DEPARTMENT OF THE INTERIOR
Hubert Work, Secretary

U. S. GEOLOGICAL SURVEY
George Otis Smith, Director

WATER-SUPPLY PAPER 550

SURFACE WATER SUPPLY OF THE UNITED STATES

1922

PART X. THE GREAT BASIN

NATHAN C. GROVER, Chief Hydraulic Engineer

A. B. PURTON, H. D. McGLASHAN, and F. F. HENSHAW
District Engineers

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

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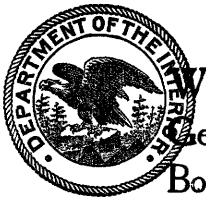

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ILLUSTRATIONS

SURFACE WATER SUPPLY OF THE GREAT BASIN, 1922

AUTHORIZATION AND SCOPE OF WORK

This volume is one of a series of 14 reports presenting records of measurements of flow made on streams in the United States during the year ending September 30, 1922.

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, 1895–1923

1895	$12,500.00
1896	20,000.00
1897 to 1900, inclusive	50,000.00
1901 to 1902, inclusive	100,000.00
1903 to 1906, inclusive	200,000.00
1907	150,000.00
1908 to 1910, inclusive	100,000.00
1911 to 1917, inclusive	150,000.00
1918	175,000.00
1919	148,244.10
1920	175,000.00
1921 to 1923, inclusive	180,000.00

In the execution of the work many private and State organizations have cooperated, either by furnishing data or by assisting in collecting data. Acknowledgments for cooperation of the first kind are made in connection with the description of each station affected; cooperation of the second kind is acknowledged on page 9.

Measurements of stream flow have been made at about 5,480 points in the United States and also at many points in Alaska and the

Hawaiian Islands. In July, 1922, 1,540 gaging stations were being maintained by the Geological Survey and the cooperating organizations. Many miscellaneous discharge measurements were made at other points. In connection with this work, data were also collected in regard to precipitation, evaporation, storage reservoirs, river profiles, and water power in many sections of the country and will be made available in water-supply papers from time to time.

DEFINITION OF TERMS

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

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

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

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

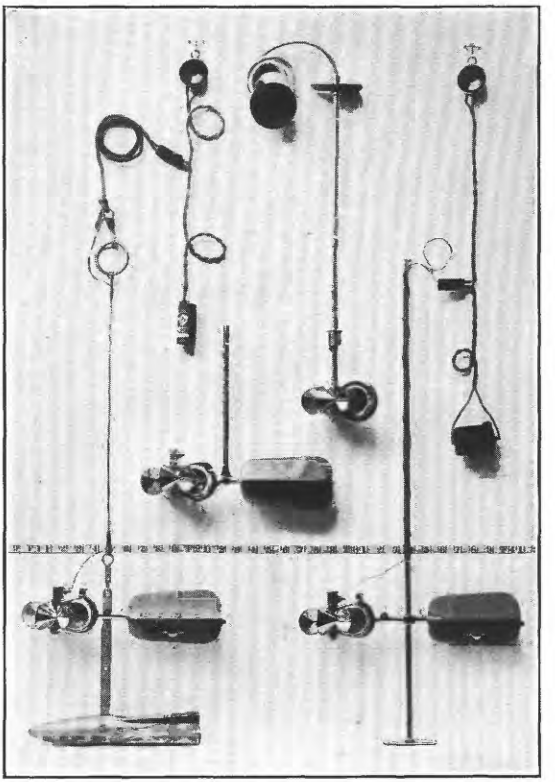
An "acre-foot," equivalent to 43,560 cubic feet, is the quantity required to cover an acre to the depth of 1 foot. The term is commonly used in connection with storage for irrigation.

The following terms not in common use are here defined:

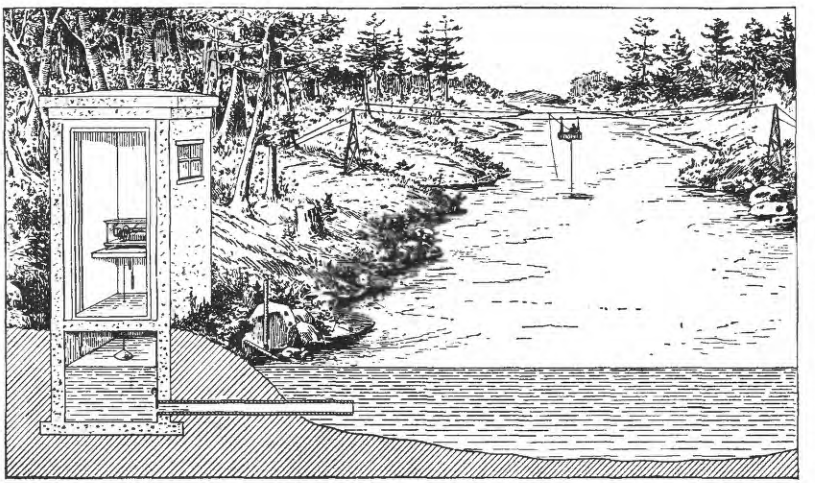
"Stage-discharge relation," an abbreviation for the term "relation of gage height to discharge."

"Control," a term used to designate the section or sections of the stream channel below the gage which 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.

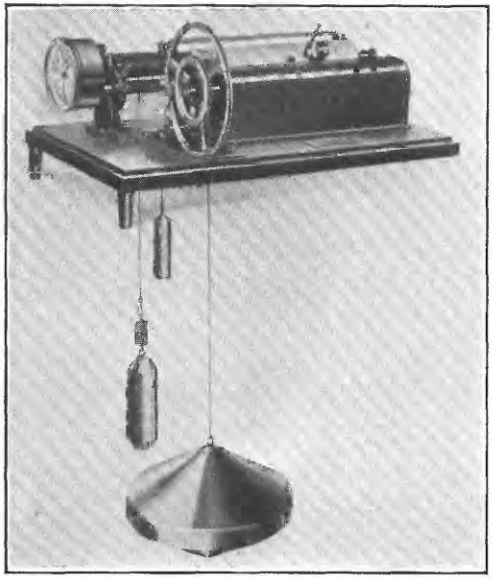
The "point of zero flow" for a gaging station is that point on the gage—the gage height—at which water ceases to flow over the control.



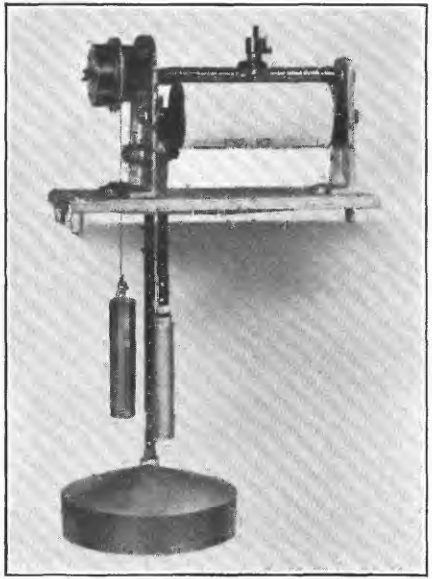
A. PRICE CURRENT METERS



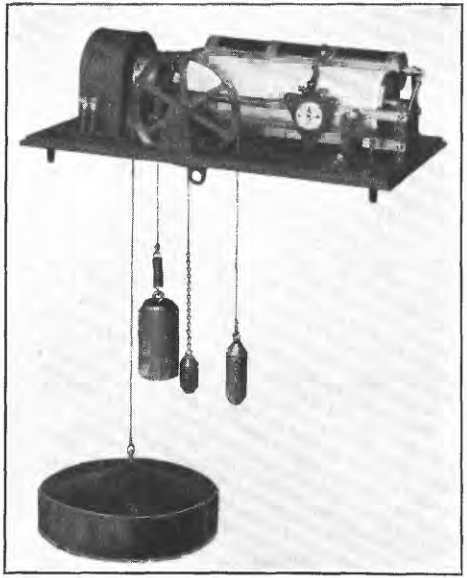
B. TYPICAL GAGING STATION



A



B



C

WATER-STAGE RECORDERS

A, Au; *B*, Gurley; *C*, Stevens

EXPLANATION OF DATA

The data presented in this report cover the year ending September 30, 1922. At the beginning of January in most parts of the United States much of the precipitation in the preceding three months is stored as ground water, in the form of snow or ice, or in ponds, lakes, and swamps, and this stored water passes off in the streams during the spring break-up. At the end of September, on the other hand, the only stored water available for run-off is possibly a small quantity in the ground; therefore the run-off for the year beginning October 1 is practically all derived from precipitation within that year.

The base data collected at gaging stations consist of records of stage, measurements of discharge, and general information used to supplement the gage heights and discharge measurements in determining the daily flow. The records of stage are obtained either from direct readings of a staff or chain gage or from a water-stage recorder that gives a continuous record of the fluctuations. Measurements of discharge are made with a current meter. (See Pls. I, II.) The general methods are outlined in standard textbooks on the measurements of river discharge.

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

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

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

The description of the station gives, in addition to statements regarding location and equipment, information in regard to any conditions that may affect the permanence of the stage-discharge relation, covering such subjects as the occurrence of ice, the use of the stream for log driving, shifting of control, and the cause and effect of backwater; it gives also information as to diversions that decrease the flow at the gage, artificial regulation, maximum and minimum recorded stages, and the accuracy of the records.

The table of daily discharge gives, in general, the discharge in second-feet corresponding to the mean of the gage heights read each day. At stations on streams subject to sudden or rapid diurnal fluctuations the discharge obtained from the rating table and the mean daily gage height may not be the true mean discharge for the

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day. If such stations are equipped with water-stage recorders the mean daily discharge may be obtained by averaging discharge at regular intervals during the day or by using the discharge integrator, an instrument operating on the principle of the planimeter and containing as an essential element the rating curve of the station.

In the table of monthly discharge the column headed "Maximum" gives the mean flow for the day when the mean gage height was highest. As the gage height is the mean for the day it does not indicate correctly the stage when the water surface was at crest height and the corresponding discharge was consequently larger than given in the maximum column. Likewise, in the column headed "Minimum" the quantity given is the mean flow for the day when the mean gage height was lowest. The column headed "Mean" is the average flow in cubic feet per second during the month. On this average flow computations recorded in the remaining columns, which are defined on page 2, are based.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

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

A paragraph in the description of the station gives information regarding the (1) permanence of the stage-discharge relation, (2) precision with which the discharge rating curve is defined, (3) refinement of gage readings, (4) frequency of gage readings, and (5) methods of applying daily gage height to the rating table to obtain the daily discharge.

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

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

"run-off in inches," published in the earlier reports by the survey should be used with caution because of possible inherent sources of error not known to the Geological Survey.

Many gaging stations on streams in the irrigated areas of the United States are situated above most of the diversions from those streams, and the discharge recorded does not show the water supply available for further development, as prior appropriations below the stations must first be satisfied. To give an idea of the amount of prior appropriations, a paragraph on diversions is presented in each station description. The figures given can not be considered exact but represent the best information available.

The tables of monthly discharge give only a general idea of the flow at the station and should not be used for other than preliminary estimates; the tables of daily discharge allow more detailed studies of the variation in flow. It should be borne in mind, however, that the observations in each succeeding year may be expected to throw new light on data previously published.

PUBLICATIONS

Investigation of water resources by the United States Geological Survey has consisted in large part of measurements of the volume of flow of streams and studies of the conditions affecting that flow, but it has comprised also investigation of such closely allied subjects as irrigation, water storage, water powers, ground 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 monographs, bulletins, professional papers, and annual reports.

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

Part I. North Atlantic slope basins (St. John River to York River).
II. South Atlantic slope and eastern Gulf of Mexico basins (James River to the Mississippi).
III. Ohio River Basin.
IV. St. Lawrence River Basin.
V. Upper Mississippi River and Hudson Bay basins.
VI. Missouri River Basin.
VII. Lower Mississippi River Basin.
VIII. Western Gulf of Mexico basins.
IX. Colorado River Basin.
X. Great Basin.
XI. Pacific slope basins in California.
XII. North Pacific slope basins, in three parts:
A, Pacific slope basins in Washington and upper Columbia River Basin.
B, Snake River Basin.
C, Lower Columbia River Basin and Pacific slope basins in Oregon.

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

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

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

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

Boston, Mass., 2500 Customhouse.
Albany, N. Y., 704 Journal Building.
Trenton, N. J., Statehouse.
Ashville, N. C., 316 Jackson Building.
Chattanooga, Tenn., 37 Municipal Building.
Columbus, Ohio, Engineering Experiment Station, Ohio State University.
Madison, Wis., care of Railroad Commission of Wisconsin.
Chicago, Ill., 940 Transportation Building.
Ames, Iowa, State Highway Commission Building.
Rolla, Mo., Rolla Building, School of Mines and Metallurgy.
Topeka, Kans., 23 Federal Building.
Austin, Tex., Capitol Building.
Helena, Mont., 45–46 Federal Building.
Denver, Colo., 403 Post Office Building.
Tucson, Ariz., 106 College of Law Building, University of Arizona.
Salt Lake City, Utah, 313 Federal Building.
Boise, Idaho, Federal Building.
Idaho Falls, Idaho, 228 Federal Building.
Tacoma, Wash., 404 Federal Building.
Portland, Oreg., 606 Post Office Building.
San Francisco, Calif., 303 Customhouse.
Los Angeles, Calif., 600 Federal Building.
Honolulu, Hawaii, 25 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 records have been obtained at about 5,480 points in the United States, and the data obtained have been published in the reports tabulated on pages 7 and 8.

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

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

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

The records at most of the stations discussed in these reports extend over a series of years, and miscellaneous measurements at many points other than regular gaging stations have been made each year. An index of the reports containing records obtained prior to 1904 has been published in Water-Supply Paper 119.

The following table gives, by years and drainage basins, the numbers of the papers on surface-water supply published from 1899 to 1922. The data for any particular station will be found in the reports covering the years during which the station was maintained. For example, data for Machias River at Whitneyville, Me., 1903 to 1921, are published in Water-Supply Papers 97, 124, 165, 201, 241, 261, 281, 301, 321, 351, 381, 401, 431, 451, 471, 501, and 521, which contain records for the New England streams from 1903 to 1921. Results of miscellaneous measurements are published by drainage basins.

Numbers of water-supply papers containing results of stream measurements, 1899–1923

[For basins included see p. 5]

Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII		
												A	B	C
1899 [a]	35	[b] 35, 36	36	36	36	[c] 36, 37	37	37	[d] 37, 38	38, [e] 39	38, [f] 39	38	38	38
1900 [g]	47, [h] 48	48	48, [i] 49	49	49	49, [j] 50	50	50	50	51	51	51	51	51
1901	65, 75	65, 75	65, 75	65, 75	[k] 65, 66, 75	66, 75	[k] 66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 78	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	176, [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, 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	332A	332B	332C
1913	351	352	353	354	355	356	357	358	359	360	361	362A	362B	362C
1914	381	382	383	384	385	386	387	388	389	390	391	392	393	394
1915	401	402	403	404	405	406	407	408	409	410	411	412	413	414
1916	431	432	433	434	435	436	437	438	439	440	441	442	443	444
1917	451	452	453	454	455	456	457	458	459	460	461	462	463	464
1918	471	472	473	474	475	476	477	478	479	480	481	482	483	484
1919–20	501	502	503	504	505	506	507	508	509	510	511	512	513	514
1921	521	522	523	524	525	526	527	528	529	530	531	532	533	534
1922	541	542	543	544	545	546	547	548	549	550	551	552	553	554

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

COOPERATION

During the year ending September 30, 1922, the work in Utah, Nevada, California, Oregon, Idaho, and Wyoming 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 and the representatives of the United States Geological Survey.

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

Special acknowledgments are due to R. E. Caldwell, State engineer of Utah; J. G. Scrugham, State engineer of Nevada; W. F. McClure, State engineer of California; Division of Water Rights of the Department of Public Works of California; Percy A. Cupper, State engineer of Oregon; F. C. Emerson, State engineer of Wyoming; and W. G. Swendsen, commissioner of reclamation of Idaho, 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 United States Bureau of Reclamation; United States Weather Bureau; Utah Power & Light Co.; United States Forest Service; Department of Public Service, Los Angeles, Calif.; and Southern Pacific Co., for free use of data collected by them.

Financial assistance has been rendered by the United States Indian Service, Sevier River Water Users, Walker River Irrigation District, Utah Power & Light Co., Silver Lake Irrigation District, Silver Creek Valley Irrigation District, Harney Valley Irrigation District, Trout Creek Irrigation District, and Wm. Hanley Co.

DIVISION OF WORK

Data for stations in Utah and Nevada were collected and prepared for publication under the direction of A. B. Purton, district engineer, assisted by W. E. Dickinson, J. J. Sanford, R. R. Rowe, J. W. Mangan, M. T. Wilson, D. M. Corbett, and Miss Lysle Christensen.

For stations in California, the data were collected and prepared for publication under the direction of H. D. McGlashan, district engineer, assisted by William Kessler, R. C. Briggs, K. M. Kelly, Jesse Arnold, and J. E. Jones.

For stations in Oregon, the data were collected and prepared for publication under the direction of F. F. Henshaw, district engineer, assisted by G. H. Canfield, J. W. Bones, K. N. Phillips, and Wendell Dawson.

For stations in Idaho, the data were collected under the direction of C. G. Paulsen, district engineer, assisted by Berkeley Johnson and W. E. Dickinson. Records for stations on Soda Creek near Soda Springs, Idaho, were prepared for publication under the direction of C. G. Paulsen. Records for stations on Bear River in Idaho were prepared for publication under the direction of A. B. Purton.

For the station in Wyoming, the data were collected and prepared for publication under the direction of Robert Follansbee, district engineer, assisted by M. B. Arthur.

The records were reviewed and manuscript assembled by B. J. Peterson and J. H. Morgan.

GAGING STATION RECORDS

GREAT SALT LAKE BASIN

GAGES ON GREAT SALT LAKE

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

RECORDS AVAILABLE.—September 14, 1875, to December 15, 1899; March to July, 1904; October 1, 1912, to September 30, 1922. Records have appeared in publications of United States Geological Survey as follows: Gage heights September 14, 1875, to January 4, 1890, in Monograph 1, "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 9 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 Papers 330 and 395.

GAGES.—Midlake gage read August 15, 1902, to September 30, 1922, by Southern Pacific Co. Saltair gage read July 1, 1903, to September 30, 1922, by

United States Weather Bureau. Other gages used at various times are described in earlier water-supply papers. Datum of Midlake gage is 4,198.0 feet above mean sea level as determined by comparative readings with other gages in 1916. Datum of Saltair gage is 4,196.8 feet above mean sea level as determined by levels by topographic branch in 1922.

EXTREMES OF DISCHARGE.—Maximum stage recorded during the year, 4,204.3 feet above mean sea level on June 15 and July 1 at Saltair gage. Minimum stage, 4,201.8 feet on October 1, 15, and November 1 and 15 at Saltair gage.

1850–1922: Maximum stage recorded, 4,211.3 feet above mean sea level July 12, 1877. Estimated maximum stage, 4,212.5 feet occurred in 1868 (data furnished by Marcus E. Jones, Salt Lake City). Minimum stage, 4,195.7 feet in 1902.

ACCURACY.—Saltair gage is read to tenths of feet. Midlake gage is read in inches and reductions have been made to feet and tenths. Apparent inconsistencies in readings are probably largely due to the effect of wind as the two gages are about 40 miles apart.

COOPERATION.—Readings on the Midlake gage are furnished by 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 September 30, 1922

Day	Saltair	Midlake	Day	Saltair	Midlake
Oct. 1	5.0	3.92	Apr. 1	6.4	5.25
15	5.0	3.83	15	6.7	5.58
Nov. 1	5.0	3.83	May 1	6.8	5.83
15	5.0	3.83	15	7.2	6.17
Dec. 1	5.1	3.83	June 1	7.4	6.25
15	5.2	3.92	15	7.5	6.25
Jan. 1	5.4	4.08	July 1	7.5	6.25
15	5.5	4.25	15	7.2	6.08
Feb. 1	5.6	4.42	Aug. 1	7.0	5.92
15	5.8	4.58	15	6.8	5.75
Mar. 1	6.0	4.75	Sept. 1	6.7	5.58
15	6.1	4.92	15	6.4	5.42

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, enters from southwest half a mile above.

DRAINAGE AREA.—645 square miles (measured on base map of Wyoming, scale 1:500,000).

RECORDS AVAILABLE.—October 26, 1913, to September 30, 1922.

GAGE.—Chain on left bank, 300 feet above bridge; read by Mrs. Alex Morrow.

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; slightly shifting at long intervals. Banks subject to overflow at stage of about 5 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.65 feet at 5.15 p. m. May 26 (discharge, 2,580 second-feet); minimum stage, 1.24 feet from September 24–27 (discharge, 40 second-feet).

1914–1922: Maximum stage recorded, 6.35 feet at 6.30 p. m., June 14, 1921 (discharge, 3,690 second-feet); minimum stage, 0.49 foot at 8.15 a. m., August 26, 1919 (discharge, 0.1 second-foot).

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

DIVERSIONS.—Prior to July 1, 1921, adjudicated diversions of 381 second-feet from Bear River above station and 390 second-feet below.

REGULATION.—Diurnal fluctuation during spring caused by alternate melting and freezing of mountain snow. No artificial regulation.

ACCURACY.—Stage-discharge relation shifted slightly. Rating curve well defined. Gage read to quarter-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except September 5–30, when shifting-control method was used. Records excellent.

The following discharge measurement was made by M. B. Authur:
May 3, 1922: Gage height, 4.32 feet; discharge, 1,270 second-feet.

Daily discharge, in second-feet, of Bear River near Evanston, Wyo., for the year ending September 30, 1922

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sep.
1	70	75	------	304	1,280	1,740	670	128	153
2	67	77	------	244	1,490	1,650	495	202	163
3	64	77	------	230	1,420	1,570	425	230	135
4	62	74	------	258	1,650	1,650	372	202	112
5	60	74	------	273	2,090	1,740	355	153	90
6	60	70	------	288	2,230	1,840	320	130	90
7	57	70	------	273	2,090	1,840	320	117	90
8	60	67	------	288	1,650	2,230	304	104	83
9	60	67	------	216	1,350	2,090	288	100	83
10	57	64	------	190	930	1,960	244	150	79
11	57	64	------	165	720	1,840	202	190	77
12	57	72	------	142	620	1,740	177	190	70
13	54	74	------	130	575	1,570	148	202	67
14	54	74	------	142	620	1,490	130	190	60
15	54	67	------	142	620	1,420	102	177	60
16	54	70	------	128	770	1,280	86	153	56
17	54	------	------	119	985	1,350	81	135	56
18	54	------	------	132	1,350	1,350	77	112	53
19	51	------	------	126	1,650	1,350	70	108	53
20	51	------	------	135	1,570	1,280	64	115	50
21	51	------	------	244	1,570	1,350	64	130	46
22	48	------	------	320	1,740	1,420	67	130	43
23	48	------	------	442	1,840	1,280	77	123	43
24	53	------	770	575	1,960	1,160	77	112	40
25	67	------	770	770	2,230	1,040	74	112	40
26	83	------	720	985	2,370	820	70	106	40
27	86	------	535	1,160	1,960	720	59	100	40
28	88	------	515	1,280	1,740	670	65	96	43
29	84	------	425	1,280	1,740	670	74	104	46
30	77	------	425	1,280	1,740	670	77	110	44
31	74	------	372	------	1,840	------	79	135	------

Monthly discharge of Bear River near Evanston, Wyo., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	88	48	61.8	3,800
November 1–16	77	64	71.0	2,250
March 24–31	770	372	566	8,980
April	1,280	119	409	24,300
May	2,370	575	1,500	92,200
June	2,230	670	1,430	85,100
July	670	59	184	11,300
August	230	96	140	8,610
September	165	40	70.2	4,180

BEAR RIVER AT HARER, IDAHO

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

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

RECORDS AVAILABLE.—June 21, 1913, to September 30, 1916; January 1, 1919, to September 30, 1922.

GAGE.—Stevens water-stage recorder on right bank; installed August 24, 1914; inspected by employees of Utah Power & Light Co.

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

CHANNEL AND CONTROL.—Bed composed of clean, hard material; practically permanent. Banks are overflowed at extremely high stages. Control fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.48 feet at 11 a.m. May 28 (discharge, 3,840 second-feet); minimum stage not recorded.

1913–1916; 1919–1922: Maximum stage recorded, 10.51 feet June 2, 1920 (discharge, 3,860 second-feet); minimum stage, 2.61 feet at 6.25 a.m. September 1, 1919 (discharge, 81 second-feet).

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

DIVERSIONS.—No large diversion above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation affected by ice during December, January, February, March, and April 1. Two well-defined rating curves determined by 44 measurements during year. Stevens continuous recorder operated successfully, except November 28–30, April 15–17, August 8, 14–24, and during ice-affected period when discharge was estimated. For other periods daily discharge determined by applying to rating table mean daily gage height ascertained from recorder graph. Records good, except for period December 1 to June 30, during which they are fair.

COOPERATION.—Gage-height record, 44 discharge measurements, and computations October 1 to December 31, 1921, furnished by Utah Power & Light Co.

Discharge measurements of Bear River at Harer, Idaho, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 1	Berkely Johnson	3.69	390	May 9	Karl Gilgen	9.70	[c] 3,320
3	Karl Gilgen [a]	3.68	378	17	do	8.59	[c] 2,610
10	do	3.64	364	24	do	10.30	[c] 3,700
17	do	3.52	320	29	do	10.47	[c] 3,880
24	do	3.61	357	June 5	do	9.99	[c] 3,470
Nov. 8	do	3.61	364	9	do	9.22	[c] 3,120
14	do	3.60	344	14	do	8.50	2,610
22	do	3.66	374	21	do	7.08	1,920
Dec. 1	do	3.66	379	27	do	5.95	1,440
9	do	[b] 3.71	258	July 3	do	4.85	938
15	do	[b] 3.68	328	22	do	4.11	566
27	do	[b] 3.94	331	29	do	3.83	457
Jan. 11	do	[b] 3.78	263	Aug. 3	do	3.73	426
21	do	[b] 3.68	198	6	Berkeley Johnson	3.75	406
Feb. 8	do	[b] 3.96	276	9	Karl Gilgen	3.78	427
27	do	[b] 4.21	274	25	do	4.11	564
Mar 10	do	[b] 4.12	284		Dickinson and Thorum [a]		
29	do	[b] 4.40	606	25		4.11	568
Apr. 6	do	5.29	1,070	Sept. 2	Karl Gilgen	3.93	486
13	do	8.42	2,630	12	do	3.78	431
18	do	5.52	1,200	18	do	3.63	385
24	do	6.97	1,970	25	do	3.56	353
May 1	do	9.15	[c] 2,940				

[a] Engineer for Utah Power & Light Co.
[b] Stage-discharge relation affected by ice.
[c] River overflowing left bank.

Daily discharge, in second-feet, of Bear River at Harer, Idaho, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	384	384					700	2,950	3,650	1,060	409	500
2	384	380					735	2,850	3,630	966	397	491
3	380	376					755	2,780	3,620	926	412	487
4	380	376			225		835	2,760	3,580	886	420	487
5	380	373		300		280	940	2,800	3,500	866	420	491
6	380	352					1,080	2,870	3,420	846	424	500
7	380	352					1,050	2,990	3,330	807	451	495
8	376	356					1,150	3,140	3,220	763	441	475
9	373	359					1,180	3,310	3,110	730	431	463
10	370	359					1,260	3,470	2,970	706	424	451
11	362	356					1,930	3,530	2,870	711	409	443
12	356	356					2,450	3,470	2,790	692	394	431
13	352	352					2,610	3,420	2,670	654	379	424
14	348	352					2,490	3,360	2,640	626		416
15	342	352						3,250	2,630	604		405
			325	225			1,840				380	
16	328	348						3,020	2,630	599		401
17	324	345						2,610	2,510	581		390
18	328	324			250	300	1,190	2,550	2,240	568		379
19	331	278					1,100	2,690	2,120	533	500	376
20	331	334					1,040	2,940	2,010	554	450	372
21	328	408					1,020	3,220	1,880	572	450	369
22	324	376					1,160	3,490	1,650	572	600	365
23	324	408					1,500	3,670	1,560	554	590	362
24	356	416					1,890	3,720	1,540	533	580	362
25	380	388					2,160	3,710	1,530	516	572	355
26	384	392		200			2,370	3,710	1,530	491	559	351
27	376	392			274	400	2,620	3,760	1,460	471	529	351
28	380				275	500	2,850	3,810	1,410	459	512	351
29	384	390			-------	606	3,010	3,840	1,340	451	500	348
30	384				-------	640	3,000	3,760	1,210	439	495	348
31	388	-------			-------	670	-------	3,680	-------	420	495	-------

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

Monthly discharge of Bear River at Harer, Idaho, for the year e nding September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	388	324	361	22,200
November	416	278	367	21,800
December	----------	----------	[a] 325	20,000
January	----------	----------	[b] 240	14,800
February	----------	----------	[b] 245	13,600
March	670	----------	[b] 336	20,700
April	3,010	700	1,650	98,200
May	3,840	2,550	3,260	200,000
June	3,650	1,210	2,480	148,000
July	1,060	420	650	40,000
August	600	----------	456	28,000
September	500	348	415	24,700
The year	3,840	----------	901	652,000

[a] Estimated by Utah Power & Light Co.
[b] Estimated by U. S. Geol. Survey from temperature records and current-meter measurements at Harer and below Stuart Dam.

BEAR RIVER AT ALEXANDER, IDAHO

LOCATION.—In NE. ¼ sec. 18, T. 9 S., R. 41 E., half a mile southeast of Alexander post office, Caribou County, 3 miles above intake of Last Chance Canal and 6 miles above dam of Utah Power & Light Co. at Grace.

DRAINAGE AREA.—3,840 square miles (measured on Utah Power & Light Co.'s map).

RECORDS AVAILABLE.—March 27, 1911, to September 30, 1916, and April 17, 1919, to September 30, 1922.

GAGE.—Stevens water-stage recorder on right bank installed September 15, 1914; inspected by employees of Utah Power & Light Co.

DISCHARGE MEASUREMENTS.—Made from cable 400 feet above gage or from a cable at Steamboat Springs about 3 miles above Alexander during period when river is frozen over.

CHANNEL AND CONTROL.—Bed composed of gravel and sand. Control fairly permanent.

EXTREMES of DISCHARGE.—Maximum open-water stage recorded, 10.14 feet at 1 a. m. May 9 (discharge, 4,590 second-feet); minimum stage not recorded. 1911–1916; 1919–1922: Maximum discharge, that of May 9, 1922; minimum stage, 4.96 feet on November 15, 1915 (discharge, 310 second-feet).

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

DIVERSIONS.—Water is diverted above station for irrigation and for storage in Bear Lake.

REGULATION.—Affected by storage and release of water at Bear Lake. This water is returned to Bear River about 30 miles above station.

ACCURACY.—Stage-discharge relation changed slightly at various times during year; affected by ice December 1 to March 20 and March 23–27. Discharge for ice-affected periods estimated from six ice-affected and three open-water measurements, notes of hydrographer, and by comparison with discharge at Bern Bridge and Pescadero. Discharge estimated August 5–26 from recorded extremes of stage and comparison with discharge at Pescadero. Shifting-control method used August 27 to September 30, except September 24–27, when discharge was estimated from recorded extremes of stage. Stevens water-stage recorder operated successfully during year except as above noted. Daily discharge determined by applying to rating table mean daily gage height ascertained by inspection of recorder graph. Records good, except from December 1, 1921, to March 19, 1922, for which they are fair.

COOPERATION.—Gage-height record and 44 discharge measurements furnished by Utah Power & Light Co.

Discharge measurements of Bear River at Alexander, Idaho, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 1	Karl Gilgen [a]	6.12	803	May 5	Karl Gilgen	9.78	4,200
2	Berkeley Johnson	6.14	786	6	Berkeley Johnson	9.76	4,030
8	Karl Gilgen	5.97	704	15	Karl Gilgen	9.10	[c]3,420
15	....do	5.99	730	20	....do	8.81	3,060
22	....do	6.06	767	26	....do	8.33	2,620
29	....do	6.12	814	June 2	....do	9.79	4,220
Nov. 12	....do	6.32	910	3	Berkeley Johnson	9.70	4,040
19	....do	6.80	1,260	10	Karl Gilgen	9.02	3,370
26	....do	6.48	1,020	15	....do	8.42	2,650
Dec. 5	....do	[b] 7.18	1,270	28	....do	7.02	1,440
6	....do	[b] 7.12	1,080	July 7	....do	6.70	1,220
10	....do	[b] 8.21	1,430	18	....do	6.53	1,080
11	....do	[b] 7.79	1,040	25	....do	6.43	1,030
14	....do	6.66	1,160	31	Berkeley Johnson	6.40	946
Jan. 3	....do	6.52	1,060	Aug. 1	Karl Gilgen	6.40	998
Mar. 4	....do	7.03	1,440	27	Dickinson and Thorum [a]	6.40	1,030
20	....do	[b] 6.74	1,060	28	Karl Gilgen	6.42	1,060
24	....do	[b] 6.90	1,290	Sept. 4	....do	6.27	917
28	....do	6.69	1,180	13	....do	6.21	934
31	....do	6.92	1,360	21	....do	6.22	914
Apr. 7	....do	7.52	1,850	28	....do	6.22	878
14	....do	7.99	2,290				
21	....do	7.56	1,920				

[a] Engineer, Utah Power & Light Co.
[b] Stage-discharge relation affected by ice.
[c] Meter cone bearing broken during measurement.

Daily discharge, in second-feet, of Bear River at Alexander, Idaho, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	814	820					1,320	4,330	4,180	1,300	989	1,020
2	840	820					1,370	4,260	4,180	1,260	1,020	982
3	886	827					1,440	4,220	4,100	1,190	1,080	949
4	846	840					1,470	4,180	4,050	1,100	1,060	923
5	757	846					1,650	4,170	4,010	1,220	1,050	936
6	751	872					1,840	4,170	3,920	1,210	1,040	949
7	745	931					1,880	4,260	3,770	1,190	1,030	942
8	727	931					1,950	4,480	3,730	1,110	1,150	910
9	710	918					1,740	4,520	3,560	1,040	1,260	890
10	727	924				1,020	1,660	4,360	3,310	1,010	1,260	903
11	739	905					1,690	4,240	3,060	989	1,220	920
12	739	912					1,770	4,170	2,850	1,040	1,180	929
13	733	918					2,070	4,080	2,700	1,130	1,150	942
14	727	931					2,300	3,680	2,720	1,160	1,120	975
15	739	950			1,060		2,410	3,450	2,740	1,140	1,120	989
16	763	964	1,160	1,130			2,520	3,390	2,820	1,090	1,120	1,010
17	769	964					2,580	3,390	2,860	1,080	1,150	975
18	769	970					2,570	3,420	2,980	1,080	1,190	942
19	769	1,110					2,420	3,440	2,850	1,100	1,190	929
20	775	1,120				1,060	2,170	3,130	2,750	1,190	1,220	910
21	775	1,220				1,080	1,930	2,470	2,600	1,250	1,190	916
22	782	1,260				1,110	2,100	2,120	2,440	1,210	1,160	896
23	801	1,180				1,200	2,260	1,990	2,210	1,100	1,130	870
24	866	1,090				1,290	2,530	2,250	1,990	1,040	1,100	850
25	853	1,100					2,770	2,490	1,600	1,020	1,070	825
26	827	1,050				1,290	3,030	2,650	1,480	1,060	1,050	850
27	834	950					3,340	2,870	1,430	1,070	1,030	870
28	814	957				1,290	3,760	3,350	1,420	1,080	1,060	884
29	808	977			-------	1,310	4,010	3,830	1,370	1,090	1,050	870
30	814	1,030			-------	1,320	4,300	4,020	1,320	982	1,050	832
31	820	-------			-------	1,340	-------	4,140	-------	982	1,050	-------

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

Monthly discharge of Bear River at Alexander, Idaho, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	886	710	784	48,200
November	1,260	820	976	58,100
December	----------	----------	[a] 1,160	71,300
January	----------	----------	[a] 1,130	69,500
February	----------	----------	[a] 1,060	58,900
March	----------	----------	[a] 1,100	67,600
April	4,300	1,320	2,300	137,000
May	4,520	1,990	3,600	221,000
June	4,180	1,320	2,830	168,000
July	1,300	982	1,110	68,200
August	1,260	989	1,110	68,200
September	1,020	825	920	54,700
The year	4,520	----------	1,510	1,090,000

[a] Estimated because of ice effect.

BEAR RIVER NEAR WESTON, IDAHO

LOCATION.—In SE. ¼ sec. 17, T. 16 S., R. 39 E., at Weston-Fairview highway bridge, 3 miles east of Weston, Franklin County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 21, 1919, to September 30, 1922. Records at this station are comparable with those obtained at gaging station formerly maintained near Preston, Idaho, where records were collected October 11, 1889, to January 15, 1917.

GAGE.—Stevens continuous water-stage recorder on left bank; inspected by Mrs. Mart Rasmussen.

DISCHARGE MEASUREMENTS.—Made from highway bridge immediately below gage.

CHANNEL AND CONTROL.—Bed composed of gravel and earth. Banks fairly high and fairly covered with brush. One channel at all stages. Low-water control is a fairly well defined gravel riffle 200 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 12.1 feet indicated by high-water marks on gage, occurred May 8 or 9 (discharge, 6,100 second-feet); minimum stage, October 3, 1921 (discharge, about 433 second-feet).

1920–1922: Maximum stage that of May 8–9, 1922; minimum stage, 1.28 feet at 5 p. m., November 15, 1919 (discharge, about 174 second-feet).

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

DIVERSIONS.—Numerous ditches divert water for irrigation above station.

REGULATION.—Considerable diurnal fluctuation is caused by operation of Oneida power plant about 25 miles above, and the seasonal flow is affected by storage and release of water at Bear Lake, about 160 miles above.

ACCURACY.—Stage-discharge relation shifted throughout year. Standard curve was used with shifting-control method. Records for October, November, and December computed by engineers of Utah Power & Light Co. from hourly discharge, except October 16–20, 22–24, and November 1–3, when mean discharge was estimated from flow below Oneida tailrace. Estimates for January, February, March 1–20, 28–31, April 1–6, 9–12, 16, 17, May 6–10, June 17–21, July 14–25, September 17, 28–30, based on hydrographic comparisons with Oneida station. Water-stage recorder operated successfully, except as above noted. For later periods daily discharge determined by applying to rating table mean daily gage height ascertained by inspection of recorder graph. Records good, except for estimated periods for which they are fair.

COOPERATION.—Computations for October, November, and December; gage-height record for remainder of year; and 11 discharge measurements furnished by Utah Power & Light Co.

Discharge measurements of Bear River near Weston, Idaho, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 3	Berkeley Johnson	2.31	534	Apr. 24	R. P. Flagel	7.30	3,050
3	do	2.03	428	May 18	do	9.00	3,770
3	do	1.85	369	June 22	do	6.55	2,490
25	R. P. Flagel [a]	1.93	396	July 26	do	2.64	561
Nov. 29	do	2.09	385	Aug. 31	Dickinson and Thorum [a]	2.79	573
Mar. 20	do	3.79	1,450				

[a] Engineer, Utah Power & Light Co.

Daily discharge, in second-feet, of Bear River near Weston, Idaho, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	933	1,000	1,290					5,510	4,160	1,170	1,300	982
2	570		1,490					5,430	4,140	1,050	1,050	923
3	433		1,340					5,440	4,370	942	650	889
4	899	932	1,180				2,500	5,500	4,450	1,230	765	1,110
5	861	933	1,220					5,590	4,390	918	1,120	1,460
6	983	902	1,360					5,600	4,590	933	1,030	913
7	1,000	1,060	1,570			1,350	2,720	5,550	4,340	1,100	1,250	982
8	1,050	1,080	1,450				3,190	5,850	4,120	1,280	1,180	1,190
9	850	1,110	1,610				3,700	5,800	4,150	1,430	1,100	1,270
10	791	1,130	1,440				2,200	5,650	3,460	1,300	903	855
11	893	984	1,470				2,500	5,470	2,520	1,820	827	737
12	988	1,230	1,730				2,900	5,180	3,320	1,800	817	1,160
13	967	1,010	1,680				3,310	4,950	3,320	1,380	566	1,080
14	756	994	1,600				3,170	4,800	3,140	1,000	942	991
15	627	1,120	1,610		1,380		3,400	4,650	2,680	600	957	1,070
16		1,180	1,470	1,400			3,500	4,500	2,390	600	928	855
17		1,120	1,330			1,600	2,500	4,420	2,800	750	1,220	550
18	960	1,270	1,200				3,260	4,100	2,600	900	947	870
19		1,350	1,450				3,280	4,380	3,200	1,100	913	1,050
20		1,700	1,590				3,140	4,460	2,800	850	628	952
21	943	1,090	1,740			1,910	2,970	4,380	2,500	600	779	942
22		1,590	1,740			1,960	2,830	3,920	2,600	850	1,040	928
23	800	1,680	1,780			2,300	3,100	3,770	2,370	750	1,280	875
24		1,550	1,580			2,810	3,510	3,100	2,160	1,200	1,200	709
25	925	1,610	1,340			2,870	3,750	2,980	1,950	1,000	991	775
26	1,030	1,440	1,650			2,780	4,000	2,900	1,680	865	1,030	1,040
27	758	1,290	1,620			2,720	4,150	3,350	1,640	808	1,020	860
28	659	1,550	1,730				4,570	3,110	1,590	846	1,280	850
29	955	1,310	1,650		-------	2,600	4,990	3,410	1,530	957	1,010	950
30	728	1,250	1,670		-------		5,400	3,720	1,460	1,070	977	1,100
31	1,000	-------	1,660		-------		-------	3,840	-------	1,250	903	-------

NOTE.—Braced figures show estimated mean for periods indicated.

Monthly discharge of Bear River near Weston, Idaho, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	1,050	433	865	53,200
November	1,700	----------	1,220	72,600
December	1,780	1,180	1,520	93,500
January	----------	----------	[a]1,400	86,100
February	----------	----------	[a]1,380	76,600
March	----------	----------	[a]1,810	111,000
April	5,400	2,200	3,230	192,000
May	5,850	2,900	4,560	280,000
June	4,590	1,460	3,010	179,000
July	1,820	600	1,040	64,000
August	1,300	566	987	60,700
September	1,460	550	964	57,400
The year	5,850	433	1,830	1,330,000

[a] Estimated because of ice effect.

BEAR RIVER NEAR COLLINSTON, UTAH

LOCATION.—In W. ½ sec. 34, T. 13 N., R. 2 W., a quarter of a mile below power plant of Utah Power & Light Co., at railroad siding called Wheelon, 4 miles north of Collinston, Box Elder County. Little Malad River enters 20 miles below station.

DRAINAGE AREA.—6,000 square miles (measured on topographic and United States Forest Service maps).

RECORDS AVAILABLE.—July 1, 1889, to September 30, 1922.

GAGE.—Friez eight-day water-stage recorder on left bank installed November 17, 1919; inspected by G. F. Taylor.

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

CHANNEL AND CONTROL.—Bed composed of gravel and sand. Left bank high and covered with willows; not subject to overflow. Right bank fairly high and covered with willows; may be overflowed by exceptionally high floods. Control not well defined.

EXTREMES OF DISCHARGE.—Maximum stage during year, 7.65 feet at 6 a. m. May 10 (discharge, 10,100 second-feet); minimum stage, 1.18 feet at 6 p. m. July 17 (discharge, 200 second-feet).

1889-1922: Maximum stage recorded, 7.7 feet June 7–10, 1909 (discharge, 11,600 second-feet); minimum stage, 0.42 foot at midnight August 5, 1920 (discharge, practically zero).

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

DIVERSIONS.—West Side and Hammond Canals divert water on both sides of Bear River about 2 miles above station. Water can be used from either or both of these canals to supply Wheelon power plant. Water passing Wheelon penstocks is used for irrigation or can be returned to river. Numerous ditches farther upstream divert water for irrigation.

REGULATION.—Flow at station is affected by operation of power plants and storage and release of water at Bear Lake Reservoir.

ACCURACY.—Stage-discharge relation changed a number of times during year; not affected by ice. Rating curves fairly well defined throughout. Operation of water-stage recorder satisfactory except May 28 to June 22 and May 14. Daily discharge ascertained by shifting-control method up to March 23 and thereafter by applying to rating table mean daily gage height determined by inspection of recorder graph, except when recorder was not running, when daily gage readings were used. Records good.

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

Discharge measurements of Bear River near Collinston, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 1	Purton and Wooley	2.32	1,350	May 16	R. P. Flagel	6.30	7,470
26	R. P. Flagel [a]	2.50	1,490	June 23	do	3.75	3,390
Feb. 15	do	3.08	2,320	July 27	do	2.25	1,030
Mar. 21	do	3.60	3,220	Sept. 1	Dickinson and Thorum [a]	2.00	800
Apr. 22	do	4.38	4,340				

[a] Engineer, Utah Power & Light Co.

Daily discharge, in second-feet, of Bear River near Collinston, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,370	1,590	1,920	2,420	2,500	2,520	5,280	7,620	6,040	1,530	1,060	872
2	1,230	1,730	2,030	2,500	2,200	2,280	5,650	8,000	6,090	854	1,110	935
3	880	1,690	2,210	2,740	1,980	2,210	5,870	8,080	6,210	818	944	872
4	784	1,630	2,080	2,780	2,120	1,920	5,970	8,060	6,250	872	678	836
5	1,110	1,630	1,870	2,610	2,270	1,990	5,920	8,140	6,260	1,000	746	1,030
6	1,200	1,630	1,850	2,120	2,270	2,050	5,900	8,460	6,280	737	900	1,190
7	1,250	1,590	1,960	1,770	2,340	2,050	5,770	9,040	6,320	863	980	971
8	1,250	1,690	2,120	1,840	2,120	2,030	5,650	9,540	6,390	890	1,070	1,000
9	1,290	1,710	2,050	2,120	2,150	2,010	5,780	9,920	6,480	971	1,000	1,120
10	1,120	1,740	2,030	1,910	2,270	2,010	5,600	10,100	6,480	917	953	1,090
11	1,000	1,720	2,100	2,270	2,340	2,380	4,820	9,900	6,300	953	791	773
12	1,110	1,650	2,080	2,200	2,340	2,610	4,660	9,360	5,220	1,310	662	728
13	1,200	1,810	2,250	2,120	2,270	2,080	4,720	8,800	4,840	1,290	614	899
14	1,300	1,680	2,250	2,120	2,340	1,600	4,840	8,420	4,980	791	456	818
15	1,380	1,730	2,180	2,050	2,420	2,020	4,790	7,760	4,840	638	670	728
16	1,310	1,740	2,180	1,980	2,120	2,240	4,800	7,470	4,690	463	662	746
17	1,030	1,770	1,920	1,980	2,200	2,160	4,360	7,330	4,520	351	622	542
18	841	1,730	1,690	2,270	2,270	2,550	3,840	7,290	4,550	351	791	336
19	1,170	1,730	1,550	2,500	2,340	2,710	4,190	7,420	4,620	719	582	630
20	1,300	1,940	1,800	2,420	2,270	2,710	4,350	7,660	4,480	1,170	638	800
21	1,360	2,160	2,410	2,500	2,270	3,170	4,350	8,080	4,550	1,440	428	764
22	1,300	1,840	3,340	2,580	2,270	3,530	4,340	8,270	4,030	1,190	755	737
23	1,410	2,210	2,730	1,840	2,200	4,000	4,350	8,190	3,810	1,000	953	710
24	1,450	2,330	2,530	1,770	2,200	4,820	4,560	7,910	3,630	1,270	1,060	678
25	1,360	2,220	2,330	2,200	2,210	5,730	4,960	7,380	3,340	1,330	1,090	550
26	1,520	2,220	2,140	2,270	2,240	6,260	5,350	6,910	2,620	1,210	854	710
27	1,630	2,030	2,330	2,270	2,060	6,160	5,590	6,620	2,200	1,010	827	890
28	1,500	1,940	2,360	2,270	2,140	5,780	6,010	6,570	2,140	836	863	764
29	1,340	2,090	2,450	2,500	-------	5,490	6,430	6,570	1,880	863	953	710
30	1,470	1,940	2,380	2,580	-------	5,270	7,020	6,180	1,780	845	809	908
31	1,370	-------	2,380	2,500	-------	5,110	-------	6,040	-------	890	872	-----

Monthly discharge of Bear River near Collinston, Utah, for the year ending September 30, 1922

Month	Discharge in second feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	1,630	784	1,250	76,900
November	2,330	1,590	1,840	109,000
December	3,340	1,550	2,180	134,000
January	2,780	1,770	2,260	139,000
February	2,500	1,980	2,240	124,000
March	6,260	1,600	3,210	197,000
April	7,020	3,840	5,190	309,000
May	10,100	6,040	7,970	490,000
June	6,480	1,780	4,730	281,000
July	1,530	351	947	58,200
August	1,110	428	822	50,500
September	1,190	386	813	48,400
The year	10,100	351	2,790	2,020,006

SODA CREEK NEAR SODA SPRINGS, IDAHO

LOCATION.—In sec. 24, T. 8 S., R. 41 E., at George Schmidt ranch, one-eighth mile below confluence of two branches of creek and 5 miles north of Soda Springs, Caribou County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 5, 1913, to September 30, 1922.

