	270	174	174	197	174	343	440	816	675	41	43
16	200	271	.....	174	197	174	343	462	938	546	40	39
17	200	272	.....	174	210	174	343	532	1,000	476	36	40
18	200	272	.....	.....	222	187	326	556	816	411	36	36
19	212	273	.....	.....	222	187	311	508	816	372	36	36
20	212	274	.....	.....	222	197	343	440	876	336	32	37
21	212	274	.....	.....	222	210	380	361	816	336	32	38
22	225	275	.....	.....	197	222	440	295	816	372	32	39
23	239	276	.....	.....	197	236	462	250	938	498	32	39
24	256	264	.....	174	197	264	462	250	938	498	32	40
25	256	264	.....	174	210	279	440	250	938	498	27	49
26	257	264	.....	174	210	311	419	222	816	453	27	53
27	258	264	.....	174	222	343	361	210	730	372	27	53
28	258	264	.....	163	222	380	343	285	730	304	27	56
29	259	264	.....	163	.....	399	361	532	816	244	27	61
30	260	264	.....	163	.....	343	380	752	938	192	27	68
31	260	.....	.....	163	.....	343	.....	828	.....	169	27	.....

NOTE.—Discharge determined from several rating curves, only fairly well defined, applicable as follows: Oct. 1–23, Nov. 24 to Apr. 10, Apr. 11 to May 27, June 11 to July 21, July 24 to Aug. 15, and Aug. 17 to Sept. 6. Indirect method for shifting control used Oct. 24 to Nov. 23, May 28 to June 10, July 22 and 23, Aug. 16, and Sept. 6–30. Discharge estimated, on account of ice, Dec. 16 to Jan. 9 and Jan. 18–23, 170 second-feet.

Monthly discharge of Walker River at Mason, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	260	117	196	12,100	B.
November	276	261	267	15,900	B.
December	264	.....	188	11,600	C.
January	.....	.....	171	10,500	C.
February	222	163	197	10,900	C.
March	399	174	231	14,200	B.
April	462	250	348	20,700	B.
May	828	210	435	26,700	B.
June	1,530	730	978	58,200	B.
July	1,200	169	634	39,000	C.
August	148	27	54.6	3,360	C.
September	68	32	44.8	2,670	C.
The year	1,530	27	312	226,000	

WALKER RIVER AT SCHURZ, NEV.

LOCATION.—In sec. 36, T. 13 N., R. 28 E., at highway bridge at Schurz, in Mineral County, 3 miles above Walker Lake and 6 miles below diversion dam of the Walker River Indian Reservation.

DRAINAGE AREA.—2,850 square miles.

RECORDS AVAILABLE.—July 2, 1913, to September 30, 1915.

GAGE.—Vertical staff on downstream pile of left abutment of highway bridge, about 300 feet back of depot, August 4, 1914, to September 30, 1915; read twice daily by Joe Mencacci. Original gage, vertical staff fastened to tree on right bank about one-fourth mile above bridge, July 2, 1913, to July 1, 1914, when it was washed out by flood. Present gage at different datum.

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

CHANNEL AND CONTROL.—Bed composed of loose sand; shifts occasionally. Banks cave at high stages. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.85 feet at 2 p. m. June 12 (discharge, 1,180 second-feet); minimum stage, 1.95 feet September 26–30 (discharge, 4 second-feet).

1913–1915: Maximum stage recorded, 11.0 feet June 8 and 9, 1914 (discharge, 2,530 second-feet); minimum stage, 1.60 feet August 17–30, September 23 to October 18, 1913 (discharge, zero).

WINTER FLOW.—Stage-discharge relation affected by ice; flow estimated from discharge measurements, observer's notes, and United States Weather Bureau reports from Fallon, Nev.

DIVERSIONS.—Below all diversions.

REGULATION.—Flow affected by irrigation diversions above.

ACCURACY.—Records fair.

Discharge measurements of Walker River at Schurz, Nev., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 12	L. W. Jordan	2.96	133	May 6	Frank Weber	4.58	357
Dec. 31[a]	Frank Weber	5.00	209	June 12	do	6.67	1,110
Jan. 19[a]	do	4.46	138	Aug. 10	do	2.06	5.0
Feb. 1	do	3.84	228				

[a] Complete ice cover at control; no anchor ice. Stage-discharge relation affected.

Daily discharge, in second-feet, of Walker River at Schurz, Nev., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	52	202	250	211	230	280	274	247	440	734	59	5
2	58	219	250	211	222	294	247	294	450	789	48	5
3	60	230	260	208	220	280	247	358	472	820	24	5
4	62	236	254	199	222	280	274	370	486	860	17	5
5	70	247	250	187	213	274	280	370	544	892	24	5
6	72	254	250	187	213	265	314	394	586	912	17	5
7	72	270	247	190	222	284	308	419	648	949	14	5
8	80	270	233	196	222	284	288	445	712	1,060	11	5
9	88	270	230	204	227	284	280	382	800	1,090	8	5
10	106	270	219	216	247	284	265	370	892	844	7	5
11	112	270	216	216	247	256	251	347	1,140	840	7	5
12	127	260	199	202	247	233	227	336	1,170	723	6	5
13	138	260	182	196	247	230	197	321	1,110	674	6	5
14	149	260	152	224	247	222	197	336	1,070	674	6	5
15	152	260	152	213	251	222	197	347	773	615	5	5
16	152	254	138	206	230	222	197	294	629	560	5	5
17	152	250	134	184	238	223	197	256	659	557	5	5
18	152	250	138	158	247	222	197	251	712	399	5	5
19	152	260	142	135	247	222	184	247	723	349	5	5
20	155	260	134	130	247	222	181	265	723	265	5	5
21	166	250	135	142	261	233	181	314	685	227	5	5
22	169	250	138	160	256	247	261	325	674	229	5	5
23	182	250	137	187	261	247	304	288	666	224	5	5
24	196	260	124	213	256	213	304	265	666	201	5	5
25	196	250	124	213	269	216	288	251	674	224	5	5
26	213	260	127	213	280	200	261	213	712	250	5	4
27	216	250	138	213	294	184	247	178	666	250	5	4
28	216	260	152	238	284	216	222	149	670	182	5	4
29	224	250	172	256	.....	238	205	139	685	127	5	4
30	233	250	192	256	.....	280	213	139	696	114	5	4
31	233	.....	206	244	.....	294	.....	370	.....	91	5	.....

NOTE.—Discharge determined as follows: Oct. 1, 1914, to Jan. 16, 1915, from a rating curve fairly well defined between 100 and 600 second-feet; Jan. 17–23 and July 10–21, by indirect method for shifting control; Jan. 24 to July 9, from a rating curve well defined between 200 and 1,200 second-feet; July 22 to Sept. 30, from a rating curve well defined up to 500 second-feet. Discharge estimated because of ice from observer's notes, discharge measurements, and climatic records, Dec. 12 to Jan. 23, as in table.

Monthly discharge of Walker River at Schurz, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	233	52	142	8,730	B.
November	276	202	253	15,100	B.
December	260	124	183	11,300	C.
January	256	130	200	12,300	C.
February	294	213	245	13,600	B.
March	294	184	247	15,200	B.
April	314	181	243	14,500	B.
May	445	139	299	18,400	B.
June	1,170	440	718	42,700	B.
July	1,090	91	540	33,200	B.
August	59	5	10.9	670	B.
September	5	4	4.83	287	C.
The year	1,170	4	257	186,000	

SWAGER CREEK NEAR BRIDGEPORT, CAL.

LOCATION.—In the NW. ¼ NW. ¼ sec. 23, T. 5 N., R. 24 E., at highway bridge three-fourths mile northwest of Mono ranger station, and 4¼ miles northwest of Bridgeport, Mono County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—June 1, 1911, to September 30, 1915 (fragmentary), when the station was discontinued.

GAGE.—Vertical staff on right bank, 20 feet above bridge, installed August 24, 1914, at datum 1.00 foot higher than that of original vertical staff at same

site, which was destroyed in the spring of 1914 when bridge was rebuilt; read by B. F. Tyler.

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

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.0 feet at 5 p. m. May 12 (discharge, 67 second-feet); minimum stage, 0.8 foot at 8.50 a. m. August 30 (discharge, 8.0 second-feet).

1911–1915; maximum stage recorded, 4.1 feet June 16, 1911 (discharge, 151 second-feet); minimum discharge, zero April 20, 1912.

WINTER FLOW.—Ice forms for short periods, but does not usually affect the stage-discharge relation.

DIVERSIONS.—No information.

REGULATION.—No information.

ACCURACY.—Records good when gage was read.

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

Discharge measurements of Swager Creek near Bridgeport, Cal., during the year ending Sept. 30, 1915.

[Made by H. J. Tompkins.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Nov. 28	a 1.10	15	Aug. 4	0.90	9.9
Mar. 18	1.25	20			

a Gage height on old gage, 2.10 feet. Ice on control but stage-discharge relation not affected thereby.

Daily discharge, in second-feet, of Swager Creek near Bridgeport, Cal., for the year ending Sept. 30, 1915.

Date.	Discharge in second-feet.	Date.	Discharge in second-feet.
Nov. 28	15	June 26	22
Mar. 18	20	Aug. 4	9.9
May 12	67	7	9.9
17	63	18	9.9
18	51	19	9.9
20	48	24	9.9
June 16	32	30	8.0
17	32	Sept. 3	9.9

NOTE.—Discharge determined for days when gage heights were available, from a rating curve well defined below 30 second-feet. Monthly means not determined.

WEST WALKER RIVER NEAR COLEVILLE, CAL.

LOCATION.—In the NE. ¼ NW. ¼ sec. 28, T. 8 N., R. 23 E., at mouth of Ross Canyon, head of Antelope Valley, and 400 feet east of State highway, 1.2 miles above Terry ranch house, 5.5 miles above Coleville, Mono County, and about 40 miles southeast of Gardnerville, Nev.

DRAINAGE AREA.—245 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 18 to September 30, 1915. October 5, 1902, to July 31, 1908, a station was maintained half a mile above present gage.

GAGE.—Water stage recorder built by S. P. Furguson, Reno, Nev., installed April 29, 1915, on left bank, 15 feet below large yellow-pine tree to which upper section of outside staff gage is fastened, and about 100 feet above Terry canal heading.

DISCHARGE MEASUREMENTS.—Made from cable 15 feet above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of large boulders; control fairly permanent; gradient is steep. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.9 feet at 2 a. m. June 30 (discharge, 1,330 second-feet); minimum stage, 2.38 feet at 3 p. m. October 24 (discharge, 59 second-feet).

WINTER FLOW.—Stage-discharge relation slightly affected by ice.

DIVERSIONS.—Station is above all diversions in Antelope Valley.

REGULATION.—None.

ACCURACY.—Records only fair, owing to varying amount of backwater from temporary jetty at Terry canal heading 100 feet below gage.

Discharge measurements of West Walker River near Coleville, Cal., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Apr. 29	L. W. Jordan	3.50	411	June 30	J. W. Jordan	4.60	1,150
May 2	do	3.26	340	Aug. 5	H. J. Tompkins	3.10	271
June 18	do	4.45	973	23	A. B. Purton	2.74	131

Daily discharge, in second-feet, of West Walker River near Coleville, Cal., for the year ending Sept. 30, 1915.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1		1,170	258	116	16		678	199	54
2		1,140	239	129	17		649	166	54
3		1,140	202	114	18	1,100	535	148	54
4		1,140	154	101	19	1,140	535	134	47
5		1,030	185	100	20	1,030	591	118	47
6		768	220	99	21	1,030	649	132	42
7		738	202	76	22	1,140	738	129	42
8		830	185	76	23	1,170	678	129	42
9		962	185	66	24	1,140	830	170	47
10		962	170	66	25	1,030	591	154	71
11		1,060	154	64	26	894	482	137	54
12		1,030	154	64	27	962	408	137	54
13		962	140	62	28	1,100	362	121	54
14		830	154	62	29	1,170	319	121	47
15		708	154	62	30	1,170	298	118	47
					31		258	118	

NOTE.—Discharge determined from two rating curves, one, fairly well defined between 100 and 1,200 second-feet, applicable June 18 to Aug. 15; the other, fairly well defined between 40 and 300 second-feet, applicable during period when jetty was in place, Sept. 13–30. Aug. 16 to Sept. 12 flow determined by indirect method for shifting control.

Monthly discharge of West Walker River near Coleville, Cal., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
June 18–30	1,170	894	1,080	27,900	B.
July	1,170	258	744	45,700	B.
August	258	118	161	9,900	B.
September	129	42	67.1	3,990	C.
The period				87,500	

WEST WALKER RIVER AT HUDSON, NEV.

LOCATION.—About sec. 11, T. 11 N., R. 24 E., at highway bridge at Hudson, in Lyon County, about a mile above canyon between Smith and Mason valleys.

DRAINAGE AREA.—About 953 square miles (measured on topographic maps).

RECORDS AVAILABLE.—August 3, 1914, to September 30, 1915.

GAGE.—Vertical staff fastened to downstream pile in middle bent of highway bridge; read twice daily by F. B. Mann.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of loose sand; control light gravel riffle. One channel at all stages. Gage height of zero flow about 1.5 feet on August 24, 1915.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.20 feet at 6 p. m. June 9 and 6 a. m. June 10 (discharge, 1,470 second-feet); minimum stage, 2.30 feet August 25 to September 3 (discharge, 31 second-feet).

1914–15: Maximum and minimum stages occurred in 1915.

WINTER FLOW.—Stage-discharge relation slightly affected by ice.

DIVERSIONS.—Below all diversions in Smith Valley and above those in Mason Valley.

REGULATION.—None.

ACCURACY.—Records good.

Discharge measurements of West Walker River at Hudson, Nev., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 14	L. W. Jordan	3.13	122	June 19	L. W. Jordan	4.93	769
Dec. 9[a]	do	3.06	99	Aug. 24	A. B. Purton	2.31	31.1
May 3	do	3.85	298				

[a] Small amount of shore and anchor ice. Stage-discharge relation affected slightly.

Daily discharge, in second-feet, of West Walker River at Hudson, Nev., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	73	153	113	.....	132	164	153	348	1,100	912	97	31
2	75	142	113	.....	132	153	164	348	1,180	860	94	31
3	78	142	113	.....	153	153	188	327	1,130	860	87	31
4	82	142	97	.....	142	132	227	290	860	835	84	34
5	87	142	97	.....	113	132	200	327	786	786	75	34
6	90	142	97	97	113	132	188	348	860	738	71	34
7	97	132	97	97	113	132	164	290	1,050	600	61	34
8	97	132	.....	97	113	132	153	327	1,300	533	56	34
9	105	132	.....	97	113	132	142	308	1,440	577	54	38
10	113	132	.....	97	113	132	132	290	1,440	622	52	38
11	113	132	.....	97	132	113	132	308	1,320	555	46	38
12	113	132	.....	97	132	113	132	388	1,070	491	44	38
13	113	132	.....	97	132	113	142	430	835	430	42	38
14	113	132	.....	113	153	113	188	368	786	388	42	38
15	117	132	.....	113	175	132	242	348	762	368	38	38
16	122	132	.....	113	153	132	200	327	886	368	38	38
17	122	132	.....	113	132	132	153	430	886	368	38	38
18	132	132	.....	113	132	132	164	491	810	308	34	38
19	132	113	.....	113	132	132	242	470	810	242	34	38
20	132	113	.....	113	142	132	368	368	810	214	34	38
21	132	113	.....	113	153	132	512	327	860	214	34	38
22	132	113	.....	113	153	132	491	214	860	388	34	38
23	142	113	.....	113	175	153	388	175	912	430	34	38
24	142	113	.....	113	200	153	368	200	886	409	32	38
25	142	113	.....	113	200	153	348	188	835	368	31	38
26	142	113	.....	113	227	175	327	188	786	308	31	38
27	142	113	.....	113	214	175	308	257	786	242	31	38
28	153	113	.....	113	175	175	290	470	810	214	31	38
29	153	113	.....	113	.....	175	308	810	786	153	31	38
30	153	113	.....	113	.....	175	327	966	886	113	31	38
31	153	.....	.....	113	.....	164	.....	1,070	.....	105	31	.....

NOTE.—Discharge determined from a rating curve well defined between 30 and 1,500 second-feet. Discharge, estimated because of ice from observer's notes and one discharge measurement, Dec. 8 to Jan. 5, 99 second-feet.

Monthly discharge of West Walker River at Hudson, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	153	73	119	7,320	B.
November	153	113	127	7,560	B.
December	113	97	100	6,150	B.
January	113	97	107	6,580	B.
February	227	113	148	8,220	B.
March	175	113	142	8,730	B.
April	512	132	245	14,600	A.
May	1,070	175	387	23,800	A.
June	1,440	762	951	56,600	A.
July	912	105	452	27,800	A.
August	97	31	47.5	2,920	B.
September	38	31	36.6	2,180	B.
The year	1,440	31	238	172,000	

HUMBOLDT-CARSON SINK.

CARSON RIVER BASIN.

EAST FORK OF CARSON RIVER NEAR MARKLEEVILLE, CAL.

LOCATION.—In the NE. ¼ sec. 27, T. 10 N., R. 20 E., at Hangman's bridge, 2 miles east of Markleeville, Alpine County. Indian Creek enters 100 feet above gage and Markleeville Creek 1¼ miles below.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—November 13, 1910, to September 30, 1915 (incomplete).

GAGE.—Vertical staff, 75 feet below bridge, bolted to rock ledge on right bank; read by W. J. Clark.

DISCHARGE MEASUREMENTS.—Made from cable, installed April 18, 1914, 400 feet below gage, or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and small boulders apparently permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.2 feet at 11.20 a. m. June 1 (discharge, 1,400 second-feet); minimum stage, 2.30 feet at 4.30 p. m. November 30 (discharge, 33 second-feet).

1910–1915: Maximum stage recorded, 7.7 feet June 7, 1911 (discharge not determined); minimum stage, 1.45 feet September 20, 1913 (discharge, 6 second-feet). In June, 1885, and March, 1907, water reached a stage equal to about 10.5 feet on the present gage.

WINTER FLOW.—Stage-discharge relation affected by ice.

DIVERSIONS.—No information.

REGULATION.—Low-water flow augmented by storage developed on Silver Creek above station.

ACCURACY.—Records good for days on which gage was read. On account of fragmentary gage-height record, estimates of monthly discharge have not been determined.

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

Discharge measurements of East Fork of Carson River near Markleeville, Cal., during the year ending Sept. 30, 1915.

[Made by H. J. Tompkins.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Dec. 2	a 2.66	62	Aug. 6	3.06	126
Mar. 24	3.56	253			

a Ice on control. Stage-discharge relation not affected thereby.

Daily discharge, in second-feet, of East Fork of Carson River near Markleeville, Cal., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1							1,400		146	85
2	85		67			298				
3										
4										92
5	85									
6	85	78				272		488	122	
7							1,200			72
8					215					
9										72
10							1,200		99	85
11	85						1,070			85
12	85	70					900			
13	85	66								
14	85						846			
15									99	
16	85	60			385		956			
17						956	900			
18		49								
19	85									
20	99									
21							846			
22						526				
23		66				526	900			49
24		60		215		526				66
25		66					698			
26					385	652				72
27		54								
28						1,010				
29	85						745			66
30	114	33								
31	92									

NOTE.—Discharge determined from a fairly well defined rating curve.

CARSON RIVER NEAR EMPIRE, NEV.

LOCATION.—In sec. 12, T. 15 N., R. 20 E., just below tailrace of Brunswick mill, ¼ mile below the highway bridge, and 2 miles below Empire, Ormsby County.

DRAINAGE AREA.—988 square miles (measured on topographic map).

RECORDS AVAILABLE.—June 25 to December 31, 1895; October 21, 1900, to September 30, 1915.

GAGE.—Inclined staff on left bank, used since February 24, 1911; entire flow of river passes this gage; vertical staff on left abutment of highway bridge, June 7, 1907, to February 23, 1911; prior to June 7, 1907, several gages at different points.

DISCHARGE MEASUREMENTS.—Made from cable ¼ mile above gage or by wading just above bridge; when made from cable, the power canal is measured and the result added.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders, fairly permanent. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.8 feet June 12 (discharge, 3,100 second-feet); minimum stage, 2.3 feet August 28–31 (discharge, 4 second-feet).

1895, 1900–1915: Maximum stage recorded, 8.0 feet January 23, 1914 (discharge, 5,160 second-feet); minimum stage, 0.7 foot August 31 and September 4, 5, and 14, 1905 (discharge, zero).

WINTER FLOW.—Stage-discharge relation not affected by ice.

DIVERSIONS.—A large amount of water is diverted above station for irrigation in Carson Valley. The water diverted by the Brunswick mill power canal is returned to river above gage.

ACCURACY.—Records are published as received from the United States Reclamation Service. Records show amount of water available for use in Dayton Valley.

Discharge measurements of Carson River near Empire, Nev., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Apr. 27	L. W. Jordan	4.68	[a] 707	July 19	R. E. Hartley [b]	3.80	187
June 1	R. E. Hartley [b]	6.11	1,890				

[a] Includes 14.3 second-feet flowing in Brunswick power canal.
[b] Employee United States Reclamation Service.

Daily discharge, in second-feet, of Carson River near Empire, Nev., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	50	194	155	285	335	335	391	860	2,150	710	50	5
2	50	155	155	285	391	335	391	860	2,520	710	50	5
3	50	155	194	285	450	335	391	710	2,150	780	50	5
4	50	155	194	285	450	285	575	640	1,910	780	36	5
5	50	155	236	285	391	236	575	710	1,880	780	36	5
6	50	155	236	285	335	236	710	860	1,880	710	36	5
7	69	155	236	236	335	236	640	860	1,880	710	36	5
8	69	155	236	236	335	194	575	860	2,030	575	27	5
9	93	155	194	236	391	194	575	940	2,030	512	27	5
10	93	155	155	236	710	194	640	1,020	2,150	512	27	5
11	122	150	194	236	512	194	575	1,580	2,660	455	27	5
12	122	150	194	285	450	194	640	1,690	3,100	512	27	5
13	122	150	194	236	391	194	710	1,470	1,470	512	16	5
14	122	150	194	335	285	236	780	1,370	1,370	450	13	5
15	122	150	194	335	285	285	780	1,270	1,370	391	10	5
16	122	150	194	285	335	335	710	1,370	1,270	335	7	5
17	122	150	194	236	450	391	710	1,470	1,270	335	7	5
18	122	150	194	236	710	391	710	1,580	1,100	285	7	5
19	122	150	235	236	512	450	860	1,370	1,100	236	7	5
20	122	150	335	236	391	391	1,020	1,180	1,100	194	5	5
21	122	150	450	236	391	391	1,100	1,020	1,020	122	5	10
22	155	150	450	236	391	450	1,020	940	1,020	122	5	16
23	155	150	710	194	391	450	940	940	1,020	122	7	16
24	155	150	860	194	391	512	940	1,020	1,020	93	5	16
25	155	194	860	236	391	575	860	1,020	940	122	5	16
26	155	194	710	236	335	575	940	940	940	122	5	21
27	155	194	640	236	335	575	870	860	780	93	5	21
28	155	194	391	236	335	512	870	1,020	780	122	4	21
29	155	194	285	236	.....	512	780	1,580	710	69	4	27
30	155	194	285	285	.....	512	860	1,910	710	50	4	27
31	155	.....	285	285	.....	512	.....	2,030	.....	50	4	.....

Monthly discharge of Carson River near Empire, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
October	155	50	113	6,950
November	194	150	162	9,649
December	860	155	324	19,900
January	335	194	255	15,700
February	710	285	407	22,600
March	575	194	362	22,300
April	1,100	391	738	43,900
May	2,030	640	1,160	71,300
June	3,100	710	1,510	89,899
July	780	50	373	22,900
August	50	4	17.9	1,100
September	27	5	9.70	577
The year	3,100	4	451	327,000

MARKLEEVILLE CREEK[1] ABOVE MARKLEEVILLE, CAL.

LOCATION.—At highway bridge above mouth of Pleasant Valley Creek, three-fourths of a mile above Markleeville, Alpine County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—November 7, 1911, to September 30, 1915 (fragmentary).

GAGE.—Vertical staff in two sections on left abutment of bridge; read by W. J. Clark; datum of gage was raised 5.71 feet, August 18, 1914.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and small boulders; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.5 feet at 7 p. m., May 28 (discharge, 540 second-feet); minimum stage, 0.80 foot at 6.30 p. m., September 21 (discharge, 0.5 second-foot).

1911–1915: Maximum stage recorded, 3.5 feet at 7 p. m., May 28, 1915 (discharge, 540 second-feet); minimum stage, 0.80 foot September 22, 1914, September 21, 1915 (discharge, 0.5 second-foot).

WINTER FLOW.—Stage-discharge relation occasionally affected by ice.

DIVERSIONS.—Town ditch, which heads above gage, furnishes water for irrigation and domestic supply at Markleeville. A small ditch also diverts water for irrigation on Hot Springs ranch.

REGULATION.—Not known.

ACCURACY.—Records good when gage is read.

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

Discharge measurements of Markleeville Creek above Markleeville, Cal., during the year ending Sept. 30, 1915.

[Made by H. J. Tompkins.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Dec. 2	1.10	3.4	Aug. 6	0.95	2.1
Mar. 24	1.86	49			

[1] Locally known as Hot Springs Creek.

Daily discharge, in second-feet, of Markleeville Creek above Markleeville, Cal., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	1.2						345			
2			3.5			86	275			
3							245			
4	1.2						245			
5	1.2	1.2					215			
6	1.2					54			1.2	
7							245			0.8
8					54					
9					60					1.0
10	1.2				68		245			.8
11									1.2	.9
12	1.2				115		185			
13	1.2	2.5			76				1.2	
14	1.2				60	135				.8
15					68	135	160		1.2	.8
16	1.2				86		185			
17	1.5				115					
18	1.5	3.5				160		14		
19					185			14		
20	2.5							16		
21	1.5				135		148	14		.5
22	1.5					115		16		
23	1.5							14		
24	1.5			55	105		115			
25										
26					95		91	9		
27					105		95	7.2		
28	1.5					540	76			
29	2.5				115					
30						275				1.0
31						310				

NOTE.—Discharge determined from a fairly well defined rating curve. Ice reported present Nov. 23-30; Dec. 13 water flowing over top of ice; gage height, 1.35 feet; discharge not determined.

MARKLEEVILLE CREEK AT MARKLEEVILLE, CAL.

LOCATION.—In the SE. ¼ sec. 21, T. 10 N., R. 20 E., at highway bridge at Markleeville, Alpine County, three-fourths mile below junction with Pleasant Valley Creek.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—November 11, 1910, to September 30, 1915 (fragmentary).

GAGE.—Vertical staff on left abutment of highway bridge near downstream end; read by W. J. Clark.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; somewhat shifting during high water. Banks high and not subject to overflow. Point of zero flow, about gage height 1.0 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.2 feet at 10.15 a. m. June 1 (discharge, 700 second-feet); minimum stage, 0.80 foot at 9.15 a. m. September 22 and 23 (discharge, 4 second-feet).

1910–1915: Maximum stage recorded, 5.3 feet June 15, 1912 (discharge, 915 second-feet); minimum stage, 0.70 foot September 20, 1913 (discharge, 3 second-feet). Flood of March, 1907, reached stage about 9 feet.

WINTER FLOW. Stage-discharge relation affected by ice.

DIVERSIONS.—See Markleeville Creek near Markleeville. Water is also diverted from Pleasant Valley Creek for irrigation.

REGULATION.—Diversions partly regulate flow. Some storage has been developed on Pleasant Valley Creek.

ACCURACY.—Records considered good when gage is read.

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

Discharge measurements of Markleeville Creek at Markleeville, Cal., during the year ending Sept. 30, 1915.

[Made by H. J. Tompkins.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Dec. 2	a 1.12	11	Aug. 6	1.06	7.8
Mar. 24	2.31	108			

a Some ice on control. Stage-discharge relation not affected.

Daily discharge, in second-feet, of Markleeville Creek at Markleeville, Cal., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	10					700			
2					150		190		
3						507	150	14	
4						507			
5	24	9					125		
6	21	11			110			8.2	
7						507		9	
8				89				6	
9				108					4.5
10				117	464	507		7	4.5
11					387	352			4.5
12	11	10		190		352			
13	11	10		160					4.5
14	24			125					4.8
15				125	263			21	4.5
16	16	10		170		320		24	
17	12			212	387	352			
18							46		
19	10			320					
20	12						38		
21	11			290					
22	8				263	600			4
23	11			212	263	250			4
24	10		104		464	201	46		7
25									
26				190	387	170	38		7
27				190			34		
28	10					160			
29	8			224		150			4.5
30	10				600	150			4
31	9								

NOTE.—Discharge determined from a fairly well defined rating curve. Ice reported present Nov. 18 to Dec. 31; data insufficient for determinations of discharge.

WEST FORK OF CARSON RIVER AT WOODFORDS, CAL.

LOCATION.—In the SE. ¼ sec. 34, T. 11 N., R. 19 E., above highway bridge at Woodfords, Alpine County.

DRAINAGE AREA.—70 square miles.

RECORDS AVAILABLE.—April, 1890, to March, 1892; October 18, 1900, to September 30, 1915.

GAGE.—Vertical staff in two sections on left bank just above highway bridge; read by an employee of United States Reclamation Service; vertical staff on right bank, at approximately same site but different datum, November 11, 1913, to August 21, 1914; vertical staff on left bank 20 feet downstream, June 8, 1907, to November 10, 1913, except for certain periods in 1910 and 1911, when gage at cable was read; vertical staff on left bank at cable half a mile above highway bridge, October 18, 1900, to May 18, 1907; original gage near present site used April, 1890, to March, 1892.

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

CHANNEL AND CONTROL.—Bed composed of fine gravel and boulders; section rough and fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.0 feet May 11, June 6 and 7 (discharge, 672 second-feet); minimum stage, 0.8 foot July 30, 31, August 8, 9, 12–15, 29, September 6–12 and 21–26 (discharge, 8 second-feet).

1900–1915: Maximum stage recorded, 6.8 feet, May 9 and 10, 1906 (discharge, 1,570 second-feet); minimum stage, 0.8 foot (see above).

WINTER FLOW.—Stage-discharge relation only slightly affected by ice.

DIVERSIONS.—Three irrigation ditches head between cable and gage. Their discharges are not included in record.

REGULATION.—Flow partially regulated by diversions.

ACCURACY.—Records fair.

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

Discharge measurements of West Fork of Carson River at Woodfords, Cal., during the year ending Sept. 30, 1915.

[Made by H. J. Tompkins.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Dec. 3	1.30	29	Aug. 7	1.50	44
Mar. 25	1.62	53			

Daily discharge, in second-feet, of West Fork of Carson River at Woodfords, Cal., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	23	44	29	32	36	32	92	209	602	209	14	18
2	23	a40	29	32	36	32	92	233	602	209	a14	18
3	23	36	29	32	36	32	100	209	a620	209	14	18
4	a23	36	29	a34	a34	32	92	233	637	209	18	18
5	a23	a36	29	36	32	29	92	233	a654	186	a16	18
6	a23	36	29	36	32	29	100	258	672	186	14	8
7	23	36	29	40	29	32	125	a285	672	186	44	8
8	23	a36	29	44	36	32	125	312	637	186	8	8
9	23	36	a29	a40	40	a34	108	467	a620	a175	8	8
10	23	36	a29	36	32	36	125	534	602	164	a8	8
11	a21	36	29	40	32	32	144	672	534	164	a8	8
12	a20	36	29	36	32	36	154	602	467	77	8	8
13	18	a36	29	48	29	36	175	534	a450	a72	8	18
14	18	a36	29	36	29	36	186	500	434	a67	8	18
15	a16	36	29	32	29	32	233	568	a402	a63	8	18
16	14	36	29	32	36	36	284	602	371	a58	18	18
17	18	a36	29	32	48	36	341	602	371	53	18	18
18	23	36	29	a30	36	40	402	602	341	53	18	18
19	23	36	29	29	32	44	341	602	a332	53	18	18
20	a25	36	29	32	26	48	341	a579	a322	36	18	18
21	a27	36	32	32	29	53	312	a557	312	a30	18	8
22	29	36	32	32	29	53	312	534	284	23	18	8
23	29	36	29	a30	26	58	312	467	258	18	11	8
24	36	36	29	29	a29	64	312	467	a246	a16	11	8
25	36	36	29	26	32	64	326	467	233	14	11	8
26	a39	36	32	29	32	70	312	534	209	11	11	8
27	a41	36	32	29	32	77	312	a534	a209	a10	11	14
28	44	36	36	32	32	92	284	534	209	a10	11	14
29	44	29	32	29	.....	108	246	568	209	a9	8	14
30	44	29	32	32	.....	100	246	568	209	8	18	14
31	44	.....	32	40	.....	100	.....	602	.....	8	18	.....

a Interpolated.

NOTE.—Discharge determined from a fairly well defined rating curve. Ditches diverting water above gage July 12, Aug. 8–15, 23–29, Sept. 6–12 and 21–26.

Monthly discharge of West Fork of Carson River at Woodfords, Cal., for the year ending Sept. 30, 1915.

[Drainage area, 70 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
October	44	14	27.1	0.387	0.45	1,670	C.
November	44	29	35.9	.513	.57	2,140	C.
December	36	29	29.9	.427	.49	1,840	C.
January	48	26	33.8	.483	.56	2,080	C.
February	48	26	32.6	.466	.49	1,816	C.
March	108	29	49.5	.707	.82	3,040	B.
April	402	92	221	3.16	3.53	13,200	B.
May	672	209	473	6.76	7.79	29,100	C.
June	672	209	424	6.06	6.76	25,200	C.
July	209	8	89.4	1.28	1.48	5,500	C.
August	44	8	14.0	.200	.23	861	D.
September	18	8	13.1	.187	.21	780	D.
The year	672	8	120	1.71	23.38	87,200	

HUMBOLDT RIVER BASIN.

HUMBOLDT RIVER AT PALISADE, NEV.

LOCATION.—In sec. 36, T. 32 N., R 51 E., at highway bridge at Palisade, Eureka County, 100 feet below Southern Pacific Railroad bridge and about a mile above mouth of Pine Creek.

DRAINAGE AREA.—5,010 square miles.

RECORDS AVAILABLE.—November 27, 1902, to October 19, 1906; July 26, 1911, to September 30, 1915.

GAGE.—Chain gage at highway bridge December 1, 1911, to September 30, 1915; read once daily by Albina Siri; datum same as that of inclined staff on left bank near Southern Pacific Railroad bridge, read from July 26 to November 30, 1911. Original gage was a vertical staff on right abutment of the highway bridge which was destroyed by high water in 1910. No determined relation between the original and present datum.

DISCHARGE MEASUREMENTS.—Made from cable about one-eighth mile above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; control fairly permanent; one channel at all stages. Point of zero flow, about gage height 0.4 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.0 feet at 2.15 p. m. June 12 (discharge, 382 second-feet); minimum stage, 0.96 foot August 28 to September 1 (discharge, 12 second-feet).

1903–1906; 1911–1915; Maximum stage recorded, 7.5 feet January 25, 1914 (discharge, 2,780 second-feet); minimum stage, 0.96 foot August 28 to September 1, 1915 (discharge, 12 second-feet).

WINTER FLOW.—Stage-discharge relation slightly affected by ice.

DIVERSIONS.—Some water diverted for irrigation in valley above canyon.

REGULATION.—Flow affected by irrigation diversions above.

ACCURACY.—Records good.

Discharge measurements of Humboldt River at Palisade, Nev., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 7	L. W. Jordan	1.90	85	May 11[a]	A. B. Purton	2.08	128
Dec. 11	do	2.15	113	July 15	do	1.48	53
Feb. 13	do	2.30	149	Aug. 19	do	1.02	15.1
May 11	A. B. Purton	2.09	136	19	do	1.02	14.8

[a] Measured about half a mile below gage.

Daily discharge, in second-feet, of Humboldt River at Palisade, Nev., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	62	149	114	72	283	343	136	176	119	28	12
2	73	149	114	72	254	343	136	224	119	27	14
3	73	149	114	73	254	343	136	346	119	26	14
4	73	149	114	73	257	343	136	346	104	24	13
5	86	149	114	73	257	346	136	312	90	23	13
6	86	149	114	73	257	346	155	312	90	21	13
7	93	149	113	73	257	312	176	346	90	20	13
8	100	149	112	73	260	312	155	346	77	19	14
9	114	149	110	86	260	312	155	346	77	19	14
10	114	149	108	86	260	280	136	346	77	19	14
11	114	149	106	86	260	280	136	346	77	18	14
12	114	149	102	86	263	251	119	382	77	18	14
13	114	149	98	149	263	251	119	346	77	18	14
14	114	149	94	149	263	251	119	312	65	18	14
15	114	149	90	149	263	224	104	312	52	16	14
16	114	131	85	172	266	224	104	280	48	16	15
17	114	131	.....	172	266	224	119	280	44	15	15
18	114	114	.....	219	266	224	155	280	41	15	15
19	114	100	.....	219	266	199	176	251	39	15	15
20	131	100	.....	222	268	199	199	224	38	15	15
21	131	86	.....	248	268	176	224	199	40	14	13
22	131	100	.....	248	268	176	224	176	44	14	13
23	131	100	.....	248	268	176	251	176	46	13	13
24	131	100	.....	251	302	155	251	155	40	13	12
25	131	114	.....	280	302	155	224	155	37	13	15
26	131	114	.....	280	302	155	199	155	33	13	19
27	149	131	.....	280	302	155	199	136	32	13	18
28	149	131	.....	283	306	136	199	136	32	12	44
29	149	131	.....	.....	339	136	176	119	29	12	48
30	149	114	.....	.....	339	136	176	119	29	12	48
31	149	.....	.....	.....	339	.....	176	.....	29	12	.....

NOTE.—Discharge determined as follows: Oct. 1 to Feb. 15 from a rating curve well defined between 50 and 200 second-feet; Feb. 16 to Apr. 4 by indirect method for shifting control; Apr. 5 to Sept. 30 from a rating curve well defined between zero and 400 second-feet. Discharge estimated, because of ice, from observer's notes, one discharge measurement, and climatic records, Dec. 7–16 as in table; Dec. 17–31, 80 second-feet; Jan. 1–31, 75 second-feet.

Monthly discharge of Humboldt River at Palisade, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	149	62	115	7,070	B.
November	149	86	131	7,800	B.
December	114	.....	93.6	5,760	C.
January	.....	.....	75.0	4,610	D.
February	283	72	161	8,940	C.
March	339	254	277	17,000	B.
April	346	136	239	14,200	B.
May	251	104	165	10,100	B.
June	382	119	255	15,200	B.
July	119	29	61.6	3,790	B.
August	28	12	17.1	1,050	B.
September	48	12	17.4	1,040	B.
The year	382	12	133	96,600	

HUMBOLDT RIVER NEAR GOLCONDA, NEV.

LOCATION.—In sec. 21, T. 36 N., R. 40 E., at highway bridge about 1¼ miles northwest of Golconda, Humboldt County, and 12 miles above mouth of Little Humboldt River.

DRAINAGE AREA.—10,800 square miles.

RECORDS AVAILABLE.—October 24, 1894, to December 31, 1909; September 8, 1910, to September 30, 1915.

GAGE.—Chain gage on downstream side of bridge near right bank, installed November 5, 1910; read once daily by Florence Bernard. Several gages at various datums and at various sites used prior to this date.

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

CHANNEL AND CONTROL.—Bed composed of loose sand; control shifts occasionally. One channel at all stages. Point of zero flow about gage height 1.7 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.9 feet at 12.30 p. m. April 6 (discharge, 352 second-feet); minimum stage, 1.75 feet September 11–26 (discharge, 0.2 second-foot).

1900–1915: Maximum stage recorded, 16.6 feet April 3, 5, 6, 8, 10, 13, 15, 17, 20, 22, 24, 27, 29, and May 1, 1907 (discharge, 3,160 second-feet); minimum stage, 2.7 feet January 2, 4, 6, 9, 10, 11, and 17, 1906 (discharge, zero).

WINTER FLOW.—Stage-discharge relation slightly affected by ice.

DIVERSIONS.—Considerable water is diverted above station.

REGULATION.—Low-water flow regulated by following diversion dams, which provide practically no storage: Bernards dam, rock and brush, half a mile above gage; Anderson's dam, rock, and brush, 1¼ miles above; Taylor and Sheehan dam, concrete spillway with flashboards, small power plant with develops power for pumping into high-line canal; Pinson's dam, rock and brush, about 5 miles above gage.

ACCURACY.—Records fair. Owing to regulation by irrigation diversions, one gage reading a day probably does not give accurate determinations.

Discharge measurements of Humboldt River near Golconda, Nev., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height	Discharge.
		Feet.	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 6	L. W. Jordan	2.67	21.8	May 14	A. B. Purton	3.13	43.3
Dec. 10	do	3.96	105	July 2	L. W. Jordan	2.01	1.8
Feb. 12	do	4.15	110	15	A. B. Purton	1.96	1.3
May 14	A. B. Purton	3.14	43.6				

Daily discharge, in second-feet, of Humboldt River near Golconda, Nev., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	19	62	76	87	87	161	161	53	31	1.0	0.7	0.4
2	19	56	76	87	87	161	184	53	31	2.0	.7	.4
3	19	53	80	91	87	161	210	53	9	2.0	.7	.4
4	19	56	80	91	84	161	253	47	9	2.0	.7	.4
5	19	56	84	91	91	161	299	59	9	2.0	.7	.4
6	21	59	84	91	91	161	352	59	9	2.0	.7	.4
7	21	59	84	91	95	172	299	53	9	2.0	.7	.4
8	23	66	87	91	95	172	238	53	6	1.5	.4	.4
9	23	66	95	91	95	172	253	53	6	1.5	.4	.4
10	23	73	99	91	95	172	253	41	6	1.5	.4	.4
11	23	80	95	91	103	172	283	41	6	1.4	.4	.2
12	23	84	87	91	112	172	283	41	4	1.4	.4	.2
13	21	87	87	91	103	172	268	41	4	1.3	.4	.2
14	21	87	.....	91	121	161	253	44	4	1.3	.4	.2
15	21	80	.....	91	121	140	150	53	4	1.3	.4	.2
16	21	66	.....	91	130	130	112	53	2	1.0	.4	.2
17	21	66	.....	95	140	112	112	47	2	1.0	.4	.2
18	20	47	.....	99	150	130	140	41	2	1.0	.4	.2
19	20	36	.....	95	150	150	184	41	2	1.0	.4	.2
20	23	27	.....	95	150	150	184	41	2	1.0	.4	.2
21	27	27	.....	95	150	150	184	36	2	1.0	.4	.2
22	29	36	.....	99	140	156	172	36	2	1.0	.4	.2
23	31	53	.....	99	140	161	172	36	2	1.0	.4	.2
24	34	59	.....	99	140	161	172	36	2	1.0	.4	.2
25	238	59	.....	99	150	161	140	36	2	.7	.4	.2
26	150	66	.....	95	161	150	53	36	2	.7	.4	.2
27	103	66	.....	95	161	140	53	36	2	.7	.4	.4
28	59	73	91	95	161	140	53	36	2	.7	.4	.4
29	59	73	87	95	.....	150	53	36	1	.7	.4	.4
30	59	73	87	95	.....	150	53	31	1	.7	.4	.4
31	62	.....	87	87	.....	161	.....	31	.....	.7	.4	.....

NOTE.—Discharge determined from a rating curve well defined from zero to 200 second-feet, and fairly well defined from 200 to 400 second-feet. Flow estimated, on account of ice, from observer's notes and climatic records Dec. 14 to 27, 85 second-feet.

Monthly discharge of Humboldt River near Golconda, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	238	19	41.0	2,520	B.
November	87	27	61.7	3,670	B.
December	99	76	85.7	5,270	C.
January	99	87	93.1	5,720	C.
February	161	84	121	6,720	B.
March	172	112	156	9,590	B.
April	352	53	186	11,100	B.
May	59	31	43.6	2,680	B.
June	31	1	5.83	347	C.
July	2.0	.7	1.23	76	D.
August	.7	.4	.47	29	D.
September	.4	.2	.29	17	D.
The year	352	.2	65.9	47,700	

HUMBOLDT RIVER NEAR OREANA, NEV.

LOCATION.—In sec. 35, T. 29 N., R. 32 E., about 2 miles above highway bridge near J. J. McCarthy's ranch and 2 miles southwest of Oreana (railroad station called Nenzel), Humboldt County.

DRAINAGE AREA.—13,800 square miles (measured on map issued by General Land Office).

RECORDS AVAILABLE.—January 27, 1896, to December 31, 1909; September 7, 1910, to September 30, 1915.

GAGE.—Friez water-stage recorder on right bank February 24 to August 22, 1914, and October 4, 1914, to September 30, 1915; original gage, vertical staff, nailed to right abutment of old highway bridge, was installed January 27, 1896, and washed out May 26, 1897. A temporary gage was used until September 7, 1897; September 8 a new inclined staff gage was installed on left bank about 1½ miles above old bridge and opposite the railroad section house. This gage washed out in 1902. A vertical staff gage fastened to piling of old Lovelock Valley dam, at the same datum and presumably at the same site as the inclined gage, was read from November 29, 1902, until December 31, 1909, when station was discontinued. The datum was lowered 2.0 feet October 1, 1904. Station was reestablished September 7, 1910, a temporary gage, at a new datum, 150 feet above bridge, being used until November 9, 1910; then a permanent vertical staff gage was installed at the highway bridge, which was read Navember 9, 1910, to February 23, 1914, and August 23 to October 3, 1914.

DISCHARGE MEASUREMENTS.—Made from cable 20 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of sand; principal control not well defined, but is probably about half a mile below gage, where bed is composed of firm clay; fairly permanent; low-water control is about 50 feet below gage. Point of zero flow about at gage height 0.3 foot. Right bank high and moderately clean; left bank not likely to overflow, but subject to caving.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.65 feet at 3.20 p. m. May 1 (discharge, 322 second-feet); minimum stage (river dry in August and September).

1896–1915: Maximum stage recorded, 12.0 feet May 12, 1897 (discharge, 3,050 second-feet); minimum stage (river dry in June and July, 1905, and in August and September, 1915).

WINTER FLOW.—Stage-discharge relation seriously affected by ice; discharge estimated from measurements, observer's notes, and climatic records.

DIVERSIONS.—Station is above all diversions for the Lovelock district, but considerable water is diverted above the station for direct irrigation and storage.

REGULATION.—Flow is affected by water stored and released by the Humboldt-Lovelocks Irrigation, Light & Power Co., at its reservoirs a few miles up the river near Humboldt.

ACCURACY.—Records good except during winter.

Discharge measurements of Humboldt River near Oreana, Nev., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 5	L. W. Jordan	0.92	31.5	May 14	L. H. Taylor	1.41	80
Dec. 7	do	.88	25.3	15	A. B. Purton	1.39	84
Feb. 10	do	[a] 1.56	75	23	L. H. Taylor	1.56	104
Apr. 11	L. H. Taylor[b]	1.43	75	June 15	L. W. Jordan	1.80	143
14	do	[c] 2.02	200	July 15	A. B. Purton	.94	20
26	L. W. Jordan	2.28	244	16	do	.94	20.4
27	L. H. Taylor	2.27	[c]226				

[a] Stage-discharge relation affected by ice.
[b] Humboldt-Lovelocks Irrigation, Light & Power Co. engineer.
[c] Read on recorder sheet.

Daily discharge, in second feet, of Humboldt River near Oreana, Nev., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	38	60	57	.....	189	202	318	114	95	1.4	.....
2	38	58	44	.....	228	200	256	127	106	1.3	.....
3	32	54	59	.....	252	163	216	125	105	1.0	.....
4	32	43	44	.....	216	140	194	122	105	.8	.....
5	30	37	34	.....	200	122	167	120	108	.6	.....
6	28	35	31	.....	200	102	133	124	122	.4	.....
7	27	40	28	.....	210	92	116	120	124	.1	.....
8	27	47	.....	.....	214	88	102	119	108	.1	.....
9	26	46	.....	.....	214	82	105	124	105	.1	.....
10	25	46	.....	75	212	85	100	144	100	.....	.....
11	24	46	.....	.....	212	80	96	141	91	.....	.....
12	24	47	.....	.....	214	135	98	144	75	.....	.....
13	23	48	46	.....	210	179	105	144	66	.....	.....
14	22	48	31	.....	214	185	95	144	38	.....	.....
15	22	47	.....	143	212	177	88	146	25	.....	.....
16	21	49	.....	154	212	187	88	146	20	.....	.....
17	20	49	.....	161	194	206	100	146	16	.....	.....
18	20	46	.....	160	200	200	105	140	14	.....	.....
19	19	46	.....	154	196	200	102	122	12	.....	.....
20	19	76	.....	161	163	200	102	95	9.0	.....	.....
21	19	58	.....	168	156	245	110	82	7.6	.....	.....
22	19	59	.....	172	167	245	110	89	6.0	.....	.....
23	20	68	.....	174	174	245	110	81	5.2	.....	.....
24	20	78	.....	179	174	245	111	82	4.0	.....	.....
25	19	91	.....	181	172	254	119	84	3.4	.....	.....
26	22	81	.....	176	170	241	111	82	3.0	.....	.....
27	31	68	.....	174	177	239	124	80	2.6	.....	.....
28	32	51	.....	176	189	245	141	80	2.0	.....	.....
29	32	35	.....	.....	185	270	135	89	1.9	.....	1.3
30	37	60	.....	.....	190	300	120	86	1.7	.....	1.5
31	61	.....	.....	.....	200	.....	114	.....	1.6	.....	.....

NOTE.—Discharge determined as follows: Oct. 1–3 from poorly defined rating curve, for old gage at highway bridge; Oct. 4 to July 7 from a rating curve well defined between 10 and 300 second-feet; July 8–15 by indirect method for shifting control; July 16 to Sept. 30 from a rating curve fairly well defined below 30 second-feet. Apr. 18–23, recording gage stopped, discharge interpolated; Aug. 10 to Sept. 28 river dry. Discharge estimated, because of ice, from observer's notes, discharge measurements, and climatic records, Dec. 8–12, 37 second-feet; Dec. 15 to Jan. 31, 30 second-feet; Feb. 1–9, 65 second-feet; Feb. 11–14, 100 second-feet.

Monthly discharge of Humboldt River near Oreana, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	61	19	26.7	1,640	A.
November	91	35	53.9	3,210	A.
December			34.5	2,120	D.
January			30.0	1,840	
February	181		121	6,720	B.
March	252	156	197	12,100	B.
April	300	80	185	11,000	B.
May	318	88	129	7,930	A.
June	146	80	115	6,840	A.
July	124	1.6	47.8	2,940	B.
August	1.4	0	.19	12	
September	1.5	0	.09	5	
The year	318	0	77.9	56,400	

HUMBOLDT RIVER NEAR LOVELOCKS, NEV.

LOCATION.—In the NW ¼ sec. 11, T. 25 N., R. 31 E., about 1,500 feet below dam and reservoir on Big 5 ranch, the lowest diversion for irrigation on Humboldt River, and 9 miles south of Lovelocks, Humboldt County.

DRAINAGE AREA.—14,200 square miles.

RECORDS AVAILABLE.—February 7, 1912, to September 30, 1915.

GAGE.—Lietz water-stage recorder on left bank, on the opposite side of the river and a few feet down stream from inclined gage to which it is referred. Original inclined staff gage on right bank was read February 7 to June 17, 1912, when Lietz gage was installed a few feet below it; Lietz gage washed out June 18, 1914, and was replaced on left bank June 26, 1914.

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

CHANNEL AND CONTROL.—Bed composed of firm clay, control fairly permanent. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.34 feet at 4.45 p. m. March 5 (discharge, 270 second-feet); minimum stage, zero in June, July, August, and September (discharge, estimated 0.05 second-foot).

1912–1915: Maximum stage recorded, 5.15 feet May 4, 1914 (discharge, 1,450 second-feet); minimum stage (channel dry during April, May, and June, 1913).

WINTER FLOW.—Slightly affected by ice.

DIVERSION.—Below all irrigation diversions.

REGULATION.—Flow affected by irrigation diversions and storage.

ACCURACY.—Records fair.

Discharge measurements of Humboldt River near Lovelocks, Nev., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Dec. 6	L. W. Jordan	0.31	18.5	May 15	A. B. Purton	0.02	0.1
Feb. 9	do	.60	80.4				

Daily discharge, in second-feet, of Humboldt River near Lovelocks, Nev., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.
1	13	10	85	.....	56	175	1	0.5	0.1
2	14	12	16	.....	47	180	1	.5	.1
3	14	19	14	.....	62	190	1	.....	1
4	14	21	16	.....	65	241	1	.....	.05
5	14	19	23	.....	78	238	1	.....	.....
6	15	21	23	.....	92	198	1	.....	.....
7	15	20	45	.....	88	183	1	.....	.....
8	17	16	27	.....	84	180	1	.....	.....
9	16	10	33	.....	80	180	1	.....	.....
10	16	17	19	.....	99	180	1	.....	.....
11	20	22	15	.....	85	180	1	.....	.....
12	16	20	.....	.....	82	180	1	.....	.....
13	19	8	.....	.....	80	180	1	.....	.....
14	21	5	.....	.....	104	180	1	.....	.....
15	20	5	.....	.....	116	175	1	.1	.....
16	19	5	.....	.....	93	180	1	.1	.....
17	16	5	.....	.....	99	177	1	.1	.....
18	14	5	.....	.....	134	230	1	.1	.....
19	13	5	.....	.....	136	105	1	.1	.....
20	12	5	.....	.....	134	68	1	.1	.....
21	14	6	.....	.....	142	99	.5	.1	.....
22	15	5	.....	.....	149	99	.5	.1	.....
23	15	5	.....	20	175	87	.5	.1	.....
24	14	5	.....	.....	175	45	.5	.1	.....
25	14	5	.....	.....	190	47	.5	.1	.....
26	14	5	.....	.....	180	37	.5	.1	.....
27	17	4	.....	.....	171	34	.5	.1	.....
28	12	4	.....	.....	162	21	.5	.1	.....
29	9	17	.....	.....	.....	9	.5	.3	.....
30	10	75	.....	60	.....	10	.5	.3	.....
31	10	.....	.....	60	.....	3	.....	.2	.....

NOTE.—Discharge determined as follows: Oct. 1 to Dec. 11 from a rating curve well defined between zero and 1,200 second-feet; Jan. 30 to Sept. 30 from a rating curve fairly well defined between zero and 250 second-feet; Nov. 29, 30, Dec. 1, 7, Feb. 16, Mar. 19, 20, 23, and 23, by averaging hourly discharge; Feb. 5, 7, 8, 26, 27, and Mar. 9–13 by interpolating discharge; May 3–14, estimated 0.3 second-foot; June 5 to Sept. 30, estimated 0.05 second-foot. Discharge estimated, because of ice, from observer's notes, Dec. 12 to Jan. 22, 20 second-feet; Jan. 24–29, 30 second-feet.

Monthly discharge of Humboldt River near Lovelocks, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	21	9	14.9	916	C.
November	75	4	12.7	756	C.
December	85	.....	23.1	1,420	
January	60	.....	24.5	1,510	
February	190	47	113	6,280	B.
March	241	3	132	8,120	B.
April	1	0.5	8.33	50	D.
May	0.5	0.1	.22	14	
June	0.1	0.05	.05	3	
July	.....	.....	[a] .05	3	
August	.....	.....	[a] .05	3	
September	.....	.....	[a] .05	3	
The year	241		26.3	19,100	

[a] Estimated.

MARYS RIVER NEAR DEETH, NEV.

LOCATION.—In the NW. ¼ sec. 31, T. 40 N., R. 60 E., at bridge 300 feet east of Malo Vista ranch house of Nevada Land & Livestock Co., and about 20 miles north of Deeth, Elko County.

DRAINAGE AREA.—355 square miles (measured on map of Nevada issued by General Land Office, 1908 edition).

RECORDS AVAILABLE.—November 24, 1902, to July 14, 1903; January 17, 1912, to September 30, 1915.

GAGE.—Chain gage on upstream side of bridge; read once daily by Jess Larson. Original staff gage at same bridge, but with different datum, read November 24, 1902, to July 14, 1903.

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

CHANNEL AND CONTROL.—Bed composed of gravel and loose sand, banks below gage subject to caving; control slightly shifting. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.7 feet at 4 p. m., March 30 (discharge, 94 second-feet); minimum stage, 2.1 feet August 12 to September 30 (discharge, 1.5 second-feet).

1902–3, 1912–1915: Maximum stage recorded, 6.3 feet May 19 and June 3–7, 1912 (discharge, 439 second-feet); minimum stage, 2.1 feet August 12 to September 30, 1915 (discharge, 1.5 second-feet).

WINTER FLOW.—Stage-discharge relation affected by ice.

DIVERSIONS.—Station is below all diversions except one small canal on the Malo Vista ranch and the Cross ranch diversions about 14 miles below.

REGULATION. During low-water periods flow is affected by diversion dams above.

ACCURACY.—Records fair.

Discharge measurements of Marys River near Deeth, Nev., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 9	L. W. Jordan	2.79	13.7	Apr. 10	A. B. Purton	3.32	58
Dec. 2[a]	do	2.70	14.5	June 25	do	2.48	10.6
Feb. 3[b]	do	2.60	14.1	Aug. 18	do	2.11	1.5

[a] Complete ice cover below gage.
[b] Overhanging ice—effect probably slight.

Daily discharge, in second-feet, of Marys River near Deeth, Nev., for the year ending Sept. 30, 1915.

Day	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	.....	15	75	58	43	19	5	1.5
2	.....	15	66	58	50	19	5	1.5
3	.....	30	66	36	36	19	3	1.5
4	.....	30	84	30	30	19	3	1.5
5	.....	19	84	30	30	19	3	1.5
6	.....	19	75	19	30	19	3	1.5
7	.....	19	84	19	30	19	3	1.5
8	.....	19	75	15	24	19	3	1.5
9	.....	15	66	15	30	15	3	1.5
10	.....	19	59	15	30	11	3	1.5
11	.....	15	50	15	30	11	3	1.5
12	.....	11	50	15	30	15	1.5	1.5
13	.....	15	50	15	30	15	1.5	1.5
14	.....	15	58	15	24	11	1.5	1.5
15	.....	19	58	19	22	11	1.5	1.5
16	.....	24	58	19	19	11	1.5	1.5
17	15	24	50	19	11	11	1.5	1.5
18	15	24	58	24	8	11	1.5	1.5
19	19	36	58	24	8	11	1.5	1.5
20	19	36	58	36	5	11	1.5	1.5
21	19	36	58	43	8	8	1.5	1.5
22	15	43	84	50	8	8	1.5	1.5
23	15	58	66	58	5	8	1.5	1.5
24	19	75	58	58	8	8	1.5	1.5
25	19	75	58	58	8	8	1.5	1.5
26	19	84	50	50	5	8	1.5	1.5
27	19	84	50	50	11	8	1.5	1.5
28	11	84	43	36	19	8	1.5	1.5
29	.....	84	43	36	19	8	1.5	1.5
30	.....	94	43	36	19	8	1.5	1.5
31	.....	84	.....	36	.....	8	1.5	.....

NOTE.—Discharge determined as follows: Feb. 17 to Sept. 30, from a rating curve well defined between zero and 100 second-feet; estimated from current-meter measurements, Oct. 1 to Nov. 24, 14, second-feet. Estimated because of ice, from observer's note and discharge measurements as follows: Nov. 25–30, 8 second-feet; Dec. 1 to Jan. 31, 6 second-feet; Feb. 1–16, 13 second-feet.

Monthly discharge of Marys River near Deeth, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	.....	.....	[a] 14.0	861	B.
November	.....	.....	[a] 12.8	762	C.
December	.....	.....	[a] 6.0	369	D
January	.....	.....	[a] 6.0	369	D.
February	42	.....	14.7	816	C.
March	94	11	39.4	2,420	B.
April	84	43	61.2	3,640	B.
May	58	15	32.5	2,000	B.
June	50	5	21.0	1,250	B.
July	19	8	12.4	762	B.
August	5	1.5	2.16	133	C.
September	1.5	1.5	1.50	89	C.
The year	94	1.5	18.6	13,500	

[a] Estimated.

STARR CREEK NEAR DEETH, NEV.

LOCATION.—In NE. ¼ sec. 12, T. 36 N., R. 59 E., at highway bridge 2 miles above mouth and about 3 miles southeast of Deeth, Elko County; below all large tributaries except Boulder Creek.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—June 4, 1913, to September 30, 1915.

GAGE.—Vertical staff nailed to upstream pile of bridge bent near right bank; read once daily by G. E. Weathers.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of small gravel. Control is gravel bar; shifts occasionally. Gage height of zero flow, about 2.0 feet. One channel, except at extremely high stages, when part of the flow passes under an auxiliary bridge.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.55 feet at 9.20 a. m. June 1 (discharge, 62 second-feet); minimum stage, 2.45 feet September 4, 6, 7, 9, 10, and 11 (discharge, 1.6 second-feet).

1913–1915: Maximum stage recorded, 5.6 feet June 4, 1914 (discharge, 372 second-feet); minimum stage, 2.45 feet September 4, 6, 7, 9, 10, and 11, 1915 (discharge, 1.6 second-feet).

WINTER FLOW.—Stage-discharge relation slightly affected by ice.

DIVERSIONS.—Station is below practically all diversions from Starr Creek.

REGULATION.—Some variation in daily flow at times, caused by diversions for irrigation.

ACCURACY.—Records fair.

Discharge measurements of Starr Creek near Deeth, Nev., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 10	L. W. Jordan	2.91	12.3	Apr. 10	A. R. Purton	2.80	10.5
Dec. 2	do	2.80	7.7	June 24	do	2.88	14
Feb. 4	do	2.76	9.1	Aug. 19	do	2.55	3.35

Daily discharge, in second-feet, of Starr Creek near Deeth, Nev., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	9.6	9.6	9.0	.....	8.8	15	15	15	62	8.8	3.3	2.3
2	12	9.6	8.5	.....	8.8	15	15	15	58	7.9	3.3	2.3
3	14	9.6	.....	.....	8.8	15	15	13	54	7.0	3.3	2.3
4	12	9.6	.....	.....	8.8	15	15	10	37	7.0	3.3	1.6
5	11	9.6	.....	.....	8.8	16	14	8.8	41	5.6	3.3	1.6
6	9.6	9.6	.....	.....	8.8	18	13	8.8	37	4.3	3.3	1.6
7	9.6	9.6	.....	.....	10	15	13	8.8	37	4.3	3.3	1.6
8	12	9.6	.....	.....	10	15	13	8.8	37	2.3	3.3	1.6
9	16	9.6	.....	.....	10	15	13	8.8	41	2.3	3.3	1.6
10	13	9.6	.....	.....	10	15	11	8.8	45	2.3	3.3	1.6
11	12	9.6	.....	.....	13	14	10	8.8	49	2.3	3.3	1.6
12	12	9.6	.....	.....	12	13	12	8.8	45	2.3	2.8	.....
13	12	9.6	.....	10	10	15	13	8.8	45	2.3	2.3	.....
14	12	9.6	.....	10	10	18	15	8.8	41	2.3	2.3	.....
15	11	9.6	.....	10	10	15	13	8.8	37	2.3	2.3	.....
16	9.6	9.6	.....	10	10	15	10	8.8	32	2.3	2.3	.....
17	9.6	11	.....	8.8	10	15	10	10	26	2.8	2.3	.....
18	12	12	.....	9.4	13	16	10	18	26	3.3	2.3	.....
19	12	12	.....	10	12	18	10	23	26	3.3	2.3	.....
20	12	12	.....	10	10	15	10	18	24	3.3	2.3	.....
21	12	11	.....	10	13	13	10	18	21	3.3	2.3	.....
22	12	9.6	.....	10	15	13	13	13	18	3.3	2.3	.....
23	12	9.6	.....	10	15	13	10	13	20	3.3	2.3	.....
24	12	9.6	.....	8.8	18	13	10	13	18	3.3	2.3	.....
25	12	9.6	.....	10	16	13	10	13	16	3.3	2.3	.....
26	11	9.6	.....	8.8	15	13	10	15	15	3.3	2.3	.....
27	9.6	9.6	.....	8.8	13	13	10	15	13	3.3	2.3	.....
28	9.6	9.6	.....	8.8	14	13	8.8	13	13	3.3	2.3	.....
29	9.6	9.6	.....	8.8	.....	13	8.8	13	11	3.3	2.3	.....
30	9.6	9.6	.....	8.8	.....	13	15	15	8.8	3.3	2.3	.....
31	9.6	.....	.....	.....	.....	15	.....	34	.....	3.3	2.3	.....

NOTE.—Discharge determined as follows: Oct. 1 to Dec. 10 from a rating curve well defined between 3 and 80 second-feet; Jan. 13 to Sept. 30 from a rating curve well defined between zero and 60 second-feet; Sept. 12–30 flow estimated because of lack of gage readings, 2 second-feet. Discharge interpolated for days on which gage was not read. Discharge estimated, because of ice, from observer's notes and discharge measurements, Dec. 3 to Jan. 12, 8 second-feet.

Monthly discharge of Starr Creek near Deeth, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	16	9.6	11.4	701	B.
November	12	9.6	9.93	591	B.
December	.....	.....	8.05	495	C.
January	10	.....	8.90	530	C.
February	18	8.8	11.5	639	B.
March	18	13	14.6	898	B.
April	15	8.8	11.9	708	B.
May	34	8.8	13.0	799	B.
June	62	8.8	31.8	1,890	B.
July	8.8	2.3	3.70	228	C.
August	3.3	2.3	2.67	164	C.
September	.....	1.6	1.92	114	C.
The year	62	1.6	10.7	7,760	

LAMOILLE CREEK NEAR LAMOILLE, NEV.

LOCATION.—In sec. 6, T. 32 N., R. 58 E., about 50 feet below tailrace of Elko-Lamoille Power Co. plant, 50 feet above first irrigation diversion, about 2 miles above Lamoille, and 22 miles southeast of Elko, Elko County.

DRAINAGE AREA.—About 14 square miles (measured on maps issued by United States Forest Service).

RECORDS AVAILABLE.—May 8 to September 30, 1915.

GAGE.—Vertical staff on left bank, read twice daily by E. Galloway.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and large boulders; control shifts with extreme high water. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.94 feet at 7 p. m. June 9 (discharge, 315 second-feet); minimum stage, 0.51 foot September 21, 22, and 23 (discharge, 2.5 second-feet).

WINTER FLOW.—Stage-discharge relation seriously affected by ice.

DIVERSIONS.—Above all irrigation diversions. Water is diverted for Elko-Lamoille Power Co. plant, but returned to stream about 50 feet above gage.

REGULATION.—A daily fluctuation occurs during the days when power plant is not in continuous operation.

ACCURACY.—Records good.

Discharge measurements of Lamoille Creek near Lamoille, Nev., during the year ending Sept. 30, 1915.

[Made by A. B. Purton.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
May 8	1.11	38.9	June 23	1.67	195	Aug. 31	0.59	5.5
Do	1.12	39.8	June 24	1.45	113			
May 23	1.35	70	Aug. 17	0.65	7.7			

Daily discharge, in second-feet, of Lamoille Creek near Lamoille, Nev., for the year ending Sept. 30, 1915.

Day.	May.	June.	July.	Aug.	Sept.	Day.	May.	June.	July.	Aug.	Sept.
1	.....	204	108	18	6.0	16	89	153	39	8.2	4.8
2	.....	137	95	18	5.2	17	98	168	36	7.8	4.8
3	.....	114	95	16	4.8	18	84	173	33	7.8	4.8
4	.....	101	81	15	4.8	19	76	150	31	7.8	4.2
5	.....	116	79	15	4.8	20	73	150	30	6.4	4.2
*6	.....	136	67	14	5.5	21	69	157	28	6.8	3.5
7	.....	174	68	13	4.8	22	71	157	28	6.8	3.5
8	41	224	65	12	4.8	23	71	160	28	7.3	3.5
9	44	283	60	11	4.2	24	76	160	26	6.8	3.5
10	46	270	57	10	4.5	25	75	116	25	6.8	4.2
11	52	173	57	9.6	4.8	26	73	108	24	5.5	4.2
12	61	119	57	9.6	4.8	27	82	108	22	5.2	4.2
13	73	102	54	9.1	4.8	28	102	108	22	5.2	4.2
14	71	111	46	9.1	4.8	29	124	114	21	4.8	4.5
15	71	146	42	8.6	4.8	30	147	108	19	4.8	3.5
						31	180	.....	19	4.5	.....

NOTE.—Discharge determined as follows: May 8-28 from a rating curve well defined between 40 and 100 second-feet; May 29 to June 10 by indirect method for shifting control; June 11 to Sept. 30 from a rating curve well defined between zero and 300 second-feet.

Monthly discharge of Lamoille Creek near Lamoille, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy[1]
	Maximum.	Minimum.	Mean.		
May 8-31	180	41	81.2	3,870	B.
June	283	101	150	8,930	B.
July	108	19	47.2	2,900	B.
August	18	4.5	9.37	576	B.
September	6.0	3.5	4.50	268	B.
The period	283	3.5	57.1	18,500	

LAMOILLE CREEK NEAR HALLECK, NEV.

LOCATION.—In NW. ¼ sec. 9, T. 35 N., R. 58 E., Elko County, half a mile below mouth of Secret Creek, the largest tributary, 1½ miles south of Halleck station on the Southern Pacific Railroad, and 2 miles above confluence with Humboldt River.

DRAINAGE AREA.—245 square miles.

RECORDS AVAILABLE.—May 12, 1913, to September 30, 1915.

GAGE.—Vertical staff on left bank, 200 feet below ford; read once daily by Harry Gorman and Jack Rose. Datum lowered 1.00 foot August 19, 1915.

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

CHANNEL AND CONTROL.—Bed composed of gravel; control is gravel bar which shifts occasionally and at times is affected by beaver dams. Channel very crooked; banks overflow during floods.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.2 feet June 8, 11, 12, and 13 (discharge, 113 second-feet); minimum stage (creek dry in August and September).

1913-1915: Maximum stage recorded, 6.7 feet June 5, 1914 (discharge, 556 second-feet); minimum stage (creek dry in August and September, 1915).

WINTER FLOW.—Stage-discharge relation seriously affected by ice; flow estimated from observer's notes, discharge measurements, and comparison with records of near-by stations.

DIVERSIONS.—Below all diversions except one small ditch.

REGULATIONS.—Flow affected by irrigation diversions above.

ACCURACY.—Records fair.

Discharge measurements of Lamoille Creek near Halleck, Nev., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 8	L. W. Jordan	3.28	25.5	Apr. 11	J. J. Sanford	3.28	29.4
Dec. 2	do	[a] 3.22	19.8	May 5	A. B. Purton	3.11	17.3
Feb. 4	do	[b] 5.10	20.9	June 25	do	3.35	34.2
Apr. 11	A. B. Purton	3.28	27.6				

[a] Complete ice cover; stage-discharge relation affected.
[b] Water flowing over ice; stage-discharge relation affected.

Daily discharge, in second-feet, of Lamoille Creek near Halleck, Nev., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1	22	27	21	20	.....	49	22	67	20	0.6
2	22	27	20	20	.....	48	22	79	17	.4
3	22	27	.....	20	.....	46	21	113	14	.4
4	25	27	.....	21	.....	45	19	101	13	.3
5	25	27	.....	.....	46	41	18	83	12	.2
6	25	27	.....	.....	40	43	18	88	12	.....
7	25	27	.....	.....	38	41	19	96	11	.....
8	27	27	.....	.....	40	40	20	101	9.8	.....
9	27	27	.....	.....	41	40	20	107	9.0	.....
10	34	27	.....	.....	45	30	19	107	8.4	.....
11	31	27	.....	.....	48	27	17	113	7.8	.....
12	29	27	.....	.....	50	26	16	113	7.5	.....
13	28	27	.....	.....	53	24	19	113	6.9	.....
14	28	27	.....	.....	55	23	18	107	6.0	.....
15	27	27	.....	.....	55	23	16	101	5.6	.....
16	28	.....	.....	.....	55	26	20	107	5.4	.....
17	28	.....	.....	.....	53	27	23	90	5.4	.....
18	28	.....	.....	.....	49	29	19	67	5.2	.....
19	28	.....	.....	.....	48	31	21	45	5.0	.....
20	28	.....	.....	.....	46	31	24	41	5.0	.....
21	27	.....	.....	.....	46	32	26	40	5.0	.....
22	27	.....	.....	.....	48	32	23	40	4.6	.....
23	27	.....	.....	.....	49	31	21	38	4.4	.....
24	28	.....	.....	.....	51	29	24	34	4.6	.....
25	28	.....	.....	.....	53	29	29	32	4.8	.....
26	28	.....	.....	.....	48	28	27	30	5.0	.....
27	28	.....	.....	.....	46	27	35	28	4.0	.....
28	27	.....	.....	.....	45	26	41	26	3.2	.....
29	27	.....	.....	.....	46	24	41	24	2.0	.....
30	27	.....	.....	.....	48	24	41	22	1.4	.....
31	27	.....	.....	.....	49	.....	53	.....	1.0	.....

NOTE.—Discharge determined from a rating curve well defined between zero and 100 second-feet; July 1–3, interpolated; Aug. 6 to Sept. 30, creek dry. Discharge estimated, because of ice, Nov. 16–30, 24 second-feet; December, 15 second-feet; January, 18 second-feet; February, 25 second-feet; Mar. 1–4, 30 second-feet.

Monthly discharge of Lamoille Creek near Halleck, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	34	22	27.0	1,660	B.
November	27	.....	25.5	1,520	C.
December	.....	.....	15.0	922	D.
January	.....	.....	18.0	1,110	D.
February	.....	.....	25.0	1,390	D.
March	55	.....	45.5	2,800	B.
April	49	23	32.4	1,930	B.
May	53	16	24.3	1,490	B.
June	113	22	71.8	4,270	B.
July	20	1.0	7.29	448	B.
August	0.6	0	.06	4	
September	0	0	0	0	
The year	113	0	24.2	17,500	

NORTH FORK OF HUMBOLDT RIVER AT DEVILS GATE, NEAR HALLECK, NEV.

LOCATION.—In sec. 13, T. 38 N., R. 57 E., Elko County, at the narrows about 3½ miles above the buildings of Morgan Hill ranch (also known as Devils Gate ranch), 17 miles north of Halleck and 27 miles by wagon road from Elko.

DRAINAGE AREA.—830 square miles (measured on maps issued by General Land Office).

RECORDS AVAILABLE.—November 11, 1913, to September 30, 1915; also at mouth of stream from October 10, 1902, to December 31, 1909, and October 1, 1910, to December 31, 1913.

GAGE.—Stevens water-stage recorder on right bank at mouth of canyon; original gage was abouut 15 miles downstream; comparatively little run-off entering below the present station, except during storms.

DISCHARGE MEASUREMENTS.—Made from cable about 30 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of sand with gravel riffle at control; about half of the control section is affected by the growth of moss. Channel is crooked and banks are comparatively high and covered with willows; at extreme high stages water may overflow right bank and pass in an overflow channel around gage. Gage height of zero flow, about 0.7 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.44 feet at 3 a. m. March 26 (discharge, 194 second-feet); minimum stage, 1.03 feet at noon August 31 (discharge, 2.6 second-feet).

1913–1915: Maximum stage recorded, 7.23 feet April 7, 1914 (discharge, 722 second-feet); minimum discharge, 1 second-foot August 20–28 and September 30, 1913 (stage, 2.5 feet).

WINTER FLOW.—Stage-discharge relation seriously affected by ice; flow estimated from discharge measurements, observer's notes, and climatic records. River freezes over at gage but riffle is sometimes partly open; anchor ice collects on riffle.

DIVERSIONS.—Numerous diversions in the valleys above and below Devils Gate. During the summer almost all low-waer flow is diverted.

REGULATION.—Flow during summer depends on amount of irrigation above. A minimum flow is maintained from seepage and springs.

ACCURACY.—Records fair.

Discharge measurements of North Fork of Humboldt River at Devils Gate, near Halleck, Nev., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Dec. 3[a]	L. W. Jordan	1.49	22.6	May 10	A. B. Purton	1.89	47.8
Feb. 4[a]	do	1.50	20.2	June 22	do	1.46	22.2
Apr. 10	A. B. Purton	2.30	78	Aug. 18	do	1.06	3.3
16	J. J. Sanford	2.30	81	30	do	1.06	3.3

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of North Fork of Humboldt River at Devils Gate, near Halleck, Nev., for the year ending Sept. 30, 1915.

Day.	Oct.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	16	.....	27	98	77	55	9.0	.....	3.4
2	16	.....	28	91	82	.....	8.8	.....	3.8
3	17	.....	28	92	85	.....	.....	.....	4.2
4	17	.....	28	94	77	.....	.....	.....	4.4
5	18	.....	29	94	67	.....	.....	.....	4.8
6	18	.....	27	93	63	.....	.....	.....	5.2
7	19	.....	28	91	60	.....	.....	.....	5.0
8	19	.....	28	85	57	.....	.....	.....	5.0
9	19	22	29	83	50	.....	.....	.....	5.0
10	21	24	30	78	48	.....	.....	.....	5.0
11	23	28	30	69	44	.....	.....	.....	4.8
12	22	26	33	66	43	.....	.....	.....	5.0
13	21	27	35	69	44	.....	.....	.....	5.0
14	20	31	35	70	54	.....	.....	.....	5.2
15	20	30	42	76	63	38	.....	.....	5.2
16	20	27	47	78	55	36	.....	.....	5.4
17	20	24	51	70	52	33	.....	.....	5.4
18	20	24	51	68	57	30	.....	3.2	5.2
19	19	24	51	70	77	28	.....	3.8	5.2
20	19	25	52	69	87	24	.....	3.8	5.0
21	20	26	59	69	76	24	.....	3.2	4.6
22	20	26	66	76	75	22	.....	3.0	4.6
23	22	26	80	92	76	19	.....	3.0	4.4
24	26	26	108	99	83	15	.....	3.0	4.6
25	25	26	159	92	87	14	.....	3.0	5.4
26	24	26	177	84	92	13	.....	3.2	6.3
27	24	26	148	80	86	11	.....	3.2	6.0
28	23	28	140	73	77	9.8	.....	3.2	6.0
29	23	.....	128	70	71	9.2	.....	3.2	6.0
30	24	.....	138	71	64	9.0	.....	3.2	6.0
31	24	.....	113	.....	58	.....	.....	2.8	.....

NOTE.—Discharge determined from two fairly well defined rating curves; one used Oct. 1–30 and Aug. 18 to Sept. 30, the other Feb. 9 to May 15. Indirect method for shifting control used May 16 to June 1 and June 15 to July 2. Discharge interpolated while recorder was not in operation; Oct. 1–7, and 31, as given in table; Nov. 1–30, 24 second-feet; June 2–14, 46 second-feet; July 3–31, 7.0 second-feet, and Aug. 1–17, 4.0 second-feet. Mean flow estimated on account of ice, Dec. 1–31, 19 second-feet; Jan. 1–31, 21 second-feet; Feb. 1–8, 20 second-feet; Feb. 13–16, as in table.

Monthly discharge of North Fork of Humboldt River at Devils Gate, near Halleck, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	26	16	20.6	1,270	B.
November	.....	.....	24.0	1,430	D.
December	.....	.....	19.0	1,170	D.
January	.....	.....	21.0	1,290	D.
February	31	.....	24.4	1,360	B.
March	177	27	65.3	4,020	B.
April	99	66	80.3	4,780	B.
May	87	43	67.3	4,140	B.
June	55	9	32.9	1,960	C.
July	9	.....	7.12	438	D.
August	.....	2.8	3.64	224	C.
September	6.3	3.4	5.04	300	C.
The year	177	2.8	30.9	22,400	

SOUTH FORK OF HUMBOLDT RIVER NEAR ELKO, NEV.

LOCATION.—In sec. 19, T. 33 N., R. 55 E., at head of canyon below Cowling's ranch, 4 miles above mouth and 10 miles southwest of Elko, Elko County.

DRAINAGE AREA.—Not measured (1,150 square miles at old station 1½ miles above).

RECORDS AVAILABLE.—August 29, 1896, to December 31, 1909; September 9, 1910, to September 30, 1915.

GAGE.—Stevens water-stage recorder on right bank, 1½ miles below highway bridge November 14, 1913, to September 30, 1915; inclined staff on left bank one-fourth mile above bridge, February 26, 1907, to November 13, 1913; prior to February, 1907, several gages at slightly different sites and datums.

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

CHANNEL AND CONTROL.—Bed composed of gravel and sand. One channel at all stages. Rock riffle a short distance below gage affords permanent control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.85 feet at 1.45 p. m. June 10 (discharge, 372 second-feet); minimum stage, dry in August and September).

1896–1915: Maximum stage recorded, 10.0 feet January 26, 1914 (discharge, 2.400 second-feet); minimum stage, dry in August and September, 1915.

WINTER FLOW.—Stage-discharge relation seriously affected by ice; flow determined from discharge measurements, observer's notes, and climatic records.

DIVERSIONS.—Below all tributaries and all diversions except those of Hunter and Banks ranch 3 miles downstream.

REGULATION.—Flow affected by diversions above.

ACCURACY.—Records good.

Discharge measurements of South Fork of Humboldt River near Elko, Nev., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 30[a]	L. W. Jordan	0.78	14	May 6	A. B. Purton	1.10	44.1
Feb. 6[a]	....do	1.82	22.3	June 21	....do	1.70	108
Apr. 9	Sanford and Purton	1.12	43.6	July 14	....do	.76	16.1

[a] Stage discharge relation affected by ice.

Daily discharge, in second-feet, of South Fork of Humboldt River near Elko, Nev., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Mar.	Apr.	May.	June.	July.	Aug.
1	9.0	25	37	48	68	289	48	1.2
2	9.5	25	38	47	65	341	46	1.8
3	10	24	38	46	57	275	44	1.7
4	10	24	35	46	52	223	43	1.5
5	11	24	35	46	53	184	42	.9
6	12	22	31	46	44	174	40	.8
7	12	22	31	46	38	182	38	1.0
8	15	21	31	45	31	221	36	.8
9	18	21	32	44	30	273	34	.6
10	20	22	32	42	31	314	32	.5
11	18	23	33	43	31	281	29	.....
12	18	22	34	43	33	217	25	.....
13	17	20	36	45	38	174	20	.....
14	18	20	35	51	49	140	16	.....
15	18	22	36	51	55	122	15	.....
16	18	20	37	50	54	111	15	.....
17	19	20	38	51	82	110	12	.....
18	20	21	35	44	126	108	9.5	.....
19	20	18	34	46	156	104	7.4	.....
20	20	14	32	47	163	104	6.0	.....
21	22	7.1	31	50	145	105	4.8	.....
22	24	8.9	31	50	152	98	3.3	.....
23	26	9.5	33	49	142	116	3.5	.....
24	25	10	35	47	128	105	4.2	.....
25	25	11	37	48	129	94	3.3	.....
26	25	11	38	47	112	84	2.6	.....
27	25	12	38	46	105	73	2.6	.....
28	24	13	38	42	105	68	2.0	.....
29	24	13	42	46	129	56	1.6	.....
30	24	14	45	57	152	51	1.5	.....
31	24	.....	46	.....	182	.....	1.3	.....

NOTE.—Discharge determined from a well-defined rating curve. Daily flow interpolated Oct. 1–6, Nov. 23–29, July 2–4, 6–10, and 12–13. Mean flow estimated, because of ice, Dec. 1–31, 10 second-feet; Jan. 1–31, 12 second-feet; Feb. 1–28, 28 second-feet. Stream was dry August 11 to September 30.

Monthly discharge of South Fork of Humboldt River near Elko, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	26	9.0	18.7	1,150	B.
November	25	7.1	18.0	1,070	B.
December	.....	.....	10.0	615	D.
January	.....	.....	12.0	738	D.
February	.....	.....	28.0	1,560	D.
March	46	31	35.6	2,190	B.
April	57	42	47.0	2,800	B.
May	182	30	88.3	5,430	B.
June	341	51	160	9,520	B.
July	48	1.3	19.0	1,170	B
August	1.8	0	.35	21	
September	0	0	0	0	
The year	341	0	36.3	26,300	

MAGGIE CREEK AT CARLIN, NEV.

LOCATION.—In sec. 26, T. 33 N., R. 52 E., 500 feet above highway bridge, half a mile above mouth, and half a mile east of Carlin, Elko County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—June 6, 1913, to September 30, 1915.

GAGE.—Inclined staff on left bank about 600 feet above Pacific Fruit Express Co. dam, October 26, 1913, to September 30, 1915; vertical staff at the bridge 100 feet above dam June 6 to October 25, 1913; read twice a day by W. O. Blinn.

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

CHANNEL AND CONTROL.—Bed composed of sand and gravel; shifts occasionally. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.1 feet at 8 a. m. March 29 and 31 (discharge, 29 second-feet); minimum stage, 0.95 foot August and September (discharge, 0.1 second-foot).

1913–1915: Maximum stage recorded, 4.5 feet April 28, 1914 (discharge, 394 second-feet); minimum stage, 0.95 foot August and September, 1915 (discharge, 0.1 second-foot).

REGULATION.—Flow affected by irrigation diversions above.

ACCURACY.—Records fair.

Discharge measurements of Maggie Creek at Carlin, Nev., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 11	L. W. Jordan	1.63	5.9	Apr. 9	A. B. Purton	1.95	22.3
Dec. 1 [a]	do	2.84	5.2	June 26	do	1.10	1.4
Feb. 7	do	1.31	3.2	Sept. 11	do	.98	[b] .05

[a] Complete ice cover at the gage; stage-discharge relation affected.
[b] Discharge estimated.

Daily discharge, in second-feet, of Maggie Creek at Carlin, Nev., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	5.1	6.8	.....	2.2	11	24	6.1	6.1	1.4	0.1	.....
2	5.1	6.8	.....	2.4	13	24	6.1	6.1	1.3	.1	.....
3	5.1	6.8	.....	3.1	16	24	4.7	6.1	1.3	.....	.....
4	5.1	6.8	.....	3.1	14	24	4.3	6.1	1.3	.....	.....
5	5.1	6.8	.....	3.7	13	24	3.7	6.1	1.3	.....	.....
6	5.1	6.8	.....	3.6	12	24	3.1	5.2	1.0	.....	.....
7	5.1	6.8	.....	3.5	12	24	2.9	5.2	1.0	.....	.....
8	5.1	6.8	.....	4.3	8.2	24	2.6	5.2	1.0	.....	.....
9	5.1	6.8	.....	5.7	9.5	23	1.8	4.3	1.0	.....	.....
10	5.1	6.8	.....	8.2	12	24	1.3	4.1	1.0	.....	.....
11	6.5	7.8	.....	8.8	8.8	22	1.2	3.7	1.0	.....	.....
12	6.8	7.8	.....	8.2	13	22	1.1	3.7	1.0	.....	.....
13	6.8	7.8	.....	12	12	22	1.4	3.1	1.0	.....	.....
14	6.8	6.8	.....	11	11	22	1.6	3.1	1.0	.....	.....
15	6.8	6.8	.....	11	12	20	1.8	2.6	1.0	.....	.....
16	6.8	6.8	.....	9.5	13	16	2.0	2.6	1.0	.....	.....
17	6.8	6.8	.....	12	16	13	3.6	2.4	1.0	.....	0.1
18	5.1	6.8	.....	11	16	12	4.7	2.4	1.0	.....	.2
19	5.1	6.8	.....	11	12	11	5.7	2.2	.9	.....	.1
20	5.8	6.8	.....	12	12	9.5	5.7	2.2	.8	.....	.2
21	6.8	.....	.....	11	16	7.5	5.9	1.8	.8	.....	1.0
22	8.5	.....	.....	9.5	16	6.1	6.1	1.8	.7	.....	1.0
23	10	.....	.....	8.8	16	6.1	6.1	1.8	1.0	.....	1.4
24	10	.....	1.6	8.8	16	8.8	6.7	1.4	.9	.....	1.0
25	10	.....	1.8	12	20	8.8	7.5	1.4	.8	.....	2.2
26	8.5	.....	2.0	11	21	8.8	7.5	1.4	.8	.....	2.6
27	8.5	.....	2.2	12	22	7.5	7.5	1.4	.7	.....	2.6
28	8.5	.....	2.2	16	24	7.5	7.5	1.4	.6	.....	2.2
29	6.8	.....	2 2	.....	27	6.1	7.5	1.4	.4	.....	2.2
30	6.8	.....	2.2	.....	25	6.1	7.5	1.4	.3	.....	2.6
31	6.8	.....	2.2	.....	27	.....	6.1	.....	.1	.....	2.6

NOTE.—Discharge determined from three fairly well defined rating curves applicable Oct. 1 to Nov. 20, Jan. 24 to July 17, and Aug. 1 to Sept. 30. Mean flow estimated on account of uncertainties in gage height record and possible ice effect as follows: Nov. 21–30, 6 second-feet; Dec. 1–31, 3 second-feet; and Jan. 1–23, 1.5 second-feet. Indirect method for shifting control used July 18–31. Mean flow estimated 0.05 second-foot Aug. 3 to Sept. 16, based on measurement of Sept. 11.

Monthly discharge of Maggie Creek at Carlin, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	10	5.1	6.63	408	B.
November	7.8		6.63	395	B.
December			3.00	184	D.
January	2.2		1.64	101	D.
February	16	2.2	8.41	467	B.
March	27	8.2	15.4	947	B.
April	24	6.1	16.1	958	B.
May	7.5	1.1	4.56	280	B.
June	6.1	1.4	3.26	194	B.
July	1.4	.1	.91	56	C.
August	.1		.05	3	D.
September	2.6		.67	40	D.
The year	27		5.57	4,030	

ROCK CREEK AT ROCK CREEK RANCH, NEAR BATTLE MOUNTAIN, NEV.

LOCATION.—Probably in sec. 6, T. 37 N., R. 47 E., at an old footbridge about a mile above diversion dam at mouth of canyon, and 1½ miles above the Rock Creek ranch house, a few miles south of Dutton, and 35 miles north of Battle Mountain, Lander County. Willow Creek is the only large tributary between this station and the one maintained several miles below in 1896.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 13 to September 30, 1915.

GAGE.—Vertical staff near left end of footbridge; read about every other day by W. H. Muffley.

DISCHARGE MEASUREMENTS.—Made from footbridge or by wading.

CHANNEL AND CONTROL.—Bed composed of rocks and gravel, but likely to shift at extreme high stages. One channel at all stages. Banks high and clean.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 2.0 feet May 21 and 26 (discharge, 17 second-feet); minimum stage, 1.2 feet July 5 and 7 (discharge, 0.4 second-foot).

DIVERSIONS.—Numerous small diversions above station; there is a small reservoir on one of the tributaries above Squaw Valley.

REGULATION.—Flow affected by diversions and storage above.

ACCURACY.—Records only fair owing to incomplete gage-height record.

Discharge measurements of Rock Creek at Rock Creek ranch, near Battle Mountain, Nev., during the year ending Sept. 30, 1915.

[Made by A. B. Purton.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
May 13	1.86	11.4	July 17	1.70	6.7
13	1.87	11.5	Aug. 29	1.55	3.4
July 17	1.70	6.8			

Daily discharge, in second-feet, of Rock Creek at Rock Creek ranch, near Battle Mountain, Nev., for the year ending Sept. 30, 1915.

Day.	May.	June.	July.	Aug.	Sept.	Day	May.	June.	July.	Aug.	Sept.
1	.....	15	1.5	4.4	3.6	16	8.8	13	.....	.....	5.6
2	.....	15	1.5	4.7	3.6	17	8.1	12	6.7	.....	.....
3	.....	15	1.5	5.0	3.6	18	10	12	.....	.....	.....
4	.....	14	1.0	5.3	3.6	19	13	11	.....	.....	.....
5	.....	13	.4	5.6	3.6	20	15	7.0	.....	.....	.....
6	.....	13	.4	5.8	4.0	21	17	2.7	.....	.....	
7	.....	13	.4	6.0	4.2	22	15	3.6	.....	.....	.....
8	.....	13	.....	6.2	4.4	23	13	4.4	.....	.....	.....
9	.....	12	.....	6.4	4.4	24	14	4.4	.....	.....	.....
10	.....	11	.....	6.7	4.4	25	16	4.4	4.4	.....	.....
11	.....	12	.....	6.7	4.4	26	17	3.6	4.4	.....	.....
12	.....	13	.....	6.7	4.4	27	16	3.3	4.4	.....	
13	12	13	.....	6.7	4.4	28	15	3.0	4.4	.....	.....
14	11	13	.....	.....	4.8	29	14	2.7	4.4	3.6	.....
15	9.5	13	.....	.....	5.2	30	12	2.1	4.4	3.6	.....
						31	11	.....	4.4	3.6	.....

NOTE.—Discharge determined from a fairly well defined rating curve. Mean flow estimated July 8–16, 3.5 second-feet and Sept. 17–24, 5.0 second-feet. Mean flow interpolated July 18–24, 5.6 second-feet, and Aug. 14–28, 5.2 second-feet. Daily discharge interpolated on days when gage was not read, except as noted above.

Monthly discharge of Rock Creek at Rock Creek ranch, near Battle Mountain, for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
May 13–31	17	8.1	13.0	491	C.
June	15	2.1	9.57	569	D.
July	6.7	.4	3.71	228	C.
August	6.7	3.6	5.32	327	C.
September	5.6	3.6	4.61	274	C.
The period	17	.4	6.75	1,890	

REESE RIVER NEAR BERLIN, NEV.

LOCATION.—In the SW. ¼ sec. 16, T. 12 N., R. 40 E., close to boundary of Toiyabe National Forest, just above the mouth of Illinois Creek, 1½ miles below Archie Bell's ranch, 2 miles above the Bell home ranch, 7 miles east of Berlin, Nye County, and 55 miles south of Austin.

DRAINAGE AREA.—94 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 10, 1913, to November 10, 1914; March 1 to September 30, 1915.

GAGE.—Vertical staff on left bank 300 feet above head gate of the upper Bell canal; gage 10 feet downstream with datum 1.17 higher read June 29 to September 30, 1915; an auxiliary gage, about 1½ miles below the regular gage, used November 1, 1913, to April 28, 1914, October 20 to November 10, 1914, and March 1 to April 18, 1915, when no water was being diverted between gages.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Stream very crooked. Banks low, covered with a thick growth of willows; subject to overflow at high stages; control at low stages is a fairly well defined gravel riffle a few feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.9 feet, new datum, June 2, 3, and 4 (discharge, 128 second-feet); minimum stage, 0.90 foot at 4 p. m. September 11 (discharge, 1.5 second-feet).

1913–1915: Maximum stage recorded, 5.5 feet, old datum, September 2, 1913 (discharge, 173 second-feet); minimum stage, 0.90 foot September 11, 1915 (discharge, 1.5 second-feet).

WINTER FLOW.—Station was discontinued during winter. Flow probably did not average more than 5 or 6 second-feet.

DIVERSIONS.—A small amount of water is diverted at the Archie Bell ranch above the station.

REGULATION.—None.

ACCURACY.—Discharge measurement made this year show a reversal in the rating curve between 1.8 feet and 3.5 feet gage height, and the position of the rating curve is not well enough defined to permit the publication of daily discharge. The maximum and minimum are not affected by the reversal, and are approximately correct as published. Records of flow as published in Water-Supply Papers 360 and 390 should be used with caution.

Discharge measurements of Reese River near Berlin, Nev., during the year ending Sept. 30, 1915.

[Made by A. B. Purton.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Apr. 17	[a] 2.83	62	June 28	[c] 3.22	28.6
17	[b] 2.80	64	29	1.84	37.9
June 28	1.86	37.4	Sept. 10	.91	1.9
28	1.86	38.2			

[a] Measurements are referred to datum established June 29.
[b] Auxiliary gage read 4.30, 1 hour later, with no diversions between gages.
[c] Measurement at auxiliary gage; water being diverted between gages.

Daily gage height, in feet, of Reese River near Berlin, Nev., for the year ending Sept., 30, 1915.

Day.	Oct.	Nov.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	1.1	2.3	2.3	3.2	3.0	3.8	1.80	1.44	.....
2	1.1	2.3	2.3	3.2	2.8	3.9	1.80	1.44	.....
3	1.1	2.3	2.35	3.2	2.8	3.9	1.80	1.42	.....
4	1.1	2.3	2.35	3.25	2.8	3.9	1.82	1.42	.....
5	1.1	2.3	2.35	3.3	2.9	3.8	1.82	1.38	.....
6	1.1	2.3	2.3	3.35	3.0	3.6	1.80	1.38	.....
7	1.1	2.3	2.3	3.4	3.05	3.35	1.80	1.36	.....
8	1.1	2.3	2.3	3.4	3.05	3.0	1.78	.....	.....
9	1.1	2.3	2.3	3.4	3.1	3.0	1.74	.....	.....
10	1.1	2.3	2.3	3.4	3.0	3.0	1.66	.....	0.91
11	1.1	.....	2.3	3.4	3.1	2.95	1.62	.....	.90
12	1.1	.....	2.3	3.4	3.1	2.95	1.54	.....	.94
13	1.05	.....	2.3	3.5	3.0	2.95	1.54	.....	.94
14	1.0	.....	2.5	3.6	3.1	2.8	1.52	.....	.94
15	1.1	.....	2.5	3.65	3.1	2.8	1.52	.....	.95
16	1.1	.....	2.55	3.7	3.2	2.75	1.52	.....	.96
17	1.1	.....	2.55	4.15	3.25	2.7	1.50	.....	.96
18	1.1	.....	2.6	4.1	3.1	2.65	1.50	.....	.94
19	1.1	.....	2.55	2.9	3.1	2.6	1.50	.....	.94
20	2.3	.....	2.55	2.9	3.0	2.5	1.54	.....	.96
21	2.3	.....	2.55	2.8	2.9	2.4	1.56	.....	.96
22	2.2	.....	2.6	2.8	2.8	2.35	1.56	.....	.95
23	2.2	.....	2.6	2.8	2.9	2.3	1.54	.....	.96
24	2.25	.....	2.6	2.9	3.0	2.15	1.54	.....	.96
25	2.3	.....	2.6	2.9	3.2	2.1	1.52	.....	98
26	2.3	.....	2.6	2.8	3.2	2.1	1.50	.....	.98
27	2.3	.....	2.6	2.9	3.2	2.1	1.50	.....	.98
28	2.4	.....	3.1	2.8	3.2	1.9	1.48	.....	.98
29	2.3	.....	3.1	3.0	3.4	1.84	1.46	.....	.98
30	2.3	.....	3.2	2.9	3.6	1.82	1.46	.....	.98
31	2.3	.....	3.25	.....	3.65	.....	1.44	.....	.....

NOTE.—Upper gage read Oct. 1–19, Apr. 19 to Aug. 7, and Sept. 10–30; auxiliary gage read Oct. 20 to Nov. 10 and Mar. 1 to Apr. 18. No gage readings available Nov. 11 to Feb. 28 and Aug. 7 to Sept. 9.

HUMBOLDT-LOVELOCKS IRRIGATION, LIGHT & POWER CO.'S CANAL NEAR MILL CITY, NEV.

LOCATION.—In the SW. ¼ sec. 29, T. 33 N., R. 35 E., one-fourth mile below head of canal, about 2½ miles northwest of Mill City, Humboldt County.

RECORDS AVAILABLE.—February 19, 1914, to May 16, 1915.

GAGE.—Stevens water-stage recorder on left bank.

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

CHANNEL AND CONTROL.—Earth section. Control indefinite; stage-discharge relation affected by growth of aquatic plants and by the wash from several small gullies below the station.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.65 feet January 15. Canal dry during the summer.

1914–1915: Maximum stage recorded, 4.09 feet July 2 and 3, 1914 (discharge, 129 second-feet).

WINTER FLOW.—Stage discharge relation affected by ice.

DIVERSIONS.—None.

REGULATION.—Flow regulated at the head gates one-fourth mile above station.

Data inadequate for determination of daily discharge.

Canal diverts from Humboldt River in sec. 29, T. 33 N., R. 35 E., for storage in the Taylor-Pitt reservoirs near Humboldt. The water is returned to the river during the irrigation season, about 3 miles west of Humboldt through the Humboldt-Lovelocks Irrigation, Light & Power Co. outlet canal and carried in the natural channel to the head gates of the canals serving the Lovelocks district.

Discharge measurements of Humboldt-Lovelocks Irrigation, Light & Power Co.'s canal near Mill City, Nev., for the period Oct. 1, 1914, to May 16, 1915.

Date.	Made by—	Gage height.	Discharge.
		* *Feet.*	*Sec.-ft.*
Oct. 5	L. W. Jordan	2.11	46.8
May 16	A. B. Purton	.54	a.2

a Discharge estimated.

Daily gage height, in feet, of Humbolt-Lovelocks Irrigation, Light & Power Co.'s canal near Mill City, Nev., for the period Oct. 1, 1914, to May 16, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	May.	Day.	Oct.	Nov.	Dec.	Jan.	Feb.	May.
1	.....	2.49	2.90	.....	.....	.....	16	2.11	2.65	.....	.....	.....	0.54
2	2.00	2.48	2.85	.....	.....	.....	17	2.12	2.65	.....	.....	.....	.....
3	.....	2.34	3.20	.....	.....	.....	18	2.13	2.65	.....	.....	.....	.....
4	.....	2.50	3.20	.....	.....	.....	19	2.13	2.65	.....	.....	.....	.....
5	2.10	2.65	3.05	.....	.....	.....	20	2.14	2.70	.....	.....	.....	.....
6	2.10	2.63	.....	.....	.....	0.54	21	2.10	2.75	.....	.....	.....	.....
7	2.10	2.63	.....	.....	.....	.....	22	2.12	2.64	.....	.....	.....	.....
8	2.12	2.63	.....	.....	.....	.....	23	1.97	2.69	.....	.....	.....	.....
9	2.13	2.65	.....	.....	3.22	.....	24	2.04	2.79	2.20	.....	.....	.....
10	2.13	2.65	.....	.....	.....	.....	25	1.99	3.00	.....	.....	.....	.....
11	2.09	2.65	.....	.....	.....	.....	26	2.15	3.03	.....	3.62	.....	.....
12	2.09	2.65	.....	.....	.....	.....	27	2.50	3.02	.....	.....	.....	.....
13	2.12	2.65	.....	.....	.....	.....	28	2.69	3.02	.....	.....	.....	.....
14	2.12	2.65	.....	.....	.....	.....	29	2.68	3.03	.....	.....	.....	.....
15	2.12	2.65	.....	3.65	.....	.....	30	2.62	2.90	.....	.....	.....	.....
							31	2.58	.....	.....	.....	.....	.....

NOTE.—Water-stage recorder not in operation after Dec. 5. Head gates reported closed about Mar. 20, and canal was practically dry for the rest of the season.

HUMBOLDT-LOVELOCKS IRRIGATION, LIGHT & POWER CO.'S CANAL NEAR HUMBOLDT, NEV.

LOCATION.—In the SE. ¼ sec. 30, T. 32 N., R. 33 E., at the outlet of the lower Taylor-Pitt reservoir, about 2½ miles west of Humboldt, Humboldt County.

RECORDS AVAILABLE.—February 15, 1914, to September 30, 1915.

GAGE.—Stevens water-stage recorder on right bank about 100 feet above weirs.

DISCHARGE MEASUREMENTS.—Made from a footbridge ¼ mile below gage or by wading.

CHANNEL AND CONTROL.—Two 8-foot Cippoletti weirs form a permanent control. There is no flow at zero gage height.

EXTREMES OF DISCHARGE.—1914–15: Maximum stage recorded during year, 3.02 feet at noon April 30 (discharge, 296 second-feet); minimum stage, canal dry during August and September.

WINTER FLOW.—Gates usually closed during winter.

DIVERSIONS.—None.

REGULATION.—Flow regulated at the outlet gates a few hundred feet above station.