GAGE.—Vertical staff set in concrete on left bank, a quarter of a mile south of ranch house, installed June 28, 1921; George Schmidt, observer.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of lava rock. Control is a reef 15 feet below gage. Stage-discharge relation affected by aquatic growth.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.70 feet April 28 and 29 (discharge, 229 second-feet); minimum stage, 0.82 foot February 20–28 (discharge, 53 second-feet).

1913–1922: Maximum stage recorded, 5.3 feet April 6, 1913 (discharge, 324 second-feet); minimum stage, 3.95 feet January 8 and 12–15, 1919 (discharge, 38 second-feet).

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

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

ACCURACY.—Stage-discharge relation not permanent on account of effect of aquatic growth, but flow is uniform. Gage read to hundredths once daily. Daily discharge ascertained by shifting-control method throughout year. Records good.

Discharge measurements of Soda Creek near Soda Springs, Idaho, during the year ending September 30, 1922

[Made by Berkeley Johnson]

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Feb. 17	0.84	55.8	June 4	1.04	75.9	Aug. 1	1.07	75.1
May 7	1.08	89.0	25	1.00	69.9	Sept. 9	1.07	64.5

Daily discharge, in second-feet, of Soda Creek near Soda Springs, Idaho, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	70	72	63	72	55	66	155	76	72	75	76
2	72	70	72	63	72	55	66	146	76	72	76	73
3	72	70	72	66	72	55	69	129	76	72	79	73
4	69	67	69	69	72	55	72	103	76	69	78	73
5	69	67	69	72	72	55	72	96	76	69	78	73
6	69	67	69	72	72	55	75	93	76	69	81	72
7	69	69	66	72	69	55	75	89	76	69	81	72
8	69	69	66	72	69	55	78	89	76	69	81	69
9	69	69	66	75	69	58	78	89	73	72	81	66
10	72	69	66	75	69	58	75	89	73	70	79	66
11	72	69	66	75	69	58	72	87	70	73	76	66
12	69	69	66	75	66	58	72	87	67	73	76	66
13	69	69	66	75	63	58	69	87	67	73	76	66
14	69	70	63	72	60	58	69	87	65	73	76	66
15	69	70	63	72	58	58	66	87	65	73	76	63
16	69	70	63	72	58	58	66	87	65	73	75	63
17	67	70	63	72	57	58	66	85	65	79	75	63
18	67	70	63	69	55	58	66	85	65	86	75	63
19	67	70	63	69	55	58	66	85	65	86	75	63
20	67	73	66	69	53	58	66	85	65	91	78	60
21	67	73	66	69	53	60	66	83	65	91	79	60
22	67	72	63	69	53	60	69	83	67	94	79	60
23	67	72	63	69	53	63	75	79	67	87	83	60
24	72	72	63	69	53	66	109	78	70	81	83	60
25	72	72	63	72	53	66	155	75	70	81	83	60
26	72	72	63	72	53	66	191	75	70	78	81	60
27	72	72	60	72	53	66	205	75	70	78	81	63
28	69	72	60	72	53	63	229	75	73	78	78	63
29	69	72	60	72	------	63	229	78	72	76	78	63
30	69	72	60	72	------	63	205	78	72	73	78	63
31	70	------	60	72	------	63	------	78	------	73	78	------

Monthly discharge of Soda Creek near Soda Springs, Idaho, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	72	67	69.5	4,270
November	73	67	70.3	4,180
December	72	60	64.8	3,980
January	75	63	70.9	4,360
February	72	53	61.6	3,420
March	66	55	59.2	3,640
April	229	66	97.9	5,830
May	155	75	90.2	5,550
June	76	65	70.3	4,180
July	94	69	76.5	4,700
August	83	75	78.3	4,810
September	76	60	65.5	3,900
The year	229	53	73.0	52,800

LOGAN RIVER ABOVE STATE DAM, NEAR LOGAN, UTAH

LOCATION.—In NE. ¼ sec. 36, T. 12 N., R. 1 E., at Logan plant of Utah Power & Light Co., 125 feet above confluence of tailrace with river, and 2½ miles above Logan, Cache County.

DRAINAGE AREA.—218 square miles (measured on topographic map).

RECORDS AVAILABLE.—May 7, 1913, to September 30, 1922, at present site; June 1, 1896, to July 17, 1903, and April 14, 1904, to December 31, 1912, at old station a quarter of a mile downstream; flow at present 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; inspected by operator of power plant.

DISCHARGE MEASUREMENTS.—Made by wading at gage; high-water measurements made from cable 400 feet downstream and flow in tailrace deducted.

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

EXTREMES OF DISCHARGE.—Maximum stage during year, 4.42 feet at 3 a. m. June 8 (discharge, 1,280 second-feet); minimum stage, 1.18 feet at 1 p. m. October 11 (discharge, 63 second-feet).

1913–1922: Maximum stage recorded, 5.6 feet at 9.30 a. m. March 21 1916 (discharge estimated, 2,000 second-feet); minimum discharge, 8 second-feet December 11, 1915.

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

BACKWATER.—Stage-discharge relation affected at times by backwater from State dam, half a mile downstream.

DIVERSIONS.—Utah Power & Light Co. diverts water above station for power and the Logan, Hyde Park & Smithfield Canal diverts for irrigation. The city of Logan has a municipal power plant about 2 miles above station but water is returned to river above the two diversions noted. The city of Logan is entitled to divert for municipal supply, from 4 to 10 second-feet of water, from springs in sec. 22, T. 12 N., R. 2 E., the quantity depending on the flow in the river.

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

ACCURACY.—Stage-discharge relation shifted May 5–8. Rating curves used before and after that period, fairly well defined. Shifting-control method used May 5–8. Operation of water-stage recorder satisfactory except February 12–16 when hook gage was read once a day. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph or daily hook readings. Records good.

COOPERATION.—Gage-height records and six discharge measurements furnished by Utah Power & Light Co.

Discharge measurements of Logan River above State dam, near Logan, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 27	R. P. Flagel[a]	1.55	106	June 20	R. P. Flagel	3.52	798
Feb. 17	do	1.40	93.4	July 28	do	2.15	252
Apr. 23	do	2.12	227	Aug. 23	Dickinson and Thorum[a]	1.82	184
May 17	do	3.27	709				

[a] Engineer, Utah Power & Light Co.

Daily discharge, in second-feet, of Logan River above State dam, near Logan, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	94	87	94	100	96	89	159	386	1,060	524	243	165
2	93	86	96	114	94	93	157	422	1,060	490	238	165
3	98	85	87	106	94	94	159	481	1,090	465	240	165
4	96	84	82	101	93	94	171	560	1,120	449	243	165
5	94	85	78	100	90	93	175	710	1,160	437	236	169
6	91	84	81	97	96	93	186	770	1,190	433	233	167
7	91	82	84	96	90	93	179	780	1,180	415	228	161
8	94	81	87	104	93	91	188	820	1,220	393	221	157
9	89	81	90	104	94	91	177	670	1,210	379	218	159
10	100	80	93	107	94	90	173	578	1,160	368	221	157
11	84	81	94	104	90	91	171	494	1,130	355	213	155
12	86	87	97	93	90	86	167	461	1,090	349	209	151
13	85	94	100	93	90	90	163	457	1,020	346	211	149
14	85	93	100	98	87	96	163	494	1,020	336	211	148
15	85	93	98	104	85	97	161	573	975	327	204	148
16	84	93	96	104	90	118	159	626	930	321	192	148
17	84	90	93	107	90	109	155	740	915	315	181	148
18	87	90	110	104	89	101	153	925	890	303	179	146
19	93	90	107	93	89	98	151	985	875	295	179	140
20	93	91	107	90	90	104	157	970	850	306	175	138
21	93	96	134	98	90	107	173	995	810	303	177	133
22	93	93	115	103	89	115	190	980	770	312	177	133
23	91	93	106	104	91	129	240	1,020	730	321	171	134
24	126	90	96	96	86	155	297	1,080	685	315	167	140
25	90	90	98	104	85	146	321	1,150	680	297	169	136
26	93	89	97	103	87	138	362	1,210	631	264	167	142
27	96	89	97	103	87	138	390	1,070	606	262	165	149
28	90	89	97	103	84	133	407	975	597	253	165	146
29	89	89	94	101	-------	153	393	1,010	573	248	165	146
30	87	91	98	93	-------	163	400	1,070	550	243	165	142
31	87	-------	100	96	-------	161	-------	1,080	-------	243	167	-------

Monthly discharge of Logan River above State dam, near Logan, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	126	84	91.6	5,630
November	96	80	85.2	5,250
December	134	78	97.0	5,960
January	114	90	101	6,210
February	96	84	90.1	5,000
March	163	86	111	6,820
April	407	151	217	12,900
May	1,210	386	792	48,700
June	1,220	550	926	55,100
July	524	243	344	21,200
August	243	165	198	12,200
September	169	133	150	8,930
The year	1,220	78	268	194,000

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

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

RECORDS AVAILABLE.—May 7, 1913, to September 30, 1922.

GAGE.—Stevens continuous water-stage recorder on right bank just above weir; inspected by plant operator.

DISCHARGE MEASUREMENTS.—Made from footbridge just above gage.

CHANNEL AND CONTROL.—Rectangular wooden weir, with a metal crest strip just below gage acts as control. Capacity of channel above weir not sufficient to eliminate all velocity of approach. Length of crest, 17.7 feet. Stage of zero flow, zero on gage.

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

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

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Operation of water-stage recorder satisfactory October 1 to March 29, when plant was shut down. Daily discharge ascertained by applying mean daily gage height to rating table. A leakage of about 2 second-feet through gates continued until June 27, when flume was cut off. For remainder of year tailrace was dry, except for slight seepage from river. Records good.

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

Canal diverts water from right bank of Logan River in SE. ¼ SW. ¼ sec. 29, T. 12 N., R. 2 E. Water is returned to river 125 feet below gaging station on Logan River above State dam in NE. ¼ sec. 36, T. 12 N., R. 1 E. Water is used for development of power.

Discharge measurements of Utah Power & Light Co.'s tailrace near Logan, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 27	R. P. Flagel[a]	1.04	70.2	Apr. 23	R. P. Flagel	0.04	2.0
Feb. 17	do	.76	45.2	Sept. 30	Purton and Woolley	1.07	72.2

[a] Engineer, Utah Power & Light Co.

Daily discharge, in second-feet, of Utah Power & Light Co.'s tailrace near Logan, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	77	77	73	64	41	28	2	2	2
2	76	78	72	65	41	26	2	2	2
3	74	78	70	65	43	26	2	2	2
4	72	78	66	64	43	26	2	2	2
5	72	78	62	64	47	29	2	2	2
6	78	77	66	58	46	29	2	2	2
7	77	77	66	53	44	30	2	2	2
8	78	79	65	46	44	30	2	2	2
9	78	80	64	40	42	31	2	2	2
10	56	80	62	40	45	31	2	2	2
11	76	79	64	43	46	33	2	2	2
12	76	76	64	37	46	34	2	2	2
13	77	73	65	33	44	34	2	2	2
14	77	73	66	33	44	34	2	2	2
15	77	74	67	33	44	32	2	2	2
16	77	74	66	30	44	18	2	2	2
17	77	74	55	29	44	24	2	2	2
18	77	76	58	30	44	38	2	2	2
19	76	76	60	23	44	42	2	2	2
20	73	76	61	28	44	41	2	2	2
21	73	77	57	36	44	41	2	2	2
22	74	80	65	37	44	44	2	2	2
23	78	79	66	36	44	46	2	2	2
24	54	78	66	36	45	47	2	2	2
25	74	77	66	34	44	46	2	2	2
26	76	77	65	34	44	46	2	2	2
27	76	73	62	34	44	46	2	2	1
28	78	71	62	34	35	47	2	2	------
29	78	71	62	38	------	25	2	2	------
30	77	71	64	42	------	2	2	2	------
31	77	------	64	42	------	2	------	2	------

NOTE.—Flow estimated Mar. 30 to June 27; no flow June 28 to Sept. 30.

Monthly discharge of Utah Power & Light Co.'s tailrace near Logan, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	78	54	74.7	4,590
November	80	71	76.2	4,530
December	73	55	64.2	3,950
January	65	23	41.3	2,540
February	47	35	43.7	2,430
March	47	[a]2	32.5	2,000
April	------	------	[a]2.0	119
May	------	------	[a]2.0	123
June	------	0	[a]1.8	107
July	0	0	0	0
August	0	0	0	0
September	0	0	0	0
The year	80	0	------	20,400

[a] Estimated.

LOGAN, HYDE PARK & SMITHFIELD CANAL NEAR LOGAN, UTAH

LOCATION.—In NW. ¼ NE. ¼ sec. 31, T. 12 N., R. 2 E., at concrete rating flume 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 east of Logan, Cache County.

RECORDS AVAILABLE.—Fragmentary records 1904 to September 30, 1922.

GAGE.—Stevens continuous water-stage recorder, installed June 6, 1913; on right bank near lower end of rating flume; inspected by employee of Logan, Hyde Park & Smithfield Canal Co.

DISCHARGE MEASUREMENTS.—Made from footplank at flume or by wading.

CHANNEL AND CONTROL.—Rectanglar concrete rating flume. Stage of zero flow determined January 28, 1919, 0.40 foot.

ICE.—Recording gage usually removed during winter when a small flow of water is maintained for domestic use.

DIVERSIONS.—None above gage.

REGULATION.—Flow regulated by head gates at diversion works.

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

Canal diverts water from Logan River in NE. ¼ NE. ¼ sec. 31, T. 12 N., R. 2 E., for irrigation and domestic use in territory north of Logan.

The following discharge measurement was made by Thorum and Dickinson: August 23, 1922: Gage height, 2.28 feet; discharge, 96.5 second-feet.

Daily discharge, in second-feet, of Logan, Hyde Park & Smithfield Canal near Logan, Utah, for the year ending September 30, 1922

Day	Oct.	May	June	July	Aug.	Sept.	Day	Oct.	May	June	July	Aug.	Sept.
1	62	------	86	105	90	98	16	60	------	95	98	86	96
2	62	------	86	103	90	98	17	60	------	94	97	95	96
3	62	------	86	104	89	97	18	54	------	94	100	96	96
4	61	------	87	106	39	97	19	46	------	94	99	97	96
5	60	------	87	106	85	97	20	46	------	98	98	96	96
6	60	------	88	105	81	97	21	------	------	103	97	97	95
7	60	------	77	105	81	96	22	------	45	103	60	97	95
8	60	------	28	106	81	96	23	------	85	103	60	97	96
9	60	------	26	106	84	96	24	------	87	102	59	98	96
10	60	------	26	105	84	96	25	------	89	100	71	97	96
11	59	------	43	105	84	96	26	------	89	103	93	97	78
12	59	------	52	103	85	96	27	------	86	108	92	98	80
13	60	------	84	98	85	96	28	------	84	108	91	98	80
14	60	------	96	98	84	96	29	------	84	107	90	98	80
15	60	------	96	99	84	96	30	------	86	106	90	98	78
							31	------	86	------	90	98	------

NOTE.—No record Oct. 21 to May 21.

Monthly discharge of Logan, Hyde Park & Smithfield Canal near Logan, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October 1-20	62	46	58.6	2,320
May 22-31	89	45	82.1	1,630
June	108	26	85.5	5,090
July	106	59	94.8	5,830
August	98	81	90.9	5,590
September	98	78	93.4	5,560

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

LOCATION.—In NE. ¼ sec. 8, T. 10 N., R. 2 E., 1 mile above diversion dam and 3½ miles above power plant of Utah Power & Light Co. and 6 miles east of 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, and November 28, 1913, to September 30, 1922.

GAGE.—Stevens continuous water-stage recorder on left bank 500 feet above wagon bridge and nearly a mile above dam; installed November 28, 1913; inspected by watchman at dam.

DISCHARGE MEASUREMENTS.—Made by wading about four-tenths of a mile above gage or from cable 1 mile above gage.

CHANNEL AND CONTROL.—Bed rough, but fairly permanent. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage during year, 5.2 feet at 4 a. m. May 6 (discharge, 1,100 second-feet); minimum stage, 1.32 feet at 10 a. m. March 1 (discharge, 65 second-feet).

1913-1922: Maximum stage determined by levels from high-water mark in well, 6.5 feet May 15, 1917 (discharge estimated by extending rating curve, 1,620 second-feet); minimum stage, 0.85 foot at 6 a. m. February 6, 1916 (discharge estimated from an extension of rating curve, 22 second-feet).

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

DIVERSIONS.—Above all important diversions.

REGULATION.—None.

ACCURACY.—Stage-discharge relation shifted slightly, but continuous throughout year. Operation of water-stage recorder satisfactory, except November 13–20, January 2–5, 11–13, March 13–19, 25–28, and June 14–19. Daily discharge ascertained by applying to rating table mean daily gage height determined by inspection of recorder graph. Shifting-control method used throughout year. Discharge interpolated for periods of missing gage heights. Records good.

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

Discharge measurements of Blacksmith Fork above Utah Power & Light Co.'s dam, near Hyrum, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Sept. 30	Purton and Woolley	1.83	147	June 20	R. P. Flagel	2.17	233
Oct. 27	R. P. Flagel[a]	1.79	141	July 28	do	1.98	158
Feb. 16	do	1.58	102	Aug. 22	Dickinson and Thorum.[a]	1.94	176
Apr. 23	do	2.32	255				
May 17	Flagel and Stoner[a]	3.74	656				

[a] Engineer, Utah Power & Light Co.

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Daily discharge, in second-feet, of Blacksmith Fork above Utah Power & Light Co.'s dam, near Hyrum, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	148	132	134	114	110	92	155	422	409	199	159	161
2	148	130	130	114	110	98	163	440	388	196	161	155
3	148	130	126	114	110	102	175	557	372	196	168	155
4	146	130	123	115	110	103	189	655	359	192	163	152
5	146	130	123	115	110	103	201	924	351	192	161	155
6	144	130	121	115	110	103	199	936	344	192	159	155
7	142	130	121	115	110	105	204	906	338	187	159	150
8	142	128	117	112	109	103	204	921	334	184	157	148
9	142	128	117	108	109	96	184	716	328	184	155	148
10	142	128	119	114	108	95	175	534	324	180	159	148
11	142	128	119	113	108	90	172	458	311	180	159	148
12	142	128	119	112	107	88	166	427	276	180	157	146
13	142	128	117	111	107	91	161	456	274	175	161	142
14	142	128	117	110	102	95	161	529	268	172	163	142
15	142	128	117	114	98	98	157	548	262	172	157	138
16	142	128	115	114	102	101	150	588	256	168	155	138
17	142	128	115	113	102	105	144	687	250	168	157	136
18	142	128	117	113	102	108	140	774	244	166	157	132
19	140	128	119	113	102	112	142	768	238	161	159	132
20	136	128	123	112	100	115	161	719	232	163	161	132
21	136	128	130	112	102	126	206	693	230	166	168	132
22	136	128	124	111	100	126	252	650	228	161	168	132
23	134	130	121	111	100	168	306	630	223	161	161	132
24	148	126	117	111	102	180	351	627	216	159	159	132
25	142	126	115	110	102	176	362	627	213	155	157	132
26	140	126	114	110	102	172	390	616	206	155	155	134
27	140	126	114	110	100	168	422	510	206	155	155	138
28	136	124	114	110	95	164	458	458	206	157	152	140
29	134	124	114	110	-------	159	445	450	201	155	155	140
30	134	128	114	110	-------	152	464	450	201	155	161	140
31	132	-------	114	110	-------	148	-------	435	-------	157	163	-------

Monthly discharge of Blacksmith Fork above Utah Power & Light Co.'s dam, near Hyrum, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	148	132	141	8,670
November	132	124	128	7,620
December	134	114	119	7,320
January	115	108	112	6,890
February	110	95	105	5,830
March	180	88	121	7,440
April	464	140	235	14,000
May	936	422	616	37,900
June	409	201	276	16,400
July	199	155	172	10,600
August	168	152	159	9,780
September	161	132	142	8,450
The year	936	88	195	141,000

WEST SIDE CANAL NEAR COLLINSTON, UTAH

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

RECORDS AVAILABLE.—June 1, 1912, to September 30, 1922.

GAGE.—Friez water-stage recorder on left bank installed May 22, 1914.

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; stage-discharge relation is probably affected by vegetal growth and slight silt deposit.

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

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

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

COOPERATION.—Records of daily discharge and three discharge measurements furnished by Utah Power & Light Co.

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

Discharge measurements of West Side Canal near Collinston, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 1	Purton and Woolley	5.55	419	July 27	R. P. Flagel	6.00	455
May 16	Flagel [a] and Stoner [a]	1.68	45.1	Sept. 1	Dickinson and Thorum [a]	6.26	490
June 23	R. P. Flagel	6.42	535				

[a] Engineer, Utah Power & Light Co.

Daily discharge, in second-feet, of West Side Canal near Collinston, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	418	118	62	68		46			548	586	560	490
2	414	106	62	70		49			557	580	560	490
3	408	104	64	39		39			560	590	560	501
4	414	79	63	54		11			560	590	560	523
5	417	76	61	54					560	590	560	513
6	403	96	59	54					560	590	560	513
7	393	101	63						560	590	560	508
8	381	100	63						564	593	560	506
9	384	102	63						566	596	560	502
10	377	104	66			55			563	598	560	492
11	384	102	62		50	36		23	557	598	558	492
12	389	102	76			35		25	538	598	560	488
13	390	105	75			33		24	533	598	560	513
14	370	104	77			30		23	533	599	563	518
15	333	102	77			25		35	476	602	562	520
16	327	108	76			20		43	439	602	560	523
17	320	109	78			39		83	510	604	564	539
18	330	106	80					136	516	602	568	534
19	350	100	78	50			12	138	522	602	586	527
20	351	91	76				20	137	525	468	551	516
21	348	86	92					132	520	336	552	516
22	334	84	79					136	504	403	502	516
23	335	89	82					179	510	413	506	516
24	230	91	66					255	510	428	506	516
25	194	91	71		146			311	502	460	476	495
26	204	88	63		66			355	488	460	490	471
27	205	88	71		49			399	474	450	533	476
28	203	84	72		49			402	465	486	536	488
29	198	86	70					134	501	545	538	495
30	203	76	70					483	578	560	539	456
31	178		70					516		563	518	

NOTE.—Braced figures show estimated discharge for periods indicated. No flow during periods for which no discharge is given.

Monthly discharge of West Side Canal near Collinston, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	418	178	329	20,200
November	118	76	95.9	5,710
December	92	59	70.5	4,330
January			51.3	3,150
February	146	0	48.6	2,700
March	55	0	13.5	830
April	20	0	1.07	64
May	516	0	128	7,870
June	578	439	527	31,400
July	604	336	545	33,500
August	586	476	546	33,600
September	539	456	505	30,000
The year	604	0	239	173,000

HAMMOND (EAST SIDE) CANAL NEAR COLLINSTON, UTAH

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

RECORDS AVAILABLE.—June 1, 1912, to September 30, 1922.

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.

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

REGULATION.—Flow can be regulated at head gates and at power-plant forebay and water can also be siphoned across river to West Side Canal.

COOPERATION.—Complete records furnished by Utah Power & Light Co.

Canal diverts water on east side of Bear River in SW. ¼ sec. 23, T. 13 N., R. 2 W., at same diversion dam as West Side Canal. Part of water is used by Wheelon plant of Utah Power & Light Co. and that which passes gaging station is used for irrigation.

Discharge measurements of Hammond (East Side) Canal near Collinston, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 1	Purton and Woolley	4.05	90	July 27	R. P. Flagel	4.29	96
26	R. P. Flagel[a]	2.44	25.4	Sept. 1	Thorum[a] and Dickinson	4.74	130
May 16	do	1.25	.0				
June 23	do	4.88	144				

[a] Engineer, Utah Power & Light Co.

Daily discharge, in second-feet, of Hammond (East Side) Canal near Collinston, Utah, for the year ending September 30, 1922

Day	Oct.	May	June	July	Aug.	Sept.	Day	Oct.	May	June	July	Aug.	Sept.
1	84	------	126	141	138	128	16	63	------	115	162	142	127
2	68	------	118	141	140	118	17	62	------	119	164	141	120
3	68	------	118	141	140	117	18	53	------	125	162	144	115
4	68	------	123	139	139	115	19	45	------	120	160	146	113
5	68	------	136	139	136	118	20	44	------	125	112	113	104
6	58	------	140	144	134	120	21	46	------	119	79	125	102
7	53	------	140	137	136	120	22	45	------	118	103	110	102
8	52	------	140	149	140	120	23	43	------	127	101	102	103
9	51	------	143	152	136	120	24	28	------	138	99	96	101
10	59	------	136	150	127	122	25	29	------	144	94	99	101
11	66	------	130	150	136	129	26	29	------	139	96	111	101
12	65	------	131	150	114	127	27	26	19	134	96	125	106
13	65	------	137	150	139	125	28	26	51	139	97	129	107
14	63	------	141	152	141	123	29	26	77	141	113	130	107
15	61	------	132	158	141	125	30	27	113	144	119	130	107
							31	17	118	------	130	131	------

NOTE.—No water in canal Nov. 1 to May 26.

Monthly discharge of Hammond (East Side) Canal near Collinston, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	84	17	50.3	3,090
November	0	0	0	0
December	0	0	0	0
January	0	0	0	0
February	0	0	0	0
March	0	0	0	0
April	0	0	0	0
May	118	0	12.2	750
June	144	115	131	7,800
July	164	79	132	8,120
August	146	96	129	7,930
September	129	101	115	6,840
The year	164	0	47.7	34,500

WEBER RIVER BASIN

WEBER RIVER NEAR OAKLEY, UTAH

LOCATION.—In NE. ¼ sec. 15, T. 1 S., R. 6 E., near mouth of canyon, 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 (measured on topographic maps).

RECORDS AVAILABLE.—October 22, 1904, to September 30, 1922.

GAGE.—Inclined staff on left bank a quarter of a mile above diversion dam of New Field & North Bench Irrigation Co. Read by John Franson.

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

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

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.3 feet on June 8 and 9 (discharge, 2,540 second-feet); minimum discharge occurred during estimated periods in winter.

1904–1922: Maximum discharge recorded, 4,010 second-feet July 6, 1907, and June 5–7, 1909; minimum stage, 4.0 feet for periods during February and March, 1908 (discharge, 46 second-feet).

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

DIVERSIONS.—Above all important diversions.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed about December 27; frequently affected by ice. Rating curves fairly well defined. Gage read to half-tenths once a day except as stated in footnote to daily-discharge table. Daily discharge determined by applying daily gage height to rating table except for periods when stage-discharge relation was affected by ice. For these periods discharge was estimated from discharge measurement, temperature records, and observer's notes. Records fair.

Discharge measurements of Weber River near Oakley, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
Dec. 13	W. E. Dickinson	[a] 4.38	75.8
Apr. 29	do	5.28	335
July 31	A. B. Purton	4.75	167

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Weber River near Oakley, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	98	98	89				76	322	1,610	585	181	122
2	98	98					76	340	1,610	560	168	122
3	98	98					76	378	1,610	510	181	122
4	98	89					76	419	1,790	510	156	112
5	98	89					76	510	1,970	463	156	112
6	98	89					76	670	1,970	419	144	102
7	98	89					76	920	2,150	378	133	102
8	98	89	80		65	65	76	790	2,540	359	133	93
9	98	89					76	670	2,540	340	122	93
10	98	89					76	560	2,240	304	238	93
11	98	89					76	419	2,060	270	181	93
12	98	89					76	419	1,790	270	156	93
13	98	89	76				84	419	1,790	254	156	93
14	98	89	81				84	419	2,060	238	181	93
15	98	89			68	61	84	463	1,450	238	156	84
16	98	89		70			84	510	1,290	223	144	84
17	98	89				61	84	730	1,450	223	133	84
18	89	89					84	1,060	1,610	208	133	76
19	89	89				61	93	1,210	1,970	194	133	76
20	89	89				68	93	1,130	1,880	208	156	76
21	89	89	75			68	102	1,130	1,880	208	133	76
22	89	89			68	76	122	1,170	1,740	194	122	76
23	89	89				76	133	1,210	1,610	238	122	76
24	117	89				76	156	1,450	1,290	208	122	76
25	117	89				84	194	1,530	1,130	181	122	76
26	107	89				84	238	1,700	1,060	168	112	76
27	107	89				84	270	1,530	990	156	112	76
28	107	89	76			76	296	1,450	920	181	112	76
29	107	89	76		-------	76	322	1,530	730	156	112	76
30	107	89	76		-------	76	304	1,610	610	156	112	76
31	107	-------	76		-------	76	-------	1,610	-------	156	133	-------

NOTE.—Discharge interpolated on account of missing gage heights Oct. 9, Nov. 27, Dec. 25–27, 29, 30, Jan. 1–3, Feb. 9–15, 16–21, 23–28, Mar. 9–14, 16–18, Apr. 1, 15, 28, May 22, 29, June 22, and July 1. Mean discharge estimated on account of ice Nov. 17–19, Dec. 2–13, 15–24, Jan. 4 to Feb. 8, and Mar. 1–8. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Weber River near Oakly, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	117	89	99.2	6,100
November	98	89	89.9	5,350
December	----------	----------	77.6	4,770
January	----------	----------	70.0	4,300
February	----------	----------	66.5	3,690
March	84	----------	68.9	4,240
April	322	76	125	7,440
May	1,700	322	912	56,100
June	2,540	610	1,640	97,600
July	585	156	282	17,300
August	238	112	144	8,850
September	122	76	89.5	5,330
The year	2,540	----------	306	221,000

WEBER RIVER AT DEVILS SLIDE, UTAH

LOCATION.—In SW. ¼ sec. 19, T. 4 N., R. 4 E., 300 feet north of hotel and 500 feet downstream from highway bridge at Devils Slide, Morgan County. Lost Creek enters from right a quarter of a mile above station.

DRAINAGE AREA.—1,090 square miles (measured on typographic and U. S. Forest Service maps).

RECORDS AVAILABLE.—February 1, 1905, to September 30, 1922.

GAGE.—Vertical staff on left bank, installed September 21, 1915; read by A. E. Lucas.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

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

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.01 feet at noon May 8 (discharge, 4,140 second-feet); minimum stage, 2.12 feet December 17, January 29, and March 1 (discharge, 142 second-feet).

1905–1922: Maximum stage recorded, 8.0 feet at 6 p. m. May 22, 1920 (discharge, 6,000 second-feet); minimum stage, 1.88 feet September 3, 1919 (discharge, 31 second-feet).

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

DIVERSIONS.—A number of canals divert water above this station for irrigation and domestic use.

REGULATION.—Diversions for irrigation only.

ACCURACY.—Stage-discharge relation changed about December 5. Rating curves well defined. Gage read to hundredths once daily throughout year. Daily discharge ascertained by applying daily gage reading to rating tables. Shifting-control method used December 2–5. Records good, except for October, November, and September for which they are fair.

Discharge measurements of Weber River at Devils Slide, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Dec. 13	W. E. Dickinson	2.50	231	Apr. 27	W. E. Dickinson	4.62	1,840
14	do	2.63	338	May. 4	do	5.45	2,580
Mar. 23	Purton and Sanford	3.40	828	Aug. 1	A B. Purton	2.57	303

Daily discharge, in second-feet, of Weber River at Devils Slide, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	158	248	314	360	193	142	425	2,160	2,930	980	295	436
2	155	240	328	398	200	152	528	2,180	2,770	848	425	340
3	158	233	259	414	211	167	568	2,520	2,650	780	788	312
4	155	244	244	245	209	200	818	2,710	2,630	715	1,200	299
5	158	240	225	303	200	218	940	3,090	2,730	638	398	237
6	158	240	218	193	167	204	780	3,780	2,770	540	360	249
7	158	240	207	164	161	152	788	3,930	2,760	528	330	237
8	158	233	177	174	215	193	848	4,140	2,830	480	312	237
9	158	236	187	184	218	190	540	3,830	2,770	425	286	233
10	155	236	211	200	249	184	528	2,680	2,780	425	320	233
11	155	236	258	197	218	207	540	2,160	2,630	381	376	230
12	158	236	278	184	193	211	452	1,860	2,480	335	312	211
13	168	244	291	174	187	174	414	1,750	2,390	312	575	207
14	171	240	299	174	167	222	425	1,560	2,450	291	624	200
15	171	240	282	170	164	270	414	2,050	2,350	258	458	200
16	165	236	207	167	207	274	370	2,320	2,170	241	381	204
17	165	240	142	237	218	360	345	2,790	2,090	207	360	200
18	165	204	170	207	218	350	370	3,360	2,190	204	350	193
19	162	236	245	164	207	320	398	3,580	2,270	193	414	170
20	158	248	320	152	215	360	480	3,550	2,230	207	464	164
21	155	292	1,170	164	237	474	708	3,780	2,220	230	425	161
22	152	276	810	167	245	582	1,040	3,380	2,180	222	381	155
23	158	271	425	184	207	788	1,340	3,380	2,070	312	370	155
24	233	251	237	177	230	1,170	1,510	3,560	1,760	345	365	155
25	284	207	320	222	245	736	1,730	3,780	1,390	320	346	155
26	236	267	325	222	237	652	1,860	3,880	1,430	299	312	155
27	255	248	312	218	218	750	1,960	3,520	1,300	299	295	148
28	255	255	425	193	167	582	2,160	3,270	1,150	299	278	152
29	276	248	312	142	-------	447	2,320	3,120	1,130	278	282	152
30	259	263	345	164	-------	425	2,500	3,180	1,080	278	345	152
31	255	-------	386	184	-------	430	-------	3,070	-------	316	403	-------

Monthly discharge of Weber River at Devils Slide, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	284	152	185	11,400
November	292	204	246	14,600
December	1,170	142	320	19,700
January	414	142	210	12,900
February	249	161	207	11,500
March	1,170	142	374	23,000
April	2,500	345	937	55,800
May	4,140	1,560	3,030	186,000
June	2,930	1,080	2,230	133,000
July	980	193	393	24,200
August	1,200	278	414	25,500
September	436	148	211	12,600
The year	4,140	142	732	530,000

WEBER RIVER AT GATEWAY, UTAH

LOCATION.—In NW. ¼ SW. ¼ sec. 27, T. 5 N., R. 1 E., 300 feet below mouth of Strawberry Creek, 1,400 feet above Union Pacific Railroad bridge across Weber River and 4,400 feet above section house at Gateway, Morgan County. East Canyon Creek enters from left 9 miles above station.

DRAINAGE AREA.—1,610 square miles (measured on map prepared by Utah Water Storage Association, 1919).

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RECORDS AVAILABLE.—June 22 to September 17, 1919, and July 26, 1920, to September, 30, 1922. Records were obtained from October, 1889, to July, 1903, at a station 1 mile downstream known as Weber River near Uinta, Utah. The records at these stations are comparable, as there were no diversions and no important tributaries between the two points.

GAGE.—Stevens continuous water-stage recorder on right bank; inspected by R. O. Bybee.

DISCHARGE MEASUREMENTS.—Made from cable about 1,000 feet above gage or by wading. Flow of Strawberry Creek is added when measurement is made at cable site.

CHANNEL AND CONTROL.—Bed composed of gravel and cobblestones. Righ bank high. At high stages river overflows a bar opposite gage.

EXTREMES OF DISCHARGE.—Maximum stage during year, 7.30 feet at 6 p. m. May 8 (discharge, 6,720 second-feet); minimum stage, 0.57 foot on October 8 and 9 (discharge, 270 second-feet).

1889–1903; 1919–1922: Maximum discharge recorded, 7,980 second-feet May 31, 1896; minimum discharge recorded, 65 second-feet August 7–13, 1898.

ICE.—Affected by ice usually only for short periods.

DIVERSIONS.—Numerous diversions from Weber River and tributaries for irrigation above Gateway. Three miles below station Davis & Weber Canal diverts water for irrigation on bench lands south of Ogden. Entire low water flow is diverted by various canals during irrigation season so that river is practically dry at Plain City Station.

REGULATION.—Water stored by Davis & Weber Canal Co. on East Canyon Creek is released during July, August, and September and passes gaging station.

ACCURACY.—Stage-discharge relation changed about April 26. Rating curve well defined. Operation of water-stage recorder satisfactory except for periods noted in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Records good.

Discharge measurements of Weber River at Gateway, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Dec. 15	W. E. Dickinson	0.78	349	June 19	R. P. Flagel[a]	4.02	2,530
Mar. 24	A. B. Purton	3.89	2,340	July 14	do	1.25	496
Apr. 27	W. E. Dickinson	4.72	3,550	Aug. 2	A. B. Purton	1.40	537
May 4	R. R. Rowe	5.60	4,640	21	R. P. Flagel[a]	1.90	804
4	R. P. Flagel[a]	5.64	4,270	Sept. 18	do	.92	363
11	Dickinson and Flagel[a]	5.24	3,610				

[a] Engineer, Utah Power & Light Co.

Daily discharge, in second-feet, of Weber River at Gateway, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	287	386	438	498		340	1,010	3,810	4,080	1,060	508	632
2	280	378	458	680		343	1,160	3,700	3,770	957	538	555
3	276	378	414	695	305	340	1,320	3,970	3,600	887	705	520
4	273	378	350	518		358	1,470	4,260	3,570	832	680	503
5	276	374	318	478		366	1,790	4,790	3,640	783	582	482
6	276	374	326	380	280	346	1,540	5,740	3,710	700	529	458
7	276	370	332	358	262	332	1,420	6,090	3,620	662	499	414
8	276	370	315	340	276	332	1,360	6,570	3,640	624	454	387
9	273	366	308	340	346	394	1,130	5,940	3,640	586	470	387
10	273	362	322	354	430	398	972	4,740	3,600	577	516	384
11	273	362	336	350	422	414	984	3,930	3,470	550	586	384
12	276	354	358	332	350	386	892	3,360	3,120	495	564	418
13	280	350	362	308	329	370	860	3,100	2,920	470	651	411
14	284	350	362	304	315	380	830	3,170	3,040	490	826	390
15	287	350	358	315	322	390	800	3,450	3,030	500	700	380
16	287	354	326	298	322	430	760	3,910	2,710	482	590	376
17	290	362	290	322	354	520	750	4,450	2,470	490	555	365
18	290	332	298	318	366	620	760	5,090	2,490	500	555	357
19	287	346	340		362	600	800	5,530	2,540	510	715	353
20	280	362	386		362	640	940	5,600	2,560	550	710	346
21	280	398	1,230		386	850	1,260	5,740	2,380	590	767	342
22	280	402	1,200		438	1,250	1,670	5,490	2,330	580	628	331
23	284	402	670		394	1,740	2,080	5,180	2,160	671	613	327
24	350	398	482		390	2,400	2,500	5,380	1,880	620	590	324
25	414	378	470	300	402	1,650	2,750	5,730	1,650	604	568	324
26	394	382	470		410	1,470	2,990	5,820	1,480	564	533	324
27	406	374	462		398	1,490	3,260	5,330	1,310	529	516	316
28	410	366	518		343	1,220	3,580	4,600	1,200	429	503	324
29	406	370	502		-------	1,040	3,930	4,430	1,270	512	516	327
30	402	378	486		-------	996	4,060	4,450	1,140	478	516	327
31	398	-------	502		-------	1,000	------	4,300	-------	482	546	-------

NOTE.—Mean discharge estimated by comparison with Utah Power & Light Co.'s records Jan. 6, Jan. 19 to Feb. 5, Mar. 13-22, Apr. 13, 14, July 7, 8, 14, 15, 17-22, and 24. Braced figures show estimated discharge for periods indicated.

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Monthly discharge of Weber River at Gateway, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	414	273	310	19,100
November	402	332	370	22,000
December	1,230	290	451	27,700
January	695	----------	358	22,000
February	438	----------	349	19,400
March	2,400	332	755	46,400
April	4,060	750	1,650	98,200
May	6,570	3,100	4,760	293,000
June	4,080	1,140	2,730	162,000
July	1,060	470	609	37,400
August	826	454	588	36,200
September	632	316	393	23,400
The year	6,570	----------	1,120	807,000

WEBER RIVER NEAR PLAIN CITY, UTAH

LOCATION.—In SE. ¼ sec. 5, T. 6 N., R. 2 W., at county highway bridge 1 mile south of Plain City, Weber County, on road to Ogden, 1 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 Great Salt Lake.

DRAINAGE AREA.—2,060 square miles (measured on topographic and United States Forest Service maps).

RECORDS AVAILABLE.—May 14, 1905, to September 30, 1922. Records were obtained at this point in 1904 by State of Utah under direction of State engineer.

GAGE.—Chain gage on upstream side of highway bridge installed November 12, 1914; read by W. E. Davies. Chain gage stolen July 31 and replaced September 7, 1922; gage on pier used during this period.

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 are high.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 19.0 feet May 8 and 9 (discharge, 7,270 second-feet); minimum stage, 1.7 feet, July 15–20 (discharge, 15 second-feet).

1904–1922: Maximum stage recorded, 19.1 feet June 6, 1909 (discharge, 7,580 second-feet); river practically dry during latter part of several summers since 1915.

ICE.—Stage-discharge relation usually affected by ice each winter.

DIVERSIONS.—In summer practically entire flow of Weber River above station is diverted for irrigation.

REGULATION.—Flow affected by diversions.

ACCURACY.—Stage-discharge relation assumed to have changed October 25 to December 21 as indicated by measurement dated December 16 and returned to curve as indicated by measurements dated April 25. Rating curve well defined up to 6,000 second-feet. Gage read to half-tenths once a day, with occasional extra readings during high water. Daily discharge ascertained by applying daily gage height to rating table using shifting-control method October 25 to December 21. Records fair up to February 11; good thereafter.

Discharge measurements of Weber River near Plain City, Utah, during the year ending September 30, 1922

[Made by W. E. Dickinson]

Date	Gage height	Discharge
	Feet	*Sec.-ft.*
Dec. 16	4.47	532
Apr. 25	15.05	4,260
Sept. 7	2.46	94.7

Daily discharge, in second-feet, of Weber River near Plain City, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21	587	635	823		599	1,730	5,800	4,660	747	80	86
2	26	563	660	927		575	1,860	5,610	3,850	647	80	106
3	31	539	660	1,060			1,990	5,500	3,570	503	80	190
4	39	539	611	953			2,300	5,640	3,520	480	244	173
5	66	527	539	849		575	2,540	6,160	3,470	457	207	165
6	86	515	515	747	680		2,820	6,910	3,370	367	165	157
7	86	503	515	599			2,330	7,090	3,280	244	142	94
8	80	515	468			575	2,060	7,270	3,230	127	113	73
9	73	515	468			551	1,960	7,270	3,140	86	86	67
10	99	515	515			599	1,860	7,000	3,010	73	80	55
11	86	515	539			599	1,730	7,090	2,970	49	190	49
12	95	503	563			599	1,610	5,160	2,930	49	173	44
13	109	515	563		875	599	1,540	4,460	2,790	38	244	44
14	127	515	587	600	722	599	1,480	4,140	2,610	21	356	61
15	127	515	575		722	672	1,480	4,460	2,580	15	411	38
					697							
16	127	539	539			797	1,420	4,870	2,510	15	216	38
17	134	539	446		623	980	1,420	5,230	2,230	15	157	21
18	150	539	492		623	1,060	1,300	6,160	2,230	15	127	21
19	165	539	587		647	1,060	1,360	6,650	2,400	15	113	21
20	165	527	635		623	1,060	1,480	6,910	2,260	15	367	21
					623							
21	160	539	940			1,360	1,800	6,910	2,200	303	389	21
22	157	563	1,770		647	1,780	2,400	7,000	1,960	283	345	21
23	165	587	1,090		647	2,200	3,010	6,820	1,700	283	244	21
24	173	539	849		647	2,970	3,740	6,570	1,640	283	216	21
25	539	539	760		599	3,050	4,200	6,570	1,510	263	157	21
					623							
26	539	539	672	580		2,890	4,660	6,570	1,700	225	134	29
27	587	539	710		599	2,680	4,870	6,320	1,180	173	86	38
28	611	515	747		599	1,800	5,310	6,000	953	127	73	55
29	599	515	797		575	1,930	5,680	5,310	875	113	67	61
30	587	539	527		-------	1,670	5,920	5,100	797	73	73	73
31	587	-------	772		-------	1,730	-------	4,870	-------	80	99	-------
					-------							

NOTE.—Discharge estimated for following ice-affected periods: Jan. 8 to Feb. 11 and Mar. 3–7; interpolated Dec. 25, Mar. 22, May 30, and July 4. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Weber River near Plain City, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	611	21	213	13,100
November	587	503	533	31,700
December	1,770	446	669	41,100
January	1,060	----------	650	40,000
February	----------	575	663	36,800
March	3,050	551	1,220	75,000
April	5,920	1,300	2,600	155,000
May	7,270	4,140	6,050	372,000
June	4,660	797	2,500	149,000
July	747	15	199	12,200
August	411	67	178	10,900
September	190	21	62.8	3,740
The year	7,270	15	1,300	941,000

LOST CREEK NEAR CROYDEN, UTAH

LOCATION.—In SE. ¼ sec. 8, T. 5 N., R. 5 E., three-quarters of a mile below mouth of Francis Canyon, 13 miles above Devils Slide, and 10 miles northeast of Croyden, Morgan County.

DRAINAGE AREA.—133 square miles (measured on maps prepared by U. S. Bureau of Reclamation).

RECORDS AVAILABLE.—February 1, 1921, to September 30, 1922.

GAGE.—Stevens continuous recorder on right bank installed March 12, 1921; inspected by D. R. Eddington.

DISCHARGE MEASUREMENTS.—Made by wading near gage or from highway bridge above junction with Francis Canyon, three-quarters of a mile above gage, to which was added discharge of Francis Canyon measured by wading.

CHANNEL AND CONTROL.—Banks high and wooded, subject to overflow only at extreme stages. Control well defined; shifting. Point of zero flow, 0.2 foot ±0.1 foot, determined August 1, 1922.

EXTREMES OF DISCHARGE.—Maximum stage during year, 4.03 feet at 2 a. m. May 8 (discharge, 647 second-feet); minimum stage not recorded.

1921–1922: Same as above.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Above important diversions.

REGULATION.—None.

ACCURACY.—Stage-discharge relation remained permanent throughout year. Rating curve fairly well defined up to 250 second-feet; extended above. Water-stage recorder operated successfully, except as stated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Records good between 20 and 200 second-feet except for estimated periods; remainder fair.