ACCURACY.—Records good.

Discharge measurements of Humboldt-Lovelocks Irrigation, Light & Power Co.'s canal near Humboldt, Nev., during the year ending Sept. 30, 1915

Date	Made by—	Gage height	Discharge.	Date	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
May 21	A. B. Purton	1.17	67	June 28	L. W. Jordan	1.28	75
21	do	1.17	68	28	do	1.54	106
June 28	L. W. Jordan	1.28	77	July 16	A. B. Purton	.30	9.4

Daily discharge, in second-feet, of Humboldt-Lovelocks Irrigation, Light & Power Co.'s canal near Humboldt, Nev., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Feb.	Mar.	Apr.	May.	June.	July.
1	0.5	12	.....	14	.....	210	103	102
2	.5	7.5	.....	53	.....	162	106	99
3	.5	.5	.....	26	.....	154	106	98
4	.5	.....	.....	15	.....	117	106	100
5	.5	.....	.....	.....	.....	84	106	119
6	.5	.....	.....	.....	.....	63	106	119
7	.5	.....	.....	.....	.....	45	106	104
8	.5	.....	.....	.....	.....	47	116	107
9	.5	.....	.....	.....	.....	50	137	108
10	.5	.....	.....	.....	.....	50	136	100
11	.5	.....	11	.....	45	50	134	80
12	.5	.....	32	.....	125	51	136	66
13	.5	.....	39	.....	120	51	136	21
14	.5	.....	46	.....	134	51	134	18
15	.5	.....	33	.....	140	52	136	15
16	.5	.....	20	.....	170	66	133	13
17	.5	.....	.....	.....	165	68	128	12
18	.5	.....	.....	.....	165	66	110	9.5
19	.5	.....	.....	.....	165	66	67	5.0
20	.5	.....	.....	.....	173	66	59	3.7
21	.5	.....	.....	.....	207	67	71	1.3
22	.5	.....	.....	.....	207	67	68	.5
23	.5	.....	.....	.....	207	67	69	.4
24	.5	.....	.....	.....	207	67	71	.4
25	7.5	.....	.....	.....	207	67	71	.3
26	12	.....	.....	.....	206	74	69	.2
27	12	.....	.....	.....	206	90	72	.2
28	12	.....	.....	.....	220	90	83	.1
29	12	.....	.....	.....	223	86	80	.1
30	12	.....	.....	.....	259	87	88	.....
31	12	.....	.....	.....	.....	90	.....	.....

NOTE.—Discharge determined from a well-defined rating curve. Mean flow estimated at 0.5 second-foot Nov. 4 to Feb. 10, Feb. 17–28, Mar. 5 to Apr. 10. Canal dry July 30 to Sept. 30.

Monthly discharge of Humboldt-Lovelocks Irrigation, Light & Power Co.'s canal near Humboldt, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	12	0.5	2.95	181	C.
November	12	.....	1.12	67	D.
December	.....	.....	a.50	31	D.
January	.....	.....	a.50	31	D.
February	46	.....	6.86	381	C.
March	53	.....	3.92	241	C.
April	259	.....	119	7,080	A.
May	210	45	78.1	4,800	A.
June	137	59	101	6,010	A.
July	119	0	42.0	2,580	A.
August	0	0	0	0	
September	0	0	0	0	
The year	259	0	29.6	21,400	

a Estimated.

PYRAMID AND WINNEMUCCA LAKES BASINS.

LAKE TAHOE AT TAHOE, CAL.

LOCATION.—In the SE. ¼ sec. 6, T. 15 N., R. 17 E., near outlet of lake at Tahoe, Placer County.

DRAINAGE AREA.—519 square miles (including water surface of lake, 193 square miles).

RECORDS AVAILABLE.—1900 to September 30, 1915.

GAGE.—Vertical staff fastened to piling of boat landing near outlet; read once a day by an employee of the United States Reclamation Service. Datum is 6,220 feet above sea level. Mean low-water elevation of lake is 6,226.0 feet.

EXTREMES OF STAGE.—Maximum stage recorded during year, 9.14 feet July 9; minimum stage, 6.89 feet January 9.

1900–1915: Maximum stage recorded, 11.26 feet July 14, 15, 17, and 18, 1907; minimum stage, 4.68 feet December 19–21, 1913.

ACCURACY.—Gage not read when water surface is rough.

COOPERATION.—Record furnished by United States Reclamation Service.

Daily gage height, in feet, of Lake Tahoe at Tahoe, Cal., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	.....	7.93	7.50	7.07	.....	7.60	7.60	.....	8.59	9.09	.....	8.49
2	.....	7.91	7.50	7.05	.....	7.60	7.58	.....	8.62	9.10	8.91	8.47
3	.....	7.89	.....	.....	7.30	.....	.....	.....	.....	9.11	8.90	8.45
4	8.32	7.89	.....	7.05	7.33	7.59	7.60	8.06	.....	9.11	8.89	8.42
5	8.28	.....	.....	7.05	7.33	7.58	7.63	8.07	8.70	9.10	8.88	8.41
6	8.21	.....	.....	.....	7.32	7.58	7.66	8.08	8.74	9.11	8.87	8.39
7	8.21	.....	7.45	.....	.....	.....	7.68	8.10	8.78	9.12	8.85	8.36
8	.....	.....	.....	7.00	.....	7.58	7.68	8.10	8.82	9.11	8.84	8.34
9	.....	7.85	7.40	6.89	.....	7.60	7.69	.....	.....	9.14	8.83	8.33
10	8.19	7.83	.....	.....	7.45	7.58	7.68	.....	8.85	9.13	8.80	8.31
11	8.19	7.83	.....	.....	7.48	7.58	7.68	.....	8.88	9.13	8.79	8.26
12	8.16	7.82	.....	.....	7.48	.....	7.69	.....	.....	9.12	8.77	8.18
13	8.15	.....	7.35	6.91	7.47	.....	.....	8.35	8.90	.....	8.75	8.15
14	8.13	.....	7.35	.....	7.49	7.56	.....	8.38	8.92	9.11	8.72	8.13
15	8.13	.....	.....	.....	7.50	7.56	.....	8.40	.....	9.11	8.71	8.12
16	.....	7.80	.....	7.10	.....	7.57	7.74	8.41	.....	9.10	8.70	8.10
17	.....	.....	.....	.....	.....	7.56	7.75	8.41	9.00	9.10	8.69	8.08
18	.....	.....	.....	.....	7.60	7.56	7.75	.....	.....	9.10	8.68	8.07
19	.....	7.75	7.30	7.08	7.65	.....	7.78	8.42	.....	9.08	8.66	8.06
20	.....	7.73	.....	7.02	.....	7.50	.....	8.45	9.00	9.09	8.64	8.00
21	8.02	7.70	.....	7.00	7.65	7.50	.....	8.47	9.01	9.08	8.64	7.99
22	.....	7.68	.....	.....	.....	7.50	.....	8.48	9.00	9.08	8.62	7.99
23	.....	7.65	.....	.....	7.65	7.50	.....	.....	9.02	9.08	8.60	7.97
24	.....	7.62	7.20	6.95	7.63	7.50	.....	.....	.....	9.07	8.59	7.95
25	8.00	7.60	7.15	6.94	7.60	7.50	7.88	8.50	9.02	9.07	8.58	7.91
26	7.98	7.58	.....	.....	7.59	.....	.....	8.50	9.02	9.05	8.56	7.89
27	7.97	7.55	7.14	7.00	.....	.....	.....	8.51	9.04	.....	8.55	7.86
28	7.96	.....	7.13	7.02	.....	.....	.....	8.51	9.04	9.01	8.54	7.84
29	7.96	.....	7.12	.....	.....	.....	7.92	8.51	9.07	8.99	8.53	7.83
30	7.96	.....	7.10	.....	.....	7.48	7.95	8.53	9.08	8.98	8.52	7.82
31	7.96	.....	7.10	.....	.....	.....	.....	8.56	.....	8.95	8.51	.....

NOTE.—Gage heights not recorded when lake was too rough for accurate reading.

TRUCKEE RIVER AT TAHOE, CAL.

LOCATION.—In the NW. ¼ sec. 7, T. 15 N., R. 17 E., at Tahoe, Placer County, a short distance below dam at outlet of Lake Tahoe.

DRAINAGE AREA.—519 square miles.

RECORDS AVAILABLE.—July 3, 1895, to February 29, 1896; June 17, 1900, to September 30, 1915.

GAGE.—Vertical staff fastened to a large cottonwood tree on left bank, 300 feet below dam at outlet of Lake Tahoe. Original gage, 100 feet above, was destroyed by dredging operations July 15, 1912.

DISCHARGE MEASUREMENTS.—Made from cable 140 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel; practically permanent.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge for year, 652 second-feet November 24; minimum mean daily discharge, 5 second-feet May 2 to June 24.

1895–96 and 1900–1915: Maximum mean daily discharge, 1,340 second-feet July 13–20, 1907 (stage, 4.3 feet); minimum, river dry during parts of 1900, 1901, and 1914.

WINTER FLOW.—Stage-discharge relation not seriously affected by ice.

DIVERSIONS.—Above are diversions.

REGULATIONS.—Flow regulated by operation of gates in dam at Lake Tahoe.

COOPERATION.—Complete record furnished by United States Reclamation Service, which maintains the station in cooperation with Stone & Webster Engineering Corporation.

Discharge measurements of Truckee River at Tahoe, Cal., during the year ending Sept. 30, 1915.

[Made by Stone & Webster Engineering Corporation and U. S. Reclamation Service.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Oct. 2	3.20	364	July 15	2.02	105
2	4.25	701	Aug. 30	3.44	436

Daily discharge, in second-feet, of Truckee River at Tahoe, Cal., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	488	618	457	552	216	261	10	6	5	22	402	402
2	367	618	457	552	249	261	10	6	5	22	402	402
3	367	618	457	552	249	261	10	6	5	22	426	402
4	367	618	457	552	249	261	10	6	5	22	426	399
5	367	618	457	552	227	261	10	6	5	22	426	396
6	367	367	457	552	205	273	10	6	5	22	426	396
7	367	367	457	426	205	273	7	5	5	22	426	367
8	367	367	457	339	205	273	7	5	5	22	457	367
9	367	367	457	339	185	273	7	5	5	22	457	367
10	367	457	457	339	205	286	7	5	5	98	457	367
11	367	457	457	339	205	286	7	5	5	98	457	367
12	367	457	457	339	205	312	7	5	5	141	457	339
13	367	457	457	339	205	312	7	5	5	96	457	339
14	339	457	552	261	205	273	7	5	5	96	457	339
15	339	457	552	261	205	273	7	5	5	98	457	339
16	339	457	552	339	185	273	7	5	5	163	457	336
17	339	457	552	339	185	174	7	5	5	163	426	353
18	339	552	552	312	185	174	7	5	5	141	426	353
19	339	552	552	273	164	174	7	5	5	141	426	353
20	339	552	552	249	164	174	7	5	5	212	423	353
21	339	552	552	299	195	174	7	5	5	498	423	353
22	339	552	552	299	195	174	7	5	5	315	423	353
23	339	552	552	339	195	174	7	5	5	315	423	353
24	299	652	552	273	164	84	7	5	22	315	448	353
25	367	457	552	273	164	84	7	5	22	372	448	367
26	426	457	552	249	164	84	7	5	22	378	448	367
27	520	457	552	249	164	84	7	5	22	378	448	367
28	520	457	552	249	261	92	6	5	22	378	448	367
29	520	457	552	249	.....	92	6	5	22	378	445	367
30	585	457	552	216	.....	92	6	5	22	402	438	312
31	618	.....	552	216	.....	10	.....	5	.....	402	438	.....

Monthly discharge of Truckee River at Tahoe, Cal., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
October	618	299	392	24,100
November	652	367	497	29,600
December	552	457	512	31,500
January	552	216	346	21,300
February	261	164	200	11,100
March	312	10	202	12,400
April	10	6	7.5	446
May	6	5	5.2	320
June	22	5	9.0	536
July	498	22	186	11,400
August	457	402	438	26,900
September	402	312	363	21,600
The year	652	5	264	191,000

NOTE.—Monthly discharge computed by U. S. Geological Survey.

TRUCKEE RIVER AT ICELAND, CAL.

LOCATION.—In sec. 36, T. 18 N., R. 17 E., above dam of ice company, 400 feet northeast of Southern Pacific Railroad station at Iceland, Nevada County, and about 23 miles west of Reno, Nev.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—August 1, 1912, to September 30, 1915. Records were obtained at a station about 3 miles downstream at the State line from September 7, 1899, to August 31, 1912.

GAGE.—Barrett & Lawrence water-stage recorder on right bank above dam; auxiliary vertical staff is fastened to gage well.

DISCHARGE MEASUREMENTS.—Made from cable 130 feet above gage.

CHANNEL AND CONTROL.—Bed composed of small boulders; fairly smooth and permanent. Left bank high; right bank subject to overflow at high stages. Dam of National Ice Co. serves as permanent control.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge for year, 4,470 second-feet May 12; minimum mean daily discharge, 373 second-feet February 26.

1907–1915: Maximum mean daily discharge reported, 15,300 second-feet March 18, 1907 (stage, 11.5 feet); minimum mean daily discharge reported, 310 second-feet December 10, 1908 (stage, 7.9 feet).

WINTER FLOW.—Stage-discharge relation probably affected by ice.

DIVERSIONS.—The Union Ice Co. diverts water above gage; the diversion of the National Ice Co. below gage is equivalent to the same amount of diversion above, since the gage indicates only the water flowing over the dam.

REGULATION.—See Truckee River at Tahoe.

COOPERATION.—Records furnished by United States Reclamation Service, which maintains the station in cooperation with Stone & Webster Engineering Corporation.

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Discharge measurements of Truckee River at Iceland, Cal., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Mar. 28	H. J. Tompkins	2.20	920	July 17	R. E. Hartley	1.64	493
June 2	R. E. Hartley	3.39	2,280	Sept. 1	do	1.74	557

Daily discharge, in second-feet, of Truckee River at Iceland, Cal., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	526	706	580	625	425	461	756	1,550	2,270	898	590	520
2	476	706	580	660	534	501	890	1,370	2,390	898	583	520
3	476	706	526	660	455	468	1,590	1,090	2,100	875	583	590
4	476	706	526	660	425	475	1,560	1,040	1,780	833	590	555
5	476	706	580	660	481	475	1,320	1,050	1,780	756	604	520
6	429	526	580	697	455	475	976	1,050	1,820	683	590	520
7	429	429	580	735	415	476	1,010	1,070	1,880	604	590	488
8	476	476	526	520	401	481	1,110	1,230	2,240	534	604	488
9	476	476	526	488	395	487	1,100	1,370	2,340	488	590	488
10	476	526	526	488	408	475	1,310	2,890	2,000	590	597	488
11	476	526	526	488	415	501	1,390	4,070	1,900	611	590	590
12	476	526	526	488	415	512	1,910	4,476	1,560	611	590	488
13	476	526	526	488	408	520	2,130	2,030	1,460	611	590	490
14	476	526	526	455	415	604	1,470	3,900	1,320	555	590	488
15	476	526	610	395	408	555	1,520	2,890	1,270	455	590	488
16	476	526	610	488	425	597	1,920	2,340	1,270	431	590	455
17	429	526	610	488	440	541	2,060	2,270	1,350	475	555	455
18	476	526	610	500	401	562	2,300	2,240	1,290	488	548	468
19	476	580	610	425	395	583	2,690	2,280	1,220	443	541	468
20	476	580	610	401	390	583	1,460	1,720	1,050	462	541	468
21	526	580	610	390	390	604	2,500	1,400	1,660	625	541	455
22	476	640	610	385	390	604	2,110	1,370	1,100	660	541	455
23	476	640	610	419	415	639	2,000	1,370	1,100	646	548	455
24	476	706	610	437	408	749	1,720	1,390	1,040	618	569	488
25	526	580	610	401	395	819	1,520	1,330	998	625	569	507
26	526	526	610	385	373	840	1,420	1,300	875	618	569	470
27	580	526	610	390	380	784	1,430	1,550	861	611	562	470
28	580	526	610	401	385	875	1,750	1,880	875	590	562	470
29	640	526	610	385	.....	927	1,760	2,040	911	576	562	470
30	640	526	610	390	.....	756	1,820	1,850	897	576	562	470
31	706	.....	610	395	.....	668	.....	1,920	.....	576	555	.....

Monthly discharge of Truckee River at Iceland, Cal., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
October	706	429	503	30,900
November	706	429	570	33,900
December	610	526	581	35,700
January	735	385	490	30,100
February	534	373	416	23,100
March	927	461	609	36,900
April	2,690	756	1,620	96,400
May	4,470	1,040	1,910	117,000
June	2,390	861	1,460	86,900
July	898	431	614	37,800
August	604	541	574	35,300
September	590	455	490	29,200
The year	4,470	373	820	593,000

NOTE.—Monthly discharge computed by engineers of U. S. Geological Survey.

TRUCKEE RIVER AT RENO, NEV.

LOCATION.—In sec. 11, T. 19 N., R. 19 E., at Virginia Street Bridge in Reno, Washoe County, 6 miles above mouth of Steamboat Creek, and 12 miles below the Nevada-California boundary.

DRAINAGE AREA.—1,070 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 1, 1906, to September 30, 1915.

GAGE.—Vertical staff fastened to retaining wall on left bank about 20 feet below bridge; datum 4,481.60 feet above sea level.

DISCHARGE MEASUREMENTS.—Made from the Rock Street Bridge 800 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; fairly permanent. One channel at all stages; river confined by retaining walls on either side.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.6 feet May 13 (discharge, 3,900 second-feet); minimum stage, 0.2 foot July 21 (discharge, 36 second-feet).

1906–1915: Maximum stage recorded, 8.2 feet March 18, 1907 (discharge, 14,600 second-feet); minimum stage, —0.1 foot July 2 and 3, 1912 (discharge, 18 second-feet).

WINTER FLOW.—Stage-discharge relation seldom affected by ice.

DIVERSIONS.—Numerous diversions for Truckee Valley above and below station.

REGULATION.—Flow affected somewhat by the operation of several power plants above station, by storage at Lake Tahoe, and by irrigation diversions for Truckee Valley.

ACCURACY.—Records good.

COOPERATION.—Gage heights furnished by United States Weather Bureau.

The following discharge measurement was made by A. B. Purton:

August 27; Gage height, 0.80 foot; discharge, 125 second-feet.

Daily discharge, in second-feet, of Truckee River at Reno, Nev., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	338	630	500	562	338	338	780	1,380	2,070	500	129	129
2	250	630	500	630	441	388	860	1,120	2,200	500	154	107
3	250	700	500	562	338	388	1,420	1,030	1,850	562	154	129
4	250	700	500	562	388	388	1,420	860	1,520	562	154	154
5	250	630	500	562	338	388	1,220	860	1,520	441	129	129
6	250	441	500	562	338	388	940	780	1,630	441	154	129
7	250	441	500	562	338	388	940	780	1,850	388	129	154
8	250	441	500	500	338	338	940	860	2,070	388	129	129
9	250	388	500	441	338	338	940	1,030	1,960	130	154	154
10	250	388	500	388	388	338	1,220	2,076	1,740	338	154	107
11	293	441	500	388	441	388	1,630	3,200	1,630	293	154	107
12	250	441	500	500	338	388	2,070	3,720	1,220	293	182	284
13	293	441	500	500	338	388	2,460	3,900	1,320	215	129	88
14	293	441	500	441	293	500	1,520	2,740	1,030	215	154	72
15	250	500	500	388	338	500	1,420	2,070	940	156	129	88
16	250	500	500	293	388	500	1,850	2,200	940	107	129	88
17	250	441	500	388	388	562	2,200	2,200	940	72	154	88
18	250	441	562	388	338	500	2,330	1,960	940	88	129	88
19	250	500	562	441	338	562	2,460	1,630	860	58	129	72
20	250	562	500	388	293	562	2,600	1,520	780	58	129	72
21	338	562	500	388	293	562	2,200	1,120	780	36	129	72
22	293	562	500	388	293	630	1,850	1,030	700	247	129	72
23	250	562	562	388	338	700	1,740	1,120	700	213	107	72
24	250	630	562	388	338	860	1,420	1,030	700	129	129	72
25	293	700	500	388	338	860	1,320	1,030	562	154	129	107
26	388	500	500	338	338	940	1,220	1,030	562	129	154	154
27	441	[illegible]	562	293	293	780	1,120	1,220	441	182	154	129
28	500	500	562	338	338	860	1,630	1,520	441	154	129	107
29	500	500	562	338	.....	940	1,630	1,850	500	182	129	88
30	630	500	562	338	.....	780	1,660	1,740	562	182	129	88
31	441	.....	562	338	.....	700	.....	1,850	.....	182	107	.....

NOTE.—Discharge determined from two well-defined rating curves, one used Oct. 1 to July 15 and the other July 16 to Sept. 30. Discharge on May 1 interpolated, as no gage reading was obtained.

Monthly discharge of Truckee River at Reno, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	630	250	308	18,900	B.
November	700	388	520	30,900	B.
December	562	500	518	31,900	B.
January	630	293	433	26,600	B.
February	441	293	344	19,100	B.
March	940	338	553	34,000	B.
April	2,600	780	1,570	93,400	B.
May	3,900	780	1,630	100,000	B.
June	2,200	441	1,170	69,600	B.
July	562	36	245	15,100	B.
August	182	107	138	8,480	B.
September	284	72	111	6,600	B.
The year	3,900	36	627	455,000	

TRUCKEE RIVER AT CLARKS, NEV.

LOCATION.—In the SE. ¼ sec. 26, T. 20 N., R. 22 E., at highway bridge about 600 feet from the Southern Pacific Railroad station at Clarks, Storey County.

DRAINAGE AREA.—1,740 square miles.

RECORDS AVAILABLE.—July 1, 1907, to June 6, 1910[1]; August 1, 1910, to September 30, 1915.

[1]At Derby dam, where the discharge is practically the same as at Clarks.

GAGE.—Vertical staff on south abutment of bridge.

DISCHARGE MEASUREMENTS.—Made from highway bridge.

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

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.40 feet May 13 (discharge, 4,320 feet); minimum stage, 2.00 feet July 21 and 24 (discharge, 150 second-feet).

1907–1915: Maximum mean daily discharge, 7,760 second-feet[1] January 1, 1914; minimum mean daily discharge, 65 second-feet August 9, 1913.

WINTER FLOW.—Stage-discharge relation not affected by ice.

DIVERSIONS.—Water is used for irrigation in Truckee Valley above station.

REGULATION.—Flow affected by the operation of several power plants above station and also by manipulation of the outlet gates of Lake Tahoe.

ACCURACY.—Records furnished by the United States Reclamation Service.

Discharge measurements of Truckee River at Clarks, Nev., during the year ending Sept. 30, 1915.

[Made by R. E. Hartley.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
June 18	3.85	1,024	July 21	2.00	135
July 20	2.19	180			

Daily discharge, in second-feet, of Truckee River at Clarks, Nev., for the year ending Sept. 30, 1915.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	460	460	870	810	630	605	1,750	1,830	2,225	705	320	320
2	480	480	870	810	630	605	1,830	1,630	2,135	730	280	340
3	460	460	840	755	605	580	2,270	1,510	2,135	705	260	340
4	500	520	840	780	605	580	1,670	1,430	2,000	730	220	320
5	520	540	810	780	605	580	1,590	1,430	2,045	705	180	280
6	540	600	810	755	630	605	1,550	1,350	2,090	540	165	260
7	560	630	840	755	655	580	1,430	1,330	2,180	580	165	240
8	560	655	840	780	680	605	1,390	1,350	2,225	540	180	220
9	540	680	870	810	705	605	1,315	2,710	2,090	440	200	220
10	540	680	870	755	730	580	1,315	3,160	2,045	420	220	240
11	560	705	840	755	730	580	1,430	3,260	2,090	520	220	260
12	580	705	840	730	705	580	1,830	3,840	1,790	480	180	280
13	560	755	840	730	705	605	1,955	4,320	1,630	440	180	260
14	540	755	780	755	755	655	2,045	2,270	1,590	400	220	280
15	540	780	810	780	840	705	2,180	2,660	1,550	340	220	340
16	580	810	810	755	930	730	2,225	2,710	1,390	360	180	340
17	560	810	840	680	1,020	780	2,270	2,760	1,280	340	220	320
18	580	810	870	655	1,080	780	2,180	2,910	1,210	260	220	300
19	560	840	870	655	990	730	2,135	2,710	1,175	200	180	300
20	560	930	600	630	900	755	2,090	1,630	1,080	180	180	320
21	580	930	705	605	870	840	2,090	1,710	960	150	200	300
22	560	930	730	605	840	870	2,045	1,710	840	220	260	280
23	540	960	730	662	780	900	2,000	1,790	960	180	300	300
24	540	930	755	605	705	930	2,000	1,830	930	150	300	320
25	560	930	755	630	705	930	1,955	2,045	840	200	280	320
26	580	900	730	605	630	930	1,910	2,000	780	260	300	320
27	580	900	780	605	655	930	1,910	2,000	730	300	320	340
28	580	930	755	630	630	1,590	1,870	2,045	705	300	320	340
29	560	930	755	630	.....	1,280	1,910	2,090	705	320	300	360
30	580	900	755	605	.....	1,430	1,910	2,180	680	340	280	340
31	600	.....	780	605	.....	1,590	.....	2,225	.....	340	300	.....

[1] Discharge at Reno Mar. 18, 1907, 14,600 second-feet.

Monthly discharge of Truckee River at Clarks, Nev., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
October	600	460	550	33,800
November	960	460	762	45,300
December	870	600	800	49,200
January	810	602	698	42,900
February	1,080	605	750	41,700
March	1,590	580	808	49,700
April	2,270	1,315	1,870	111,000
May	4,320	1,330	2,210	136,000
June	2,225	680	1,470	87,500
July	730	150	399	24,500
August	320	165	237	14,600
September	360	220	300	17,900
The year	4,320	150	903	654,000

NOTE.—Monthly discharge computed by engineers of the U. S. Geological Survey.

DONNER CREEK NEAR TRUCKEE, CAL.

LOCATION.—In the NE. ¼ sec. 17, T. 17 N., R. 16 E., below dam of Donner Creek Ice Co., below mouth of Cold Creek, and 1½ miles west of Truckee, Nevada County.

DRAINAGE AREA.—30 square miles.

RECORDS AVAILABLE.—October 23, 1902, to September 30, 1915, when station was discontinued.

GAGE.—Inclined staff on left bank, 375 feet below dam; read by an employee of United States Reclamation Service. Previous to June 1, 1909, several gages, having different datums, were used.

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

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

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.1 feet May 13 and 14 (discharge, 518 second-feet); minimum stage, no flow March 4–13.

1902–1915: Maximum stage recorded, 5.5 feet March 18, 1907 (discharge, 980 second-feet); minimum stage, creek dry during parts of almost every year.

WINTER FLOW.—Stage-discharge relation affected at times by ice.

DIVERSIONS.—Not known.

REGULATION.—Flow is controlled by operation of outlet gates at dam.

ACCURACY.—Records fair.

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

Discharge measurements of Donner Creek near Truckee, Cal., during the year ending Sept. 30, 1915.

[Made by H. J. Tompkins.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Dec. 4	a 0.45	3.5	Aug. 9	−.26	11
Mar. 27	+.34	46			

a Some ice on control.

Daily discharge, in second-feet, of Donner Creek near Truckee, Cal., for the year ending Sept. 30, 1915.

Day	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		20	7.0	52	62	217	350	103	17	10
2		20	20	52	73	165	389	87	17	10
3		20	15	52	103	142	313	87	7.5	10
4	3.7	20	10	.0	95	142	313	82	7.5	10
5		20	7.0	.0	87	165	313	77	6.0	10
6		20	10	.0	87	165	246	72	6.0	10
7		20	10	.0	87	217	246	67	13	10
8		20	7.0	.0	95	246	246	62	13	10
9		20	3.0	.0	112	313	217	57	13	10
10		32	7.0	.0	132	389	246	52	13	10
11		32	20	.0	190	473	217	47	13	10
12		32	142	.0	165	473	217	42	13	10
13		32	142	.0	165	518	190	37	10	10
14		41	103	28	165	518	165	32	10	10
15		41	103	28	246	473	165	27	10	10
16		41	103	35	313	473	165	22	10	10
17		41	62	35	370	389	165	22	10	10
18		41	62	43	370	389	142	22	10	10
19		32	62	43	350	389	142	22	10	10
20		20	52	52	313	389	165	22	10	10
21		20	52	52	313	350	165	22	10	7.5
22		20	52	52	313	313	142	22	10	7.5
23		20	43	52	278	246	142	22	10	7.5
24		15	43	52	246	246	142	22	10	7.5
25		15	43	52	217	246	142	22	10	7.5
26		15	43	57	217	217	142	22	10	7.5
27		10	52	57	246	278	121	22	7.5	7.5
28		10	52	73	246	278	121	17	7.5	7.5
29		10	.....	62	217	278	121	17	7.5	7.5
30		10	.....	62	217	278	121	17	7.5	7.5
31		20	.....	73	.....	313	.....	17	7.5	.....

NOTE.—Discharge determined from two fairly well defined rating curves, applicable Oct. 1 to Feb. 12 and Feb. 13 to Sept. 30. No record Oct. 1 to Dec. 3 and Dec. 5–29. Discharge July 4 to 15 interpolated.

Monthly discharge of Donner Creek near Truckee, Cal., for the year ending Sept. 30, 1915.

[Drainage area, 30 square miles.]

Month.	Discharge in second-feet.				Run-off.		Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.	Depth in inches on drainage area.	Total in acre-feet.	
January	41	10	23.5	0.783	0.90	1,440	B.
February	142	3.0	47.4	1.58	1.65	2,630	C.
March	73	.0	34.3	1.14	1.31	2,110	C.
April	370	62	203	6.77	7.55	12,100	B.
May	518	142	313	10.4	11.99	19,200	B.
June	389	121	199	6.63	7.40	11,800	B.
July	103	17	40.7	1.36	1.57	2,500	D
August	17	6.0	10.2	.340	.39	627	C.
September	10	7.5	9.17	.306	.34	546	C.
The period						53,000	

LITTLE TRUCKEE RIVER AT BOCA, CAL.

LOCATION.—In sec. 28, T. 18 N., R. 17 E., at Boca, Nevada County, 150 feet above mouth of stream, and 500 feet below ice-pond dam.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—January 1, 1911, to September 30, 1915, when station was discontinued. At Pine Station and Starr, 1903–1910.

GAGE.—Inclined staff on left bank 100 feet above railroad bridge; read by an employee of the United States Reclamation Service.

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

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

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.9 feet May 12 (discharge, 1,600 second-feet); minimum stage, 0.05 foot September 12–30 (discharge, 14 second-feet).

1906–1915: Maximum stage recorded, 4.9 feet April 15, 1914 (discharge, 2,360 second-feet); minimum stage, river dry September 26 to October 5 and October 10, 1911, September 6 and 7 and October 6–13, 1913.

WINTER FLOW.—Open-channel rating curve assumed applicable.

DIVERSIONS.—There is a small diversion for power just above station. The plant is operated only during the night and water is returned to river below gage.

REGULATION.—Flow regulated by gates in dam.

ACCURACY.—Records fair even though regulation at dam and operation of power plant tend to make record unsatisfactory.

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

Discharge measurements of Little Truckee River at Boca, Cal., during the year ending Sept. 30, 1915.

[Made by H. J. Tompkins.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Dec. 4	0.46	28	Aug. 9	0.26	19
Mar. 27	1.54	188			

Daily discharge, in second-feet, of Little Truckee River at Boca, Cal., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	29	38	49	16	27	49	283	690	815	283	29	15
2	29	34	49	18	29	49	470	370	815	243	29	15
3	29	34	29	18	38	45	660	370	630	207	25	15
4	29	34	29	18	29	45	520	370	520	207	25	15
5	29	32	41	20	29	41	395	325	575	207	25	15
6	29	32	41	21	34	41	370	325	630	175	25	15
7	29	34	27	25	38	45	370	325	690	148	21	15
8	29	32	20	25	38	45	420	370	815	148	21	15
9	32	32	25	23	41	45	495	470	750	148	21	15
10	32	34	34	23	38	45	548	880	690	124	21	15
11	34	34	34	23	41	45	750	1,370	575	124	21	15
12	38	32	25	25	41	41	880	1,600	470	124	18	14
13	38	32	25	29	45	148	750	1,230	420	103	18	14
14	38	34	27	32	38	54	575	880	370	103	18	14
15	38	32	27	27	41	70	690	750	283	85	21	14
16	38	32	25	25	41	78	750	815	370	70	21	14
17	38	32	21	25	49	85	782	815	470	70	21	14
18	34	32	21	25	49	85	815	815	420	58	18	14
19	34	25	21	23	45	94	815	630	370	58	18	14
20	34	20	21	23	41	94	848	520	325	49	18	14
21	38	18	18	25	41	103	750	470	283	49	15	14
22	38	20	20	23	45	124	630	420	243	49	18	14
23	34	20	20	21	45	148	602	470	283	41	15	14
24	34	21	21	22	45	191	520	470	283	85	18	14
25	38	23	20	21	49	225	750	420	283	70	21	14
26	38	23	20	21	45	207	690	370	243	49	21	14
27	34	21	18	23	45	191	630	470	243	41	18	14
28	32	21	18	23	49	283	950	575	207	34	15	14
29	34	21	18	25	.....	207	950	630	243	34	15	14
30	41	23	16	25	.....	175	950	630	243	34	15	14
31	38	.....	16	27	.....	225	.....	690	.....	29	18	.....

NOTE.—Discharge determined from a fairly well defined rating curve.

Monthly discharge of Little Truckee River at Boca, Cal., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	41	29	34.2	2,100	C.
November	38	18	28.4	1,690	C.
December	49	16	25.7	1,580	C.
January	32	16	23.2	1,430	C.
February	49	27	40.6	2,250	B.
March	283	41	107	6,580	B.
April	950	283	654	38,900	B.
May	1,600	325	630	38,700	B.
June	815	207	452	26,900	B.
July	283	29	105	6,460	B.
August	29	15	20.1	1,240	C.
September	15	14	14.4	857	C.
The year	1,600	14	178	129,000	

HONEY LAKE BASIN.

GOLD RUN CREEK NEAR SUSANVILLE, CAL.

LOCATION.—In the NE. ¼ sec. 17, T. 29 N., R. 12 E., at bridge on county road, at Ridenour & Sons' ranch, about 2½ miles southeast of Susanville, Lassen County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—February 24 to March 31, 1913, and March 21 to September 30, 1915.

GAGE.—Vertical staff nailed to upper side of right bridge abutment; read twice daily by S. D. Ridenour. Gage used in 1913 was at same site but different datum.

DISCHARGE MEASUREMENTS.—Made by wading or from bridge.

CHANNEL AND CONTROL.—Bed composed of gravel and small boulders; shifts frequently.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, above gage May 11 and 12 (discharge not known); minimum stage, below lower limit of gage August 15 to September 30 (discharge, less than 2.0 second-feet).

WINTER FLOW.—Stage-discharge relation probably affected by ice.

DIVERSIONS.—Not known.

REGULATION.—Not known.

ACCURACY.—Rating curve fairly well defined, but some of the discharge measurements were not made according to standard methods and, although they have been corrected by means of comparative measurements, may still be in erorr. Records fair.

Discharge measurements of Gold Run Creek near Susanville, Cal., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Mar. 21	McKay and Crandall	0.48	11.9	Apr. 30	Thad McKay	1.14	25.1
31	Thad McKay	.58	12.6	May 13	do	2.56	104
Apr. 5	do	.56	11.8	June 12	do	.98	13.2
13	do	.64	19.1	12	do	.98	13.2
21	do	1.18	16.7				

Daily discharge, in second-feet, of Gold Run Creek near Susanville, Cal., for the year ending Sept. 30, 1915.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Day.	Mar.	Apr.	May.	June.	July.	Aug.
1	.....	13	18	25	4.7	2.8	16	.....	15	60	11	3.4	.....
2	.....	13	15	27	4.6	2.6	17	.....	19	63	10	3.2	.....
3	.....	15	13	28	4.4	2.6	18	.....	20	57	8.5	3.2	.....
4	.....	13	13	23	4.3	2.5	19	.....	23	50	8.5	3.2	.....
5	.....	12	13	23	4.2	2.4	20	.....	22	28	7.8	3.0	.....
6	.....	12	13	27	4.4	2.6	21	11	18	22	8.5	5.6	.....
7	.....	12	13	24	4.4	2.6	22	12	16	19	7.8	4.0	.....
8	.....	12	12	23	4.4	2.5	23	12	14	18	7.6	3.4	.....
9	.....	12	18	20	4.4	2.5	24	13	12	18	7.0	3.3	.....
10	.....	12	52	19	3.9	2.6	25	13	12	19	6.0	3.1	.....
11	.....	13	175	18	3.6	2.4	26	12	12	17	5.5	3.4	.....
12	.....	15	140	15	3.6	2.4	27	12	17	19	5.0	3.4	.....
13	.....	14	98	13	3.4	2.2	28	18	23	22	5.0	2.8	.....
14	.....	13	72	11	3.2	2.0	29	15	52	28	5.0	2.8	.....
15	.....	13	57	11	3.2	.....	30	13	27	27	5.0	2.6	.....
							31	13	.....	24	.....	2.9	.....

NOTE.—Discharge determined from a fairly well defined rating curve; gage heights Apr. 17–28 and June 3 to Aug. 14 were corrected for backwater, due to temporary dam in the creek below station, before applying the rating table.

Monthly discharge of Gold Run Creek near Susanville, Cal., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
March 21–31	18	11	13.1	286	B.
April	52	10	16.5	982	C.
May	175	12	39.1	2,400	C.
June	28	5.0	13.8	821	C.
July	5.6	2.6	3.68	226	C.
August 1–14	2.8	2.0	2.48	69	D.
The period	.....	.....	.....	4,780	

LASSEN CREEK NEAR SUSANVILLE, CAL.

LOCATION.—In the NW. ¼ sec. 22, T. 29 N., R. 12 E., at Drake ranch, about 2½ miles southeast of Johnstonville, and 4½ miles southeast of Susanville, Lassen County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 13 to April 14, 1913, and March 21 to September 30, 1915.

GAGE.—Staff gage on right bank; read twice daily by Jesse Drake, jr. Gage used in 1913 was a staff gage nailed to bent of highway bridge 1½ miles downstream and at different datum.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of firm clay, shifts frequently. Banks subject to overflow at high water.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.56 feet at 8 a. m. May 11 (discharge, 50 second-feet); minimum stage, probably no flow from middle of August to end of September.

WINTER FLOW.—Stage-discharge relation probably affected by ice.

DIVERSIONS.—Water is diverted above station for irrigation.

REGULATION.—Not known.

ACCURACY.—Records poor.

Discharge measurements of Lassen Creek near Susanville, Cal., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Mar. 21	McKayland Crandall...	1.40	2.2	Apr. 21	Thad McKay.....	1.28	1.7
29	Thad McKay.....	1.58	5.8	30	.....do.....	1.38	3.2
Apr. 5	.....do.....	1.46	2.8	May 13	.....do.....	2.18	15
12	.....do.....	1.40	2.9	June 12	.....do.....	1.06	.2

Daily discharge, in second-feet, of Lassen Creek near Susanville, Cal., for the year ending Sept. 30, 1915.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Day.	Mar.	Apr.	May.	June.	July.	Aug
1	.....	3.0	2.6	2.4	0.04	0.06	16	.....	2.4	4.2	1.0	.04	.....
2	.....	2.5	1.7	2.1	.03	.05	17	.....	1.4	6.5	1.8	.03	.....
3	.....	2.8	1.3	1.2	.04	.06	18	.....	1.4	5.8	2.4	.03	.....
4	.....	3.0	2.4	1.4	.04	.05	19	.....	.9	5.1	2.4	.04	.....
5	.....	3.3	1.0	1.3	.07	.06	20	.....	1.2	4.3	2.4	.05	.....
6	.....	2.7	.8	1.4	.10	.05	21	2.2	1.9	3.3	.7	.04	.....
7	.....	2.3	1.0	1.3	.08	.04	22	2.4	2.1	3.3	.07	.06	.....
8	.....	2.4	1.8	1.3	.09	.03	23	2.6	1.8	3.4	.01	.05	.....
9	.....	2.4	5.1	.6	.10	.02	24	2.5	1.0	3.3	.03	.06	.....
10	.....	2.8	16	.2	.11	.05	25	2.4	.6	2.9	.03	.01	.....
11	.....	3.5	42	.6	.09	.06	26	2.7	.7	2.5	.03	.04	.....
12	.....	3.8	34	.4	.09	.06	27	3.0	.7	2.1	.03	.05	.....
13	.....	3.6	18	.6	.12	.05	28	11	1.0	2.4	.03	.04	.....
14	.....	3.0	12	1.1	.07	.05	29	6.4	3.7	2.6	.05	.04	.....
15	.....	2.9	6.8	1.5	.08	.....	30	3.4	3.2	2.4	.05	.04	.....
							31	3.2	.....	2.6	.....	.06	.....

NOTE.—Discharge determined from five poorly defined rating curves covering the following periods: Mar. 21–27; Mar. 28 and 29; Mar. 30 to Apr. 7; Apr. 11–22 and Apr. 24 to Aug. 14. Discharge determined by indirect method of shifting control Apr. 8 to 10 and 23.

Monthly discharge of Lassen Creek near Susanville, Cal., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
March 21–31	11	2.2	3.80	83	D.
April	3.8	.6	2.27	135	D.
May	42	.8	6.55	403	D.
June	2.4	.01	.95	57	D.
July	.12	.01	.06	4	
August 1–14	.06	.02	.05	1	
September	.....	.....	.....	.....	
The period	.....	.....	.....	683	

BAXTER CREEK NEAR JANESVILLE, CAL.

LOCATION.—In the NE. ¼ SW. ¼ sec. 32, T. 29 N., R. 13 E., 200 feet west of the bridge on county road at ranch of D. J. Sweeny, and 2½ miles northwest of Janesville, Lassen County.

RECORDS AVAILABLE.—February 17, 1913, to July 24, 1915.

GAGE.—Inclined staff on left bank; read twice daily by D. J. Sweeny. March 21, 1915, gage was moved downstream 400 feet; original datum not maintained.

DISCHARGE MEASUREMENTS.—Made from footbridge or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and small boulders; somewhat shifting. An artificial control, effective at low stages, was constructed March 21, 1915, when station was moved 400 feet downstream.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.6 feet at noon May 11 (discharge determined from extension of rating curve, 178 second feet); minimum stage, 1.40 feet (gage installed March 21, 1915) June 20–22 and June 24 to July 24 (discharge, 0.4 second-foot).

1913–1915: Maximum stage recorded, 9.6 feet at 5 p. m. January 25, 1914 (discharge, 360 second-feet); minimum stage, 0.5 foot August 9–31, 1914, June 20–22 and June 24 to July 24, 1915 (discharge, 0.4 second-foot).

WINTER FLOW.—Probably slightly affected by ice for short periods.

DIVERSIONS.—Not known.

REGULATION.—Not known.

ACCURACY.—Records fair. Stage-discharge relation affected at times by the growth of aquatic plants.

Discharge measurements of Baxter Creek, near Janesville, Cal., during the years ending Sept. 30, 1914–15.

Date.	Made by—	Gage height.[a]	Gage height.[b]	Discharge.
		Feet.	*Feet.*	*Sec.-ft.*
1914.				
July 26	L. W. Jordan	0.80	.....	0.8
1915.				
Mar. 20	Lynn Crandall	1.21	1.92	5.5
22	....do	1.26	1.96	6.5
29	Thad McKay	1.70	2.25	11.8
Apr. 5	....do	1.55	2.15	9.0
12	....do	1.70	2.20	10.6
20	....do	1.76	2.31	12.6
30	....do	2.11	2.59	18.7
May 11	....do	5.20	5.47	131
13	....do	3.36	3.71	43.1
14	....do	2.96	3.32	35.6
June 12	....do	1.30	1.85	4.7

[b] New gage established Mar. 21, 1915.
[a] Old gage.

Daily discharge, in second-feet, of Baxter Creek near Janesville, Cal., for the years ending Sept. 30, 1914 and 1915.

[D. J. Sweeney, observer.]

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913-14.												
1	3.5	5.0	5.9	190	15	76	31	43	36	5.5	0.5	0.5
2	3.5	5.4	5.9	242	14	44	30	40	33	5.0	.5	.5
3	3.5	5.4	5.9	101	14	46	30	43	31	4.0	.5	.5
4	3.5	5.4	5.9	85	16	41	38	47	30	4.0	.5	.5
5	3.5	5.4	5.9	64	14	44	39	52	27	3.0	.5	.5
6	3.5	5.4	5.9	57	14	46	40	50	28	2.0	.5	.5
7	3.5	5.4	5.9	57	14	41	40	47	33	2.0	.5	.5
8	3.5	5.4	5.9	57	14	38	38	46	32	2.0	.4	.5
9	3.5	5.4	5.9	31	14	38	47	44	31	2.0	.4	.5
10	3.5	6.4	5.9	22	19	40	59	48	29	1.6	.4	.5
11	3.5	5.4	5.9	19	27	36	54	55	29	1.6	.4	.5
12	3.5	5.4	7.4	18	22	40	50	52	26	1.6	.4	.5
13	3.5	6.4	7.4	14	23	38	54	57	24	1.6	.4	.5
14	3.5	6.9	6.9	142	24	39	55	62	22	1.6	.4	.5
15	3.5	5.9	6.9	68	25	36	59	60	19	1.6	.4	.5
16	3.5	5.9	6.9	43	27	38	59	59	17	1.6	.4	.5
17	3.5	5.4	6.4	37	28	34	52	55	15	1.6	.4	.5
18	3.5	5.4	6.4	37	46	35	50	52	20	1.6	.4	.5
19	3.5	5.4	6.4	27	111	33	54	50	26	1.6	.4	.5
20	3.8	5.4	6.4	28	210	33	62	52	22	1.6	.4	.6
21	4.0	5.4	7.4	64	200	32	64	57	19	.8	.4	.6
22	4.6	5.4	9.0	214	102	31	59	57	18	.8	.4	.6
23	4.6	5.4	9.6	142	64	38	59	55	19	.8	.4	.6
24	4.6	5.4	9.6	184	57	38	59	54	18	.8	.4	.6
25	4.6	5.4	8.5	252	52	33	55	55	16	.8	.4	.6
26	4.6	6.9	8.5	111	47	35	57	44	14	.8	.4	.6
27	4.6	7.4	8.5	29	36	33	59	43	13	.8	.4	.6
28	4.6	6.4	9.6	17	44	31	52	41	12	.8	.4	.6
29	4.6	5.9	9.6	17	.....	31	50	40	8.1	.7	.4	.6
30	4.6	5.9	15	15	.....	29	48	38	5.5	.6	.4	.6
31	4.6	.....	119	15	.....	30	.....	38	.....	.5	.4	.....
1914-15.												
1	.6	3.4	3.9	2.6	25	11	7.9	13	13	.4	.....	.....
2	.6	3.4	3.4	2.6	38	12	8.8	9.7	13	.4	.....	.....
3	.7	3.4	3.4	3.4	9.8	12	9.2	9.0	12	.4	.....	.....
4	.7	3.4	4.4	4.4	8.6	9.8	9.7	13	11	.4	.....	.....
5	.8	3.4	3.9	4.9	6.4	9.2	9.7	9.5	10	.4	.....	.....
6	.8	3.4	3.9	4.9	6.4	8.6	8.4	8.8	9.2	.4	.....	.....
7	.9	3.4	3.4	4.9	6.4	6.9	7.4	9.7	7.9	.4	.....	.....
8	2.0	3.4	3.4	4.9	40	6.9	7.9	9.7	6.7	.4	.....	.....
9	2.4	3.4	3.4	3.9	26	9.8	7.9	18	5.6	.4	.....	.....
10	2.6	3.4	3.4	3.9	12	8.6	8.4	34	5.0	.4	.....	.....
11	2.6	3.4	3.4	4.9	8.0	8.0	8.8	108	3.9	.4	.....	.....
12	2.6	3.4	3.4	4.9	6.9	8.6	10	91	4.2	.4	.....	.....
13	2.6	3.4	3.4	12	6.4	9.2	9.7	52	4.2	.4	.....	.....
14	2.6	3.4	3.4	8.6	6.4	9.2	7.4	38	3.3	.4	.....	.....
15	2.6	3.0	3.4	5.9	6.4	9.8	7.0	32	1.9	.4	.....	.....
16	2.6	3.0	3.4	3.9	25	9.2	7.9	32	1.6	.4	.....	.....
17	3.9	3.0	3.4	3.0	44	10	9.7	32	1.1	.4	.....	.....
18	2.6	3.0	3.4	2.2	22	10	11	30	.7	.4	.....	.....
19	5.9	3.0	3.4	2.2	13	8.6	11	27	.5	.4	.....	.....
20	5.4	3.0	3.4	2.2	19	5.9	12	24	.4	.4	.....	.....
21	4.9	3.4	3.4	2.6	8.6	5.3	12	22	.4	.4	.....	.....
22	3.4	3.0	3.4	2.6	7.4	5.6	12	24	.4	.4	.....	.....
23	3.4	3.0	3.4	2.6	7.4	7.0	8.8	24	.5	.4	.....	.....
24	3.4	3.0	3.4	3.0	8.6	7.9	7.0	23	.4	.4	.....	.....
25	3.4	3.4	3.4	3.9	11	8.4	6.2	20	.4	.....	.....	.....
26	3.4	3.4	3.4	3.9	11	8.4	6.2	19	.4	.....	.....	.....
27	2.6	3.4	3.4	4.9	7.4	8.8	7.0	20	.4	.....	.....	.....
28	2.6	3.9	3.4	4.9	16	16	10	21	.4	.....	.....	.....
29	2.6	4.9	3.4	5.4	.....	13	22	21	.4	.....	.....	.....
30	2.6	4.4	3.4	6.4	.....	9.7	18	19	.4	.....	.....	.....
31	3.4	.....	3.4	7.4	.....	8.4	.....	15	.....	.....	.....	.....

NOTE.—Discharge determined from several fairly well-defined rating curves applicable as follows: Oct. 1, 1913, to Jan. 23, 1914; Jan. 25 to June 25, 1914; June 26 to Sept. 30, 1914; Oct. 10, 1914, to Mar. 20, 1915; and Mar. 21 to July 24, 1915. Discharge estimated Jan. 24, 1914. Discharge Oct. 1–9, 1914, estimated from gage heights and noted conditions of aquatic growth and sand deposits in stream.

Monthly discharge of Baxter Creek, near Janesville, Cal., for the years ending Sept. 30, 1914–15.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
1913–14.					
October	4.6	3.5	3.88	239	D.
November	7.4	5.0	5.72	340	D.
December	119	5.9	11.0	676	C.
January	252	14	77.4	4,760	C.
February	210	14	46.2	2,570	B.
March	76	29	38.0	2,340	B.
April	64	30	50.1	2,980	B.
May	62	38	49.5	3,040	B.
June	36	5.5	22.4	1,330	C.
July	5.5	.5	1.78	109	D.
August	.5	.4	.42	26	D.
September	.6	.5	.54	32	D.
The year	252	.4	25.5	18,400	
1914–15.					
October	5.9	0.6	2.62	161	D.
November	4.9	3.0	3.38	201	D.
December	4.4	3.4	3.48	214	D.
January	12	2.2	4.45	274	D.
February	44	6.4	14.8	822	C.
March	16	5.3	9.09	559	B.
April	22	6.2	9.63	573	B.
May	108	8.8	26.7	1,640	B.
June	13	.4	3.98	237	C.
July 1–24	.4	.4	.40	19	
The period				4,700	

SCHLOSS CREEK AT JANESVILLE, CAL.

LOCATION.—In the N. ½ SW. ¼ sec. 9, T. 28 N., R. 13 E., about half a mile above road crossing at schoolhouse in Janesville, Lassen County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 22 to June 30, 1915, when station was discontinued.

GAGE.—Vertical staff on left bank; read once daily by Harold Bradford.

DISCHARGE MEASUREMENTS.—Made by wading at gage.

CHANNEL AND CONTROL.—Bed composed of loose gravel.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 2.7 feet at 4 p. m. May 11 (discharge, 7.6 second-feet); minimum stage, 2.1 feet at 7 a. m. June 23 (discharge, zero second-foot).

WINTER FLOW.—No records.

DIVERSIONS.—None above station.

REGULATION.—None above station.

ACCURACY.—Records fair.

Discharge measurements of Schloss Creek at Janesville, Cal., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Mar. 22	Lynn Crandall	2.30	0.3	Apr. 20	Thad McKay	2.32	1.4
29	Thad McKay	2.40	1.1	30	do	2.30	1.0
Apr. 5	do	2.38	.8	May 12	do	2.55	4.6
12	do	2.38	1.1	June 12	do	2.24	.4

Daily discharge, in second-feet, of Schloss Creek at Janesville, Cal., for the year ending Sept. 30, 1915.

Day.	Mar.	Apr.	May.	June.	Day.	Mar.	Apr.	May.	June.
1		0.8	3.1	1.1	16		0.7	2.3	0.1
2		.8	2.3	1.1	17		1.3	2.3	.2
3		.8	1.7	1.1	18		1.4	1.7	.1
4		.8	3.1	.6	19		1.6	1.1	.2
5		.7	2.3	1.1	20		1.7	1.1	.1
6		.3	1.7	1.1	21		1.7	1.1	.1
7		.3	1.1	1.1	22	0.3	1.7	1.1	.1
8		.3	1.1	1.1	23	.3	1.7	1.1	.0
9		.3	2.3	1.1	24	.8	1.1	1.7	.1
10		.3	3.1	1.1	25	.8	1.1	1.1	.2
11		.3	7.6	.6	26	.8	1.1	1.1	.1
12		.8	4.8	.6	27	.8	1.1	1.1	.2
13		.9	3.9	.6	28	1.3	1.1	1.7	.2
14		.5	3.9	.2	29	1.3	2.3	1.1	.1
15		.6	3.1	.2	30	1.3	3.1	1.1	.1
					31	1.3		.6	

NOTE.—Discharge determined from two fairly well-defined rating curves applicable Mar. 21 to Apr. 12 and Apr. 20 to June 30. Indirect method for shifting control used Apr. 13–19.

Monthly discharge of Schloss Creek at Janesville, Cal., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
March 22–31	1.3	0.3	0.90	18	C.
April	3.1	.3	1.04	62	D.
May	7.6	.6	2.14	132	D.
June	1.1	.0	.49	29	D.
The period				241	

JANESVILLE CREEK AT JANESVILLE, CAL.

LOCATION.—In the SW. ¼ sec. 9, T. 28 N., R. 13 E., about 50 feet from the old Masonic Building at the town of Janesville, Lassen County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 3 to June 7, 1913, and March 22, to June 30, 1915, when station was discontinued.

GAGE.—Staff gage nailed to cottonwood tree on left bank; read once daily by Harold Bradford.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Composed of gravel and sand; probably shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.9 feet at 4 p. m. May 11 (discharge, 8.3 second-feet); minimum stage, 1.15 feet at 4 p. m. June 29, and 6 p. m. June 30 (discharge, 0.4 second-feet).

WINTER FLOW.—Stage-discharge relation probably affected by ice.

DIVERSIONS.—Not known.

REGULATION.—Not known.

ACCURACY.—Records poor.

Discharge measurements of Janesville Creek at Janesville, Cal., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Mar. 22	Lynn Crandall	1.40	1.6	Apr. 20	Thad McKay	1.60	2.3
29	Thad McKay	1.48	1.4	30	do	1.50	1.6
Apr. 5	do	1.45	1.4	May 12	do	1.80	6.8
12	do	1.40	1.8	June 12	do	1.30	.8

Daily discharge, in second-feet, of Janesville Creek at Janesville, Cal., for the year ending Sept. 30, 1915.

Day.	Mar.	Apr.	May.	June	Day.	Mar.	Apr.	May.	June.
1		1.5	2.6	1.2	16		2.1	3.1	.9
2		1.4	2.6	1.2	17		2.1	2.6	.7
3		1.8	2.1	1.4	18		1.8	2.6	.7
4		1.4	3.1	1.4	19		2.1	2.1	.5
5		1.4	2.6	1.4	20		2.6	2.1	.7
6		1.4	2.1	1.2	21		2.1	1.8	.7
7		1.4	1.8	1.2	22	1.4	2.1	1.4	.5
8		1.4	1.8	1.4	23	1.4	2.1	1.4	.5
9		1.8	1.8	1.4	24	1.8	2.1	1.4	.5
10		1.8	2.1	1.4	25	1.8	2.1	1.4	.5
11		2.0	8.3	1.4	26	1.8	2.1	1.4	.5
12		2.1	6.1	1.2	27	1.8	1.8	1.4	.7
13		2.1	5.2	1.2	28	2.1	2.6	1.4	.5
14		1.8	4.4	1.2	29	1.8	3.1	1.8	.4
15		1.8	3.1	1.4	30	1.8	3.1	1.4	.4
					31	1.8		1.4	

NOTE.—Discharge determined from a poorly defined rating curve.

Monthly discharge of Janesville Creek at Janesville, Cal., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
March 22-31	2.1	1.4	1.75	35	D.
April	3.1	1.4	1.97	117	D.
May	8.3	1.4	2.53	156	D.
June	1.4	.4	.94	56	D.
The period				364	

WARNER LAKES BASIN.

TWENTYMILE CREEK NEAR WARNER LAKE, OREG.

LOCATION.—In sec. 24, T. 40 S., R. 23 E., about one-fourth mile above highway bridge at mouth of canyon, 2 miles south of Warner Lake post office, Lake County; below all tributaries.

DRAINAGE AREA.—155 square miles (measured on map issued by United States Reclamation Service). Total drainage area, 213 square miles, but an area of 58 square miles, tributary to Cowhead Lake, contributed no water to Twentymile Creek from about June 1, 1911, until the spring of 1914, and probably very little in 1914.

RECORDS AVAILABLE.—March 1, 1910, to September 30, 1915.

GAGE.—Barrett & Lawrence water-stage recorder on right bank, December 3, 1914, to September 30, 1915; read weekly prior to this date by F. B. Houston. Original gage, at the bridge March 1, 1910, was removed to the present site on June 3, 1910; gage readings during 1910 and 1911 at the present site were referred to the same datum. Readings for 1912–1914 are referred to a datum 0.32 foot lower than that used during 1911. The water-stage recorder, temporarily installed, was used March 31 to July 20, 1914.

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

CHANNEL AND CONTROL.—Bed composed of boulders and gravel; probably shifts slightly. Control is a solid rock reef, broken by crevices; obstructions on the control change the stage-discharge relation occasionally. Banks not subject to overflow. Stage of zero flow about —0.2 foot gage height.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.1 feet at 7 p. m. May 10 (discharge, 1,020 second-feet); minimum stage, 0.26 foot August 30 and September 1 (discharge, 1.8 second-feet).

1910–1915: Maximum stage recorded, 4.8 feet at original gage at bridge March 1, 1910 (discharge, 2,610 second-feet). The crest of the 1910 flood may have been even higher; minimum stage occurred in 1915.

WINTER FLOW.—Stage-discharge relation not seriously affected by ice; ice forms in the stream but seldom at control; open-channel rating curve assumed applicable.

DIVERSIONS.—Some bottom land is irrigated along Fifteenmile and Twelvemile Creeks and along Eightmile Creek, a tributary of Cowhead Lake. Two small ditches take out just above station. A ditch also diverts from the head of Twelvemile Creek into Lake Anne, a small storage reservoir in the north end of Surprise Valley.

REGULATION.—None.

ACCURACY.—Records excellent for period during which water-stage recorder was in operation; only fair during other periods on account of diurnal fluctuation at high stages and lack of daily readings at low stages.

Discharge measurements of Twentymile Creek near Warner Lake, Oreg., during the year ending Sept. 30, 1915.

[Made by P. V. Hodges.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Mar. 20	2.21	72	Apr. 15	1.59	27
Apr. 3	2.66	141	May 11	4.54	518
6	1.70	33.7			

Daily discharge, in second-feet, of Twentymile Creek near Warner Lake, Oreg., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	3.5	5.3	6.6	6.1	8.4	7.7	112	48	79	11	3.6	1.8
2	3.6	5.3	6.9	6.3	9.4	7.6	113	110	73	10	3.0	1.9
3	3.7	5.3	7.2	6.6	8.0	7.5	159	153	67	10	2.9	2.0
4	3.7	5.3	7.2	6.8	7.8	7 3	62	72	62	9	2.8	2.0
5	3.8	5.3	7.2	7.0	7.5	7.2	46	44	62	9	2.7	2.1
6	3.9	5.3	7.1	7.3	7.3	7.1	37	38	62	10	2.6	2.2
7	3.9	5.3	7.0	7.5	7.0	7.0	34	38	62	15	2.5	2.3
8	4.0	5.3	6.8	7.8	6.8	6.8	32	40	62	8.7	2.5	2.4
9	4.1	5.3	6.7	8.0	7.2	10	28	61	62	8.2	2.4	2.4
10	4.2	5.3	6.6	8.9	6.6	13	28	421	48	7.7	2.3	2.5
11	4.3	5.3	6.5	6.5	6.5	17	30	354	44	7.1	2.3	2.6
12	4.4	5.3	6.1	5.2	8.7	20	32	242	44	6.6	2.2	2.6
13	4.5	5.3	6.0	6.5	10	24	30	112	36	6.1	2.1	2.7
14	4.6	5.3	5.8	5.2	13	28	26	73	33	5.6	2.1	2.7
15	4.7	5.3	5.7	5.8	15	32	27	67	30	5.1	2.0	2.7
16	4.8	6.0	5.5	5.2	14	42	28	67	28	4.5	2.0	2.8
17	4.9	5.2	5.4	5.2	13	53	32	72	28	4.0	2.0	2.8
18	5.0	4.3	5.2	5.2	11	63	33	72	28	3.5	2.0	2.8
19	5.1	3.5	5.2	5.2	10	74	34	67	28	3.5	2.0	2.9
20	5.2	2.6	5.2	7.2	8.9	84	38	62	24	3.5	1.9	2.9
21	5.3	3.0	5.2	7.8	7.7	100	43	62	22	3.5	1.9	2.9
22	5.3	3.3	5.3	8.4	6.5	200	42	62	21	3.5	1.9	3.0
23	5.3	3.7	5.6	8.4	6.7	300	38	57	20	3.5	1.9	3.1
24	5.3	4.0	5.8	8.4	6.9	228	41	57	18	3.0	1.9	3.1
25	5.3	4.4	5.8	8.4	7.0	190	40	52	17	3.0	1.9	3.2
26	5.3	4.7	5.8	8.4	7.2	126	40	62	16	3.0	1.9	3.2
27	5.3	5.1	5.8	8.4	7.4	112	40	72	15	3.0	1.9	3.3
28	5.3	5.5	5.5	8.4	7.5	324	40	84	14	3.0	1.9	3.3
29	5.3	5.8	5.5	8.4	.....	152	100	84	13	3.0	1.9	3.4
30	5.3	6.2	5.5	8.4	.....	78	120	84	12	4.0	1.8	3.4
31	5.3	.....	5.5	8.4	.....	133	.....	84	.....	4.2	1.8	.....

NOTE.—Discharge determined from rating curve well defined above 3 second-feet. Discharge interpolated for following periods: Oct. 1–8, 10–12, 14–20, 22–27, Oct. 29 to Nov. 3, Nov. 5–14, 17–19, Nov. 21 to Dec. 2, Dec. 6–10, 13–17, Jan. 2–8, 23–31, Feb. 4–7, 12–14, 16–21, 23–28, Mar. 2–7, 9–14, 16–19, 21–22, June 1–2, 29–30, July 9–17, 19–22, Aug. 14–20, Sept. 2–10, 12–21, and 23–30. Discharge has been determined from 6 readings taken daily from recorder graph for Mar. 24–25, 28–29, Apr. 2–3, May 2–3, 9–12. Discharge ascertained, by comparison with records for Deep Creek, Jan. 16–19, Apr. 25–30, and July 2–7,

Monthly discharge of Twentymile Creek near Warner Lake, Oreg., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	5.3	3.5	4.65	286	C.
November	6.2	2.6	4.89	291	C.
December	7.2	5.2	6.04	371	B.
January	8.9	5.2	7.14	439	B.
February	15	6.5	8.68	482	B.
March	324	6.8	79.4	4,880	B.
April	159	26	50.2	2,990	B.
May	421	38	96.1	5,910	A.
June	79	12	37.7	2,240	A.
July	15	3.0	5.96	366	B.
August	3.6	1.8	2.21	136	B.
September	3.4	1.8	2.70	161	B.
The year	421	1.8	25.6	18,600	

DEEP CREEK AT BIG VALLEY, NEAR LAKEVIEW, OREG.

LOCATION.—In sec. 4, T. 40 S., R. 22 E., near the dam site for the proposed Big Valley reservoir, 8 miles above mouth of Camas Creek, about 9 miles from Mud Creek stage station, and 12 miles east of Lakeview, Lake County.

DRAINAGE AREA.—76 square miles (measured on map issued by United States Reclamation Service).

RECORDS AVAILABLE.—May 3, 1911, to September 30, 1915. Station discontinued September 30, 1915.

GAGE.—Stevens water-stage recorder on right bank from March 26, 1914, to September 30, 1915; Barrett & Lawrence recorder used December, 1911, to March 25, 1914. Original staff gage, about one-fourth mile below recorder, was used until December, 1911, and as a reference gage for the recorder until May 28, 1912. May 28 to August 21, 1912, a staff gage at cable was used as a reference gage. Gage heights for 1912 previous to August 22 were referred to the cable gage by means of comparative readings. Since August 22, 1912, a staff gage on the stilling well of the water-stage recorder has been used as a reference gage.

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

CHANNEL AND CONTROL.—Bed composed of gravel and sand; control rock and firm gravel; practically permanent. Banks subject to overflow at high stages for a short distance each side of the main channel.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 3.78 feet at 2 p. m. May 10 (discharge, 355 second-feet); minimum stage, 0.30 foot August 27 and 30 (discharge, 2.5 second-feet).

1911–1915: Maximum stage recorded, 5.27 feet for cable gage at 12 p. m. May 29, 1912 (discharge, 790 second-feet)*; minimum stage, 0.30 foot August 27 and 30, 1915 (discharge, 2.5 second-feet).

WINTER FLOW.—Stream freezes over at gage, but probably not at control; stage-discharge relation practically unaffected by ice.

DIVERSIONS.—A large area of wild hay land (perhaps 2,000 acres) is irrigated in Big Valley above station by natural flooding in the spring and from ditches during summer.

REGULATION.—None.

ACCURACY.—Records good except when recording gage was not working properly. Discharge estimated for periods when gage was not working. Total yearly run-off is practically correct.

Discharge measurements of Deep Creek at Big Valley, near Lakeview, Oreg., during the year endnig Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 17	J. E. Stewart	0.64	11.1	Apr. 11	P. V. Hodges	1.96	98
Dec. 6	do	a.50	6.3	21	do	2.60	164
Mar. 28	P. V. Hodges	2.30	126	May 10	do	3.78	357

a Stage-discharge relation may have been affected by ice.

Daily discharge, in second-feet, of Deep Creek at Big Valley, near Lakeview, Oreg., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	6.3				99	203	234	19	11	3.0
2	6.9				137	189	216	18	9.6	3.1
3	12				224	175	190	17	8.4	
4	9.6				135	161	179	18	7.2	
5	9.0				100	147	170	19	6.5	
6	9.3		6.0		85	133	167	23	6.5	
7	9.3				90	120	166	28	6.0	
8	9.0				80	106	161	25	6.0	
9	9.3				80	106	150	24	5.5	
10	14				95	297	132	22	5.5	
11	17				104	280	127	20	5.0	
12	15				113	250	124	17	5.0	
13	14				107	206	106	16	5.0	
14	14				90	209	91	15	4.5	
15	14				97	188	80	15	4.5	
16	12	6.0			110	180	72	14	4.0	
17	12	6.0		15	126	196	68	14	4.0	
18		5.2		25	134	249	68	13	4.0	
19		6.0		50	141	216	67	12	4.0	
20		6.6		60	152	182	62	11	4.0	
21		6.9		80	163	213	58	10	3.8	
22		7.8		90	147	210	54	8.8	3.8	
23		8.1		100	130	195	50	7.7	3.7	
24		10		110	151	204	46	6.6	3.4	
25		7.5		100	128	184	42	5.6	3.1	
26		10		92	128	184	38	3.6	2.8	
27				76	140	199	34	3.6	2.5	
28				141	157	230	30	4.0	2.6	
29				107	223	241	28	4.2	2.8	
30				79	217	234	23	9.6	2.5	
31				80		234		16	2.8	

NOTE.—Discharge determined from rating curve fairly well defined from 100 to 400 second-feet; Mar. 17–25, by comparison with Adel record; May 8 and 9, estimated as for a gage height of 2.1 feet, the lowest point shown by the recorder, for the period Apr. 30 to May 9, during which time the clock was stopped; Apr. 30 to May 7, June 21–27, July 18–24, and Aug. 5–18, interpolated. Mean discharge Oct. 18–31 estimated 10 second-feet; Nov. 1–15 and 27–30, 8 second-feet; Dec. 1–31, 6 second-feet; Jan. 1 to Feb. 28, 8 second-feet; Mar. 1–16, 10 second-feet; Sept. 1–30, 3.3 second-feet.

Monthly discharge of Deep Creek at Big Valley, near Lakeview, Oreg., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October			10.7	658	C.
November			7.74	461	C.
December			[a] 6.0	369	D.
January			[a] 8.0	492	D.
February			[a] 8.0	444	D.
March	141		44.0	2,710	C.
April	224	80	129	7,680	A.
May	297	106	197	12,100	B.
June	234	23	101	6,010	B.
July	28	3.6	14.2	873	C.
August	11	2.5	4.84	298	C.
September			[a] 3.3	196	D.
The year	297	2.5	44.7	32,300	

[a] Estimated.

DEEP CREEK AT ADEL, OREG.

LOCATION.—In the SE. ¼ sec. 21, T. 39 S., R. 24 E., just back of Wible's Hotel at Adel, Lake County, about one-eighth mile upstream from wagon bridge crossing creek; below all tributaries.

DRAINAGE AREA.—250 square miles (measured on map issued by United States Reclamation Service; revised since publication of Water-Supply Paper 390).

RECORDS AVAILABLE.—May 11, 1909, to September 30, 1915.

GAGE.—Barrett & Lawrence water-stage recorder June 20 to September 30, 1914, and March 19 to May 27, 1915; Friez recorder used March 10 to June 19, 1914; recorders refer to vertical staff in two sections on left bank above a series of rapids; datum unchanged since 1913; daily readings on staff gage at other times by M. Wible. From 1909 to 1912 the gage apparently rose gradually 0.11 foot and was not corrected.

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

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; probably permanent except for slight shifts affecting only low water. Banks subject to overflow during extreme floods. Gage height of zero flow about 2.0 feet.

EXTREMES OF DISCHARGE.—Maximum stage during the year from water-stage recorder, 4.7 feet at 2 p. m. April 3 (discharge, 552 second-feet); minimum stage, 2.35 feet August 19–21 (discharge, 2.0 second-feet).

1909–1915: Maximum stage recorded, 9.0 feet at 6 p. m. March 2, 1910 (discharge, 4,950 second-feet); minimum stage, 2.35 feet August 19–21, 1915 (discharge, 2.0 second-feet).

WINTER FLOW.—Stage-discharge relation affected occasionally by backwater from ice jams; control generally remains open.

DIVERSIONS.—Several small ditches divert water for irrigation near headwaters of stream, and 2,000 or 3,000 acres of land are watered by natural flooding near Big Valley and Crane Lake, but much of the water is probably returned to stream. The most important diversions are those made within 2 miles above gage, near the mouth of the Deep Creek canyon, by five ditches having a total capacity of about 30 second-feet. The M. C. ditch (capacity, about 200 second-feet) takes out one-eighth mile below gage. Gages were installed and read on the Company and M. C.-Givan ditches during part of the irrigation season of 1915. Occasional measurements were made of the others (see p. 199), and an estimate prepared of their discharge.

REGULATION.—None.

ACCURACY.—Rating curve well defined. Records good during time when recording gage was running; poor at other times.

Discharge measurements of Deep Creek at Adel, Oreg., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 11	J. E. Stewart	2.82	19.2	Mar. 29	P. V. Hodges	4.15	326
Mar. 19	P. V. Hodges	3.30	84.0	Apr. 19	....do	4.00	283

Daily discharge, in second-feet, of Deep Creek at Adel, Oreg., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1	11	22	17	18	25	205	227	330	24	7
2	11	22	16	18	22	259	211	320	24	7
3	22	22	18	22	22	435	255	300	24	7
4	18	22	16	18	22	377	233	275	28	7
5	11	22	18	18	22	269	191	250	32	7
6	9	22	.....	22	25	211	172	225	36	7
7	9	22	.....	22	25	211	158	210	40	7
8	10	19	.....	25	25	197	153	191	44	7
9	10	18	.....	22	25	177	177	153	36	5.5
10	9	24	.....	18	25	197	377	148	36	2.5
11	11	16	.....	18	25	219	461	140	36	2.5
12	11	22	.....	22	25	249	470	135	30	2.5
13	10	22	.....	18	25	233	377	125	24	2.5
14	11	22	.....	22	25	191	337	120	16	2.5
15	11	25	.....	22	25	194	326	115	7	2.5
16	13	22	.....	22	25	219	283	105	7	2.5
17	13	18	.....	18	25	233	272	100	7	2.5
18	18	19	.....	18	25	246	337	95	7	2.5
19	30	16	.....	18	108	265	365	85	7	2.0
20	51	18	.....	22	134	265	297	80	7	2.0
21	30	22	.....	22	172	265	301	75	7	2.0
22	22	16	.....	22	239	233	294	65	7	.....
23	22	18	.....	22	319	208	265	60	7	.....
24	22	18	.....	25	357	227	259	55	7	.....
25	22	18	.....	25	290	219	265	50	7	.....
26	22	22	.....	25	205	194	272	45	7	.....
27	22	18	.....	25	205	191	272	40	7	.....
28	22	18	.....	25	301	202	330	35	7	.....
29	22	13	.....	.....	319	233	340	30	7	.....
30	25	22	.....	.....	219	283	350	27	7	.....
31	30	.....	.....	.....	191	.....	340	.....	7	.....

NOTE.—Discharge, Oct. 1 to Apr. 1, determined from rating curve well defined above 12 second-feet; Apr. 2 to Aug. 21, from rating curve well defined above 6 second-feet; curves are the same above 30 second-feet. Discharge estimated Mar. 27–28, May 28 to June 7, June 11–30; interpolated July 4–7. Gage-height record poor and discharge uncertain except during the period Mar. 19 to May 27, when recorder was working. Mean discharge Aug. 22–31 estimated 2.0 second-feet.

Monthly discharge of Deep Creek at Adel, Oreg., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	51	9	18.1	1,110	B.
November	25	13	20.0	1,190	B.
December	.....	.....	a 20.0	1,230	D.
January	.....	.....	a 25.0	1,540	D.
February	25	18	21.2	1,180	D.
March	357	22	113	6,950	B.
April	435	177	237	14,100	A.
May	470	153	289	17,800	B.
June	a 330	27	133	7,910	D.
July	44	7	17.7	1,090	D.
August	7	2.0	3.55	218	D.
September	.....	.....	a 5.0	298	D.
The year	470	2.0	75.4	54,600	

a Estimated.

Monthly discharge of ditches diverting water from Deep Creek above Adel, Oreg., for the period April to September, 1915.

Month.	Discharge in second-feet.					Total.	
	Crump.	M. C.—Givan.	Wible Messner.	Company.	Wible.	Second-feet.	Acre-feet.
April	a 0.5	0.6	a 3.0	2.36	0.0	6.46	384
May	a 1.0	3.51	a 8.0	12.4	a 1.0	25.9	1,590
June	a 1.0	4.46	a 6.0	14.5	a 1.0	27.0	1,610
July	a 1.0	3.77	a 4.0	2.58	a 1.0	12.4	762
August	a 1.0	a 2.0	a 3.0	a 1.0	a 1.0	8.0	492
September	a .5	a 2.0	a 2.0	a 1.0	.0	5.5	327
The period						14.2	5,170

a Estimated.

Monthly discharge of M. C. ditch diverting water from Deep Creek below Adel, Oreg., for the period April to September, 1915.

	Apr.	May.	June.	July.	Aug.	Sept.	Period.
Mean (second-feet)	35.6	87.6	27.3	16.6	2.1	a 3.0	28.7
Total (acre-feet)	2,120	5,390	1,620	1,020	129	178	10,500

a Estimated.

CAMAS CREEK NEAR LAKEVIEW, OREG.

LOCATION.—In the NE. ¼ sec. 3, T. 39 S., R. 22 E., 500 feet below mouth of Blue Creek, and about 20 miles from Lakeview, Lake County.

DRAINAGE AREA.—63 square miles (measured on map issued by United States Reclamation Service; revised since publication of Water-Supply Paper 390).

RECORDS AVAILABLE.—September 11, 1912, to November 19, 1914; occasional readings March 18 to May 9, 1915, when station was discontinued.

GAGE.—Vertical staff on right bank, read once a day. Stevens water-stage recorder used March 27 to November 19, 1914.

DISCHARGE MEASUREMENTS.—Made from foot log or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; fairly permanent. Point of zero flow, about —0.2 foot gage height.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.7 feet at 2.30 p. m. April 29 and 10.30 a. m. April 30 (discharge, 365 second-feet); the stage may have gone higher during the night, or during the high water of May 10–11. No record of minimum.

1913–1915: Maximum stage recorded, 4.47 feet at 8 a. m. April 10, 1914 (discharge, 454 second-feet); minimum stage, 0.40 foot September 17–23, 1913 (discharge, 2 second feet).

WINTER FLOW.—Stage-discharge relation seriously affected by ice; records discontinued.

DIVERSIONS.—A little irrigation is practiced in Camas Prairie, near head of stream.

REGULATION.—None.

ACCURACY.—Determinations of daily discharge for 1915 fair; monthly discharge not computed.

Discharge measurements of Camas Creek near Lakeview, Oreg., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 19	J. E. Stewart	0.65	9.6	Apr. 12	P. V. Hodges	2.51	138
Mar. 18	P. V. Hodges	1.19	27.6	20	do	2.22	108
26	do	2.00	87.1	May 9	do	1.70	61.1
Apr. 10	do	2.30	111	Oct. 10	Henshaw and Batchelder	.41	3.8

Daily discharge, in second-feet, of Camas Creek near Lakeview, Oreg., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Mar.	Apr.	May.	Day.	Oct.	Nov.	Mar.	Apr.	May.
1	7.6	12	.....	139	107	16	13	.....	.....	.....	.....
2	12	11	.....	149	.....	17	22	.....	.....	.....	.....
3	9.6	11	.....	272	87	18	24	8	28	.....	.....
4	8.6	.....	.....	.....	77	19	18	9	39	.....	.....
5	8.8	.....	.....	.....	68	20	14	.....	51	117	.....
6	8.8	.....	.....	.....	51	21	13	.....	.....	107	.....
7	8.6	.....	.....	.....	51	22	12	.....	77	87	.....
8	9.6	.....	.....	.....	45	23	11	.....	97	.....	.....
9	14	.....	.....	.....	59	24	11	.....	127	.....	.....
10	12	.....	.....	127	.....	25	11	.....	117	.....	.....
11	11	.....	.....	137	.....	26	10	.....	89	.....	.....
12	9.6	.....	.....	137	.....	27	11	.....	79	107	.....
13	9.2	.....	.....	.....	.....	28	.....	.....	.....	107	.....
14	8.4	.....	.....	.....	.....	29	12	.....	129	264	.....
15	9.0	.....	.....	.....	.....	30	14	.....	119	280	.....
						31	12	.....	119	.....	.....

NOTE.—Discharge determined from a fairly well defined rating curve; published only for days when gage heights are available.

MUD CREEK NEAR PLUSH, OREG.

LOCATION.—In sec. 32, T. 38 S., R. 22 E., just above road between Lakeview and Plush, about half a mile above junction of Mud and Camas creeks, and 22 miles from Plush, Lake County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 25, 1911, to August 31, 1912; March 27 to May 9, 1915, when station was discontinued.

GAGE.—Vertical staff on left bank 300 feet above highway bridge; read twice daily by Francis Anderson.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of boulders and gravel; slightly shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.35 feet during night of April 11, observed from high-water marks the next morning (discharge, 108 second-feet).

1911–12 and 1915: Maximum stage recorded, 3.9 feet May 21, 1912 (discharge, 303 second-feet); minimum discharge, 2.8 second-feet, obtained from current-meter measurement October 10, 1915.

WINTER FLOW.—Stage-discharge relation may be affected by ice; open-water rating is applicable to all records which have been obtained.

DIVERSION.—None.

REGULATION.—None.

ACCURACY.—Records good.

Discharge measurements of Mud Creek near Plush, Oreg., during the year ending Sept. 30, 1914.

[Made by J. E. Stewart.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Apr. 14	2.58	132	July 13	0.88	6.4
14	2.88	183			

Discharge measurements of Mud Creek near Plush, Oreg., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Mar. 27	P. V. Hodges	0.90	7.6	Apr. 20	P. V. Hodges	1.92	66
Apr. 10	do	1.85	58	May 9	do	1.58	40.2
11	do	2.15	81	Oct. 10	Henshaw and Batchelder.	.72	2.8
12	do	1.80	59				

Daily discharge, in second-feet, of Mud Creek near Plush, Oreg., for the year ending Sept. 30, 1915.

Day.	Mar.	Apr.	May.	Day.	Mar.	Apr.	May.	Day.	Mar.	Apr.	May.
1		10	38	11		75		21		51	
2		9.4	36	12		82		22		42	
3		15	35	13		65		23		35	
4		29	43	14		65		24		40	
5		41	41	15		69		25		26	
6		32	38	16		61		26		32	
7		35	35	17		57		27	9.4	34	
8		33	35	18		49		28	14	36	
9		34	49	19		48		29	12	38	
10		60		20		57		30	11	40	
								31	11		

NOTE.—Discharge determined from well-defined rating curve. Discharge estimated Apr. 24–25, Apr. 28 to May 1, and May 6–8. Total run-off Mar. 27–31, 114 acre-feet; Apr. 1–30, 2,580 acre-feet; May 1–9, 694 acre-feet; for the period Mar. 27 to May 3, 390 acre-feet.

DRAKE CREEK NEAR ADEL, OREG.

LOCATION.—In sec. 9, T. 39 S., R. 23 E. (unsurveyed), at highway bridge, 1 mile above mouth, 8 miles west of Adel, Lake County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—Occasional readings March 18 to May 10, 1915, when station was discontinued.

GAGE.—Vertical staff on left abutment of highway bridge.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of gravel; control rocky; probably permanent. Left bank low, and some water may pass around bridge during floods. The point of zero flow is at zero height.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.54 feet; during flood of March 24–26, determined by leveling to high-water mark (discharge, 137 second-feet); minimum stage, 0.45 foot (discharge, 4.2 second-feet) by current-meter measurement of October 10.

WINTER FLOW.—No records.

DIVERSION.—None.

ACCURACY.—Records good for days when gage was read, but on account of diurnal fluctuation may not represent mean daily discharge correctly. Monthly means have not been computed.

Discharge measurements of Drake Creek near Adel, Oreg., during the period Mar. 18 to Oct. 10, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Mar. 18	P. V. Hodges	0.87	30.6	Apr. 10	P. V. Hodges	0.48	5.8
26	do	.70	18.4	20	do	.47	5.2
28	do	1.44	116	Oct. 10	Henshaw and Batchelder	.45	4.2

Daily discharge, in second-feet, of Drake Creek near Adel, Oreg., for the year ending Sept. 30, 1915.

Date.	Discharge.	Date.	Discharge.	Date.	Discharge.
	Sec.-ft.		*Sec.-ft.*		*Sec.-ft.*
Mar. 18	31	Mar. 30	18	Apr. 28	55
20	19	31	34	29	55
22	62	Apr. 1	24	30	34
23	45	2	34	May 3	18
24	41	3	87	4	12
25	50	10	5	5	12
26	30	19	6	6	6
27	15	20	5	10	12
28	116	27	55		
29	30				

NOTE.—Discharge determined from a well defined rating curve.

M. C.-GIVAN DITCH NEAR ADEL, OREG.

LOCATION.—In sec. 20, T. 39 S., R. 24 E., near intake, about a mile above Adel, Lake County.

RECORDS AVAILABLE.—April 7 to September 30, 1915; some measurements 1911–1914.

GAGE.—Vertical staff; read by Myrtle Wible and J. N. Givan.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Bed composed of gravel; somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.5 feet June 19 (discharge, 7.8 second-feet); minimum discharge, canal dry at times.

ACCURACY.—Records roughly approximate.

This ditch diverts water from right bank of Deep Creek in the N. W. ¼ sec. 20, for irrigating land south of that stream near Adel. Most of the water returned to the creek enters below station at Adel.

Discharge measurements of M. C.-Givan ditch near Adel, Oreg., for the period Apr. 19 to Oct. 6, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Apr. 9	P. V. Hodges	4.60	0.4	May 5	P. V. Hodges	4.91	1.5
14	do	4.60	.3	12	do	5.15	3.7
19	do	4.75	1.2	Oct. 6	F. F. Henshaw	5.22	3.4

Daily discharge, in second-feet, of M. C.-Givan ditch near Adel, Oreg., for the year ending Sept. 30, 1915.

Day.	Apr.	May.	June.	July.	Day.	Apr.	May.	June.	July.
1	.....	1.5	3.2	5.3	16	0.6	2.9	5.1	4.5
2	.....	1.5	3.2	5.2	17	.7	3.5	6.0	4.5
3	.....	1.6	3.2	5.2	18	.8	4.2	6.9	4.4
4	.....	1.6	3.2	5.1	19	.9	4.8	7.8	4.4
5	.....	1.6	3.2	5.1	20	.9	5.4	7.5	4.3
6	.....	1.9	3.0	5.0	21	.9	6.0	7.1	4.3
7	0.4	2.2	2.7	5.0	22	1.0	6.6	6.8	4.3
8	.4	2.6	2.5	4.9	23	1.0	6.1	6.4	3.8
9	.4	2.9	2.2	4.9	24	1.1	5.6	6.1	3.2
10	.4	3.2	2.0	4.8	25	1.1	5.2	5.7	1.8
11	.4	3.5	1.7	4.8	26	1.2	4.7	5.4	.3
12	.3	3.8	1.5	4.7	27	1.2	4.2	5.4	.3
13	.3	3.3	2.4	4.7	28	1.3	3.7	5.4	.3
14	.3	2.8	3.3	4.6	29	1.3	3.2	5.3	.3
15	.4	2.3	4.2	4.6	30	1.4	3.2	5.3	.9
					31	.....	3.2	.....	1.5

NOTE.—Discharge May to July determined from a fairly well defined rating curve. Gage read Apr. 9, 14, 19, May 5, 12, 15, 22, 29, June 5, 12, 19, 26, July 22, 24, 26, 29, 31; discharge interpolated for days when gage was not read. Water turned into canal at 8 a. m Apr. 7.

Monthly discharge of M. C.-Givan ditch near Adel, Oreg., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
April 7–30	1.4	3	0.78	37	D.
May	6.6	1.5	3.51	216	C.
June	7.8	1.5	4.46	265	C.
July	5.3	.3	3.77	232	D.
August	.....	.....	[a]2.0	123	D.
September	.....	.....	[a]2.0	119	D.
The period	.....	.....	.....	992	

[a] Estimated.

COMPANY DITCH NEAR ADEL, OREG.

LOCATION.—In the NE. ¼ sec. 20, T. 39 S., R. 24 E., about half a mile below intake, and a mile above Adel, Lake County.

RECORDS AVAILABLE.—April 8 to September 30, 1915; some measurements 1911–1914.

GAGE.—Vertical staff, about 100 feet below flume crossing Deep Creek; read by J. E. Lemberger.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Bed composed of gravel; somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.95 feet June 22 and 26 (discharge, 18 second-feet); minimum discharge, canal dry at times.

ACCURACY.—Results good for May and June; roughly approximate for April and July.

This ditch diverts water in the NW. ¼ sec. 20, from the right bank of Deep Creek; it crosses the creek about one-fourth mile below the intake and irrigates land lying north of creek near Adel. Return water enters creek for the most part below station at Adel.

Discharge measurements of Company ditch near Adel, Oreg., during the period Apr. 9 to Oct. 6, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Apr. 9	P. V. Hodges	4.84	2.0	May 12	P. V. Hodges	5.60	11.2
14	do	4.85	2.1	Oct. 6	F. F. Henshaw	4.75	.9
May 5	do	5.50	9.2				

Daily discharge, in second-feet, of Company ditch near Adel, Oreg., for year ending Sept. 30, 1915.

Day.	Apr.	May.	June.	July.	Day.	Apr.	May.	June.	July.
1		8	14	15	16	2.2	15	16	
2		8	13	13	17	2.2	16	16	
3		9	13	11	18	0	16	16	
4		9	12	10	19	0	14	14	
5		9.3	14	8	20	0	11	12	
6		11	16	6	21	3	11	13	
7		12	15	4	22	3	11	16	
8	1.4	14	14	4	23	4	10	18	
9	2.1	16	12	3	24	4	11	18	
10	2.1	14	11	2	25	5	14	18	
11	2.1	11	10	2	26	5	15	18	
12	2.2	11	12	1	27	6	15	17	
13	2.2	11	13	1	28	6	15	17	
14	2.2	10	11	0	29	7	15	17	
15	2.2	11	11		30	7	16	17	
					31		15		

NOTE.—Discharge determined from a well-defined rating curve. Gage read about every other day May 10 to June 30; discharge for April and July estimated; discharge interpolated on days when gage was not read. Water turned into canal 8 a. m. Apr. 8.

Monthly discharge of Company ditch near Adel, Oreg., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
April 8–30	7	0	3.08	140	D.
May	16	8	12.4	762	B.
June	18	10	14.5	863	B.
July	15	0	a 2.58	159	D.
August			a 1.0	61	D.
September			a 1.0	60	D.
The period				2,050	

a Estimated.

M. C. DITCH AT ADEL, OREG.

LOCATION.—In sec. 21, T. 39 S, R. 24 E., about one-eighth mile below intake and the same distance from highway bridge at Adel, Lake County.

RECORDS AVAILABLE.—April 16 to September 30, 1915.

GAGE.—Vertical staff on right or upper bank of ditch; read about once a week by J. N. Givan.

DISCHARGE MEASUREMENTS.—Made from foot plank or by wading.

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

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.78 feet at 7.15 p. m. May 11 (discharge, 202 second-feet).

This canal diverts water from right bank of Deep Creek just below highway bridge at Adel, for irrigating land lying on the south side of Deep Creek.

Discharge measurements of M. C. ditch at Adel, Oreg., during the period Apr. 19 to Oct. 6, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Apr. 19	P. V. Hodges	2.70	64	Oct. 6	F. F. Henshaw	1.40	3.8
" 26	do	3.02	98				

Daily discharge, in second-feet, of M. C. ditch at Adel, Oreg., for the year ending Sept. 30, 1915.

Day.	Apr.	May.	June.	July.	Aug.	Day.	Apr.	May.	June.	July.	Aug.
1	.....	80	44	.....	4	16	30	89	34	.....	.....
2	.....	77	37	.....	3	17	44	88	39	.....	.....
3	.....	75	30	.....	3	18	44	87	43	.....	.....
4	.....	72	23	.....	2	19	58	87	48	.....	.....
5	.....	69	16	.....	2	20	69	86	[illegible]	.....	.....
6	.....	70	16	.....	2	21	70	85	41	.....	.....
7	.....	70	16	.....	2	22	70	84	37	13	.....
8	.....	70	16	.....	2	23	70	81	34	13	.....
9	.....	70	16	.....	2	24	70	78	30	13	.....
10	.....	130	16	.....	2	25	102	76	27	13	.....
11	.....	193	16	.....	2	26	94	73	23	13	.....
12	.....	169	16	.....	2	27	91	70	.....	10	.....
13	.....	142	21	.....	2	28	88	67	.....	6	.....
14	.....	116	25	.....	2	29	86	64	.....	5	.....
15	.....	90	30	.....	2	30	83	57	.....	5	.....
						31	.....	50	.....	4	.....

NOTE.—Discharge determined from a well-defined rating curve. Gage read Apr. 18–20, 25–26, May 5, 11, 12, 15, 22, 29, June 5, 12, 19, 25, July 22, 26, 28, 31, Aug. 1, 4, 7, 9–11, 13, 15. Discharge for other days interpolated or estimated. Mean discharge June 27 to July 21, estimated, 20 second-feet; Aug. 16–31, 2 second-feet. Water turned into ditch Apr. 16.

Monthly discharge of M. C. ditch at Adel, Oreg., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
April 16–30	102	30	71.3	2,120	B.
May	193	50	87.6	5,390	B.
June	48	16	27.3	1,620	C.
July	.....	4	16.6	1,020	D.
August	.....	.....	2.1	129	D.
September	.....	.....	*a* 3.0	179	D.
The period	.....	.....	.....	10,500	

a Estimated.

HONEY CREEK NEAR PLUSH, OREG.

LOCATION.—In the SW. ¼ sec. 20, T. 36 S., R. 24 E., half a mile above mouth of canyon, 1 mile above the wagon bridge near Plush, and 1½ miles northwest of Plush, Lake County; below all tributaries.

DRAINAGE AREA.—156 square miles (measured on maps issued by United States Reclamation Service; revised since publication of Water-Supply Paper 390).

RECORDS AVAILABLE.—May 13, 1909, to September 30, 1914; March 1 to May 16, 1915, when station was discontinued.

GAGE.—Barrett & Lawrence water-stage recorder on left bank; installed March 29, 1912; washed away April 15, 1915, in flood caused by the breaking of a dam on Snyder Creek and replaced by a Fuller recorder temporarily installed May 1; temporary staff gage at same site April 16–30, 1915; staff read daily. May 13, 1909, to January 23, 1910, vertical staff gage fastened to wagon bridge at Plush; affected by backwater from a temporary diversion dam and was not replaced after being washed out January 23, 1910. February 24, 1910, to March 9, 1911, vertical staff gage, in two sections, on right bank, half a mile above mouth of the canyon and 1 mile above bridge. March 10, 1911, to January 12, 1912, vertical staff on left bank at datum 1.0 foot lower than that of previous gage; gage-height records, beginning February 24, 1910, have been corrected to this datum. January 13, 1912, Barrett & Lawrence water-stage recorder installed, but proved to be in backwater from diversion dam. March 29, 1912, water-stage recorder installed at its final site, about 50 feet below staff gage and referred to old staff gage used 1910–11. February 13, 1913, reference gage installed on stilling well; datum approximately 1.0 foot lower than that used in 1912. This last datum was maintained until station was discontinued, May 16, 1915.

DISCHARGE MEASUREMENTS.—Made from cable installed May 27, 1914, about 500 feet below gage, or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; may shift in extreme floods by rolling of rocks; control section for high water is a few feet downstream from that for low water and evidently permanent.

EXTREMES OF DISCHARGE.—Maximum gage height (except on April 15, when dam failde), 3.35 feet night of May 3, observed from high-water marks the next day (discharge, 165 second-feet); minimum discharge for year may have been as low as 1 second-foot in September.

1910–1915: Maximum stage recorded, 6.30 feet February 24, 1910, on gage installed that day (discharge, 2,240 second-feet, by current-meter measurement); minimum stage, —0.46 foot July 18, 1910 (discharge, 0.94 second-foot).

FLOOD OF APRIL 15.—The dam on Snyder Creek, about 14 miles above Plush, broke during night of April 14 and crest of flood reached Plush about 4 a. m. April 15. High water is said to have lasted only about two hours. All irrigation diversion dams near Plush were washed away.

The crest of the flood reached a height of 9.20 feet at the recording gage and 8.31 feet at the old gage 50 feet above. The high-water curve defined by 1910 measurements would give a discharge of 3,840 second-feet.

The water was 0.3 foot higher in the blacksmith shop, near the bridge across Honey Creek, than the high-water mark of February, 1890, which would indicate a maximum of about 3,500 second-feet for that flood. This is, of course, subject to error.

There were stored in the Snyder Creek reservoir, when it failed (according to a survey by P. V. Hodges), 571 acre-feet. It may be assumed that about 10 per cent of this was lost en route to the Plush station, leaving 514 acre-feet, equivalent to 259 second-feet for the day. By adding to this 49 second-feet for the natural flow which was interpolated between April 14 and 16, 308 second-feet is obtained; 310 may be used as the probable mean for the day. If the peak discharge of 3,840 second-feet had lasted two hours it would have delivered about 640 acre-feet. This is a rough check on the maximum. The water was probably fairly high, approaching the maximum for about two hours and then gradually lowered to the natural flow.

WINTER FLOW.—Stage-discharge relation affected by ice. Observations discontinued during winter.

DIVERSIONS.—A small quantity of water is diverted near head of stream and used to irrigate a few hundred acres; with this exception the total run-off from the basin above the station is shown by the records.

REGULATION.—By storage in Snyder Creek dam before it was washed out.

ACCURACY.—Conditions during 1914 and 1915 have been favorable; records good. Records for 1912 and earlier years poor.

Discharge measurements of Honey Creek near Plush, Oreg., during the period Nov. 12, 1914, to Oct. 5, 1915

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 12	J. E. Stewart	0.64	4.3	Apr. 17	P. V. Hodges	2.12	50.3
Mar. 21	P. V. Hodges	1.16	15.2	18	do	2.28	60.6
31	do	1.34	20.7	22	do	1.88	38.8
Apr. 2	do	1.70	38.2	23	do	1.73	33.3
7	do	1.68	35.9	24	do	2.04	49.1
8	do	1.61	31.7	May 4	do	2.56	84.8
12	do	1.93	44.7	4	do	2.51	83.8
13	do	2.15	57.3	Oct. 5	Henshaw and Batchelder	*a* .30	1.5
15	do	1.99	44.3				

a Roughly approximate.

Daily discharge, in second-feet, of Honey Creek near Plush, Oreg., for the year ending Sept. 30, 1915.

Day.	Mar.	Apr.	May.	Day.	Mar.	Apr.	May	Day.	Mar.	Apr.	May.
1	8	22	45	11	8	50	125	21	15	48	.....
2	8	35	45	12	8	55	78	22	16	40	.....
3	8	86	159	13	9	51	70	23	19	34	.....
4	8	50	85	14	10	48	70	24	25	46	.....
5	8	44	69	15	13	310	63	25	19	60	.....
6	7	40	45	16	15	50	56	26	18	50	.....
7	7	35	38	17	18	54	.....	27	16	40	.....
8	7	31	43	18	21	59	.....	28	26	38	.....
9	7	47	48	19	16	51	.....	29	31	42	.....
10	7	48	74	20	16	50	.....	30	24	54	.....
								31	21	.....	.....

NOTE.—Discharge determined from a fairly well defined rating curve Mar. 1 to Apr. 14 and from a well-defined curve Apr. 16 to May 16. Mean discharge Apr. 15 has been estimated by adding that resulting from the release of stored water to natural flow as interpolated between the records of Apr. 14 and 16. Discharge Mar. 1–2 estimated.

Monthly discharge of Honey Creek near Plush, Oreg., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
March	31	7	14.2	873	B.
April	310	22	55.6	3,310	B.
May 1–16	159	38	69.6	2,210	B.
The period	.....	.....	.....	6,390	

PELICAN LAKE NEAR ADEL, OREG.

LOCATION.—In the NW. ¼ sec. 10, T. 39 S., R. 24 E., on west shore of lake, about 2 miles north of Adel, Lake County.

RECORDS AVAILABLE.—Occasional readings February 17, 1913, to April 18, 1915.

GAGE.—Vertical staff spiked to a juniper post.

Gage height, in feet, of Pelican Lake near Adel, Oreg., for the year ending Sept. 30, 1915.

March 25	6.50	April 7	6.60
31	6.55	18	6.40

CRUMP LAKE NEAR ADEL, OREG.

LOCATION.—In the SE. ¼ sec. 22, T. 38 S., R. 24 E. (unsurveyed), on the west shore of the lake, 8 miles north of Adel, Lake County.

RECORDS AVAILABLE.—May 21, 1910, to January 15, 1912; occasional readings in 1913, 1914, and 1915.

GAGE.—Vertical staff fastened to a large boulder 50 feet east of county road; datum 4,464.4 feet (United States Reclamation Service datum, which is approximately sea level).

EXTREMES OF STAGE.—Maximum stage recorded during year, 2.48 feet April 8; minimum stage, —.06 foot October 16. From high-water marks on rocks, it appears that the lake has reached a stage of about 5.2 feet.

Gage height, in feet, of Crump Lake near Adel, Oreg., for the period Mar. 25 to Oct. 16, 1915.

March 25	1.73	May 5	2.32
April 3	2.32	12	2.22
8	2.48	October 16	—.06
18	2.37		

HART LAKE NEAR PLUSH, OREG.

LOCATION.—On line between secs. 23 and 26, T. 36 S., R. 24 E., 2 miles north of mouth of Honey Creek, and 2 miles northeast of Plush, Lake County.

RECORDS AVAILABLE.—Occasional readings from June 8, 1910, to September 30, 1915.

GAGE.—Vertical staff nailed to a post; datum used in 1914 and 1915 probably higher than that used in previous years; present gage datum about 4,461 feet above sea level.

EXTREMES OF STAGE.—Maximum gage height recorded during year, 1.86 feet May 4; lowest reading 0.95 foot September 27. Extreme high-water mark noted on this lake is at gage height 5.0 feet.

Gage height, in feet, of Hart Lake near Plush, Oreg., for the year ending Sept. 30, 1915.

March 21	1.33	April 16	1.47
24	1.33	May 4	1.86
31	1.37	September 27	.95

FLAGSTAFF LAKE NEAR PLUSH, OREG.

LOCATION.—In sec. 5, T. 35 S., R. 25 E., in a slough at the south end of lake, 15 miles north of Plush, Lake County.

RECORDS AVAILABLE.—May 31 to June 30, 1910; April 30, 1911, to September 30, 1915 (readings at irregular intervals).

GAGE.—Vertical staff attached to bridge pile; elevation 4,533.5 feet, United States Reclamation Service datum.

EXTREMES OF STAGE.—Maximum stage recorded during year, 0.85 foot March 23; minimum stage, —1.6 feet September 28 (lowest stage on record). The lake had no doubt been falling steadily since the spring of 1914, as practically no water flowed into lake in 1915. Highest recorded stage is 4.15 feet, May 31, 1910. From high-water marks observed in 1914 J. E. Stewart estimated that the highest stage reached in 1910 was 4.5 feet and that the lake had within comparatively recent times been up to about 11.8 feet.

Gage height, in feet, of Flagstaff Lake near Plush, Oreg., during year ending Sept. 30, 1915.

March 23	0.85	September 28	—1.6
May 3	.57		

LOWER CAMPBELL LAKE NEAR PLUSH, OREG.

LOCATION.—In sec. 23, T. 34 S., R. 26 E., and sec. 36, T. 34 S., R. 25 E., on east shore of lake near road, about 20 miles northeast of Plush, Lake County.

RECORDS AVAILABLE.—Occasional readings in 1914 and 1915.

GAGE.—Height of water surface determined by leveling from one of two bench marks.

Elevation, in feet, of Lower Campbell Lake, for the period June 3, 1914, to Oct. 5, 1915.

1914.		1915.	
June 3	11.34	Mar. 23	10.00
July 1	11.87	May 3	9.67
		Oct. 5	7.47

STONE CORRAL LAKE NEAR PLUSH, OREG.

LOCATION.—In secs. 20 and 21, T. 34 S., R. 26 E., on east side of lake near road, about 20 miles northeast of Plush, Lake County.