Discharge measurements of Lost Creek near Croyden, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
Dec. 14	W. E. Dickinson	1.18	17.6
Apr. 28	do	2.66	202
Aug. 1	A. B. Purton	1.19	17.3

Daily discharge, in second-feet, of Lost Creek near Croyden, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	21					28	208	184	25	18	26
2	16	20					32	222	167	25	21	16
3	16	18					39	268	158	24	28	15
4	16	18					46	334	148	24	18	14
5	16	16					50	462	138	25	16	14
6	16	16					48	560	128	26	16	14
7	17	15	20				48	578	118	27	15	14
8	17	14					50	588	112	27	15	14
9	17	14					44	476	104	27	14	14
10	17	14					41	367	99	23	19	14
11	18	14					40	298	91	22	16	14
12	18	14					37	256	87	22	16	14
13	18	15				16	36	230	82	20	63	13
14	18	16	18				36	241	77	20	36	13
15	18	16			14		35	271	74	19	18	13
16	18	18		14			33	319	74	18	17	13
17	18	13					32	388	68	18	16	13
18	18						31	480	62	18	16	13
19	19						32	490	58	18	16	13
20	19						39	458	53	19	17	13
21	20						54	462	48	20	16	13
22	20		16				76	427	44	20	16	13
23	20						103	416	42	19	18	13
24	30	20					134	402	39	16	15	13
25	25					36	154	402	36	15	14	13
26	23					35	171	382	33	14	14	13
27	24					32	195	310	31	14	13	13
28	22					31	215	262	29	14	13	13
29	22				-------	28	215	238	28	14	14	13
30	22				-------	27	218	222	27	14	16	13
31	22	-------			-------	27	-------	203	-------	16	22	-------

NOTE.—Discharge interpolated Sept. 26–29. Discharge Nov. 18 to Mar. 24 estimated from one meter measurement, temperature charts, and by comparison with records for Lost Creek at Devils Slide. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Lost Creek near Croyden, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	30	16	19.2	1,180
November	----------	----------	17.7	1,050
December	----------	----------	17.7	1,090
January	----------	----------	14.0	861
February	----------	----------	14.0	778
March	----------	----------	19.4	1,190
April	218	28	77.1	4,590
May	588	203	362	22,300
June	184	27	81.3	4,840
July	27	14	20.1	1,240
August	63	13	18.8	1,160
September	26	13	13.9	827
The year	588	----------	56.7	41,100

LOST CREEK AT DEVILS SLIDE, UTAH

LOCATION.—In SE. ¼ sec. 19, T. 4 N., R. 4 E., a quarter of a mile above confluence with Weber River half a mile east of Devils Slide, Morgan County.

DRAINAGE AREA.—228 square miles (measured on map prepared by U. S. Bureau of Reclamation).

RECORDS AVAILABLE.—April 1, 1921, to September 30, 1922, at present site; February 2 to December 31, 1905, at a site 150 feet above mouth of creek (published as "Lost Creek near Croyden, Utah").

GAGE.—Stevens continuous recorder on right bank; inspected by A. E. Lucas.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Bed consists of gravel, rocky at gage. Straight for about 100 feet above and below gage. Most of water at this point, except during spring high water, is seepage and from springs. One channel at all stages. Control of rocks a short distance below gage changes occasionally. Some moss on rocks at control.

EXTREMES OF DISCHARGE.—Maximum stage during year, 4.26 feet at 7.30 and 11 a. m. May 8 (discharge, 1,190 second-feet); minimum stage, 1.06 feet October 7–15 (discharge, 15 second-feet).

1921–1922: Maximum stage, 4.26 feet at 7.30 and 11 a. m. May 8, 1922 (discharge, 1,190 second-feet); minimum stage, 1.03 feet September 15 and 16, 1921 (discharge, 13 second-feet).

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Below all diversions.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed about April 26. Rating curves fairly well defined between 10 and 600 second-feet. Water-stage recorder successfully operated throughout year, except for periods indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Records good except for estimated periods, for which they are fair.

Discharge measurements of Lost Creek at Devils Slide, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Dec. 14	W. E. Dickinson	1.16	25.5	Apr. 28	W. E. Dickinson	2.87	464
15	do	1.17	27.4	May 4	do	3.09	563
Mar. 23	A. B. Purton	1.51	70.2	Aug. 1	A. B. Purton	1.06	22.2

Daily discharge, in second-feet, of Lost Creek at Devils Slide, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sept.
1	16	30		36			71	424	278	37	21	39
2	16	30		38			80	444	233	35	23	33
3	16	31		42			88	504	208	37	28	32
4	16	32		35			99	570	188	37	29	28
5	16	32		36			107	740	182	35	30	22
6	16	32		19			109	940	173	32	28	21
7	15	32	30				109	1,060	159	35	25	22
8	15	32					111	1,080	142	35	23	23
9	15	32					111	825	128	33	22	25
10	15	32					106	610	119	34	22	26
11	15	34					104	480	109	33	25	28
12	15	36				30	99	396	106	29	25	27
13	15	38	26				95	356	104	30	37	25
14	15	38	27				97	338	102	25	59	27
15	15	42	27		25		97	464	98	24	44	23
16	16	42	21				92	560	102	28	38	22
17	16	41	17				87	720	98	24	36	22
18	17	38	24				87	880	93	24	34	20
19	17	38	28	25			90	895	80	26	37	20
20	17	40	28				100	845	74	26	38	21
21	18	40	35				115	830	53	25	37	21
22	18	40	40				160	770	49	24	37	21
23	18	41	38			69	220	745	42	26	37	21
24	23	40	26			85	280	725	39	26	37	19
25	22	38	36			77	325	710	44	26	35	19
26	22		36			77	360	625	44	27	33	18
27	24		35			79	416	494	48	26	38	18
28	26	35	36			72	468	408	33	27	29	17
29	27		36		-------	66	456	364	33	23	27	18
30	27		36		-------	66	456	325	38	23	29	18
31	28	-------	36		-------	68	-------	284	-------	22	33	-------

NOTE.—No gage-height record; discharge estimated Nov. 26 to Dec. 12, Jan. 7 to Mar. 22, and Apr. 19–26. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Lost Creek at Devils Slide, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	28	15	18.3	1,130
November	42	30	35.9	2,140
December	40	----------	30.6	1,880
January	42	----------	26.8	1,650
February	----------	----------	25.0	1,390
March	85	----------	42.5	2,610
April	468	71	173	10,300
May	1,080	284	627	38,600
June	278	33	107	6,370
July	37	22	28.7	1,760
August	59	21	32.0	1,970
September	39	17	23.2	1,380
The year	1,080	15	98.3	71,200

SOUTH FORK OF OGDEN RIVER NEAR HUNTSVILLE, UTAH

LOCATION.—In SE. ¼ sec. 12, T. 6 N., R. 2 E., half a mile below mouth of Magpie Creek, 1 mile above heading of Huntsville Mountain Canal, and 5½ miles east of Huntsville, Weber County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 21, 1921, to September 30, 1922.

GAGE.—Stevens continuous recorder on right bank; inspected by J. J. Sanford and Lucetta Bingham. Datum lowered 0.50 foot September 6, 1922.

DISCHARGE MEASUREMENTS.—Made by wading below gage or from cable three-quarters of a mile above gage.

CHANNEL AND CONTROL.—Bed of stream rocky and clean. One channel for all stages. Control well defined but subject to slight shifting.

EXTREMES OF DISCHARGE.—Maximum stage for year, 4.82 feet at 2 a. m. May 6 (discharge, 1,380 second-feet); minimum stage, 0.03 foot at 7 p. m. September 17 (discharge, 45 second-feet).

1921-1922: Same as above.

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

DIVERSIONS.—Only a few small ranch diversions above.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed slightly May 6. Rating curves fairly well defined. Water-stage recorder operated satisfactorily except for periods indicated in footnote to daily-discharge table. Daily discharge ascertained by applying mean daily gage height to rating table using shifting-control method October 1 to May 6. Records good.

Discharge measurements of South Fork of Ogden River near Huntsville, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 31	Tegart and Sanford	0.26	52.2	Apr. 26	W. E. Dickinson	2.23	498
Dec. 16	W. E. Dickinson	.19	51.2	June 19	Purton and Falck	.83	169
Jan. 7	Purton and Sanford	.40	67.9	July 18	A. B. Purton	.22	69.3
Feb. 19	J. J. Sanford	.25	55.6	Sept. 6	W. E. Dickinson	[a].56	47.9
Apr. 3	do	.98	162				

[a] Datum lowered 0.50 foot.

Daily discharge, in second-feet, of South Fork of Ogden River near Huntsville, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	53	53	70			54	133	601	554	102	66	55
2	53	53	63			56	154	628	513	99	68	54
3	52	53	58			58	178	716	485	96	66	53
4	52	53	55	60		56	202	800	415	92	64	52
5	52	53	49			57	215	1,060	393	91	63	51
6	52	53	48			57	204	1,220	370	91	60	50
7	53	53	48	58			202	1,200	341	90	59	50
8	53	52	48	58	50		200	1,180	315	86	58	50
9	53	52	49	58			174	905	290	85	58	49
10	53	52	49	58		55	156	696	271	84	63	49
11	53	53	50	55			148	556	250	80	59	49
12	53	52	50	52			135	485	237	79	58	49
13	53	53	50	52		54	124	454	228	78	60	48
14	53	53	50	52		55	123	516	224	78	63	48
15	53	53	50	52		61	117	624	213	76	57	48
16	52	54	51	53		76	114	760	201	73	57	48
17	52	53		55	55	83	110	950	190	71	57	48
18	52	52		54		83	104	1,100	178	69	57	49
19	52	54			57	88	105	1,080	174	71	57	50
20	52	54			58	100	123	1,060	170	79	55	50
21	52	56			60	123	184	1,020	162	79	55	50
22	52	58			61	156	284	968	153	75	55	51
23	53	60			60	215	388	959	145	68	57	51
24	67	57	55		60	281	472	980	136	66	54	50
25	57	56		50	61	219	502	1,010	129	65	52	49
26	55	57			61	194	565	950	124	64	52	48
27	55	56			58	186	607	760	118	64	51	49
28	54	57			52	174	655	692	115	68	51	51
29	53	56			-------	145	634	668	110	66	53	51
30	53	58			-------	137	655	654	105	65	53	50
31	53	-------			-------	135	-------	606	-------	65	54	-------

NOTE.—Daily discharge estimated Dec. 17 to Jan. 6, Jan. 19 to Feb. 18, Mar. 1, 2, 7–12, Sept. 2–5, and 9-13. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of South Fork of Ogden River near Huntsville, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	67	52	53.4	3,280
November	60	52	54.3	3,230
December	70	48	53.6	3,300
January	----------	----------	53.8	3,310
February	61	----------	53.7	2,980
March	281	----------	104	6,400
April	655	104	266	15,800
May	1,220	454	834	51,300
June	554	105	244	14,500
July	102	64	77.9	4,790
August	68	51	57.8	3,550
September	55	48	50.0	2,980
The year	1,220	----------	159	115,000

JORDAN RIVER BASIN

JORDAN RIVER NEAR LEHI, UTAH

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

DRAINAGE AREA.—2,570 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 30 to December 31, 1904, and July 22, 1913, to September 30, 1922.

GAGE.—Stevens eight-day water-stage recorder on right bank 25 feet above bridge since May 16, 1920; operated by W. A. Knight.

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.

EXTREMES OF DISCHARGE.—Maximum mean daily stage during year, 7.78 feet June 8 (discharge, 1,370 second-feet); minimum mean daily stage not recorded.

1913–1922: Maximum mean daily stage reported, 7.78 feet June 8, 1922 (discharge, 1,370 second-feet). Minimum stage, no flow at 6 p. m. December 15, 1915, owing to a strong north wind which blew water in lake from outlet gates. No flow August 14–15 and September 2, 1919, because dam was placed in outlet of lake to permit repairing of cut-off wall under pump house, and October 16, 1919, to May 15, 1920, because dam was placed in outlet of lake incident to construction of new pumping plant.

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

DIVERSIONS.—None from Jordan River above station. In 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., near Garfield.

REGULATION.—During irrigation season when natural flow from Utah Lake is inadequate for demands below, water is pumped from the lake into Jordan River. A pumping plant with a capacity of about 1,500 second-feet is at outlet of lake, 800 feet above gage, and is owned and operated by various canal companies interested in the stream. This 1,500 second-feet capacity includes four 200-second-feet units installed during winter of 1919–20.

ACCURACY.—Stage-discharge relation changed about June 9; shifting to September 30. Operation of water-stage recorder satisfactory except October 29 to November 6. Daily discharge ascertained by applying mean daily gage height to rating table; shifting-control method used June 9 to September 30. Records good.

COOPERATION.—Records of mean daily gage height furnished by W. A. Knight, water commissioner.

Discharge measurements of Jordan River near Lehi, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Dec. 8	W. E. Dickinson	4.83	587	Aug. 26	A. B. Purton	5.57	733
Mar. 23	do	6.06	921	Sept. 12	W. E. Dickinson	5.23	665
[a]May 16	do	7.25	1,220				

[a] Discharge at steel bridge 2 miles below, 1,290 second-feet for gage height 7.28 feet.

Daily discharge, in second-feet, of Jordan River near Lehi, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	526		581	692	732	828	925	1,050	1,350	1,160	884	718
2	530		550	701	732	830	928	1,070	1,350	1,150	876	722
3	535	74	539	660	732	830	941	1,060	1,360	1,140	871	718
4	532		594	706	732	830	962	1,080	1,360	1,130	858	718
5	535		598	713	737	835	978	1,090	1,360	1,120	850	727
6	537	350	596	722	737	838	967	1,100	1,360	1,110	842	718
7	528	557	601	722	739	842	975	1,110	1,360	1,100	838	680
8	532	554	601	720	742	832	959	1,150	1,370	1,060	835	655
9	532	554	601	718	749	840	941	1,150	1,330	1,060	835	662
10	530	554	603	718	758	842	975	1,100	1,310	1,060	832	662
11	530	554	605	718	756	832	936	1,170	1,330	1,040	822	667
12	530	554	607	718	768	848	975	1,200	1,320	1,050	822	667
13	530	559	607	720	768	850	970	1,200	1,310	1,040	820	662
14	535	565	609	720	768	852	959	1,200	1,310	1,030	818	657
15	528	559	570	718	768	855	933	1,200	1,300	1,010	800	653
16	524	526	574	718	770	863	986	1,220	1,300	1,000	780	650
17	527	550	618	720	770	863	988	1,230	1,300	996	775	641
18	527	572	630	722	773	871	1,000	1,240	1,300	993	773	639
19	527	570	632	722	778	884	1,000	1,260	1,280	1,000	773	637
20	511	576	637	725	780	884	1,000	1,280	1,280	967	775	632
21	496	581	637	725	785	889	1,000	1,280	1,280	954	778	630
22	524	561	641	722	798	891	1,000	1,300	1,280	923	773	618
23	522	543	653	725	805	897	1,010	1,300	1,200	941	761	621
24	518	576	678	722	810	881	1,010	1,320	1,220	943	744	618
25	530	574	676	722	815	897	1,020	1,330	1,220	936	737	614
26	518	572	674	722	815	920	1,020	1,260	1,210	915	732	609
27	513	574	676	722	820	915	1,030	1,300	1,210	917	732	612
28	528	572	671	725	822	936	1,040	1,330	1,190	904	727	579
29	300	570	674	727	-------	933	1,050	1,340	1,190	891	727	601
30	74	574	669	727	-------	938	1,040	1,340	1,180	894	722	598
31	74	-------	678	730	-------	943	-------	1,330	-------	889	720	-------

NOTE.—Braced figure shows mean estimated discharge for period indicated. Gates closed Oct. 29 to Nov. 6 for repairs; discharge estimated from information furnished by water commissioner.

Monthly discharge of Jordan River near Lehi, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	537	----------	490	30,100
November	581	----------	474	28,200
December	678	539	622	38,200
January	730	660	717	44,100
February	822	732	770	42,800
March	943	828	871	53,600
April	1,050	925	984	58,600
May	1,340	1,050	1,210	74,400
June	1,370	1,180	1,290	76,800
July	1,160	889	1,010	62,100
August	884	720	795	48,900
September	727	579	653	38,900
The year	1,370	----------	824	597,000

SPANISH FORK AT THISTLE, UTAH

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

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

RECORDS AVAILABLE.—December 3, 1907, to September 30, 1922.

GAGE.—Inclined staff on right bank 10 feet below cable installed May 4, 1915; read by Mrs. Effie Gordon and W. W. McClure.

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

CHANNEL AND CONTROL.—Bed composed of gravel and sand. 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. Control is gravel bar about 30 feet below gage; shifting.

ICE.—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 the United States Bureau of Reclamation.

Discharge measurements of Spanish Fork at Thistle, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Apr. 22	Kenneth Borg[a]	5.72	253	Sept. 15	Borg and Jones	5.33	58.9
May 7	Borg and Jones[a]	7.04	772	20	Dickinson and Borg	5.31	53.5

[a] Engineer, U. S. Bureau of Reclamation.

Daily discharge, in second-feet, of Spanish Fork at Thistle, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	61	67	75	71	58	75	133	451	737	218	135	117
2	61	67	75	103	52	82	143	447	689	214	135	110
3	61	67	61	75	50	93	138	464	641	214	135	107
4	61	69	52	67	61	89	188	482	589	207	135	105
5	61	71	52	58	67	80	238	571	589	207	135	105
6	61	71	52	52	71	69	238	660	542	201	135	100
7	61	71	52	45	71	69	175	762	542	201	135	100
8	60	69	52	47	71	78	155	894	429	201	133	98
9	60	67	52	49	82	75	146	827	496	201	133	98
10	58	65	52	49	93	75	133	703	451	194	133	98
11	58	65	52	50	95	73	130	608	425	191	133	93
12	58	63	56	61	93	67	107	538	404	178	133	93
13	61	67	60	71	93	58	107	538	384	172	133	86
14	61	67	63	71	91	71	115	557	365	166	133	82
15	61	69	65	67	89	93	120	713	365	166	130	78
16	61	67	61	67	82	157	110	698	365	160	130	69
17	61	65	56	61	75	178	98	796	365	160	130	60
18	61	65	58	67	71	166	98	953	341	152	130	60
19	61	65	58	71	82	172	98	1,017	322	140	130	56
20	61	65	117	71	105	178	110	1,007	285	140	130	56
21	61	65	127	71	125	172	152	1,001	249	140	130	56
22	61	63	133	71	117	204	194	894	214	140	127	56
23	61	61	117	75	98	211	263	905	249	140	127	56
24	89	61	84	89	89	221	285	974	242	140	127	56
25	71	61	93	89	89	204	349	953	231	138	127	56
26	67	61	107	75	86	157	346	1,250	231	138	127	56
27	67	63	105	65	82	143	349	1,001	231	138	127	56
28	67	63	93	65	80	130	376	968	218	138	127	56
29	67	63	91	61	-------	105	433	942	218	138	125	56
30	67	63	98	58	-------	112	408	889	218	138	125	56
31	67	-------	105	58	-------	130	-------	838	-------	138	125	-------

Monthly discharge of Spanish Fork at Thistle, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	89	58	63.0	3,880
November	71	61	65.5	3,900
December	133	52	76.6	4,710
January	103	45	66	4,070
February	125	50	83	4,600
March	221	58	122	7,510
April	433	98	198	11,800
May	1,250	447	784	48,200
June	737	214	388	23,100
July	218	138	168	10,300
August	135	125	131	8,030
September	117	56	78	4,620
The year	1,250	45	186	135,000

SPANISH FORK AT LAKE SHORE, UTAH

LOCATION.—In NW. ¼ sec. 15, T. 8 S., R. 2 E., 1 mile east of Lake Shore, Utah County, 3 miles above mouth, and 3 miles northwest of Spanish Fork; below all tributaries and diversions.

DRAINAGE AREA.—700 square miles (measured on topographic map).

RECORDS AVAILABLE.—December 10, 1903, to July 10, 1907; March 10, 1909, to September 30, 1922.

GAGE.—Inclined staff with vertical low-water extension, on right bank about half a mile below highway bridge; installed March 10, 1909; read by Andrew Poulsen.

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

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

ICE.—Stage-discharge relation slightly affected for short periods.

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

REGULATION.—Natural flow affected by irrigation diversions.

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

Discharge measurements of Spanish Fork at Lake Shore, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Apr. 26	Kenneth Borg [a]	11.85	615	July 28	Borg and Jones	3.90	11
May 17	Borg and Jones [a]	16.00	1,010	Sept. 20	W. E. Dickinson	3.50	2.4
July 9	do	2.71	46				

[a] Engineer, U. S. Bureau of Reclamation.

Daily discharge, in second-feet, of Spanish Fork at Lake Shore, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	55	153	199	199	162	194	323	835	519	113	4	60
2	46	153	199	186	166	187	334	847	454	116	13	21
3	33	159	192	172	162	169	403	867	347	110	59	14
4	15	146	186	162	168	166	448	885	265	106	143	5
5	20	159	179	147	172	194	469	889	191	106	113	4
6	33	159	179	135	162	188	471	1,085	127	106	65	5
7	29	159	179	130	170	188	426	1,100	73	106	38	4
8	36	166	172	132	190	188	397	1,080	67	106	28	3
9	24	162	166	136	200	187	369	1,005	60	106	16	3
10	65	159	159	136	222	195	355	906	54	70	13	3
11	84	166	169	148	224	195	320	872	84	123	10	3
12	71	166	172	154	197	185	320	796	97	92	3	5
13	65	172	179	161	185	195	314	760	66	230	5	3
14	59	172	185	166	178	229	314	803	72	82	6	5
15	52	175	185	173	171	248	310	822	66	74	3	5
16	65	179	166	187	171	304	307	849	60	65	7	5
17	65	179	159	178	187	402	301	929	54	207	3	4
18	62	182	179	161	225	393	298	961	114	46	126	4
19	65	182	192	134	205	402	295	1,001	120	93	78	5
20	71	179	291	142	212	547	295	1,009	114	57	78	4
21	84	182	258	157	259	675	406	977	117	46	72	3
22	80	179	239	137	232	737	530	928	114	15	66	3
23	96	182	199	140	223	815	596	928	117	12	29	3
24	121	179	172	143	226	853	657	873	115	36	3	3
25	127	172	179	152	226	475	711	849	115	23	6	3
26	133	172	192	156	233	411	730	841	115	15	5	3
27	127	179	226	168	260	347	741	771	117	15	5	3
28	127	179	202	168	216	332	744	731	125	19	6	3
29	121	182	206	175	-------	311	793	655	120	9	5	4
30	127	185	213	168	-------	305	827	655	119	4	8	2
31	146	-------	213	156	-------	320	-------	586	-------	7	14	-------

Monthly discharge of Spanish Fork at Lake Shore, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	146	15	74	4,570
November	185	146	171	10,100
December	291	159	193	11,900
January	199	130	157	9,640
February	260	162	200	11,100
March	855	166	340	20,900
April	827	295	460	27,400
May	1,100	586	874	53,800
June	519	54	139	8,280
July	230	4	75	4,590
August	143	3	33	2,040
September	60	2	6.5	387
The year	1,100	2	227	165,000

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, 1 mile below mouth of North Fork of Provo River, which enters on right, and 400 feet above South Fork, which enters on left, 1 mile above Utah Power & Light Co.'s diversion dam, and 12 miles up Provo Canyon on highway and railroad from Provo to Heber.

DRAINAGE AREA.—600 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 17, 1911, to September 30, 1922. Records have been obtained at various points below mouth of South Fork since 1890.

GAGE.—Vertical staff on right bank, 16 feet above steel bridge; installed July 21, 1920; read by J. F. Carter and G. Purvance.

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

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; fairly permanent. Banks fairly high and not subject to overflow; one channel at all stages. Control is gravel riffle at low stage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.55 feet on May 26 (discharge, 2,580 second-feet); minimum stage, 1.85 feet on March 2 (discharge, 230 second-feet).

1911–1922: Maximum stage recorded, 6.13 feet at 7 p. m. June 11, 1921 (discharge, 3,180 second-feet); minimum stage, 0.06 foot August 1 and 8, 1919 (discharge, 126 second-feet).

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

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

REGULATION.—A number of small lakes at headwaters have been utilized as storage reservoirs and flow is regulated to slight extent.

ACCURACY.—Stage-discharge relation changed continually throughout the year. Standard curve, fairly well defined, used with shifting-control method. Staff gage read to hundredths once a day. Records fair.

COOPERATION.—Seven discharge measurements furnished by Utah Power & Light Co.

Discharge measurements of Provo River at Forks, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 20	R. P. Flagel[a]	2.18	247	July 11	R. P. Flagel[a]	2.32	317
Nov. 9	W. E. Dickinson	2.18	299	Aug. 10	do	2.60	438
Jan. 6	R. P. Flagel[a]	2.17	320	27	A. B. Purton	2.28	294
May 2	Flagel[a] and Murphy[a]	3.88	1,130	Sept. 6	R. P. Flagel[a]	2.36	320
16	R. R. Rowe	4.09	1,210	21	W. E. Dickinson	2.18	260
June 1	Flagel[a] and Stoner[a]	4.99	1,890				

[a] Engineer, Utah Power & Light Co.

Daily discharge, in second-feet, of Provo River at Forks, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	270	290	350	401	281	238	405	1,250	1,870	466	350	337
2	270	296	401	488	290	230	436	1,200	1,750	444	358	337
3	262	296	358	528	290	243	452	1,290	1,700	405	500	344
4	262	296	324	378	290	259	536	1,380	1,710	361	393	344
5	267	296	337	386	293	264	650	1,600	1,710	365	365	344
6	264	299	324	317	287	248	524	1,810	1,820	350	358	321
7	270	299	324	317	287	238	484	1,920	1,770	334	350	311
8	267	299	311	299	324	240	504	2,200	1,830	334	344	311
9	262	296	311	299	480	240	436	2,170	1,880	337	350	317
10	264	296	324	299	416	240	412	1,630	1,840	317	428	317
11	262	296	337	317	321	267	412	1,220	1,740	324	401	317
12	259	299	337	317	281	281	390	1,120	1,650	317	361	311
13	259	305	337	299	290	293	361	958	1,300	324	350	311
14	262	305	330	299	287	290	358	1,010	1,300	317	368	311
15	259	299	330	299	293	302	368	1,060	1,300	324	361	293
16	262	299	317	317	296	327	368	1,200	1,120	324	344	290
17	259	299	270	311	299	397	354	1,390	978	324	327	287
18	259	305	327	311	299	393	354	1,800	972	317	327	270
19	259	311	401	299	302	397	365	1,990	978	330	334	270
20	256	317	1,070	299	305	401	390	2,120	1,060	344	358	270
21	256	324	998	299	344	432	476	2,160	972	337	340	264
22	256	324	690	299	365	755	594	1,960	939	330	340	259
23	259	324	480	299	358	567	680	1,950	882	372	330	259
24	290	330	365	281	330	554	804	2,160	792	344	314	253
25	324	337	424	287	327	492	972	2,310	715	330	299	253
26	330	337	401	293	278	472	1,110	2,580	645	324	299	259
27	317	330	401	293	259	460	1,070	2,450	544	324	293	259
28	314	324	520	296	243	428	1,130	2,060	549	324	299	259
29	302	324	440	235	-------	428	1,500	1,940	476	324	299	259
30	299	324	416	253	-------	412	1,410	1,980	488	324	311	253
31	296	-------	424	264	-------	401	-------	1,860	-------	324	324	-------

Monthly discharge of Provo River at Forks, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	330	256	274	16,800
November	337	290	309	18,400
December	1,070	270	419	25,800
January	528	235	319	19,600
February	480	243	311	17,300
March	755	230	361	22,200
April	1,500	354	610	36,300
May	2,580	958	1,730	106,000
June	1,880	476	1,240	73,800
July	466	317	342	21,000
August	500	293	348	21,400
September	344	253	293	17,400
The year	2,580	230	548	396,000

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, a quarter of a mile above confluence with Provo River and 12 miles up Provo Canyon on highway and railroad from Provo to Heber.

DRAINAGE AREA.—30 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 17, 1911, to September 30, 1922.

GAGE.—Vertical staff nailed to cottonwood tree on right bank; installed June 15, 1913; moved 20 feet upstream on May 2, 1922. No reference to original datum; read by J. F. Carter.

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

CHANNEL AND CONTROL.—Bed composed of gravel; shifting. One channel at all stages; banks not subject to overflow. Control shifts continuously.

EXTREMES OF DISCHARGE.—Maximum discharge recorded during year, 123 second-feet on May 27; minimum discharge, 36 second-feet on July 20 and 21.

1911-1922: Maximum discharge, 123 second-feet, May 27, 1922; minimum discharge, 20 second-feet, July 23, 1917, and January 2, 1920.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Below all diversions.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed frequently. Standard rating curve fairly well defined. Gage read once a day to hundredths. Daily discharge ascertained by shifting-control method. Records fair.

COOPERATION.—Seven discharge measurements furnished by Utah Power & Light Co.

Discharge measurements of South Fork of Provo River at Forks, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec. ft.*			*Feet*	*Sec.-ft.*
Oct. 20	Flagel [a] and Wentz [b]	0.98	52	July 11	R. P. Flagel	1.10	41.6
Nov. 9	W. E. Dickinson	.98	50	Aug. 9	do	1.30	44.5
Jan. 6	R. P. Flagel	1.00	45.6	27	A. B. Purton	1.27	44.6
May 2	do	[c] 1.42	53	Sept. 6	R. P. Flagel	1.29	47.1
16	W. E. Dickinson	1.53	62	21	W E Dickinson	1.23	44.3
June 1	Flagel and Stoner [a]	1.45	80				

[a] Engineer, Utah Power & Light Co.
[b] Water commissioner, Provo River.
[c] Gage moved 20 feet upstream, reading 0.90 foot before moving.

Daily discharge, in second-feet, of South Fork of Provo River at Forks, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	53	50	53	41	41	39	53	53	84	47	45	47
2	53	50	55	65	41	38	50	53	81	47	45	47
3	52	50	53	53	41	40	50	60	87	47	50	47
4	52	50	53	48	41	38	50	60	90	47	44	47
5	52	50	50	46	39	38	68	64	100	47	40	47
6	52	50	50	46	38	38	53	72	103	42	40	47
7	53	53	50	46	41	39	48	78	116	42	40	47
8	53	50	50	44	42	39	48	86	103	42	38	47
9	52	50	50	41	45	39	46	80	100	42	41	47
10	52	50	50	41	44	39	48	74	87	42	45	46
11	52	50	50	41	42	39	48	67	84	42	42	46
12	52	50	50	41	41	39	46	59	69	42	40	46
13	52	50	50	41	41	39	46	56	67	42	41	46
14	52	53	50	41	41	39	46	55	67	41	41	45
15	52	53	50	41	41	39	48	55	67	39	41	45
16	52	53	50	41	41	39	48	62	47	38	41	45
17	52	53	50	41	41	40	46	68	51	38	41	45
18	52	55	53	41	42	40	46	75	51	37	42	44
19	52	55	65	41	42	41	48	87	51	37	42	44
20	52	53	57	41	42	41	50	92	51	36	45	44
21	52	53	50	41	42	41	50	104	54	36	45	44
22	52	53	48	41	42	42	48	96	54	37	45	44
23	56	53	44	41	41	46	50	96	51	41	46	44
24	55	53	41	41	41	50	50	104	51	40	46	45
25	54	53	41	41	41	54	50	121	51	40	46	47
26	50	50	41	41	41	54	53	106	47	39	46	47
27	50	50	41	41	40	55	53	123	47	39	45	47
28	48	50	46	41	39	54	53	98	47	38	44	47
29	48	50	46	40	-------	53	65	92	47	38	46	47
30	51	50	44	41	-------	53	65	88	47	37	46	47
31	53	-------	44	41	-------	53	-------	90	-------	37	46	-------

Monthly discharge of South Fork of Provo River at Forks, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	56	48	52.0	3,200
November	55	50	51.3	3,050
December	65	41	49.2	3,030
January	65	40	42.9	2,640
February	45	38	41.2	2,290
March	55	38	43.2	2,660
April	68	46	50.8	3,020
May	123	53	79.8	4,910
June	116	47	68.4	4,070
July	47	36	40.6	2,500
August	50	38	43.4	2,670
September	47	44	45.9	2,730
The year	123	36	50.8	36,800

SEVIER LAKE BASIN

SEVIER RIVER AT HATCH, UTAH

LOCATION.—In SE. ¼ sec. 28, T. 36 S., R. 5 W., at county bridge a quarter of a mile east of of J. C. Barnhurst's house at Hatch, Garfield County, and 1½ miles below dam site of former Hatchtown Reservoir.

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

RECORDS AVAILABLE.—June 3, 1911, to July 31, 1921 (fragmentary); April 1 to September 30, 1922.

GAGE.—Stevens continuous water-stage recorder on left bank installed August 23, 1914; inspected by H. S. Barnhurst.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

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

EXTREMES OF DISCHARGE.—Maximum stage during year, 5.25 feet at 4 a. m. May 26 (discharge, 1,490 second-feet); minimum stage not recorded.

1911-1922: Maximum stage occurred about 9 p. m. May 25, 1914, when Hatchtown Reservoir dam failed (discharge not determined). Maximum stage recorded, 5.25 feet at 4 a. m. May 26, 1922 (discharge, 1,490 second-feet); minimum flow, 10 second-feet on days in January, March, and April, 1912, while water was being stored at Hatchtown Reservoir.

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

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. No regulation since that date.

ACCURACY.—Stage-discharge relation permanent throughout period. Rating curve fairly well defined. Operation of water-stage recorder satisfactory except for periods shown in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Records good.

Discharge measurements of Sevier River at Hatch, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 2	W. E. Dickinson	0.79	102	May 31	Purton and McBride	4.92	1,360
Apr. 6	Dickinson and McBride [a]	1.03	132	June 27	Brice McBride	3.06	665
				Sept. 1	do	1.32	188

[a] Water commissioner for Sevier River.

Daily discharge, in second-feet, of Sevier River at Hatch, Utah, for the year ending September 30, 1922

Day	Apr.	May	June	Ju	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	100	479	1,350	622	247	187	16	106	759	1,030	310	187	159
2	105	523	1,260	598	242	210	17	106	886	1,010	307	187	159
3	110	559	1,260	577	232	220	18	104	1,030	984	305	190	156
4	116	625	1,280	559	227	208	19	110	1,220	975	310	220	156
5	122	714	1,260	547	222	178	20	135	1,260	960	299	218	156
6	128	838	1,250	523	220	172	21	161	1,230		288	196	156
7	120	1,010	1,220	494	218	170	22	192	1,250		294	222	156
8	124	1,130	1,210	454	215	167	23	237	1,280	835	278	213	156
9	118	1,080	1,170	409	215	163	24	254	1,330		270	199	159
10	116	924	1,150	379	240	163	25	257	1,380		269	192	159
11	114	777	1,120	355	208	161	26	267	1,430	710	268	190	159
12	114	704	1,090	344	196	159	27	307	1,390	704	267	187	159
13	112	672	1,080	338	194	159	28	350	1,380	680	267	187	159
14	108	683	1,040	324	190	159	29	418	1,380	680	254	192	159
15	114	718	1,020	316	187	159	30	463	1,370	660	252	190	159
							31	------	1,370	------	247	192	------

NOTE.—Discharge estimated Apr. 2-5, June 21-25, and July 25-27, when gage was not read. Braced figure shows estimated mean discharge for period indicated.

Monthly discharge of Sevier River at Hatch, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April	463	100	173	10,300
May	1,430	479	1,010	62,100
June	1,350	660	1,010	60,100
July	622	247	365	22,400
August	247	187	207	12,700
September	220	156	167	9,940
The period	1,430	100	490	178,000

SEVIER RIVER NEAR CIRCLEVILLE, UTAH

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

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

RECORDS AVAILABLE.—May 10 to September 19, 1912; April 23, 1914, to September 30, 1922.

GAGE.—Stevens continuous water-stage recorder installed April 23, 1914; inspected by J. P. Meeks.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—One channel at all stages; stream bed composed of sand; shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.7 feet on May 30 (discharge, 1,600 second-feet); minimum stage occurred during January, not recorded.

1912-1922: Maximum stage occurred in 1914 during flood resulting from failure of Hatchtown Dam; discharge not determined. Maximum discharge recorded, 1,600 second-feet August 6, 1916, and May 30, 1922; minimum stage recorded, 2.12 feet from July 8–11, 1919 (discharge, 52 second-feet)

ICE.—Stage-discharge relation affected by ice.

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

REGULATION.—Flow affected by diversions only.

ACCURACY.—Stage-discharge relation for low water changed between May 30 and June 28; affected by ice January 17 to February 15. Rating curves well defined. Water-stage recorder operated satisfactorily except for periods indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Discharge for periods when recorder was not in operation estimated by hydrographic comparison with other stations on Sevier River or interpolated from weekly staff gage readings. Records for periods estimated fair; others good.

Discharge measurements of Sevier River near Circleville, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 1	W. E. Dickinson	2.99	172	June 28	Brice McBride	4.85	665
Apr. 7	Dickinson and McBride[a]	3.31	248	Sept. 30	do	2.84	134

[a] Water commissioner for Sevier River.

Daily discharge, in second-feet, of Sevier River near Circleville, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	135	170		203		165	353	824	1,500		439	
2	146	165	160	206		160	358	845	1,460		368	
3	138	165		210		160	364	887	1,330		341	
4	133	165					380	956	1,340		311	
5	132	169	156				396		1,360		260	
										580		290
6	139	170	154	206			322		1,330		265	
7	136	169	154				250		1,280		287	
8	133	167	148		130		252		1,260		260	
9	131	167		201			230		1,240		240	
10	129	167	150			180	232	1,240	1,170		244	244
11	128	169					238		1,150	314	295	242
12	129	172	153	170			225		1,140			234
13		174	158				220					224
14	130	172	158				210			280		
15		167	163				225				230	
16	132	167	153	149	174	338	208					
17	131	167	139			361	194			247		
18	132	160	148			270	189	1,260		234	178	
19	131	148	167			309	196			330		
20	129	158	206		190	348	230		900	260		
21	130	172	353			374	322					170
22	130	165	530			442	433			230		
23	131	176	296		174	650	513					
24		167	250	110		740	583				250	
25	170	174	220				591	1,480		202		
26		172	200		170	480	538			202		
27	174	165	194				602		680	204		
28	172	169	208				639		665	244		
29	170	169	208		-------	232	767		780	219		
30	174	169	206		-------	262	845	1,600	860	229		136
31	172	-------	203		-------	312	-------	1,530	-------	408	204	-------

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

Monthly discharge of Sevier River near Circleville, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	174	128	142	8,730
November	176	148	168	10,000
December	530	139	194	11,900
January	----------	----------	151	9,280
February	----------	----------	153	8,500
March	----------	----------	297	18,300
April	845	189	370	22,000
May	----------	824	1,290	79,300
June	1,500	665	1,040	61,900
July	----------	----------	362	22,300
August	439	----------	260	16,000
September	----------	----------	214	12,700
The year	----------	----------	388	281,000

SEVIER RIVER NEAR KINGSTON, UTAH

LOCATION.—In NW. ¼ sec. 16, T. 30 S., R. 3 W., 1 mile above site used until September 18, 1918, 2 miles above mouth of East Fork, and 1 mile west of Kingston, Piute County.

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

RECORDS AVAILABLE.—June 12, 1914, to September 30, 1922, also several miscellaneous measurements in 1911, published in Water-Supply Paper 310 as "South Fork near Junction, Utah."

GAGE.—Stevens continuous water-stage recorder on left bank; installed September 20, 1918; inspected by W. S. Price.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—One channel at all stages. Concrete control 10 feet below gage; completely drowned out latter part of year owing to deposits in channel below.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year (observer's reading), 4.92 feet at 4 p.m. May 21 (discharge, 1,460 second-feet); minimum stage, 0.85 foot at 1 p.m. March 17 (discharge, 28 second-feet).

1914–1922: Maximum stage recorded, 4.92 feet at 4. p.m. May 21, 1922 (discharge, 1,460 second-feet); minimum stage, 0.70 foot on July 6, 1919 (discharge, 13 second-feet).

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

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

REGULATION.—Flow affected by diversions for irrigation.

ACCURACY.—Stage-discharge relation probably changed during rising stage between April 22 and May 8. Rating curve used to April 21, well defined below 375 second-feet and extended above; curve used thereafter, well defined. Operation of water-stage recorder satisfactory, except for periods shown in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Discharge for periods of ice effect or missing gage height record, estimated by comparison with records for other Sevier River stations and temperature records. Records good where daily discharge determinations are given except for April, May, and estimated periods for which they are fair.

Discharge measurements of Sevier River near Kingston, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 1	W. E. Dickinson	1.41	158	May 30	Purton and McBride	4.65	1,320
Apr. 7	McBride[a] and Dickinson	1.70	271	June 28	Brice McBride	2.92	531
				Sept. 30	do	1.80	111

[a] Water commissioner for Sevier River.

Daily discharge, in second-feet, of Sevier River near Kingston, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	100	157	180	256			297	693	1,270	865	420	233
2	157	154	184	264			264	706	1,260	732	396	225
3	130	157	167	277			341	715	1,160		322	280
4	116	164	167	232			433	771	1,140		303	432
5	110	161	180		150		437	852	1,200		284	416
6	110	157	191			180	350	1,040	1,150		269	322
7	108	157	187				264	1,200	1,100	450	262	303
8	105	154	194				272	1,290	1,100		215	284
9	100	148	187				256	1,350	1,060		218	273
10	97	142	174	200			256	1,320	1,040		211	266
11	95	139	164				272	1,130	1,040		262	236
12	92	142	187			187	252	982	982		247	229
13	92	142	209			180	244	874	942	211	200	
14	92	164	209			130	236	883	919	166	173	
15	90	167	209		200	71	252	883	883	152	162	185
16	87	174	202			75	236	914		120	152	
17	85	170	187			52	232	960		100	159	
18	83	164	180			155	220	1,100	790	95	166	
19	83	164	202		341	256	220	1,300		211	204	142
20	85	191	224		315	315	232	1,430		169	240	126
21	85	198	341			390	332	1,450	710	110	288	120
22	85	194	600	150		447	440	1,420	689	132	218	129
23	92	198	380			640	508	1,380	650	111	233	125
24	142	198	290			860	548	1,380	624	90	341	120
25	136	220	260		225	650	544	1,370	600	69	311	116
26	133	213	240			442	472	1,420	594	52	295	126
27	139	194	232			540	512	1,440	552	57	211	116
28	145	191	248			442	548	1,450	532	110	166	108
29	145	191	260	148		406	637	1,420	620	92	166	110
30	154	187	256	148	-------	370	689	1,350	820	100	240	110
31	154	-------	260	148	-------	334	-------	1,300	-------	360	225	-------

NOTE.—No gage heights Jan. 5-8, 10-14, 16-21, 23-28, 30, 31, Feb. 1-7, 9-11, 13-18, 23-26, 28, Mar. 1-5, 7-11, 18, 25, 29-31, Apr. 1, 6, June 16-20, 25, July 3-12, 23, 24, Sept. 13-18, 23, and 24. Braced figures show estimated mean discharge for periods indicated.

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Monthly discharge of Sevier River near Kingston, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	157	83	111	6,820
November	220	139	172	10,200
December	600	164	231	14,200
January	277	----------	181	11,100
February	341	----------	198	11,000
March	860	52	288	17,700
April	689	220	357	21,200
May	1,450	693	1,150	70,700
June	1,270	532	886	52,700
July	865	52	278	17,100
August	420	152	244	15,000
September	432	108	202	12,000
The year	1,450	52	359	260,000

PIUTE RESERVOIR NEAR MARYSVALE, UTAH

LOCATION.—In NW. ¼ sec. 3, T. 29 S., R. 3 W., at Piute Dam, 11 miles south of Marysvale, Piute County.

RECORDS AVAILABLE.—March 22, 1914, to September 30, 1922.

GAGE.—Iron pins driven every foot into rock face at outlet gates; readings between foot marks are measured with a graduated scale.

COOPERATION.—Gage-height record furnished by Piute Reservoir & Irrigation Co.

Daily contents, in acre-feet, of Piute Reservoir near Marysvale, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21,000	13,500	19,600	33,000	40,200	51,900	57,800	64,800	80,400	68,000	46,300	38,400
2	20,500	13,600	19,700	33,500	40,300	52,100	58,000	65,400	79,400	68,200	45,900	38,300
3	20,000	13,800	20,000	34,000	40,500	52,500	58,400	64,500	78,500	68,000	45,500	38,200
4	19,400	13,900	20,300	34,600	40,600	52,900	59,200	66,700	77,600	67,800	45,200	38,300
5	18,800	14,100	20,500	35,000	40,900	53,300	60,100	67,700	76,700	67,600	44,800	38,400
6	18,400	14,200	20,800	35,300	41,200	53,500	61,100	69,800	75,800	67,200	44,500	38,700
7	17,900	14,500	21,100	35,600	41,300	53,700	61,800	72,400	75,200	66,900	44,200	38,600
8	17,200	14,700	21,400	35,900	41,800	54,000	62,200	74,800	74,600	66,400	43,500	38,400
9	16,800	14,900	21,800	36,200	42,500	54,400	62,300	76,600	74,100	66,000	43,000	38,300
10	16,500	15,100	22,200	36,500	43,000	54,800	62,100	77,800	73,400	65,200	42,700	38,100
11	15,900	15,300	22,400	36,700	43,600	55,200	61,800	78,100	72,700	64,400	42,400	37,900
12	15,400	15,500	22,800	37,000	44,200	55,500	61,700	77,600	72,100	63,600	42,000	37,800
13	15,000	15,600	23,200	37,200	44,700	55,800	61,600	77,000	71,700	62,600	41,800	37,700
14	14,500	15,800	23,600	37,500	45,100	56,200	61,500	76,200	71,800	61,700	41,500	37,400
15	14,000	16,000	24,000	37,700	45,400	56,800	61,400	75,800	72,000	60,700	42,900	37,100
16	13,700	16,200	24,400	37,900	45,800	57,400	61,300	75,600	71,500	59,600	40,900	36,700
17	13,400	16,500	24,800	38,200	46,300	58,000	61,100	75,200	71,000	58,500	40,700	36,700
18	13,100	16,700	25,000	38,500	46,800	58,500	60,800	75,600	70,900	57,600	40,500	36,200
19	12,800	16,800	25,400	38,600	47,400	58,900	60,400	76,800	70,700	56,600	40,200	35,900
20	12,600	17,000	25,900	38,700	48,000	59,300	60,000	78,800	70,500	55,700	40,000	35,600
21	12,400	17,200	26,600	38,800	48,700	59,600	59,800	80,100	70,400	54,600	39,700	35,200
22	12,300	17,400	27,800	38,900	49,300	60,200	60,000	80,900	70,100	53,600	39,500	34,600
23	12,400	17,600	28,500	39,000	49,600	60,800	60,400	81,500	69,700	52,700	39,500	34,100
24	12,400	17,900	29,100	39,100	50,000	61,300	60,900	81,800	69,300	51,700	39,600	33,700
25	12,400	18,100	29,500	39,200	50,400	61,400	61,900	81,900	68,900	51,200	39,500	33,300
26	12,500	18,300	29,900	39,400	50,700	61,300	62,500	82,000	68,500	50,400	39,500	32,700
27	12,600	18,600	30,400	39,500	51,300	60,600	62,900	82,200	68,000	49,600	39,400	32,200
28	12,800	18,800	30,900	39,600	51,600	60,200	63,000	82,300	67,700	48,900	39,200	31,700
29	12,900	19,000	31,400	39,700	-------	59,400	63,400	82,000	67,700	47,900	39,000	31,100
30	13,100	19,300	32,000	39,900	-------	58,400	64,200	81,500	67,900	47,100	38,800	30,800
31	13,100	-------	32,600	40,100	-------	57,600	-------	80,900	-------	46,700	38,500	-------

SEVIER RIVER BELOW PIUTE DAM, NEAR MARYSVALE, UTAH

LOCATION.—In sec. 34, T. 28 S., R. 3 W., 700 yards below dam of 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, 1922.