RECORDS AVAILABLE.—Occasional readings during 1914 and 1915.

GAGE.—Height of water surface determined by leveling from one of two bench marks.

Elevation, in feet, of Stone Corral Lake near Plush, Oreg., for period June 3, 1914, to Oct. 5, 1915.

1914.		1915.	
June 3	11.26	Mar. 23	10.00
July 1	11.67	May 3	9.72
		Oct. 5	7.59

BLUEJOINT LAKE NEAR PLUSH, OREG.

LOCATION.—In sec. 15, T. 33 S., R. 26 E., about 2 miles south of Warren Laird's ranch house, and 30 miles north of Plush, Lake County.

RECORDS AVAILABLE.—Occasional readings March 21, 1911, to September 30, 1915.

GAGE.—Vertical staff on post in lake bed about 200 yards from Laird's pumping plant. Another staff was read in 1911; since then water has fallen below it and water surface has been obtained by leveling from a bench mark; all readings have been referred to the present datum, which is probably slightly below the lowest point of the lake bed.

The lake was dry during the entire year ending September 30, 1915.

ABERT LAKE BASIN.

CHEWAUCAN RIVER AT DAM SITE NEAR PAISLEY, OREG.

LOCATION.—In the NW. ¼ sec. 10, T. 36 S., R. 18 E., ¼ mile below site of proposed reservoir dam of the Paisley project of the Northwest Townsite Co., half a mile below Little Swamp Creek, a mile below South Creek, and about 20 miles south of Paisley, Lake County.

DRAINAGE AREA.—158 square miles (measured on map of Fremont National Forest).

RECORDS AVAILABLE.—June 25, 1912, to September 30, 1915 (fragmentary).

GAGE.—Vertical staff on right bank. Stevens eight-day water-stage recorder installed May 26, 1915.

DISCHARGE MEASUREMENTS.—Made from cable 20 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.45 feet at 9.30 p. m., April 20 (discharge, 272 second-feet); minimum stage, 0.62 foot at 7 a. m. November 18 (discharge 10 second-feet); low stage was caused by the freezing of the river above, temporarily holding back the water.

1912–1915: Maximum and minimum occurred in 1915.

WINTER FLOW.—Stage-discharge relation seriously affected by ice; flow estimated from discharge measurements, observer's notes, and records of temperature.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Records excellent except when stage-discharge relation was affected by ice.

COOPERATION.—Field data furnished by Northwest Townsite Co.

Discharge measurements of Chewaucan River at dam site near Paisley, Oreg., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 20	Daniels and Arbuckle	1.37	59	Apr. 22	W. S. Daniels	2.25	222
Dec. 7	Daniels and Gilmour	a1.52	41.8	June 10	do	1.95	165
Feb. 16	do	a1.60	40	July 2	do	1.25	57
Mar. 4	Daniels and Beane	a1.18	40.6	22	do	1.00	34.8
23	W. S. Daniels	1.68	110	Sept. 4	do	.89	23.8
23	do	1.81	132				

a Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Chewaucan River at dam site near Paisley, Oreg., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	30	41	43	43	34	39	150	210	220	56	38	25
2	37	43	38	43	43	32	190	190	215	57	35	25
3	41	40	38	46	48	38	200	170	206	57	33	25
4	35	37	38	48	29	40	160	170	196	57	32	25
5	35	37	38	38	27	42	130	160	192	57	31	25
6	34	37	38	38	22	38	130	150	190	60	31	25
7	35	29	38	31	22	34	140	150	190	68	28	25
8	35	37	28	26	20	36	130	150	184	61	28	25
9	34	37	22	17	22	38	130	222	172	60	28	25
10	46	35	26	20	18	34	160	248	160	56	28	25
11	45	35	26	18	18	38	190	222	158	49	28	25
12	41	33	26	16	12	37	180	222	148	46	28	27
13	41	43	19	14	13	48	190	222	132	44	28	28
14	37	33	26	14	34	54	160	235	124	44	30	28
15	35	48	26	14	17	80	170	200	118	43	31	28
16	34	39	26	12	36	54	190	200	115	42	29	28
17	36	36	26	14	43	85	222	210	112	41	28	28
18	43	30	26	16	38	100	235	222	109	41	28	26
19	75	27	16	24	36	86	248	210	104	38	28	25
20	62	27	26	19	37	100	260	190	100	35	27	25
21	48	27	13	25	41	108	248	190	93	35	27	25
22	43	27	34	13	25	115	222	210	87	34	27	25
23	41	27	62	16	28	150	210	210	85	33	27	25
24	41	35	74	25	30	150	200	235	82	33	28	25
25	40	43	80	30	32	122	190	200	78	33	28	25
26	40	49	80	62	29	115	180	202	76	32	28	25
27	37	38	86	52	48	115	210	200	72	32	27	25
28	37	37	80	48	48	180	210	218	68	34	25	25
29	37	37	74	52	.....	140	235	218	63	38	25	25
30	41	43	57	43	.....	122	210	220	60	41	25	25
31	41	.....	43	34	.....	130	.....	220	.....	45	25	.....

NOTE.—Discharge determined from two rating curves, one well defined between 30 and 70 second-feet, used Oct. 1 to Nov. 29; the other well defined above 20 second-feet, used Mar. 17 to Sept. 30. Discharge Nov. 19–24 and Nov. 30 to Mar. 16 estimated from discharge measurements, observer's notes of ice thickness, conditions at control, and records of temperature; daily records during winter are subject to error, but the mean discharge for a week or longer is probably correct within 25 per cent.

Monthly discharge of Chewaucan River at dam site near Paisley, Oreg., for the year ending Sept 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	75	30	40.5	2,490	A.
November	49	27	36.2	2,150	B.
December	86	13	41.1	2,530	C.
January	62	12	29.4	1,810	D.
February	48	12	30.4	1,690	D.
March	180	32	80.6	4,960	B.
April	260	130	189	11,200	A.
May	248	150	202	12,400	A.
June	220	60	130	7,740	A.
July	68	32	45.2	2,780	A.
August	38	25	28.7	1,760	A.
September	28	25	25.6	1,520	A.
The year	260	12	73.4	53,000	

CHEWAUCAN RIVER NEAR PAISLEY, OREG.

LOCATION.—In the SW. ¼ sec. 27, T. 33 S., R. 18 E., just above mouth of Mill Creek, half a mile above intake of Conn ditch, and about 2½ miles upstream from Paisley, Lake County.

DRAINAGE AREA.—263 miles (measured on map of Fremont National Forest). At a former gaging station, about 2 miles downstream, the measured drainage area is 272 square miles.

RECORDS AVAILABLE.—January 20, 1914, to September 30, 1915. Records giving practically the same yearly run-off are available as follows: Chewaucan River above Mill Creek near Paisley, Oreg., November 6, 1912, to September 30, 1914; Chewaucan River above Conn ditch, near Paisley, Oreg., April 3 to July 13, 1912; Chewaucan River at Paisley, Oreg., January 4, 1905, to December 31, 1907, and January 18, 1909, to April 15, 1912.

GAGE.—Lietz water-stage recorder, owned and operated by Chewacan Land and Cattle Co., on left bank. Vertical staff on left bank, 50 feet below recorder is read about three times a week; these readings used when the recorder is not running (Chewaucan River above Mill Creek station gage). Both gages refer to same datum, but slope of water surface causes a slight difference in comparative readings on the two gages.

DISCHARGE MEASUREMENTS.—Made from cable about 30 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; control, just above mouth of Mill Creek, is composed of larger rocks; shifts only slightly at high water. Stage of zero flow about —0.3 foot gage height.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 2.40 feet at 6 a. m. April 20 (discharge, 330 second-feet); minimum stage from water-stage recorder, 0.67 foot at 11.30 a. m. November 15 (discharge, 21.5 second-feet). Discharge was practically as low at 6 p. m. November 20 (gage height, 0.72 foot), backwater estimated 0.04 foot, discharge, 22 second-feet.

1905–1907 and 1909–1914: Maximum stage recorded, 9.40 feet at 5 p. m. November 23, 1909 (discharge, estimated from extension of rating curve, 4,000 second-feet); minimum stage, 3.4 feet August and September, 1905, and August, 1907 (discharge, 19 second-feet). These extreme stages were recorded at stations in the immediate vicinity, which have been discontinued.

WINTER FLOW.—Stage-discharge relation seriously affected by ice; flow estimated from discharge measurements, observer's notes, and records of temperature.

DIVERSIONS.—Not more than two or three hundred acres irrigated above station.

REGULATION.—None.

ACCURACY.—Records excellent, except during periods when ice affected stage-discharge relation or gage was not working.

COOPERATION.—Gage-height record and some measurements furnished by W. C. Hammatt, engineer for Chewacan Land & Cattle Co.; some measurements by Northwest Townsite Co.

Discharge measurements of Chewaucan River near Paisley, Oreg., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 22	Bert. Harber[a]	1.10	52	Apr. 2	W. S. Daniels	1.85	185
Nov. 21	W. S. Daniels[b]	[c] 1.00	24.1	23	Guinee and Harber	2.07	262
23	Bert. Harber	[c] 1.30	45	May 16	Hodges and Daniels	2.04	232
Dec. 11	James E. Stewart	[c] 1.42	29.2	27	Richard Guinee	2.01	225
19	Arbuckle and Guinee[a]	[c] 1.67	47.5	June 21	....do	1.36	113
Jan. 20	Richard Guinee	[c] 1.20	45.2	22	W. S. Daniels	1.35	91
21	H. K. Gilmour[b]	[c] 1.25	40.8	July 27	....do	.81	29.6
Feb. 9	Daniels and Gilmour	[c] 1.16	51	27	Richard Guinee	.80	38.6
16	Richard Guinee	[c] 1.02	51	Aug. 23	Bert. Harber	.75	24.6
24	W. S. Daniels	1.10	54	Sept. 20	.....do	.75	27.2
Mar. 10	.....do	1.13	61				
16	Hodges and Daniels	1.26	77				
20	Richard Guinee	1.40	131				

[a] Employee of Chewacan Land & Cattle Co.
[b] Employee of Northwest Townsite Co.
[c] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Chewaucan River near Paisley, Oreg., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	39	53	36	62	108	54	154	222	234	58	41	23
2	42	51	51	62	114	52	198	210	234	55	39	23
3	51	51	42	59	99	54	247	198	222	52	33	23
4	44	51	58	59	91	53	198	186	210	52	31	24
5	42	47	60	62	83	51	164	175	198	55	31	26
6	43	44	41	58	64	54	154	175	198	55	30	26
7	44	45	42	55	62	53	154	175	186	59	29	26
8	41	40	38	56	58	45	144	175	186	59	28	25
9	40	63	32	55	53	42	154	210	186	55	29	26
10	47	42	35	55	47	47	175	272	164	52	29	26
11	54	44	35	55	44	55	186	272	164	48	29	26
12	54	60	36	52	54	62	222	247	154	47	29	28
13	52	53	36	48	48	70	222	234	144	44	28	27
14	51	45	36	46	52	86	198	247	135	43	28	27
15	46	42	36	44	51	104	198	234	126	42	29	28
16	44	55	36	42	55	115	222	222	126	40	29	27
17	45	41	36	36	62	129	247	234	114	38	29	27
18	56	42	36	34	74	133	272	247	108	39	29	27
19	89	44	40	36	91	117	289	247	106	38	28	26
20	99	34	38	43	77	126	301	234	97	38	27	25
21	68	37	35	38	63	135	301	222	94	37	27	26
22	62	43	28	36	50	144	268	210	88	35	26	26
23	63	53	46	32	54	164	242	210	86	33	26	25
24	59	47	101	35	58	186	234	234	85	32	27	26
25	52	51	125	41	58	154	222	234	85	32	27	26
26	51	52	121	50	58	154	234	210	88	30	26	26
27	51	60	123	62	56	144	234	210	82	30	25	25
28	50	50	116	71	55	175	247	222	71	30	24	26
29	51	37	114	76	.....	175	260	234	68	35	23	26
30	51	39	113	78	.....	154	260	234	63	36	22	26
31	53	.....	88	86	.....	154	.....	234	.....	40	23	.....

NOTE.—Discharge determined from well-defined rating curve. Discharge estimated, because of ice Nov. 20–24 and Nov. 29 to Feb. 15. Recorder not working Feb. 20 to Mar. 3; staff gage was read Feb. 20 to Mar. 3, Feb. 22, 24, 26, 27, and Mar. 2 and 3; discharge interpolated for days when gage was not read.

Monthly discharge of Chewaucan River near Paisley, Oreg., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	99	39	52.7	3,240	A.
November	64	34	47.2	2,810	B.
December	125	28	58.4	3,590	C.
January	86	32	52.4	3,220	D.
February	114	44	85.7	5,650	C.
March	186	42	105	6,460	B.
April	301	144	220	13,100	A.
May	272	175	222	13,600	A.
June	234	63	137	8,150	A.
July	59	30	43.2	2,660	A.
August	41	22	28.4	1,750	A.
September	28	23	25.8	1,540	A.
The year	301	22	88.0	63,800	

CHEWAUCAN RIVER AT THE NARROWS, NEAR PAISLEY, OREG.

LOCATION.—Near the west line of sec. 19, T. 34 S., R. 20 E., at a constriction in Chewaucan Marsh known as The Narrows, about half a mile below lower end of outside canal, and 12 miles southeast of Paisley, Lake County. Moss Creek enters the upper marsh 3 miles northwest of station but seldom contributes any water to the river.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—January 18, 1914, to September 30, 1915.

GAGE.—Vertical staff on left bank; read daily by William Koenig and W. W. Hampton, for Chewacan Land & Cattle Co., and three times a week, beginning May 14, 1915, by Mrs. B. A. Webster, for Northwest Townsite Co. During ice period of 1914–15 gage was raised 0.25 foot and was not corrected.

DISCHARGE MEASUREMENTS.—At low water, made by wading; at high water, from plank projecting from a wagon drawn across river by a horse on shore.

CHANNEL AND CONTROL.—Bed composed of gravel, which has been lowered somewhat by dredging; shifts during floods. Stage-discharge relation may be affected in the summer by the growth of aquatic plants; banks not subject to overflow.

EXTREMES OF DISCHARGE.—1914: Maximum stage recorded, 3.50 feet April 20–21 and 24 (discharge, 505 second-feet); minimum stage, 1.00 foot September 8 (discharge, 4 second-feet).

1915: Maximum stage recorded, 1.8 feet April 26 (discharge, 154 second-feet); minimum stage, 0.22 foot September 10 (channel dry).

WINTER FLOW.—Stage-discharge relation affected by ice for two or three months each winter; flow estimated from discharge measurements, observer's notes, and records of temperature.

DIVERSIONS.—About 6,200 acres of upland and 14,300 acres of marsh hay land are irrigated between the gage above Paisley and this station.

REGULATION.—Discharge varies considerably owing to the manipulation of dams and ditches used for irrigating, and to operation of dredge above the station, which was cuttting a new channel for river.

ACCURACY.—Records good, except for periods when stream was obstructed by ice. Conditions for measuring good, and sufficient measurements have been obtained to define curves for periods between the shift in control. After the change in datum during the winter a new rating curve was developed to agree with subsequent measurements.

COOPERATION.—Current-meter measurements and gage readings furnished by Chewacan Land & Cattle Co., W. C. Hammatt, engineer, and Northwest Townsite Co.

Discharge measurements of Chewaucan River at The Narrows, near Paisley, Oreg., during the period Jan. 19, 1914, to Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1914.		*Feet.*	*Sec.-ft*	1914–15.		*Feet*	*Sec.-ft*
Jan. 19	S. A. Mushen [a]	1.60	67	Oct. 16	Daniels and Taylor	1.34	29.7
Feb. 27	R. A. Harrower [b]	1.59	79	23	Bert Harber	1.30	24.1
Mar. 12	Bert Harber [a]	2.70	289	26	Daniels and Taylor	1.45	37.9
21	W. S. Daniels [b]	3.07	376	Nov. 21	Bert Harber	1.35	c 25.7
Apr. 3	do	2.58	271	Dec. 5	Daniels and Gilmour	1.61	c 42.4
7	M. S. Edson [a]	2.73	306	22	Richard Guinee [a]	1.50	c 21.6
16	W. S. Daniels	3.38	474	28	H. K. Gilmour [b]	1.64	c 27.9
25	Bert Harber	3.45	498	Jan. 24	Richard Guinee	1.30	c 24.1
27	W. S. Daniels	3.34	450	Feb. 14	do	1.25	46.2
May 2	do	2.93	363	15	Daniels and Gilmour	1.29	52
7	do	2.74	297	Mar. 6	do	1.29	53
12	do	2.87	338	24	W. S. Daniels	1.44	78
21	Daniels and Moore	3.20	403	25	Richard Guinee	1.42	83
21	Bert Harber	3.20	401	Apr. 20	do	1.70	143
26	Daniels and Moore	3.27	402	May 15	P. V. Hodges	1.14	36.9
June 2	Bert Harber	3.10	359	25	Richard Guinee	1.35	66
10	Daniels and Moore	2.77	270	June 3	W. S. Daniels	1.14	32.6
15	do	2.56	224	14	Guinee and Harber	1.00	18.6
23	do	1.97	113	21	W. S. Daniels	.92	11.4
July 2	Arbuckle and Moore [b]	1.65	72	July 25	Bert Harber	.95	16.1
7	do	1.59	62	28	W. S. Daniels	.92	11.2
20	Daniels and Moore	1.36	28.8	Aug. 20	Bert Harber	.85	8.14
20	Bert Harber	1.35	27.0	21	W. S. Daniels	.84	7.6
Aug. 7	Daniels and Moore	1.20	15.6	Sept. 11	do	.53	.7
21	Bert Harber	1.20	12.8	19	Bert Harber	.75	4.8
Sept. 25	do	1.15	14.0	30	W. S. Daniels	1.06	22.5

[a] Employee of Chewacan Land & Cattle Co.
[b] Employee of Northwest Townsite Co.
[c] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Chewaucan River at The Narrows, near Paisley, Oreg., for the period Jan. 18, 1914, to Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914.												
1					67	110	332	370	370	72	15	8
2					61	110	295	358	355	65	15	8
3					55	102	270	345	355	63	15	6
4					61	80	245	332	330	62	15	4
5					61	80	282	320	318	60	15	6
6					55	195	295	320	305	59	15	8
7					55	215	308	308	305	57	15	6
8					50	245	295	308	305	55	12	4
9					50	282	295	320	292	54	15	8
10					50	295	332	320	280	52	20	6
11					45	295	345	332	268	50	15	6
12					45	295	345	332	242	48	20	15
13					45	320	345	332	242	47	20	6
14					45	332	420	358	230	45	15	6
15					45	345	432	370	220	42	15	8
16					50	358	460	370	200	40	15	8
17					55	370	460	382	190	37	15	24
18				67	67	382	475	382	180	34	14	29
19				67	74	382	490	370	160	32	12	24
20				67	74	382	505	385	140	29	12	20
21				67	88	382	505	385	130	29	15	24
22				61	102	382	490	385	122	24	15	20
23				55	102	395	490	400	108	24	20	15
24				50	88	382	505	400	100	24	12	15
25				74	74	370	490	400	108	24	6	12
26				67	74	370	475	400	108	24	8	15
27				61	80	345	460	400	100	20	8	24
28				61	95	320	445	400	92	20	6	20
29				67	.....	282	420	400	85	20	6	20
30				74	.....	332	408	385	78	20	6	20
31				74	.....	345	.....	370	.....	15	6	.....
1914–15.												
1	20	40	29	34	48	55	41	72	42	10	17	6.0
2	24	40	24	28	48	48	41	72	34	18	22	6.0
3	24	38	45	34	64	48	64	72	31	22	17	1.5
4	24	36	52	28	41	55	90	55	28	28	14	.5
5	24	34	42	22	41	48	79	55	28	31	14	.4
6	24	34	52	28	41	55	64	52	28	34	14	.2
7	24	34	45	22	55	48	55	48	26	34	10	.1
8	24	34	52	22	55	34	55	41	22	34	10	0
9	24	34	40	22	72	41	55	41	22	36	8.4	0
10	24	34	40	22	55	48	48	48	22	34	8.0	0
11	29	34	40	22	34	49	55	64	22	28	7.6	.5
12	29	40	24	22	48	48	64	48	22	28	6.0	1.5
13	29	40	29	22	48	55	81	41	21	28	6.0	1.4
14	29	40	12	28	46	55	72	34	18	26	6.0	1.5
15	29	40	16	22	52	72	64	33	17	22	8.0	5.7
16	29	34	9	22	48	72	64	28	17	22	7.2	10
17	29	34	12	22	55	64	81	28	17	22	8.0	10
18	29	34	24	28	64	76	120	28	14	22	7.6	6.0
19	34	29	29	28	41	64	130	33	14	26	8.0	4.5
20	40	20	34	28	55	48	130	34	14	22	7.6	6.8
21	34	26	34	28	48	48	130	41	13	21	7.6	2.2
22	24	26	22	28	48	55	130	48	10	17	8.0	4.2
23	24	27	12	28	48	64	90	41	10	17	6.0	4.5
24	20	29	24	24	49	76	90	48	14	14	6.0	6.0
25	40	30	22	28	48	81	142	62	10	14	5.4	6.0
26	36	32	20	34	48	64	154	64	10	11	6.0	6.0
27	40	34	24	41	48	48	137	58	10	10	6.0	9.0
28	34	35	28	48	55	40	120	55	11	10	6.0	10
29	34	32	29	41	.....	64	130	49	10	10	6.0	3.0
30	34	29	29	41	.....	55	98	48	8.4	14	6.0	26
31	40	.....	34	48	.....	48	.....	41	.....	17	6.0	.....

NOTE.—Discharge determined from rating curves as follows: Jan. 19 to May 15, 1914, well defined above 70 second-feet; May 20 to Dec. 31, 1914, well defined from 15 to 450 second-feet; Jan. 1 to Sept. 30, 1915, well defined throughout; May 16–19, by indirect method for shifting control. Discharge estimated on account of ice, as follows: Jan. 18 to Feb. 15, Nov. 15–22, 1914; Nov. 30, 1914, to Feb. 9, 1915, and Feb. 13, 1915. Discharge June 28 to July 1, July 3–6, 8–13, and 15–19, and Nov. 23–27, 1914, interpolated. The change in stage-discharge relation on Jan. 1 was due to heaving of gage by ice rather than to shift in control; the gage was not corrected and all gage-height records after this date are referred to a datum 0.25 foot higher than previous records.

Monthly discharge of Chewaucan River at Narrows near Paisley, Oreg., for the period Jan. 18, 1914, to Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
1914.					
January 18–31	67	50	65.1	1,810	C.
February	102	45	64.8	3,600	B.
March	395	80	293	18,000	A.
April	505	245	397	23,600	A.
May	400	308	363	22,300	A.
June	370	78	211	12,600	A.
July	72	15	40.2	2,470	B.
August	20	6	13.3	818	B.
September	29	4	13.2	785	B.
The period				86,000	
1914–15.					
October	40	20	29.1	1,790	A.
November	40	20	33.4	1,990	B.
December	52	9	29.9	1,840	C.
January	48	22	28.9	1,780	C.
February	72	34	50.1	2,780	B.
March	81	34	55.7	3,430	A.
April	154	41	89.1	5,300	A.
May	72	28	47.8	2,930	A.
June	42	8.4	18.8	1,120	A.
July	36	10	22.0	1,350	A.
August	22	5.4	8.88	546	A.
September	26	0	4.65	277	B.
The year	154	0	34.7	25,100	

CHEWAUCAN RIVER AT HOTCHKISS FORD, NEAR PAISLEY, OREG.

LOCATION.—Near line between secs. 11 and 12, T. 35 S., R. 20 E., below lower Chewaucan Marsh, above Crooked Creek, and about 20 miles southeast of Paisley, Lake County. Willow Creek is tributary to the lower marsh but contributes water to it only at times of floods in the early spring, the entire flow being diverted for irrigation at other times.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—January 18, 1914, to September 30, 1915.

GAGE.—Vertical staff on left bank; read daily by William Koenig and W. W. Hampton, for Chewacan Land & Cattle Co., and three times a week, beginning May 14, 1915, by Mrs. B. A. Webster, for Northwest Townsite Co.

DISCHARGE MEASUREMENTS.—Made by wading, at low stages; at high stages, from plank projecting from a wagon drawn across river by a horse on shore.

CHANNEL AND CONTROL.—Bed composed of fine gravel, sand, and mud; control somewhat shifting; growth of aquatic plants, mostly tules, affects stage-discharge relation the greater part of year. Banks low, and overflow is considerable at high stages.

EXTREMES OF DISCHARGE.—1914: Maximum stage recorded, 4.50 feet April 24 (discharge, 400 second-feet); minimum stage, 1.25 feet September 5 (discharge, 8.0 second-feet).

1915: Maximum stage recorded, 2.25 feet February 9, when stage-discharge relation was affected by ice; maximum discharge, 90 second-feet (gage height, 2.0 feet) February 6; minimum, stream reported dry September 7.

WINTER FLOW.—Stage-discharge relation affected by ice three to four months each winter.

DIVERSIONS.—About 7,800 acres of marsh hay land are irrigated between the Narrows and Hotchkiss ford stations. A total of 28,300 acres is watered from river above station.

REGULATION.—Discharge may vary during irrigating season, owing to manipulation of dams and ditches for irrigating the marsh.

ACCURACY.—Records good for 1914, as effect of aquatic plant growth was fairly stable; fair for periods when stream was affected by ice; poor for summer of 1915, when flow was extremely low, but error introduced in total run-off is small.

COOPERATION.—Part of field data furnished by Chewacan Land & Cattle Co., through W. C. Hammatt, consulting engineer, and part by Northwest Townsite Co.

Discharge measurements of Chewaucan River at Hotchkiss ford, near Paisley, Oreg., during the period Jan. 18, 1914, to Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1914.		*Feet.*	*Sec.-ft.*	1914		*Feet.*	*Sec.-ft.*
Jan. 19	S. A. Mushen [a]	1.95	83	Oct. 23	Bert Harber	1.55	33.5
Mar. 12	Bert Harber [a]	3.50	248	26	Daniels and Taylor	1.60	34.1
Apr. 3	Daniels and Moore [b]	3.79	284	Nov. 21	Bert Harber	1.55	26.1
8	M. S. Edson [a]	3.25	235	Dec. 5	Daniels and Gilmour	[c] 1.72	41.1
16	Daniels and Moore	3.96	380	21	Richard Guinee [a]	[c] 1.80	23.9
25	Bert Harber	4.40	332	28	H. K. Gilmour [b]	[c] 1.85	21.1
27	Daniels and Moore	4.39	397				
May 2	do	4.13	340	1915.			
7	do	3.73	271	Jan. 25	Richard Guinee	[c] 1.75	23.8
12	do	3.56	234	Feb. 14	do	[c] 1.80	42.7
21	do	4.00	278	15	Daniels and Gilmour	1.58	52
22	Bert Harber	4.10	262	Mar. 11	do	1.54	49.2
26	Daniels and Moore	4.30	314	25	Richard Guinee	1.40	39.0
June 3	Bert Harber	4.30	293	Apr. 5	W. S. Daniels	1.05	3.0
15	Daniels and Moore	3.89	237	20	Richard Guinee	.95	(d)
23	do	2.99	132	May 15	P. V. Hodges	1.09	3.5
24	W. C. Hammatt [a]	2.90	127	26	Richard Guinee	1.10	2.8
27	Daniels and Moore	2.91	122	June 13	W. S. Daniels	.99	.8
July 2	Arbuckle and Moore	2.40	80	14	Richard Guinee	1.00	(d)
7	do	2.19	57	July 9	Daniels and Taylor	1.59	30.0
20	Daniels and Moore	1.75	28.2	25	Bert Harber	1.35	16.9
20	Bert Harber	1.75	31.1	Aug. 5	W. S. Daniels	1.30	12.8
Aug. 7	Daniels and Moore	1.39	10.5	20	Bert Harber	1.05	2.7
21	Bert Harber	1.40	14.9	21	W. S. Daniels	1.02	2.4
Sept. 25	do	1.45	17.8	Sept. 19	Bert Harber	1.00	.9
Oct. 16	Daniels and Taylor	1.62	30.3	30	W. S. Daniels	1.09	4.0

[a] Employee of Chewacan Land & Cattle Co.
[b] Stage-discharge relation affected by ice.
[c] Employee of Northwest Townsite Co.
[d] Velocity reported too small to measure.

Daily discharge, in second-feet, of Chewaucan River at Hotchkiss ford, near Paisley, Oreg., for the period Jan. 18, 1914, to Sept. 30, 1915.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1914												
1					56	114	313	350	306	86	11	10
2					52	134	300	340	299	76	11	10
3					48	140	280	327	299	73	11	10
4					48	105	261	306	292	69	11	10
5					48	92	261	294	292	66	11	8.0
6					48	124	261	280	285	62	11	10
7					48	178	236	271	285	59	11	10
8					48	194	235	261	285	56	9.5	9.2
9					52	206	254	248	278	53	9.5	10
10					48	236	280	242	271	49	8.0	10
11					52	236	294	236	264	46	9.0	10
12					56	248	287	234	264	43	11	10
13					56	261	294	236	257	40	11	10
14					52	248	306	236	250	37	14	10
15					52	236	334	248	243	36	11	10
16					52	230	380	261	229	34	14	12
17					56	236	382	261	216	33	16	12
18				82	60	294	392	268	203	32	15	24
19				82	74	334	392	268	190	30	15	24
20				69	74	342	392	274	174	29	12	21
21				69	96	350	400	277	162	26	15	21
22				69	119	342	400	271	146	24	15	24
23				69	100	350	400	278	130	21	15	18
24				69	92	313	400	292	125	21	15	18
25				78	87	342	332	299	140	18	12	18
26				69	87	334	366	299	135	18	10	15
27				64	87	327	397	299	125	16	12	21
28				64	92	300	358	299	115	16	10	21
29				64	.....	254	358	299	105	14	10	21
30				64	.....	274	350	299	96	14	10	18
31				64	.....	306	.....	299	.....	11	10	.....
1914–15												
1	21	38	42	25	28	54	16	19	2.0	1.0	14	5.0
2	21	38	35	25	28	54	14	19	2.0	3.4	14	5.0
3	21	38	42	28	32	54	9.0	16	1.0	7.0	14	3.4
4	21	38	50	28	42	54	5.0	14	1.0	7.0	14	2.0
5	21	38	41	28	54	54	3.0	14	1.0	7.0	14	1.6
6	21	38	54	28	90	50	3.0	9.0	1.0	11	12	.5
7	21	35	50	25	76	50	3.0	7.0	1.0	16	11	0
8	21	35	50	25	67	50	3.0	5.0	1.0	19	11	0
9	21	35	54	25	72	50	1.0	3.0	1.0	28	10	0
10	21	35	46	22	62	46	1.0	5.0	1.0	32	9.0	0
11	21	35	46	22	62	50	1.0	5.0	1.0	25	7.0	0
12	24	35	32	25	67	50	1.0	5.0	1.0	22	7.0	0
13	24	35	28	25	62	50	1.0	5.0	.9	19	5.4	0
14	24	35	28	25	43	50	.5	3.8	1.0	19	5.0	0
15	24	35	22	25	52	54	.5	3.8	1.0	19	5.0	0
16	30	35	19	22	50	58	.5	2.4	1.0	18	5.0	0
17	24	35	19	22	50	62	.5	3.8	1.0	16	5.0	0
18	32	32	22	22	54	62	.5	5.0	1.0	16	5.0	.8
19	28	32	22	22	50	54	.5	5.0	.5	16	5.0	.9
20	38	28	25	22	62	50	0	4.6	.5	16	2.8	1.7
21	38	26	24	22	58	46	.5	5.0	.5	15	2.2	2.0
22	38	28	23	22	50	46	5.0	3.0	.5	16	5.0	2.0
23	34	29	22	22	50	50	16	3.0	.5	14	2.8	2.0
24	28	30	19	23	50	35	19	3.0	1.0	14	2.0	1.8
25	28	32	19	24	50	39	16	2.8	1.0	20	4.6	2.0
26	34	33	19	25	54	32	22	3.0	1.0	14	5.0	3.0
27	35	34	16	25	54	28	25	2.7	1.0	11	1.2	5.0
28	35	35	21	28	54	22	22	3.0	1.0	11	5.0	5.0
29	35	35	22	28	.....	22	19	2.0	1.0	11	2.0	5.0
30	35	35	22	28	.....	22	19	2.0	1.0	11	2.0	4.6
31	38	.....	19	28	.....	19	.....	2.0	.....	14	2.5	.....

NOTE.—Discharge determined from fairly well defined rating curves as follows: Jan. 19 to Apr. 3, May 2, to Aug. 10, and Aug. 18 to Oct. 17, 1914. Discharge for all other open-channel periods determined by indirect method for shifting control. Stage-discharge relation affected by ice, and flow estimated from measurements, observer's notes, and studies of temperature, as follows: Jan. 21–22, 27–29, Feb. 2–4, 6–11, Nov. 14–22, 1914; Nov. 23, 1914, to Feb 14, 1915. Discharge estimated Jan. 18, and interpolated June 28 to July 1, July 3–6, 8–13, 15–19, and Nov. 23–27, 1914.

Monthly discharge of Chewaucan River at Hotchkiss ford, near Paisley, Oreg., for the period Jan. 18, 1914, to Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
1914					
January 18–31	82	64	69.7	1,940	B.
February	119	48	65.7	3,650	B.
March	350	92	248	15,200	B.
April	400	235	330	19,600	B.
May	350	234	279	17,200	B.
June	306	96	215	12,800	A.
uly	80	11	39.0	2,400	B.
August	16	8.0	11.8	726	B.
September	24	8.0	14.5	863	B.
The period				74,400	
1914–15					
October	38	21	27.6	1,700	B.
November	38	26	34.1	2,030	B.
December	54	16	30.7	1,890	C.
January	28	22	24.7	1,520	C.
February	90	28	54.4	3,020	B.
March	62	19	45.7	2,810	B.
April	25	0	7.58	448	C.
May	19	2.0	6.00	368	C.
June	2.0	.5	.98	58	
July	32	1.0	15.1	929	B.
August	14	1.2	6.76	416	C.
September	5.0	0	1.76	104	
The year	90	0	21.1	15,300	

CONN DITCH NEAR PAISLEY, OREG.

LOCATION.—In the SE. ¼ sec. 27, T. 33 S., R. 18 E., just below road crossing, half a mile below intake of ditch, and about 2 miles southwest of Paisley, Lake County.

RECORDS AVAILABLE.—July 17, 1914, to September 30, 1915.

GAGE.—Vertical staff on left or upper side of ditch about 40 feet below road bridge; read daily, when water is diverted, by Richard Guinee, for Chewacan Land & Cattle Co.; read occasionally by W. S. Daniels.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Ditch not particularly well built or maintained; control somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 1.75 feet July 20, 1914 (discharge, 19 second-feet); minimum, canal dry at times.

WINTER FLOW.—Stage-discharge relation affected by ice; water generally turned out of canal during extremely cold weather.

ACCURACY.—Records fair.

COOPERATION.—Most of the gage readings and meter measurements furnished by the Chewacan Land & Cattle Co., W. C. Hammatt, consulting engineer, and some by the Northwest Townsite Co.

Conn ditch diverts from Chewaucan River in the SE. ¼ sec. 27, T. 33 S., R. 18 E., and about three-eighths mile below Mill Creek and the gaging station just above. The water is used for irrigating the Conn ranch, on a bench northwest of Paisley.

Discharge measurements of Conn ditch near Paisley, Oreg., during the period July 17, 1914, to Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1914.		*Feet.*	*Sec.-ft.*	1915.		*Feet*	*Sec.-ft.*
July 17	Bert Harber [a]	1.65	18.0	Apr. 23	Richard Guinee [a]	.65	4.1
21	Daniels and Moore [b]	1.72	16.3	May 27	do	.55	2.5
Aug. 5	do	1.05	6.9	June 5	W. S. Daniels	1.30	12.4
17	Bert Harber	1.15	8.6	8	do	1.55	17.0
Sept. 20	do	.45	.6	16	do	1.10	9.3
Oct. 22	do	.45	.6	21	Richard Guinee	1.10	11.2
Nov. 23	do	[c] .65	1.0	July 13	W. S. Daniels	.60	2.9
				27	do	.60	3.3
				Aug. 23	Bert Harber	.60	2.2

[a] Employee of Chewacan Land & Cattle Co.
[b] Employee of Northwestern Townsite Co.
[c] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Conn ditch near Paisley, Oreg., for the period July 17, 1914, to Sept. 30, 1915.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1914.				1914.				1914.			
1		11	8.4	11		7.7	7.7	21	18	8.4	1.6
2		11	8.4	12		7.0	8.4	22	18	8.4	1.6
3		11	8.4	13		6.2	7.7	23	18	8.4	1.5
4		7.0	8.4	14		7.7	7.0	24	17	8.4	1.3
5		7.0	7.7	15		7.7	4.2	25	17	8.4	1.2
6		6.2	7.7	16		7.7	2.6	26	16	8.4	1.2
7		7.0	7.7	17	17	8.4	2.1	27	15	8.4	1.2
8		6.2	7.7	18	17	8.4	1.6	28	16	8.4	1.6
9		5.5	7.7	19	18	8.4	.8	29	16	8.4	1.6
10		6.2	7.7	20	19	8.4	.4	30	11	7.7	1.6
								31	11	7.7	

Day.	Oct.	Nov.	Dec.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.									
1	1.6	0.6	0.5		3.9	11	4.4	2.9	1.3
2	1.2	.6	.5		4.4	12	4.3	2.9	1.2
3	1.4	.6	.5		4.4	12	4.0	2.9	2.2
4	1.2	.6	.5		4.4	12	4.4	4.7	2.2
5	1.2	.6	.5		3.3	12	3.9	4.4	1.8
6	1.2	.6	.5		1.6	12	3.9	4.7	1.8
7	1.2	.5	.5		2.4	12	3.9	4.4	2.8
8	1.2	.4	.4		2.4	14	3.8	4.4	2.5
9	1.2	.6	.4		2.9	16	3.9	4.4	2.2
10	1.2	.4	.3		3.4	15	3.4	4.3	2.2
11	1.2	.8	.2		3.9	17	2.9	4.4	2.2
12	1.2	.8	.2	5.0	4.4	10	2.9	3.7	2.2
13	1.2	.6	.2	5.0	3.9	3.9	2.9	2.2	2.2
14	1.2	.6	.1	3.4	3.4	11	2.9	2.8	2.2
15	1.2	.6	.1	1.2	3.4	11	2.9	2.2	2.3
16	.8	.6	.1	.9	3.4	9.5	2.9	2.2	2.8
17	1.2	.6	.1	5.6	3.4	10	2.9	1.8	2.7
18	.8	.6	.1	6.2	3.4	9.2	2.9	1.8	3.0
19	.8	.3		3.9	3.1	9.5	2.9	2.0	3.2
20	.8	.4		3.9	2.9	9.2	2.9	1.9	2.8
21	.6	.4		3.9	2.9	9.2	2.9	1.8	2.7
22	.6	.3		3.4	2.9	8.9	2.5	1.8	2.2
23	1.0	1.0		3.4	2.9	9.2	2.4	2.2	2.5
24	.8	.8		3.4	2.9	8.9	2.8	2.2	3.2
25	.8	.6		2.9	2.9	8.4	2.9	2.2	3.2
26	.8	.4		2.9	2.9	8.2	2.9	2.0	3.2
27	.8	.6		2.9	2.5	8.4	2.9	2.2	3.2
28	.8	.8		2.9	2.4	8.4	2.9	1.8	2.2
29	.8	1.2		2.9	9.5	7.9	2.9	1.8	1.8
30	.8	.8		2.9	10	13	2.9	1.8	1.5
31	.7				11		2.9	1.8	

NOTE.—Discharge determined from rating curves as follows: July 17 to Dec. 18, 1914, fairly well defined; Apr. 12 to Aug. 3, 1915, well defined 2 to 18 second-feet; Aug. 4 to Sept. 30, 1915, fairly well defined. Discharge Nov. 23–24 and Dec. 1–18, 1914, estimated on account of ice. No water in ditch Dec. 19, 1914, to Apr. 11, 1915.

Monthly discharge of Conn ditch near Paisley, Oreg., for the period July 17, 1914, to Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
1914.					
July 17–31	19	11	16.3	484	B.
August	11	5.5	7.96	490	B.
September	8.4	.4	4.56	271	B.
The period				1,240	
1914–15.					
October	1.6	.6	1.02	63	
November	1.2	.3	.61	36	
December	.5	0	.18	11	
January			0	0	
February			0	0	
March			0	0	
April	6.2	0	2.22	132	B.
May	11	1.6	3.91	239	B.
June	17	3.9	10.6	631	B.
July	4.4	2.4	3.22	198	C.
August	4.7	1.8	2.70	166	C.
September	3.2	1.3	2.42	144	B.
The year	17	0	2.24	1,620	

SMALLS CREEK AT PAISLEY, OREG.

LOCATION.—In the SW. ¼ sec. 24, T. 33 S., R. 18 E., in the western part of the town of Paisley, Lake County, just above the road bridge, about 200 yards below point of diversion from Chewaucan River, and about the same distance above the head gate of Bagley ditch.

RECORDS AVAILABLE.—January 18, 1914, to September 30, 1915.

GAGE.—Vertical staff on right bank; read daily by Bert Harbor and Richard Guinee. An old gage was used up to June 28, 1914.

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

CHANNEL AND CONTROL.—A natural stream channel, fairly straight and narrow, with well-defined banks and gravel bed; shifts only at high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 2.2 feet May 15, 1914 (discharge, 107 second-feet); minimum stage, 0.4 foot November 11, 1914 (discharge, 0.2 second-foot).

WINTER FLOW.—Stage-discharge relation seriously affected by ice; flow estimated from discharge measurements, observer's notes, and records of temperature.

ACCURACY.—Records good except when stream was obstructed by ice, when they are fair.

COOPERATION.—Most of the records furnished by Chewacan Land & Cattle Co., W. C. Hammatt, consulting engineer; some measurements and gage readings furnished by Northwest Townsite Co.

Smalls Creek is a natural slough or defluent of Chewaucan River and has been converted into an irrigation canal. It diverts water from the river in the SW. ¼ sec. 24, T. 33 S., R. 18 E., and irrigates 2,417 acres of the alluvial fan of Chewaucan River above the upper marsh, including 1,209 acres watered from Bagley ditch, which takes out a short distance from the river. The irrigation season extends from about April 1 to September 15. Water is diverted at other times for watering stock. Surplus and return waters find their way to the marsh.

Discharge measurements of Smalls Creek at Paisley, Oreg., during the period Jan. 15, 1914, to Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1914.		*Feet.*	*Sec.-ft.*	1914–15.		*Feet.*	*Sec.-ft.*
Jan. 15	S. A. Mushen [a]	[b] 0.55	1.1	Oct. 22	Bert Harber	0.70	2.3
Mar. 13	Bert Harber [a]	.65	6.8	24	do	.90	6.6
Apr. 4	Edson and Harber [a]	1.00	18.7	Nov. 22	do	[b] .70	2.5
15	Daniels and Moore [c]	.55	5.8	Dec. 19	Arbuckle and Guinee	[b] 1.10	1.1
May 10	Bert Harber	1.50	40.2	Jan. 19	Richard Guinee [a]	[b] 1.50	2.9
14	do	1.95	84	Feb. 16	do	.75	.6
15	Daniels and Arbuckle	2.15	98	Mar. 20	do	.65	3.1
25	Bert Harber	1.70	58	Apr. 23	Guinee and Harber	1.45	34.3
June 1	do	1.75	59	May 28	Richard Guinee	1.65	45.0
15	do	1.40	36.6	June 21	do	1.30	26.6
21	do	1.85	72	July 27	do	1.10	15.3
July 17	do	1.25	21.9	27	W. S. Daniels [c]	1.09	13.2
Aug. 17	do	.95	8.8	Aug. 23	Bert Harber	1.05	12.0
Sept. 20	do	1.00	9.9	Sept. 20	do	1.05	10.4

[a] Employee of Chewacan Land & Cattle Co.
[b] Stage-discharge relation affected by ice.
[c] Employee of Northwest Townsite Co.

Daily discharge, in second-feet, of Smalls Creek at Paisley, Oreg., for the period Jan. 18, 1914, to Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914.												
1					9.0	10	12	18	61		16	8.2
2					2.0	9.0	14	18	57		19	8.2
3					3.0	10	15	20	57		16	8.2
4					3.8	7.8	18	20	53		16	8.2
5					3.0	4.6	25	34	49		14	8.2
6					5.6	6.6	13	36	49		16	8.2
7					3.8	4.6	4.6	42	53		14	8.2
8					3.0	5.6	3.8	49	70		12	14
9					3.0	5.6	3.8	46	53		12	10
10					3.0	10	3.8	46	53		6.5	8.2
11					3.0	4.6	3.8	39	49		6.5	8.2
12					3.0	6.6	2.5	39	53		6.5	8.2
13					3.0	7.8	4.6	74	49		6.5	8.2
14					3.0	9.0	4.6	79	49		6.5	8.2
15					3.0	9.0	5.6	107	46		6.5	10
16					3.0	9.0	7.8	61	46		6.5	10
17					3.0	9.0	14	61	39	22	8.2	16
18					4.6	9.0	14	61	36	30	8.2	16
19					7.8	9.0	15	61	34	34	8.2	10
20					7.8	9.0	9.0	61	70	38	8.2	8.2
21				2.0	9.0	26	7.8	61	65	26	10	8.2
22				4.0	4.6	28	15	61	61	26	10	10
23				6.0	4.6	28	15	57	65	26	8.2	8.2
24				7.8	4.6	26	10	57	74	19	8.2	8.2
25				7.8	3.8	24	5.6	57	84	19	8.2	5.2
26				7.8	4.6	22	4.6	42	70	16	8.2	5.2
27				5.6	4.6	18	3.8	57	74	16	8.2	5.2
28				5.6	4.6	16	14	61	70	16	8.2	5.2
29				5.6	.....	15	19	61	70	19	8.2	5.2
30				5.6	.....	14	18	59	60	19	8.2	5.2
31				5.6	.....	14	.....	61	.....	19	8.2	.....
1914–15.												
1	6.5	5.2	0.9	5.2	5.2	3.2	12	42	53	26	18	10
2	14	5.2	.9	4.0	4.0	3.2	20	42	53	23	16	10
3	8.2	4.0	.9	4.0	3.2	2.5	20	42	49	23	16	10
4	8.2	4.0	.9	8.2	3.2	2.5	16	42	49	23	14	10
5	8.2	3.2	.9	6.5	3.2	2.5	18	42	45	23	12	10
6	8.2	3.2	.9	6.0	1.8	2.5	18	37	45	26	12	10
7	8.2	3.2	.9	5.0	.9	1.9	14	38	45	29	12	10
8	8.2	3.2	.9	5.0	.6	2.5	16	45	45	23	12	10
9	8.2	3.2	.9	4.0	.4	2.5	16	45	45	23	12	10
10	12	2.4	.9	4.0	.2	2.5	18	45	42	20	12	10
11	12	.2	1.2	4.0	.2	7.5	18	53	38	20	12	10
12	4.0	6.5	1.2	3.0	.2	3.2	16	57	38	18	12	12
13	4.0	6.5	1.2	3.0	.6	3.2	16	57	38	18	12	13
14	4.0	6.5	1.2	3.0	.4	6.0	16	57	38	18	12	14
15	4.0	.4	1.2	2.0	.4	6.0	18	55	31	20	14	12
16	4.0	3.2	1.2	2.0	.6	6.0	18	49	31	16	14	12
17	3.2	1.8	1.2	2.0	.9	6.0	22	49	28	14	13	12
18	6.5	2.4	1.2	2.5	1.4	4.0	38	49	28	14	12	11
19	8.2	1.8	1.1	2.9	1.7	5.0	38	51	25	14	13	12
20	12	2.0	1.2	3.2	2.0	3.2	42	45	25	16	14	12
21	8.2	2.2	1.2	6.5	2.5	4.0	42	45	25	16	12	12
22	2.4	2.4	2.4	5.2	2.5	3.2	38	49	25	16	12	10
23	2.4	4.0	4.0	4.0	2.5	3.2	34	49	22	14	12	11
24	2.4	4.0	1.8	4.0	3.2	4.0	42	57	22	16	12	10
25	4.0	3.2	2.4	4.0	2.5	4.0	45	55	22	14	12	12
26	5.2	2.4	3.2	8.2	2.5	5.0	45	53	22	14	12	12
27	5.2	2.4	2.4	6.5	2.5	9.0	49	49	22	14	12	11
28	5.2	1.2	2.4	6.5	3.2	12	49	53	22	14	11	12
29	4.0	.9	3.2	6.5	.....	12	53	53	31	16	10	12
30	4.0	.9	4.0	6.5	.....	12	49	53	31	17	10	12
31	4.0	.....	4.0	5.2	.....	12	.....	51	.....	18	10	.....

NOTE.—Discharge determined from well-defined rating curves as follows: Jan. 18 to June 28, July 17 to Nov. 29, 1914; Feb. 21 to June 30, and July 1 to Sept. 30, 1915. Discharge estimated, on account of ice, Jan. 21–23, 27–31, Feb. 2–18, Nov. 20–21, 1914, and Nov. 30, 1914, to Feb. 20, 1915. Mean discharge estimated, Jan. 18–20, 1914, 1 second-foot; July 1–16, 1914, 40 second-feet; and June 28–29, 1914, as in table.

Monthly discharge of Smalls Creek at Paisley, Oreg., for the period Jan. 18, 1914, to Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
1914.					
January 18-31	7.8	.....	4.74	132	C.
February	9.0	2.0	4.31	239	C.
March	28	4.6	12.5	769	B.
April	25	2.5	10.6	631	B.
May	107	18	51.8	3,190	B.
June	84	34	57.3	3,410	B.
July	.....	16	31.7	1,950	
August	19	6.5	9.91	609	B.
September	16	5.2	8.61	501	B.
The period	.....	.....	.....	11,400	
1914-15.					
October	14	2.4	6.41	394	B.
November	6.5	.2	3.06	182	B.
December	4.0	.9	1.67	102	
January	8.2	2.0	4.60	283	
February	5.2	.2	1.88	104	
March	12	1.9	5.04	310	C.
April	53	12	28.5	1,700	B.
May	57	37	48.7	3,000	B.
June	53	22	34.5	2,050	B.
July	29	14	18.6	1,140	B.
August	18	10	12.6	775	B.
September	14	10	11.1	660	B.
The year	57	.2	14.8	10,700	

BAGLEY DITCH AT PAISLEY, OREG.

LOCATION.—In the SW ¼ sec. 24, T. 33 S., R. 18 E., just below head gate, in the town of Paisley, Lake County.

RECORDS AVAILABLE.—January 18, 1914, to September 30, 1915.

GAGE.—Vertical staff on left bank; read daily by Bert Harber and Richard Guinee.

DISCHARGE MEASUREMENTS.—Made from plank across ditch at gage or by wading.

CHANNEL AND CONTROL.—Bed composed of earth; control unstable.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 2.5 feet May 15, 1914 (discharge, 68 second-feet); minimum, canal dry at times.

WINTER FLOW.—Stage-discharge relation affected by ice from two to four months each winter. Only a small amount of water is carried during extremely cold weather. Discharge estimated from measurements, observer's notes, and climatic data.

16345°—18—WSP 410——15

ACCURACY.—Records only fair on account of frequent shifts in control.
COOPERATION.—Field data furnished by Chewacan Land & Cattle Co., W. C. Hammatt, consulting engineer.

Bagley ditch (sometimes called Brattain ditch) diverts water from Smalls Creek in the SW. ¼ sec. 24, T. 33 S., R. 18 E., a few hundred yards below the point where Smalls Creek diverts from Chewaucan River; extends 6 miles in a southerly direction, and irrigates 1,209 acres lying above the area water by Smalls Creek. Return and waste waters enter upper Chewaucan Marsh. The irrigation season extends from late in March or early in April to about September. Water is diverted for stock throughout the winter.