GAGE.—Friez water-stage recorder established May 1, 1912, replaced by Stevens continuous water-stage recorder June 17, 1922; inspected by M. C. Jensen.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel. One channel at all stages. Control is a riffle of heavy gravel and rocks located at gage, shifting only during high stages.

EXTREMES OF DISCHARGE.—Maximum stage, 4.45 feet between 6 p. m. May 23 and 8 a. m. May 24 (discharge, 2,600 second-feet); minimum stage, −0.42 foot February 6–12 (discharge, 7 second-feet).

1911–1922: Maximum stage, that of May 23 and 24, 1922; minimum discharge practically zero when reservoir gates were closed April 5–10, 1919.

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

DIVERSIONS.—No water diverted between this station and Piute Reservoir.

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

ACCURACY.—Stage-discharge relation changed about May 5 and June 18. Rating curves fairly well defined. Operation of water-stage recorder satisfactory except June 15 and 16. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graphs; shifting-control method used May 5–10 and June 19–27. Discharge estimated for June 15 and 16. Records fair.

Discharge measurements of Sevier River below Piute Dam, near Marysvale, Utah, during the year ending September 30, 1922

Date	Made by–	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 31	W. E. Dickinson	1.13	206	May 30	A. B. Purton	4.40	2,500
Apr. 4	Dickinson and McBride [a]	.70	111	June 17	Brice McBride	2.91	1,000
8	do	1.23	241				

[a] Water commissioner for Sevier River.

Daily discharge, in second-feet, of Sevier River below Piute Dam, near Marysvale, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	513	204	131	12	70	30	320	1,220	2,380	736	743	562
2	513	204	113	10	70	30	320	1,220	2,300	750	750	568
3	508	204	115	20	70	30	270	1,240	2,220	736	673	568
4	519	204	115	34	50	30	90	1,250	2,150	722	645	568
5	519	185	115	40	12	30	111	1,280	2,080	708	652	574
6	513	177	115	40	7	30	113	1,420	1,990	680	659	580
7	508	149	103	40	7	30	250	1,900	1,900	659	645	574
8	502	149	75	40	7	30	330	2,240	1,810	645	638	574
9	492	149	66	48	7	30	559	2,410	1,720	645	645	568
10	455	149	66	57	7	30	559	2,400	1,620	680	624	580
11	445	149	66	57	7	30	542	2,350	1,570	673	586	580
12	445	149	66	57	7	30	475	2,320	1,490	666	592	574
13	445	149	66	60	20	30	415	2,300	918	694	604	556
14	440	149	65	67	32	30	406	2,240	966	715	598	545
15	445	149	65	70	32	30	406	2,170	1,000	722	592	545
16	450	149	66	68	30	30	420	2,140	1,050	736	586	586
17	415	149	66	68	30	30	554	2,140	1,020	757	580	604
18	392	145	66	68	30	80	565	2,200	950	743	586	592
19	340	145	65	68	30	123	565	2,320	846	729	592	598
20	283	145	59	68	30	129	565	2,380	729	722	592	610
21	262	145	50	68	30	137	554	2,380	838	722	592	604
22	262	145	50	67	30	151	530	2,430	814	736	592	610
23	259	145	49	68	30	273	530	2,480	790	743	592	619
24	259	145	49	68	30	519	536	2,530	774	736	592	610
25	256	145	49	68	30	844	548	2,500	758	736	598	610
26	218	145	49	68	30	884	774	2,500	736	736	598	638
27	204	145	49	68	30	876	884	2,520	722	729	598	638
28	204	145	49	68	30	868	966	2,520	715	743	598	631
29	204	145	49	68	-------	746	958	2,510	708	757	592	631
30	204	145	36	68	-------	634	1,140	2,500	715	750	592	624
31	204	-------	18	68	-------	542	-------	2,440	-------	743	568	-------

Monthly discharge of Sevier River below Piute Dam, near Marysvale, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	519	204	377	23,200
November	204	145	157	9,340
December	131	18	69.7	4,290
January	70	10	56.1	3,450
February	70	7	28.4	1,580
March	884	30	236	14,500
April	1,140	90	508	30,200
May	2,530	1,220	2,150	132,000
June	2,380	708	1,280	76,200
July	757	645	718	44,100
August	750	568	616	37,900
September	638	545	590	35,100
The year	2,530	7	568	412,000

SEVIER RIVER AT SEVIER, UTAH

LOCATION.—In E. ½ sec. 32, T. 25 S., R. 4 W., at Sevier, Sevier County, 100 yards above railroad bridge on Y spur, and 50 yards west of main-line track of Denver & Rio Grande Western Railroad. Clear Creek enters Sevier River immediately above this station. Prior to November 15, 1916, Clear Creek entered Sevier River 45 yards below this station.

DRAINAGE AREA.—2,850 square miles including Clear Creek which was diverted, into Sevier River above this station on November 15, 1916; 2,700 square miles exclusive of Clear Creek. Areas measured on topographic maps.

RECORDS AVAILABLE.—May 20, 1911, to September 30, 1922.

GAGE.—Stevens continuous water-stage recorder on right bank; installed March 30, 1920; inspected by R. W. Levie.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Channel straight. Control composed of coarse gravel about 75 feet below gage; somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum discharge estimated, 2,800 second-feet occurring during last week in May; minimum stage not determined.

1911-1922: Maximum discharge, estimated 2,800 second-feet during last week in May, 1922; minimum stage, 1.15 feet at 2. p. m. November 27, 1919 (discharge, 10 second-feet).

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

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

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

ACCURACY.—Stage-discharge relation changed March 24 and about May 8. Rating curves fairly well defined. Water-stage recorder operated successfully, except for periods indicated in footnote in daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height from water-stage recorder, except for periods of missing gage heights when discharge was estimated from hydrographic comparison with record for Sevier River below Piute Dam. Gage-height record May 24 to June 25 was not used because of doubtful accuracy and discharge was estimated. Records fair.

Discharge measurements of Sevier River at Sevier, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 31	W. E. Dickinson	2.31	239	June 29	Brice McBride [b]	[a] 4.93	932
Apr. 4	Dickinson and McBride	2.08	193	July 31	do	[a] 4.48	872
8	do	2.45	306				

[a] Intake to gage well clogged.
[b] Sevier River water commissioner.

Daily discharge, in second-feet, of Sevier River at Sevier, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	535	239	190	84	123	51	640	1,260		946	870	676
2	540	239	172	82	122	59	410	1,320		953	870	676
3	535	239	158	80	121		410	1,360		960	870	694
4	530	239	154	58	120	65	186	1,360			820	700
5	530	239	151	62	68		203	1,380			770	688
6	535	214	151	59	55	71	193	1,510		880		688
7	535	203	151	80		63	193	1,660	2,300		770	688
8	525	190	134	82		64	265	1,890				670
9	525	190	112	80		60	458					658
10	500	187	107	95	55	74	654			800	770	658
11	490	187	109	98		74	671				740	658
12	490	187	105	95		74	626				710	658
13	490	187	105	93	55	74	567					652
14	490	187	109	102	65	90	521			840		616
15	488	187	109	110	80	102	511				710	610
16	486	187	96	118	80	107	511					622
17	481	187	79	118	79	92	572				712	670
18	431	187	130	114	85	81	665			880	712	652
19	413	187	136		87	111	677			865	718	652
20	350	187	128		84	154	671	2,700		850	760	670
21	305	187	128		82	175	705		1,100		730	670
22	295	187	120		75	192	711				736	664
23	288	187	112		75	242	729				742	670
24	298	184	96	120	75	389	746			850	742	670
25	298	190	111		75	665	764				736	664
26	288	187	109		75	870	770				736	664
27	248	187	107		78	1,000	985				736	676
28	245	187	109		71	1,000	1,050			850	736	676
29	239	187	109	124	-------	1,000	1,120		932	857	712	670
30	239	190	107	124	-------	860	1,180		939	865	694	670
31	239	-------	96	123	-------	730	-------		-------	872	694	-------

NOTE.—Discharge estimated Oct. 11–15, Nov. 15–19, Jan. 15, 19–28, Jan. 30 to Feb. 4, Feb. 6–12, 14–16, Mar. 3–5, 11, 12, Mar. 27 to Apr. 3, May 9 to June 28, June 30 to July 30, and Aug. 1–16. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Sevier River at Sevier, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	540	239	416	25,600
November	239	184	197	11,700
December	190	79	122	7,500
January	124	58	103	6,330
February	123	----------	77.2	4,290
March	1,000	51	281	17,300
April	1,180	186	612	36,400
May	----------	1,260	2,380	146,000
June	----------	----------	1,610	95,800
July	960	----------	865	53,200
August	870	694	750	46,100
September	700	610	665	39,600
The year	----------	----------	677	490,000

SEVIER RIVER NEAR VERMILION, UTAH

LOCATION.—In 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 23, 1912; July 31, 1914, to September 30, 1922.

GAGE.—Stevens continuous water-stage recorder on right bank; installed April 20, 1917; inspected by Mrs. Will Barron and Orsen Wilkinson.

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

CHANNEL AND CONTROL.—Fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, about 8.1 feet May 30 (discharge, 2,400 second-feet); minimum stage, 3.52 feet on July 14 (discharge, 24 second-feet).

1914–1922: Maximum stage that of May 30, 1922; minimum discharge, 2 second-feet in July and August, 1915, and July, 1919.

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

DIVERSIONS.—Entire flow usually diverted above station during low-water season. Flow past station at such times represents seepage and return flow below Rockyford Dam.

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

ACCURACY.—Stage-discharge relation changed slightly about March 29. Rating curves well defined. Water-stage recorder operated satisfactorily except as indicated in footnote to daily-discharge table. Shifting-control method used March 24–29. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Records good.

Discharge measurements of Sevier River near Vermilion, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 30	W. E. Dickinson	4.56	215	July 14	Brice McBride[a]	3.52	23.3
Apr. 3	McBride and Dickinson	5.28	547	Sept. 27	do	4.04	95.8
9	Dickinson and McBride	4.76	291				

[a] Water commissioner for Sevier River.

Daily discharge, in second-feet, of Sevier River near Vermilion, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	82	246	249	219		178	886	357	2,250	472	230	150
2	80	246	246		175	174	760	415	2,170	521	265	164
3	84	246	240			170	565	521	2,160	532	269	167
4	84	246	237		170	165	510	538	2,120	472	281	179
5	86	252	231	180	170	172	457	565	2,090	441	277	192
6	88	252	228		172	170	376	594	2,080	405	234	190
7	99	243	225	145	165	165	289	688		353	224	187
8	114	231	225	145	168	165	227	826		281	218	182
9	122	216	237	145	188	165	289	982		244	209	162
10	122	219	234	145	219	162	348	1,160		150	200	150
11	129	231	237	145	190	168	516	1,370	{1,640	100	190	141
12	158	234	252	145	185	168	611	1,550		70	169	138
13	201	231	234	145	180	175	635	1,630		50	150	138
14	243	243	234	145	172	190	600	1,660		24	155	129
15	286	231	231	145	175	195	554	1,670	1,200	25	148	123
16	262	219	228	145	178	204	483	1,720		26	123	116
17	216	240	213	150	188	243	488	1,720		27	106	114
18	213	246	207	150	195	234	510	1,670		27	95	116
19	222	246	231	148	210	204	565	1,640		30	91	114
20	258	255	240	145	207	210	571	1,650	935	48	91	110
21	286	266	237		204	243	532	1,680		174	93	106
22	225	258	240		195	243	499	1,750		331	95	106
23	225	246	249		182	266	478	1,830		172	104	102
24	237	243	243		188	302	426	1,900		119	119	96
25	266	255	228		192	358	446	1,970	670	116	127	95
26	246	266	234	165	185	465	372	2,030		116	127	93
27	231	255	249		185	665	258	2,160		106	119	95
28	222	255	237		182	858	289	2,200	570	119	114	98
29	216	255	231		-------	958	314	2,350		164	112	104
30	210	252	228		-------	994	326	2,370		184	110	106
31	216	-------	225		-------	958	-------	2,350		195	112	-------

NOTE.—Mean discharge interpolated or estimated from comparison with Gunnison record Jan. 2-6, 21-31, Feb. 1-3, Mar. 2, 3, May 30 to June 1, June 7-30, and July 10-13. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Sevier River near Vermilion, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	286	80	185	11,400
November	266	216	244	14,500
December	252	207	234	14,400
January	-------	-------	161	9,900
February	219	165	185	10,300
March	994	162	322	19,800
April	886	227	473	28,100
May	2,370	357	1,470	90,400
June	2,250	-------	1,300	77,400
July	532	24	197	12,100
August	281	91	160	9,840
September	192	93	132	7,860
The year	2,370	24	450	306,000

SEVIER RIVER BELOW SAN PITCH RIVER, NEAR GUNNISON, UTAH

LOCATION.—In NE. ¼ sec. 14, T. 19 S., R.1 W., half a mile below former gaging station at bridge on county road from Gunnison to West View precinct, 3 miles west of Gunnison, Sanpete County. San Pitch River enters from east 1,000 feet above station.

DRAINAGE AREA.—4,880 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1917, to September 30, 1922. Records of Sevier River near Gunnison above confluence of San Pitch River were obtained June 29, 1900, to September 30, 1917. Combined flow of Sevier River near Gunnison and San Pitch River near Gunnison is comparable with flow at present station.

GAGE.—Stevens continuous water-stage recorder on left bank; installed October 4, 1917; inspected by Annetta Kenney and Ludeen Christensen.

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

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

EXTREMES OF DISCHARGE.—Maximum stage during year, 5.32 feet at 2 a. m. June 1 (discharge, 2,620 second-feet); minimum stage, 2.16 feet at 10 p. m. July 18 (discharge, 128 second-feet).

1918–1922: Maximum stage, that of June 1, 1922; minimum stage, 0.19 foot July 30, 1919 (discharge, 57 second-feet).

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

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

REGULATION.—Flow at gage is affected by operation of reservoirs and numerous irrigation diversions above.

ACCURACY.—Stage-discharge relation permanent to first part of May and shifted continually during rest of year. Rating curves fairly well defined. Operation of water-stage recorder satisfactory except January 22 and 23. Shifting-control method used May 11 to September 30. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. For days when recorder was not in operation, discharge interpolated or estimated. Records October to April good; May to September fair.

Discharge measurements of Sevier River below San Pitch River, near Gunnison, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 29	W. E. Dickinson	1.77	449	June 20	Brice McBride	3.94	1,050
Apr. 2	McBride [a] and Dickinson	3.28	1,300	July 2	do	3.30	565
10	do	1.94	506	15	do	2.20	137
May 21	Brice McBride	4.49	1,790	28	do	2.42	275
June 2	Purton and McBride	5.16	2,510	Aug. 22	do	2.62	401
15	Brice McBride	4.45	1,510	Sept. 24	do	2.36	260

[a] Water commissioner for Sevier River.

Daily discharge, in second-feet, of Sevier River below San Pitch River, near Gunnison, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	225	424	427	409	391	641	1,310	588	2,580	617	339	435
2	241	431	431	398	357	612	1,260	602	2,550	565	379	350
3	257	431	420	395	350	602	1,130	641	2,450	565	461	358
4	263	431	413	367	357	617	922	736	2,410	553	466	375
5	263	435	391	334	360	593	770	815	2,380	505	450	387
6	274	438	395	324	357	560	692	970	2,320	478	425	392
7	289	438	402	311	347	534	631	1,020	2,250	430	400	375
8	302	435	402	311	343	521	542	1,020	2,200	379	379	354
9	317	424	388	311	381	517	484	1,130	2,120	343	379	343
10	324	406	398	311	476	513	509	1,210	2,020	320	371	324
11	324	406	391	308	465	525	547	1,270	1,930	234	354	302
12	334	413	395	311	406	521	646	1,310	1,810	173	339	288
13	357	424	402	305	381	521	792	1,480	1,680	157	328	288
14	384	420	402	302	364	552	934	1,700	1,580	147	316	284
15	402	413	406	311	353	607	898	1,880	1,500	137	316	281
16	438	388	391	314	367	626	880	1,880	1,380	137	313	274
17	431	391	367	327	388	677	792	1,840	1,280	137	302	270
18	398	398	350	340	416	736	742	1,900	1,200	137	291	267
19	395	395	384	330	420	725	775	1,940	1,120	140	284	264
20	409	406	450	305	424	731	770	1,880	1,060	167	328	267
21	435	413	450	300	457	798	742	1,800	1,010	157	383	270
22	427	420	438	300	488	892	742	1,830	952	218	366	267
23	406	413	453	320	504	958	725	1,940	895	298	316	264
24	438	402	424	343	473	1,010	698	2,060	839	244	328	260
25	457	413	402	350	530	994	682	2,130	760	221	313	260
26	457	420	424	353	583	970	682	2,190	722	240	309	260
27	457	416	446	364	636	988	626	2,250	679	264	309	260
28	450	413	442	364	656	1,050	547	2,310	624	274	302	264
29	446	413	427	370	-------	1,180	542	2,450	644	264	298	264
30	435	416	420	370	-------	1,280	597	2,540	644	291	298	264
31	431	-------	420	391	-------	1,280	-------	2,560	-------	309	316	-------

Monthly discharge of Sevier River below San Pitch River, near Gunnison, Utah, for the year ending September 30, 1922.

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	457	225	370	22,800
November	438	388	416	24,800
December	453	350	411	25,300
January	409	300	337	20,700
February	656	343	430	23,900
March	1,280	513	753	46,300
April	1,310	484	754	44,900
May	2,560	588	1,610	99,000
June	2,580	624	1,520	90,400
July	617	137	294	18,100
August	466	284	347	21,300
September	435	260	304	18,100
The year	2,580	137	629	456,000

SEVIER BRIDGE RESERVOIR NEAR JUAB, UTAH

LOCATION.—In NW. ¼ sec. 1, T. 17 S., R. 2 W., at dam of Consolidated Sevier Bridge Reservoir Co., 13 miles southwest of Juab, Juab County.

RECORDS AVAILABLE.—January 1, 1914, to September 30, 1922.

GAGE.—Inclined staff gage about 100 feet upstream from south end of dam, since April 26, 1914.

COOPERATION.—Gage-height record furnished by Consolidated Servier Bridge Reservoir Co.

Daily contents, in acre-feet, of Sevier Bridge Reservoir near Juab, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	66,900	78,700	104,000	133,000	150,000	177,000	221,000	236,000	249,000	237,000	201,000	175,000
2	66,100	79,600	105,000	134,000	151,000	178,000	223,000	233,000	250,000	236,000	200,000	175,000
3	65,100	80,600	106,000	135,000	151,000	178,000	225,000	231,000	250,000	235,000	200,000	175,000
4	64,600	81,300	107,000	136,000	151,000	179,000	227,000	230,000	250,000	235,000	200,000	174,000
5	64,000	82,000	108,000	137,000	152,000	180,000	228,000	229,000	250,000	234,000	199,000	173,000
6	63,500	82,900	109,000	138,000	152,000	181,000	230,000	230,000	250.000	233,000	199,000	173,000
7	63,500	83,900	110,000	138,000	152,000	182,000	233,000	231,000	250,000	232,000	199,000	173,000
8	63,500	84,900	111,000	139,000	153,000	184,000	235,000	231,000	249,000	230,000	198,000	172,000
9	63,500	85,800	112,000	140,000	153,000	186,000	238,000	231,000	249,000	230,000	197,000	172,000
10	63,500	86,800	113,000	141,000	154,000	188,000	239,000	231,000	248,000	228,000	196,000	171,000
11	63,500	87,800	114,000	141,000	154,000	190,000	240,000	231,000	247,000	227,000	196,000	171,000
12	64,400	88,700	115,000	142,000	154,000	192,000	242,000	233,000	248,000	225,000	194,000	171,000
13	65,100	89,700	116,000	143,000	155,000	194,000	243,000	234,000	246,000	225,000	192,000	170,000
14	65,700	90,700	116,000	143,000	155,000	195,000	244,000	235,000	245,000	224,000	191,000	169,000
15	66,400	91,700	117,000	144,000	156,000	196,000	246,000	236,000	245,000	223,000	190,000	168,000
16	67,100	92,700	118,000	144,000	157,000	198,000	247,000	238,000	245,000	220,000	189,000	167,000
17	67,700	93,800	119,000	145,000	157,000	199,000	248,000	241,000	245,000	219,000	188,000	166,000
18	68,400	94,800	119,000	145,000	158,000	200,000	249,000	245,000	245,000	217,000	188,000	166,000
19	69,100	95,100	120,000	145,000	159,000	202,000	251,000	245,000	246,000	216,000	186,000	165,000
20	69,600	95,100	121,000	146,000	161,000	202,000	251,000	246,000	246,000	215,000	186,000	164,000
21	70,200	96,000	123,000	147,000	163,000	203,000	248,000	247,000	245,000	213,000	186,000	163,000
22	70,500	96,900	124,000	047,000	165,000	205,000	247,000	247,000	245,000	212,000	185,000	162,000
23	71,300	97,700	125,000	147,000	167,000	206,000	246,000	246,000	244,000	211,000	184,000	161,000
24	72,100	98,600	126,000	148,000	170,000	207,000	246,000	246,000	244,000	211,000	184,000	160,000
25	72,900	99,500	127,000	148,000	172,000	207,000	246,000	246,000	243,000	210,000	182,000	159,000
26	73,800	100,000	128,000	148,000	174,000	209,000	245,000	245,000	242,000	208,000	181,000	158,000
27	74,700	101,000	129,000	149,000	175,000	211,000	244,000	245,000	241,000	206,000	180,000	158,000
28	75,400	102,000	130,000	149,000	176,000	213,000	243,000	246,000	240,000	205,000	179,000	157,000
29	76,100	103,000	131,000	149,000	-------	214,000	241,000	246,000	239,000	204,000	178,000	156,000
30	76,900	103,000	131,000	150,000	-------	216,000	238,000	247,000	237,000	202,000	176,000	156,000
31	77,600	-------	132,000	150,000	-------	218,000	-------	248,000	-------	201,000	175,000	-------

SEVIER RIVER NEAR JUAB, UTAH

LOCATION.—In NE. ¼ sec. 2, T. 17 S., R. 2 W., 1,600 feet downstream from Sevier Bridge Dam and 13 miles southwest of Juab, Juab County.

DRAINAGE AREA.—5,120 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 23, 1911, to September 30, 1922.

GAGE.—Stevens continuous water-stage recorder on left bank; installed April 16, 1914; inspected by H. F. Stout and O. E. Howard.

DISCHARGE MEASUREMENTS.—Made from cable 600 feet above gage or by wading.

CHANNEL AND CONTROL.—One channel at all stages. Bed composed of sand, clay, and fine gravel. Artificial control of rocks about 40 feet below gage; shifts a little.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year (observer's reading), 8.50 feet at 7 p. m. June 2 (discharge, 2,140 second-feet); minimum stage, 1.2 feet December 6–18 and January 6 to February 6 (discharge, 3 second-feet).

1911–1922: Maximum stage recorded, that of June 2, 1922; no flow March 7, 1918.

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

DIVERSIONS.—None between this station and that near Gunnison.

REGULATION.—Flow controlled by gates in dam just above station.

ACCURACY.—Stage-discharge relation permanent to about June 21 and shifted continually after that date. Standard rating curve well defined. When water-stage recorder was not in operation, staff gage was read to hundredths once a day. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph or staff gage reading. Records good.

COOPERATION.—Water commissioner for Sevier River made seven measurements during year.

Discharge measurements of Sevier River near Juab, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 8	W. E. Dickinson	1.27	7.5	July 21	Brice McBride	4.40	854
June 4	Brice McBride [a]	8.45	2,110	Aug. 13	do	4.70	890
18	do	5.28	1,070	19	do	3.88	670
July 3	do	4.84	977	Sept. 23	do	4.08	780

[a] Water commissioner for Sevier River.

Daily discharge, in second-feet, of Sevier River near Juab, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	801	7	7	6	3	8	9	1,080	2,090	997	601	677
2	798	7	7	6	3	8	9	1,080	2,140	967	589	646
3	677	7	7	6	3	8	9	1,080	2,110	979	586	638
4	485	7	7	6	3	8	14	1,070	2,120	982	583	618
5	468	7	7	6	3	9	14	910	2,120	979	586	592
6	491	7	3	3	3	9	14	610	2,110	976	586	595
7	453	7	3	3	6	9	18	674	2,120	958	580	580
8	365	7	3	3	6	9	18	646	2,100	919	642	541
9	327	7	3	3	6	9	24	780	2,070	925	762	529
10	327	7	3	3	5	9	24	768	2,020	874	831	526
11	94	7	3	3	5	9	24	780	1,990	819	894	529
12	9	7	3	3	5	9	31	780	1,560	807	886	577
13	9	7	3	3	5	9	31	730	2,010	780	890	665
14	9	7	3	3	6	9	31	756	1,800	783	890	704
15	9	7	3	3	6	9	31	816	1,320	810	804	774
16	9	7	3	3	6	9	31	886	1,320	843	665	756
17	9	7	3	3	6	9	124	894	1,060	846	665	659
18	85	7	3	3	6	9	232	946	1,060	852	665	686
19	85	7	6	3	6	8	408	1,010	1,050	789	626	707
20	85	7	6	3	6	8	704	1,090	1,030	789	514	753
21	85	7	6	3	6	8	1,210	1,280	902	855	692	762
22	85	7	6	3	6	8	1,180	1,700	1,150	686	730	756
23	7	7	6	3	7	8	1,170	1,790	1,140	514	783	762
24	7	7	6	3	7	8	1,150	1,950	1,140	689	804	780
25	7	7	6	3	7	8	1,130	1,950	1,170	913	834	753
26	7	7	6	3	7	8	1,130	1,920	1,220	910	837	742
27	7	7	6	3	8	8	1,100	1,940	1,180	867	834	653
28	7	7	6	3	8	9	1,050	1,950	1,210	816	819	668
29	7	7	6	3	-------	9	1,080	1,970	1,180	816	801	668
30	7	7	6	3	-------	9	1,080	2,010	1,140	816	804	677
31	7	-------	6	3	-------	9	-------	2,040	-------	753	777	-------

NOTE.—No record Mar. 25; discharge interpolated.

Monthly discharge of Sevier River near Juab, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	801	7	188	11,600
November	7	7	7.0	417
December	7	3	4.9	301
January	6	3	3.5	214
February	8	3	5.5	305
March	9	8	8.6	528
April	1,210	9	436	25,900
May	2,040	610	1,220	75,000
June	2,140	902	1,550	92,200
July	997	514	849	52,200
August	894	514	728	44,800
September	780	526	666	39,600
The year	2,140	3	474	343,000

SEVIER RIVER AT OASIS, UTAH

LOCATION.—In E. ½ sec. 33, T. 17 S., R. 7 W., three-quarters of a mile northwest of Oasis, Millard County, and 1½ miles below county bridge, locally known as Hinckley Bridge.

DRAINAGE AREA.—8,080 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 13, 1912, to September 30, 1922.

GAGE.—Stevens continuous water-stage recorder on left bank installed April 24, 1914; inspected by Alfred Stanworth and J. M. Jackson.

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

CHANNEL AND CONTROL.—Two channels at extremely high water, one channel at low and medium stages. Bed composed of sand with some aquatic vegetation. Control is fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, 9.81 feet from 4 to 9 p. m. June 17 (discharge, 1,570 second-feet); minimum stage not recorded.

1912–1922: Maximum discharge, 1,580 second-feet June 12, 1914; minimum discharge, 0.5 second-foot May 13–19, 1912.

ICE.—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 times is largely seepage or return water entering below Gunnison Bend Reservoir.

REGULATION.—Flow controlled by storage reservoirs and diversion dams above station.

ACCURACY.—Stage-discharge relation changed during high water the last week in May and again September 1. Rating curves fairly well defined. Water-stage recorder operated successfully, except for periods indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph or weekly reading obtained when recorder was not in operation. Discharge for periods of missing gage heights interpolated or estimated from information furnished by water commissioner for Sevier River. 8,000 acre-feet released from Gunnison Bend Reservoir February 24–28. Records fair.

COOPERATION.—Four discharge measurements made by water commissioner for Sevier River.

Discharge measurements of Sevier River at Oasis, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 8	W. E. Dickinson	2.00	28.1	July 26	Brice McBride	1.98	22.4
May 1	Brice McBride[a]	6.88	684	Sept. 20	do	2.26	42.3
June 7	do	9.10	1,300				

[a] Water commissioner for Sevier River.

Daily discharge, in second-feet, of Sevier River at Oasis, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	34		27	33			630	1,010	133	35	144
2	34	28		27				726	1,050	114	38	214
3	36	26	28	28		75	17	670	1,120	94	36	142
4	44	25			32			539	1,220		32	117
5	116	25	28					287	1,250		30	82
6		26		55		75		370	1,280	70	32	67
7	86	28			30			306	1,300		31	45
8		27						76	1,300		32	40
9			30					67	1,300	46	32	38
10	57			83		88		59	1,330	48	32	39
11	55	28			34		52	57	1,350	47	34	41
12	48		32					51	1,350	45	34	48
13	42			73		100		48	1,330	39	32	46
14	38				37			50	1,320	36	30	41
15	38	28						52	1,180	32	29	40
16	36		32	63		86		52	1,220	35	30	40
17	36				40			55	1,550	34	30	39
18	36						14	55	1,320	29	30	40
19	36	29				73		57	964	28	30	40
20	36		32	43	43			62	628	28	28	41
21	34						520	60	314	26	28	40
22	32	30			43		520	64	224	26	30	39
23	32						520	90	210	24	32	40
24	34		29	23		68	1,030	400	144	23	34	39
25	30							906	89	22	34	39
26	30	30			830		970	955	141	23	36	39
27			26	28				997	161	26	39	39
28	36							1,080	252	27	40	39
29			27		-------	64	910	1,110	150	28	36	39
30		29			-------	40	521	1,090	98	28	35	38
31	43	-------			-------	40	-------	1,030	-------	30	39	-------

NOTE.—Braced figures show estimated mean discharge for periods indicated, when no gage-height records were obtained. Discharge also estimated Oct. 1, Nov. 6, Jan. 1–2, Mar. 30–31, Apr. 21–23, Sept. 1–2.

Monthly discharge of Sevier River at Oasis, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	116	30	46.6	2,870
November	----------	----------	28.6	1,700
December	----------	----------	29.5	1,810
January	----------	----------	46.5	2,860
February	----------	----------	178	9,890
March	----------	----------	75.4	4,640
April	1,030	----------	286	17,000
May	1,110	48	389	23,900
June	1,550	89	872	51,900
July	133	22	45.8	2,820
August	40	28	32.9	2,020
September	214	38	57.8	3,440
The year	1,550	----------	172	125,000

EAST FORK OF SEVIER RIVER NEAR KINGSTON, UTAH

LOCATION.—In SW. ¼ sec. 13, T. 30 S., R. 3 W., 1 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, 1922. Records obtained about 1½ miles above Rockyford Bridge, in SW. ¼ sec. 16, T. 30 S., R. 2½ W., March 27, 1913, to April 28, 1914; also at gage three-fourths of a mile north of Kingston, in NE. ¼ sec. 10, T. 30 S., R. 3 W., May 11 to September 20, 1912.

GAGE.—Stevens continuous water-stage recorder on right bank, 1 mile below highway bridge; established April 29, 1914; inspected by W. S. Price.

DISCHARGE MEASUREMENTS.—Made from cable 2 miles above gage, from highway bridge 1 mile above, or by wading.

CHANNEL AND CONTROL.—One channel at all stages. Right bank is overflowed during high water. Bed composed of gravel. Concrete control built December 4-11, 1917, 20 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage during year, 610 feet on May 8 (discharge, 1,740 second-feet). Minimum stage not recorded.

1913–1922: Maximum stage recorded, that of May 8, 1922; minimum stage, 1.00 foot September 19–21, 1913 (discharge, 8 second-feet).

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

DIVERSIONS.—Above all diversions near Kingston.

REGULATION.—Flow affected by operation of gates at Otter Creek Reservoir 8 miles above.

ACCURACY.—Stage-discharge relation changed about May 9; affected by ice parts of January and February. Rating curves fairly well defined. Operation of water-stage recorder satisfactory, except during parts of January and February when well was frozen and during a few short periods in May. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Discharge for ice periods estimated from observer's notes and temperature records. Records good.

Discharge measurements of East Fork of Sevier River near Kingston, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 1	W. E. Dickinson	3.06	60.8	June 1	Purton and McBride	4.60	702
Apr. 5	McBride[a] and Dickinson	3.82	284	26	Brice McBride	2.78	52.6

[a] Water commissioner for Sevier River.

Daily discharge, in second-feet, of East Fork of Sevier River near Kingston, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	60	63	19	25		21	146	738	700	65	186	259
2	56	65	20	27		21	140	750	630	50	180	256
3	58	66	19	28		22	177	785	540	48	174	256
4	56	66	22	26		20	234	856	480	46	174	262
5	56	68	37			20	268	820	410	46	174	262
6	58	68	41			19	220	1,150	386	42	174	256
7	58	66	44			22	228	1,690	378	41	174	248
8	58	68	47			19	231	1,680	350	38	177	248
9	60	66	43			21	217	1,430	284	38	190	252
10	60	66	44	20	18	19	214	1,320	242	40	193	245
11	61	41	41			20	210		225	54	222	238
12	61	37	36			20	206	1,020	190	54	225	235
13	61	33	29			22	203		174	56	245	215
14	61	28	19			22	193		152	53	242	218
15	61	24	19			27	193	930	141	48	238	218
16	61	22	17			36	186	984	129	71	238	218
17	61	19	38			58	180	1,030	118	118	238	218
18	61	16	36			32	177		112	116	238	215
19	61	14	36		28	33	180	1,240	103	99	231	215
20	61	14	22		29	43	190		97	92	235	222
21	60	16	23		28	54	220	1,460	80	120	245	222
22	61	16	29		22	60	280	1,300	72	166	266	222
23	61	16	25		20	96	351	1,300	72	166	266	218
24	66	16	23	15	20	108	445	1,300	68	166	273	215
25	66	20	35		21	118	466	1,300	53	171	273	212
26	66	20	27		21	89	502		50	180	270	215
27	65	20	22		21	124	535	1,030	50	180	270	225
28	65	19	22		20	113	630		48	174	262	225
29	65	19	22		------	------	708		72	174	256	225
30	65	19	25		------	130	708	858	74	190	248	231
31	65	------	25		------	------	------	782	------	183	252	------

Note.—Braced figures show estimated mean discharge for periods indicated when gage-height record was not obtained.

Monthly discharge of East Fork of Sevier River near Kingston, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	66	56	61.1	3,760
November	68	14	36.4	2,170
December	47	17	29.3	1,800
January	28	------	18.3	1,130
February	29	------	19.8	1,100
March	------	19	53.8	3,310
April	708	140	295	17,600
May	1,690	738	1,110	68,200
June	700	48	216	12,900
July	190	38	99.5	6,120
August	273	174	227	14,000
September	262	212	232	13,800
The year	1,690	------	201	146,000

ROCKYFORD CANAL NEAR VERMILION, UTAH

LOCATION.—In sec. 19, T. 22 S., R. 1 W., 300 feet below head of canal and 2 miles northeast of Vermilion, Sevier County.

RECORDS AVAILABLE.—July 8, 1914, to September 30, 1922.

GAGE.—Stevens continuous water-stage recorder on left bank; installed October 18, 1917; inspected by Mrs. Will Barron.

DISCHARGE MEASUREMENTS.—Made from highway bridge 400 feet downstream or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and clay; shifts somewhat.

ICE.—Stage-discharge relation affected at times by ice.

DIVERSIONS.—None above gage. Gage is a short distance below wasteway which returns surplus water to Sevier River.

REGULATION.—Flow controlled by head gates and wasteway.

ACCURACY.—Stage-discharge relation changed several times May 22 to September 30, but permanent rest of year. Standard rating curve used with shifts to parallel curves. Operation of water-stage recorder satisfactory, except as stated in footnote to daily-discharge table. Staff gage readings were obtained about once a week during year. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph or staff gage readings. Records good for November, December, and April; rest fair.

Canal diverts water from Rockyford Reservoir, a small reservoir on Sevier River at Vermilion in sec. 19, T. 22 S., R. 1 W. Flow dependent on water stored in reservoir and seepage and return waters below Richfield. Water used for irrigation north of Vermilion.

Discharge measurements of Rockyford Canal near Vermilion, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 30	W. E. Dickinson	1.14	13.3	July 1	Brice McBride	2.38	79.9
Apr. 3	Dickinson and McBride[a]	1.87	52.2	14	do	2.69	90.5
May 7	Brice McBride	2.28	79.2	Aug. 8	do	2.30	77.1
June 2	A. B. Purton	2.52	85.0	Sept. 27	do	2.10	73.1

[a] Water commissioner for Sevier River.

Daily discharge, in second-feet, of Rockyford Canal near Vermilion, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	27	24	20		34	57	53	84	79	81	71
2		39	26	21			51	54	86	80	79	70
3		39	26	21	24		51	64	85	80	79	70
4		39	24	21			49	70	84	80	81	71
5		39	24				48	69	84	78	79	73
6		40	24		24		48	69	40	74	78	74
7	40	38	24		24		44	75	7	69	78	74
8		35	24		24	35	41	79	2	60	77	74
9		36	25	21	24		39	80	2	53	76	70
10		36	25		24		44	77	20	40	76	66
11		26	25		24		47	60	60	86	76	66
12	39	8	25		24		48	62	71	89	72	67
13		18	25		24		46	66	79	91	69	67
14		24	26	20	24	36	46	66	89	89	69	66
15	39	24	26		24	36	46	65	90	90	70	65
16		24	26	20	24	36	46	66	89	92	74	65
17		24	26		24	36	46	69	87	91	79	65
18		24	26		24	35	46	84	86	92	76	65
19	30	24	26		24	34	46	84	84	93	71	62
20		24	26	20	24	35	46	84	84	94	71	61
21		24	23	20	24	36	45	84	83	97	70	61
22		23	22	22	24	36	44	84	81	93	70	60
23		22	22		26	35	46	86	81	87	70	60
24	14	23	22		34	33	56	86	81	84	72	62
25		22	22	22	34	32	56	86	81	75	79	62
26		23	21		34	32	54	88	83	70	75	60
27		23	22		34	35	47	89	82	69	70	60
28		23	21		34	37	49	87	78	64	70	64
29		24	21	23	-------	36	50	86	78	60	68	64
30	14	24	20		-------	38	51	85	79	62	68	64
31	14	-------	20		-------	51	-------	86	-------	70	69	-------

NOTE.—Discharge estimated for periods when gage-height record was not obtained as shown by braces and also Nov. 16–19, Dec. 5–7, 17, and 18.

Monthly discharge of Rockyford Canal near Vermilion, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	-------	-------	29.4	1,810
November	40	8	27.3	1,620
December	26	20	23.8	1,460
January	-------	-------	21.2	1,300
February	34	-------	25.9	1,440
March	51	-------	35.5	2,180
April	57	39	47.8	2,840
May	89	53	75.6	4,650
June	90	2	70.7	4,210
July	97	40	78.4	4,820
August	81	68	73.9	4,540
September	74	60	66.0	3,930
The year	97	2	48.1	34,800

BEAVER RIVER BASIN

BEAVER RIVER NEAR BEAVER, UTAH

LOCATION.—In SE. ¼ sec. 18, T. 29 S., R. 6 W., a quarter of a mile above city diversion dam at mouth of canyon, 4½ miles above Beaver, Beaver County.

DRAINAGE AREA.—82 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 15 to September 22, 1906; March 15, 1914, to September 30, 1922.

GAGE.—Stevens continuous water-stage recorder on right bank used since November 14, 1914; inspected by G. W. Valantine.

DISCHARGE MEASUREMENTS.—Made from footbridge 70 feet above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of boulders and coarse gravel; somewhat shifting. One channel; left bank subject to overflow at extremely high stages. Control composed of boulders; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, 6.31 feet at 6 p. m. May 25 (discharge, 785 second-feet); minimum stage not recorded.

1914–1922: Maximum stage, 6.31 feet at 6 p. m. May 25, 1922 (discharge 785 second-feet); minimum stage, 2.57 feet, January 28, 1916 (discharge, 8 second-feet).

ICE.—Stage-discharge relation seriously affected during winter.

DIVERSIONS.—Above all irrigation diversions. Above station is a small storage reservoir known as Kents Lake. Water is diverted by 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 somewhat affected by the Kents Lake storage reservoir.

ACCURACY.—Stage-discharge relation changed about May 17. Rating curves well defined. Water-stage recorder operated successfully, except during periods indicated by braced figures in daily-discharge table. For these periods discharge interpolated or estimated from hydrographic study based on weekly staff gage readings, observer's notes, two discharge measurements' temperature records, and flow of Beaver River at Adamsville. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph or staff gage readings. Records for estimated periods fair, others good.

Discharge measurements of Beaver River near Beaver, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 6	W. E. Dickinson	3.25	30.6	Apr. 22	A. B. Purton	3.41	41.8
6	do	3.28	31.2	May 29	do	5.80	581

Daily discharge, in second-feet, of Beaver River near Beaver, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30						23	116	581	113	62	44
2	30		24				22	135	523	108	62	39
3		30		25		20		149	504	102	64	43
4			22					171	504	95	58	45
5						20		226	486	85	51	38
	30						25					
6		29						264	486	82	45	35
7		29	20					299	467	77	44	34
8		28						272	432	71	45	33
9	30	28				22	29	198	398	71	47	32
10					20			156	349	82	48	33
		26										
11								130	318	78	44	31
12	30					24	24	119	287	78	44	31
13		25				24		120	258	76	47	31
14						25		136	247	72	47	30
15						25		152	221	68	46	30
16	29	24					18	152	223	68	44	30
17						24		212	210	64	46	29
18					22			324	210	62	45	31
19				20		22		422	210	67	44	31
20	28	23					31	372	210	67	43	31
			25									
21								365	206	67	44	31
22					22	25	44	422	193	67	53	32
23	26						50	534	181	64	54	30
24		25					47	608	162	64	52	30
25							53	628	151	63	42	30
26	28				22	29	57	680	141	62	39	30
27		27			22		61	620	131	88	36	29
28					21		65	593	127	82	34	29
29		26			-------	25	78	620	151	64	38	28
30	30				-------		102	628	127	62	39	29
31	30	-------	27		-------		-------	640	-------	66	43	-------

Monthly discharge of Beaver River near Beaver, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	----------	----------	29.1	1,790
November	----------	----------	26.3	1,560
December	----------	----------	23.9	1,470
January	----------	----------	20.8	1,280
February	----------	----------	20.7	1,150
March	----------	----------	23.5	1,440
April	102	----------	36.6	2,180
May	680	116	338	20,800
June	581	127	290	17,300
July	113	62	75.3	4,630
August	64	34	46.8	2,880
September	45	28	32.6	1,940
The year	680	----------	80.1	58,400

BEAVER RIVER AT ADAMSVILLE, UTAH

LOCATION.—In S. ½ sec. 30, T. 29 S., R. 8 W., 100 yards below highway bridge on road from Milford to Beaver, a quarter of a mile above mouth of Indian Creek, and three-quarters of a mile south of Adamsville, Beaver County.

DRAINAGE AREA.—272 square miles (measured on topographic maps).

RECORDS AVAILABLE.—December 16, 1913, to September 30, 1922.

GAGE.—Stevens continuous water-stage recorder on right bank; installed March 13, 1914; inspected by W. A. Rees.

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

CHANNEL AND CONTROL.—Bed composed of fine gravel. Banks low; covered with willows; subject to overflow at extremely high stages. Concrete control constructed July 11, 1916, and rebuilt September 26, 1919. Stage of zero flow, 1.15 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.38 feet from 6 to 10 a. m. May 31 (discharge, 583 second-feet); minimum stage, 1.37 feet July 13–18 (discharge, 2 second-feet).

1914–1922: Maximum stage, 4.85 feet at 6 a. m. May 23, 1920 (discharge, 796 second-feet); minimum stage, 1.04 feet at 3 p. m. July 9, 1919 (discharge, 0.3 second-foot).

ICE.—Stage-discharge relation affected by ice during short periods.

DIVERSIONS.—No diversions between station and storage reservoir of Beaver County Irrigation Co. There are a number of ditches above station supplying the Adamsville and Beaver districts.

REGULATION.—Low-water flow affected by irrigation diversions.

ACCURACY.—Stage-discharge relation changed about May 25. Rating curves well defined. Water-stage recorder operated satisfactorily, except December 17, April 12-14, and several periods during January and February, which were affected by ice. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. For periods when recorder was not in operation and periods of ice effect, discharge was determined by study of temperature records and observer's notes. Records good

Discharge measurements of Beaver River at Adamsville, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
Nov. 7	W. E. Dickinson	1.88	43.9
May 28	A. B. Purton	4.03	485

Daily discharge, in second-feet, of Beaver River at Adamsville, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	48	56	53		68	44	134	522	70	43	40
2	19	48	56	54		74	42	144	453	58	55	49
3	18	45	51	53		62	39	169	393	50	116	58
4	16	44	51	54		58	42	175	386	48	66	52
5	18	45	57	52	45	61	56	182	354	46	55	40
6	26	44	57	48		59	54	229	324	41	50	36
7	24	44	54	46		63	46	267	319	34	46	35
8	23	44	57	46		48	47	277	299	20	46	34
9	32	45	56	46	51	50	46	225	272	11	46	30
10	33	45	56	46	50	43	52	184	237	7	41	26
11	32	44	54	46	42	44	52	194	216	6	32	22
12	32	44	54		42	46	49	156	188	3	25	17
13	32	44	56		43	50	46	137	147	2	21	16
14	31	44	52		44	56	43	152	125	2	18	16
15	32	44	56	50	48	61	40	165	103	2	15	15
16	32	45	51		47	58	40	148	83	2	15	17
17	32	50	54		47	59	39	156	59	2	12	18
18	32	51	58	45	47	53	38	214	52	2	12	17
19	37	52	61		47	48	39	308	42	2	28	16
20	39	57	64		45	52	38	291	37	3	35	16
21	37	58	70		42	59	43	242	38	3	37	16
22	37	57	74		39	56	56	256	35	3	37	17
23	35	58	63		39	58	74	294	33	3	40	17
24	76	58	57		42	59	71	380	31	3	42	20
25	68	71	58	45	43	51	78	424	28	3	39	21
26	53	62	59		49	47	84	527	28	3	37	22
27	50	58	68		56	47	87	525	30	4	38	22
28	48	58	68		62	46	88	499	30	7	39	22
29	47	57	62		-------	44	102	516	40	8	40	22
30	47	56	58		-------	42	120	533	46	7	43	23
31	48	-------	54		-------	39	-------	555	-------	13	41	-------

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

Monthly discharge of Beaver River at Adamsville, Utah, for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	76	16	35.5	2,180
November	71	44	50.7	3,020
December	74	51	58.1	3,570
January	-------	-------	47.5	2,920
February	62	39	45.9	2,550
March	74	39	53.6	3,300
April	120	38	56.5	3,360
May	555	134	279	17,200
June	522	28	165	9,820
July	70	2	15.1	928
August	116	12	39.0	2,400
September	58	15	25.7	1,530
The year	555	2	72.9	52,800

BEAVER RIVER AT ROCKYFORD DAM, NEAR MINERSVILLE, UTAH

LOCATION.—In NW. ¼ sec. 11, T. 30 S., R. 9 W., half a mile below Rockyford Dam and 4 miles above Minersville, Beaver County.

DRAINAGE AREA.—512 square miles (measured on topographic maps).

RECORDS AVAILABLE.—December 18, 1913, to September 30, 1922.

GAGE.—Friez water-stage recorder at present site since June 1, 1916; inspected by J. L. Jackson.

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

CHANNEL AND CONTROL.—Bed composed of gravel; some vegetal growth. One channel at all stages. Banks not subject to overflow. Concrete control installed November 2–12, 1916. Slight growth of moss on control during summer. Stage of zero flow, at gage height 0.60 foot.

EXTREMES OF DISCHARGE.—Maximum stage during year, 3.14 feet May 29–31 and June 1 and 2 (discharge, 564 second-feet); minimum stage, 1.07 feet October 5–23 (discharge, 22 second-feet).

1913–1922: Maximum stage, 3.53 feet at 7 p. m. June 10, 1921 (discharge, 727 second-feet); minimum stage, 1.68 feet March 19 and 20, 1914 (discharge estimated, 0.3 second-foot).

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

DIVERSIONS.—None between dam and station. There are a number above Adamsville.

REGULATION.—Flow controlled by operation of gates at Rockyford Dam.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Friez recorder operated successfully except January 8–13, May 5, and June 27–30. For days when recorder was not in operation, discharge interpolated or estimated. Owing to regulation, it was possible to obtain good estimates. Records good.

COOPERATION.—Gage-height record furnished by Beaver County Irrigation Co.

Discharge measurements of Beaver River at Rockyford Dam, near Minersville, Utah, during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
Nov. 7	W. E. Dickinson	1.27	41.8
May 28	A. B. Purton	3.00	495

Daily discharge, in second-feet, of Beaver River at Rockyford Dam, near Minersville, Utah, for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	43	68	32	30	57	58	186	564	70	55	58
2	27	43	68	32	30	61	58	216	500	67	55	68
3	27	43	68	32	30	50	58	216	272	58	55	68
4	27	42	68	32	30	45	58	216	120	58	58	68
5	26	42	68	32	30	45	58	248	157	61	70	68
6	22	42	68	32	30	45	58	279	321	70	70	67
7	22	42	68	32	30	45	58	355	365	78	70	67
8	22	42	52		31	45	49	376	298	90	70	67
9	22	42	54		31	45	66	304	351	90	70	67
10	22	42	54		31	45	66	304	321	90	70	67
11	22	43	54	32	31	45	66	304	166	90	70	61
12	22	43	54		31	48	66	282	101	96	70	58
13	22	43	54		31	49	66	279	101	98	70	58
14	22	43	54	32	31	49	66	222	101	98	70	58
15	22	43	54	32	31	54	66	197	101	98	73	58
16	22	43	54	32	31	72	52	197	101	103	78	58
17	22	43	54	32	31	94	42	197	101	90	78	58
18	22	43	53	31	32	109	42	202	98	94	78	58
19	22	43	46	31	32	109	42	245	39	105	73	57
20	22	48	46	31	32	109	42	276	43	109	67	57
21	22	50	46	30	32	109	42	291	58	109	67	57
22	27	52	41	30	32	109	42	291	67	109	67	55
23	32	52	38	30	32	109	42	291	67	107	67	55
24	32	53	38	30	32	109	49	291	67	101	64	55
25	32	60	38	30	32	109	67	334	67	101	58	55
26	32	60	38	30	32	83	78	351	67	101	62	55
27	32	60	38	30	32	70	85	461	68	101	67	55
28	32	60	36	30	38	58	101	508		101	67	55
29	32	62	32	30	------	58	113	564		87	63	55
30	32	68	32	30	------	58	132	564		76	67	49
31	27	------	32	30	------	58	------	564	-----	70	58	------

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

Monthly discharge of Beaver River at Rockyford Dam, near Minersville, Utah, for for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	37	22	25.7	1,580
November	68	42	47.8	2,840
December	68	32	50.6	3,110
January	32	30	31.2	1,920
February	38	30	31.4	1,740
March	109	45	69.4	4,270
April	132	42	62.9	3,740
May	564	186	310	19,100
June	564	39	163	9,700
July	109	58	89.5	5,500
August	78	55	67.1	4,130
September	68	49	59.5	3,550
The year	564	22	84.5	61,200

OWENS LAKE BASIN

OWENS RIVER NEAR ROUND VALLEY, CALIF.

LOCATION.—In SE. ¼ sec. 10, T. 6 S., R. 31 E., below 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, 1922.

GAGE.—Vertical staff on left bank 85 feet below bridge. A water-stage recorder was installed November 22, 1920. Gage operated by W. G. Allen.

DISCHARGE MEASUREMENTS.—Made from cable at gage.

CHANNEL AND CONTROL.—Rock and boulders; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 3.18 feet at noon June 28 (discharge, 709 second-feet); minimum stage, from water-stage recorder, 1.08 feet at 7.30 a. m. January 19 (discharge, about 11 second-feet).

1903–1922: Maximum stage recorded, 4.0 feet June 30, 1907 (discharge, 1,190 second-feet); minimum stage, that of January 19, 1922.

ICE.—Shore ice exists at times but ordinarily does not affect stage-discharge relation.

DIVERSIONS.—No water is diverted above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changes continually. Standard rating curve fairly well defined. Water-stage recorder gave a good record. Daily discharge ascertained by shifting-control method. Records good.

COOPERATION.—Gage-height record and discharge measurements furnished by city of Los Angeles.

Discharge measurements of Owens River near Round Valley, Calif., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 28	M. C. Smart	1.90	137	May 27	J. E. Jones	2.39	327
Dec. 9	do	1.80	124	June 10	Selepegno and Allen	2.92	562
Jan. 10	do	1.85	157	21	Weatherill and Allen	3.05	641
26	do	1.92	180	July 8	do	2.87	583
Feb. 25	do	2.00	188	22	do	2.50	374
Mar. 14	do	1.94	179	Aug. 7	G. P. Weatherill	2.13	231
28	do	2.06	219	Sept. 5	Weatherill and Allen	2.00	174
Apr. 17	do	2.08	207	26	do	1.99	181

Daily discharge, in second-feet, of Owens River near Round Valley, Calif., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	133	141	147	221	197	194	253	197	446	594	296	204
2	130	138	127	214	172	191	276	194	451	599	345	200
3	130	138	116	184	159	178	320	184	456	583	409	194
4	138	144	124	181	162	178	383	200	489	578	288	197
5	138	138	136	172	187	159	345	204	533	573	253	181
6	150	138	130	175	191	172	312	214	588	578	238	168
7	159	141	124	191	194	172	316	217	599	553	224	168
8	153	147	124	181	204	162	357	221	588	543	219	168
9	172	144	124	162	197	175	329	210	588	533	214	165
10	165	141	128	162	191	165	301	207	594	508	209	165
11	168	141	133	150	156	168	273	194	538	489	204	168
12	172	144	136	136	53	138	245	178	513	465	200	175
13	162	141	144	136	121	204	217	181	494	446	194	181
14	156	144	144	159	204	187	308	187	528	423	184	175
15	144	147	138	162	214	178	396	207	475	418	187	178
16	132	130	138	172	224	187	324	228	484	405	178	175
17	121	121	127	191	239	181	261	235	523	400	175	162
18	121	112	141	29	265	194	257	253	568	396	178	162
19	124	130	127	63	269	200	340	280	604	427	168	165
20	130	124	165	153	257	200	423	292	614	475	168	168
21	130	136	111	175	249	200	470	288	624	418	168	175
22	121	159	162	194	231	194	427	280	640	378	162	175
23	119	178	159	200	217	191	479	300	624	345	168	172
24	141	153	159	197	217	214	470	324	630	324	187	181
25	130	138	127	187	217	228	361	345	635	316	210	181
26	130	138	40	187	181	235	361	324	640	308	214	181
27	119	141	130	191	178	239	328	328	671	292	217	181
28	141	141	172	191	181	242	276	345	693	276	221	181
29	138	144	197	181	-------	253	242	353	677	269	269	181
30	138	150	204	141	-------	249	217	374	656	276	249	175
31	144	-------	200	184	-------	221	-------	409	-------	288	214	-------

Monthly discharge of Owens River near Round Valley, Calif., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	172	119	140	8,610
November	178	112	141	8,390
December	204	40	140	8,610
January	221	29	168	10,300
February	269	53	197	10,900
March	253	138	195	12,000
April	479	217	329	19,600
May	409	178	257	15,800
June	693	446	572	34,000
July	599	269	435	26,700
August	409	162	220	13,500
September	204	162	177	10,500
The year	693	29	247	179,000

OWENS RIVER NEAR BIG PINE, CALIF.

LOCATION.—In sec. 2, T. 11 S., R. 34 E., at Charlies Butte, 11 miles southeast of Big Pine, Inyo County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—September 20, 1906, to September 30, 1922.

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

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

CHANNEL AND CONTROL.—Sand and gravel; shift slightly. Right bank high; left bank subject to overflow during floods.

EXTREMES OF DISCHARGE.—Maximum stage during year, 6.50 feet December 22 (discharge, 1,220 second-feet); minimum stage, 0.80 foot May 5–16 (discharge, 68 second-feet).

1906-1922: Maximum stage recorded, 11.2 feet about 9 p. m. January 26; 1914 (discharge, from extension of rating curve, about 3,220 second-feet); minimum stage, −0.05 foot June 13–16, 1908 (discharge, 36 second-feet).

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

DIVERSIONS.—On account of diversions above station, record does not indicate total run-off from drainage area.

REGULATION.—Flow is partly regulated by diversions.

ACCURACY.—Stage-discharge relation changed December 22 at high water. Rating curve fairly well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

COOPERATION.—Gage-height record and discharge measurements furnished by city of Los Angeles.

Discharge measurements of Owens River near Big Pine, Calif., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 24	J. E. Jones	1.89	223	June 17	E. M. Selepegno	3.82	567
Jan. 17	Topham and Jones	3.10	432	July 11	Topham and Selepegno	5.49	974
Feb. 15	J. W. Topham	3.68	554	20	do	4.49	710
Mar. 15	Topham and Selepegno	3.10	443	31	do	2.15	204
Apr. 11	J. W. Topham	2.70	343	Aug. 21	J. W. Topham	1.12	91
25	do	2.38	269	Sept. 7	do	1.05	89
May 10	Jones and Selepegno	.80	70	28	E. M. Selepegno	1.22	123
June 12	E. M. Selepegno	4.09	663				

Daily discharge, in second-feet, of Owens River near Big Pine, Calif., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.
1	61	310	368	605	406	428	428	94	362	1,050	280	110
2	81	310	368	582	406	450	428	85	406	1,050	362	94
3	91	329	348	605	406	428	428	80	428	1,050	472	90
4	91	329	329	582	406	472	428	72	494	1,080	582	94
5	91	329	348	494	406	428	450	68	538	1,050	538	85
6	91	329	329	494	450	406	450	68	628	1,100	582	90
7	96	348	348	494	472	384	406	68	674	1,100	406	90
8	101	329	348	494	494	362	362	68	697	1,100	362	85
9	112	348	348	450	560	362	406	68	720	1,100	320	85
10	123	348	348	450	697	406	362	68	697	1,000	280	85
11	128	348	348	428	720	406	340	68	674	981	260	85
12	152	329	348	406	674	406	362	68	651	957	227	85
13	159	329	348	406	605	406	384	68	628	813	212	85
14	146	348	348	384	494	406	362	68	582	789	197	85
15	146	348	348	384	560	428	320	68	582	766	154	85
16	152	348	348	428	538	406	362	68	605	789	134	80
17	159	348	348	428	538	406	280	72	582	813	128	80
18	159	348	348	406	516	406	227	76	628	743	122	85
19	173	348	348	340	538	384	227	90	720	743	116	85
20	204	348	452	280	516	384	227	110	766	743	105	85
21	204	368	867	340	538	384	243	141	789	766	100	85
22	220	368	1,220	384	628	384	280	148	837	743	90	85
23	220	368	981	362	605	362	243	141	837	720	76	94
24	237	388	743	384	538	362	260	116	837	697	85	100
25	237	388	766	384	516	362	280	141	813	472	122	105
26	188	368	861	406	494	362	212	190	861	406	116	116
27	220	368	766	428	494	362	175	212	909	362	100	105
28	220	348	766	406	472	384	148	204	909	300	90	105
29	237	348	743	406	-------	384	128	227	1,030	260	134	105
30	310	368	628	384	-------	406	105	280	1,050	243	141	110
31	310	-------	628	362	-------	428	-------	320	-------	243	134	-------

Monthly discharge of Owens River near Big Pine, Calif., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	310	61	165	10,100
November	388	310	348	20,700
December	1,220	329	517	31,800
January	605	280	432	26,600
February	720	406	525	29,200
March	472	362	398	24,500
April	450	105	310	18,400
May	320	68	117	7,190
June	1,050	362	698	41,500
July	1,100	243	775	47,700
August	582	76	227	14,000
September	116	80	91.9	5,470
The year	1,220	61	383	277,000

OWENS LAKE NEAR LONE PINE, CALIF.

LOCATION.—On the west shore of Owens Lake, 1 mile north of Brier siding on California & Nevada Railroad (Southern Pacific Co.) and 9 miles south of Lone Pine, Inyo County.

RECORDS AVAILABLE.—March, 1908, to September 30, 1922.

GAGE.—Vertical staff installed November 1, 1911, at a boulder point east of railroad culvert No. 507B; read occasionally by an employee of city of Los Angeles.

EXTREMES OF STAGE.—1911–1922: Maximum elevation recorded, 3,578.75 feet March 16 and April 7, 1912; minimum stage recorded, 3,559.00 feet September 26, 1922.

COOPERATION.—Records furnished by city of Los Angeles.

Elevations given in the table are computed from the original readings made on gage. To reduce these elevations to mean sea level (U. S. G. S. datum), add 3,550 feet.

Elevation, in feet, of Owens Lake near Lone Pine, Calif., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1											9.55	
2		10.25										9.15
3	10.52					10.43	10.30		9.65			
4								10.02				
5			10.05	10.20								
6		10.23				10.42				9.45		
7	10.50						10.30		9.55			
8											9.40	
9												9.10
10	10.50							10.00		9.55		
11		10.20	10.02		10.52							
12							10.20					
13	10.47											
14										9.53	9.35	9.10
15		10.18	10.00	10.18		10.40			9.50			
16	10.45											
17							10.20	9.85				
18			10.00							9.60		
19	10.40				10.45							
20						10.37			9.40			
21		10.15	10.00				10.10					9.05
22								9.85				
23					10.45							
24	10.30						10.08					
25		10.10		10.15		10.35				9.57		
26			10.10		10.45				9.40			9.00
27												
28	10.28	10.08					10.05					
29								9.75				
30						10.28						
31												

ROCK CREEK NEAR ROUND VALLEY, CALIF.

LOCATION.—In NE. ¼ SE. ¼ sec. 9, T. 6 N., 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.—About 46 square miles.

RECORDS AVAILABLE.—August 3, 1903, to September 30, 1922.

GAGE.—Vertical staff on left bank about 600 feet below bridge; read by W. G. Allen. Prior to July, 1906, gage was located at highway bridge.

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

CHANNEL AND CONTROL.—Sand and cobblestones; somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.03 feet July 5 (discharge, 119 second-feet); minimum stage, 0.81 foot April 17 (discharge, 18 second-feet).

1903–1922: Maximum stage recorded, 5.0 feet January 25, 1914 (discharge, 360 second-feet); minimum discharge, 14 second-feet April 20–23, 1905.

ICE.—Shore ice forms but probably does not affect stage-discharge relation.

DIVERSIONS.—Water for irrigation is diverted above station.

REGULATION.—Flow partly regulated by diversions.

ACCURACY.—Stage-discharge relation not permanent. Standard rating curve well defined. Staff gage read to hundredths two or three times a week. Daily discharge ascertained by applying gage height to rating table using shifting-control method. Discharge for days when gage was not read was interpolated or estimated from flow of Owens River near Round Valley. Records fair.

COOPERATION.—Gage-height record and discharge measurements furnished by city of Los Angeles.

Discharge measurements of Rock Creek near Round Valley, Calif., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 12	M. C. Smart	0.90	26	Apr. 18	M. C. Smart	0.89	20
22	J. E. Jones	.83	22	May 27	J. E. Jones	1.71	82
29	Smart and Allen	.94	23	June 10	Selepengo and Allen	2.62	108
Nov. 20	M. C. Smart	.96	26	21	Weatherill and Allen	2.90	114
Dec. 9	do	.93	25	July 8	do	2.79	102
Jan. 10	do	1.10	37	21	G. P. Weatherill	2.25	106
21	do	.93	26	Aug. 7	do	1.52	64
Feb. 27	do	1.17	37	22	E. M. Selepegno	.95	27
Mar. 13	do	1.03	29	Sept. 5	G. P. Weatherill	1.01	33
28	do	1.00	30	27	do	.90	24

Daily discharge, in second-feet, of Rock Creek near Round Valley, Calif., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22	23	27	34	36	31	28	28	125	107	72	43
2	23	23	25	34	36	34	28	28	128	106	80	40
3	23	23	22	34	37	35	28	28	131	105	78	42
4	22	23	24	35	38	36	28	33	135	112	73	37
5	22	25	27	36	36	33	27	38	136	119	69	32
6	24	24	26	37	34	29	27	43	137	113	65	31
7	27	23	26	39	44	29	26	45	129	107	61	30
8	26	23	26	40	53	30	25	47	122	102	70	30
9	25	23	25	39	63	30	24	49	115	100	79	30
10	26	23	24	37	46	29	23	42	108	88	70	34
11	27	24	25	40	30	28	22	36	97	77	60	33
12	26	24	26	40	34	28	22	42	86	80	50	32
13	28	24	28	39	38	29	22	48	77	84	34	30
14	27	24	28	38	36	29	21	54	68	80	35	28
15	26	24	28	38	34	29	20	60	74	77	36	28
16	26	24	26	39	34	29	19	61	90	86	38	28
17	26	23	25	36	34	29	18	62	106	96	40	29
18	25	22	34	33	34	29	21	66	104	104	35	29
19	25	23	42	30	34	29	21	60	102	112	30	28
20	24	23	51	27	34	29	21	55	109	109	27	29
21	23	24	60	25	34	28	20	58	117	106	27	30
22	22	24	45	27	34	27	20	64	106	88	27	27
23	23	24	30	29	33	28	22	70	96	88	27	24
24	25	25	32	32	32	29	24	82	86	74	28	26
25	26	26	32	32	31	30	25	94	100	60	30	25
26	25	26	34	32	34	28	26	88	115	53	32	24
27	24	26	36	32	37	28	27	83	114	47	33	24
28	24	26	38	32	29	29	27	86	112	45	34	24
29	23	26	38	33	-------	30	28	89	110	42	43	23
30	23	27	39	34	-------	30	28	98	108	53	45	22
31	23	-------	40	35	-------	29	-------	106	-------	65	46	-------

Monthly discharge of Rock Creek near Round Valley, Calif., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	28	22	24.5	1,510
November	27	22	24.1	1,430
December	60	22	31.9	1,960
January	40	25	34.5	2,120
February	63	29	36.8	2,040
March	36	27	29.7	1,830
April	28	18	23.9	1,420
May	106	28	59.5	3,660
June	137	68	108	6,430
July	119	42	86.6	5,320
August	80	27	47.5	2,920
September	43	22	29.7	1,770
The year	137	18	44.8	32,400

PINE CREEK NEAR ROUND VALLEY, CALIF.

LOCATION.—In SE. ¼ sec. 9, T. 6 S., R. 31 E., 300 feet above highway bridge, 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, 1922.

GAGE.—Vertical staff on left bank 300 feet above bridge; read by W. G. Allen. Prior to May 13, 1908, gage was 150 feet below highway bridge.

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

CHANNEL AND CONTROL.—Lava rock and sand; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, over 6 feet June 28 (discharge, about 300 second-feet); minimum stage, 3.20 feet at 10 a. m. August 12 (discharge, 0.2 second-foot).

1903–1922: Maximum discharge, 370 second-feet June 22, 1911; minimum discharge, 0.1 second-foot August 13, 1920.

ICE.—Ice occasionally forms at station but does not affect stage-discharge relation.

DIVERSIONS.—Water is diverted above station for irrigation.

REGULATION.—Diversions probably affect flow.

ACCURACY.—Stage-discharge relation changed June 28. Rating curves well defined. Staff gage read to hundredths two or three times a week. Daily discharge ascertained by applying daily gage height to rating table and interpolating or estimating discharge for days when gage was not read. Records fair.

COOPERATION.—Gage-height record and discharge measurements furnished by city of Los Angeles.

Discharge measurements of Pine Creek near Round Valley, Calif., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 12	M. C. Smart	3.24	1.7	May 27	J. E. Jones	4.01	33
22	J. E. Jones	3.30	2.2	June 10	Selepegno and Allen	5.01	118
29	Smart and Allen	3.32	2.9	21	Weatherill and Allen	5.68	198
Nov. 29	M. C. Smart	3.35	3.5	July 8	do	5.28	180
Jan. 10	do	3.38	3.3	21	G. P. Weatherill	4.60	84
21	do	3.32	2.3	Aug. 7	Weatherill and Allen	3.95	20
Feb. 27	do	3.45	5.3	22	E. M. Selepegno	3.61	5.4
Mar. 13	do	3.39	3.8	Sept. 5	G. P. Weatherill	3.50	2.6
28	do	3.32	3.0	27	do	3.46	.7
Apr. 18	do	3.25	1.7				

Daily discharge, in second-feet, of Pine Creek near Round Valley, Calif., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.7	3.4	3.9	6.0	3.3	4.0	3.3	1.6	115	263	48	4.1
2	1.5	2.9	3.3	5.5	3.7	3.9	3.1	2.2	126	256	53	3.2
3	1.4	2.8	2.7	4.8	4.1	4.1	2.9	2.9	138	250	43	4.4
4	1.5	2.7	3.3	4.4	4.5	4.3	2.6	2.4	162	250	38	3.2
5	1.6	2.7	3.9	4.1	4.7	4.2	2.3	2.0	168	250	32	2.0
6	1.7	2.7	3.6	4.4	4.8	4.1	2.3	1.7	174	228	27	3.8
7	1.8	2.7	3.3	4.8	14	4.2	2.3	1.7	164	206	22	5.5
8	1.8	2.7	3.1	4.5	22	4.3	2.3	1.6	153	184	20	4.1
9	1.7	2.7	2.9	4.3	31	4.5	2.3	1.6	143	162	19	2.6
10	1.8	2.7	2.7	4.1	19	4.5	2.2	1.5	132	144	13	3.9
11	1.8	2.8	2.9	4.5	6.5	4.5	2.1	1.4	135	126	6.5	4.1
12	1.9	2.9	3.1	4.3	6	4.4	2.4	1.1	138	95	.2	4.4
13	2.0	2.9	3.3	4.2	5.5	4.3	2.7	.8	116	64	6	3.4
14	2.2	2.9	3.5	4.1	5	4.2	2.5	.8	94	78	6	2.3
15	2.3	2.9	3.7	4.2	4.5	4.1	2.3	.8	54	93	5.5	2.6
16	2.5	2.9	3.5	4.3	4.3	4.1	2.3	.8	105	90	6	2.9
17	2.7	2.9	3.3	4.0	4.2	4.0	2.4	.8	156	88	7	4.4
18	2.7	2.9	7	3.7	4.1	3.9	2.0	.8	159	90	8	3.5
19	2.7	2.7	11	3.4	4.0	3.4	2.5	2.4	162	93	9	2.6
20	2.7	3.0	15	3.1	3.9	2.9	3.0	4.1	186	88	9	2.2
21	2.7	3.3	19	2.9	3.8	3.3	3.5	3.7	211	83	7	1.7
22	2.5	3.7	12	3.7	3.7	3.7	4.1	13	195	71	5.5	1.2
23	2.5	3.7	4.5	3.9	3.9	3.4	1.6	22	179	70	5	.6
24	2.7	3.8	4.1	4.1	4.2	3.1	1.4	29	162	54	4.7	1.4
25	2.9	3.9	4.4	3.7	4.5	2.9	1.2	37	200	39	7	1.0
26	2.9	3.9	4.7	3.3	5	2.7	1.2	36	237	29	9	.5
27	2.9	3.7	5	3.3	6	2.8	1.1	34		18	9	1.4
28	2.9	3.5	5.5	3.3	4.1	2.9	1.0	45	275	15	8	1.1
29	2.9	3.5	5.5	3.3	-------	2.9	1.0	57		13	9	.8
30	3.4	3.7	6	3.3	-------	2.9	1.3	65		28	5	.6
31	3.9	-------	6	3.3	-------	3.1	-------	74	-------	43	5	-------

Monthly discharge of Pine Creek near Round Valley, Calif., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	3.9	1.4	2.33	143
November	3.9	2.7	3.12	186
December	19	2.7	5.35	329
January	6	2.9	4.03	248
February	31	3.3	6.94	385
March	4.5	2.7	3.73	229
April	4.1	1.0	2.24	133
May	74	.8	14.5	892
June	-------	54	169	10,100
July	263	13	115	7,070
August	53	.2	14.6	898
September	5.5	.5	2.65	158
The year	-------	.2	28.6	20,800

89017—27†—WSP 550——7

MONO LAKE BASIN

MONO LAKE NEAR MONO LAKE, CALIF.

LOCATION.—In lot 6, SE. ¼ NE. ¼ sec. 31, T. 2 N., R. 26 E., 2 miles south of Mono Lake post office, Mono County.

RECORDS AVAILABLE.—June 15, 1912, to September 30, 1922 (fragmentary).

GAGE.—Vertical staff on support of boathouse, installed September, 1916; read once daily by W. E. Green. Original gage was vertical staff fastened to willow tree about 400 feet from Hammon's store. Relations of datums of gages unknown.

EXTREMES OF STAGE.—1912–1922; Maximum stage recorded, 13.3 feet May 27, 1915; minimum stage recorded, 7.93 feet December 11, 1913.

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

Daily gage-height, in feet, of Mono Lake near Mono Lake, Calif., during the year ending September 30, 1922

October 20..... 11. 1	May 13 ..... 11. 8	August 25 ..... 12. 1
November 20.... 11. 0	June 24 ..... 12. 25	September 27.... 11. 8
December 15... 10. 95	July 20..... 12. 2	

WALKER LAKE BASIN

EAST WALKER RIVER NEAR BRIDGEPORT, CALIF.

LOCATION.—In sec. 27, T. 6 N., R. 25 E., 100 feet from highway, half a mile above highway bridge, and 6 miles below Bridgeport, Mono County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 1 to September 30, 1922, and miscellaneous meas urements in 1920 and 1921, at present site; July 29, 1911, to September 30 1914, comparable records at a site 1½ miles upstream.

GAGE.—Stevens continuous recorder on right bank; inspected by Walker River Irrigation District employees.

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

CHANNEL AND CONTROL.—Channel fairly straight above and below gage. Bed of shifting sand and gravel. Control indefinite; fairly permanent.

ICE.—No records in winter.

DIVERSIONS.—Below all diversions in Bridgeport Valley.

REGULATION.—Slight regulation by Twin Lakes Reservoir and irrigation above gage.

ACCURACY.—Stage-discharge relation practically permanent during year. Rating curve fairly well defined. Stevens continuous recorder operated successfully except June 12 to July 2. Daily discharge for latter period estimated from comparison with records for Mason station. Daily discharge determined by applying mean daily gage height to rating table. Records good.

COOPERATION.—Engineers for Walker River Irrigation District made five discharge measurements during year.

Discharge measurements of East Walker River near Bridgeport, Calif., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 15	Rowe and Lindsley [a]	2.03	64	July 3	R. R. Rowe	5.03	755
May 3	Warren [b] and Beemer [c]	3.82	392	July 26	Warren and King [b]	3.48	272
June 3	Warren and Lamberson [a]	5.27	733	Aug. 15	Warren and Shirley [a]	2.68	143
				Sept. 21	Warren and King	2.09	73

[a] Ditch rider, Walker River Irrigation District.
[b] Engineer, Walker River Irrigation District.
[c] Water commissioner and chief engineer, Walker River Irrigation District.

Daily discharge, in second-feet, of East Walker River near Bridgeport, Calif., for the year ending September 30, 1922

Day	Oct.	Nov.	May	June	July	Aug.	Sept.
1	55	65	--------	735	850	368	115
2	54	65	--------	743	750	363	106
3	54	66	438	772	708	356	95
4	53	65	510	798	694	307	93
5	55	65	604	874	720	298	93
6	70	65	642	909	694	279	91
7	76	65	688	954	671	279	79
8	73	63	636	951	630	273	77
9	70	65	471	927	619	254	71
10	68	64	358	874	592	239	65
11	65	67	338	841	604	189	68
12	65	65	416		601	169	66
13	63	62	424		613	142	63
14	62	69	438		592	140	63
15	63	64	507		561	139	63
16	64	73	538		529	158	62
17	65	70	564		507	157	57
18	65	61	613	750	479	155	61
19	59	59	592		521	148	61
20	58	64	552		578	140	60
21	57	66	457		513	144	65
22	55	66	443		435	122	63
23	54	62	446		384	115	61
24	54	54	513		356	111	61
25	56		552		328	111	62
26	57		476	800	298	116	58
27	60	55	446	900	260	109	56
28	66		485	1,050	219	115	58
29	64		535	1,050	215	130	59
30	64		613	1,000	245	132	61
31	64	--------	700	--------	316	120	--------

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

Monthly discharge of East Walker River near Bridgeport, Calif., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	76	53	61.5	3,780
November	73	----------	62.7	3,730
May 3-31	700	338	517	29,700
June	1,050	----------	823	49,000
July	850	215	519	31,900
August	368	111	189	11,600
September	115	56	70.4	4,190

EAST WALKER RIVER ABOVE MASON VALLEY, NEAR MASON, NEV.

LOCATION.—In SW. ¼ sec. 4, T. 11 N., R. 26 E., 30 feet below highway bridge and 11 miles southeast of Mason, Mineral County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 23, 1921, to September 30, 1922, at present site; August 27, 1916, to January 5, 1918, fragmentary records at a site half a mile upstream.

GAGE.—Stevens continuous recorder on left bank; attended by employees of Walker River Irrigation District.

DISCHARGE MEASUREMENTS.—Made by wading or from highway bridge near gage. Excellent sections at all stages.

CHANNEL AND CONTROL.—Channel fairly straight. Bed of shifting sand and fine gravel. Banks covered with willows. Control indefinite and shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.40 feet at 5 p. m. June 29 (discharge, 1,160 second-feet); minimum stage, 0.68 foot at 11 a. m. February 13 (discharge, 28 second-feet).

1921–1922: Same as given above.

ICE.—Stage-discharge relation affected by ice at times.

DIVERSIONS.—Strosnider Canal heads about 1½ miles above gage. Nine diversions between gage and mouth of West Walker River with maximum capacity of 120 second-feet.

REGULATION.—Slight regulation by Twin Lakes Reservoir and by irrigation.

ACCURACY.—Stage-discharge relation shifting continually during year; affected by ice January 20 to February 8. Standard rating curve well defined. Water-stage recorder successfully operated throughout year except December 16, February 4-7, April 5-9, and September 30. Daily discharge ascertained by shifting-control method. Records good.

COOPERATION.—Gage-height record and four measurements furnished by Walker River Irrigation District.

Discharge measurements of East Walker River above Mason Valley, near Mason, Nev., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 3	A. J. Aikens[a]	0.96	57	June 28	R. R. Rowe	4.17	992
15	Rowe and Lindsley[a]	.99	53	July 29	Warren and King[c]	1.92	217
Jan. 9	Rowe and Beemer[b]	1.14	99	Aug. 17	Warren and Shirley[a]	1.37	103
May 19	D. R. Warren[c]	3.45	577				

[a] Ditch rider, Walker River Irrigation District.
[b] Water commissioner and chief engineer, Walker River Irrigation District.
[c] Engineer, Walker River Irrigation District.

Daily discharge, in second-feet, of East Walker River above Mason Valley, near Mason, Nev., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	53	63		104		81	142	342	688	990	238	102
2	54	61		109		77	138	351	715	850	252	106
3	56	61		119		78	150	375	710	733	295	102
4	55	61		98		82	179	425	742	679	351	92
5	54	63		92	55	82		556	810	679	250	87
6	54	63		95		86	175	670	880	751	222	87
7	58	63		100		83		728	925	661	202	86
8	60	60		100		83		746	970	607	190	80
9	60	63	70	90	73	79		602	975	564	176	75
10	58	66		76	58	83	185	414	925	532	166	75
11	58	65		79	51	83	183	302	860	500	154	74
12	56	63		84	38	80	183	302	820	496	137	73
13	55	61		74	34	75	170	366	770	500	127	72
14	54	62		70	37	95	153	397	810	504	119	71
15	53	65		87	48	140	183	453	825	472	107	66
16	53	67		89	58	140	208	500	710	442	103	65
17	53	64	72	97	68	107	212	520	688	425	103	65
18	51	56	82	98	70	98	204	544	742	418	108	64
19	53	51	101	69	83	95	214	580	770	442	114	64
20	51	56	98		84	101	292	552	742	464	117	64
21	50	63	91		87	103	422	488	733	492	118	64
22	50	67	68		78	108	556	411	746	446	122	64
23	47	70	71		80	110	643	387	751	390	113	66
24	46	70	80		80	123	720	422	728	351	104	64
25	45	66	90		81	128	625	476	715	315	98	63
26	45	64	88	30	83	133	598	488	746	282	103	63
27	47	64	89		87	126	576	411	825	255	102	60
28	53		92		84	123	468	378	955	235	126	58
29	57	65	88		-------	123	428	428	1,100	212	148	58
30	61		96		-------	130	381	476	1,060	196	124	60
31	64	-------	101		-------	142	-------	580	-------	202	114	-------

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

Monthly discharge of East Walker River above Mason Valley, near Mason, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	64	45	53.7	3,300
November	70	51	63.1	3,760
December	101	----------	78.3	4,810
January	119	----------	67.4	4,140
February	87	34	64.4	3,580
March	142	75	102	6,270
April	720	138	303	18,000
May	746	302	473	29,100
June	1,100	688	815	48,500
July	990	196	487	29,900
August	351	98	155	9,530
September	106	58	73.0	4,340
The year	1,100	----------	228	165,000

WALKER RIVER AT MASON, NEV.

LOCATION.—In NE. ¼ sec. 33, T. 13 N., R. 25 E., 200 yards above highway bridge at Mason, Lyon County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—November 21, 1910, to September 15, 1912; July 3, 1913, to September 30, 1916; and May 15, 1921, to September 30, 1922.

GAGE.—Stevens continuous water-stage recorder on left bank; inspected by employees of Walker River Irrigation District.

DISCHARGE MEASUREMENTS.—Made by wading near gage or from highway bridge 200 yards below gage. Good sections at all stages.

CHANNEL AND CONTROL.—Bed is shifting sand; no well-defined control. Two or more channels at low water. One channel for medium and high stages.

EXTREMES OF DISCHARGE.—Maximum stage during period, 5.94 feet at 2 a. m. on June 8 (discharge, 2,400 second-feet); minimum stage not determined.

1921–1922: Maximum stage, that of June 8, 1922; minimum stage, 1.74 feet September 17, 1921 (discharge, 17 second-feet).

ICE.—No records during winter.

DIVERSIONS.—None between confluence of East and West Walker Rivers and gaging station. During irrigation season practically all of stream is diverted below gage for use in Mason Valley. Maximum capacity of canals diverting water from East Walker River in Mason Valley, 120 second-feet; from West Walker River, 100 second-feet.

REGULATION.—Flow affected by storage of waters in Topaz Lake, Poor Lake, and Twin Lakes, as well as by extensive irrigation in Mason, Smith, Antelope, and Bridgeport Valleys.

ACCURACY.—Stage-discharge relation not permanent. Standard rating curves fairly well defined. Water-stage recorder operated successfully for periods except as stated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Shifting-control method used June 6 to September 30. Records fair.

Discharge measurements of Walker River at Mason, Nev., during the year ending September, 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 16	R. R. Rowe	2.00	38.1	July 5	D. R. Warren	4.43	1,620
Jan. 10	do	2.39	87.2	Sept. 1	Warren[a] and Shirley[a]	2.30	135
May 20	D. R. Warren[a]	4.89	1,530				

[a] Engineer, Walker River Irrigation District.

Daily discharge, in second-feet, of Walker River at Mason, Nev., for the year ending September 30, 1922

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	49	280	225	598	1,370	2,020	92	140
2	35	47	266	213	579	1,450	1,910	140	122
3	35	44	252	238	645	1,480	1,920	84	112
4	35	43	234	261	768	1,600	1,710	235	87
5	36	44	213	330	957	1,750	1,670	200	73
6	36	46	213	345	1,190	1,960	1,800	148	75
7	37	50	205	300	1,310	2,250	1,910	95	73
8	38	50	205	261	1,430	2,270	1,730	59	69
9	39	50	185	285	1,280	2,200	1,570	53	61
10	41	53	185	266	944	2,010	1,440	40	63
11	38	54	201	290	710	1,580	848	36	58
12	38	53	230	335	600	1,440	677	54	50
13	39	49	174	320	492	1,540	871	126	47
14	40	49	171	280	650	1,750	742	245	40
15	41	49	243	295	810	1,910	622	176	36
16	38	53	290	340	970	1,960	583	160	34
17	38	56	275	335	1,340	2,010	499	144	44
18	38	59	225	310	1,410	2,060	505	130	53
19	39	56	193	453	1,580	2,010	576	136	61
20	40	54	181	723	1,580	2,020	758	172	79
21	41	54	185	742	1,490	2,110	895	195	63
22	41	59	197	775	1,280	2,000	750	176	56
23	43	60	205	808	1,180	1,970	642	164	56
24	43	63	230	866	1,130	1,760	469	148	63
25	42	62	230	860	1,280	1,540	324	119	77
26	39	60	248	801	1,200	1,600	230	130	77
27	39	62	243	808	976	1,820	160	136	61
28	40		234	736	1,000	2,090	133	148	56
29	42	60	213	671	970	2,260	116	250	53
30	44		205	671	1,080	2,120	97	286	56
31	46		225		1,210		75	176	

NOTE.—No gage heights Nov. 28-30, Apr. 22, and May 12, 14, and 15; discharge estimated. No record Dec. 1 to Feb. 28.

Monthly discharge of Walker River at Mason, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	46	34	39.2	2,410
November	63	43	53.6	3,190
March	290	171	221	13,600
April	866	213	471	28,000
May	1,580	492	1,050	64,600
June	2,270	1,370	1,860	111,000
July	2,020	75	911	56,000
August	286	36	144	8,850
September	140	34	66.5	3,960

WALKER RIVER NEAR WABUSKA, NEV.

LOCATION.—In NE. ¼ sec. 20, T. 15 N., R. 26 E., half a mile above boundary of Walker River Indian Reservation and 5 miles east of Wabuska, Lyon County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—January 15, 1920, to September 30, 1922. Comparable records were obtained July 22, 1902, to July 31, 1908, at railroad bridge 3 miles upstream.

GAGE.—Stevens eight-day water-stage recorder on left bank; installed July 28, 1920; inspected by Mrs. A. E. Parker. Temporary staff gage used since August 30, 1922.

DISCHARGE MEASUREMENTS.—Made by wading or from cable 30 feet upstream.

CHANNEL AND CONTROL.—Banks fairly high and clean. One channel, except at very high stages when abandoned channel on right may carry small quantity of water around gage. Bed of stream composed of sand.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.08 feet at 10 a. m. June 8 (discharge, 2,220 second-feet); minimum stage recorded, 3.38 feet October 9–13 (discharge, 4 second-feet).

1920–1922: Maximum stage recorded, 7.08 feet at 10 a. m. June 8 (discharge, 2,200 second-feet); minimum stage, 3.26 feet September 1, 1921 (discharge, 1 second-foot).

ICE.—Some ice effect in winter.

DIVERSIONS.—Below all diversions above the Walker River Indian Reservation.

REGULATION.—Flow regulated by Topaz Lake, Poor Lake, and Twin Lakes Reservoirs; Regulation in Topaz Lake was begun in 1921. The Poor Lake and Twin Lakes Reservoirs have been in operation many years but the effect of this regulation is small.

ACCURACY.—Stage-discharge relation changed June 9. Rating curves fairly wel defined. Operation of water-stage recorder satisfactory, except as stated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph, or mean daily gage height readings. Records fair.

Discharge measurements of Walker River near Wabuska, Nev., during the year ending September 30, 1922.

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 16	R. R. Rowe	3.43	5.6	June 27	R. R. Rowe	6.16	1,360
Jan. 10	do	3.83	70	Aug. 30	D. R. Warren [a]	[b] 1.30	81
May 8	A. B. Purton	5.70	924	Sept. 14	do	.61	7.2

[a] Engineer, Walker River Irrigation District.
[b] Temporary gage, 500 feet downstream.

Daily discharge, in second-feet, of Walker River near Wabuska, Nev., for the year ending September 30, 1922

Date	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	11	39				139		1,000	1,750		
2	20	12	42				150	350	1,150	1,650	45	
3	18	12	46				152		1,300	1,580		
4	15	13	42				167		1,340	1,510	75	
5	12	13	61	73	150	90	187		1,600	1,440	100	
6	8	15	78				198	640	1,740	1,500		
7	5	16	89				187		2,000	1,530	40	20
8	4	17	82	72			164	925	2,130	1,450		
9	4	20	82	76	200		172	950	2,170	1,340		
10	4	20	74	72		94	194		2,030	1,180		
11	4	21	107	67	170	100	187	670	1,630	905	10	
12	4	22	87	72		96	204		1,660	695		
13	4	22	72	80	140	89	204	390	1,690	648	40	
14	4	21	72	76		96	191	380	1,720	621	80	7
15	4	21	74	80		115	175	370	1,870	510		7
16	5	22		87	280	142	187		1,880	456		7
17	5	25		82		170	218	900	1,860	408		6
18	4	39		105		150	218		1,910	400		7
19	4	28	70			132	306		1,920	438		8
20	4	25				122	448	1,430	1,910	501		8
21	4	25				127	419	1,420	1,890	470	40	9
22	4	25				127	469	1,340	1,820	434		8
23	4	25	69			129	506	1,170	1,700	392		8
24	5	25	65		150	137	549	1,060	1,710	340		7
25	5	25	69	100		142	601	1,000	1,520	270		7
26	5	25	76			147		1,100	1,430	198		11
27	7	27	76			147	480	1,050	1,370	151		11
28	7	28	76			145		925	1,620	107		11
29	8	32	76		-------	134		805	1,780	89		12
30	9	35	72		-------	127	350	784	1,920	74	81	12
31	10	-------	74		-------	127	-------	867	-------	60	100	-------

NOTE.—Discharge determined from hydrographic comparison with records for stations at Mason, Wabuska, and Schurz Oct. 4–6, 20, Oct. 28 to Nov. 1, Nov. 21–25, Dec. 16–22, Jan. 1–7, Jan. 19 to Mar. 9, Apr. 26 to May 7, May 9–12, 14–19, 25–27, June 12, Aug. 1–3, and Aug. 5 to Sept. 13. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Walker River near Wabuska, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	20	4	7.0	428
November	39	11	22.2	1,320
December	107	39	70.6	4,340
January	-------	-------	86.5	5,320
February	-------	-------	181	10,400
March	170	89	116	7,130
April	-------	139	295	17,600
May	1,430	-------	812	49,900
June	2,170	1,000	1,710	102,000
July	1,750	60	745	45,890
August	100	-------	45.2	2,780
September	-------	6	13.5	803
The year	2,170	4	342	248,000

89017—27†—WSP 550——8

WALKER RIVER AT SCHURZ, NEV.

LOCATION.—In sec. 36, T. 13 N., R. 28 E., 50 feet below Southern Pacific Railroad bridge at Schurz, Mineral County, 3 miles above Walker Lake and 6 miles below diversion dam of Walker River Indian Reservation.

DRAINAGE AREA.—2,850 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 2, 1913, to September 30, 1922.

GAGE.—Inclined staff gage on right bank 50 feet below Southern Pacific Railroad bridge installed November 14, 1916; vertical staff gage for low stages on bridge pier; read by J. G. Bradford.

DISCHARGE MEASUREMENTS.—Made by wading or from flume half a mile below gage.

CHANNEL AND CONTROL.—Bed composed of loose sand; shifts occasionally. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum discharge recorded during year, 2,050 second-feet at 6 a. m. July 1; no flow October 1 to November 5, and September 1 and 2.

1913–1922: Maximum stage recorded, 11.0 feet June 8 and 9, 1914 (discharge, 2,530 second-feet); no flow during periods in 1913, 1920, 1921, and 1922.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Below all diversions.

REGULATION.—Flow affected by irrigation diversions above.

ACCURACY.—Stage-discharge relation changed during June; affected by ice January 16–21. Rating curves fairly well defined. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table using shifting-control method June 8–25. Records good except for August and September for which they may be poor.

Discharge measurements of Walker River at Schurz Nev., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 16	R. R. Rowe		0	May 8	A. B. Purton	4.10	679
Jan. 16	do	[a] 1.46	32.4	June 28	R. R. Rowe	5.40	1,490
16	do	[a] 1.70	71				

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Walker River at Schurz, Nev., for the year ending September 30, 1922

Day	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	21	28	82	51	157	302	730	1,940	59	0
2	-------	21	28	88	46	161	308	940	1,730	48	0
3	-------	21	30	91	46	157	302	1,060	1,590		3
4	-------	21	30	91	46	152	313	1,140	1,560		20
5	-------	21	30	97	53	152	332	1,200	1,520		17
6	2	21	30	116	63	161	337	1,420	1,480		13
7	3	20	30	116	79	165	342	1,510	1,480		6
8	4	18	26	133	88	171	730	1,730	1,540		6
9	4	18	26	133	91	177	850	1,910	1,400	15	6
10	4	18	26	133	107	185	870	1,970	1,060		3
11	4	26	28	133	124	198	700	1,880	880		1
12	4	26	30	124	124	206	540	1,600	785		1
13	4	26	30	107	124	212	421	1,520	650		1
14	4	23	30	107	133	223	342	1,670	635		1
15	4	21	30	133	133	223	332	1,650	590	2	1
16	4	21	50	152	142	267	350	1,760	478	3	1
17	6	21		171	142	285	458	1,730	440	5	1
18	8	21		198	161	362	762	1,740	393	2	1
19	8	21		223	165	410	1,100	1,800	367	2	1
20	8	22	40	241	142	429	1,160	1,840	420	2	1
21	11	25		267	161	458	1,190	1,810	458	2	1
22	15	26	63	185	161	500	1,130	1,820	458	2	1
23	18	26	63	110	171	478	1,030	1,720	435	2	1
24	18	26	66	91	161	500	885	1,640	393	3	1
25	20	26	70	91	157	496	805	1,630	325	2	1
26	21	26	70	84	161	500	870	1,500	249	2	1
27	21	26	76	66	161	449	850	1,380	185	3	1
28	21	26	76	53	161	415	730	1,500	137	3	1
29	21	26	76	-------	161	367	760	1,670	94	2	1
30	21	26	76	-------	157	256	635	1,900	94	12	1
31	-------	26	84	-------	152	-------	650	-------	86	4	-------

NOTE.—Discharge determined from hydrographic comparisons with records for stations at Mason, Wabuska, and Schurz Jan. 17–21, because of ice effect, and Aug. 3–14 because of unreliable gage readings. No flow Oct. 1 to Nov. 5.

Monthly discharge of Walker River at Schurz, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	0	0	0	0
November	21	0	8.6	512
December	26	18	23.0	1,410
January	84	26	45.2	2,780
February	267	53	129	7,160
March	171	46	123	7,560
April	500	152	296	17,600
May	1,190	302	658	40,500
June	1,970	730	1,580	94,000
July	1,940	86	769	47,300
August	59	2	11.0	676
September	20	0	3.1	184
The year	1,970	0	303	220,000

WEST WALKER RIVER NEAR COLEVILLE, CALIF.

LOCATION.—In NE. ¼ NW. ¼ sec. 28, T. 8 N., R. 23 E., at mouth of Ross Canyon, at head of Antelope Valley, 400 feet east of State highway, 1,100 feet above Trry Canal heading, and 6 miles above Coleville, Mono County.

DRAINAGE AREA.—245 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 18, 1915, to September 30, 1922; October 5, 1902, to July 31, 1908, a station was maintained half a mile above present gage.

GAGE.—Ferguson 30-day water-stage recorder on left bank installed August 15, 1919, was replaced by a Stevens continuous recorder on May 5, 1922; inspected by T. F. Hardy.