Discharge measurements of Bagley ditch at Paisley, Oreg., during the period Jan. 15, 1914, to Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge
1914.		*Feet.*	*Sec.-ft.*	1914–15.		*Feet.*	*Sec.-ft.*
Jan. 15	S. A. Mushen	[a] 0.80	0	Oct. 22	Bert Harber	.70	1.8
Mar. 13	Bert Harber	1.10	4.9	Nov. 22	do	[a] 1.25	.6
Apr. 4	Edson and Harber	1.65	14.6	Dec. 19	Arbuckle and Guinee	[a] 1.10	.4
May 10	Bert Harber	1.75	30.5	Jan. 19	Richard Guinee	[a] 1.20	.5
14	do	2.40	63	Feb. 16	do	[a] 1.65	.2
25	do	2.20	41.1	Mar. 20	do	.75	2.7
June 1	do	2.35	54	Apr. 23	Guinee and Harber	1.65	20.2
15	do	1.95	33.8	May 28	Richard Guinee	1.95	26.0
21	do	2.45	56	June 21	do	1.45	13.3
July 26	do	1.25	9.6	July 27	do	1.55	11.8
Aug. 17	do	.90	4.3	Aug. 23	Bert Harber	1.20	8.2
Sept. 20	do	.95	4.5	Sept. 20	do	1.05	5.9

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Bagley ditch at Paisley, Oreg., for the period Jan. 18, 1914, to Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914.												
1					9.6	1.0	8.8		52		12	3.4
2					.2	1.0	9.6		44		15	3.4
3					.8	3.7	10		44		8.0	3.4
4					1.7	2.2	15		42		9.0	4.0
5					1.5	.8	24		42		6.2	3.4
6					1.5	.8	22		39		5.3	3.4
7					1.5	.6			42		4.6	4.0
8					1.5	.8			56		5.3	5.3
9					1.0	1.0			42		5.3	6.2
10					1.0	4.9		31	42		4.0	5.3
11					1.0	5.6		29	42		4.0	6.2
12					1.0	5.6		31	44		4.0	6.2
13					.5	4.9		57	42		4.0	6.2
14					.5	4.9		62	42		4.0	7.0
15					.5	4.9		68	39		4.0	7.0
16					.1	5.6		52	39		4.0	15
17					2.6	6.4		50	30	16	4.0	9.0
18				0.5	2.0	6.4		47	28	23	4.0	8.0
19				.5	2.0	6.4		46	26	20	4.0	4.6
20				.5	1.7	6.4		45	56	25	4.0	5.3
21				1.0	1.0	22		44	54	18	4.0	4.0
22				1.5	.4	26		43	46	20	4.0	4.0
23				2.0	.4	26		42	49	20	4.0	4.0
24				2.5	.3	24		42	59	12	5.3	4.0
25				3.7	.2	20		42	62	11	6.2	2.3
26				4.9	.3	18		32	54	10	7.0	2.3
27				2.6	.3	14		49	56	12	7.0	2.3
28				2.6	.6	11		54	55	12	7.0	4.6
29				2.6		11		46	50	11	4.6	2.3
30				2.6		9.6		46	50	15	4.0	2.3
31				2.6		9.6		46		14	3.4	
1914-15.												
1	2.3	4.0	0.5	1.1	5.3	1.0	8.0	26	26	21	14	6.0
2	8.0	4.0	.5	.9	5.3	1.0	9.0	25	26	20	13	5.2
3	7.0	4.0	.5	.7	4.6	1.5	9.0	25	26	18	12	5.2
4	4.6	4.0	.5	1.1	4.6	1.0	8.0	25	24	20	10	5.2
5	5.3	2.3	.5	1.8	4.6	1.5	10	25	24	20	9.0	5.2
6	5.3	2.3	.5	1.4	3.4	1.0	10	24	24	21	9.0	5.2
7	5.3	1.8	.5	1.1	2.3	1.0	11	24	26	22	8.0	5.2
8	5.3	1.8	.5	.9	1.1	1.5	11	25	24	21	8.0	5.2
9	6.2	1.8	.5	.5	.7	1.5	12	26	24	21	8.0	6.0
10	9.0	1.8	.5	1.2	.2	1.5	12	26	22	20	8.0	6.0
11	11	.4	.5	1.8	.2	.5	12	28	21	18	7.0	6.0
12	2.8	5.3	.5	1.8	2	1.5	12	30	21	17	8.0	7.0
13	2.8	5.3	.5	1.8	.2	2.0	11	30	20	17	9.0	7.0
14	2.3	2.8	.5	1.8	.2	1.5	11	28	20	20	9.0	8.0
15	2.3	.4	.5	1.8	.2	1.5	9.0	28	17	21	10	7.0
16	1.8	.5	.5	1.8	.2	1.5	8.0	28	17	14	10	6.0
17	1.8	.5	.5	1.8	.5	1.5	19	28	16	14	10	6.0
18	4.6	.5	.5	1.2	.5	2.0	22	28	14	14	10	6.0
19	5.3	.5	.5	.5	.5	3.3	26	28	13	14	10	5.2
20	11	.5	.5	2.8	.5	2.6	24	28	13	17	10	5.2
21	5.3	.5	.5	4.0	1.0	3.3	24	28	13	18	9.0	5.2
22	1.8	.6	1.5	2.8	1.0	2.6	21	31	12	17	8.0	5.2
23	1.8	.6	2.5	2.3	1.0	3.3	20	31	12	16	8.0	5.2
24	1.8	.6	2.5	1.8	1.0	3.3	22	32	13	17	8.0	5.2
25	3.4	.6	1.8	.7	1.0	4.2	24	32	14	16	9.0	5.2
26	4.0	1.8	1.1	.7	.8	4.2	24	32	14	14	9.0	5.2
27	4.0	1.1	1.1	.7	1.0	5.0	25	26	16	13	9.0	5.2
28	4.0	.7	2.3	.7	1.0	5.0	25	26	17	16	8.0	5.2
29	4.0	.6	2.8	.7		5.0	26	26	20	14	7.0	5.2
30	4.0	.6	1.8	2.8		6.0	26	26	21	14	6.0	5.2
31	4.0		1.1	5.3		8.0		26		17	7.0	5.2

NOTE.—Discharge determined from a number of rating curves applicable for short periods, and by indirect method for shifting control. Stage-discharge relation affected by ice, and flow estimated, Jan. 18–25, Feb. 5–15, 18–19, 1914, and Nov. 14, 1914, to Feb. 25, 1915. Mean discharge estimated as 30 second-feet July 1–16, 1914. There was no water in the ditch from Apr. 7 to May 9, 1914.

Monthly discharge of Bagley ditch at Paisley, Oreg., for the period Jan. 18, 1914, to Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
1914.					
January 18-31	4.9	0.5	2.15	60	
February	9.6	.1	1.28	71	
March	26	.6	8.55	526	B.
April	24	0	2.98	177	B.
May	68	0	32.4	1,990	B.
June	62	26	45.6	2,710	B.
July		10	23.2	1,430	
August	15	3.4	5.52	339	B.
September	15	2.3	4.95	295	B.
The period				7,600	
1914-15.					
October	11	1.8	4.58	282	B.
November	5.3	.4	1.74	104	
December	2.8	.5	.94	58	
January	5.3	.5	1.62	100	
February	5.3	.2	1.54	85	
March	8.0	.5	2.59	159	C.
April	26	8.0	16.4	976	C.
May	32	24	27.5	1,690	C.
June	26	12	19.0	1,130	B.
July	22	13	17.5	1,080	B.
August	14	6.0	9.03	555	B.
September	8.0	5.2	5.66	337	B.
The year	32	.2	9.05	6,560	

JONES-INNIS-ZX DITCH NEAR PAISLEY, OREG.

LOCATION.—In the NW. ¼ sec. 19, T. 33 S., R. 19 E., about 100 yards below the intake, and a mile east of Paisley, Lake County.

RECORDS AVAILABLE.—July 20, 1914, to September 30, 1915.

GAGE.—Vertical staff; read daily by Bert Harber and Richard Guinee.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Channel excavated in gravel; control fairly permanent. Stage-discharge relation affected at times by growth of aquatic plants.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 2.85 feet May 10, 1915 (discharge, 132 second-feet); minimum, canal dry, at stage of about 0.6 foot.

WINTER FLOW.—Stage-discharge relation seriously affected by ice for two or three months each winter; discharge very small.

ACCURACY.—Records fair; measurements at high stages in 1915 subject to error; at other times only a small quantity of water for stock was being carried.

COOPERATION.—Field data furnished by Chewacan Land & Cattle Co.

Jones-Innis-ZX ditch (so called from the largest water users under it, ZX being the common name of the Chewacan Land & Cattle Co.'s ranch) diverts water from Chewaucan River in the NW. ¼ sec. 19, T. 33 S., R. 19 E., into natural sloughs, from which is irrigated an area of 2,218 acres of the lowest part of the alluvial fan of Chewaucan River immediately above the upper marsh. One of these, Paisley Slough, at its lower end discharges into the "Stock ditch," which is used for irrigation and watering cattle. The irrigating season extends from early in April to September 15, but little water is usually directed after July. Water is diverted practically the entire year for watering stock.

Discharge measurements of Jones-Innis-ZX ditch near Paisley, Oreg., during the period July 20, 1914, to Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1914.		*Feet.*	*Sec.-ft.*	1915.		*Feet.*	*Sec.-ft.*
Aug. 22	Bert Harber	1.10	2.3	Feb. 16	Richard Guinee	[a] 1.05	0.3
Sept. 25	do	1.00	.4	Mar. 26	do	1.00	[b]
Oct. 22	do	1.10	1.5	Apr. 24	Guinee and Harber	2.15	56
Dec. 28	Richard Guinee	[a] 1.88	1.2	May 27	Richard Guinee	2.60	103
1915.				June 21	do	2.00	52
Jan. 20	do	[a] 1.55	2.1	Sept. 19	Bert Harber	1.35	8.7

[a] Stage-discharge relation affected by ice.
[b] Current too sluggish to move meter.

Daily discharge, in second-feet, of Jones-Innis-ZX ditch near Paisley, Oreg., for the period July 20, 1914, to Sept. 30, 1915.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1914.				1914.				1914.			
1	.....	0.6	6.0	11	.....	0.3	8.6	21	0.8	1.2	0.3
2	.....	.3	8.6	12	.....	.6	8.6	22	.8	2.3	.3
3	.....	.6	8.6	13	.....	.6	7.2	23	.8	2.4	.8
4	.....	.8	8.6	14	.....	.6	7.2	24	.3	8.6	.6
5	.....	.8	8.6	15	.....	.6	4.9	25	.2	10	.6
6	.....	.8	8.6	16	.....	.6	4.9	26	.3	8.6	.3
7	.....	.6	9.3	17	.....	1.2	.8	27	.6	10	.3
8	.....	.8	10	18	.....	1.2	.3	28	.6	10	.3
9	.....	.6	8.6	19	.....	1.2	.3	29	.3	10	.3
10	.....	.6	8.6	20	0.8	1.2	.3	30	.6	10	.3
								31	.3	7.2	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Aug.	Sept.
1914—15.											
1	0.3	1.2	4.9	.....	0.8	1.2	3.0	114	103	.....	2.4
2	.3	1.2	4.9	.....	.3	1.2	3.0	120	98	.....	7.2
3	.3	.8	4.9	.....	.3	1.2	4.0	120	92	.....	7.2
4	.8	.8	4.0	.....	.3	.8	4.0	114	92	.....	7.2
5	3.0	.6	3.0	.....	1.7	.8	2.4	114	81	.....	7.2
6	2.4	.8	2.4	.....	2.4	1.2	2.4	103	81	.....	7.2
7	1.7	.8	2.4	.....	.6	1.2	2.4	103	81	.....	6.0
8	1.7	.8	1.7	.....	.6	1.2	3.0	92	70	.....	6.0
9	1.7	.8	1.7	.....	1.2	1.2	3.0	92	70	.....	6.0
10	1.7	.8	1.7	.....	1.7	1.2	3.0	132	60	.....	6.0
11	2.4	.8	.8	.....	4.9	1.2	3.0	120	60	.....	4.9
12	.8	.8	.....	.....	7.2	1.2	2.4	120	56	.....	8.6
13	1.2	.8	.....	.....	4.9	1.2	3.0	120	56	.....	10
14	.8	.8	.....	.....	4.0	.8	3.0	114	51	.....	10
15	.8	.8	.....	.....	1.7	.8	2.4	114	51	.....	10
16	.8	.8	.....	.....	1.2	.8	2.4	114	51	.....	10
17	.8	.8	.....	.....	1.2	.8	28	108	46	.....	10
18	.8	.8	.....	.....	1.2	1.2	32	108	46	.....	10
19	1.7	.6	.....	.....	1.2	1.2	38	108	42	3.0	3.0
20	2.4	.6	.....	2.1	1.2	1.2	35	108	42	2.7	3.0
21	1.7	.6	.....	.....	1.2	1.2	38	108	42	2.4	2.4
22	1.5	.6	.....	.....	1.2	1.2	46	108	42	4.0	2.4
23	1.2	.6	.....	.....	1.7	1.2	56	108	38	2.4	2.4
24	1.2	.6	.....	.....	1.2	1.7	56	108	38	6.0	2.4
25	1.2	.6	.....	.....	1.2	2.4	60	108	38	4.9	3.0
26	.8	7.2	.....	.....	1.2	1.7	51	108	38	4.0	2.4
27	.8	13	.....	.....	1.2	2.4	54	103	35	4.0	2.4
28	1.2	8.6	1.2	.....	1.2	3.0	56	103	32	3.0	2.4
29	.8	4.9	.....	.....	.....	2.4	120	103	22	3.0	2.4
30	.8	4.9	.....	.3	.....	2.4	108	103	20	7.2	3.0
31	1.2	.....	.....	.6	.....	2.4	.....	103	.....	3.0	.....

NOTE.—Discharge determined by indirect method for shifting control July 20 to Dec. 11, 1914, and from a well-defined rating curve for other open-channel periods. Discharge estimated on account of ice as follows: 1.0 second-foot, Dec. 12–27 and 29–31; 2.0 second-feet, Jan. 1–19; 1.0 second-foot, Jan. 21–29; Feb. 11–20, as shown in table.

Monthly discharge of Jones-Innis-ZX ditch near Paisley, Oreg., for the period July 20, 1914, to September 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
1914.					
July 20-31	0.8	0.2	0.53	13	
August	10	.3	3.06	188	C.
September	10	.3	4.42	262	C.
The period				463	
1914-15.					
October	3.0	.3	1.25	77	
November	13	.6	1.93	115	
December	4.9	.8	1.70	105	
January		.3	1.61	99	
February	7.2	.3	1.74	96	
March	3.0	.8	1.41	87	
April	120	2.4	27.5	1,640	B.
May	132	92	110	6,760	C.
June	108	20	55.8	3,320	B.
July	0	0	0	0	
August	7.2	0	1.60	98	B.
September	10	2.4	5.57	331	B.
The year	132	0	17.5	12,700	

SILVER LAKE BASIN.

SILVER CREEK NEAR SILVER LAKE, OREG.

LOCATION.—In the SW. ¼ sec. 28, T. 28 S., R. 14 E., at the dam site of the proposed Egli reservoir, 1½ miles southwest of Silver Lake post office, Lake County, and about 3 miles above mouth of Bridge Creek.

DRAINAGE AREA.—221 square miles.

RECORDS AVAILABLE.—December 29, 1904, to March 31, 1907; January 11, 1909, to September 30, 1915.

GAGE.—Inclined staff on right bank, directly under cable, installed July 24, 1915; read once daily by J. H. Gowdy. Vertical staff on right bank, 10 feet above cable, was used April 5, 1912, to July 23, 1915. An inclined staff at the site of the present gage was used to April 5, 1912, and readings made from it have been reduced to the same datum as far as possible.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Bed composed of rocks and gravel; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.95 feet March 20 and 21 (discharge, 86 second-feet); the flood crest may have been slightly higher, as gage was read only once daily; minimum stage, 0.15 foot August 7–8 (discharge, 0.8 second-foot).

1905–1907 and 1909–1915: Maximum stage recorded, 6.40 feet at 4 p. m. November 23, 1909 (discharge, 910 second feet); minimum stage, August 7–8, 1915.

WINTER FLOW.—Stage-discharge relation seriously affected by ice in 1915; flow estimated from observer's notes and records of temperature.

DIVERSIONS.—A few small tracts are irrigated above station.

REGULATION.—None.

ACCURACY.—Records good, except for periods in which stage-discharge relation was affected by ice.

Discharge measurements of Silver Creek near Silver Lake, Oreg., during the year ending Sept. 30, 1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Dec. 13	J. E. Stewart	[a] 0.68	7.8	July 18	P. V. Hodges	0.44	3.3
Mar. 13	P. V. Hodges	.67	13.4	24	do	.37	2.7
May 18	do	1.17	31.1				

[a] Stage-discharge relation may have been slightly affected by ice.

Daily discharge, in second-feet, of Silver Creek near Silver Lake, Oreg., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	13	12	10	10	13	21	78	23	19	11	2.8	1.1
2	13	12	10	10	10	17	70	23	22	9.5	3.0	1.1
3	13	12	10	10	10	13	70	23	21	9.5	2.5	1.1
4	13	12	10	10	10	13	48	21	19	7.4	2.0	1.1
5	13	12	9	8	13	13	55	21	19	7.4	1.5	1.1
6	13	12	8	6	21	13	42	21	16	6.5	1.1	1.1
7	13	12	8	5	23	13	36	21	18	6.5	.8	1.1
8	13	12	8	5	21	13	36	25	20	7.5	.8	1.5
9	12	12	6	5	21	15	30	30	19	5.6	1.1	1.5
10	12	12	7	5	21	13	30	36	20	5.6	1.5	1.5
11	12	12	6	5	21	13	33	36	16	5.0	1.1	1.5
12	13	12	6	5	21	13	30	42	17	5.0	1.1	1.5
13	13	12	7	5	21	13	25	42	15	4.6	1.1	1.5
14	13	12	6	5	21	17	36	36	17	4.6	1.1	1.5
15	13	12	6	5	25	35	42	36	17	4.0	1.1	1.5
16	13	12	6	5	25	47	48	30	15	4.0	1.5	1.5
17	13	12	6	5	25	41	55	30	16	4.0	1.1	1.5
18	13	12	6	5	23	60	70	30	16	4.0	1.5	1.5
19	13	12	6	5	21	76	55	36	15	4.0	1.5	1.5
20	13	12	6	5	21	86	48	36	15	3.4	1.1	1.5
21	13	13	6	5	21	86	48	30	15	3.4	1.5	1.5
22	13	10	6	5	23	78	42	27	16	3.0	1.5	2.0
23	13	12	6	5	25	78	36	27	15	3.0	1.5	2.0
24	13	12	5	5	25	78	30	25	14	2.9	1.5	1.8
25	10	12	5	5	23	70	30	25	13	2.5	1.5	1.8
26	12	12	5	5	25	42	27	25	16	2.5	1.5	1.5
27	12	12	5	5	25	25	27	24	15	2.5	1.1	1.5
28	12	12	6	12	25	48	25	23	13	2.5	1.1	1.5
29	12	12	7	14	.....	55	25	23	11	2.5	1.1	1.5
30	12	10	8	16	.....	70	25	21	13	3.0	1.1	1.5
31	12	.....	9	13	.....	70	.....	21	.....	4.6	1.1	.....

NOTE.—Discharge determined from three fairly well defined rating curves, applicable Oct. 1 to Feb. 4, Feb. 6 to Mar. 19, and Mar. 20 to Sept. 30, respectively. Stage-discharge relation affected by ice Dec. 14 to Feb. 5; flow estimated as in table.

Monthly discharge of Silver Creek near Silver Lake, Oreg., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	13	12	12.6	775	B.
November	13	10	11.9	708	B.
December	10	5	6.9	424	C.
January	16	5	6.9	424	D.
February	25	10	20.7	1,150	B.
March	86	13	40.2	2,470	B.
April	78	25	41.7	2,480	B.
May	42	21	28.0	1,720	B.
June	22	11	16.4	976	B.
July	11	2.5	4.85	298	B.
August	3.0	.8	1.41	87	B.
September	2.0	1.1	1.46	87	B.
The year	86	.8	16.0	11,600	

SILVER LAKE NEAR SILVER LAKE, OREG.

LOCATION.—In lot 3, sec. 11, T. 29 S., R. 15 E., on the west shore of the lake, a mile south of the Duncan place, and 9 miles from Silver Lake, Lake County.

RECORDS AVAILABLE.—Occasional readings 1905–1915.

GAGE.—Vertical staff bolted to large boulder, used in 1905 and 1906. Since then the water surface has been referred to the bench mark. Datum of gage, 4,425.54 feet above sea level, according to surveys by the Oregon Eastern Railroad and United States Reclamation Service.

EXTREMES OF STAGE.—Maximum stage during recent years, 16.5 feet in spring of 1904 (determined from high-water marks); minimum since gage was established, 7.55 feet October 3, 1915; lake bed was dry in 1889.

Elevation, in feet, of Silver Lake near Silver Lake, Oreg.

1914.		1915.	
Aug. 2	11.15	July 19	8.58
Nov. 2	9.96	22	8.55
		Oct. 3	7.55

MALHEUR AND HARNEY LAKES BASINS.

SILVIES RIVER NEAR BURNS, OREG.

LOCATION.—In the SW. ¼ sec. 31, T. 21 S., R. 30 E., about a mile above Sylvester's ranch, and 12 miles northwest of Burns, Harney County.

DRAINAGE.—940 square miles (measured on special maps issued by United States Reclamation Service in 1915).

RECORDS AVAILABLE.—May 10, 1903, to July 24, 1906; December 14, 1908, to September 30, 1915 (fragmentary).

GAGE.—Gurley water-stage recorder on left bank, installed December, 1911. Prior to December, 1911, station was about 1¼ miles downstream, at wagon bridge near Parker's house, in sec. 7, T. 22 S., R. 30 E.

DISCHARGE MEASUREMENTS.—Made from cable about one-fourth mile below gage or by wading.

CHANNEL AND CONTROL.—Control is a gravel riffle about 25 feet below gage; probably shifts in high water. Above gage heights of 13 feet river overflows a wide area. During low water the stage-discharge relation is affected by backwater from a diversion dam.

EXTREMES OF DISCHARGE.—Maximum gage height from water-stage recorder, 9.36 feet, 3.15 to 7.30 p. m. April 4 (discharge, 607 second-feet); no record of minimum.

1904–1906 and 1909–1915: Maximum stage recorded, 17.12 feet April 15, 1904 (discharge, 4,730 second-feet); minimum stage, 2.2 feet September 9–12, 1903 (discharge, 3 second-feet).

WINTER FLOW.—Stage-discharge relation not seriously affected by ice.

DIVERSIONS.—A large area of land in the headwaters of Silvies River is irrigated with flood water.

REGULATION.—None.

ACCURACY.—Records for high water good, but no reliable low-water records have been obtained since about 1911.

The following measurement was made by H. K. Donnelly, assistant to the State engineer of Oregon:

April 16: Gage height, 6.23 feet; discharge, 303 second-feet.

Daily discharge, in second-feet, of Silvies River near Burns, Oreg., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Mar.	Apr.	May.	June.	Day.	Oct.	Nov.	Mar.	Apr.	May.	June.
1	.....	40	.....	428	178	.....	16	.....	.....	.....	288	213	.....
2	.....	39	.....	438	203	.....	17	.....	.....	.....	263	203	.....
3	.....	39	.....	518	218	.....	18	.....	.....	.....	248	188	.....
4	.....	38	.....	601	208	.....	19	.....	.....	.....	238	178	.....
5	.....	38	.....	591	228	.....	20	.....	.....	.....	213	168	.....
6	.....	38	.....	549	223	.....	21	.....	.....	.....	148	158	.....
7	.....	38	.....	498	183	.....	22	.....	.....	.....	123	148	.....
8	.....	.....	62	448	158	.....	23	.....	.....	.....	133	148	.....
9	.....	.....	63	408	168	58	24	.....	.....	.....	128	148	.....
10	.....	.....	71	378	203	.....	25	.....	.....	.....	133	148	.....
11	.....	.....	.....	368	228	.....	26	.....	.....	.....	128	143	.....
12	.....	.....	.....	368	238	.....	27	.....	.....	.....	118	143	.....
13	.....	.....	.....	358	228	.....	28	.....	.....	.....	123	143	.....
14	.....	.....	.....	338	218	.....	29	.....	.....	468	138	133	.....
15	.....	.....	118	308	213		30	.....	.....	468	148	133	.....
							31	40	.....	468	.....	130	.....

NOTE.—Discharge determined from well-defined rating curve. Discharge May 23 and 24 interpolated. Mean discharge Mar. 11–14 estimated, 90 second-feet; Mar. 16–28, 250 second-feet. Total run-off, Mar. 8–31, 10,600 acre-feet; Apr. 1–30, 18,200 acre-feet; May 1–31, 11,100 acre-feet

DONNER UND BLITZEN RIVER NEAR DIAMOND, OREG.

LOCATION.—In the SW. ¼ sec. 8, T. 32 S., R. 32½ E., at mouth of canyon, on the P ranch, 1½ miles above the ranch buildings, about 25 miles southwest of Diamond, Harney County, and 40 miles above Narrows, Harney County.

DRAINAGE AREA.—200 square miles (measured on special maps prepared by Garfield Stubblefield).

RECORDS AVAILABLE.—May 22, 1910, to September 30, 1915; also January 26, 1909, to July 31, 1910, and November 1–12, 1910, at station below several diversion ditches.

GAGE.—Vertical staff on left bank; read daily during high water March 30 to August 14, and weekly at other times, by Jesus Achurra; original gage was a vertical staff on right bank just below wagon bridge near ranch building.

DISCHARGE MEASUREMENTS.—Made from a cable 75 yards above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and sand; one channel at all stages. Banks covered with dense growth of willows and underbrush; subject to overflow at flood stages. Gage has been raised considerably since 1913, but was not checked with level until 1916. Gage readings used as read.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.4 feet at 7.30 p. m. May 3 (discharge, 2,060 second-feet); minimum stage, 1.8 feet December 18 to February 6 (discharge, 26 second-feet).

1909–1915: Maximum and minimum occurred in 1915.

WINTER FLOW.—Stage-discharge relation not seriously affected by ice; open-channel rating curve assumed applicable.

DIVERSIONS.—Present gage is above all irrigation ditches.

REGULATION.—None.

ACCURACY.—Records fair. During the spring river is subject to considerable diurnal fluctuations and much of the water from the melting snow may pass the station at night, when no record would be obtained.

COOPERATION.—Field data furnished by the Blitzen Valley Land Co.

Discharge measurements of Donner und Blitzen River near Diamond, Oreg., during the year ending Sept. 30, 1915.

[Made by A. H. Page.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
May 3	2.65	271	July 18	1.60	34.5
June 17	2.53	275			

Daily discharge, in second-feet, of Donner und Blitzen River near Diamond, Oreg., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	58	58	.....	.....	.....	32	75	130	270	118	42	.....
2	.....	.....	.....	26	.....	32	86	142	270	118	42	.....
3	.....	.....	.....	.....	.....	32	95	1,070	240	130	42	.....
4	.....	.....	.....	.....	.....	32	95	490	225	130	42	42
5	.....	.....	32	.....	.....	32	85	470	210	130	42	.....
6	.....	.....	.....	.....	26	32	85	795	255	130	42	.....
7	.....	58	.....	.....	.....	34	95	682	322	168	42	.....
8	58	.....	.....	.....	.....	35	95	660	305	168	42	.....
9	.....	.....	.....	26	.....	37	95	570	305	155	42	.....
10	.....	.....	.....	.....	.....	39	95	660	340	143	42	.....
11	.....	.....	.....	.....	.....	40	105	1,270	270	130	42	42
12	.....	.....	32	.....	.....	42	118	1,440	210	118	42	.....
13	.....	.....	.....	.....	32	44	118	1,400	155	118	42	.....
14	.....	58	.....	.....	.....	44	118	1,120	168	118	35	.....
15	58	.....	.....	.....	.....	44	105	1,070	180	118	35	.....
16	.....	.....	.....	26	.....	44	105	885	210	105	35	.....
17	.....	.....	.....	.....	.....	44	130	750	210	95	35	.....
18	.....	.....	.....	.....	.....	44	142	750	210	85	35	42
19	.....	.....	26	.....	.....	44	155	682	210	75	35	.....
20	.....	.....	.....	.....	32	44	168	638	195	65	35	.....
21	65	37	.....	.....	.....	44	220	615	180	65	35	.....
22	.....	.....	.....	.....	.....	44	168	570	168	65	35	.....
23	.....	.....	.....	26	.....	44	105	490	155	65	35	.....
24	.....	.....	.....	.....	.....	44	85	470	143	65	35	.....
25	.....	.....	.....	.....	.....	44	85	450	105	65	35	42
26	.....	.....	26	.....	.....	44	85	358	105	58	35	.....
27	.....	.....	.....	.....	32	44	118	340	105	50	35	.....
28	65	37	.....	.....	.....	51	168	305	105	50	35	.....
29	.....	.....	.....	.....	.....	58	142	288	105	50	35	.....
30	.....	.....	.....	26	.....	65	130	288	105	50	36	.....
31	.....	.....	.....	.....	.....	75	.....	270	.....	50	37	.....

NOTE.—Discharge Oct. 1 to May 2 determined from poorly defined rating curve; May 3 to Sept. 30 from fairly well defined rating curve. Discharge interpolated for days in March and August when gage was not read.

Monthly discharge of Donner und Blitzen River near Diamond, Oreg., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off total (in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	.....	.....	60.8	3,740	C.
November	.....	.....	49.6	2,950	D.
December	.....	.....	29.5	1,810	D.
January	.....	.....	26.0	1,600	D.
February	.....	.....	30.5	1,690	D.
March	75	32	42.8	2,630	D.
April	220	75	116	6,900	C.
May	1,440	130	649	39,900	C.
June	340	105	201	12,000	B.
July	168	50	98.4	6,050	B.
August	42	35	38.0	2,340	B.
September	42	42	42.0	2,500	B.
The year	1,440	.....	116	84,100	

DONNER UND BLITZEN RIVER NEAR NARROWS, OREG.

LOCATION.—In the NE. ¼ sec. 26, T. 29 S., R. 31 E., at the "grain camp," at bridge immediately below the intake of the Buena Vista canal, 2 or 3 miles above the mouth of Keiger Creek, and about 25 miles south of Narrows, Harney County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 21 to July 31, 1915, when records were suspended because no observer was available.

GAGE.—Vertical staff on west abutment of bridge; read once daily by W. F. Edwards.

DISCHARGE MEASUREMENTS.—Made from cable about 70 feet below gage.

CHANNEL AND CONTROL.—Artificial channel, excavated in clayey material. Banks fairly even and not subject to overflow; control not defined.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.2 feet May 16 (discharge, 392 second-feet); minimum stage recorded, 1.7 feet April 16 (discharge, 17 second-feet).

WINTER FLOW.—No records during period when stream was frozen.

DIVERSIONS.—In addition to the Buena Vista canal and a small ditch taking out from river just above gage, 14,000 acres of the P ranch lands are irrigated by spring flooding from the river and its tributaries. (See p. 239 for records on Buena Vista canal.)

REGULATION.—The diversion dam above the gage backs the water up 4 or 5 miles, and the pondage thus created may affect materially the discharge of a day or two.

ACCURACY.—Records good; rating curve excellent, but gage readings may not give accurately the mean for a day or even for a week.

COOPERATION.—Field data furnished by Blitzen Valley Land Co.

Discharge measurements of Donner und Blitzen River near Narrows, Oreg., during the year ending Sept. 30, 1915.

[Made by A. H. Page.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Apr. 26	2.52	69	June 21	3.87	166
May 7	4.63	268	Aug. 23	1.82	32.9
June 10	4.48	245			

Daily discharge, in second-feet, of Donner und Blitzen River near Narrows, Oreg., for the year ending Sept. 30, 1915.

Day.	Mar.	Apr.	May.	June.	July.	Day.	Mar.	Apr.	May.	June.	July.
1	.....	87	99	247	57	16	.....	27	392	203	75
2	.....	93	106	217	63	17	.....	32	180	180	63
3	.....	93	113	344	69	18	.....	37	191	170	57
4	.....	87	127	300	69	19	.....	75	203	170	52
5	.....	93	180	247	63	20	.....	52	217	170	52
6	.....	87	300	170	151	21	87	57	203	160	47
7	.....	87	300	203	127	22	99	63	191	160	47
8	.....	69	217	232	120	23	81	57	180	151	42
9	.....	75	160	232	120	24	87	52	180	63	42
10	.....	69	165	217	113	25	93	47	180	63	42
11	.....	69	170	232	106	26	87	57	170	63	47
12	.....	75	180	191	99	27	81	57	160	57	47
13	.....	69	203	281	93	28	75	75	160	57	52
14	.....	69	300	247	93	29	87	75	170	63	52
15	.....	63	344	217	87	30	81	99	180	63	57
						31	93	.....	203	.....	57

NOTE.—Discharge determined from a well-defined rating curve. Results June 24 to July 5 may be in error, or the Buena Vista canal may have been diverting some water, but the more probable explanation of the decrease in discharge is that water was turned into one or more of the ditches on the R ranch at the beginning and turned out at the end of the period.

Monthly discharge of Donner und Blitzen River near Narrows, Oreg., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
March 21–31	99	75	86.5	1,890	B.
April	99	27	68.2	4,060	B.
May	392	99	198	12,200	B.
June	344	57	179	10,700	B.
July	151	42	72.9	4,480	B.
The period				33,300	

Combined discharge of Donner und Blitzen River and Buena Vista canal near Narrows, Oreg., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).
	Maximum.	Minimum.	Mean.	
March 21–31	147	81	101	2,210
April	169	95	117	6,960
May	479	179	283	17,400
June	344	57	186	11,100
July	151	42	72.9	4,480
The period				42,200

NOTE.—See p. 239 for records of Buena Vista canal near Narrows, Oreg.

MUD CREEK NEAR DIAMOND, OREG.

LOCATION.—In sec. 4, T. 32 S., R. 32½ E., one-fourth mile east of the ranch field, about 2 miles east of the P ranch buildings, and about 23 miles southwest of Diamond, Harney County.

DRAINAGE AREA.—30 square miles (measured on special maps prepared by Garfield Stubblefield).

RECORDS AVAILABLE.—March 18, 1911, to September 30, 1915.

GAGE.—Vertical staff driven into bed of creek on left bank; read once daily October 1–10, March 26 to August 14, and once or twice a week for rest of year, by Jesus Achurra.

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

CHANNEL AND CONTROL.—Bed composed of clean sand; shifting. Control not defined.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.65 feet at 6.30 p. m. May 3 (discharge estimated from extension of rating curve as 154 second-feet); minimum stage, 1.3 feet August 21 and 28, 1915 (discharge, 0,1 second-foot).

1911–1915: Maximum and minimum occurred in 1915.

WINTER FLOW.—Stage-discharge relation apparently not affected by ice.

DIVERSIONS.—None above station.

REGULATION.—None.

ACCURACY.—Records are poor, but are valuable in conjunction with those on Donner und Blitzen River and Bridge Creek, in showing the total run-off above the mouth of Keiger Creek.

COOPERATION.—Field data furnished by Blitzen Valley Land Co.

Discharge measurements of Mud Creek near Diamond, Oreg., during the year ending Sept. 30, 1915.

[Made by A. H. Page.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
May 3	2.67	17.5	July 19	1.30	0.1
June 19	1.89	6.0			

Daily discharge, in second-feet, of Mud Creek near Diamond, Oreg., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	0.6	.....	0.8	.....	.....	0.6	1.7	7.8	10.2	3.3	0.1	.....
2	.6	0.8	.8	0.4	0.4	.6	1.7	8.7	10.2	3.3	.1	.....
3	.6	.....	.....	.....	.....	.6	2.8	70	7.4	3.3	.1	.....
4	.6	.....	.....	.....	.....	.6	2.8	21	7.4	3.3	.1	0.1
5	.6	.....	.....	.4	.....	.6	2.8	21	8.0	3.3	.1	.....
6	.6	.....	.4	.....	.....	.6	2.8	22	8.8	3.3	.1	.....
7	.6	.8	.....	.....	.....	.6	2.8	21	8.8	3.3	.1	.....
8	.8	.8	.....	.....	.....	.6	2.3	21	8.0	3.3	.1	.....
9	.8	.....	.....	.....	.4	.6	2.8	21	8.0	3.3	.1	.....
10	.8	.....	.....	.4	.....	.6	2.8	24	7.7	3.3	.1	.....
11	.8	.8	.4	.....	.....	.6	2.8	80	7.4	3.3	.1	.1
12	.8	.....	.....	.....	.....	.6	3.2	88	7.4	2.8	.1	.....
13	.8	.....	.4	.....	.....	.6	3.2	60	6.7	2.8	.1	.....
14	.8	.8	.....	.....	.....	.6	3.2	47	6.7	2.4	.1	.....
15	.8	.8	.....	.....	.4	.6	3.2	39	6.7	2.4	.1	.....
16	.8	.....	.....	.4	.....	.6	3.2	30	6.7	1.6	.1	.....
17	.8	.....	.....	.....	.....	.6	3.2	24	7.4	1.6	.1	.....
18	.8	.....	.....	.....	.....	.6	3.2	23	6.7	1.2	.1	.2
19	.8	.....	.4	.4	.....	.6	3.2	22	6.0	1.2	.1	.....
20	.8	.8	.4	.....	.....	.6	4.2	19	6.0	.8	.1	.....
21	.8	.....	.....	.....	.....	.7	4.2	19	5.4	.8	.1	.....
22	.8	.8	.....	.....	.4	.8	4.8	18	5.4	.8	.1	.....
23	.8	.....	.....	.....	.....	.8	4.2	18	5.4	.8	.1	.....
24	.8	.....	.....	.....	.....	.9	3.7	17	5.4	.8	.1	.....
25	.8	.....	.4	.4	.....	1.0	3.2	16	4.8	.8	.1	.2
26	.8	.....	.....	.....	.....	1.0	3.2	12	4.8	.4	.1	.....
27	.8	.....	.....	.....	.....	1.2	3.2	12	4.3	.4	.1	.....
28	.8	.8	.4	.....	.4	1.2	3.7	11	3.8	.4	.1	.....
29	.8	.8	.....	.4	.....	1.4	4.2	11	3.3	.1	.1	.....
30	.8	.....	.....	.....	.....	1.7	6.2	10.2	3.3	.1	.1	.....
31	.8	.....	.....	.....	.....	1.7	.....	10.2	.....	.1	.1	.....

NOTE.—Discharge Oct. 1 to May 2 determined from a poorly defined rating curve; May 3 to Sept. 30, from a fairly well defined rating curve. Discharge interpolated for days in October, March, and August, when gage was not read.

Monthly discharge of Mud Creek near Diamond, Oreg., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October	0.8	0.6	0.75	46	D.
November	.....	.....	.80	48	D.
December	.....	.....	.49	30	D.
January	.....	.....	.40	25	D.
February	.....	.....	.40	22	D.
March	1.7	.6	.79	49	D.
April	6.2	1.7	3.28	195	D.
May	88	7.8	26.6	1,640	C.
June	10.2	3.3	6.60	393	C.
July	3.3	.1	1.89	116	C.
August	.1	.1	.10	6	D.
September	.....	.....	.15	9	D.
The year	.....	.....	3.56	2,580	

BRIDGE CREEK NEAR DIAMOND, OREG.

LOCATION.—In sec. 34, T. 31 S., R. 32½ E., one-fourth mile east of the ranch field, about 4 miles northeast of the P ranch buildings, and about 20 miles southwest of Diamond, Harney County.

DRAINAGE AREA.—35 square miles (measured on map of United States Reclamation Service).

RECORDS AVAILABLE.—March 18 to August 31, 1911; January 1, 1912, to September 30, 1915.

GAGE.—Vertical staff on left bank; read daily April 1 to August 14, and weekly at other times, by Jesus Achurra.

DISCHARGE MEASUREMENTS.—Made from footbridge near gage.

CHANNEL AND CONTROL.—Bed composed of alluvium and clay; shifts slightly. One channel; banks not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.85 feet at 6 p. m. May 3 (discharge, 166 second-feet); minimum stage, 1.6 feet January 2 to April 27 (discharge, 8 second-feet).

1911–1915: Maximum stage recorded, 4.85 feet May 3, 1915 (discharge, 166 second-feet); minimum discharge, 7 second-feet (gage height, 1.85 feet), February 24 and 25, 1912.

WINTER FLOW.—Stage-discharge relation not affected by ice on account of large volume of flow from springs.

DIVERSIONS.—None above station.

REGULATION.—None.

ACCURACY.—Records for 1915 good.

COOPERATION.—Field data furnished by Blitzen Valley Land Co.

Discharge measurements of Bridge Creek near Diamond, Oreg., during the year ending Sept. 30, 1915.

[Made by A. H. Page.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
May 3	1.88	17.0	July 19	1.68	10.6
June 19	1.66	9.6			

Daily discharge, in second-feet, of Bridge Creek near Diamond, Oreg., for the year ending Sept. 30, 1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	12	12					8	11	11	10	10	
2				8			8	14	11	10	10	
3							8	80	11	10	10	
4							8	29	11	10	10	10
5			12				8	23	11	10	10	
6					8	8	8	19	11	10	10	
7		12					8	14	11	10	10	
8	12						8	14	11	10	10	
9				8			8	12	11	10	10	
10							8	14	11	10	10	
11							8	27	11	10	10	10
12			11				8	29	11	10	10	
13					8	8	8	25	11	10	10	
14		12					8	23	11	10	10	
15	12						8	21	11	10	10	
16				8			8	17	11	10	10	
17							8	16	11	10	10	
18							8	14	11	10	10	10
19			10				8	14	11	10	10	
20					8	8	8	12	11	10	10	
21	12	12					8	11	11	10	10	
22							8	11	11	10	10	
23				8			8	11	11	10	10	
24							8	11	10	10	10	
25							8	11	10	10	10	10
26			10				8	11	10	10	10	
27					8	8	8	11	10	10	10	
28	12	12					10	11	10	10	10	
29							10	11	10	10	10	
30				8			10	11	10	10	10	
31								11		10	10	

NOTE.—Discharge determined from well-defined rating curve; interpolated for days in August when gage was not read.

Monthly discharge of Bridge Creek near Diamond, Oreg., for the year ending Sept. 30, 1915.

Month.	Discharge in second feet.			Run-off total (in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
October			12.0	738	B.
November			12.0	714	B.
December			10.8	664	B.
January			8.0	492	B.
February			8.0	444	B.
March			8.0	492	B.
April	10	8	8.2	488	B.
May	80	11	17.7	1,090	B.
June	11	10	10.8	643	B.
July	10	10	10.0	615	B.
August			10.0	615	B.
September			10.0	595	B.
The year	80		10.5	7,590	

BUENA VISTA CANAL NEAR NARROWS, OREG.

LOCATION.—In the NE. ¼ sec. 26, T. 29 S., R. 31 E., at bridge over canal, 300 feet below intake, and opposite station on Donner und Blitzen River at the "grain camp," about 25 miles south of Narrows, Harney County.

RECORDS AVAILABLE.—March 25 to June 7, 1915.

GAGE.—Vertical staff on pier of bridge; read once daily by W. F. Edwards.

DISCHARGE MEASUREMENTS.—Made from bridge.

CHANNEL AND CONTROL.—Canal is about 4 feet deep, excavated in a clayey material. A dam across canal about one-fourth mile below gage acts as control, but this is not disturbed during the irrigating season.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.6 feet May 14 (discharge, 179 second-feet). Canal dry at times.

WINTER FLOW.—Water turned out during extremely cold weather.

ACCURACY.—A curve, based on measurements made in 1915 and 1916, has been obtained, and records are fair.

COOPERATION.—Field data furnished by Blitzen Valley Land Co.

This canal diverts water from left bank of Donner und Blitzen River, in the NE. ¼ sec. 26, T. 29 S., R. 31 E., to irrigate marsh hay lands on west side of Donner und Blitzen River.

The following discharge measurement was made by A. H. Page:

May 7, 1915: Gage height, 3.47 feet (discharge, 91.1 second-feet).

Daily discharge, in second-feet, of Buena Vista canal near Narrows, Oreg., for the year ending Sept. 30, 1915.

Day.	Mar.	Apr.	May.	June.	Day.	Mar.	Apr.	May.	June.
1	.....	21	80	87	16	.....	108	80	.....
2	.....	17	80	80	17	.....	108	73	.....
3	.....	25	87	0	18	.....	101	73	.....
4	.....	21	87	0	19	.....	94	80	.....
5	.....	17	94	0	20	.....	60	87	.....
6	.....	25	115	33	21	.....	60	87	.....
7	.....	21	108	17	22	.....	60	80	.....
8	.....	33	73	.....	23	.....	60	73	.....
9	.....	38	73	.....	24	.....	60	66	.....
10	.....	29	87	.....	25	54	54	66	.....
11	.....	43	87	.....	26	43	43	60	.....
12	.....	48	101	.....	27	4	38	60	.....
13	.....	43	131	.....	28	13	43	60	.....
14	.....	43	179	.....	29	17	48	60	.....
15	.....	29	108	.....	30	13	73	66	.....
					31	17	.....	80	.....

NOTE.—Discharge determined from a rating curve fairly well defined between 40 and 120 second-feet based largely on measurements made in 1916. Water turned into canal Mar. 25 and shut off on June 7.

Monthly discharge of Buena Vista canal near Narrows, Oreg., for the year ending Sept. 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
March 25–31	54	4	23.0	319	C.
April	108	17	48.8	2,900	C.
May	179	60	85.2	5,240	B.
June 1–7	87	0	31.0	430	C.
The period	.....	.....	.....	8,890	

SILVER CREEK ABOVE RILEY, OREG.

LOCATION.—In the NW. ¼ sec. 30, T. 22 S., R. 26 E at Cecil ranch, 3 miles below junction of Nichols Creek, and about 12 miles above Riley, Harney County.

DRAINAGE AREA.—260 square miles (measured on maps of United States Reclamation Service).

RECORDS AVAILABLE.—April 19, 1904, to July 14, 1906; February 16 to December 12, 1909; April 6 to October 19, 1910; and flood periods 1911, 1912, 1914, and 1915.

GAGE.—Vertical and inclined staff on right bank, one-fourth mile above Cecil ranch house and 100 yards above point where creek divides into three channels, installed December 5, 1910; read once daily, and high water during the nights noted by Glen Garret. Original gage, read 1904 to 1906,

was attached to timbers on left downstream side of bridge over left or main channel, at the ranch buildings where creek is divided into three channels. A second gage, 100 yards upstream from bridge, was installed January 14, 1909, and read until October 19, 1910.

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

CHANNEL AND CONTROL.—Bed composed of clean gravel; not likely to shift.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.0 feet night of April 3, observed from high-water marks the next morning (discharge, 610 second-feet). Stream goes practically dry each year at about zero gage height.

1904–1906 and 1909–1915: Maximum stage recorded, 13.95 feet on original gage, observed from high-water mark April 14, 1904 (discharge, 1,760 second-feet).

WINTER FLOW.—Stage-discharge relation seriously affected by ice; no records during winter in recent years, as stream is practically dry.

DIVERSIONS.—Practically no land irrigated above station.

REGULATION.—None.

ACCURACY.—High-water part of rating curve is subject to error, as no measurements were made in 1915 above low water; results fair.

The following measurement was made by R. D. Cooper:

April 27, 1915: Gage height, 1.20 feet; discharge, 42.8 second-feet.

Daily discharge, in second-feet, of Silver Creek above Riley, Oreg., for the period Mar. 14 to May 5, 1915.

Day.	Mar.	Apr.	May.	Day.	Mar.	Apr.	May.	Day.	Mar.	Apr.	May.
1	.....	402	49	11	.....	207	.....	21	62	73	.....
2	.....	389	49	12	.....	194	.....	22	85	66	.....
3	.....	441	43	13	.....	134	.....	23	122	62	.....
4	.....	558	43	14	23	98	.....	24	194	66	.....
5	.....	480	37	15	23	85	.....	25	194	55	.....
6	.....	376	.....	16	19	90	.....	26	170	52	.....
7	.....	350	.....	17	30	85	.....	27	170	49	.....
8	.....	324	.....	18	52	90	.....	28	337	46	.....
9	.....	233	.....	19	23	81	.....	29	519	43	.....
10	.....	220	.....	20	32	77	.....	30	428	43	.....
								31	402	.....	.....

NOTE.—Discharge determined from a fairly well defined rating curve.

Monthly discharge of Silver Creek above Riley, Oreg., for the period Mar. 14 to May 5, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
March 14–31	519	19	160	5,710	C.
April	558	43	182	10,800	C.
May 1–5	49	37	44.2	438	B.
The period				16,900	

NOTE.—The run-off during period not covered by records was probably less than 1,000 acre-feet.

CATLOW VALLEY DRAINAGE BASIN.

HOME CREEK NEAR BECKLEY, OREG.[1]

LOCATION.—In the NE. ¼ sec. 10, T. 35 S., R. 32 E., at the mouth of canyon, half a mile above Home Creek ranch buildings, 12 miles southeast of Beckley, and about 60 miles south of Narrows, Harney County.

[1] Published in Water-Supply Paper 310, 1911, as Home Creek near Narrows, Oreg.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 21 to July 31, 1911; February 10 to July 31, 1912; April 1 to June 30, 1915.

GAGE.—Vertical staff on left bank; read once daily by Judd Wise. A similar staff at practically the same site but different datum was used in 1911 and 1912.

DISCHARGE MEASUREMENTS.—Made from foot plank near gage or by wading.

CHANNEL AND CONTROL.—Bed composed of heavy gravel and boulders; may shift in extreme floods.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.0 feet May 5 (discharge, 165 second-feet). The measurement of January 16, 1.0 second-foot, probably represents the smallest flow that this station ever reaches.

1911–12 and 1915: Maximum stage recorded, 4.7 feet, on old gage, April 27, 1912 (discharge, 330 second-feet); minimum discharge, 1.0 second-foot January 16, 1915.

WINTER FLOW.—Creek freezes solid and water overflows the ice in severe winter.

DIVERSIONS.—None above station; most of the water of the creek is used for flood irrigation on the hay lands of the Home Creek ranch.

REGULATION.—None.

ACCURACY.—Records fair; probably considerable diurnal fluctuation in the spring; records for 1912 are subject to error, as no measurements were made during that year.

COOPERATION.—Field data furnished by Blitzen Valley Land Co.

Discharge measurements of Home Creek near Beckley, Oreg., during the year ending Sept. 30, 1915.

[Made by A. H. Page.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Jan. 16	1.84	1.0	May 27	2.42	16.0
May 4	3.80	141	July 18	1.85	2.4
6	2.80	40.9			

Daily discharge, in second-feet, of Home Creek near Beckley, Oreg., for the periods Feb. 10 to July 31, 1912, and Apr. 1 to June 30, 1915.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Day.	Feb.	Mar.	Apr.	May.	June.	July.
1912.							1912.						
1		4.0	102	124	53	6.0	16	14	4.0	44	147	23	4.0
2		4.0	210	113	62	4.0	17	36	4.0	53	225	29	1.5
3		2.5	240	171	53	1.5	18	62	4.0	36	171	23	6.0
4		1.5	135	159	53	4.0	19	53	6.0	53	210	44	4.0
5		1.5	113	171	53	2.5	20	14	8.0	36	159	23	1.5
6		1.0	124	159	62	4.0	21	11	6.0	53	183	29	4.0
7		1.5	225	183	29	1.5	22	8.0	11	62	171	23	2.5
8		2.5	147	171	53	6.0	23	6.0	4.0	147	71	44	1.5
9		4.0	285	196	36	1.0	24	4.0	29	91	53	23	4.0
10	2.5	4.0	171	147	44	6.0	25	4.0	14	196	147	23	4.0
11	4.0	4.0	159	159	29	4.0	26	4.0	18	310	62	14	1.5
12	2.5	6.0	135	135	36	4.0	27	4.0	91	330	53	18	4.0
13	6.0	4.0	62	183	23	1.5	28	4.0	124	210	44	16	2.5
14	4.0	4.0	29	159	44	8.0	29	4.0	91	124	159	14	1.5
15	8.0	2.5	53	171	23	2.5	30		71	113	44	18	2.5
							31		124		53		4.0

Daily discharge, in second-feet, of Home Creek near Beckley, Oreg., for the periods Feb. 10 to July 31, 1912, and Apr. 1 to June 30, 1915—Continued.

Day.	Apr.	May.	June.	Day.	Apr.	May.	June.	Day.	Apr.	May.	June.
1915.				1915.				1915.			
1	47	20	6	11	.....	81	.....	21	29	39	.....
2	39	32	.....	12	.....	112	.....	22	23	26	.....
3	39	32	.....	13	.....	56	8	23	26	26	6
4	32	39	8	14	.....	56	.....	24	18	26	.....
5	56	96	.....	15	.....	47	.....	25	15	20	.....
6	52	47	.....	16	43	47	11	26	18	20	6
7	66	26	6	17	36	66	.....	27	15	20	.....
8	39	43	.....	18	32	56	8	28	20	15	.....
9	43	47	.....	19	32	56	.....	29	20	11	6
10	47	56	6	20	29	47	8	30	15	11	6
								31	.....	8	.....

NOTE.—Discharge determined from fairly well defined rating curves. Curve for 1912 is same as that for 1911 at low water, and extended parallel to the curve for 1915 to high water. Mean discharge Apr. 11–15, 1915, estimated at 50 second-feet.

Monthly discharge of Home Creek near Beckley, Oreg., for the periods Feb. 10 to July 31, 1912, and Apr. 1 to June 30, 1915.

Month.	Discharge in second-feet.			Run-off (total in acre-feet).	Accuracy.
	Maximum.	Minimum.	Mean.		
1912.					
February 10–29	62	2.5	12.8	508	C.
March	124	1.0	21.2	1,300	C.
April	330	29	134	7,970	B.
May	225	44	140	8,610	B.
June	62	14	33.9	2,020	B.
July	8.0	1.0	3.40	209	C.
The period	.....	.....	.....	20,600	
1915.					
April	66	15	36.0	2,140	B.
May	112	8	41.4	2,550	B.
June	11	6	7.1	422	C.
The period	.....	.....	.....	5,110	

MISCELLANEOUS MEASUREMENTS.

The results of measurements of streams in the Great Basin at points other than those at which gaging stations are maintained are presented in the following table:

Miscellaneous measurements in Great Basin during the year ending Sept. 30, 1915.

Sevier Lake basin.

Date.	Stream.	Tributary to or diverting from—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
Aug. 24	Sevier River	Sevier Lake	Immediately below heading of East Panquitch canal, near Panquitch, Utah.	.....	6.2
25	....do	....do	Immediately below heading of Old Houston canal, near Panquitch, Utah.	.....	30.1
25	....do	....do	Immediately below heading of Vaeter canal, near Panquitch, Utah.	.....	64
Jan. 14	....do	....do	County bridge at Marysvale, Utah.	.....	36.2
June 12	....do	....do	Immediately below heading of Wells canal, near Joseph, Utah.	.....	270
26	....do	....do	....do	.....	272

Miscellaneous measurements in Great Basin during the year ending Sept. 30, 1915—Continued.

Sevier Lake basin—Continued.

Date.	Stream.	Tributary to or diverting from—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
July 6	Sevier River	Sevier Lake	Immediately below heading of Wells canal, near Joseph, Utah.		300
Aug. 31	do	do	do		112
June 26	do	do	Immediately below heading of Monroe canal, near Elsinore, Utah.		204
July 7	do	do	do		223
22	do	do	do		175
Aug. 30	do	do	do		76
June 25	do	do	Immediately below heading of Brooklyn canal, near Elsinore, Utah.		141
26	do	do	do		153
July 7	do	do	do		167
22	do	do	do		137
June 12	do	do	Immediately below heading of Richfield canal, near Elsinore, Utah.		40.7
25	do	do	do		36.1
26	do	do	do		36.6
July 8	do	do	do		44.7
21	do	do	do		48.8
Aug. 30	do	do	do		15.1
June 12	do	do	Immediately below heading of Annabella canal, near Elsinore, Utah.		33.0
July 8	do	do	do		2.3
21	do	do	do		13.9
Aug. 14	do	do	do		1.9
30	do	do	do		0
June 23	do	do	Immediately below heading of Vermillion canal, near Richfield, Utah.		15.8
July 8	do	do	do		2.0
Aug. 4	do	do	do		13.0
30	do	do	do		0
June 23	do	do	100 feet below Jumbo dam, near Sigurd, Utah.		79
July 9	do	do	do		62
20	do	do	Bridge below Jumbo dam, near Sigurd, Utah.		6.5
Aug. 14	do	do	do		8.2
July 8	do	do	100 feet below heading of Westview canal near Redmond, Utah.		32.3
Aug. 2	do	do	150 feet below heading of Westview canal.		76
30	do	do	200 feet below heading of Westview canal.		60
July 8	do	do	120 feet below heading of Fayette canal, near Centerfield, Utah.		46.2
Aug. 2	do	do	150 feet below heading of Fayette canal.		62
30	do	do	Immediately below heading of Fayette canal.		56
Mar. 9	do	do	500 feet above the Molen springs near Mills, Utah.		4.9
Dec. 13	do	do	¼ mile below the lower Molen spring near Mills, Utah.		35.8
Jan. 23	do	do	do		61
Mar. 9	do	do	100 feet below the lower Molen spring.		37.2
Dec. 14	do	do	Railroad bridge at Mills, Utah, just below mouth of Chicken Creek.		42.0
Mar. 16	do	do	100 feet below railroad bridge at Mills, Utah.		48.9
Sept. 20	do	do	Private gage 300 feet below Delta spillway, 8 miles above Delta, Utah.	1.48	75
27	do	do	do	1.84	113
30	do	do	do	2.55	227
20	do	do	Old Riverside railroad bridge, ¾ mile below present Salt Lake Route bridge and about 5 miles below Delta spillway.		75

Miscellaneous measurements in Great Basin during the year ending Sept. 30, 1915—Continued.

Sevier Lake basin—Continued.

Date.	Stream.	Tributary to or diverting from—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
July 30	Sevier River	Sevier Lake	Old gage 2 miles above dam of Gunnison Bend reservoir and about 1½ miles northwest of Delta, Utah.	2.10	161
Oct. 29	Duck Creek	Sink	Approximately in sec. 5, T. 38 S., R. 7 E., just above sink and about 15 miles southwest of Hatch, Utah.		10.3
29	Swain Creek	Asay Creek	Approximately in sec. 13, T. 38 S., R. 7 E., about 15 miles southwest of Hatch, Utah.		1.0
Dec. 12	Lost Creek	Sevier River	Bridge about 4 miles southwest of Salina, Utah.		a 1.6
Jan. 22	....do	....do	....do		a 1.6
Dec. 12	Salina Creek	....do	Railroad bridge at Salina, Utah, about ½ mile below regular gaging station.		12.2

Beaver River basin.

May 19	Beaver River	Beaver Lake	½ mile below station at Rockyford dam, near Minersville, Utah.		b 23.6
Nov. 23	North Creek	Beaver River	Bridge at Greenville, Utah.		a 2.0
Jan. 27	....do	....do	....do		a 1.5

Minor basins in Nevada.

May 3	Quinn Canyon	Baker Creek	Mouth of canyon, approximately in sec. 24, T. 13 N., R. 69 E. About 3 miles southwest of Baker, Nev.		.6
July 10	....do	....do	....do		.3
11	Weaver Creek	Snake Valley	Above Robeson's diversion approximately sec. 15, T. 14 N., R. 69 E., about 8 miles northwest of Baker, Nev.		4.1
May 2	Snake Creek	....do	Approximately in sec. 15, T. 13 N., R. 70 E. At weir about 4 miles west of Garrison, Utah.		8.3
2	Garrison Big Wash	....do	Narrows above Osborne's ranch, about 8 miles southwest of Garrison, Utah.		.3
2	....do	....do	Narrows at lower end of Osborne's ranch.		.7
4	Unnamed Creek	Steptoe Valley	Immediately above the reservoir at the McDermitt ranch of Steptoe Sheep Co. near Currie, Nev.		1.8
July 12	Nelson Creek	....do	50 feet above railroad bridge near Currie, Nev.		2.1
8	White River	White River Valley	Midland Trail Bridge at McQueen's ranch, approximately in sec. 10, T. 12 N., R. 60 E.		3.6
8	Currant Creek	Railroad Valley	T. 11 N., R. 59 E., just above heading of feeder canal for Cazier's reservoir, near Currant, Nev.		5.7
8	Cazier's reservoir feeder canal.	Currant Creek	Head of canal		2.8
Sept. 8	Big Warm Spring outlet canal.	Duckwater Creek	Approximately in sec. 29, T. 13 N., R. 56 E., at weir about ½ mile south of Tognoni's house, Duckwater, Nev.		12.4

a Flow estimated.
b Gage at regular station read 2.65, corresponding to discharge of 14 second-feet.

Miscellaneous measurements in Great Basin during the year ending Sept. 30, 1915—Continued.

Minor basins in Nevada—Continued.

Date.	Stream.	Tributary to or diverting from—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
Apr. 26	Blackbird Creek	Big Smoky Valley a	T. 18 N., R. 45 E., 2¼ miles above mouth of canyon, above Blackbird ranch, Lander County, Nev.		0.2
26	Birch Creek	do	Sec. 2, T. 17 N., R. 44 E., just above Spencer's upper ditch, Lander County, Nev.		1.6
June 30	do	do	do		2.7
Apr. 26	do	do	Former gaging station near Austin, Nev.	1.82	1.9
June 30	do	do	do	1.99	2.8
30	Lynch Creek	do	SE. ¼ sec. 5, T. 17 N., R. 44 E., at mouth of Canyon, Lander County, Nev.		.3
Apr. 26	Tar Creek	do	SE. ¼ sec. 8, T. 17 N., R. 44 E., ¼ mile above Cahill's house, Lander County, Nev.		1.5
June 30	do	do	do		.7
Apr. 26	Gilman Springs Creek	do	SW. ¼ sec. 3, T. 16 N., R. 44 E., of main road crossing, Lander County, Nev.		.2
June 30	do	do	do		.4
30	do	do	SW. ¼ sec. 33, T. 17 N., R. 44 E., just below springs.		.6
Apr. 25	Santa Fe Creek	do	Center of sec. 18, T. 16 N., R. 44 E., in mouth of canyon, near Schmidtlein's ranch, Lander County, Nev.		1.4
July 1	do	do	do		2.3
Apr. 25	Shoshone Creek	do	SW. ¼ sec. 18, T. 16 N., R. 44 E., in mouth of canyon, Lander County, Nev.		.6
July 1	do	do	do		1.1
Apr. 25	Santa Fe Creek	do	SW. ¼ sec. 16, T. 16 N., R. 44 E., at Schmidtlein's ranch road, Lander County, Nev.		1.0
July 1	do	do	SW. ¼ sec. 16, T. 16 N., R. 44 E., ¼ mile above Schmidtlein's ranch.		2.6
1	Schmidtlein's garden ditch.	do	Heading on Schmidt'ein's ranch, Lander County, Nev.		.6
1	Kingston Creek	do	SW. ¼ sec. 21, T. 16 N., R. 43 E., in lower end of Daniels's field, Lander County, Nev.		10.0
Apr. 25	do	do	NE. ¼ sec. 35, T. 16 N., R. 43 E., at old mill.		3.4
July 1	do	do	do		14.9
1	do	do	1½ miles below old mill		1.8
1	do	do	4½ miles below old mill		1.1
Apr. 25	Clear Creek	do	SE. ¼ sec. 11, T. 15 N., R. 43 E., at mouth of canyon, Lander County, Nev.		1.0
July 2	do	do	do		2.7
Apr. 25	Carsley Creek	do	NE. ¼ sec. 13, T. 15 N., R. 43 E., at small house in mouth of canyon, Lander County, Nev.		1.2
July 2	do	do	do		4.4
2	Needles Creek	do	NW. ¼ sec. 2, T. 14 N., R. 43 E., at road near Frank Gedron's ranch, Nye County, Nev.		.5
Apr. 25	Decker Creek	do	Mouth of canyon, Nye County, Nev.		2.2
July 2	do	do	do		1.2
Apr. 25	do	do	SE. ¼ sec. 3, T. 14 N., R. 43 E., at main road.		.6
July 2	do	do	do		1.1

a For other measurements in Big Smoky Valley, see Water Supply Paper No. 423.

Miscellaneous measurements in Great Basin during the year ending Sept. 30, 1915—Continued.

Minor basins in Nevada—Continued.

Date.	Stream.	Tributary to or diverting from—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft*
Apr. 24	Blue Spring Creek	do	E. ½ sec. 7, T. 14 N., R. 43 E., at mouth of canyon, Nye County, Nev.		1.4
July 2	do	do	do		.7
2	do	do	NW. ¼ sec. 16, T. 14 N., R. 43 E., at Alice Gedron's garden.		.4
2	do	do	SW. ¼ sec. 16, T. 14 N., R. 43 E., at upper road.		.2
Apr. 24	do	do	SW. ¼ sec. 15, T. 14 N., R. 43 E., at lower road.		.7
24	Grinnell Creek	do	NE. ¼ sec. 28, T. 14 N., R. 43 E., at road, Nye County, Nev.		.4
23	Last Chance, Ophir, Wisconsin, and Summit creeks.	do	On Millett-Twin River road, in sec. 36, T. 13 N., R. 42 E., and sec. 2, T. 12 N., R. 42 E., Nye County, Nev.		1.2
July 3	do	do	NE. ¼ sec. 9, T. 12 N., R. 42 E., at Roger's ranch.		1.7
3	Ophir, Wisconsin, and Summit creeks.	do	1½ miles below mouths of each canyon, Nye County, Nev.		2.8
3	Last Chance Creek	do	1½ miles below mouth of canyon, Nye County, Nev.		1.2
Apr. 23	North Twin River	do	SW. ¼ sec. 15, T. 12 N., R. 42 E., ¼ mile below mouth of canyon, Nye County, Nev.		12.9
July 3	do	do	do		13.6
Apr. 23	South Twin River	do	NW. ¼ sec. 23, T. 12 N., R. 42 E., ¼ mile below mouth of canyon, Nye County, Nev.		8.5
July 3	do	do	do		14.4
Apr. 23	Belcher Creek	do	NW. ¼ sec. 1, T. 11 N., R. 42 E., at mouth of canyon, Nye County, Nev.		6.2
July 4	do	do	do		5.2
Apr. 23	do	do	1½ miles below mouth of canyon.		4.7
July 4	do	do	do		3.0
Apr. 21	Cove Creek	do	NE. ¼ sec. 13, T. 11 N., R. 42 E., at mouth of canyon, Nye County, Nev.		2.8
July 4	do	do	do		3.4
4	do	do	1½ miles below mouth of canyon, at road.		2.2
Apr. 20	Broad Creek	do	W. ½ sec. 31, T. 11 N., R. 43 E., at mouth of canyon, Nye County, Nev.		13.8
July 4	do	do	do		2.0
5	Jett Creek	do	SW. ¼ sec. 11, T. 10 N., R. 42 E., above pipeline intake, 1¾ miles above mouth of canyon, Nye County, Nev.		5.8
Apr. 20	do	do	Mouth of canyon		18.6
20	Pablo Creek	do	NE. ¼ sec. 25, T. 10 N., R. 42 E., at mouth of canyon, Nye County, Nev.		6.6
July 6	do	do	do		2.6
Apr. 20	Antelope Creek	do	NW. ¼ sec. 11, T. 9 N., R. 42 E., 300 feet above mouth of canyon, Nye County, Nev.		.01
19	Cloverdale Creek	do	NW. ¼ sec. 11, T. 8 N., R. 39 E., 1 mile above Cloverdale ranch, Nye County, Nev.		11.3
21	Jefferson Creek	do	SW. ¼ sec. 9, T. 10 N., R. 44 E., below North Jefferson Creek, Nye County, Nev.		16.8
July 4	do	do	do		1.1
5	do	do	SE. ¼ sec. 28, T. 11 N., R. 43 E., 6 miles below North Jefferson Creek.		1.6

Miscellaneous measurements in Great Basin during the year ending Sept. 30, 1915—Continued.

Minor basins in Nevada—Continued.

Date.	Stream.	Tributary to or diverting from—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
Apr. 22	Shoshone Creek	Jefferson Creek	NE. ¼ sec. 17, T. 10 N., R. 44 E., at Shoshone, Nev.		0.1
22	Willow Creek	Big Smoky Valley	NE. ¼ sec. 29, T. 11 N., R. 44 E., at foothill road, Nye County, Nev.		1.2
July 5	do	do	do		.3
Apr. 22	Barker Creek	do	SE. ¼ sec. 15, T. 11 N., R. 44 E., above small cabin, at mouth of canyon, Nye County, Nev.		3.1
July 5	do	do	do		7.1
5	do	do	NE. ¼ sec. 12, T. 11 N., R. 43 E., at Cook's ranch, 5 miles below mouth of canyon.		2.8
Apr. 22	North Fork Barker Creek.	Barker Creek	Near a small ranch at mouth of Barker Canyon.		1.0
24	South Moore Creek	Big Smoky Valley	SE. ¼ sec. 26, T. 12 N., R. 44 E., at mouth of canyon, Nye County, Nev.		.2
July 3	do	do	do		2.6
Apr. 24	North Moore Creek	do	NE. ¼ sec. 26, T. 12 N., R. 44 E., at mouth of canyon, Nye County, Nev.		.9
July 3	do	do	do		4.6
May 5	Franklin River	Franklin Lake	T. 31 N., R. 60 E., at bridge where Elko to Currie road crosses river.		2.0
5	Short Creek	Franklin River	T. 31 N., R. 59 E., above diversions for Short ranch about 10 miles northeast of Ruby P. O.		3.6
5	Moores Creek	do	Approximately in sec. 29, T. 31 N., R. 59 E., above diversions, and near the school house.		2.3
5	North Gidney Creek	do	At road crossing, approximately sec. 32, T. 31 N., R. 59 E.		2.0
5	I. E. Wines Creek	do	do		1.7
20	Quinn River	Black Rock Desert	About 2 miles above the Home ranch of the Ellison Ranching Co., and about 45 miles north of Winnemucca. Nev.		37.8
20	Granite Creek	Quinn River	Adorn's ranch, about 3 miles north of Amos P. O., and about 30 miles north of Winnemucca.		8.7
18	King River	do	Bengtsher's ranch, about 2 miles above mouth of Log Cabin Creek, 7 miles above King River ranch, and about 35 miles northwest of Winnemucca.	2.56	21.3
19	do	do	do	2.56	21.6
18	do	do	Ford 2 or 3 miles below King River ranch.		14.4
18	Log Cabin Creek	King River	Just above confluence with King River, about 5 miles above King River ranch.		9.6

Mohave River basin.

June 29	Little Rock Creek		Head gate of Palmdale Water Co., near Little Rock, Cal.		5.4

Miscellaneous measurements in Great Basin during the year ending Sept. 30, 1915—Continued.

Mono Lake basin.

Date.	Stream.	Tributary to or diverting from—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
Mar. 13	Rush Creek	Mono Lake	Former gaging station, in NE. ¼ sec. 13, T. 1 N., R. 26 E., at highway bridge one-fourth mile above mouth, near Mono Lake, Cal.	3.48	44

Walker Lake basin.

Nov. 28	East Walker River	Walker Lake	Former gaging station, in SW. ¼ SE. ¼ sec. 34, T. 6 N., R. 25 E., in Mono National Forest, about 4½ miles north of Bridgeport, Cal.	2.64	97
Mar. 17	do	do	do	2.79	150
21	do	do	do	2.99	180
Aug. 4	do	do	do	2.95	160
Nov. 29	Robinson Creek	East Walker River	Former gaging station, in SW. ¼ NW. ¼ sec. 15, T. 4 N., R. 24 E., at mouth of canyon, in Mono National Forest, 5 miles above junction with Buckeye Creek, near Bridgeport, Cal.	2.28	2.1
Mar. 20	do	do	do	2.65	21
Aug. 4	do	do	do	3.50	145
Nov. 29	Buckeye Creek	Robinson Creek	Former gaging station, in SE. ¼ NW. ¼ sec. 3, T. 4 N., R. 24 E., near mouth of canyon, in Mono National Forest, half a mile below Hot Springs, near Bridgeport, Cal.	2.50	8.3
Mar. 19	do	do	do	2.85	21
Aug. 4	do	do	do	3.38	76

Carson River basin.

Mar. 24	Markleeville ditch	Hot Springs Creek	Markleeville, Cal	.....	1.2
Aug. 6	do	do	do	.....	7.1

Humboldt River basin.

May 16	Humboldt River	Humboldt Sink	½ mile below dam near Mill City, Nev.	.....	36.0
June 27	do	do	300 feet below dam near Mill City, Nev.	.....	18.5
28	do	do	2 miles above Humboldt-Lovelock Irrigation Light & Power outlet canal, near Humboldt, Nev.	0.46	8.8
May 7	McDermott ditch	Lamoille Creek	Head, near Lamoille, Nev.	.....	7.4
8	do	do	do	.....	6.5
Apr. 17	Reese River	Humboldt River	First house above Walsh's red brick, 26 miles below Bell's, and 30 miles from Austin, Nev.	.....	9.0
16	Big Creek	Reese River	Former gaging station at Carter's ranch, near Austin, Nev.	1.69	3.1
June 28	do	do	do	1.85	9.5
May 22	Rock Creek	Humboldt River	Mouth of canyon, 25 miles above Battle Mountain, Nev.	.....	15.0

Miscellaneous measurements in Great Basin during the year ending Sept. 30, 1915—Continued.

Warner Lakes basin.

Date.	Stream.	Tributary to or diverting from—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
Mar. 30	Unnamed Creek	Coleman Valley	Above reservoir, in sec. 5, T. 41 S., R. 25 E.		1.6
Apr. 19	Crump ditch	Deep Creek	Near Intake at Adel, Oreg.		1.0
May 12	Wible-Messner ditch	do	do		8.9
Mar. 21	Fish Creek	Hart Lake	Above Pridays reservoir, near Plush, Oreg.		b 3.0
Apr. 2	do	do	do		1.5
7	do	do	do		b 1.0
May 4	do	do	do		2.4
Apr. 25	Honey Creek	do	Below all diversions, about 1½ miles below gaging station, near Plush, Oreg.		20.1
1	Snyder Creek	Honey Creek	Just above Colvin Creek, about 10 miles northwest of Plush, Oreg.		4.6
Do.	Colvin Creek	Snyder Creek	Mouth, about 10 miles northwest of Plush, Oreg.		3.0
Do.	North "7T" ditch	Honey Creek	Intake, near Plush, Oreg.		5.6
8	do	do	do		6.8
1	Middle "7T" ditch	do	do		2.0
8	do	do	do		2.9
1	South "7T" ditch	do	do		10.3
8	do	do	do		12.6
Mar. 24	Five small streams from west side of Hart Mountain.	Marsh north of Hart Lake.	Above diversions, near "7T" and Stein ranches		b 1.5
May 3	do	do	do		5.4

Summer Lake basin.

Dec. 12	Ana River	Summer Lake	Former gaging station near Summer Lake, Oreg.		131
May 17	do	do	do	3.23	134

Silver Lake basin.

Mar. 20	Silver Creek	Silver Lake	Sec. 17, T. 30 S., R. 14 E., near Silver Lake, Oreg.		21.0
July 22	Bridge Creek	Silver Creek	Former gaging station near Silver Lake, Oreg.		.5
22	Buck Creek	Silver Lake	do	4.50	4.5

Malheur Lake basin.

Apr. 27	Keiger Creek	Donner und Blitzen River.	Former gaging station near Diamond, Oreg.	1.70	37.0
June 3	do	do	do	2.01	60
Aug. 24	do	do	do	1.03	4.4
Apr. 28	Cucamonga Creek	Keiger Creek	do	.27	.2
June 13	do	do	do	1.40	6.2
Apr. 28	McCoy Creek	do	do	2.31	52
June 14	do	do	do	2.39	60
Aug. 23	do	do	do	1.18	2.0

INDEX.

STREAM-GAGING STATIONS

AND

PUBLICATIONS RELATING TO WATER RESOURCES

PART X. GREAT BASIN

16345°—17—WSP 410——17

STREAM-GAGING STATIONS AND PUBLICATIONS RELATING TO WATER RESOURCES.

INTRODUCTION.

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

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

Part I. North Atlantic slope basins.
II. South Atlantic and eastern Gulf of Mexico basins.
III. Ohio River basin.
IV. St. Lawrence River basin.
V. Upper Mississippi River and Hudson Bay basins.
VI. Missouri River basin.
VII. Lower Mississippi River basin.
VIII. Western Gulf of Mexico basins.
IX. Colorado River basin.
X. Great Basin.
XI. Pacific slope basins in California.
XII. North Pacific slope basins, in three volumes:
A. Pacific slope basins in Washington and upper Columbia River basin.
B. Snake River basin.
C. Lower Columbia River basin and Pacific slope basins in Oregon.

HOW GOVERNMENT REPORTS MAY BE OBTAINED OR CONSULTED.

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

1. Copies may be obtained free of charge by applying to the Director of the Geological Survey, Washington, D. C. The edition printed for free distribution is, however, small and is soon exhausted.

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

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

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

Albany, N. Y., Room 18, Federal Building.
Atlanta, Ga., Post Office Building.
Boston, Mass., 2500 Customhouse.
St. Paul, Minn., Old Capitol Building.
Madison, Wis., care of Railroad Commission of Wisconsin.
Boise, Idaho, 615 Idaho Building.
Helena, Mont., Montana National Bank Building.
Topeka, Kans., 25 Federal Building.
Denver, Colo., 403 New Post Office Building.
Phoenix, Ariz., 417 Fleming Building.
Salt Lake City, Utah, 421 Federal Building.
Tacoma, Wash., 406 Federal Building.
Portland, Oreg., 416 Couch Building.
San Francisco, Cal., 328 Customhouse.
Los Angeles, Cal., 619 Federal Building.
Honolulu, Hawaii, 14 Capitol Building.

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

STREAM-FLOW REPORTS.

Stream-flow records have been obtained at more than 3,800 points in the United States, and the data obtained have been published in the reports tabulated below:

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

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

Report.	Character of data.	Year.
10th A, pt. 2	Descriptive information only.	
11th A, pt. 2	Monthly discharge and descriptive information.	1884 to Sept., 1890.
12th A, pt. 2	....do....	1884 to June 30, 1891.
13th A, pt. 3	Mean discharge in second-feet.	1884 to Dec. 31, 1892.
14th A, pt. 2	Monthly discharge (long-time records, 1871 to 1893).	1888 to Dec. 31, 1893.
B 131	Descriptions, measurements, gage heights, and ratings.	1893 and 1894.
16th A, pt. 2	Descriptive information only.	
B 140	Descriptions, measurements, gage heights, ratings, and monthly discharge (also many data covering earlier years).	1895.
W 11	Gage heights (also gage heights for earlier years).	1896.
18th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also similar data for some earlier years).	1895 and 1896.
W 15	Descriptions, measurements, and gage heights, eastern United States, eastern Mississippi River, and Missouri River above junction with Kansas.	1897.
W 16	Descriptions, measurements, and gage heights, western Mississippi River below junction of Missouri and Platte, and western United States.	1897.
19th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also some long-time records).	1897.
W 27	Measurements, ratings, and gage heights, eastern United States, eastern Mississippi River, and Missouri River.	1898.
W 28	Measurements, ratings, and gage heights, Arkansas River and western United States.	1898.

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

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

Report.	Character of data.	Year.
20th A, pt. 4	Monthly discharge (also for many earlier years)	1898.
W 35 to 39	Descriptions, measurements, gage heights, and ratings	1899.
21st A, pt. 4	Monthly discharge	1899.
W 47 to 52	Descriptions, measurements, gage heights, and ratings	1900.
22d A, pt. 4	Monthly discharge	1900.
W 65, 66	Descriptions, measurements, gage heights, and ratings	1901.
W 75	Monthly discharge	1901.
W 82 to 85	Complete data	1902.
W 97 to 100	do	1903.
W 124 to 135	do	1904.
W 165 to 178	do	1905.
W 201 to 214	do	1906.
W 241 to 252	do	1907–8.
W 261 to 272	do	1909.
W 281 to 292	do	1910.
W 301 to 312	do	1911.
W 321 to 332	do	1912.
W 351 to 362	do	1913.
W 381 to 394	do	1914.
W 401 to 414	do	1915.

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

The records at most of the stations discussed in these reports extend over a series of years, and miscellaneous measurements at many points other than regular gaging stations have been made each year. An index of the reports containing records obtained prior to 1904 has been published in Water-Supply Paper 119.

The table which follows gives, by years and drainage basins, the numbers of the papers on surface-water supply published from 1899 to 1915. The data for any particular station will in general be found in the reports covering the years during which the station was maintained. For example, data for Machias River at Whitneyville, Maine, 1903 to 1915, are published in Water-Supply Papers 97, 124, 165, 201, 241, 261, 281, 301, 321, 351, 381, and 401, which contain records for the New England streams from 1903 to 1915. Results of miscellaneous measurements are published by drainage basins.

In these papers and in the following lists the stations are arranged in downstream order. The main stem of any river is determined by measuring or estimating its drainage area—that is, the headwater stream having the largest drainage area is considered the continuation of the main stream, and local changes in name and lake surface are disregarded. All stations from the source to the mouth of the main stem of the river are presented first, and the tributaries in order from source to mouth follow, the streams in each tributary basin being listed before those of the next basin below.

In exception to this rule the records for Mississippi River are given in four parts, as indicated on page III, and the records for large lakes are taken up in order of streams around the rim of the lake.

Numbers of water-supply papers containing results of stream measurements, 1899–1915.

Year.	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII		
												North Pacific slope basins.		
	North Atlantic slope basins (St. John River to York River).	South Atlantic and eastern Gulf of Mexico basins (James River to the Mississippi).	Ohio River basin.	St. Lawrence River and Great Lakes basins.	Hudson Bay and upper Mississippi River basins.	Missouri River basin.	Lower Mississippi River basin.	Western Gulf of Mexico basins.	Colorado River basin.	Great Basin.	Pacific slope basins in California.	Pacific slope basins in Washington and upper Columbia River basin.	Snake River basin.	Lower Columbia River basin and Pacific slope basins in Oregon.
1899 [a]	35	[b] 35, 36	36	36	36	[c] 36, 37	37	37	[c] 37, 38	38, [c] 39	38, [f] 39	38	38	38
1900 [g]	47, [h] 48	48	48, [i] 49	49	49, [j] 50	50	50	50	50	51	51	51	51	51
1901	65, 75	65, 75	65, 75	65, 75	[k] 65, 66, 75	66, 75	[k] 65, 66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75
1902	82	[b] 82, 83	83	[l] 82, 83	[k] 83, 85	84	[k] 83, 84	84	85	85	85	85	85	85
1903	97	[b] 97, 98	98	97	[k] 98, 99, [m] 100	99	[k] 98, 99	99	100	100	100	100	100	100
1904	[n] 124, [o] 125, [p] 126	[p] 126, 127	128	129	[k] 128, 130	130, [q] 131	[k] 128, 131	132	133	133, [r] 134	134	135	135	135
1905	[n] 165, [o] 166, [p] 167	[p] 167, 168	169	170	171	172	[k] 169, 173	174	175, [s] 177	176, [r] 177	177	178	178	[t] 177, 178
1906	[n] 201, [o] 202, [p] 203	[p] 203, 204	205	206	207	208	[k] 205, 209	210	211	212, [r] 213	213	214	214	214
1907–8	241	242	243	244	245	246	247	248	249	250, [r] 251	251	252	252	252
1909	261	262	263	264	265	266	267	268	269	270, [r] 271	271	272	272	272
1910	281	282	283	284	285	286	287	288	289	290	291	292	292	292
1911	301	302	303	304	305	306	307	308	309	310	311	312	312	312
1912	321	322	323	324	325	326	327	328	329	330	331	332–A	332–B	332–C
1913	351	352	353	354	355	356	357	358	359	360	361	362–A	362–B	362–C
1914	381	382	383	384	385	386	387	388	389	390	391	392	393	394
1915	401	402	403	404	405	406	407	408	409	410	411	412	413	414

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

PART X. THE GREAT BASIN.

PRINCIPAL DIVISIONS.

The Great Basin is made up of a number of minor basins whose streams do not discharge into the ocean. The largest of these minor basins are the depressions that hold Great Salt Lake, Sevier Lake, Humboldt Sink, Truckee, Walker, Carson, and Owens rivers, and Honey, Mono, Malheur, Harney, Warner, Abert, Summer, and Silver lakes. The streams of this section drain wholly or in part the States of California, Idaho, Nevada, Oregon, Utah, and Wyoming.

In addition to the list of gaging stations and the annotated list of publications relating specifically to the section, these pages contain a similar list of reports that are of general interest in many sections and cover a wide range of hydrologic subjects, and also brief references to reports published by State and other organizations (see p. XXIV).

GAGING STATIONS.

NOTE.—Dash after a date indicates that station was being maintained September 30, 1915. Period after a date indicates discontinuance.

GREAT SALT LAKE BASIN.

Great Salt Lake at Saltair, Utah, 1904; 1912–
Great Salt Lake at Midlake, Utah, 1912–
Great Salt Lake at Garfield Beach gage, Utah, 1875–1899.
Bear River near Evanston, Wyo., 1913–
Bear River near Harer, Idaho, 1913–
Bear River at Dingle, Idaho, 1903–1914.
Bear River at Soda Springs, Idaho, 1896.
Bear River at Alexander, Idaho, 1911–
Bear River near Preston, Idaho, 1889–
Bear River near Collinston, Utah, 1889–
Bear (Mud) Lake inlet canal near Dingle, Idaho, 1911–1913.
Bear Lake at Fishaven, Idaho, 1904–1906.
Georgetown Creek near Georgetown, Idaho, 1911–1914.
Soda Creek near Soda Springs, Idaho, 1913–
Cub Creek near Franklin, Idaho, 1900–1901.
Logan River above State dam, near Logan, Utah, 1913–
Logan River near Logan, Utah, 1896–1912.
Logan River below State dam, near Logan, Utah, 1913–14.
Logan River below Logan Northern canal, near Logan, Utah, 1915–
Utah Power & Light Co.'s tailrace near Logan, Utah, 1913–
Logan, Hyde Park, and Smithfield canal near Logan, Utah, 1904–1907; 1909–
Logan Northern canal near Logan, Utah, 1913–
Blacksmith Fork above Utah Power & Light Co.'s dam, near Hyrum, Utah, 1900–1902; 1913–
Blacksmith Fork at Utah Power & Light Co.'s plant, near Hyrum, Utah, 1914–

SEVIER LAKE BASIN.

Mammoth Creek (head of Sevier River) near Hatch, Utah, 1912; 1913–14.
Sevier River at Hatch, Utah, 1911–
Sevier River near Panguitch, Utah, 1914.
Sevier River near Circleville, Utah, 1912; 1914–
Sevier River near Kingston, Utah, 1914–
Sevier River near Junction, Utah, 1911; 1912–
Piute reservoir near Marysvale, Utah, 1914.
Sevier River below Piute dam, near Marysvale, Utah, 1911; 1912–
Sevier River at Pitts ranch, near Marysvale, Utah, 1906–1911.
Sevier River at Marysvale, Utah, 1912–1914.
Sevier River at Sevier, Utah, 1911–
Sevier River at Joseph, Utah, 1889.
Sevier River near Vermilion, Utah, 1912; 1914–
Sevier River near Gunnison, Utah, 1900–
Sevier River at Clarks bridge, near Fayette, Utah, 1914–
Sevier River at McArtie's Ford, near Fayette, Utah, 1914.
Sevier Bridge reservoir near Juab, 1914.
Sevier River near Juab, Utah, 1911–
Sevier River near Mills, Utah, 1914–
Sevier River at Leamington, Utah, 1889–1898; 1912–1914.
Sevier River near Lynndyl, Utah, 1914–
Delta & Melville reservoir near Delta, Utah, 1914.
Sevier River near Delta, Utah, 1912; 1913–
Gunnison Bend reservoir near Delta, Utah, 1914.
Sevier River at Oasis, Utah, 1913–
    Hatch Bench canal near Hatch, Utah, 1914.
    Asay Creek near Hatch, Utah, 1912; 1913–14.
    State canal near Panguitch, Utah, 1913; 1914.
    Long canal near Panguitch, Utah, 1914.
    East Panguitch canal near Panguitch, Utah, 1914.
    McEwen canal near Panguitch, Utah, 1914.
    Fox canal near Circleville, Utah, 1914.
    Circleville canal near Circleville, Utah, 1914.
    Old Kingston canal near Circleville, Utah, 1914.
    Dalton canal at Circleville, Utah, 1914.
    Mitchels Slough:
        Mitchells Slough canal near Junction, Utah, 1914.
    East Fork of Sevier River near Kingston, Utah, 1912; 1913–
    East Fork of Sevier River at Junction, Utah, 1913.
        Otter Creek reservoir near Coyoto, Utah, 1914.
        Otter Creek reservoir canal near Coyoto, Utah, 1914–15.
        Otter Creek near Coyoto, Utah, 1913; 1914–
        Kingston canal at Kingston, Utah, 1914.
    Pine Creek at Marysvale, Utah, 1914.
    Clear Creek at Sevier, Utah, 1912–
        Cove canal at Sevier, Utah, 1914.
    Monroe South Bend canal near Joseph, Utah, 1914.
    Sevier Valley canal near Joseph, Utah, 1912.
    Sevier Valley canal at Elsinore, Utah, 1913.
    Sevier Valley canal near Richfield, Utah, 1912–1914.
    State canal near Vermilion, Utah, 1913.
    State canal near Aurora, Utah, 1913.
    State canal near Salina, Utah, 1913.

Sevier River tributaries—Continued.
State canal near Redmond, Utah, 1913; 1914.
Joseph canal near Joseph, Utah, 1914.
Wells canal near Joseph, Utah, 1914.
Monroe canal near Elsinore, Utah, 1914.
Elsinore canal near Elsinore, Utah, 1914.
Brooklyn canal near Elsinore, Utah, 1914.
Richfield canal near Elsinore, Utah, 1914.
Annabella canal at Elsinore, Utah, 1914.
Vermilion canal near Richfield, Utah, 1914.
Rockyford canal near Vermilion, Utah, 1914.
Salina Creek at Salina, Utah, 1914–
West View canal at Redmond, Utah, 1914.
Fayette canal near Centerfield, Utah, 1914.
Dover canal near Gunnison, Utah, 1914.
San Pitch River near Gunnison, Utah, 1900–1905; 1912.
Manti Creek near Manti, Utah, 1900.
Wellington canal near Mills, Utah, 1914.
Sevier River Land & Water Co.'s canal near Leamington, Utah, 1914.
Sevier River Land & Water Co.'s canal above Fool Creek reservoir, near Lynndyl, Utah, 1914.
Sevier River Land & Water Co.'s by-pass near Lynndyl, Utah, 1914.
Sevier River Land & Water Co.'s reservoir No. 1 (Fool Creek reservoir) near Lynndyl, Utah, 1914.
McIntyre canal near Leamington, Utah, 1914.
Leamington canal near Leamington, Utah, 1914.
Delta and Melville canal (Canal A) near Delta, Utah, 1912.
Canal B at intake, near Delta, Utah, 1912.
Lyman's ditch near Delta, Utah, 1912.
Melville West Side canal near Delta, Utah, 1912.
Canal C at head gate near Delta, Utah, 1912.
Melville Main canal near Delta, 1912.
Midland canal near Delta, Utah, 1914.
Abraham canal near Delta, Utah, 1913; 1914.
Deseret High-Line canal near Delta, Utah, 1913; 1914.
Deseret canal near Delta, Utah, 1913; 1914.
Smith canal near Delta, Utah, 1914.

STREAMS IN PAVANT VALLEY.

Chalk Creek near Fillmore, Utah, 1914.
Pine Creek near Fillmore, Utah, 1914.
Meadow Creek near Meadow, Utah, 1914.
Corn Creek near Kanosh, Utah, 1914.

BEAVER RIVER BASIN.

Beaver River near Beaver, Utah, 1906; 1914–
Beaver River at Adamsville, Utah, 1913–
Beaver River at Rockyford dam, near Minersville, Utah, 1913–
Beaver River at Minersville, Utah, 1909–1913.
Beaver River at Milford, Utah, 1914.
South Creek near Beaver, Utah, 1906.
North Fork of North Creek (head of North Creek) near Beaver, Utah, 1906.
South Fork of North Creek near Beaver, Utah, 1906.
Indian Creek at Adamsville, near Beaver, Utah, 1906; 1914–
Minersville canal at Minersville, Utah, 1906; 1914.
Coal Creek near Cedar City, Utah, 1915–

MINOR BASINS IN NEVADA.

Thousand Springs Creek near Tecoma, Nev., 1910–1913.
Snake Creek near Baker, Nev., 1913–
Baker Creek near Baker, Nev., 1913–
Cleveland Creek near Osceola, Nev., 1914–
White River near Preston, Nev., 1914.
Currant Creek at Ranger Station near Currant, Nev., 1913.
Currant Creek at Cazier's Ranch near Currant, Nev., 1913; 1914–
Birch Creek near Austin, Nev., 1913; 1914.

SALTON SINK BASIN.

Salton Sea near Salton, Cal., 1904–
Alamo River near Brawley, Cal., 1909–1912.
New River near Brawley, Cal., 1909–1911.

OWENS LAKE BASIN.

Owens River near Round Valley, Cal., 1903–
Owens River near Big Pine [Tinemaha], Cal., 1906–
Owens River near Lone Pine, Cal., 1909–
Owens River near Citrus, Cal., 1903–1906.
Owens Lake near Lone Pine (Olancha), Cal., 1908–
Rock Creek near Round Valley, Cal., 1903–
Pine Creek near Round Valley, Cal., 1903–
Owens River canal near Bishop, Cal., 1903–1905.
McNally canal near Bishop, Cal., 1903–1905.
Farmers canal near Bishop, Cal., 1903–1905.
Bishop Creek near Bishop, Cal., 1903–1911.
Hillside (North) canal near Bishop, Cal., 1903–1905.
Hillside (South) canal near Bishop, Cal., 1903–1905.
Powers canal near Bishop, Cal., 1903–1905.
Bishop Creek canal near Bishop, Cal., 1903–1905.
Collins (George) canal near Bishop, Cal., 1903–1906.
Collins (A. O.) canal near Bishop, Cal., 1903–1906.
Dell canal near Bishop, Cal., 1903–1906.
Big Pine and Owens River canal near Bishop, Cal., 1903–1905.
Rawson canal near Bishop, Cal., 1903–1905.
Sanger canal near Alvord, Cal., 1903–1905.
Baker Creek near Big Pine, Cal., 1908–1911.
Big Pine Creek near Big Pine, Cal., 1903–1911.
Tinemaha Creek near Big Pine [Tinemaha], Cal., 1906–1911.
Birch Creek near Big Pine [Tinemaha], Cal., 1905; 1906–1911.
Taboose Creek near Aberdeen, Cal., 1906–1911.
Goodale Creek near Aberdeen, Cal., 1906–1911.
Division Creek near Independence, Cal., 1906–1910.
Eightmile (Sawmill) Creek near Independence, Cal., 1906–1910.
Thibaut Creek near Independence, Cal., 1908–1911.
East Side canal near Citrus, Cal., 1903–1906.
Stevens canal near Citrus, Cal., 1903–1905.
Oak Creek near Independence, Cal., 1905–1911:
Little Pine (Independence) Creek near Independence, Cal., 1905–1911.
Shepard Creek near Thebe, Cal., 1906–1910.
Bairs Creek near Thebe, Cal., 1906–1911.
George Creek near Thebe, Cal., 1906–1911.

Humboldt River basin:
Humboldt River near Elko, Nev., 1895–1902.
Humboldt River at Palisade, Nev., 1902–1906; 1911–
Humboldt River at Battle Mountain, Nev., 1896–7.
Humboldt River near Golconda, Nev., 1894–1909; 1910–
Humboldt River near Oreana, Nev., 1896–1909; 1910–
Humboldt River near Lovelocks, Nev., 1912–
Bishop Creek near Wells, Nev., 1910.
Marys River at Marys River Cabin, near Deeth, Nev., 1913–14.
Marys River at Buena Vista ranch, near Deeth, Nev., 1913–14.
Marys River near Deeth, Nev., 1902–3; 1912–
Hanks Creek near Deeth, Nev., 1913–14.
Starr Creek near Deeth, Nev., 1913–
Lamoille Creek near Lamoille, Nev., 1915–
Lamoille Creek near Halleck, Nev., 1913–
North Fork of Humboldt River near Peko, Nev., 1898–1900.
North Fork of Humboldt River at Devils Gate, near Halleck, Nev., 1913–
North Fork of Humboldt River near Halleck, Nev., 1902–1909; 1910–1913.
South Fork of Humboldt River near Elko, Nev., 1896–1909; 1910–
Maggie Creek at Carlin, Nev., 1913–
Pine Creek at Palisade, Nev., 1902–1904; 1912–
Rock Creek at Rock Creek ranch, near Battle Mountain, Nev., 1915–
Rock Creek near Battle Mountain, Nev., 1896.
Reese River near Berlin, Nev., 1913–
Big Creek near Austin, Nev., 1913–14.
Humboldt-Lovelocks Irrigation Light & Power Co.'s canal near Mill City, Nev., 1914–
Humboldt-Lovelocks Irrigation Light & Power Co.'s canal near Humboldt, Nev., 1914–

PYRAMID AND WINNEMUCCA LAKE BASINS.

Lake Tahoe at Tahoe, Cal., 1900–
Truckee River at Tahoe, Cal., 1895–96; 1900–
Truckee River near Boca, Cal., 1890.
Truckee River at Iceland, Cal., 1912–
Truckee River at Nevada-California State line, 1899–1912.
Truckee River at Laughton, Nev., 1890.
Truckee River at Reno, Nev., 1906–
Truckee River near Essex, Nev., 1889.
Truckee River at Vista, Nev., 1899–1908.
Truckee River at Clarks, Nev., 1907–
Truckee River at Derby dam, Nev., 1907–1910.
Truckee River near Wadsworth, Nev., 1902–1905.
Lake Winnemucca inlet near Wadsworth, Nev., 1902–1905.
Donner Creek at Donner Lake, near Truckee, Cal., 1909–10.
Donner Creek near Truckee, Cal., 1902–
Prosser Creek near Hobart Mills (Truckee), Cal., 1903–4; 1907–1912.
Prosser Creek near Boca, Cal., 1899–90; 1902–3.
South Fork of Prosser Creek near Truckee, Cal., 1909–10.
Little Truckee River near Truckee, Cal., 1909–10.
Little Truckee River near Boca, Cal., 1890.
Little Truckee River at Boca, Cal., 1911–

HONEY LAKE BASIN.

SURPRISE VALLEY DRAINAGE BASIN.

WARNER LAKES BASIN.

ABERT LAKE BASIN.

Chewaucan River at dam site, near Paisley, Oreg., 1912–
Chewaucan River above Mill Creek, near Paisley, Oreg., 1912–
Chewaucan River at Chewaucan Land & Cattle Co.'s gage, near Paisley, Oreg., 1914–
Chewaucan River above Conn's ditch, near Paisley, Oreg., 1912.
Chewaucan River at Paisley, Oreg., 1905–1907; 1909–1912; 1913.
Chewaucan River at Hotchkiss Ford, near Paisley, Oreg., 1914–
Chewaucan River at Narrows, near Paisley, Oreg., 1914–
Conn ditch near Paisley, Oreg., 1914–
Smalls Creek at Paisley, Oreg., 1914–
Bagley ditch at Paisley, Oreg., 1914–
Jones-Innis-ZX ditch near Paisley, Oreg., 1914–
Crooked Creek near Valley Falls, Oreg., 1912–13.

SUMMER LAKE BASIN.

Ana River near Summer Lake, Oreg., 1905; 1909–10.

SILVER LAKE BASIN.

Silver Creek near Silver Lake, Oreg., 1904–1907; 1909–
Bridge Creek near Silver Lake, Oreg., 1905–6; 1911–12.
Buck Creek near Silver Lake, Oreg., 1905–6; 1909–1911.

MALHEUR AND HARNEY LAKES BASIN.

Malheur Lake outlet at Narrows, Oreg., 1903–1906; 1911–12; 1913; 1914.
Silvies River near Silvies, Oreg., 1903–1905; 1909–1912.
Silvies River near Burns, Oreg., 1903–1906; 1909–
Donner und Blitzen River near Diamond, Oreg., 1909–
Donner und Blitzen River near Narrows, Oreg., 1915.
Mud Creek near Diamond, Oreg., 1911–
Bridge Creek near Diamond, Oreg., 1911; 1912–
Krumbo Creek near Diamond, Oreg., 1911; 1913.
Keiger Creek near Diamond, Oreg., 1909–10; 1911; 1912–13.
Cucamonga Creek near Diamond, Oreg., 1911–1913.
McCoy Creek near Diamond, Oreg., 1909–1914.
Riddle Creek near Smith, Oreg., 1911.
Buena Vista canal near Narrows, Oreg., 1915.
Silver Creek above Riley, Oreg., 1904–1906; 1909; 1910; flood periods 1911–1915.
Silver Creek below Riley, Oreg., 1912; 1913; 1914.

ALVORD LAKE BASIN.

Trout Creek near Denio, Oreg., 1911–12.
Little Cottonwood Creek near Denio, Oreg., 1911–12.

TUMTUM LAKE BASIN.

Van Horn Creek near Denio, Oreg., 1911.

CATLOW VALLEY, DRAINAGE BASIN.

Home Creek near Beckley (Narrows), Oreg., 1911; 1912; 1915.

REPORTS ON WATER RESOURCES OF THE GREAT BASIN.

PUBLICATIONS OF THE UNITED STATES GEOLOGICAL SURVEY.

WATER-SUPPLY PAPERS.

Water-supply papers are distributed free by the Geological Survey as long as its stock lasts. An asterisk (*) indicates that this stock has been exhausted. Many of the papers marked in this way may, however, be purchased (at price noted) from the SUPERINTENDENT OF DOCUMENTS, WASHINGTON, D. C. Omission of the price indicates that the report is not obtainable from Government sources. Water-Supply Papers are of octavo size.

*7. Seepage water of northern Utah, by Samuel Fortier. 1897. 50 pp., 3 pls. 10c.

Deseribes Cache Valley and its water supply and seepage waters in Ogden Valley.

*43. Conveyance of water in irrigation canals, flumes, and pipes, by Samuel Fortier. 1901. 86 pp., 15 pls. 15c.

Describes the location and construction of various types of canals for irrigation.

*44. Profiles of rivers in the United States, by Henry Gannett. 1901. 100 pp., 11 pls. 15c.

Gives elevations and distances along Sevier, Bear, and Humboldt rivers; also brief descriptions.

*57. Preliminary list of deep borings in the United States, Part I (Alabama-Montana), by N. H. Darton. 1902. 60 pp. 10c.

*61. Preliminary list of deep borings in the United States, Part II (Nebraska-Wyoming), by N. H. Darton. 1902. 67 pp. 5c.

A second, revised, edition of Nos. 57 and 61 was published in 1905 as Water-Supply Paper 149 (q. v.).

68 Water storage in the Truckee Basin, California-Nevada, by L. H. Taylor. 1902. 90 pp., 8 pls. 10c.

Discusses reservoir sites, water rights for power and irrigation, irrigable lands, duty of water, and necessity for national control of water.

*78. Preliminary report on artesian basins in southwestern Idaho and southeastern Oregon, by I. C. Russell. 1903. 53 pp., 2 pls. 5c.

Discusses briefly the rocks and geologic structure of a part of the Snake River Plains in Canyon and Owyhee counties, Idaho, and Malheur and Harney counties, Oreg.; describes briefly the conditions on which artesian flow depends, and in some detail the springs and drilled wells in the Lewis, Otis, Harney, and Whitehorse artesian basins; also describes artesian wells in alluvial deposits and discusses the size of drill holes, casings, etc., the preservation of well records, and the importance of laws to govern the use of artesian waters; gives list of publications bearing on artesian waters.