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

CHANNEL AND CONTROL.—Bed composed of large boulders, sand, and gravel; fairly permanent. One channel at all stages. Control composed of large boulders and some loose gravel; fairly permanent. Point of zero flow, −0.2 ±0.3 foot determined October 14, 1921.

EXTREMES OF DISCHARGE.—Maximum stage during year, 5.95 feet at 4 a. m. June 5 (discharge, 2,640 second-feet); minimum stage not recorded.

1915–1922: Maximum stage recorded, 5.74 feet at 3 a. m. June 12, 1921 (discharge, 2,710 second-feet); minimum discharge, 14 second-feet at 10 p. m. March 2, 1916.

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

DIVERSIONS.—Station is above diversions except one small canal 1½ miles upstream which diverts a maximum of 3 second-feet.

REGULATION.—A small reservoir at Poor Lake, 17 miles upstream, capacity of which is not known, stores water from the spring floods and releases it later in the summer. Regulation is very slight.

ACCURACY.—Stage-discharge relation changed several times during year; affected by ice during January. Three poorly defined curves were used. Weekly gage readings were made from December 6 to May 5. Water-stage recorder operated satisfactorily during remainder of year except one short period. Daily discharge ascertained by applying mean daily gage height or weekly reading to rating table. Discharge was estimated for periods of no gage heights by hydrographic comparison of all Walker River stations and climatological data. Records fair.

COOPERATION.—Two discharge measurements furnished by Walker River Irrigation District.

Discharge measurements of West Walker River near Coleville, Calif., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 14	R. R. Rowe	1.60	57	July 1	R. R. Rowe	4.41	1.230
Jan. 12	do	[a] 1.75	54	Aug. 8	Warren [b] and Rhodes [b]	2.62	255
May 6	A. B. Purton	4.12	910	Sept. 6	do	[c] 2.00	91

[a] Stage-discharge relation affected by ice.
[b] Engineer, Walker River Irrigation District.
[c] Intake partly clogged.

Daily discharge, in second-feet, of West Walker River near Coleville Calif., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	60	57	50				65		1,790	1,390	460	118
2	59	56	53		45		62		1,930	1,350	400	110
3	58	56	52					750	2,080	1,330	342	104
4	58	55	32						2,180	1,420	320	102
5	66	55	63		46				2,290	1,490	289	98
6	67	54	47	54			62	1,110	2,210	1,400	271	96
7	67	54				55		1,180	2,140	1,240	271	92
8	66	54	40					950	2,050	1,140	262	91
9	63	54					63	700	1,600	985	247	87
10	62	54						550	1,360	894	229	83
11	60	54	36					474	1,300	887	217	83
12	59	54		54	50		60	487	1,440	874	183	82
13	58	54						620	1,480	832	162	80
14	57	54						850	1,360	802	152	78
15	57	53	40			56		1,090	1,580	802	144	76
16	57	52		50			55	1,210	1,810	760	134	75
17	57	52				55		1,350	1,860	700	125	75
18	57	54	50					1,530	1,760	705	121	73
19	57	57			52	52		1,430	1,870	832	118	72
20	57	60					100	1,280	1,930	766	114	72
21	56	55						978	1,810	585	110	70
22	56	55				60		999	1,720	541	106	68
23	56	52	52				220	1,240	1,580	487	104	68
24	56	52			55			1,470	1,600	416	98	67
25	56	54		40				1,560	1,780	376	98	67
26	56	52				74	300	1,050	2,180	359	110	65
27	56	50						1,030	2,080	348	128	64
28	56	45	54					1,300	1,950	342	139	64
29	56	45				70		1,440	1,730	345	106	64
30	56	45	54				392	1,570	1,640	348	142	64
31	57							1,780		400	130	

Monthly discharge of West Walker River near Coleville, Calif., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	67	56	58.7	3,610
November	60	45	53.3	3,170
December	63		47.3	2,910
January			47.7	2,930
February			50.8	2,820
March			58.9	3,620
April			133	7,910
May	1,780		1,060	65,200
June	2,290	1,360	1,810	108,090
July	1,490	342	811	49,900
August	460	98	188	11,600
September	118	64	80.3	4,780
The year	2,290		368	266,000

WEST WALKER RIVER NEAR WELLINGTON, NEV.

LOCATION.—In sec. 10, T. 10 N., R. 23 E., in canyon between Antelope and Smith valleys, in Douglas County three-quarters of a mile above Lyon County line, a quarter of a mile above Plymouth Canal on right and Colony or Simpson Canal on left, and 1 mile above Wellington, Lyon County.

DRAINAGE AREA.—521 square miles (measured on topographic map).

RECORDS AVAILABLE.—December 20, 1917, to September 30, 1922.

GAGE.—Stevens eight-day water-stage recorder on right bank; inspected by J. W. Pierce.

DISCHARGE MEASUREMENTS.—Made by wading near gage or from Hoye Bridge, about 2 miles upstream.

CHANNEL and CONTROL.—One channel at all stages. Banks not subject to overflow. Stream bed composed of boulders and gravel. Control composed of boulders short distance below gage; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, 5.32 feet at 5 a. m. June 6 (discharge, 2,110 second-feet); minimum stage not recorded but was probably less than 10 second-feet late in January.

1918–1922: Maximum and minimum stages same as given above.

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

DIVERSIONS.—Station is below all diversions and return water in Antelope Valley and above all diversions in Smith Valley except Saroni Canal, records of flow for which are given on page 108.

REGULATION.—Flow partly controlled by Topaz Lake and Poor Lake Reservoirs.

ACCURACY.—Stage-discharge relation practically permanent during year; probably affected by ice most of January. Rating curve fairly well defined. Operation of water-stage recorder unsatisfactory except for a few short periods; weekly readings were made during year except during winter. Daily discharge ascertained by applying to rating table mean daily gage height, determined from recorder graph, or weekly staff gage readings. Discharge estimated for periods of no gage-height record by hydrographic comparison of all Walker River stations and climatological data. Records fair.

COOPERATION.—One discharge measurement furnished by Walker River Irrigation District.

Discharge measurements of West Walker River near Wellington, Nev., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 12	Rowe and Pierce [a]	1.00	42.6	June 29	R. R. Rowe	4.40	1,480
Jan. 15	R. R. Rowe	b. 94	15	Aug. 23	D. R. Warren [c]	2.38	329
May 3	A. B. Purton	2.12	253				

[a] Former water commissioner.
[b] Stage-discharge relation affected by ice.
[c] Engineer, Walker River Irrigation District.

Daily discharge, in second-feet, of West Walker River near Wellington, Nev., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40					30			1,100		
2		23	22			29	200	1,300	1,150		260
3						28	256			410	
4			22			26	400	1,550			183
5	41	22		25		24	550	1,830	1,280		
6						24	670	2,000		436	170
7			23			24	780				
8	45					29	895		1,210		
9		22				32	620			380	151
10	44					36					
11			21	30		37	400		770		
12	42		20	31		35		1,900		580	
13	42	22	20	25		37					
14	43		20	20		37	432				150
15	42		20	15		35			620		
16	40	23	20			37				410	
17	39		20				1,200				192
18	40		22					1,620			
19		25	20						560		
20	42	22	26			215				419	195
21		23	28				1,280	1,700		370	
22	45								534	350	
23		22	27	15		51				332	
24											209
25			26				1,150	1,080		310	
26	30	22				100			340		
27		22						1,700		321	190
28		22					995				
29		22	25		30			1,480	332	330	
30	26	22			30	148	950	1,300	330		
31	25				30						

Monthly discharge of West Walker River near Wellington, Nev., for the year ending September 30, 1922.

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October		25	38.2	2,350
November	25	22	22.4	1,330
December	28	20	23.2	1,430
January	31		19.7	1,210
February			a 25	1,390
March			a 30	1,840
April		24	86.3	5,140
May			832	51,200
June			1,700	101,000
July			711	43,700
August			382	23,500
September			186	11,100
The year			339	245,000

a Estimated.

WEST WALKER RIVER NEAR HUDSON, NEV.

LOCATION.—In SE. ¼ sec. 13, T. 11 N., R. 24 E., half a mile above highway bridge in upper end of Wilson Canyon and 3 miles southeast of Hudson, Lyon County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 7, 1921, to September 30, 1922. Records for West Walker River at Hudson August 3, 1914, to September 30, 1921.

GAGE.—Stevens continuous recorder; inspected by employees of Walker River Irrigation District.

DISCHARGE MEASUREMENTS.—Made by wading near gage or from bridge half a mile below gage.

CHANNEL AND CONTROL.—Channel fairly straight. Bed of sand and fine gravel; few rocks. Control is rock riffle 200 feet below gage; shifts occasionally.

EXTREMES OF DISCHARGE.—Maximum stage during year, 6.35 feet at noon on June 7 (discharge, 2,530 second-feet); minimum stage, 1.09 feet on December 19 (discharge, 18 second-feet).

1921–22: Maximum and minimum stages same as given above.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Below all diversions in Smith Valley. Six canals divert between gage and mouth of river, with total capacity of 100 second-feet.

REGULATION.—By Poor Lake and Topaz Lake Reservoirs and irrigation.

ACCURACY.—Stage-discharge relation shifted several times; probably affected by ice January 19 to February 16. Standard rating curve fairly well defined. Water-stage recorder operated successfully except December 23 to January 7 and September 16-22. Daily discharge ascertained by applying to rating table mean daily gage height. Shifting-control method used September 21–23 and June 6–13. Discharge estimated from hydrographic comparison of all Walker River stations during periods of no gage heights and when gage heights were affected by ice. Records fair.

COOPERATION.—One discharge measurement and gage-height record furnished by Walker River Irrigation District.

Discharge measurements of West Walker River near Hudson, Nev., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 11	R. R. Rowe	1.19	30.3	June 29	R. R. Rowe	5.30	1,640
Jan. 11	do	1.22	26.7	Sept. 5	Warren [a] and Shirley [b]	1.70	99
May 7	A. B. Purton	3.96	691				

[a] Engineer, Walker River Irrigation Dirtrict.
[b] Ditch rider, Walker River Irrigation District.

Daily discharge, in second-feet, of West Walker River near Hudson, Nev., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21	25	21			35	29	146	1,080	1,190	211	103
2	22	25	21			35	29	163	1,190	1,190	201	101
3	23	25	22			35	28	197	1,300	1,250	152	96
4	23	24	24	22		35	27	261	1,450	1,100	127	90
5	25	25	30			34	27	383	1,640	1,180	161	93
6	25	25	25			33	26	545	2,030	1,280	137	98
7	29	25	25			32	25	645	2,370	1,260	126	96
8	34	25	25	22		30	24	735	2,130	1,080	122	88
9	35	25	30	25	40	29	23	585	1,940	950	101	86
10	33	25	22	25		29	23	400	1,720	740	86	86
11	31	24	23	27		29	30	280	2,230	419	124	86
12	30	24	19	32		30	32	195	1,940	422	209	76
13	29	24	19	41		27	30	160	1,860	520	287	58
14	29	23	19	29		26	29	199	1,610	401	328	56
15	30	22	19	32		35	28	306	1,590	380	268	48
16	30	22	19	36		76	27	525	1,620	351	261	
17	29	22	25	32	48	91	26	1,000	1,720	304	252	
18	29	25	28	60	152	62	28	1,100	1,760	383	245	
19	29	24	18		239	52	314	1,280	1,730	398	257	90
20	33	22	26		195	52	152	1,260	1,740	500	280	
21	33	22	21		117	53	45	1,170	1,790	488	280	
22	33	22	22		90	52	32	995	1,660	398	259	
23	34	22			74	49	32	955	1,610	327	230	111
24	34	22			57	45	42	1,020	1,120	248	220	127
25	29	22		25	45	39	63	1,160	970	187	189	135
26	29	22	22		54	34	73	780	905	135	187	115
27	29	22			51	31	93	800	1,320	135	183	101
28	29	22			39	29	106	765	1,580	167	167	90
29	28	22			-------	29	115	755	1,620	158	150	83
30	26	22			-------	29	148	845	1,220	156	120	106
31	25	-------			-------	29	-------	945	-------	169	106	-------

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

Monthly discharge of West Walker River near Hudson, Nev., for year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	35	21	29.0	1,780
November	25	22	23.4	1,390
December	30	18	22.6	1,390
January	60	----------	27.1	1,670
February	239	----------	64.3	3,570
March	91	26	39.5	2,430
April	314	23	56.9	3,390
May	1,280	146	663	40,800
June	2,370	905	1,610	95,800
July	1,280	135	576	35,400
August	328	86	194	11,900
September	135	48	92.0	5,470
The year	2,370	----------	284	205,000

SARONI CANAL NEAR WELLINGTON, NEV.

LOCATION.—In sec. 10, T. 10 N., R. 23 E., in canyon between Antelope and Smith valleys, Douglas County, 1 mile below head of canal, 1 mile above Wellington, Lyon County, and 150 feet east and 200 feet upstream from station on West Walker River.

RECORDS AVAILABLE.—May 26, 1920, to September 30, 1922.

GAGE.—Vertical enamel staff at upstream end of left abutment of bridge; read by J. W. Pierce.

DISCHARGE MEASUREMENTS.—Made by wading or from bridge.

CHANNEL AND CONTROL.—One channel at all stages. Control is gravel section of canal; shifts several times a year.

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

DIVERSIONS.—None above station.

REGULATION.—By head gates.

ACCURACY.—Stage-discharge relation changed frequently during latter part of year; affected by ice during winter. Rating curve used to June 4, fairly well defined; shifting-control method used June 5 to September 30. Gage read to hundredths once a week, except during winter. Daily discharge determined by applying gage height to rating table. For intermediate periods discharge estimated from notes by ditch rider or interpolated. Records fair.

COOPERATION.—Two discharge measurements furnished by Walker River Irrigation District.

Canal diverts water in NW. ¼ sec. 15, T. 10 N., R. 23 E., from right bank of West Walker River for use in Smith Valley. Combined flow of Saroni Canal and West Walker River near Wellington shows quantity of water flowing from Antelope Valley.

Discharge measurements of Saroni Canal near Wellington, Nev., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 12	Rowe and Pierce [a]	0.44	6.2	June 29	R. R. Rowe	2.30	73
Jan. 15	R. R. Rowe	[b] 1.10	4.2	July 15	Warren [c] and King [c]	2.44	77
May 3	A. B. Purton	1.39	33.5	Aug. 23	do	2.18	61

[a] Former water commissioner.
[b] Stage-discharge relation affected by ice.
[c] Engineer, Walker River Irrigation District.

Daily discharge, in second-feet, of Saroni Canal near Wellington, Nev., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	4	7				3	15		65		
2	7	4	7				3	25	62	50		48
3	7	5	7					34			60	
4	7	5	7						66			44
5	7	5	7				7			62		
6	7	5	7	5				25			56	46
7	7	5	7									
8	7	5	7					18	68	64		
9	7	5	7				12				59	
10	6	5	7				12					46
11	6	5	7				12	25	69	70		
12	6	5	7	4			12					
13	6	5	7	4			11				62	
14	7		7	4			11	47				46
15			8	4	2.5	3	11		68	78		
16			8				11				60	
17			8					55				44
18	9			4					66	70		
19												
20		5					11				60	
21								59	67		60	36
22	11						0			64	60	
23			7				0			64	60	
24										65	60	28
25								56	68	66	60	
26	8	7		2			8			67	59	
27		7							70	68	59	30
28		7						52		69		
29		7							73	69	53	
30	4	7					8	57	70	67		
31	4									65		

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

Monthly discharge of Saroni Canal near Wellington, Nev., for the year ending September 30, 1922

Month	Mean discharge in second-feet	Run-off in acre-feet	Month	Mean discharge in second-feet	Run-off in acre-feet
October	7.3	449	May	42.3	2,600
November	5.3	315	June	67.5	4,020
December	7.1	437	July	67.0	4,120
January	3.6	221	August	58.8	3,620
February	[a] 2.5	139	September	40.3	2,400
March	[a] 3.0	184			
April	8.4	500	The year	26.2	19,000

[a] Estimated.

HUMBOLDT-CARSON SINK BASIN

CARSON RIVER BASIN

EAST FORK OF CARSON RIVER NEAR MARKLEEVILLE, CALIF.

LOCATION.—In 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, 1922 (not complete).

GAGE.—Vertical staff, 75 feet below bridge, bolted to rock ledge on right bank; read by W. J. Clark.

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

CHANNEL AND CONTROL.—Gravel and small boulders; appear permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.95 feet June 8 (discharge, 2,050 second-feet); minimum stage, 2.5 feet November 13 (discharge, 49 second-feet).

1910–1922: Maximum stage recorded, 7.7 feet June 7, 1911 (discharge not determined); minimum stage, 1.45 feet September 20, 1913 (discharge, 6 second-feet).

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—No information.

REGULATION.—Low-water flow augmented by storage developed on Silver Creek above station.

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

The following discharge measurement was made by H. D. McGlashan:
August 12, 1922: Gage-height, 3.08 feet; discharge, 141 second-feet.

Daily discharge, in second-feet, of East Fork of Carson River near Markleeville, Calif., for the year ending September 30, 1922

Day	Oct.	Nov.	May	June	July	Aug.	Sept.
1							
2					1,010	260	
3							
4							
5							85
6							
7	60						85
8				2,050			
9				1,720			
10							
11							
12				1,400		129	
13		49		1,480		138	78
14							77
15							
16				1,800			
17							
18							
19							72
20				1,560			60
21				1,720		285	
22							60
23						129	72
24							
25							60
26				1,480			
27							60
28							
29			1,560				
30			1,800	1,200			
31						92	

CARSON RIVER NEAR EMPIRE, NEV.

LOCATION.—In sec. 12, T. 15 N., R. 20 E., just below tailrace of Brunswick mill, one-quarter mile below 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, 1922.

GAGE.—Inclined staff on left bank used since February 24, 1911.

DISCHARGE MEASUREMENTS.—Made from cable a quarter of a mile above gage or by wading just above bridge. When made from cable, power canal is measured and this quantity added.

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

EXTREMES OF DISCHARGE.—Maximum mean daily stage during year, 7.4 feet June 5 (discharge, 3,290 second-feet); minimum mean daily stage, 2.8 feet October 1–4; August 30, 31, and September 1, 2, and 5–7 (discharge, 16 second-feet).

1900–1922: 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).

ICE.—No information.

DIVERSIONS.—A large amount of water is diverted above station for irrigation in Carson Valley. Water diverted by Brunswick mill power canal is returned to river above gage.

COOPERATION.—Records of daily discharge furnished by United States Bureau of Reclamation.

Daily discharge, in second-feet, of Carson River near Empire, Nev., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	52	81	335	240	285	385	1,260	2,740	1,170	81	16
2	16	52	81	335	240	240	700	1,260	2,850	1,170	125	16
3	16	52	81	240	240	285	440	1,350	2,960	1,080	100	26
4	16	52	81	240	240	285	565	1,530	3,180	1,000	100	22
5	22	52	81	240	240	240	500	2,000	3,290	1,000	81	12
6	22	65	100	200	240	285	385	2,200	3,180	845	81	16
7	22	65	100	200	200	285	500	2,300	2,850	770	65	16
8	22	65	100	200	200	285	385	2,000	2,630	700	65	22
9	22	65	100	200	200	285	335	1,440	2,300	440	52	22
10	22	65	100	200	200	285	285	1,080	2,200	335	52	22
11	22	65	100	160	200	240	335	920	2,200	335	52	22
12	22	65	100	160	240	285	335	1,080	1,800	335	40	22
13	22	65	100	125	285	845	285	1,080	2,000	285	40	22
14	30	65	100	125	335	920	385	1,350	2,300	240	40	22
15	30	65	100	160	500	1,350	335	1,800	2,300	240	40	22
16	30	65	81	160	630	700	285	2,100	2,300	240	40	22
17	30	65	100	160	845	440	285	2,300	2,200	200	30	22
18	30	65	100	100	845	385	285	2,630	2,000	200	30	22
19	30	65	100	100	920	385	335	2,740	1,800	200	30	22
20	40	65	100	81	1,170	385	440	2,520	1,710	385	30	22
21	40	81	100	81	1,260	385	565	2,000	1,530	385	30	22
22	40	81	100	125	1,000	440	700	1,800	1,440	335	22	22
23	40	81	100	125	920	500	845	2,100	1,260	285	22	22
24	40	81	100	160	845	565	920	2,300	1,260	200	22	22
25	40	81	100	160	565	630	920	2,520	1,260	200	22	22
26	40	81	125	200	500	440	1,080	2,520	1,440	160	22	22
27	52	81	125	200	385	500	1,170	2,630	1,530	125	22	22
28	52	81	160	200	285	385	1,260	2,300	1,350	81	22	22
29	52	81	160	200	-------	335	1,260	2,000	1,260	40	22	22
30	52	81	160	200	-------	385	1,260	2,300	1,170	52	16	22
31	52	-------	240	200	-------	500	-------	2,630	-------	52	16	-------

Monthly discharge of Carson River near Empire, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	52	16	31.7	1,950
November	81	52	68.2	4,060
December	240	81	108	6,640
January	335	81	180	11,100
February	1,260	200	499	27,700
March	1,350	240	444	27,300
April	1,260	285	589	35,000
May	2,740	920	1,940	119,000
June	3,290	1,170	2,080	124,000
July	1,170	40	422	25,900
August	125	16	45.5	2,800
September	22	16	21.0	1,250
The year	3,290	16	534	387,000

CARSON RIVER NEAR FORT CHURCHILL, NEV.

LOCATION.—In sec. 5, T. 16 N., R. 23 E., 1 mile west of Clifton station, on Mound House-Churchill branch of Southern Pacific Railroad, 9 miles west of Fort Churchill, Lyon County, and 10 miles below Dayton.

DRAINAGE AREA.—1,200 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 13, 1911, to September 30, 1922.

GAGE.—Inclined staff on right bank with vertical extension for high water.

DISCHARGE MEASUREMENTS.—Made from suspension bridge 500 feet above gage or by wading.

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

EXTREMES OF DISCHARGE.—Maximum mean daily stage during year, 9.9 feet June 6 and 7 (discharge, 3,900 second-feet); minimum mean daily stage, 3.4 feet October 1–4 and 7–9 (discharge, 9 second-feet).

1911–1922: Maximum stage, 11.5 feet January 26, 1914 (discharge, 6,150 second-feet); minimum stage, 3.0 feet September 1 to October 2, 1919 (discharge, 2 second-feet).

ICE.—No information.

DIVERSIONS.—Carson and Dayton valleys are irrigated above station.

REGULATION.—Flow affected by diversions.

COOPERATION.—Records of daily discharge furnished by the United States Bureau of Reclamation.

Daily discharge, in second-feet, of Carson River near Fort Churchill, Nev., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9	88	173	332	248	620	655	1,340	2,920	1,480	70	37
2	9	88	173	360	304	585	655	1,340	3,160	1,340	37	37
3	9	88	173	480	332	515	620	1,280	3,280	1,220	107	37
4	9	88	196	550	304	515	690	1,280	3,520	1,160	107	37
5	22	88	196	450	304	515	760	1,550	3,400	1,110	107	37
6	22	88	173	390	276	450	690	1,930	3,900	1,010	107	37
7	9	88	173	360	222	420	620	2,170	3,900	920	107	37
8	9	107	173	360	276	450	655	2,350	3,520	880	88	37
9	9	107	196	332	276	450	655	2,260	3,280	725	88	37
10	22	107	196	304	276	480	620	1,770	3,040	655	88	37
11	22	107	196	276	304	480	550	1,280	2,560	620	70	37
12	22	107	196	276	304	480	550	1,110	2,325	620	70	37
13	22	107	196	276	304	515	515	960	2,210	585	53	37
14	37	129	196	276	304	515	515	1,110	2,325	550	53	37
15	37	129	196	222	304	585	480	1,480	2,680	450	53	37
16	37	129	196	196	304	1,110	480	1,930	2,800	360	53	37
17	37	129	196	196	332	1,110	480	2,170	2,800	332	53	37
18	37	150	196	222	480	1,060	480	2,440	2,440	304	37	37
19	37	129	196	222	655	620	450	2,620	2,440	304	37	37
20	37	150	196	222	1,620	620	515	2,890	2,325	420	37	37
21	53	150	173	222	1,060	655	655	2,800	1,930	620	37	37
22	53	150	173	222	1,060	655	690	2,350	1,770	550	37	37
23	53	150	173	222	920	655	800	2,010	1,690	515	37	37
24	53	173	173	222	760	620	920	2,260	1,550	360	37	37
25	53	173	196	248	655	690	960	2,620	1,480	332	37	37
26	53	173	196	248	655	690	1,110	2,710	1,480	304	37	37
27	53	173	222	248	655	690	1,220	2,010	1,620	248	37	37
28	53	173	248	248	655	620	1,160	1,770	1,550	276	37	37
29	70	150	248	248	-------	620	1,220	1,930	1,480	196	37	37
30	70	173	248	248	-------	655	1,280	2,170	1,340	150	37	37
31	88	-------	276	248	-------	655	-------	2,440	-------	88	37	-------

Monthly discharge of Carson River near Fort Churchill, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maixmum	Minimum	Mean	
October	88	9	35.7	2,200
November	173	88	128	7,620
December	276	173	197	12,100
January	550	196	288	17,700
February	1,620	222	505	28,000
March	1,110	420	623	38,300
April	1,280	450	722	43,000
May	2,890	960	1,950	120,000
June	3,900	1,340	2,490	148,000
July	1,480	88	603	37,100
August	107	37	59.0	3,630
September	37	37	37.0	2,200
The year	3,900	9	635	460,000

MARKLEEVILLE CREEK[1] ABOVE MARKLEEVILLE, CALIF.

LOCATION.—At highway bridge above mouth of Pleasant Valley Creek, three-fourths mile above Markleeville, Alpine County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—November 7, 1911, to September 30, 1922 (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.—Gravel and small boulders; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.30 feet June 6 (discharge, 460 second-feet); minimum stage recorded, 0.55 foot October 5 and 9 (discharge, 0.2 second-foot).

1911–1922: Maximum stage recorded, 3.65 feet at 4.30 p. m. June 15, 1917 (discharge, 602 second-feet); minimum stage recorded, 0.45 foot September 5, 1921 (discharge, 0.05 second-foot).

ICE.—No record obtained during winter.

DIVERSIONS.—Town ditch, which heads above gage, furnished water for irrigation and domestic supply at Markleeville. A small ditch also diverts water for irrigation on Hot Springs ranch.

REGULATION.—No information.

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

The following discharge measurement was made by H. D. McGlashan:
August 21, 1922: Gage height, 0.68 foot; discharge, 3.3 second-feet.

Daily discharge, in second-feet, of Markleeville Creek above Markleeville, Calif., for the year ending September 30, 1922

Day	Oct.	Nov.	May	June	July	Aug.	Sept.
1				310			
2						6	2.4
3							
4							2.5
5	0.2						
6				460			
7				292			
8							
9	.2						
10							
11							2.4
12						3.3	
13		0.4					2.2
14		.2		245			
15							2.2
16							2.5
17						3.0	
18							
19							2.2
20							
21							
22				112		3.0	2.2
23							
24			245				
25							
26					6		2.2
27							
28							
29							
30							
31						2.4	

[1] Known locally as Hot Springs Creek.

MARKLEEVILLE CREEK AT MARKLEEVILLE, CALIF.

LOCATION.—In SE. ¼ sec. 21, T. 10 N., R. 20 E., at highway bridge at Markleeville, Alpine County, three-fourths of a mile below junction with Pleasant Valley Creek.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—November 11, 1910, to September 30, 1922 (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.—Gravel and boulders; somewhat shifting during high water. Banks are high and not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage recorded during the year, 4.4 feet June 6 (discharge, 805 second-feet); minimum stage recorded, 1.09 feet August 12 (discharge, 13 second-feet).

1910–1922: Maximum stage recorded, 5.3 feet June 15, 1912 (discharge, 915 second-feet); minimum stage recorded, 0.65 foot September 6, 1920 (discharge, 2.0 second-feet). Flood of March, 1907, reached a stage about 9 feet.

ICE.—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.—Stage-discharge relation changed from that of previous year. Rating curve fairly well-defined. Gage read to half-tenths occasionally. Daily discharge ascertained by applying gage height to rating table.

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

The following discharge measurement was made by H. D. McGlashan: August 12, 1922: Gage height, 1.09 feet; discharge, 13 second-feet.

Daily discharge, in second-feet, of Markleeville Creek at Markleeville, Calif., for the year ending September 30, 1922

Day	May	June	July	Aug.	Day	May	June	July	Aug.
1		700			16				
2			158	25	17				
3			150		18				
4					19				13
5		750			20				
6		805			21		464		
7		700			22		320		
8		700			23		292		
9		552			24	650			
10					25				
11					26		265		
12		650		13	27				
13		424			28				
14					29	552			
15		552			30	650	186		
					31				

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 1 mile above mouth of Pine Creek.

DRAINAGE AREA.—5,010 square miles (measured on Land Office maps).

RECORDS AVAILABLE.—November 27, 1902, to October 19, 1906; July 26, 1911, to September 30, 1922.

GAGE.—Chain gage at highway bridge since December 1, 1911; read daily by Albina Siri and Wendell Jones.

DISCHARGE MEASUREMENTS.—Made from cable about an eighth of a mile above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel. Control at low stages is gravel bar 50 to 75 feet below gage; at high stages a pile bent railroad bridge about 300 feet below gage and rock riffle a few hundred feet farther downstream become effective; both 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, 7.7 feet at 3 p. m. May 9 (discharge, 3,350 second-feet); minimum stage, 1.28 feet at 3 p. m. September 30 (discharge, 27 second-feet).

1903–1906; 1911–1922: Maximum stage recorded, 8.6 feet at 10 a. m. March 5, 1921 (discharge, 4,300 second-feet); minimum stage, 0.86 foot, August 25 to September 18, 1919 (discharge, 9 second-feet).

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Some water diverted for irrigation in valleys above canyon.

REGULATION.—Flow affected by irrigation diversions above.

ACCURACY.—Stage-discharge relation remained permanent except when affected by ice in January and February and when driftwood was lodged on bridge below gage May 2 to July 5. Shifting-control method used May 2–8 and June 26 to July 5. Rating curves well defined. Gage read to hundredths once daily except January 5 to February 10, February 12–16, and March 1–3 when ice was below chain weight. Daily discharge ascertained by applying daily gage height to rating table except for period of ice effect for which it was estimated from one meter measurement, weather records, and observer's notes. Records good.

Discharge measurements of Humboldt River at Palisade, Nev., during the year ending September 30, 1922

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 23	1.66	52	Jan. 19	[a] 2.61	96	May 30	[b] 6.02	2,010
Jan. 19	[a] 2.00	54	Mar. 30	4.42	1,030	June 24	[b] 5.14	1,390

[a] Stage-discharge relation affected by ice.
[b] Stage-discharge relation affected by drift on pile bridge below gage.

Daily discharge, in second-feet, of Humboldt River at Palisade, Nev., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	F b.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	83	132	167			1,020	2,880	1,930	700	91	44
2	32	83	132	177		110	1,030	3,060	2,030	670	91	52
3	32	83	129	149			1,090	3,130	2,030	625	93	52
4	30	88	125	129		115	1,140	2,990	2,000	575	93	50
5	30	101	122			115	1,280	3,020	2,000	500	91	50
6	30	101	109		100	122	1,380	3,080	2,000	424	88	42
7	32	96	112			132	1,480	3,140	2,070	385	88	47
8	33	86	112			153	1,690	3,290	2,070	362	86	46
9	33	86	112			153	1,620	3,350	2,110	325	83	46
10	35	86	118			145	1,450	3,190	2,110	290	81	44
11	35	86	118		93	132	1,450	3,070	2,030	264	76	43
12	38	86	129	100		132	1,440	2,990	1,960	239	72	43
13	40	86	134			140	1,310	2,630	2,000	216	67	41
14	43	86	140			149	1,190	2,390	2,070	199	63	40
15	44	86	145		80	239	1,160	2,150	2,110	177	59	39
16	44	88	98			786	1,140	2,000	2,110	172	59	38
17	46	93	101		104	1,210	1,080	1,900	2,070	158	55	35
18	47	96	107		115	1,950	1,030	1,790	1,960	145	65	34
19	50	96	107		115	924	996	2,030	2,190	138	107	33
20	50	96	109	60	125	1,040	1,060	2,230	2,070	132	86	33
21	50	96	115		132	1,240	1,200	2,350	1,900	127	55	34
22	52	98	125		132	1,140	1,410	2,310	1,720	122	46	34
23	52	104	132		136	1,080	1,690	2,590	1,440	118	40	35
24	55	107	132		136	1,150	1,930	2,550	1,400	115	40	35
25	57	107	132		140	1,070	2,280	2,470	1,230	112	55	34
26	59	109	132	75	140	984	2,280	2,430	1,170	112	125	33
27	65	115	132		140	984	2,480	2,350	995	104	47	30
28	72	115	132		140	984	2,760	2,150	950	101	50	29
29	76	125	153		-------	996	2,280	2,000	875	98	47	28
30	81	132	153		-------	1,020	2,440	1,960	820	96	52	27
31	83	-------	153		-------	1,020	-------	1,860	-------	93	46	-------

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

Monthly discharge of Humboldt River at Palisade, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	83	30	47.1	2,900
November	132	83	96.7	5,750
December	153	98	125	7,690
January	177	----------	96.2	5,920
February	140	----------	109	6,050
March	1,950	----------	633	38,900
April	2,760	996	1,530	91,000
May	3,350	1,790	2,560	157,000
June	2,190	820	1,780	106,000
July	700	93	255	15,700
August	125	40	70.9	4,360
September	52	27	39.3	2,340
The year	3,350	27	613	444,000

HUMBOLDT RIVER AT BATTLE MOUNTAIN, NEV.

LOCATION.—In SE. ¼ sec. 8, T. 32 N., R. 45 E., 700 feet below Licking Dam and 1 mile northeast of Battle Mountain, Lander County, Nev.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 1, 1921, to September 30, 1922.

GAGE.—Low and high water enamel vertical staff gages on right bank installed March 2, 1921; read by William Licking.

DISCHARGE MEASUREMENTS.—From highway bridge 1,600 feet above gage or by wading.

CHANNEL AND CONTROL.—Channel crooked with several sloughs carrying water around gage at high water. Bed of gravel. Control is gravel riffle 300 feet below gage.

EXTREMES OF DISCHARGE.—Maximum discharge recorded during year, 1,560 second-feet May 11–13; minimum stage, 0.40 foot October 8 (discharge, 11 second-feet).

1921–22; Maximum discharge recorded, 1,560 second-feet June 18–20, 1921, and May 11–13, 1922 (1,560 second-feet); minimum stage, 0.37 foot at 11.40 a. m. on September 30, 1921 (discharge by meter measurement, 7 second-feet).

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Extensive diversions above and below gage.

REGULATION.—By irrigation, especially by Licking Dam.

ACCURACY.—Stage-discharge relation permanent to April 5 and shifted continually after that date; affected by ice December 17 and December 21 to February 19. Standard rating curve well defined. Daily discharge ascertained by applying gage height to rating table October 1 to April 5; shifting-control method used April 6 to September 30. Records fair.

Discharge measurements of Humboldt River at Battle Mountain, Nev., during the year ending September 30, 1922

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 22	0.51	14.4	Apr. 4	7.89	1,120	June 25	8.65	1,360
Jan. 18	[a] 1.80	103	May 29	9.00	1,550			

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Humboldt River at Battle Mountain, Nev., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	38	109			182	1,120	1,500	1,500	851	66	34
2	23	41	110			158	1,120	1,500	1,490	791	34	33
3	22	43	109			156	1,110	1,500	1,480	765	56	31
4	20	51	101			155	1,110	1,500	1,480	701	63	31
5	20	52	83			145	1,130	1.500	1,480	681	60	30
					105							
6	19	54	110			132	1,250	1,520	1,460	397	56	29
7	17	63	130			134	1,300	1,530	1,450	367	109	29
8	11	69	132			136	1,320	1,530	1,450	347	111	29
9	12	70	119	100		140	1,330	1,530	1,440	327	53	28
10	12	74	90			140	1,370	1,540	1,450	315	51	28
11	12	76	90			145	1,410	1,560	1,440	303	50	28
12	13	76	104			156	1,380	1,560	1,440	285	48	27
13	14	76	102			145	1,350	1,560	1,440	255	48	27
14	13	79	108			156	1,330	1,550	1,440	187	47	25
15	15	79	110		140	194	1,330	1,540	1,440	154	46	24
16	16	79	85			245	1,290	1,550	1,440	147	44	23
17	16	74	85			317	1,280	1,540	1,440	143	43	22
18	15	70	88	103		379	1,260	1,530	1,440	138	43	22
19	15	74	90			452	1,230	1,530	1,450	134	41	21
20	14	74	105		179	865	1,180	1,520	1,450	132	40	20
21	14	76			189	1,070	1,160	1,540	1,420	130	40	19
22	14	78			191	1,220	1,220	1,540	1,440	127	38	18
23	14	86			191	1,250	1,300	1,540	1,430	121	37	17
24	15	87			192	1,300	1,370	1,540	1,420	112	37	17
25	15	92			193	1,280	1,400	1,540	1,390	104	34	17
					90							
26	18	96	105		194	1,280	1,440	1,540	1,350	96	33	17
27	21	99			197	1,200	1,460	1,540	1,280	88	33	17
28	23	102			191	1,180	1,460	1,540	1,160	85	32	17
29	28	104			-------	1,130	1,460	1,550	1,010	81	33	18
30	31	107			-------	1,120	1,480	1,540	919	72	38	19
31	34	-------			-------	1,110	-------	1,530	-------	69	33	-------

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

Monthly discharge of Humboldt River at Battle Mountain, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	34	11	17.8	1,090
November	107	38	74.6	4,440
December	132	83	104	6.400
January	----------	----------	95.9	5,900
February	197	----------	144	8,000
March	1,300	132	572	35,200
April	1,480	1,100	1,300	77,400
May	1,560	1,500	1,530	94,100
June	1,500	919	1,400	83,300
July	851	69	274	16,800
August	111	32	48.3	2,970
September	34	17	23.9	1,420
The year	1,560	11	465	337,000

HUMBOLDT RIVER AT COMUS, NEV.

LOCATION.—In NW. ¼ sec. 14, T. 36 N., R. 41 E., at Comus, Humboldt County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—September 25, 1917, to September 30, 1922.

GAGE.—Inclined staff on left bank 160 feet above Southern Pacific section house; established September 25, 1917; read by John Alvaro and Charles Helton.

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

CHANNEL AND CONTROL.—Channel straight for half a mile above and below gage. Bed composed of fine gravel and sand. Low-water control is gravel bar 150 feet downstream. Point of zero flow determined September 30, 1921, 0.8 foot ±0.1 foot.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.3 feet May 17 (discharge, 2,070 second-feet); minimum stage not recorded.

1918–1922: Maximum stage recorded, 10.9 feet on June 24, 25, and 26, 1921 (discharge, 2,700 second-feet); no flow during periods in 1918, 1919, and 1920.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Water is diverted all along river both above and below this station. Practically all flow during irrigation season is seepage.

REGULATION.—None except by diversion.

ACCURACY.—Stage-discharge relation permanent throughout year; affected by ice during winter. Rating curve fairly well defined. Gage read to quarter-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. For periods of missing gage heights, discharge estimated from discharge measurements, observer's notes, temperature records, and hydrographic comparison with discharge at Battle Mountain. Records fair.

Discharge measurements of Humboldt River at Comus, Nev., during the year ending September 30, 1922

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 21	1.75	18.0	Apr. 3	7.00	1,070	June 25	8.00	1,410
Jan. 8	[a] 2.88	118	May 28	9.32	1,770			

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Humboldt River at Comus, Nev., for the year ending September, 30,1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	17					1,150	1,390	1,750	1,180	97	
2	17	17					1,120	1,440	1,740	1,150	95	
3	17	15					1,090	1,480	1,730	1,110	92	
4	17	17					1,090	1,530	1,730	1,080	77	
5	17	20		110			1,090	1,610	1,710	1,030	71	
6	17	25					1,120	1,670	1,620	966	69	
7	17	28				250	1,140	1,730	1,560	869	60	
8	17	34		118	80		1,120	1,800	1,510	711	56	
9	17	34					1,130	1,860	1,490	611	51	
10	17	38					1,200	1,900	1,470	567	46	
11	15	40					1,230	1,940	1,470	562	46	
12	15	42					1,290	1,950	1,460	538	46	
13	14	42					1,300	1,980	1,440	514	44	
14	14	44				357	1,310	1,990	1,460	359	44	
15	14	42				378	1,380	2,020	1,470	349	44	15
16	15	42	80			400	1,400	2,040	1,470	328	43	
17	15	42				514	1,420	2,070	1,480	300	42	
18	15	42				586	1,400	2,050	1,460	254		
19	15	42				758	1,380	2,040	1,440	244		
20	15			35	160	882	1,340	2,040	1,420	229		
21	15					1,040	1,290	2,010	1,420	220		
22	15					1,370	1,270	1,970	1,420	196		
23	15					1,450	1,210	1,920	1,400	283		
24	15					1,200	1,160	1,890	1,380	233		
25	15	60				1,020	1,150	1,840	1,380	214	30	
26	17				336	1,020	1,150	1,790	1,320	200		
27	19				378	1,060	1,180	1,790	1,340	181		
28	19				360	1,100	1,220	1,760	1,280	176		
29	19					1,120	1,290	1,760	1,250	134		
30	19					1,160	1,360	1,760	1,220	116		
31	17					1,180		1,760		100		

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

Monthly discharge of Humboldt River at Comus, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	19	14	16.2	996
November		15	42.8	2,550
December			80	4,920
January			54.6	3,360
February	378		138	7,660
March	1,450		640	39,400
April	1,420	1,090	1,230	73,200
May	2,070	1,390	1,830	113,000
June	1,750	1,220	1,480	88,100
July	1,180	100	484	29,800
August	97		46.5	2,860
September			15	893
The year	2,070		506	367,000

HUMBOLDT RIVER NEAR OREANA, NEV.

LOCATION.—In sec. 35, T. 29 N., R. 32 E., 2 miles above highway bridge near J. J. McCarthy's ranch and 2 miles southwest of Oreana, Pershing 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, 1922.

GAGE.—Friez water-stage recorder on right bank since October 4, 1914; inspected by Allen Holliday.

DISCHARGE MEASUREMENTS.—Made from cable 20 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of sand. Right bank high and comparatively clean. Left bank not subject to overflow, but subject to caving. 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.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.50 feet at 9 a. m. May 27 (discharge, 2,280 second-feet); minimum discharge not recorded.

1896–1922: Maximum stage recorded, 12.0 feet May 12, 1897 (discharge, 3,050 second-feet); no flow during numerous periods.

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

DIVERSIONS.—Station is above diversions for Lovelock district, but considerable water is diverted above station for irrigation and storage.

REGULATION.—Flow is affected by water stored and released by Humboldt-Lovelock Irrigation, Light & Power Co. at its reservoirs a few miles up river, near Humboldt.

ACCURACY.—Stage-discharge relation changed after June 4. Rating curve well defined. Friez eight-day gage operated successfully except during days shown in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph and also weekly gage readings when recorder was not operating. Shifting-control method used May 29 to June 3. Records fair.

Discharge measurements of Humboldt River near Oreana, Nev., during the year ending September 30, 1922

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 8	1.05	63.2	Jan. 17	[a] 1.13	15.1	May 27	7.46	2,260
10	1.05	64.4	Mar. 31	4.00	768.	July 5	4.67	940
18	1.02	54.6						

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Humboldt River near Oreana, Nev., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		25	22				778	1,010	1,960	973		201
2		24	22				794	996	1,800	972		201
3		24	21				797	1,000	1,800	960	197	201
4	63	24	21				850	1,010	1,700	950		
5		23	21		40		860	1,020		940		
6		24	21			275	881	1,040		900	195	180
7		24	21				888	1,040	1,560	850		
8	63	23	20				888	1,020		800		
9	62	23	20	12			895	1,050				
10	62	23	20				898	1,070			196	160
11	60	23	20				909	1,100	1,430	660		
12	60	22	19			270	916	1,150				
13	59	22	11			258	926	1,200			197	
14	59	22	7			251	940	1,210	1,320			125
15	58	22	6		80	263	940	1,270				
16	58	22	6			286	958	1,340		529	198	
17	58	21	7	15		300	972	1,410	1,220			88
18	58	21	8			303	985	1,530				
19	56	21				305	1,000	1,630				
20	56	21				291	1,010	1,770		410	199	
21	56	21				295	1,020	1,880	1,140			75
22	56	21				310	1,030	2,000				
23	49	21			350	346	1,040	2,060		288		
24	43	20		10		385	1,050	2,150			201	60
25	39	20	10			431	1,060	2,200	1,050			
26	32	20				485	1,060	2,240	976	240		
27	30	20				556	1,060	2,260			203	50
28	28	21				625	1,060	2,240	975			
29	27	22			------	691	1,040	2,180			202	
30	27	22			------	733	1,030	2,130		199		
31	26	------			------	760	-------	2,050	-------	198		-------

NOTE.—No gage-height record; discharge interpolated or estimated from discharge measurements, temperature charts, and observer's notes Oct. 6, 7, 16, 17, Nov. 14–19, 21–26, Dec. 1–3, 5–10, Dec. 19 to Mar. 11, Apr. 18–22, June 5–10, 12–16, 18–24, June 27 to July 1, 3, 4, 6, 7, 9–15, 17–22, 24–29, July 31 to Aug. 5, 7–12, 14–19, 21–26, Aug. 28 to Sept. 2, 4–9, 11–16, 18–23, 25–30. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Humboldt River near Oreana, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	-------	26	52.4	3,220
November	25	20	22.1	1,320
December	22	6	13.6	836
January	-------	-------	11.2	689
February	-------	-------	162	9,000
March	760	-------	360	22,100
April	1,060	778	951	56,600
May	2,260	996	1,520	93,500
June	1,960	-------	1,330	79,100
July	973	-------	551	33,900
August	-------	-------	199	12,200
September	-------	-------	116	6,900
The year	2,260	-------	442	319,000

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HUMBOLDT RIVER NEAR LOVELOCK, NEV.

LOCATION.—In NW. ¼ sec. 11, T. 25 N., R. 31 E., 1,500 feet below dam and reservoir on Big 5 ranch and 9 miles south of Lovelock, Pershing County.

DRAINAGE AREA.—14,200 square miles (measured on General Land Office maps).

RECORDS AVAILABLE.—February 7, 1912, to September 30, 1922.

GAGE.—Lietz water-stage recorder moved from left to right bank and datum lowered 1.00 foot October 10, 1921; inspected by C. E. Sommer and H. F. Sommer.

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

CHANNEL AND CONTROL.—Bed is composed of firm clay. Control fairly permanent. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage during year, 5.90 feet on May 29 and 30 (discharge, 1,700 second-feet); river dry October 1 to January 20 and August 13 to September 30.

1912–1922: Maximum stage recorded, that of May 29 and 30, 1922; stream dry for periods in 1913, 1916, 1917, 1918, throughout the years 1919 and 1920, and for periods in 1921 and 1922.

ICE.—Practically none.

DIVERSIONS.—Below all irrigation diversions.

REGULATION.—Flow affected by irrigation diversions and storage.

ACCURACY.—Stage-discharge relation for low water changed during high water the last part of June. Rating curves fairly well defined. Water-stage recorder operated successfully, except as stated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Records fair.