*81. California hydrography, by J. B. Lippincott. 1903. 488 pp., 1 pl. 25c.

A collection of published records of stream flow "hitherto much scattered, some of them out of print and difficult to secure," brought together as a book of reference.

140. Field measurements of the rate of movement of underground waters, by C. S. Slichter. 1905. 122 pp., 15 pls. 15c.

Discusses flow in Rio Hondo, San Gabriel, and Mohave River valleys, Cal.; gives results of tests of wells and pumping plants, and describes stovepipe method of well construction.

*103. A review of the laws forbidding pollution of inland waters in the United States, by E. B. Goodell. 1904. 130 pp. Superseded by Water-Supply Paper 152.

Cites statutory restrictions of water pollution in California, Idaho, Nevada, Oregon, Utah, and Wyoming.

*122. Relation of the law to underground waters, by D. W. Johnson. 1905. 55 pp. 5c.

Cites legislative acts affecting ground waters in California, Idaho, Nevada, Oregon, Utah, and Wyoming.

146. Proceedings of second conference of engineers of the Reclamation Service, with accompanying papers, compiled by F. H. Newell, chief engineer. 1905. 267 pp. 15c. [Inquiries concerning this report should be addressed to the Reclamation Service.] Contains:

A brief report on "Hydrographic investigations in Nevada," by A. E. Chandler. Gives notes concerning fluctuations and average discharge at stations on Truckee, Humboldt, Carson, and Walker rivers.

A report on "Underground waters of southern California," by W. C. Mendenhall. Discusses the origin, distribution, and character of the artesian waters, the causes of fluctuations in the supply, and the need of moderation in use.

149. Preliminary list of deep borings in the United States, second edition, with additions, by N. H. Darton. 1905. 175 pp. 10c.

Gives by States (and within the States by counties), location, depth, diameter, yield, height of water, and other information concerning wells 400 feet or more in depth; includes all wells listed in Water-Supply Papers 57 and 61; mentions also principal publications relating to deep borings.

152. A review of the laws forbidding pollution of inland waters in the United States (second edition), by E. B. Goodell. 1905. 149 pp. 10c.

Cites statutory restrictions of water pollution in California, Idaho, Nevada, Oregon, Utah, and Wyoming.

*157. Underground water in the valleys of Utah Lake and Jordan River, Utah, by G. B. Richardson. 1906. 81 pp., 9 pls. 20c.

Discusses the source, distribution, recovery, and quality of waters; contains list of typical wells.

*162. Destructive floods in the United States in 1905, with a discussion of flood discharge and frequency and an index to flood literature, by E. C. Murphy and others. 1906. 105 pp., 4 pls. 15c.

Gives estimates of flood flow and frequency of Bear River at Collinston, Utah, and Humbodit River at Golconda, Nev. (p. 85).

*181. Geology and water resources of Owens Valley, Cal., by W. T. Lee. 1906. 28 pp., 6 pls. 15c.

Discusses artensian conditions, utilization of ground waters by pumping and power plants, and undrained lakes as registers of climate. See also Water-Supply Paper 294.

*199. Underground water in Sanpete and central Sevier valleys, Utah, by G. B. Richardson. 1907. 63 pp., 6 pls. 25c.

Describes topography and geology of the area, the sources, distribution, recovery, and quality of the ground waters; presents tabulated data concerning springs and wells.

*217. Water resources of Beaver Valley, Utah, by W. T. Lee. 1908. 57 pp., 1 pl. 10c.

Describes possible development of surface and ground waters, and quality of waters; contains field assays of well water, and sanitary and other exact analyses.

*220. Geology and water resources of a portion of south-central Oregon, by G. A. Waring. 1908. 86 pp., 10 pls. 20c.

Describes the rocks, streams, lakes and lake valleys, deep and shallow wells, climate, soils, vegetation, industries, and reclamation projects in Lake County; gives analyses of soils and waters.

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*224. Some desert watering places in southeastern California and southwestern Nevada, by W. C. Mendenhall. 1909. 98 pp., 4 pls. 20c.

Describes physical features of the Colorado and Mohave deserts and the Death Valley region, mineral resources and industrial development, climate, rivers, springs, and camping places; gives hints on desert traveling; describes main routes of travel, and gives details concerning the springs.

*225. Ground waters of the Indio region, California, with a sketch of the Colorado Desert, by W. C. Mendenhall. 1909. 56 pp., 12 pls. 20c.

Describes the structural features and deposits of the Colorado Desert, rainfall and drainage, the origin, source, character, and development of ground waters; gives history of development of the Indio region, and discusses soils, crops, and cost of reclamation.

*231. Geology and water resources of the Harney Basin region, Oregon, by G. A. Waring. 1909. 93 pp., 5 pls. 25c.

Describes topography, climate, vegetation, settlements and industries, the rocks and their succession, lakes, springs, and streams, and artesian conditions; discusses conservation of water supply, temperature of ground waters, and well-drilling methods; describes in detail Harney, Catlow, Alvord, and Whitehorse basins, and Malheur River basin.

237. The quality of the surface waters of California, by Walton Van Winkle and F. M. Eaton. 1910. 142 pp., 1 pl. 20c.

Describes geography, climate, industrial development, and drainage, and gives results of mineral analyses of the river waters.

274. Some stream waters of the Western United States, with chapters on sediment carried by the Rio Grande and the industrial application of water analyses, by Herman Stabler. 1911. 188 pp. 15c.

Describes collection of samples, plan of analytical work and methods of analyses; discusses soap-consuming power of waters, water softening, boiler waters, and water for irrigation; gives results of analyses of waters of Carson, Truckee, and Owens rivers.

277. Ground water in Juab, Millard, and Iron counties, Utah, by O. E. Meinzer. 1911. 162 pp., 5 pls. 25c.

Describes the physiographic features, geologic formations, and history, the rainfall, soil, vegetation, streams, and industrial development; discusses the occurrence of ground water in the bedrock and in unconsolidated sediments, artesian conditions and springs, the quality of the ground waters, irrigation, construction of wells, and watering places on routes of travel; describes in detail Juab Valley and Round, Little, Sage, Dog, and Fernow valleys, Tintic Valley and Tintic mining district, Pavant and Lower Beaver valleys, Old River Bed and Cherry Creek region, Drum and Swasey Wash region, Sevier Desert, Wah Wah Valley, Sevier Lake bottoms, White, Fish Springs, Snake, Parowan, and Rush Lake valleys, and Escalante Desert; analyses.

278. Water resources of Antelope Valley, Cal., by H. R. Johnson. 1911. 92 pp., 7 pls. 25c.

Describes topography, drainage, climate, physiography, and the water-bearing and nonwater-bearing rocks of areas in Kern, Los Angeles, and San Bernardino counties; discusses the influence of rainfall on the surface and ground waters, the artesian water and nonartesian water, bedrock springs, chemical character (analyses, alkali, dissolved solids, hygienic conditions), fallacies as to origin and quantities of artesian water, and the present and future development of the underground supplies.

294. An intensive study of the water resources of a part of Owens Valley, Cal., by C. H. Lee. 1912. 135 pp., 30 pls. 55c.

Describes topography, drainage, and structure of the valley, and discusses precipitation, stream flow, evaporation, percolation, and ground waters; bibliography.

297. Gazetteer of surface waters of California, Pt. III: Pacific coast and Great Basin streams, by B. D. Wood. 1913. 244 pp. 20c.

Contains description of streams and lakes of the Great Basin in California.

*300. Water resources of California, Pt. III: Stream measurements in the Great Basin and Pacific coast river basins, by H. D. McGlashan and H. J. Dean. 1913. 956 pp., 4 pls. 55c.

Describes the general features of the Great Basin in California, the Great Basin lakes in California and Nevada and gives results of stream-flow investigations available up to September 30, 1912.

333. Ground water in Box Elder and Tooele counties, Utah, by Everett Carpenter. 1913. 90 pp., 2 pls. 10c.

338. Springs of California, by Gerald A. Waring. 1915. 410 pp., 13 pls. 60c.

Describe briefly the pyhical features of California, including the coast ranges, Great Central Valley, the lava-covered region, the Sierra Nevada, the southeastern desert, and faults; defines "mineral water" and "pure water;" discusses source and amount of substances in waters, degree of concentration of natural waters and their properties, and the therapeutic value, temperature, and classification of mineral waters. The springs are described under the headings "hot," "carbonated," "sulphur," "saline," "magnesic," "iron," "artesian," "large cold," and "minor perennial" springs.

350. Profile surveys in Bear River basin, Idaho, prepared under the direction of R. B. Marshall, chief geographer. 1914. 7 pp., 6 pls. 10c.

Contains a brief description of Bear River basin and a list of the gaging stations that have been maintained and mentions publications containing the results of measurements of stream flow in the basin. The maps show not only the outlines of the river banks, the islands, the positions of rapids, falls, shoals, and existing dams, and the crossings of all ferries and roads, but the contours of banks to an elevation high enough to indicate the possibility of using the stream for the development of power by low or medium heads.

363. Quality of the surface waters of Oregon, by Walton Van Winkle. 1914. 137 pp., 2 pls. 20c.

Gives the results of an investigation made in cooperation with the State of Oregon "to determine the chemical composition of the waters of said State for a period of 14 months from" July 1, 1911. Describes the natural features of Oregon, discusses water for domestic and industrial uses, purification of water, and gives the results of analyses of waters of streams tributary to the Pacific and of a number of those discharging into the Great Basin; gives an outline of the geological history of the Great Basin, and brief descriptions of the general features of the Harney, Warner Lakes, Alkali Lake, Christmas Lake, and Chewaucan basins.

364. Water analyses from the laboratory of the United States Geological Survey, tabulated by F. W. Clarke, chief chemist. 1914. 40 pp. 5c.

Contains analyses of waters of rivers, lakes, wells, and springs in Utah, Nevada, California, and Oregon, and of mine waters from Tintic, Utah, and Tonopah and Kimberly, Nev.

365. Ground water in southeastern Nevada, by Everett Carpenter. 1915. 86 pp., 5 pls. 15c.

Describes an area in Clark, Lincoln, White Pine, and Nye counties drained in part by streams tributary to Colorado River and in part by streams discharging into the Great Basin. Discusses stream, lake, and wind topography, vegetation, crops, and industrial development, rainfall, occurrence of water in bedrock and unconsolidated sediments, source and permanence of artesian waters, and character and distribution of springs; also the quality of waters for domestic use and for irrigation, and gives analyses. Gives details of water supply by areas in Las Vegas and Virgin river basins and the Great Basin. Gives information in regard to watering places on routes of travel.

370. Surface water supply of Oregon, 1878–1910, by F. F. Henshaw and H. J. Dean. 1915. 829 pp., 1 pl. 45c.

Contains information pertaining to the surface waters of Oregon collected by the United States Geological Survey and cooperating parties from 1878 to September 30, 1910.

*375. Contributions to the hydrology of the United States, 1915; Nathan C. Grover, chief hydraulic engineer, 1916. 181 pp., 9 pls. 15c. Contains:

(*d*) Ground water in Big Smoky Valley, Nev., by O. E. Meinzer, pp. 85–116, pls. 6–7. Describes a typical Nevada desert valley—a plain hemmed in by mountain ranges and underlain by porous rock waste eroded from these ranges and saturated with water discharged from them. This valley was selected for investigation not because it afforded exceptional opportunity for the utilization of ground waters, but because it was considered more or less typical of the undeveloped valleys of the State. Preliminary report. See 423.

420. Profile surveys along Henrys Fork, Idaho, and Logan River and Blacksmith Fork, Utah, prepared under the direction of W. H. Herron, acting chief geographer. 1916. 8 pp., 10 pls. 10c.

Contains a brief description of the general features of Logan River basin and a list of the gaging stations that have been maintained in the basin. The maps show not only the outlines of the river banks, the islands, the positions of rapids, falls, shoals, and existing dams, and the crossings of all ferries and roads, but the contours of banks to an elevation high enough to indicate the possibility of using the stream for the development of power by low or medium heads.

423. Geology and water resources of Big Smoky, Clayton, and Alkali Spring valleys, Nevada, by Oscar E. Meinzer. 1917. 167 pp., 15 pls. 30c.

Covers in detail the area described briefly in Water-Supply Paper 375 (*d*) and two small adjoining areas.

425. Contributions to the hydrology of the United States, 1917; N. C. Grover, chief hydraulic engineer. 1918. Contains:

(*d*) Ground water in Reese River basin and adjacent parts of Humboldt River basin, Nevada, by G. A. Waring.

ANNUAL REPORTS.

Each of the papers contained in the annual reports was also issued in separate form.

Annual reports are distributed free by the Geological Survey as long as its stock lasts. An asterisk (*) indicates that this stock has been exhausted. Many of the papers so marked, however may be purchased from the SUPERINTENDENT OF DOCUMENTS, WASHINGTON, D. C.

* Third Annual Report of the United States Geological Survey, 1881–82, J. W. Powell, Director. 1883. xviii, 564 pp., 67 pls. $2.35. Contains:

* Sketch of the geological history of Lake Lahontan, by I. C. Russell, pp. 189–235, pls. 18–23. Describes the physical features of the Great Basin.

* Fourth Annual Report of the United States Geological Survey, 1882–83, J. W. Powell, Director. 1884. xxxii, 473 pp., 85 pls. $1.85. Contains:

* A geological reconnaissance in southern Oregon, by I. C. Russell, pp. 431–464, pls. 83–85. Describes the interior drainage of southern Oregon; discusses the area, extent, quality of waters, and recent changes in the existing lakes.

* Eighth Annual Report of the United States Geological Survey, 1886–87, J. W. Powell, Director. 1889. 2 parts. * Part I, xix, 474, viii pp., pls. 76. $1.50. Contains:

* The Quaternary history of Mono Valley, Cal., by I. C. Russell, pp. 261–394, pls. 16–44. Describes the physiographic features and drainage of the Mono Lake basin, the sources of water supply of the present lake, including streams and springs, and discusses the chemical composition of the water and the fluctuations in lake level.

* Tenth Annual Report of the United States Geological Survey, 1888–89, J. W. Powell, Director. 1890. 2 parts. *Pt. II. Irrigation, viii, 123 pp. 35c.

Makes a preliminary report on the organization and prosecution of the survey of the arid lands for purposes of irrigation; includes an account of the methods of topographic and hydraulic work, the segregation work on reservoir sites and irrigable lands, fields and office methods, and brief descriptions of the topography of some of the river basins.

Eleventh Annual Report of the United States Geological Survey, 1889–90, J. W. Powell, Director. 1891. 2 parts. Pt. II. Irrigation, xiv, 395 pp., 30 plates and maps. $1.25. Contains:

*Hydrography, pp. 1–110. Discusses scope of work, methods of stream measurement, rainfall and evaporation, and describes the more important streams.

*Engineering, pp. 111–200. Defines the scope of the work and gives an account of the surveys in the Sun River basin and in the Arkansas, Rio Grande, California, Lahontan, Utah, and Snake River divisions.

* The arid lands, pp. 201–289. Includes statements of the Director to the House Committee on Irrigation and extracts from the constitutions of States relating to irrigation.

*Topography, pp. 291–343. Comprises reports of the topographic surveys in California, Nevada, Colorado, Idaho, Montana, and New Mexico, and a report on reservoir sites.

*Irrigation literature, pp. 345–388. Gives a list of books and pamphlets on irrigation and allied subjects, mainly contained in the library of the United States Geological Survey.

Twelfth Annual Report of the United States Geological Survey, 1890–91, J. W. Powell, Director. 1891. 2 parts, Pt. II. Irrigation, xviii, 576 pp., 93 pls. $2.00. Contains:

*Report upon the location and survey of reservoir sites during the fiscal year ending June 30, 1891, by A. H. Thompson, pp. 1–212, pls. 54–57. Describes reservoir sites in Carson River basin at Red Lake, Pleasant Valley, Mountain Bullion, Indian Pool, Heenan Lake, Silver King Valley, Wolf Creek, Dumonts Meadow, all in Alpine County, along Rush Creek, in Hulls Meadow, on Little Truckee River, at Twin Valley on the North Fork of Prosser Creek, at Monument Peak, at Grass Lake, and at Hope Valley, in California, and on Truckee River, Nev.; for each reservoir site gives the location, height of dam, area inclosed by contour, approximate contents of reservoir, position of irrigable lands and areas of segregated lands.

Thirteenth Annual Report of the United States Geological Survey, 1891–92, J. W. Powell, Director. 1892. (Pts. II and III, 1893.) 3 parts. Pt. III, Irrigation, xi, 486 pp., 77 pls. $1.85. Contains:

*Engineering results of irrigation survey, by H. M. Wilson, pp. 351–427, pls. 147–182. Describes Donner Lake, Independence Lake, and Webber Lake reservoirs, also Truckee canals in the Truckee River system, and Long Valley and Hope Valley reservoirs in the Carson River basin, Nev.

Report upon the location and survey of reservoir sites during the fiscal year ending June 30, 1892, by A. H. Thompson, pp. 451–478. Describes Bear Lake reservoir site (Utah-Idaho), Silver Lake, Twin Lakes, and Marys Lake sites, and sites on Sanpitch, Sevier, East Fork of Sevier, Otter Creek, Panquitch Lake, and at Blue Spring, Utah.

Sixteenth Annual Report of the United States Geological Survey, 1894–95, Charles D. Walcott, Director. 1896. (Pts. II, III, and IV, 1895.) 4 parts. *Pt. II. Papers of an economic character, xix, 598 pp., 43 pls. $1.25. Contains:

The public lands and their water supply, by F. H. Newell, pp. 457–533, pls. 35–39. Describes general character of the public lands, the lands disposed of (railroad lands grant, and swamp lands, and private miscellaneous entries), lands reserved (Indian, forest, and military reservations), the vacant lands, and the rate of disposal of vacant lands; discusses the streams, wells, and reservoirs as sources of water supply; gives details for each State.

Eighteenth Annual Report of the United States Geological Survey, 1896–97, Charles D. Walcott, Director. 1897. (Pts. II and III, 1898.) 5 parts in 6 vols. *Pt. IV, Hydrography, x, 756 pp., 102 pls. $1.75. Contains:

*Reservoirs for irrigation, by J. D. Schuyler, pp. 617–740, pls. 47–102. Discusses proposed Rock Creek reservoir on Humboldt River, Nev.; gives tables of reservoir capacities and areas; describes proposed reservoir of Antelope Valley Water Co., California, and on Rock Creek, Humboldt River basin, Nev.

Twentieth Annual Report of the United States Geological Survey, 1898–99, Charles D. Walcott, Director. 1899. (Pts. II, III, IV, V, and VII, 1900.) 7 parts in 8 vols, and separate case for maps with Pt. V. *Pt. V, Forest Reserves, xix, 498 pp., 159 pls., 8 maps in separate case. $2.80.

Contains:

*The San Gabriel Forest Reserve, by J. B. Leiberg, pp. 411–428, pls. 143–146. The San Bernardino Forest Reserve, by J. B. Leiberg, pp. 429–454, pls. 147–153. The San Jacinto Forest Reserve, by J. B. Leiberg, pp. 455–478, pls. 154–159. Describes general topographic features of forest reserves and drainage, part of which is by streams tributary to the Pacific, and part by streams that are lost in the sands of the Mohave and other deserts.

MONOGRAPHS.

Monographs are of quarto size. They are not distributed free but may be obtained from the Geological Survey at the prices indicated. An asterisk (*) indicates that the Survey's stock of the paper is exhausted.

I. Lake Bonneville, by G. K. Gilbert. 1890. xx, 438 pp., 51 pls., 1 map. $1.50.

Contains in the introduction a description of the Great Basin; describes the present lakes and their oscillations, and gives analyses of the waters of Great Salt Lake and of fresh waters in the Salt Lake Basin.

XI. Geological history of Lake Lahontan, a Quaternary lake of northwestern Nevada, by I. C. Russell. 1885. xiv, 288 pp., 46 pls. $1.75.

Contains descriptions of the present rivers and lakes; discusses the chemical deposits of the area and gives analyses showing the composition of the principal rivers and lakes of the Lahontan Basin.

BULLETINS.

An asterisk (*) indicates that the Geological Survey's stock of the paper is exhausted. Many of the papers so marked may be purchased from the SUPERINTENDENT OF DOCUMENTS, WASHINGTON, D. C. Bulletins are of octavo size.

252. Preliminary report on the geology and water resources of central Oregon, by I. C. Russell. 1905. 138 pp., 24 pls. 15c.

Describes a portion of the extreme northern part of the Great Basin and a part of the drainage area of Deschutes River and its principal tributary, Crooked River; gives an account of the topography, drainage, rainfall, and temperature, winds, and forests; describes the volcanic and sedimentary rock formations, and discusses, by counties, the geology and topography, the surface and underground waters; treats of artesian conditions in the Deschutes basin and makes suggestions concerning artesian well records.

*264. Record of deep-well drilling for 1904, by M. L. Fuller, E. F. Lines, and A. C. Veatch. 1905. 106 pp. 10c.

Discusses the importance of accurate well records to the driller, to owners of oil, gas, and water wells, and to geologists; describes the general methods of work; gives tabulated records of wells in Utah.

*298. Record of deep-well drilling for 1905, by M. L. Fuller and Samuel Sanford. 1906. 299 pp. 25c.

Gives an account of progress in the collection of well records and samples; contains tabulated records of wells in California, Idaho, Nevada, Oregon, and Utah; and detailed record of well at Salt Lake City, Utah. The well of which a detailed section is given was selected because it affords valuable stratigraphic information.

GEOLOGIC FOLIOS.

Under the plan adopted for the preparation of a geologic map of the United States the entire area is divided into small quadrangles, bounded by certain meridians and parallels, and these quadrangles, which number several thousand, are separately surveyed and mapped. The unit of survey is also the unit of publication, and the maps and description of each quadrangle are issued in the form of a folio. When all the folios are completed they will constitute the Geologic Atlas of the United States.

A folio is designated by the name of the principal town or of a prominent natural feature within the quadrangle. Each folio includes maps showing the topography, geology, underground structure, and mineral deposits of the area mapped and several pages of descriptive text. The text explains the maps and describes the topographic and geologic features of the country and its mineral products. The topographic map shows roads, railroads, waterways, and, by contour lines, the shapes of the hills and valleys and the height above sea level of all points in the quadrangle. The areal-geology map shows the distribution of the various rocks at the surface. The structural-geology map shows the relations of the rocks to one another underground. The economic-geology map indicates the location of mineral deposits that are commercially valuable. The artesian-water map shows the depth to underground-water horizons. Economic-geology and artesian-water maps are included in folios if the conditions in the areas mapped warrant their publication. The folios are of special interest to students of geography and geology and are valuable as guides in the development and utilization of mineral resources.

The folios numbered from 1 to 163, inclusive, are published in only one form (18 by 22 inches), called the library edition. Some of the folios that bear numbers higher than 163 are published also in an octavo edition (6 by 9 inches). Owing to a fire in the Geological Survey building May 18, 1913, the stock of geologic folios was more or less damaged by fire and water, but 80 or 90 per cent of the folios are usable. They will be sold at the uniform price of 5 cents each, with no reduction for wholesale orders. This rate applies to folios in stock from 1 to 184, inclusive, also to the library edition of folio 186. The library edition of folios 185, 187, and higher numbers sell for 25 cents a copy, except that some folios which contain an unusually large amount of matter, sell for 50 cents a copy. The octavo edition of folio 185 and higher numbers sells for 50 cents a copy. If 34 folios selling at 25 cents each (or their equivalent in higher-priced folios) are ordered at one time a discount of 40 per cent is allowed; $5.10 is the minimum amount accepted at this rate.

All folios contain descriptions of the drainage of the quadrangles.

*39. Truckee folio, California.

Describes the general and economic geology of an area extending westward and northward from Truckee Lake, drained by streams a part of which flow through Yuba and American rivers to the Sacramento, and part through Lake Tahoe to the Great Basin, discusses the topography and geology, and under "Economic geology" the mineral springs which occur abundantly throughout the area.

MISCELLANEOUS REPORTS.

Other Federal bureaus and State and other organizations have from time to time published reports relating to the water resources of various sections of the country. Notable among those pertaining to the Great Basin are the reports of the Reclamation Board, the State engineer and surveyor, the State Conservation Commission of California, the reports of the State engineers of Idaho, Oregon, Utah, and Wyoming, the biennial reports of the Bureau of Industry, Agriculture, and Irrigation of Nevada, and the annual reports of the United States Reclamation Service.

The following reports deserve special mention:

Oregon system of water titles, by John H. Lewis: Oregon State Engineer Bull. 2, 1912.

State and national water laws, with detailed statement of the Oregon system of water titles, by John H. Lewis, with a discussion by Messrs. Clarence T. Johnston and L. J. Conte: Am. Soc. Civil Eng. Trans., vol. 76, pp. 637–758, 1913.

Irrigation pumping in Nevada, etc., by Charles Norcross: Nevada Bureau of Industry, Agriculture, and Irrigation Bull. 8, 1913.

Report of irrigation investigations in Utah, under the direction of Elwood Mead: U. S. Dept. Agr. Office Exper. Sta. Bull. 124, 1903.

How to appropriate the public waters of the State of Nevada, compiled by W. M. Kearney, State engineer, 1911.

Requirements and regulations, including suggestions and instructions in relation to the appropriation, use, and measurement of water in the State of Nevada: State engineer of Nevada, 1912.

GEOLOGICAL SURVEY HYDROLOGIC REPORTS OF GENERAL INTEREST.

The following list comprises reports not readily classifiable by drainage basins and covering a wide range of hydrologic investigations:

WATER-SUPPLY PAPERS.

*1. Pumping water for irrigation, by H. M. Wilson. 1896. 57 pp., 9 pls.
Describes pumps and motive powers, windmills, water wheels, and various kinds of engines, also storage reservoirs to retain pumped water until needed for irrigation.

*3. Sewage irrigation, by G. W. Rafter. 1897. 100 pp., 4 pls. 10c. (See Water-Paper 22.)
Discusses methods of sewage disposal by intermittent filtration and by irrigation; describes utilization of sewage in Germany, England, and France, and sewage purification in the United States.

*8. Windmills for irrigation, by E. C. Murphy. 1897. 49 pp., 8 pls. 10c.
Gives results of experimental tests of windmills during the summer of 1896 in the vicinity of Garden, Kans.; describes instruments and methods and draws conclusions.

*14. New tests of certain pumps and water lifts used in irrigation, by O. P. Hood. 1898. 91 pp., 1 pl.
Discusses efficiency of pumps and water lifts of various types.

*20. Experiments with windmills, by T. O. Perry. 1899. 97 pp., 12 pls. 15c.
Includes tables and descriptions of wind wheels, compares wheels of several types, and discusses results.

*22. Sewage irrigation, Part II, by G. W. Rafter. 1899. 100 pp., 7 pls. 15c.
Gives résumé of Water-Supply Paper 3; discusses pollution of certain streams, experiments on purification of factory wastes in Massachusetts, value of commercial fertilizers, and describes American sewage-disposal plants by States; contains bibliography of publications relating to sewage utilization and disposal.

*41. The windmill; its efficiency and economic use, Part I, by E. C. Murphy. 1901. 72 pp., 14 pls. 5c.

*42. The windmill; its efficiency and economic use, Part II, by E. C. Murphy. 1901. 75 pp. (73–147), 2 pls. (15–16). 10c.
Nos. 41 and 42 give details of results of experimental tests with windmills of various types.

*43. Conveyance of water in irrigation canals, flumes, and pipes, by Samuel Fortier. 1901. 86 pp., 15 pls. 15c.

*56. Methods of stream measurement. 1901. 51 pp., 12 pls. 15c.
Describes the methods used by the Survey in 1901–2. See also Nos. 64, 94, and 95.

*64. Accuracy of stream measurements, by E. C. Murphy. 1902. 99 pp., 4 pls. (See No. 95.) 10c.
Describes methods of measuring velocity of water and of measuring and computing stream flow and compares results obtained with the different instruments and methods; describes also experiments and results at the Cornell University hydraulic laboratory. A second, enlarged, edition published as Water-Supply Paper 95.

*67. The motions of underground waters, by C. S. Slichter. 1902. 106 pp., 8 pls. 15c.

Discusses origin, depth, and amount of ground waters; permeability of rocks and porosity of soils; causes, rates, and laws of motions of ground water; surface and deep zones of flow, and recovery of water by open wells and artesian and deep wells; treats of the shape and position of the water table; gives simple methods of measuring yield of flowing well; describes artesian wells at Savannah, Ga.

72. Sewage pollution in the metropolitan area near New York City and its effect on inland water resources, by M. O. Leighton. 1902. 75 pp., 8 pls. 10c.

Defines "normal" and "polluted" waters and discusses the damage resulting from pollution.

*80. The relation of rainfall to run-off, by G. W. Rafter. 1903. 104 pp. 10c.

Treats of measurements of rainfall and laws and measurements of stream flow; gives rainfall, run-off, and evaporation formulas; discusses effect of forests on rainfall and run-off.

87. Irrigation in India (second edition), by H. M. Wilson. 1903. 238 pp., 27 pls. 25c.

First edition was published in Part II of the Twelfth Annual Report.

93. Proceedings of first conference of engineers of Reclamation Service, with accompanying papers, compiled by F. H. Newell, chief engineer. 1904. 361 pp. 25c. [Requests for this report should be addressed to the U. S. Reclamation Service.]

Contains the following papers of more or less general interest:
Limits of an irrigation project, by D. W. Ross.
Relation of Federal and State laws to irrigation, by Morris Bien.
Electrical transmission of power for pumping, by H. A. Storrs.
Correct design and stability of high masonry dams, by Geo. Y. Wisner.
Irrigation surveys and the use of the plane table, by J. B. Lippincott.
The use of alkaline waters for irrigation, by Thomas H. Means.

*94. Hydrographic manual of the United States Geological Survey, prepared by E. C. Murphy, J. C. Hoyt, and G. B. Hollister. 1904. 76 pp., 3 pls. 10c.

Gives instruction for field and office work relating to measurements of stream flow by current meters. See also No. 95.

*95. Accuracy of stream measurements (second, enlarged, edition), by E. C. Murphy. 1904. 169 pp., 6 pls.

Describes methods of measuring and computing stream flow and compares results derived from different instruments and methods. See also No. 94.

*103. A review of the laws forbidding pollution of inland waters in the United States, by E. B. Goodell. 1904. 120 pp. (See No. 152.)

Explains the legal principles under which antipollution statutes become operative, quotes court decisions to show authority for various deductions, and classifies according to scope the statutes enacted in the different States.

110. Contributions to the hydrology of eastern United States, 1904; M. L. Fuller, geologist in charge. 1905. 211 pp., 5 pls. 10c.

Contains the following reports of general interest. The scope of each paper is indicated by its title.

Description of underflow meter used in measuring the velocity and direction of underground water, by Charles S. Slichter.

The California or "stovepipe" method of well construction, by Charles S. Slichter.

Approximate methods of measuring the yield of flowing wells, by Charles S. Slichter.

Corrections necessary in accurate determinations of flow from vertical well casings, from notes furnished by A. N. Talbot.

Experiment relating to problems of well contamination at Quitman, Ga., by S. W. McCallie.

113. The disposal of strawboard and oil-well wastes, by R. L. Sackett and Isaiah Bowman. 1905. 52 pp., 4 pls. 5c.

The first paper discusses the pollution of streams by sewage and by trade wastes, describes the manufacture of strawboard, and gives results of various experiments in disposing of the waste. The second paper describes briefly the topography, drainage, and geology of the region about Marion, Ind., the contamination of rock wells and of streams by waste oil and brine.

*114. Underground waters of eastern United States; M. L. Fuller, geologist in charge. 1905. 285 pp., 18 pls. 25c.

Contains report on "Occurrence of underground water," by M. L. Fuller, discussing sources, amount, and temperature of waters, permeability and storage capacity of rocks, water-bearing formations, recovery of water by springs, wells, and pumps, essential conditions of artesian flows, and general conditions affecting underground waters in eastern United States.

119. Index to the hydrographic progress reports of the United States Geological Survey, 1888 to 1903, by J. C. Hoyt and B. D. Wood. 1905. 253 pp. 15c.

Scope indicated by title.

120. Bibliographic review and index of papers relating to underground waters published by the United States Geological Survey, 1879–1904, by M. L. Fuller. 1905. 128 pp. 10c.

Scope indicated by title.

*122. Relation of the law to underground waters, by D. W. Johnson. 1905. 55 pp. 5c.

Defines and classifies underground waters, gives common-law rules relating to their use, and cites State legislative acts affecting them.

140. Field measurements of the rate of movement of underground waters, by C. S. Slichter. 1905. 122 pp., 15 pls. 15c.

Discusses the capacity of sand to transmit water, describes measurements of underflow in Rio Hondo, San Gabriel, and Mohave River valleys, Cal., and on Long Island, N. Y.; gives results of tests of wells and pumping plants, and describes stovepipe method of well construction.

143. Experiments of steel-concrete pipes on a working scale, by J. H. Quinton. 1905. 61 pp., 4 pls. 5c.

Scope indicated by title.

145. Contributions to the hydrology of eastern United States, 1905; M. L. Fuller, geologist in charge. 1905. 220 pp., 6 pls. 10c.

Contains brief reports of general interest as follows:

Drainage of ponds into drilled wells, by Robert E. Horton. Discusses efficiency, cost, and capacity of drainage wells, and gives statistics of such wells in southern Michigan.

Construction of so-called fountain and geyser springs, by Myron L. Fuller.

A convenient gage for determining low artesian heads, by Myron L. Fuller.

146. Proceedings of second conference of engineers of the Reclamation Service, with accompanying papers, compiled by F. H. Newell, Chief Engineer. 1905. 267 pp. 15c. [Inquiries concerning this report should be addressed to the U. S. Reclamation Service.]

Contains brief account of the organization of the hydrographic [water-resources] branch and the Reclamation Service, reports of conferences and committees, circulars of instruction, and many brief reports on subjects closely related to reclamation, and a bibliography of technical papers by members of the service. Of the papers read at the conference those listed below (scope indicated by title) are of more or less general interest.

Proposed State code of water laws, by Morris Bien.

Power engineering applied to irrigation problems, by O. H. Ensign.

Estimates on tunneling in irrigation projects, by A. L. Fellows.

Collection of stream-gaging data, by N. C. Grover.

Diamond-drill methods, by G. A. Hammond.

Mean-velocity and area curves, by F. W. Hanna.

146. Proceedings of second conference of engineers of the Reclamation Service—Continued.

Importance of general hydrographic data concerning basins of streams gaged, by R. E. Horton.
Effect of aquatic vegetation on stream flow, by R. E. Horton.
Sanitary regulations governing construction camps, by M. O. Leighton.
Necessity of draining irrigated land, by Thos. H. Means.
Alkali soils, by Thos. H. Means.
Cost of stream-gaging work, by E. C. Murphy.
Equipment of a cable gaging station, by E. C. Murphy.
Silting of reservoirs, by W. M. Reed.
Farm-unit classification, by D. W. Ross.
Cost of power for pumping irrigating water, by H. A. Storrs.
Records of flow at current-meter gaging stations during the frozen season, by F. H. Tillinghast.

147. Destructive floods in United States in 1904, by E. C. Murphy and others. 1905. 206 pp., 18 pls. 15c.

Contains a brief account of "A method of computing cross-section area of waterways," including formulas for maximum discharge and areas of cross section.

*150. Weir experiments, coefficients, and formulas, by R. E. Horton. 1906. 189 pp., 38 pls. (See Water-Supply Paper 200.) 15c.

Scope indicated by title.

151. Field assay of water, by M. O. Leighton. 1905. 77 pp., 4 pls.

Discusses methods, instruments, and reagents used in determining turbidity, color, iron, chlorides, and hardness in connection with the studies of the quality of water in various parts of the United States.

152. A review of the laws forbidding pollution of inland waters in the United States, second edition, by E. B. Goodell. 1905. 149 pp. 10c.

Scope indicated by title.

*155. Fluctuations of the water level in wells, with special reference to Long Island, N. Y., by A. C. Veatch. 1906. 83 pp., 9 pls. 25c.

Includes general discussion of fluctuations due to rainfall and evaporation, barometric changes, temperature changes, changes in rivers, changes in lake level, tidal changes, effects of settlement, irrigation, dams, underground water developments, and to indeterminate causes.

*160. Underground water papers, 1906; M. L. Fuller, geologist in charge. 1906. 104 pp., 1 pl.

Gives account of work in 1905, lists publications relating to underground waters, and contains the following brief reports of general interest:
Significance of the term "artesian," by Myron L. Fuller.
Representation of wells and springs on maps, by Myron L. Fuller.
Total amount of free water in the earth's crust, by Myron L. Fuller.
Use of fluorescein in the study of underground waters, by R. B. Dole.
Problems of water contamination, by Isaiah Bowman.
Instances of improvement of water in wells, by Myron L. Fuller.

*162. Destructive floods in the United States in 1905, with a discussion of flood discharge and frequency and an index to flood literature, by E. C. Murphy and others. 1906. 105 pp., 4 pls. 15c.

*163. Bibliographic review and index of underground-water literature published in the United States in 1905, by M. L. Fuller, F. G. Clapp, and B. L. Johnson. 1906. 130 pp. 15c.

Scope indicated by title.

*179. Prevention of stream pollution by distillery refuse, based on investigations at Lynchburg, Ohio, by Herman Stabler. 1906. 34 pp., 1 pl. 10c.

Describes grain distillation, treatment of slop, sources, character, and effects of effluents on streams; discusses filtration, precipitation, fermentation, and evaporation methods of disposal of wastes without pollution.

*180. Turbine water-wheel tests and power tables, by R. E. Horton. 1906. 134 pp., 2 pls. 20c.
Scope indicated by title.

*185. Investigations on the purification of Boston sewage, * * * with a history of the sewage-disposal problem, by C.-E. A. Winslow and E. B. Phelps. 1906. 163 pp. 25c.
Discusses composition, disposal, purification, and treatment of sewages and tendencies in sewage-disposal practice in England, Germany, and the United States; describes character of crude sewage at Boston, removal of suspended matter, treatment in septic tanks, and purification in intermittent sand filtration and coarse material; gives bibliography.

*186. Stream pollution by acid-iron wastes, a report based on investigations made at Shelby, Ohio, by Herman Stabler. 1906. 36 pp., 1 pl.
Gives history of pollution by acid-iron wastes at Shelby, Ohio, and of resulting litigation; discusses effect of acid-iron liquors on sewage purification processes, recovery of copperas from acid-iron wastes, and other processes for removal of pickling liquor.

*187. Determination of stream flow during the frozen season, by H. K. Barrows and R. E. Horton. 1907. 93 pp., 1 pl. 15c.
Scope indicated by title.

*189. The prevention of stream pollution by strawboard waste, by E. B. Phelps. 1906. 29 pp., 2 pls.
Describes manufacture of strawboard, present and proposed methods of disposal of waste liquors, laboratory investigations of precipitation and sedimentation, and field studies of amounts and character of water used, raw material and finished product, and mechanical filtration.

*194. Pollution of Illinois and Mississippi rivers by Chicago sewage (a digest of the testimony taken in the case of the State of Missouri *v.* The State of Illinois and the Sanitary District of Chicago), by M. O. Leighton. 1907. 369 pp., 2 pls.
Scope indicated by amplification of title.

*200. Weir experiments, coefficients, and formulas (revision of paper No. 150), by R. E. Horton. 1907. 195 pp., 38 pls. 35c.
Scope indicated by title.

*226. The pollution of streams by sulphite-pulp waste, a study of possible remedies, by E. B. Phelps. 1909. 37 pp., 1 pl. 10c.
Describes manufacture of sulphite pulp, the waste liquors, and the experimental work leading to suggestions as to methods of preventing stream pollution.

*229. The disinfection of sewage and sewage filter effluents, with a chapter on the putrescibility and stability of sewage effluents, by E. B. Phelps. 1909. 91 pp., 1 pl. 15c.
Scope indicated by title.

*234. Papers on the conservation of water resources. 1909. 96 pp., 2 pls. 15c.
Contains the following papers, whose scope is indicated by their titles: Distribution of rainfall, by Henry Gannett; Floods, by M. O. Leighton; Developed water powers, compiled under the direction of W. M. Steuart, with discussion by M. O. Leighton; Undeveloped water powers, by M. O. Leighton; Irrigation, by F. H. Newell; Underground waters, by W. C. Mendenhall; Denudation, by R. B. Dole and Herman Stabler; Control of catchment areas, by H. N. Parker.

*235. The purification of some textile and other factory wastes, by Herman Stabler and G. H. Pratt. 1909. 76 pp. 10c.
Discusses waste waters from wool scouring, bleaching and dyeing cotton yarn, bleaching cotton piece goods, and manufacture of oleomargarine, fertilizer, and glue.

236. The quality of surface waters in the United States: Part I, Analyses of waters east of the one hundredth meridian, by R. B. Dole. 1909. 123 pp. 10c.

Describes collection of samples, methods of examination, preparation of solutions, accuracy of estimates, and expression of analytical results.

238. The public utility of water powers and their governmental regulation, by René Tavernier and M. O. Leighton. 1910. 161 pp. 15c.

Discusses hydraulic power and irrigation, French, Italian, and Swiss legislation relative to the development of water powers, and laws proposed in the French Parliament; reviews work of bureau of hydraulics and agricultural improvement of the French department of agriculture, and gives résumé of Federal and State water-power legislation in the United States.

*255. Underground waters for farm use, by M. L. Fuller. 1910. 58 pp., 17 pls. 15c.

Discusses rocks as sources of water supply and the relative safety of supplies from different materials; springs, and their protection; open or dug and deep wells, their location, yield, relative cost, protection, and safety; advantages and disadvantages of cisterns and combination wells and cisterns.

*257. Well-drilling methods, by Isaiah Bowman. 1911. 139 pp., 4 pls. 15c.

Discusses amount, distribution, and disposal of rainfall, water-bearing rocks, amount of ground water, artesian conditions, and oil and gas bearing formations; gives history of well drilling in Asia, Europe, and the United States; describes in detail the various methods and the machinery used; discusses loss of tools and geologic difficulties, contamination of well waters and methods of prevention, tests of capacity and measurement of depth, and costs of sinking wells.

*258. Underground water papers, 1910, by M. L. Fuller, F. G. Clapp, G. C. Matson, Samuel Sanford, and H. C. Wolff. 1911. 123 pp., 2 pls. 15c.

Contains the following papers (scope indicated by title) of general interest:
Drainage by wells, by M. L. Fuller.
Freezing of wells and related phenomena, by M. L. Fuller.
Pollution of underground waters in limestone, by G. C. Matson.
Protection of shallow wells in sandy deposits, by M. L. Fuller.
Magnetic wells, by M. L. Fuller.

*315. The purification of public water supplies, by G. A. Johnson. 1913. 84 pp., 8 pls. 10c.

Discusses ground, lake, and river waters as public supplies, development of waterworks systems in the United States, water consumption, and typhoid fever; describes methods of filtration and sterilization of water, and municipal water softening.

334. The Ohio Valley flood of March–April, 1913 (including comparisons with some earlier floods), by A. H. Horton and H. J. Jackson. 1913. 96 pp., 22 pls. 20c.

Although relating specifically to floods in the Ohio Valley, this report discusses also the causes of floods and the prevention of damage by floods.

337. The effects of ice on stream flow, by William Glenn Hoyt. 1913. 77 pp., 7 pls. 15c.

Discusses methods of measuring the winter flow of streams.

*345. Contributions to the hydrology of the United States, 1914; N. C. Grover, chief hydraulic engineer. 1915. 225 pp., 17 pls. 30c. Contains:

*(e) A method of determining the daily discharge of rivers of variable slope, by M. R. Hall, W. E. Hall, and C. H. Pierce, pp. 53–65. Scope indicated by title.

364. Water analyses from the laboratory of the United States Geological Survey, tabulated by F. W. Clarke, chief chemist. 1914. 40 pp. 5c.

Contains analyses of waters from rivers, lakes, wells, and springs in various parts of the United States, including analyses of the geyser water of Yellowstone National Park, hot springs in Montana, brines from Death Valley, water from the Gulf of Mexico, and mine waters from Tennessee, Michigan, Missouri and Oklahoma, Montana, Colorado and Utah, Nevada and Arizona, and California.

371. Equipment for current-meter gaging stations, by G. J. Lyon. 1915. 64 pp., 37 pls. 20c.

Describes methods of installing water-stage recorders and other gages and of constructing gage wells, shelters, structures for making discharge measurements, and artificial controls.

*375. Contributions to the hydrology of the United States, 1915; N. C. Grover, chief hydraulic engineer. 1916. 181 pp., 9 pls. 15c.

Contains three papers presented at the conference of engineers of the water-resources branch in December, 1914, as follows:

*(c) Relation of stream gaging to the science of hydraulics, by C. H. Pierce and R. W. Davenport, pp. 77–84.

(e) A method for correcting river discharge for a changing stage, by B. E. Jones, pp. 117–130.

(f) Conditions requiring the use of automatic gages in obtaining records of stream flow, by C. H. Pierce, pp. 131–139.

*400. Contributions to the hydrology of the United States, 1916; N. C. Grover, chief hydraulic engineer. 1917. 108 pp., 7 pls. Contains:

(a) The people's interest in water-power resources, by G. O. Smith, pp. 1–8.

*(c) The measurement of silt-laden streams, by R. C. Pierce, pp. 39–51.

(d) Accuracy of stream-flow data, by N. C. Grover and J. C. Hoyt, pp. 53–59.

416. The divining rod, a history of water witching, with a bibliography, by Arthur J. Ellis. 1917. 59 pp. 10c.

A brief paper published "merely to furnish a reply to the numerous inquiries that are continually being received from all parts of the country" as to the efficacy of the divining rod for locating underground water.

425. Contributions to the hydrology of the United States, 1917; N. C. Grover, chief hydraulic engineer. 1918. Contains:

*(c) Hydraulic conversion tables and convenient equivalents, pp. 71–94. 1917.

ANNUAL REPORTS.

*Fifth Annual Report of the United States Geological Survey, 1883–84, J. W. Powell, Director. 1885. xxxvi, 469 pp., 58 pls. $2.25. Contains:

*The requisite and qualifying conditions of artesian wells, by T. C. Chamberlin, pp. 125 to 173, pl. 21. Scope indicated by title.

Twelfth Annual Report of the United States Geological Survey, 1890–91, J. W. Powell, Director. 1891. 2 parts. Pt. II, Irrigation, xviii, 576 pp., 93 pls. $2. Contains:

*Irrigation in India, H. M. Wilson, pp. 363–561, pls. 107 to 146. See Water-Supply Paper 87.

Thirteenth Annual Report of the United States Geological Survey, 1891–92, J. W. Powell, Director. 1892. (Pts. II and III, 1893.) 3 parts. *Pt. III, Irrigation, xi, 486 pp., 77 pls. $1.85. Contains:

*American irrigation engineering, by H. M. Wilson, pp. 101–349, pls. 111–145. Discusses the economic aspects of irrigation, alkaline drainage, silt and sedimentation; gives brief history of legislation; describes perennial canals in Idaho-California, Wyoming, and Arizona; discusses water storage at reservoirs of the California and other projects, subsurface sources of supply, pumping, and subirrigation.

Fourteenth Annual Report of the United States Geological Survey, 1892–93, J. W. Powell, Director. 1893. (Pt. II, 1894.) 2 parts. *Pt. II, Accompanying papers, xx, 597 pp., 73 pls. $2.10. Contains:

*The potable waters of eastern United States, by W J McGee, pp. 1–47. Discusses cistern water, stream waters, and ground waters, including mineral springs and artesian wells.

*Natural mineral waters of the United States, by A. C. Peale, pp. 49–88, pls. 3 and 4. Discusses the origin and flow of mineral springs, the source of mineralization, thermal springs, the chemical composition and analysis of spring waters, geographic distribution, and the utilization of mineral waters; gives a list of American mineral spring resorts; contains also some analyses.

Nineteenth Annual Report of the United States Geological Survey, 1897–98, Charles D. Walcott, Director. 1898. (Parts II, III, and V, 1899.) 6 parts in 7 vols. and separate case for maps with Pt. V. *Pt. II, Papers chiefly of a theoretic nature, v, 958 pp., 172 pls. $2.65. Contains:

*Principles and conditions of the movements of ground water, by F. H. King, pp. 59–294, pls. 6–16. Discusses the amount of water stored in sandstone, in soil, and in other rocks, the depth to which ground water penetrates; gravitational, thermal, and capillary movements of ground waters, and the configuration of the ground-water surface; gives the results of experimental investigations on the flow of air and water through a rigid, porous medium, and through sands, sandstones, and silts; discusses results obtained by other investigators, and summarizes results of observations; discusses also rate of flow of water through sand and rock, the growth of rivers, rate of filtration through soil, interference of wells, etc.

*Theoretical investigation of the motion of ground waters, by C. S. Slichter, pp. 295–384, pl. 17. Scope indicated by title.

PROFESSIONAL PAPERS.

*72. Denudation and erosion in the southern Appalachian region and the Monongahela basin, by L. C. Glenn. 1911. 137 pp., 21 pls. 35c.

Describes the topography, geology, drainage, forests, climate, and population, and transportation facilities of the region, the relation of agriculture, lumbering, mining, and power development to erosion and denudation, and the nature, effects, and remedies of erosion; gives details of conditions in Holston, Nolichucky, French Broad, Little Tennessee, and Hiwassee river basins, along Tennessee River proper, and in the basins of the Coosa-Alabama system, Chattahoochee, Savannah, Saluda, Broad, Catawba, Yadkin, New, and Monongahela rivers.

86. The transportation of débris by running water, by G. K. Gilbert, based on experiments made with the assistance of E. C. Murphy. 1914. 263 pp., 3 pls. 70c.

The results of an investigation which was carried on in a specially equipped laboratory at Berkley, Cal., and was undertaken for the purpose of learning "the laws which control the movement of bed load and especially to determine how the quantity of load is related to the stream slope and discharge and to the degree of comminution of the débris."

A highly technical report.

105. Hydraulic-mining débris in the Sierra Nevada, by G. K. Gilbert. 154 pp., 34 pls. 1917. 50c.

Presents the results of an investigation undertaken by the United States Geological Survey in response to a memorial from the California Miners' Association asking that a particular study be made of portions of the Sacramento and San Joaquin valleys affected by detritus from torrential streams. The report deals largely with geologic and physiographic aspects of the subject, traces the physical effects, past and future, of the hydraulic mining of earlier decades, the similar effects which certain other industries induce through stimulation of the erosion of the soil, and the influence of the restriction of the area of inundation by the construction of levees. Suggests cooperation by several interests for the control of the streams now carrying heavy loads of débris.

BULLETINS.

*32. Lists and analyses of the mineral springs of the United States (a preliminary study), by A. C. Peale. 1886. 235 pp.

Defines mineral waters, lists the springs by States, and gives tables of analyses.

*319. Summary of the controlling factors of artesian flows, by M. L. Fuller. 1908. 44 pp., 7 pls. 10c.

Describes underground reservoirs, the sources of ground waters, the confining agents, the primary and modifying factors of artesian circulation, the essential and modifying factors of artesian flow, and typical artesian systems.

*479. The geochemical interpretation of water analyses, by Chase Palmer. 1911. 31 pp. 5c.

Discusses the expression of chemical analyses, the chemical character of water, and the properties of natural waters; gives a classification of waters based on property values and reacting values, and discusses the character of the waters of certain rivers as interpreted directly from the results of analyses; discusses also the relation of water properties to geologic formations, silica in river water, and the character of the waters of the Mississippi and the Great Lakes and St. Lawrence River as indicated by chemical analyses.

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INDEX BY AREAS AND SUBJECTS.

[A—Annual Report; M—Monograph; B—Bulletin; P—Professional Paper; W—Water-Supply Paper, G F—Geologic folio.]

[1] Many of the reports contain brief subject bibliographies. See abstracts.

[2] Many chemical analyses are scattered through the reports, as indicated by abstracts.

INDEX OF STREAMS.

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