Discharge measurements of Humboldt River near Lovelock, Nev., during the year ending September 30, 1922

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 7	−0.58	0.05	May 27	5.74	1,630
Mar. 31	3.36	698	July 4	3.56	754

Daily discharge, in second-feet, of Humboldt River near Lovelock, Nev., for the year ending September 30, 1922

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
1	-------		292	719	682	1,590		
2	-------		275	732	667	1,520	785	
3	-------		270	741	615	1,470		
4	-------		270	748		1,470	748	
5	-------		270	773	505	1,440	730	
6	-------	5	270	796		1,430	751	50
7	-------		270	806	395	1,320	712	
8	-------		273	830	409	1,150		
9	-------		275	830	403	1,140	693	
10	-------		278	810	395	1,140		
11	-------		281	803	421	1,110	674	
12	-------	5	284	803	450	1,120		-------
13	-------		284	800	473	1,120	674	-------
14	-------		286	803	555	1,060		-------
15	-------	50	289	806	528	993		-------
16	-------		289	810	537	975	674	-------
17	-------		292	813	582	960	415	-------
18	-------		297	806	654	945	155	-------
19	-------	256	336	810	713	972	144	-------
20	-------	359	331	803	820	1,000	130	-------
21		359	331	790	872	971	96	-------
22		359	339	803	908		130	-------
23		359	359	806			106	-------
24		359	409	806				-------
25	2	359	438	796	1,260			-------
26		331	467	748		885	120	-------
27		317	522	738	1,610			-------
28		308	576	738	1,680			-------
29		-------	621	726	1,700			-------
30	5	-------	673	707	1,700		132	-------
31	5	-------	704	-------	1,680	-------	130	-------

NOTE.—No flow Oct. 1 to Jan. 20 and Aug. 13 to Sept. 30. Braced figures show estimated mean discharge for periods indicated. Gage heights missing Jan. 21 to Feb. 18, May 4–6, 23–26, June 17, 19, June 22 to July 3, July 8–10, 12–15, 17, 24–29, 31, and Aug. 1–12; discharge interpolated or estimated from observer's notes or flow at Oreana.

Monthly discharge of Humboldt River near Lovelock, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	0	0	0	0
November	0	0	0	0
December	0	0	0	0
January	----------	0	.9	55
February	359	----------	133	7,390
March	704	270	360	22,100
April	830	707	783	46,600
May	1,700	----------	839	51,600
June	1,590	----------	1,100	65,500
July	----------	96	438	26,900
August	----------	----------	19.4	1,190
September	0	0	0	0
The year	1,700	0	305	221,000

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 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, 1922.

GAGE.—Vertical enamel staff nailed to upstream pile of bridge bent near right bank; read by G. E. Weathers.

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

CHANNEL AND CONTROL.—Bed composed of small gravel. Control is gravel bar; shifts occasionally. 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, 3.95 feet June 14 (discharge, 253 second-feet); minimum stage recorded, 1.58 feet January 31 (discharge, 2.0 second-feet).

1913–1922: Maximum stage recorded, 4.65 feet June 9, 1921 (discharge, 391 second-feet); minimum stage, 0.80 foot July 8 to August 7, 1919 (discharge, 0.5 second-foot).

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

DIVERSIONS.—Station is below practically all diversions.

REGULATION.—Some variation in daily flow at times caused by diversions for irrigation.

ACCURACY.—Stage-discharge relation shifting; affected by ice January 7 to February 8, also February 15 and 28. Standard rating curve fairly well defined. Staff gage read to half-tenths three or four times a week by G. E. Weathers. Daily discharge ascertained by applying daily gage height to rating table using shifting-control method. Discharge interpolated for days of no gage height except during periods of ice effect when discharge was estimated from observer's notes and one meter measurement. Records fair.

Discharge measurements of Starr Creek near Deeth, Nev., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 23	Rowe and Purton	1.81	14.6	May 31	R. R. Rowe	3.06	123
Jan. 31	R. R. Rowe	[a] 1.58	1.5	July 10	do	1.91	17.2
Apr. 12	do	1.91	25.2				

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Starr Creek near Deeth, Nev., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6		12	11		12	31	72	141	55		5
2	6		12	11		12	31	71	144	43		5
3			11	11		12	46	87	148	40		5
4			11			12	61	103	178	33		5
5			11		5	12	48	109	201	30	10	5
		8										
6			11	10		12	34	112	224	33		5
7			11			12	33	115	248	33		5
8			11			12	32	125	240	26		5
9	6		11		18	12	32	135	232	20	10	5
10			11			12	31	100	215	17	10	5
11			11			12	34	69	197	10	9	5
12			11			12	26	69	197	10	9	5
13			11		15	12	27	67	200	10	9	5
14			11			12	27	65	253	10	8	5
15			11			13	28	65	205	11	8	5
		9		6								
16	6		11			14	31	70	194	11	8	4
17	6		11		12	14	35	74	184		7	4
18	6		11		12	13	40	107	174		6	4
19	6		11		12	12	44	140	182		6	4
20	6		11		12	13	50	155	174		6	4
21	6	10	11		12	15	59	173	148		6	4
22	6	12	12		12	16	59	151	123		6	4
23		15	11		12	20	59	139	98		6	4
24		14	11		12	22	66	128	92	10	6	4
25		12	11		12	23	72	117	92		6	4
				2								
26	7	12	11		12	25	78	110	86		6	4
27		11	11		12	25	73	110	81		6	4
28		11	11		12	27	73	110	76		6	4
29		12	11			29	73	110	71		6	4
30		12	11			31	73	118	66		6	4
31			11	2		31		123			5	

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

Monthly discharge of Starr Creek near Deeth, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October			6.3	387
November	15		9.7	577
December	12	11	11.1	682
January			6.0	369
February			11.0	611
March	31	12	16.5	1,010
April	78	26	46.9	2,790
May	173	65	106	6,520
June	253	66	162	9,640
July	55		17.5	1,080
August		5	7.8	480
September	5	4	4.5	268
The year	253		33.8	24,400

MARYS RIVER NEAR DEETH, NEV.

LOCATION.—In NW. ¼ sec. 31, T. 40 N., R. 60 E., at bridge 300 feet east of Mala Vista ranch house of Nevada Land & Livestock Co. and 19 miles north of Deeth, Elko County.

DRAINAGE AREA.—355 square miles (measured on map of Nevada issued by General Land Office, edition of 1908).

RECORDS AVAILABLE.—November 24, 1902, to July 14, 1903; January 17, 1912, to September 30,1922.

GAGE.—Chain gage on upstream side of bridge. A vertical high-water staff installed May 14, 1921, on right upstream face of bridge. Both gages set to same datum and read by Herb Clayton.

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; one channel at all stages. Rock and gravel control 25 feet below gage, slightly shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.78 feet at 2.30 p. m. May 8 (discharge, 616 second-feet); no discharge about January 21 to February 10, when river was frozen solid.

1912–1922: Maximum and minimum stages same as given above.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Station is below all diversions except small ditch on Mala Vista ranch and Cross ranch diversions about 12 miles below.

REGULATION.—During low-water periods flow is affected by diversions above.

ACCURACY.—Stage-discharge relation permanent throughout year; affected by ice December 13 to February 23. Rating curve well defined up to 450 second-feet and extended above. Gage read to hundredths once a day. Daily discharge ascertained by applying daily gage height to rating table except for periods when stage-discharge relation was affected by ice. For these periods discharge estimated from weather records and observer's notes. Records good except for periods of estimated discharge.

Discharge measurements of Marys River near Deeth, Nev., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
Nov. 22	Rowe and Purton	2.40	10.6
June 1	R. R. Rowe	5.57	321
July 10	——do	2.47	13.4

Daily discharge, in second-feet, of Marys River near Deeth, Nev., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	10	14			14	46	429	318	22	9	2
2	11	11	14			12	52	395	310	20	9	2
3	11	11	14			9	42	442	318	19	12	2
4	11	11	13			5	68	462	310	17	13	2
5	12	11	14			3	95	494	296	15	12	2
					0							
6	12	11	13			2	68	548	296	15	11	2
7	12	11	14			1	60	592	289	14	9	2
8	12	11	14			1	86	616	282	14	8	2
9	12	12	14			2	90	579	296	14	8	2
10	12	12	14			2	76	500	282	13	8	2
				5								
11	11	12	14			2	95	494	275	12	8	2
12	11	12	14			3	68	462	254	12	7	2
13	11	12				5	68	429	216	11	10	2
14	11	13				9	64	381	191	14	9	2
15	11	13				11	60	360	156	14	10	2
16	11	13				17	68	367	135	13	9	2
17	11	14			7	19	76	388	120	12	8	2
18	11	14				23	68	422	115	12	6	2
19	11	14				9	95	468	125	11	4	2
20	10	14				6	100	488	135	12	3	2
21	10	14	12			18	115	494	135	14	3	2
22	10	10				28	135	462	110	14	2	2
23	10	14				40	168	429	95	14	3	2
24	10	14			10	53	222	409	76	15	3	2
25	10	14			11	61	268	429	68	13	3	2
				0								
26	10	14			14	61	325	436	60	11	3	2
27	10	14			16	66	360	416	56	10	3	2
28	10	14			13	53	381	381	46	10	3	2
29	10	14			-------	45	429	360	39	8	4	2
30	10	14			-------	43	448	318	33	8	2	2
31	10	-------			-------	40	-------	325	-------	8	3	-------

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

Monthly discharge of Marys River near Deeth, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	12	10	10.8	664
November	14	10	12.6	750
December	----------	----------	12.7	781
January	----------	0	3.2	197
February	16	0	5.5	306
March	66	1	21.4	1,320
April	448	42	143	8,510
May	616	318	444	27,300
June	318	33	181	10,800
July	22	8	13.3	818
August	13	2	6.6	406
September	2	2	2	119
The year	616	0	71.8	52,000

LAMOILLE CREEK NEAR LAMOILLE, NEV.

LOCATION.—In sec. 6, T. 32 N., R. 58 E., 50 feet below tailrace of Elko-Lamoille Power Co.'s plant, 50 feet above first irrigation diversion, 2 miles above Lamoille, and 22 miles southeast of Elko, Elko County.

DRAINAGE AREA.—14 square miles (measured on maps issued by United States Forest Service).

RECORDS AVAILABLE.—May 8, 1915, to September 30, 1922.

GAGE.—Vertical staff on right bank; installed July 4, 1917; read by an employee of Elko-Lamoille Power Co.

DISCHARGE MEASUREMENTS.—Made from bridge 500 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and large boulders. One channel at all stages. Control composed of boulders; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.10 feet June 7 (discharge, 416 second-feet); minimum stage not recorded.

1915–1922: Maximum stage probably occurred in June, 1917, when gage was washed out (discharge probably exceeded 500 second-feet); minimum discharge, 1 second-foot at 7 p.m. January 24, 1918.

ICE.—Stage-discharge relation affected by ice every winter.

DIVERSIONS.—Above all irrigation diversions. Water is diverted for Elko-Lamoille Power Co.'s plant, but returned to stream about 50 feet above gage.

REGULATION.—A daily fluctuation occurs on days when power plant is not in continuous operation.

ACCURACY.—Stage-discharge relation permanent during year; affected by ice during January. Rating curve well defined. Gage read to hundredths twice daily. Daily discharge determined by applying mean daily gage height to rating table except for periods in December, January, and February, which were either affected by ice or water was below gage. Discharge for these days interpolated. Records good.

Discharge measurements of Lamoille Creek near Lamoille, Nev., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 23	Rowe and Purton	0.48	5.0	May 21	R. R. Rowe	1.65	145
Jan. 29	R. R. Rowe	.45	4.3	July 11	do	1.40	84.4

Daily discharge, in second-feet, of Lamoille Creek near Lamoille, Nev., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8	6	7	5	5	4	7	38	269	152	28	10
2	6	6	5	5	3	4	7	42	265	152	28	10
3	8	6	3	3	3	3	8	45	297	141	44	9
4	7	6	4	3	4	3	8	57	320	141	40	9
5	7	6	4	3	3	4	8	73	348	145	37	8
6	7	6	4	3	3	4	8	88	352	136	27	8
7	7	6	4	3	3	4	9	101	362	131	22	8
8	7	5	5	3	4	3	9	98	373	127	20	8
9	7	5	4	}	4	4	8	96	289	98	21	8
10	7	5	4	}	3	4	9	73	267	95	24	8
11	6	5	4	}	3	4	9	67	251	89	24	7
12	7	5	5	}	2	3	9	64	249	88	20	7
13	7	5	4	} 8	3	4	8	66	237	86	18	7
14	7	5	4	}	4	4	8	72	227	83	16	7
15	7	5	4	}	4	4	9	82	217	79	15	7
16	7	5	3	}	4	5	8	98	217	72	13	6
17	7	5	3	}	3	5	9	129	221	69	13	6
18	6	5	3	}	3	4	9	150	249	66	12	6
19	8	4	3	}	4	6	9	147	249	63	13	6
20	7	5	3	}	4	5	9	131	285	69	12	6
21	7	5	4	}	3	6	11	126	253	60	11	6
22	7	6	4	} 2	4	6	12	131	237	55	11	6
23	7	5	3	}	3	6	16	158	227	48	10	6
24	6	5	3	}	4	7	17	179	211	45	11	5
25	7	4	3	}	4	7	18	229	207	42	10	6
26	7	4	3	}	3	7	20	205	205	36	10	5
27	6	4	3	3	3	7	27	186	221	34	10	5
28	6	5	3	3	3	7	32	225	203	32	12	5
29	6	4	4	4	-------	7	32	190	182	31	11	5
30	5	5	4	3	-------	7	33	259	167	30	10	5
31	5	-------	4	3	-------	7	-------	275	-------	29	10	-------

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

Monthly discharge of Lamoille Creek near Lamoille, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	8	5	6.7	412
November	6	4	5.1	303
December	7	3	3.8	234
January	5	----------	2.9	178
February	5	2	3.4	189
March	7	3	5.0	307
April	33	7	12.9	768
May	275	38	125	7,690
June	373	167	255	15,200
July	152	29	81.4	5,010
August	44	10	18.2	1,120
September	9	5	6.8	405
The year	373	----------	43.9	31,800

89017—27†—WSP 550——10

SECRET CREEK NEAR HALLECK, NEV.

LOCATION.—In NE. ¼ NW. ¼ sec. 1, T. 34 N., R. 59 E., at Ryan ranch 500 feet from Secret Pass highway, half a mile below mouth of Doisey Creek, 12 miles above confluence with Lamoille Creek, and 15 miles southeast of Halleck, Elko County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 28, 1917, to September 30, 1922.

GAGE.—Vertical staff on right bank, 75 feet below lower fence on Ryan ranch; read by J. M. Ryan.

DISCHARGE MEASUREMENTS.—Made by wading at gage.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; one channel, except at extremely high stages when water runs through shallow overflow channel on right bank. Control is coarse gravel bar which is fairly permanent.

EXTREMES OF DISCHARGE.—Maximum mean daily discharge recorded, 300 second-feet April 29; minimum stage not recorded, but less than 1 second-foot during latter part of January.

1917–1922: Maximum stage recorded, 3.65 feet at 5 a.m. on April 23, 1921 (discharge, 375 second-feet); minimum stage probably no flow during August and September, 1919.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Station is below Secret Valley and Ryan ranch diversions; the "71" ranch diverts water 4 to 6 miles below.

REGULATION.—Flow affected by irrigation diversions above.

ACCURACY.—Stage-discharge relation changed April 29; affected by ice several times. Rating curve used until April 29, poorly defined; that used thereafter fairly well defined. Staff gage read to hundredths once or twice a day during high-water stage, and four or five times a week during low-water stage, except during ice-affected period. Daily discharge ascertained by applying daily gage height to rating table, and interpolating, or estimating for periods of no gage heights. Records good for May and June; fair for other months.

Discharge measurements of Secret Creek near Halleck, Nev., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 23	Rowe and Purton	0.56	6.3	May 31	R. R. Rowe	1.60	87.7
Jan. 30	R. R. Rowe	[a].46	2.5	July 10	do	.62	6.0

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Secret Creek near Halleck, Nev., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3	4	24	7	3	3	.7	208	83	11	3	2
2	3	4	5	5	3	3	8	208	78	11	4	2
3	3	4	4		3	4	11	236	74	11	5	2
4	3	4	4		3	4	14	250	69	9	5	2
5	3	4	4		3	3	23	250	67	8	4	2
6	3	4	4		3	3	19	222	67	8	4	2
7	3	4	4		4	4	19	185	65	8	4	2
8	3	4	3		4	4	26	225	61	8	4	2
9	3	4	4		4	4	22	135	56	7	4	2
10	3	4	4		3	4	20	90	50	6	3	2
				3								
11	3	4	4		3	4	22	76	48	5	3	2
12	3	4	4		3	4	19	69	54	5	3	2
13	3	4	5		3	4	17	74	68	5	3	2
14	3	4	4		3	4	13	88	99	5	3	2
15	3	4	4		4	4	17	93	53	4	3	2
16	3	4	4		5	6	14	90	54	5	2	2
17	3	4	3		4	6	12	95	35	4	2	2
18	3	4	3		4	5	12	111	28	6	2	2
19	3	4	3		4	4	16	134	27	7	2	2
20	3	4	4		4	6	13	164	26	6	2	2
21	3	4	5		4	6	29	115	26	6	2	2
22	3	6	4		4	9	48	88	21	5	2	2
23	3	7	5		3	12	82	90	23	5	2	2
24	4	4	4	1	3	11	123	98	20	4	2	2
25	4	4	4		4	11	140	110	16	4	2	2
26	4	4	4		4	10	200	104	16	4	2	2
27	4	4	4		4	10	208	81	15	4	2	2
28	4	4	4		4	10	250	86	12	4	2	2
29	4	5	3		------	8	300	84	12	4	2	2
30	4	7	4	2	------	8	194	83	12	4	2	2
31	4	------	6	3	------	7	------	88	------	4	2	------

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

Monthly discharge of Secret Creek near Halleck, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	4	3	3.3	203
November	7	4	4.3	256
December	24	3	4.7	289
January	7	------	2.5	154
February	5	3	3.6	200
March	12	3	6.0	369
April	300	7	63.3	3,770
May	250	69	130	7,990
June	99	12	44.5	2,650
July	11	4	6.0	369
August	5	2	2.8	172
September	2	2	2.0	119
The year	300	------	22.8	16,500

SOUTH FORK OF HUMBOLDT RIVER NEAR ELKO, NEV.

LOCATION.—In sec. 19, T. 33 N., R. 55 E., at head of canyon below Cowling 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, 1922.

GAGE.—Stevens continuous water-stage recorder on right bank 1½ miles below highway bridge since November 14, 1913; inspected by Grace Clayton and Albert Lamari.

DISCHARGE MEASUREMENTS.—Made from cable 110 feet above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and sand. One channel at all stages. Basalt dike a short distance below gage affords well defined low-water control. Left bank caves in during extreme high water causing shift.

EXTREMES OF DISCHARGE.—Maximum stage during year, 4.38 feet at 3 p. m. June 7 (discharge, 1,120 second-feet); minimum stage not recorded.

1896–1922: Maximum discharge recorded, 2,400 second-feet January 26, 1914; minimum stage, river dry at times in 1915, 1916, 1918, 1919, and 1921.

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

DIVERSIONS.—Below all tributaries and all diversions except those of Hunter & Banks ranch 3 miles downstream.

REGULATION.—Flow affected by diversions above.

ACCURACY.—Stage-discharge relation practically permanent during year. Rating curve well defined below 900 second-feet and extended above. Operation of water-stage recorder satisfactory except for periods shown in footnote to daily-discharge table. Daily discharge determined by applying to rating table mean daily gage height determined from recorder graph or staff readings. For periods of no gage readings, discharge interpolated or estimated from temperature charts and hydrographic comparison with other Humboldt River stations. Records for estimated periods fair; others good.

Discharge measurements of South Fork of Humboldt River near Elko, Nev., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 21	Rowe and Purton	0.81	17.8	June 23	R. R. Rowe	2.88	375
Jan. 28	R. R. Rowe	*2.10	17.8	Sept. 28	do	.42	2.7
Mar 29	do	2.21	202	28	do	.42	2.6
May 20	do	3.62	695				

* Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of South Fork of Humboldt River near Elko, Nev., for the year ending September 30, 1922

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		12			527	700	180	4	
2		12		220	497	736	176		
3		12			501	728	165		
4		12			542	768	165		
5		11		235	589	920			
6		11		246	644	1,010	160		
7		10		228	660	1,050			
8	6	11		303	692	1,030			
9		11		248	640	932	159		
10		10		211	527	724			
11		12		208	422	628			
12		13		195		573	75		
13		15		144		554			
14		18				632			
15	8	14			410	720			3
16		12		170		577	31	4	
17		10				490			
18		10			404	501			
19		17			581	494			
20		16		199	688	486			
21		17		303	708	457			
22	10			404	620	397			
23				493	527	352			
24		18		531	516	314	15		
25				542	577	272			
26		18		562	612	261			
27				581	573				
28			202	620	520	220			3
29		18	205	616	535				3
30	12		210	566	562				3
31	12				648				

NOTE.—Braced figures show estimated mean discharge for periods when no gage-height records were obtained. No records Dec. 1 to Mar. 28.

Monthly discharge of South Fork of Humboldt River near Elko, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October			8.5	510
November		10	14.3	851
March 29–31			206	1,230
April	620		311	18,500
May	708		541	33,300
June	1,050		573	34,100
July			70.7	4,350
August			4	249
September			3	176

MAGGIE CREEK AT CARLIN, NEV.

LOCATION.—In sec. 26, T. 33 N., R. 52 E., 700 feet above highway bridge, half a mile above confluence with Humboldt River, and half a mile east of Carlin, Elko County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—June 6, 1913, to June 10, 1922.

GAGE.—Vertical staff on right bank about 800 feet above Pacific Fruit Express Co.'s dam; installed September 22, 1917; read by C. G. Wright and R. H. Moores. Datum raised 1.08 feet May 19, 1922.

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

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

EXTREMES OF DISCHARGE.—Maximum stage during year from high-water marks, 4.3 feet May 7 (discharge, 800 second-feet); minimum stage recorded, 1.11 feet October 1–4 (discharge, 1 second-foot).

1913–1922: Maximum stage recorded, 4.3 feet May 7, 1922 (discharge 800 second-feet); minimum discharge, no flow during periods in 1919 and 1920.

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

DIVERSIONS.—No information.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Rating curves fairly well defined. Gage read to hundredths once a day. Daily discharge ascertained by applying daily gage height to rating table. Discharge estimated for periods of high water when gage was washed loose. Records fair.

Discharge measurements of Maggie Creek at Carlin, Nev., during the year ending September 30, 1922

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 22	1.16	1.4	Apr. 12	1.96	64.4	May 30	2.56	128
Jan. 6	1.02	.5	May 19	[a] 3.19	307	June 24	1.50	11.3
Mar. 28	1.70	40.2						

[a] Datum raised 1.08 feet.

Daily discharge, in second-feet, of Maggie Creek at Carlin, Nev., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June
1	1	4	13	-------	38	716	
2	1	4	9	-------	39	720	100
3	1	3	5	-------	39	716	
4	1	3	7	-------	41	688	85
5	2	3	5	-------	46	700	82
6	2	3	5	-------	54	728	81
7	2	3	5	-------	60	750	78
8	2	4	4	-------	67		74
9	2	4	4	-------	76		72
10	2	5	3	-------	82		72
11	3	4	3	-------	76		-------
12	2	3	4	-------	68		-------
13	3	4	5	-------	68	500	-------
14	3	4	5	-------	66		-------
15	2	5	7	-------	63		-------
16	2	5	5	-------	61		-------
17	3	7	7	-------	57		-------
18	3	7	7	-------	53		-------
19	2	5	5	-------	49	308	-------
20	2	5	7	-------	64		-------
21	2	7	8	-------	89		-------
22	2	7	7	-------	150		-------
23	3	8	8	-------	335		-------
24	2	9	10	-------	640		-------
25	3	7	11	-------	700	200	-------
26	3	5	14	-------	720		-------
27	3	4	16	-------	740		-------
28	3	5	25	39	724		-------
29	3	8	30	35	700		-------
30	3	10	34	36	724	130	-------
31	3	-------	47	37	-------	120	-------

NOTE.—Braced figures show estimated mean discharge for periods indicated, when gage was washed loose by high water.

Monthly discharge of Maggie Creek at Carlin, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	3	1	2.3	141
November	10	3	5.2	309
December	47	3	10.5	646
March 28–31	39	35	36.8	292
April	740	38	223	13,300
May	----------	----------	422	25,900
June 1–10	----------	72	84.4	1,670

ROCK CREEK NEAR BATTLE MOUNTAIN, NEV.

LOCATION.—In NE. ¼ sec. 17, T. 34 N., R. 48 E., at mouth of canyon, below all tributaries, half a mile above highway bridge on Overland Trail, in Eureka County, 25 miles northeast of Battle Mountain, Lander County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 26, 1918, to September 30, 1922.

GAGE.—Stevens continuous water-stage recorder on left bank installed March 26, 1918; inspected by Frank Eads.

DISCHARGE MEASUREMENTS.—Made by wading near gage or from highway bridge half a mile downstream.

CHANNEL AND CONTROL.—One channel at all stages. Banks high and not subject to overflow. Stream bed composed of gravel and boulders. Principal control is rock riffle 50 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage during year, 3.83 feet at 7 a. m. April 24 (discharge, 1,010 second-feet); no flow during August and September.

1918–1922: Maximum stage, 5.54 feet at 1 a. m. February 11, 1921 (discharge, 2,240 second-feet); creek dry generally during parts of each year.

ICE.—Stage-discharge relation unaffected by ice.

DIVERSIONS.—There are diversions in valley above canyon. Station is above all diversions in Boulder Flat.

REGULATION.—A small reservoir in Squaw Valley about 30 miles upstream may affect run-off to small extent.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined below 700 second-feet. Operation of water-stage recorder satisfactory except as stated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Records fair.

Discharge measurements of Rock Creek near Battle Mountain, Nev., during the year ending September 30, 1922

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 22	1.15	5.8	Apr. 4	3.32	551	June 24	1.13	5.0
Jan. 18	.90	1.2	May 29	1.80	56.8			

Daily discharge, in second-feet, of Rock Creek near Battle Mountain, Nev., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1	3	3	2				90		49	1
2	4	4	1				92	500	50	7
3	3	4					152		51	6
4	4	4					369		50	2
5	4	4					234	369	51	1
6		4	2				143	508	51	
7		4				2	108	540	45	
8		3					234		41	
9		3					188		40	
10		3	3	1			123		38	
	4									
11		3	4				114		37	
12		4	4				127		34	
13		4	2				108		32	
14		4	2				129	300	29	
15		4			1	50	115		33	
16	5	3					117		37	
17		3				215	117		27	
18		4		1		129	94		24	
19	5	5				65	92		20	.5
20		6				43	193		17	
21		6				125	328	224	13	
22	6	8	2			161	561		10	
23	6	9				92	780		7	
24	6	6				123	846		5	
25	6	4		1		127	762	75	5	
26	6	2				106	744		3	
27	5	3				68	727		3	
28	5	2				74	736		3	
29	6	2				74	651	57	2	
30	5	2				84	583	50	2	
31	5					92		49		

NOTE.—Mean discharge July 6–31 based on daily gage heights. Braced figures for other periods show estimated mean discharge when gage-height records were not obtained.

Monthly discharge of Rock Creek near Battle Mountain, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	6	3	4.6	283
November	9	2	4.0	238
December	4		2.1	129
January			1.0	61
February			1.0	56
March	215		58.5	3,600
April	846	90	322	19,200
May		49	265	16,300
June	51	2	27.0	1,610
July	7		.97	60
August	0	0	0	0
September	0	0	0	0
The year	846	0	57.3	41,500

LITTLE HUMBOLDT RIVER NEAR PARADISE VALLEY, NEV.

LOCATION.—In NE. ¼ sec. 19, T. 41 N., R. 41 E., 300 feet south of Humboldt Hot Springs and 11 miles southeast of Paradise Valley, Humboldt County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 1, 1921, to September 30, 1922.

GAGE.—Stevens continuous water-stage recorder on right bank; inspected by G. S. Reed.

DISCHARGE MEASUREMENTS.—Made by wading or from bridge 4 miles above gage.

CHANNEL AND CONTROL.—Bed composed of firm sand and clay. One channel for all stages. Control is shale ledge 40 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage during year, 9.30 feet at 8 a. m. May 8 (discharge, 331 second-feet); minimum stage, 2.90 feet February 16 (discharge, 10 second-feet).

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Above all diversions in Paradise Valley. Bull Head ranch diverts in valley above.

REGULATION.—Affected by Bull Head irrigation diversion.

ACCURACY.—Stage-discharge relation permanent throughout year. Rating curve fairly well defined. Operation of water-stage recorder satisfactory, except as stated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Discharge for days of missing gage height interpolated or estimated from hydrographic comparisons with record for Martin Creek. Records fair.

Discharge measurements of Little Humboldt River near Paradise Valley, Nev., during the year ending September 30, 1922

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 2	2.99	10.6	Jan. 7	3.08	12.6	May 25	6.56	141
5	3.00	11.0	Apr. 1	4.17	36.2	July 6	3.03	12.1
20	[a] 3.13	11.4						

[a] Stage-discharge relation affected by backwater from dam half a mile below gage.

Daily discharge, in second-feet, of Little Humboldt River near Paradise Valley, Nev., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	10	12	11	10	15	36	251		16	11	12
2	11	10	12	12	10	15	36	223		16	11	11
3	11	11	12	12	11	16	39	216		15	11	11
4	11	11	11	12	11	16	46	234		14	11	11
5	11	11	11	12	11	16	49	246		13	11	11
6	11	11	11	12	11	16	59	266		12	11	11
7	11	11	11	12	11	16	62	291		12	11	
8	11	11	11	13	11	16	62	319		11	11	
9	11	11	11	13	11	16	69	303		11	11	
10	11	11	11	12	11	16	78	288		11	11	
11	11	11	11	12	11	16	71	242	75	11	11	
12	11	11	11	12	11	16	60			11	11	
13	11	11	11	12	11	16	51			11	11	
14	11	12	12	12	10	16	45			11	11	
15	11	12	11	12	10	16	42			11	11	
16	11	12	11	11	10	17	42	185		11	11	
17	11	11	11	11	10	45	42			11	11	
18	11	11	11	11	10	49	42			11	11	
19	11	11	11	10	11	36	42			11	11	11
20	11	11	11	10	13	45	42			11	11	
21	11	12	11	10	14	71	47	204		11	11	
22	10	12	11	10	14	82	63	207	32	11	11	
23	10	12	11	10	14	65	75	185		11	11	
24	10	12	11	10	14	57	89	158		11	11	
25	10	12	11	10	14		108	141		11	11	
26	10	12	11	10	15		134	138	24	11	11	
27	10	12	11	10	15		164	135		11	11	
28	10	12	11	10	15	46	194	142		11	11	
29	10	12	11	10	-------		222	138		11	12	
30	10	12	11	10	-------		250	123		11	11	
31	10	-------	11	10	-------		-------	108	-------	11	12	-------

NOTE.—No gage heights Oct. 1, 3, Jan. 18, Feb. 12–15, Mar. 24–31, May 12–20, June 1–21, 23–30, July 3–5, and Sept. 7–30. Gage heights not used and discharge estimated Oct. 19–22, 28–31, Nov. 1–6, Jan. 1–3, 16, and 17. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Little Humboldt River near Paradise Valley, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	11	10	10.7	658
November	12	10	11.4	678
December	12	11	11.1	682
January	13	10	11.1	682
February	15	10	11.8	655
March	82	15	33.1	2,040
April	250	36	78.9	4,680
May	319	108	201	12,400
June	----------	----------	60.0	3,570
July	16	11	11.7	719
August	12	11	11.1	682
September	12	----------	11.0	655
The year	319	10	38.7	28,106

MARTIN CREEK NEAR PARADISE VALLEY, NEV.

LOCATION.—In SE. ¼ NE. ¼ sec. 11, T. 42 N., R. 40 E., 1½ miles above Silver State flour mill and 8 miles northeast of Paradise Valley, Humboldt County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 1, 1921, to September 30, 1922.

GAGE.—Stevens continuous recorder on right bank; inspected by John Schneider and Edmund Recanzone.

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

CHANNEL AND CONTROL.—Channel of rock and earth. One channel at all stages. Control is double rock riffle, core of old rock-fill diversion dam.

EXTREMES OF DISCHARGE.—Maximum stage, 6.67 feet at 10 a. m. May 19 (discharge, 275 second-feet); minimum discharge probably occurred during period of ice effect.

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

DIVERSIONS.—None above gage.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent; affected by ice January 12 to February 13. Rating curve well defined up to 200 second-feet and extended above. Water-stage recorder operated satisfactorily except as stated in footnote to daily discharge-table. Daily discharge ascertained by applying mean daily gage height or weekly gage readings to rating table except period of ice effect. Discharge estimated or interpolated for periods when no gage heights were recorded. Discharge, for periods when gage heights were obtained, good; estimated periods fair.

Discharge measurements of Martin Creek near Paradise Valley, Nev., during the year ending September 30, 1922

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 2	4.56	7.2	Jan. 7	4.71	11.1	May 25	6.20	180
5	4.57	7.4	Apr. 1	5.03	26.7	July 6	4.85	15.4

Daily discharge, in second-feet, of Martin Creek near Paradise Valley, Nev., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7	9	10	9		9	30		150	19	8	7
2	7	9	10	9		9	44		148	18	8	7
3	7	9	10	10		10	72		146	18	9	7
4	7	9	10	10		11	119	225	144	17	9	7
5	7	9	10	10		10	70		133	16	8	7
6	7	9	10	10		10	53		122	16	7	7
7	7	9	10	11	7	9	111	239	111	15	7	7
8	8	10	10	9		9	144	258	104	14	7	7
9	8	9	10	8		9	110		101	13	7	7
10	8	9	10	8		10	75		98	13	7	7
11	8	8	10	8		10	39	210	95	12	7	7
12	8	14	10			9	39		93	11	7	7
13	8	13	10			10	35		91	10	7	7
14	8	12	10		8	12	39	162	89	10	7	7
15	8	11	10		8	14	25	175	82	9	7	7
16	8	11	10		9	22	18	180	76	9	7	7
17	8	10	10		9	20	15	186	70	9	7	7
18	8	10	10		10	16	20	195	64	8	7	7
19	8	9	10		10	17	69	221	58	8	7	7
20	8	9	10		10	25	119	229	53	10	7	7
21	8	9	10	7	10	41	158	190	48	9	7	7
22	8	9	10		11	44	176	180	44	9	7	7
23	8	9	10		10	48		180	41	8	7	7
24	8	9	10		10	49		190	38	8	7	7
25	8	9	9		10	35		180	35	8	7	7
26	8	9	9		11	28	195	167	31	8	7	7
27	8	10	9		11	26		153	27	8	7	7
28	8	10	9		9	28		144	24	8	7	7
29	9	10	9		-------	28		147	22	7	8	7
30	9	10	9		-------	28		150	20	7	7	8
31	9	-------	9		-------	29	-------	153	-------	7	7	-------

NOTE.—Braced figures show estimated mean discharge for periods indicated. No gage-height record Oct. 1, 2, Nov. 1, 2, 4–6, 9, 10, 13–15, 17–19, 26–28, 30, Dec. 13, 14, 16–21, 23–27, 29–31, Jan. 1–5, 29–31, Feb. 1–5, Apr. 9, 10, 15–18, 23–30, May 1–6, 9–13, 29, 30, June 1–3, 5, 6, 9–13, 15–17, 19, 20, 22–24, 26, 27, 29, 30, July 1, 3–5, 7, 8, Aug. 8–12 and Sept. 21–23; discharge estimated or interpolated.

Monthly discharge of Martin Creek near Paradise Valley, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	9	7	7.9	486
November	14	8	9.7	577
December	10	9	9.8	603
January	11	----------	7.8	480
February	11	----------	8.5	472
March	49	9	20.5	1,260
April	----------	15	105	6,250
May	258	144	196	12,100
June	150	20	78.6	4,680
July	19	7	11.0	676
August	9	7	7.3	449
September	8	7	7.0	417
The year	258	----------	39.2	28,400

HUMBOLDT-LOVELOCK IRRIGATION, LIGHT & POWER CO.'S FEEDER CANAL NEAR MILL CITY, NEV.

LOCATION.—In SW. ¼ sec. 29, T. 33 N., R. 35 E., a quarter of a mile below head of canal and 2 miles north of Mill City, Pershing County.

RECORDS AVAILABLE.—February 19, 1914, to September 30, 1922.

GAGE.—Stevens continuous water-stage recorder on left bank; inspected by Peter Organ.

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

CHANNEL AND CONTROL.—Earth section. Channel control. Stage-discharge relation is affected by growth of aquatic plants and by wash from several small gullies below station.

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

DIVERSIONS.—None.

REGULATION.—Flow regulated by head gates one-fourth mile above station.

ACCURACY.—Stage-discharge relation permanent; affected by ice during parts of December and January. Rating curve fairly well defined. Water-stage recorder operated successfully, except during periods in December, January, and July. Daily discharge obtained by applying to rating table mean daily gage height determined from recorder graph or staff gage readings. Records fair.

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 river during irrigation season, about 3 miles west of Humboldt and carried in the natural channel to the head gates of the canals serving the Lovelock district.

Discharge measurements of Humboldt-Lovelock Irrigation Light & Power Co.'s feeder canal near Mill City, Nev., during the year ending September 30, 1922

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 6		0	Jan. 17	[a] 3.97	84.0	June 26	3.10	84.3
19	1.08	6.6	May 27	.80	.1			

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Humboldt-Lovelock Irrigation, Light & Power Co.'s feeder canal near Mill City, Nev., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	June	July	Aug.
1		32			6	94	1
2		32			43	85	
3		32			69	82	
4		32	120		70	86	
5		29			70	90	
6		26			70	87	
7		26			70	83	
8		25	124		76	87	
9		24		90	90	83	
10		25			90	77	
11		25	120		87	69	
12		25			86	62	
13		31			86	56	
14		37			86	50	
15		39	115		87	46	
16		40	92		109	41	
17		36		84	117	40	
18		43			116	36	
19	3	50			112	31	
20	20	56			109	22	
21	34	57			106	9	
22	35	57			105	9	
23	35	57		80	102	8	
24	33	57	90		98	7	
25	31	60			88	6	
26	31	60			84		
27	31	60			86		
28	29	60			88	3	
29	29	64			90		
30	29	67			98		
31	30						

NOTE.—No flow Oct. 1–18, Jan. 30 to May 31, and Aug. 2 to Sept. 30. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Humboldt-Lovelock Irrigation, Light & Power Co.'s feeder canal near Mill City, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	35	0	11.9	732
November	67	24	42.1	2,510
December			105	6,460
January			80.1	4,930
February	0	0	0	0
March	0	0	0	0
April	0	0	0	0
May	0	0	0	0
June	117	6	86.5	5,150
July	94		44.0	2,710
August	1	0	0	0
September	0	0	0	0
The year	117	0	31.0	22,500

HUMBOLDT-LOVELOCK IRRIGATION, LIGHT & POWER CO.'S OUTLET CANAL NEAR HUMBOLDT, NEV.

LOCATION.—In SE. ¼ sec. 30, T. 32 N., R. 33 E., at outlet of lower Taylor-Pitt Reservoir, about 2½ miles west of Humboldt, Pershing County.

RECORDS AVAILABLE.—February 15, 1914, to September 30, 1920; October 1, 1921, to September 30, 1922.

GAGE.—Stevens continuous water-stage recorder on right bank about 100 feet above the weirs; inspected by G. L. Pitt.

DISCHARGE MEASUREMENTS.—Made from a footbridge one-fourth mile below gage or by wading.

CHANNEL AND CONTROL.—Two 8-foot Cippoletti weirs form a permanent control. Stage of zero flow at gage height 0.04 foot, determined April 7, 1917.

ICE.—Gates usually closed during winter.

DIVERSIONS.—None.

REGULATION.—Flow regulated by reservoir outlet gates a few hundred feet above station.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined below 150 second-feet. Operation of water-stage recorder satisfactory during periods when reservoir gates were open except for two short periods. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Discharge estimated for two short periods when water-stage recorder was not operating. Seepage through gates, when closed, was about 2 second-feet. Records good.

Canal conducts stored water released from the Taylor-Pitt reservoirs to Humboldt River in SW. ¼ sec. 31, T. 33 N., R. 33 E., for irrigation use in Lovelock Valley several miles downstream.

Discharge measurements of Humboldt-Lovelock Irrigation, Light & Power Co.'s outlet canal near Humboldt, Nev., during the year ending September 30, 1922

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 6	0.39	11.2	Jan. 17	[a]—0.12	2.1	July 5	0.18	2.7
19	.40	12.9	May 27	.20	5.0			

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Humboldt-Lovelock Irrigation, Light & Power Co.'s outlet canal near Humboldt, Nev., for the year ending September 30, 1922

Day	Oct.	May	June	July	Aug.	Sept.
1			4	4	3	18
2			4	4	3	2
3	2		4	4	3	
4			4	4	3	
5			4	3	3	2
6	12		4	3		
7			5	3		10
8			5	4		22
9			6	4	3	22
10		2	7	4		22
11			7	3		22
12			7	3	24	22
13	12		7	2	68	22
14			7	3	90	22
15			7	3	120	22
16			8	3	119	11
17			8	3	127	
18			8	3	131	
19	12		8	4	119	
20	12		8	4	96	
21	12	2	8	5	65	
22	12	2	8	4	54	
23	12	3	4	4	39	
24	13	3	3	5		2
25	6	3	3	7		
26	2	4	3	4	38	
27	2	4	3	3		
28	2	4	3	2	36	
29	2	4	3	3	28	
30	2	4	3	3	28	
31	2	4	-------	3	28	-------

NOTE.—No gage-height record; discharge estimated Oct. 7–18, Aug. 6–11, 24–27. Gates closed Oct. 1–5, Oct. 26 to May 22, Sept. 3–6, and 17–30; seepage about 2 second-feet. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Humboldt-Lovelock Irrigation, Light & Power Co.'s outlet canal near Humboldt, Nev., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	13	----------	8.3	510
November	----------	----------	2	119
December	----------	----------	2	123
January	----------	----------	2	123
February	----------	----------	2	111
March	----------	----------	2	123
April	----------	----------	2	119
May	4	----------	2.5	154
June	8	3	5.4	321
July	7	2	3.6	221
August	131	3	43.8	269
September	22	----------	8.4	500
The year	131	----------	7.1	2,690

PYRAMID AND WINNEMUCCA LAKES BASIN

LAKE TAHOE AT TAHOE, CALIF.

LOCATION.—In 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, 1922.

GAGE.—Vertical staff fastened to piling of boat landing near outlet; read once a day by an employee of the United States Bureau of Reclamation. 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, 7.28 feet July 8; minimum stage, 4.46 feet December 19.

1900–1922: Maximum stage recorded, 11.26 feet July 14, 15, 17, and 18, 1907; minimum stage, 4.37 feet November 7, 1920.

ACCURACY.—Gage read to hundredths once daily.

COOPERATION.—Record furnished by United States Bureau of Reclamation.

Daily gage height, in feet, of Lake Tahoe at Tahoe, Calif., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.33	4.92	4.60	4.92	4.74	5.30	5.28	5.25	6.19	7.18	7.07	6.48
2	5.32	4.91	4.61	4.94	4.74	5.31	5.28	5.27	6.24	7.20	7.06	6.46
3	5.30	4.90	4.60	4.94	4.74	5.32	5.28	5.29	6.29	7.21	7.05	6.46
4	5.29	4.88	4.58	4.93	4.74	5.33	5.27	5.32	6.34	7.22	7.05	6.44
5	5.27	4.87	4.56	4.93	4.73	5.34	5.27	5.34	6.39	7.25	7.04	6.40
6	5.26	4.86	4.55	4.92	4.73	5.34	5.26	5.37	6.44	7.25	7.03	6.38
7	5.24	4.85	4.54	4.91	4.72	5.33	5.26	5.39	6.49	7.27	7.03	6.36
8	5.22	4.84	4.52	4.90	4.72	5.30	5.25	5.42	6.52	7.28	7.02	6.34
9	5.21	4.83	4.52	4.89	4.88	5.30	5.25	5.48	6.56	7.27	7.00	6.32
10	5.20	4.82	4.51	4.88	4.95	5.27	5.23	5.57	6.59	7.27	6.97	6.30
11	5.19	4.81	4.50	4.87	4.99	5.28	5.22	5.54	6.66	7.27	6.94	6.28
12	5.18	4.80	4.50	4.86	4.99	5.28	5.22	5.56	6.88	7.26	6.90	6.27
13	5.16	4.79	4.49	4.85	4.99	5.28	5.22	5.58	6.71	7.26	6.85	6.26
14	5.14	4.78	4.49	4.83	4.98	5.29	5.21	5.60	6.77	7.26	6.80	6.24
15	5.13	4.76	4.48	4.82	4.97	5.29	5.20	5.62	6.81	7.25	6.78	6.23
16	5.12	4.74	4.48	4.81	4.97	5.31	5.20	5.66	6.85	7.25	6.76	6.21
17	5.11	4.74	4.47	4.80	4.98	5.31	5.19	5.68	6.88	7.25	6.75	6.20
18	5.09	4.73	4.47	4.79	5.12	5.31	5.19	5.73	6.92	7.24	6.73	6.19
19	5.08	4.71	4.46	4.76	5.16	5.30	5.19	5.78	6.96	7.24	6.71	6.17
20	5.06	4.70	4.60	4.75	5.24	5.29	5.19	5.84	7.00	7.24	6.71	6.15
21	5.05	4.69	4.62	4.75	5.26	5.28	5.20	5.87	7.01	7.24	6.67	6.14
22	5.03	4.68	4.65	4.75	5.26	5.26	5.20	5.90	7.04	7.23	6.65	6.13
23	5.02	4.68	4.66	4.74	5.25	5.25	5.20	5.92	7.07	7.21	6.61	6.12
24	5.00	4.67	4.68	4.74	5.25	5.25	5.21	5.95	7.10	7.20	6.59	6.11
25	4.98	4.66	4.72	4.73	5.25	5.24	5.21	6.00	7.13	7.18	6.56	6.09
26	4.98	4.65	4.75	4.73	5.27	5.24	5.22	6.04	7.13	7.16	6.55	6.07
27	4.97	4.63	4.86	4.75	5.29	5.24	5.22	6.06	7.14	7.14	6.55	6.04
28	4.97	4.63	4.86	4.75	5.29	5.28	5.23	6.07	7.15	7.12	6.55	6.01
29	4.96	4.62	4.87	4.75	-------	5.25	5.23	6.08	7.15	7.10	6.54	5.99
30	4.94	4.61	4.89	4.75	-------	5.25	5.24	6.11	7.16	7.08	6.52	5.98
31	4.93	-------	4.90	4.75	-------	5.24	-------	6.15	-------	7.07	6.50	-------

TRUCKEE RIVER AT TAHOE, CALIF.

LOCATION.—In 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, 1922.

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.—Gravel; practically permanent.

EXTREMES OF DISCHARGE.—1895–1896; 1900–1922: Maximum mean daily discharge, 1,340 second-feet, July 13–20, 1907 (stage, 4.3 feet); river dry during parts of 1900, 1901, 1914, and 1918–1922.

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

DIVERSIONS.—No information.

REGULATION.—Flow regulated by operation of gates in dam at Lake Tahoe.

ACCURACY.—Stage-discharge relation not permanent. Rating curve well defined. Gage read to hundredths at least once each day. Stage controlled by outlet gates at Lake Tahoe. Daily discharge ascertained by United States Bureau of Reclamation by applying mean daily gage height to rating table.

COOPERATION.—Daily-discharge record furnished by United States Bureau of Reclamation.

Daily discharge, in second-feet, of Truckee River at Tahoe, Calif., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	July	Aug.	Sept.
1	340	246	138	244	190	385	222	-------	420	472
2	340	241	140	252	190	385	222	-------	420	465
3	340	238	136	252	190	389	222	-------	420	476
4	337	233	133	249	190	389	222	-------	420	472
5	334	230	129	249	188	389	222	-------	417	472
6	334	228	129	246	188	389	154	-------	413	472
7	331	225	127	244	186	389	154	-------	437	472
8	331	222	125	241	186	385	154	-------	437	480
9	328	220	125	238	235	382	169	-------	434	480
10	328	215	123	235	272	370	169	-------	427	480
11	328	209	121	235	295	373	163	34	420	480
12	325	207	121	230	301	373	163	34	420	480
13	328	207	120	228	298	373	163	34	455	476
14	322	205	120	220	295	376	163	83	455	476
15	340	195	120	215	295	376	163	190	455	472
16	337	186	120	209	295	379	207	190	455	480
17	334	183	118	207	298	379	207	190	452	480
18	331	183	118	205	325	379	207	190	452	480
19	328	172	116	198	340	355	169	207	452	480
20	325	165	138	193	370	349	169	207	459	476
21	325	163	144	193	340	343	-------	207	487	476
22	322	161	152	193	340	334	-------	252	487	483
23	322	161	154	190	337	325	-------	252	487	483
24	319	159	161	190	337	322	-------	252	487	483
25	304	154	174	180	340	275	-------	298	483	480
26	289	150	190	180	340	275	-------	355	483	476
27	280	144	230	193	340	275	-------	395	483	472
28	280	144	230	193	340	278	-------	395	483	480
29	278	140	233	193	-------	266	-------	437	483	476
30	252	140	238	193	-------	266	-------	437	480	472
31	249	-------	238	193	-------	266	-------	420	476	-------

NOTE.—No flow Apr. 21 to July 10.

Monthly discharge of Truckee River at Tahoe, Calif., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	340	249	318	19,600
November	246	140	191	11,400
December	238	116	150	9,220
January	252	180	216	13,300
February	370	186	280	15,600
March	389	266	348	21,400
April	222	0	123	7,320
May	0	0	0	0
June	0	0	0	0
July	437	0	163	10,000
August	487	413	453	27,900
September	483	465	477	28,400
The year	487	0	226	164,000

TRUCKEE RIVER AT ICELAND, CALIF.

LOCATION.—In sec. 36, T. 18 N., R. 17 E., above dam of National Ice Co., 400 feet northeast of Southern Pacific Railroad station at Iceland, Nevada County, and 23 miles west of Reno, Nev.

DRAINAGE AREA.—937 square miles.

RECORDS AVAILABLE.—August 1, 1912, to September 30, 1922.

GAGE.—Water-stage recorder on right bank above dam; auxiliary vertical staff fastened to gage well.

DISCHARGE MEASUREMENTS.—Made from cable 130 feet above gage.

CHANNEL AND CONTROL.—Bed consists of small boulders; fairly smooth and permanent. Left bank high; right bank subject to overflow at high stages. Dam of National Ice Co. is the control.

EXTREMES OF DISCHARGE.—1907–1922: Maximum mean daily discharge, 15,300 second-feet March 18, 1907; minimum mean daily discharge, 175 second-feet November 6-7, 1920.

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

DIVERSIONS.—No information.

REGULATION.—See Truckee River at Tahoe.

ACCURACY.—Mean daily gage heights determined from water-stage recorder sheets. Daily discharge ascertained by United States Bureau of Reclamation by applying mean daily gage height to rating table.

COOPERATION.—Daily-discharge record furnished by United States Bureau of Reclamation.

Discharge measurements of Truckee River at Iceland, Calif., during the year ending September 30, 1922

[Made by S. R. Marean]

Date	Gage height	Discharge
	Feet	*Sec.-ft.*
May 19	4.26	3,940
20	4.35	4,040
20	4.35	4,080

Daily discharge, in second-feet, of Truckee River at Iceland, Calif., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	418	324	330	462	425	451	510	2,980	3,290	1,200	559	510
2	400	314	362	490	379	490	482	3,070	3,430	1,060	550	506
3	403	314	330	451	379	494	502	3,430	3,470	981	542	506
4	410	324	266	440	379	490	550	4,180	3,570	967	530	502
5	410	320	266	386	379	502	595	4,570	3,540	939	530	510
6	400	327	266	414	389	502	542	4,570	3,360	883	522	506
7	400	340	266	414	382	494	474	4,670	3,140	843	494	506
8	400	314	266	379	365	486	498	3,800	2,870	807	518	510
9	403	314	250	362	365	486	518	2,740	2,710	730	522	510
10	410	327	250	352	346	486	526	2,300	2,560	640	518	518
11	410	298	260	346	376	478	510	2,160	2,130	550	514	514
12	400	298	266	340	379	486	498	2,300	1,990	568	510	514
13	389	292	234	356	396	478	486	2,740	1,840	568	502	510
14	400	330	228	382	470	409	466	3,250	1,940	518	514	506
15	407	324	203	396	470	494	466	3,610	1,990	502	526	502
16	396	330	228	382	470	510	470	3,800	2,080	550	530	502
17	396	298	203	179	470	510	514	3,990	2,130	563	522	502
18	396	314	234	369	470	506	498	4,470	2,080	546	518	502
19	400	330	234	369	510	502	518	4,180	1,990	510	514	506
20	396	314	234	317	470	506	568	3,900	1,940	510	510	506
21	393	314	250	376	470	498	715	3,250	1,830	502	510	502
22	382	330	298	376	447	506	855	2,980	1,770	498	510	498
23	379	330	314	382	432	530	1,110	3,070	1,660	518	526	494
24	346	266	304	382	445	522	1,200	3,250	1,550	494	526	498
25	346	266	324	425	455	538	1,480	3,250	1,300	478	526	498
26	330	266	314	510	455	542	1,800	2,590	1,440	498	526	502
27	324	266	314	396	455	510	2,030	2,300	1,480	538	522	502
28	382	266	330	376	448	506	2,320	2,440	1,440	530	518	498
29	330	314	356	396	-------	510	2,650	2,660	1,340	526	526	494
30	330	266	372	425	-------	510	3,100	2,980	1,270	542	514	490
31	324	-------	396	421	-------	530	-------	3,250	-------	542	510	-------

Monthly discharge of Truckee River at Iceland, Calif., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	418	324	384	23,600
November	340	266	308	18,300
December	396	203	282	17,300
January	490	317	395	24,300
February	510	346	424	23,500
March	542	409	499	30,700
April	3,100	466	915	54,400
May	4,670	2,160	3,310	204,000
June	3,570	1,270	2,240	133,000
July	1,200	478	648	39,800
August	559	494	521	32,000
September	518	490	504	30,000
The year	4,670	203	872	631,000

WARNER LAKES BASIN

TWENTYMILE CREEK NEAR WARNER LAKE, OREG.

LOCATION.—In sec. 24, T. 40 S., R. 23 E., a quarter of a mile above highway bridge on Warner Lake-Coleman Valley road at mouth of canyon, below all tributaries, and 2 miles south of Warner Lake post office, Lake County.

DRAINAGE AREA.—155 square miles (measured on map issued by United States Bureau of Reclamation), not including 43 square miles tributary to Cowhead Lake, which contributes water only during years of heavy run-off.

RECORDS AVAILABLE.—March 1, 1910, to July 2, 1916; December 16, 1917, to September 30, 1919; and March 14, 1921, to June 30, 1922, when station was discontinued.

GAGE.—Vertical staff gage on left bank installed October 19, 1921; gage reader, Hillard Houston. Earlier gages at different locations and datums.

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

CHANNEL AND CONTROL.—Stream bed at gage composed of fine gravel, somewhat shifting; control for all but extreme low stages is solid rock reef broken by crevices and obstructed by boulders and gravel and occasional obstructions of drift; shifts slightly.

EXTREMES OF DISCHARGE.—Maximum stage during year, 8.0 feet during night of April 26–27, observed from high-water mark the next morning (discharge, 1,600 second-feet); minimum stage recorded, 0.15 foot August 4, which was probably close to minimum for year (discharge, 2.5 second-feet).

1910–1916, 1918–19, and 1921–22; Maximum discharge recorded, 2,610 second-feet March 1, 1910; minimum discharge recorded, 1.4 second-feet August 1, 1919.

ICE.—Stage-discharge relation apparently not affected by ice during year.

DIVERSIONS.—Some diversions for irrigation along Twelvemile and Fifteenmile Creeks and along Eightmile Creek, a tributary of Cowhead Lake. Two small ditches divert just above gage. A ditch also diverts from head of Twelvemile Creek into Lake Anne for storage.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed April 26 at high water and June 24 when débris was removed from control. Rating curves fairly well defined. Gage read to hundredths once a day at medium and low stages; read to half-tenths twice a day and high-water mark noted at high stages. Daily discharge obtained by applying mean daily gage height to rating table. Records fair.

Discharge measurements of Twentymile Creek near Warner Lake, Oreg., during the period October 1, 1921, to November 17, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
1921		*Feet*	*Sec.-ft.*	1922		*Feet*	*Sec.-ft.*
Oct. 19	G. H. Canfield	0.22	3.3	May 28	J. W. Bones	2.20	94
				June 24	Wendell Dawson	•1.04	26.4
1922				Nov. 17	Henshaw and Mushen	.38	5.6
May 16	J. W. Bones	2.52	118				

• Gage read 0.72 foot after removing obstruction on control.

Daily discharge, in second-feet, of Twentymile Creek near Warner Lake, Oreg., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.6	4.7	7.1	8.1	4.7	7.8	26	241	108
2	3.6	4.4	6.8	7.8	4.7	7.4	65	148	118
3	3.7	4.7	5.2	7.4	4.7	5.5	128	224	124
4		4.4	4.4	7.1	4.7	6.8	134	224	126
5		4.4	4.2	6.8	4.7	6.4	102	191	129
6		4.7	3.6	6.8	5.2	5.0	115	176	118
7		5.0	3.6	6.8	5.5	5.8	496	199	108
8		5.0	6.1	6.8	5.8	5.8	469	108	100
9		5.0	5.8	6.1	5.5	5.5	183	108	113
10		5.2	5.8	6.1	6.1	5.2	199	104	113
11	3.5	5.0	5.8	6.8	5.8	6.8	128	96	82
12		4.7	5.8	5.8	6.8	6.8	80	86	72
13		4.7	5.8	5.8	5.8	7.1	72	86	72
14		4.7	5.5	5.2	5.5	9.2	41	79	69
15		4.4	5.2	6.8	5.8	7.4	29	108	72
16		4.4	5.0	6.8	6.4	7.8	36	124	66
17		4.4	4.7	5.2	5.8	8.1	31	129	60
18		4.4	4.7	5.0	5.5	7.4	56	176	54
19	3.3	4.4	4.7	4.4	5.8	7.4	268	168	51
20	3.0	4.4	4.7	4.4	6.4	8.8	496	161	48
21	4.5	7.4	4.7	4.4	5.8	11	874	141	42
22	3.1	5.2	5.2	4.4	6.6	11	1,070	124	36
23	3.3	4.7	5.2	4.4	5.2	14	693	118	24
24	3.3	4.7	4.7	5.2	5.2	20	780	124	26
25	3.4	5.0	5.0	5.2	5.8	13	664	141	22
26	5.1	5.2	5.2	5.0	5.2	12	1,010	124	22
27	5.8	5.2	5.5	5.0	5.2	13	907	100	23
28	5.5	5.2	5.5	4.7	6.8	11	523	93	21
29	5.8	6.1	5.5	4.7	------	13	369	118	19
30	5.0	6.8	5.8	4.7	------	15	278	118	15
31	3.4	------	6.1	4.7	------	23	------	118	------

NOTE.—Discharge, Oct. 4–18, estimated, because gage was not read.

Monthly discharge of Twentymile Creek near Warner Lake, Oreg., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	5.8	------	3.80	234
November	7.4	4.4	4.95	295
December	7.1	3.6	5.25	323
January	8.1	4.4	5.75	354
February	6.8	4.7	5.61	312
March	23	5	9.48	583
April	1,070	26	344	20,500
May	241	79	137	8,420
June	129	15	68.4	4,070
The period	------	------	------	35,100

FIFTEENMILE CREEK NEAR WARNER LAKE, OREG.

LOCATION.—In sec. 21, T. 41 S., R. 23 E., at highway bridge on Fort Bidwell-Warner Lake road, 1½ miles north of California-Oregon State line, 15 miles northeast of Fort Bidwell, Calif., and 8 miles southwest of Warner Lake, Lake County, Oreg.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 10 to May 15, 1913; December 8, 1917, to September 30, 1919; and April 8 to June 30, 1922, when station was discontinued.

GAGE.—Vertical staff in two sections, first section on left upstream corner of the bridge, second section 30 feet upstream from bridge. Read by stage driver.

DISCHARGE MEASUREMENTS.—Made by wading or from bridge.

CHANNEL AND CONTROL.—Control consists of several large boulders at lower side of bridge for extreme low water, boulders and gravel 30 feet downstream from bridge for medium water, and the bridge and graded road for high water; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 2.0 feet on April 22 and 27 (discharge, 45 second-feet); minimum stage, 0.6 foot June 26–30 (discharge, 2.0 second-feet).

DIVERSIONS.—Several very small irrigation ditches; negligible.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve fairly well defined by two discharge measurements and form of old curve. Gage read to tenths once daily except Sundays. Daily discharge ascertained by applying daily gage height to rating table; Sundays interpolated. Records fair.

Discharge measurements of Fifteenmile Creek near Warner Lake, Oreg., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
May 17	J. W. Bones	1.45	21.6
June 24	Wendell Dawson	.67	2.8

Daily discharge, in second-feet, of Fifteenmile Creek near Warner Lake, Oreg., for the period April 1 to June 30, 1922

Day	Apr.	May	June	Day	Apr.	May	June	Day	Apr.	May	June
1		13	11	11	13	32	8.7	21	28	20	3.2
2		6.4	8.3	12	11	16	6.4	22	45	16	3.2
3		4.7	8.3	13	11	13	6.4	23	39	16	3.2
4		4.7	8.3	14	6.4	16	6.4	24	32	16	3.2
5	7	11	8.3	15	6.4	20	4.7	25	32	16	2.6
6		8.3	8.3	16	6.4	20	4.7	26	40	16	2.0
7		14	6.4	17	6.4	20	4.7	27	45	6.4	2.0
8	20	20	6.4	18	6.4	24	4.0	28	36	8.7	2.0
9	20	24	8.3	19	8.3	24	3.2	29	8.3	11	2.0
10	11	32	11	20	20	24	3.2	30	11	11	2.0
								31		11	

NOTE.—Mean discharge, Apr. 1-7, estimated.

Monthly discharge of Fifteenmile Creek near Warner Lake, Oreg., for the period April 1 to June 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April	45		17.5	1,040
May	32	4.7	16.0	984
June	11	2.0	5.41	322
The period				2,350

TWELVEMILE CREEK NEAR FORT BIDWELL, CALIF.

LOCATION.—In NE. ¼ NE. ¼ sec. 31, T. 48 N., R. 17 E., a quarter of a mile below mouth of Tenmile Creek, at bridge on Fort Bidwell-Warner Lake road a quarter of a mile south of Oregon-California State line, and 12 miles northeast of Fort Bidwell, Modoc County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 14 to June 30, 1912; April 1 to June 17, 1913; December 8, 1917, to September 30, 1919; and May 16 to June 30, 1922, when station was discontinued.

GAGE.—Vertical staff gage nailed to one of a clump of large cottonwood trees on left bank, 80 feet below bridge; read by J. M. Allenwood.

DISCHARGE MEASUREMENTS.—Made by wading or from bridge.

CHANNEL AND CONTROL.—Boulders and gravel 15 feet below gage; permanent. Banks are gravel and abrupt.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period of record in 1922, 3.0 feet on several days in May and June (discharge, 122 second-feet); minimum stage recorded, 2.16 feet at time of measurement June 24 (discharge, 22 second-feet).

DIVERSIONS.—Peterson ditch, capacity about 20 second-feet, diverts from South Fork of Twelvemile Creek 3 miles above gage. Eightmile Creek, a tributary of Twelvemile Creek, is diverted partly at Shadler ranch and partly into Lake Anne for storage. La Xague and Fisher ditches divert below gage.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during period of record. Rating curve fairly well defined. Gage read to tenths once daily except on Sundays; some readings questionable. Records fair.

Discharge measurements of Twelvemile Creek near Fort Bidwell, Calif., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
May 17	J. W. Bones	2.80	88
June 24	Wendell Dawson	2.16	22.8

Daily discharge, in second-feet, of Twelvemile Creek near Fort Bidwell, Calif., for the period May 16 to June 30, 1922

Day	May	June	Day	May	June	Day	May	June
1		122	11		91	21	74	49
2		122	12		60	22	60	49
3		122	13		60	23	60	49
4		114	14		60	24	122	49
5		105	15		60	25	122	44
6		105	16	88	49	26	122	39
7		88	17	88	49	27	88	39
8		88	18	122	49	28	88	39
9		122	19	122	49	29	88	39
10		122	20	88	49	30	122	39
						31	122	

Monthly discharge of Twelvemile Creek near Fort Bidwell, Calif., for the period May 16 to June 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
May 16–31	122	60	98.5	3,130
June	122	39	70.7	4,210

DEEP CREEK AT ADEL, OREG.

LOCATION.—In SE. ¼ sec. 21, T. 39 S., R. 24 E., just back of Wible Hotel at Adel, Lake County, one-eighth mile upstream from wagon bridge; below all tributaries.

DRAINAGE AREA.—250 square miles (measured on United States Bureau of Reclamation map).

RECORDS AVAILABLE.—May 11, 1909, to May 31, 1916; December 18, 1917, to September 30, 1919; January 30, 1921, to December 9, 1922, when station was discontinued.

GAGE.—Stevens eight-day water-stage recorder on left bank one-eighth mile above bridge; inspected by W. S. Wible.

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 at gage and bridge in extreme floods.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 6.2 feet at 2 a. m. April 21 (discharge, 1,510 second-feet); minimum stage from water-stage recorder, 2.40 feet August 4–8 (discharge, 2.0 second-feet).

1909–1919; 1921–22: Maximum stage recorded, 9.0 feet at 6 p. m. March 2, 1910 (discharge, 4,950 second-feet); minimum stage, 2.4 feet July 18–21, 1919 (discharge, 1.4 second-feet).

ICE.—Stage-discharge relation probably slightly affected by ice during January, February, and the first half of March.

DIVERSIONS.—Considerable area irrigated from tributaries, and 2,000 or 3,000 acres watered by natural flooding in Big Valley and Crane Lake. Five ditches, with total capacity of about 30 second-feet, divert water within 2 miles above gage and carry about 5,000 acre-feet around gage each year.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent during year; slightly affected by ice January 1 to March 13. Rating curve well defined. Operation of water-stage recorder satisfactory April 8 to August 22 except for the week ending July 1, for which gage heights are somewhat uncertain. Gage read to hundredths once a day during remainder of year, with some gaps. Daily discharge obtained by applying to rating table mean gage height obtained by inspecting recorder graph or daily reading. Records good except those for low water, which are poor.

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Discharge measurements of Deep Creek at Adel, Oreg., during the period October 1, 1921, to November 17, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
1921		*Feet*	*Sec.-ft.*	1922		*Feet*	*Sec.-ft.*
Oct. 17	G. H. Canfield	2.66	11.6	May 28	J.W. Bones	4.34	389
				June 24	Wendell Dawson	3.25	77
1922				Nov. 17	Henshaw and Mushen	2.80	21
May 15	J. W. Bones	5.00	703				

Daily discharge, in second-feet, of Deep Creek at Adel, Oreg., for the period October 1, 1921, to December 9, 1922

Day.	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.4	14	47	27	18	224	843	396	15	2.6	5.0	4.4	19	19
2	7.4	14		27	18		873	384	8.2	2.6	5.0	4.4	19	19
3	7.4	14	47	26	18		724	421	7.0	2.3	5.0	4.4	19	19
4	7.4	14		26	19		966	425	6.2	2.0	5.0	4.4	19	19
5	7.4	14		26	19	200	998	430	5.8	2.0	5.0	4.4	19	19
6	7.4	15	47	25	19		1,030	392	5.8	2.0	5.0	4.4	19	19
7	7.4	14	59	25	19		935	314	5.8	2.0	5.0	4.4	19	19
8	7.4	15	59	24	19	307	843	281	5.8	2.0	5.0	5.0	19	19
9	7.4	15	59	24	20	230	638	372		2.3	5.0	5.0	19	19
10	7.4	15	59	24	20	203	550	421		2.6	5.0	5.0	19	------
11	7.4	13	59	23	20	116	464	314	5.8	3.2	5.0	5.0	19	------
12	7.4	13	57	23	20	134	455	260		3.8	5.0	10	19	------
13	7.4	13	54	22	21	105	501	233	5.8	4.4	5.0	10	19	------
14	7.4	13	50	22	25	80	611	215	5.8	5.0	5.0	10	19	------
15	14	13	34	20	25	68	611	195	5.8	5.0	5.0	10	19	------
16	14	13	24	19	25	79	718	175	4.4	5.0	5.0	10	19	------
17	14	13	19	18	27	68	754	156	4.4	5.8	5.0	10	20	------
18	14	13	19	18	27	84	843	139	4.4	5.4	5.0	10	19	------
19	16	13	19	18	27	146	904	132	4.4	5.0	5.0	10	19	------
20	16	13	19	18	27	666	783	116	5.4	5.0	5.0	10	19	------
21			19	18	27	843	666	103	5.8	5.0	4.4	10	19	------
22			19	18	27	1,130	595	96	5.0	5.0	4.4	10	19	------
23			19	18	27	1,190	585	86	5.0	5.0	4.4	10	19	------
24			19	18	27	1,130	575	84	4.4	5.0	4.4	10	19	------
25			20	18	27	1,160	590	77	4.1	5.0	4.4	13	19	------
26	15	18	21	18	28	1,290	525	61	3.8	5.0	4.4	13	19	------
27			22	18	28	1,260	421	47	3.5	5.0	4.4	13	19	------
28			22	18	28	1,060	384	36	3.5	5.0	4.4	13	19	------
29			23	------	28	904	380	29	3.5	5.0	4.4	19	19	------
30			23	------	40	783	392	21	3.5	5.0	4.4	19	19	------
31		------	25	------	40	------	405	------	2.9	5.0	------	19	------	------

NOTE.—Braced figures show estimated discharge for periods indicated.

Monthly discharge of Deep Creek at Adel, Oreg., for the period October 1, 1921, to December 9, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
1921-22				
October		7.4	11.5	707
November		13	15.1	898
December			30.0	1,840
January	59	19	35.6	2,190
February	27	18	21.5	1,190
March	40	18	24.5	1,510
April	1,290	68	482	28,700
May	1,030	380	663	40,800
June	430	21	214	12,700
July	15	2.9	5.43	334
August	5.8	2.0	4.03	248
September	5.0	4.4	4.80	286
The year	1,290	2.0	126	91,400
1922				
October	19	4.4	9.35	575
November	20	19	19	1,130
December 1-9	19	19	19	339

HONEY CREEK NEAR PLUSH, OREG.

LOCATION.—In SW. ¼ sec. 20, T. 36 S., R. 24 E., half a mile above mouth of canyon, 1½ miles northwest of Plush, Lake County, and 1 mile above wagon bridge near Plush; below all tributaries.

DRAINAGE AREA.—156 square miles (measured on maps prepared by United States Bureau of Reclamation).

RECORDS AVAILABLE.—May 13, 1909, to September 30, 1914; March 1 to May 16, 1915; March 15 to August 31, 1921; and March 19 to June 30, 1922, when station was discontinued.

GAGE.—Vertical staff on left bank; gage readers, M. M. Barry and Cleo Gibson.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Gravel and boulders, shifting in extreme floods.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.8 feet during nights of May 5 and May 6, observed from high-water marks the next morning (discharge, 490 second-feet); minimum stage not recorded.

1909–1915; 1921–22: Maximum stage recorded, 9.20 feet April 15, 1915, about 4 a. m. due to breaking of a storage dam on Snyder Creek (discharge, about 3,840 second-feet). Maximum stage due to natural causes 6.30 feet on an old gage February 24, 1910 (discharge, 2,240 second-feet); minimum stage recorded, −0.46 foot July 18, 1910 (discharge, 0.94 second-foot).

ICE.—None during period of records.

DIVERSIONS.—A few hundred acres are irrigated in the basin above the gage; large area irrigated in the valley below.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent during period covered by records. Rating curve fairly well defined. Gage read to half-tenths every other day at low stages. once a day and high-water mark noted at high stages. Daily discharge obtained by applying to rating table mean daily gage height obtained by averaging daily reading which was generally made at low water and the maximum stage giving the reading double weight. Records fair.

Discharge measurements of Honey Creek near Plush, Oreg., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 18	G. H. Canfield	0.59	2.3	June 13	J. W. Bones	2.10	49.6
May 16	J. W. Bones	3.75	271	24	Wendell Dawson	1.29	19.3
28	do	2.76	103				

Daily discharge, in second-feet, of Honey Creek near Plush, Oreg., for the year ending September 30, 1922

Day	Mar.	Apr.	May	June	Day	Mar.	Apr.	May	June
1		32	170	77	16		14	300	36
2		40	200	77	17		15	260	30
3		107	220	77	18		16	300	25
4		148	240	86	19	6	75	320	24
5		55	380	77	20		134	240	22
6		69	340	77	21	8	220	182	20
7		240	320	69	22		320	164	19
8		260	240	69	23	14	320	134	18
9		96	180	82	24		310	134	16
10		55	120	96	25	11	300	148	14
11		44	150	76	26		300	120	12
12		32	182	55	27	11	280	107	11
13		23	182	50	28		280	96	8
14		14	200	44	29	11	200	96	6
15		14	260	40	30		134	86	6
					31	19		86	

Monthly discharge of Honey Creek near Plush, Oreg., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
March 19–31	19	6	11.4	294
April	320	14	139	8,270
May	380	86	199	12,200
June	96	6	44.0	2,620
The year				23,400

SILVER LAKE BASIN

SILVER LAKE NEAR SILVER LAKE, OREG.

LOCATION.—In lot 3, sec. 11, T. 29 S., R. 15 E., on west shore of lake, 1 mile south of Duncan place and 9 miles from Silver Lake, Lake County.

RECORDS AVAILABLE.—Occasional readings 1905 to 1917 and 1921.

GAGE.—Vertical staff bolted to large boulder was used in 1905 and 1906. Since then water surface has been referenced to bench mark. Elevation of gage zero above sea level is uncertain.

EXTREMES OF STAGE.—Maximum stage during recent years, 16.5 feet in spring of 1904 determined from high-water marks. Lake bed went dry in 1889 and during September or October, 1917.

Gage readings during 1921:

May 10, 7.33 feet.

August 23, 4.53 feet.

SILVER CREEK NEAR SILVER LAKE, OREG.

LOCATION.—In SW. ¼ sec. 28, T. 28 S., R. 14 E., below diversion point of canal of Silver Lake Irrigation District, 1½ miles southwest of Silver Lake post office, Lake County, and 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, 1922.

GAGE.—Stevens continuous water-stage recorder referred to inclined staff on right bank since March 5, 1921. Gage reader, J. H. Gowdy.

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

CHANNEL AND CONTROL.—Composed of rocks and gravel; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 4.35 feet at midnight April 26 (discharge, 378 second-feet); minimum stage, −0.04 foot at 10 a. m. September 3 (discharge, 0.4 second-foot).

1905–1907; 1909–1922: Maximum stage recorded, 6.40 feet at 4 p. m. November 23, 1909 (discharge, 910 second-feet); minimum discharge, 0.3 second-foot August 30, September 2 and 6, 1918.

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

DIVERSIONS.—A few small tracts irrigated above station, chiefly in Thompson Valley. Canal of Silver Lake Irrigation District diverted some water past gage during season, probably about 1,000 acre-feet.

REGULATION.—Water stored in reservoir of Silver Lake Irrigation District at Thompson Valley from about March 20 to April 20, and released during summer.

ACCURACY.—Stage-discharge relation changed when ice went out of river during latter part of March; affected by ice January 31. Rating curves well defined except curve used March 25 to September 30, which is poorly defined below 15 second-feet. Recorder operated satisfactorily except during winter, when staff gage was read about once a week, and for short periods thereafter. Daily discharge ascertained by applying to rating table staff gage readings or mean daily gage height determined by inspecting recorder graph. For periods of no gage-height record, mean discharges estimated. Records good except for periods of missing gage record and for stages below 15 second-feet after March 5, for which they are fair.

Discharge measurements of Silver Creek near Silver Lake, Oreg., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 15	K. N. Phillips	0.51	5.0	Apr. 24	Wendell Dawson	3.60	284
Apr. 2	Wendell Dawson	.50	9.2	25	do	4.04	336
3	do	.61	13.3	May 28	A. C. F. Perry[a]	.90	26
8	do	1.50	61	June 20	Wendell Dawson	.65	11.1
20	do	1.86	82	July 28	A. C. F. Perry	.65	11.6
22	do	3.19	221	Aug. 18	Wendell Dawson	.40	3.4

[a] Assistant to State engineer.

Daily discharge, in second-feet, of Silver Creek near Silver Lake, Oreg., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.4	4.0	16.0	2.5			9.3	100	26	26	8.6	0.8
2	1.6	4.0	18.0				10		27	26	8.6	.5
3	1.6	4.2	8.1				14		28	27	7.6	.5
4	1.8	4.5	6.7	2.5			21		28	26	10.0	.9
5	1.6	4.5	6.4				23	42	28	24	11.0	.8
6	1.9	4.5	7.2				20	42	29	26	9.6	1.4
7	2.0	4.0	6.7	2.5	3		33	42	30	24	8.6	3.2
8	3.2		5.8				55	37	31	22	7.1	3.2
9	4.0		5.6				56	35	30	24	6.8	3.2
10	3.5		5.8			2.5	44	32	29	24	7.9	3.2
11	3.6		6.4	2.5			26	38	28	22	8.3	3.2
12	3.8		6.4				28	31	28	17	9.6	3.2
13	4.5		4.2				21	28	28	14	8.6	3.2
14	4.5	4	4.5		2.5		20	29	28	14	7.9	3.2
15	5.3		5.0				14	33	27	12	7.3	
16				2.5			17	38	26	10	5.5	
17							18	43	25	9.3	5.5	
18							16	49	23	8.6	4.6	
19					2.5	2.5	26	58	15	9.3	4.1	
20		3.8					90	59	13	10	3.7	
21		6.4		2.5			142	53	15	9.0	3.7	
22		8.4				5	223	50	22	9.6	3.6	3
23	5	9.4	4				262	37	21	11	3.4	
24		6.7			2.0		294	34	30	10	2.8	
25		5.3				7.6	336	30	26	9.6	2.6	
26		8.1		4	2	7.6	343	28	27	11	2.4	
27		6.7				7.6	336	28	26	12	2.0	
28		5.0				7.1	315	26	24	13	1.6	
29		4.0			-------	6.8	294	22	26	13	1.3	
30		9.4			-------	7.6	242	18	26	14	1.7	
31		-------		10	-------	8.3	-------	19	-------	12	.8	-------

NOTE.—Braced figures show mean discharge for periods when no gage-height record is available, estimated from observer's notes, records of temperature and precipitation, and comparisons with records for other stations in the vicinity.

Monthly discharge of Silver Creek near Silver Lake, Oreg., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	-------	1.4	4.01	247
November	9.4	3.8	5.03	299
December	18	-------	5.70	350
January	-------	-------	3.18	196
February	-------	-------	2.64	147
March	8.3	-------	4.04	248
April	343	9.3	112	6,660
May	-------	18	44.5	2,740
June	31	13	25.7	1,530
July	27	8.6	16.1	990
August	11	.8	5.70	350
September	-------	.5	2.62	156
The year	343	.5	19.2	13,900

SILVER LAKE INLET NEAR SILVER LAKE, OREG.

LOCATION.—In NE. ¼ sec. 21, T. 28 S., R. 15 E., at bridge on road to Thorn Lake about half a mile above meander line of Silver Lake and 6 miles east of Silver Lake post office, Lake County.

RECORDS AVAILABLE.—April 24 to June 24, 1922; station discontinued.

GAGE.—Vertical staff on bent of bridge; read by O. N. Hill.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Firm clay and silt; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 2.70 feet at 5 p. m. April 30 (discharge, 180 second-feet); inlet dry most of year.

ICE.—None.

DIVERSIONS.—Most of water naturally tributary to this channel is diverted for irrigation around town of Silver Lake and on Paulina Marsh.

REGULATION.—By irrigation dams.

ACCURACY.—Stage-discharge relation apparently permanent. Rating curve well defined. Gage read to hundredths twice a day at high water, three times a week at low stages. Daily discharge ascertained by applying mean daily gage height to rating table. Record fair.

COOPERATION.—Records furnished by State engineer of Oregon.

This channel drains from Paulina Marsh into Silver Lake and is the principal feeder of the lake. The inflow was very slight each year from 1915 to 1920, but was probably considerable in 1921. Silver Lake went dry in September, 1917, and the slight inflow since that time has been quickly absorbed into the bed of the lake.

Discharge measurements of Silver Lake inlet near Silver Lake, Oreg., during the year ending September 30, 1922

[Made by A. C. F. Perry[a]]

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Apr. 24	1.15	22.7	Apr. 28	2.52	152	May 22	0.84	8.2
26	1.95	78	May 4	1.57	46.6	30	.34	.5

[a] Assistant to State engineer.

Daily discharge, in second-feet, of Silver Lake inlet near Silver Lake, Oreg., for the year ending September 30, 1922.

Day	Apr.	May	June
1		169	
2		122	
3		80	
4		46	
5		35	0.2
6		28	
7		25	
8		22	0
9		26	
10	5	30	8.0
11		25	
12		20	
13		17	15
14		15	14
15		13	13
			10
16		12	
17		10	
18		14	8
19		18	6
20		14	
			3.2
21	10	11	2.4
22		8.9	1.4
23		6.8	.9
24	22	4.7	.4
25	51	4.7	.2
26	80	4.7	----
27	127	3.5	----
28	146	2.5	----
29	164	1.4	----
30	180	.6	----
31	----	.4	----

Monthly discharge of Silver Lake inlet near Silver Lake, Oreg., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April	180		30.2	1,800
May	169	0.4	25.5	1,570
June 1–24	15	0	4.41	210
The period				3,580

WEST FORK OF SILVER CREEK NEAR SILVER LAKE, OREG.

LOCATION.—In sec. 8, T. 29 S., R. 14 E., 1 mile above mouth of West Fork and 7 miles by road southwest of Silver Lake post office, Lake County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 21, 1919, to August 31, 1922 (fragmentary).

GAGE.—Stevens eight-day recorder installed October 18, 1921, on left bank, about half a mile above location used 1919 to 1921; inspected by J. H. Gowdy.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Stream bed gravel and small boulders; banks clean but of friable soil and may shift by undercutting.

EXTREMES OF DISCHARGE.—Maximum stage during period, from water-stage recorder, 2.24 feet at 8 p. m. April 22 (discharge, 99 second-feet); minimum stage for year probably occurred during winter when no records were obtained.

1919–1922: Maximum discharge, 138 second-feet April 11, 1921; minimum stage, from recorder, 0.37 foot July 27, 1920 (discharge, 1.1 second-feet).

ICE.—Stage-discharge relation affected by ice during winter; practically no ice during period of record.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent owing to erosion of friable stream banks. Three fairly well defined rating curves applicable March 26 to April 19, April 20–22, and April 23 to August 24. Operation of recorder satisfactory except for occasional short periods. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph, or for days of considerable variation in stage by averaging discharge for shorter intervals. Records good.

Discharge measurements of West Fork of Silver Creek near Silver Lake, Oreg., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 16	K. N. Phillips	0.52	2.8	Apr. 25	A. C. F. Perry[a]	1.04	21.8
18	do	.44	2.6	May 19	do	1.62	60
Apr. 8	Wendell Dawson	1.31	27.2	June 13	do	.88	16.5
20	do	1.34	31.6	24	do	.70	10.4
22	do	1.35	33.8	July 1	do	.62	7.7
22	do	1.88	65.6	21	do	.50	4.6
22	do	2.14	87	Aug. 18	Wendell Dawson	.39	2.4

[a] Assistant to State engineer.

Daily discharge, in second-feet, of West Fork of Silver Creek near Silver Lake, Oreg., for the year ending September 30, 1922

Day	Mar.	Apr.	May	June	July	Aug.	Day	Mar.	Apr.	May	June	July	Aug.
1			22	28	7.7	3.8	16		5.4	35	16	4.6	3.3
2			23	26		4.0	17		5.0	40	15		2.9
3			24	25		3.8	18		9.5	44	13		2.3
4			25	24		3.6	19		20	54	13	4.6	2.4
5		9	23	23	7.0	3.4	20		37	56	12		3.5
6			31	21		3.4	21		59	46	12	4.6	3.1
7			31	23		3.1	22		46	40	11	4.4	2.9
8		27	30	23	6.1	2.7	23		33		10	4.2	2.5
9		16	28	22	5.8	2.5	24		28	36	10	4.0	2.5
10		13	26	20	5.6	2.5	25	2.0	26		9.4	4.0	
11		11	23	18	5.4	2.9	26	2.1		32	9.1	3.8	
12		9.4	23	17	5.1	3.3	27	3.0	25	30	8.8	3.8	2.5
13		7.8	23	16	4.8	3.1	28	2.9		28		3.6	
14		6.1	25	16	4.8	3.3	29	4.0	24	28	8.0	3.6	
15		5.4	29	16	4.6	3.5	30	4.5	22	28		3.6	
							31	4.5		28		4.0	

Monthly discharge of West Fork of Silver Creek near Silver Lake, Oreg., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
March 25–31	4.5	2.0	3.29	46
April	59	5.0	18.3	1,090
May	56	22	31.7	1,950
June	28		16.0	952
July	7.7	3.6	5.11	314
August	4.0		2.96	182
The period				4,530

BRIDGE CREEK NEAR SILVER LAKE, OREG.

LOCATION.—In sec. 3, T. 29 S., R. 13 E., 8 miles southwest of Silver Lake, Lake County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 7 to August 31, 1922, at present site; fragmentary records, 1905–1906 and 1910–1912, at a site in T. 28 S., R 14 E.

GAGE.—Stevens eight-day water-stage recorder; inspected by A. C. F. Perry.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Control is a rocky riffle just below gage, but the soft banks may be eroded by high water.

EXTREMES OF DISCHARGE.—Maximum stage from water-stage recorder, 1.39 feet at 1 p. m. June 5 (discharge, 43 second-feet); minimum stage, from recorder, 0.33 foot on August 25–27 (discharge, 0.9 second-foot). Stream was practically dry in late summer.

ICE.—None during period of records.

DIVERSIONS.—One small ditch diverts about half a mile above gage.

REGULATION.—None.

ACCURACY.—Stage-discharge relation somewhat unstable. Rating curve used April 7–21 fairly well defined; curve used May 11 to August 25 well defined. Shifting-control method used April 22 to May 10. Operation of water-stage recorder satisfactory except for a few short gaps. Records good.

89017—27†—WSP 550——12

Discharge measurements of Bridge Creek near Silver Lake, Oreg., during 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Apr. 7	Wendell Dawson	1.02	14.0	June 24	A. C. F. Perry	0.82	13.4
15	do	.52	3.0	July 1	do	.67	8.3
21	do	.84	10.5	21	do	.52	3.6
May 19	A. C. F. Perry	1.30	38.2	Aug. 18	Wendell Dawson	.38	1.4
June 13	do	1.05	23.6	Nov. 12	do	.32	.75

Daily discharge, in second-feet, of Bridge Creek near Silver Lake, Oreg., for the year ending September 30, 1922

Day	Apr.	May	June	July	Aug.	Day	Apr.	May	June	July	Aug.
1		9.5	37	7.6	2.5	16	3.1	23	23	2.4	1.7
2		9.0	38	7.2	2.3	17	3.1	26	21	3.0	1.7
3		8.5	39	6.2	2.1	18	4.3	30	20	3.0	1.8
4		10	40	5.3	2.3	19	8.5	38	19	3.0	1.5
5		11	42	5.0	2.1	20	13	40	17	3.0	1.4
6		13	42	5.0	1.8	21	14	39	16	3.6	1.4
7	14	14	38	5.0	1.8	22	16	35	15	3.3	1.4
8	7.8	14	36	4.8	1.8	23	14	33	14	3.1	1.7
9	4.2	13	34	4.8	1.7	24	13	34	14	3.0	1.4
10	3.0	12	30	4.5	1.7	25	12	35	13	2.7	1.2
11	3.7	12	28	4.3	1.7	26	12	32	11	2.7	1.0
12	3.2	11	25	4.8	1.8	27	11	29	10	2.7	1.0
13	4.3	12	24	3.6	1.8	28	10	28	9.4	2.8	
14	3.0	14	24	3.3	1.7	29	10	28	8.6	2.8	1.0
15	3.6	18	24	2.8	1.8	30	10	31	8.3	2.7	
						31		35		2.5	

Monthly discharge of Bridge Creek near Silver Lake, Oreg., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April 7–30	16	3	8.37	398
May	40	8.5	22.5	1,380
June	42	8.3	24.0	1,430
July	7.6	2.4	3.89	239
August	2.5	1	1.62	100
The period				3,550

BUCK CREEK NEAR SILVER LAKE, OREG.

LOCATION.—In NE. ¼ sec. 28, T. 28 S., R. 13 E., at Howard ranch, near Klamath Falls road and 8 miles west of town of Silver Lake, Lake County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—January 21, 1905, to July 19, 1906; January 20, 1909, to September 24, 1910; March 13, 1919, to August 31, 1922; also some fragmentary records in 1911. Records 1905–6 and 1909–10, were obtained at a site 4 miles downstream, and March 13, 1919, to April 12, 1922, at a site 1½ miles downstream from present location.

GAGE.—Gurley eight-day recorder on right bank; inspected by A. C. F. Perry. Vertical staff on left bank, directly back of Deadmond house, in SE. ¼ sec. 22, used up to April 13, 1922, when recorder was installed. Inclined staff in sec. 17, T. 28 S., R. 14 E., about 4 miles downstream used 1905 to 1910.

DISCHARGE MEASUREMENTS.—Made near gage by wading at low water, from head gate at high water.

CHANNEL AND CONTROL.—One channel, except at extreme high stages. Contro is sharp gravel riffle.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 2.33 feet at 3 a. m. June 4 (discharge, 138 second-feet); minimum discharge, about 3.8 second-feet January 1 to March 2 and March 5–18.

1905–6; 1909–10; 1919–1922: Maximum stage recorded, 10.0 feet on old gage, February 24, 1910, at 8 p. m. (discharge, from extension of rating curve, 409 second-feet); minimum discharge, 2.5 second-feet, December 11 and 12, 1906. The flood of February, 1907, reached a stage of 6.6 feet on gage at Deadmond ranch, according to observer (discharge, from extension of rating curve, 450 second-feet).

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—About 100 acres irrigated through two small ditches above recorder, 120 acres above old gage; most of water diverted returns to creek. Deadmond ditch also diverts around old gage; it has been measured and an estimate made of the quantity of water diverted.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent; affected by ice December 15 to April 12. Shifting-control method used October 1 to April 12, May 30, and June 1. Two well-defined rating curves used April 13 to May 30 and June 2 to August 23. Gage read to half-tenths once a day until April 29. Operation of recorder satisfactory April 13 to August 23 with short breaks. Records good for May to August; fair for October, November, and April; poor December to March owing to lack of current-meter measurements.

Discharge measurements of Buck Creek near Silver Lake, Oreg., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 10	K. N. Phillips	0.88	5.2	May 19	A. C. F. Perry	1.72	73
Apr. 15	Wendell Dawson	.81	9.0	June 2	do	2.09	99
21	do	1.38	40.0	22	Wendell Dawson	1.44	35.9
25	A. C. F. Perry	1.20	31.0	July 1	A. C. F. Perry	1.12	20.7
May 16	do	1.37	35.3	Aug. 18	Wendell Dawson	.76	6.6

Daily discharge, in second-feet, of Buck Creek near Silver Lake, Oreg., for the year ending September 30, 1922

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.
1	4.3	8.2	11	3.8	13	22	97	19	9.5
2	4.8	8.0	11	3.8	13	22	101	18	9.2
3	4.9	7.9	10	4.1	15	22	99	17	9.0
4	5.4	7.9	9.4	4.1	14	22	123	16	9.0
5	5.4	7.9	9.0	3.8	14	25	121	15	8.8
6	4.8	7.7	10	3.8	19	26	100	14	8.2
7	4.8	7.9	9.4	3.8	27	26	88	13	8.0
8	4.8	7.9	9.0	3.8	23	23	87	11	7.8
9	5.2	7.9	10	3.8	19	21	81	10	7.8
10	5.0	8.0	11	3.8	15	18	73	9.8	7.5
11	5.4	8.2	11	3.8	13	16	58	9.5	7.2
12	5.4	8.0	13	3.8	13	16	52	9.5	7.5
13	5.2	7.3	13	3.8	16	19	54	9.2	7.8
14	5.6	6.7	11	3.8	10	22	57	9.0	7.5
15	6.4	5.4	7.9	3.8	8.7	28	54		7.8
16	7.4	5.4	6.4	3.8	8.7	35	53		7.8
17	7.4	4.8	5.6	3.8	8.7	42	59	9	7.0
18	7.1	7.0	5.4	3.8	12	53	50		6.5
19	7.1	8.2	4.3	6.0	39	68	49		6.2
20	7.1	9.1	4.3	7.4	50	71	48		6.5
21	6.8	12	4.3	13	49	68	45	9.0	7.2
22	6.8	14	4.3	17	76	64	39	8.8	8.0
23	7.1	15	4.3	19	42	60	35	8.8	7.2
24	7.3	13	4.3	20	39	66	32	8.8	
25	7.4	11	4.3	20	41	73	29	9.0	
26	7.3	9.4	4.3	19	40	59	27	9.0	
27	7.1	11	4.3	18	35	53	26	9.2	7
28	7.1	11	4.3	15	28	57	24	9.2	
29	7.1	13	4.3	14	26	66	22	9.2	
30	7.1	13	4.8	13	23	83	20	9.0	
31	7.4		4.8	13		94		9.2	

NOTE.—Braced figures show estimated discharge for periods indicated.

Monthly discharge of Buck Creek near Silver Lake, Oreg., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	7.4	4.3	6.19	381
November	15	4.8	9.06	539
December	13	4.3	7.42	456
January			[a] 3.80	234
February			[a] 3.80	211
March	20	3.8	8.50	523
April	76	8.7	25.0	1,490
May	94	16	43.2	2,660
June	123	20	60.1	3,580
July	19	8.8	10.7	658
August	9.5	6.2	7.58	466
The period				11,200

[a] Estimated.

DUNCAN CREEK NEAR SILVER LAKE, OREG.

LOCATION.—In SE. ¼ sec. 9, T. 29 S., R. 15 E., just above backwater of Lutz Reservoir and 10 miles southeast of Silver Lake, Lake County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 12 to June 4, 1922.

GAGE.—Stevens continuous water-stage recorder on downstream side of large boulder, about 150 yards above backwater of reservoir at medium stage.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Large boulders, practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage from water-stage recorder, 3.29 feet at 11 p. m. May 15 (discharge, 247 second-feet); stream bed dry after June 4.

ICE.—None during period of run-off.

DIVERSIONS.—None above station. Reservoir dam is used to divert water for irrigation of land near Silver Lake.

REGULATION.—Water stored in Lutz Reservoir, capacity about 600 acre-feet, just below gage; storage had been accumulated prior to April 12, 1922, amounting to 280 acre-feet, the total run-off of the creek up to that time.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined above 5 second-feet. Operation of water-stage recorder satisfactory April 19 to June 4. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph, or for days of considerable variation in stage by averaging discharge for shorter periods. Records good.

Discharge measurements of Duncan Creek near Silver Lake, Oreg., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Apr. 12	Wendell Dawson	0.88	0.8	Apr. 24	A. C. Perry	1.77	26
19	do	1.41	7.9	24	do	2.04	43
19	do	1.84	28	May 17	do	2.42	94

Daily discharge, in second-feet, of Duncan Creek near Silver Lake, Oreg., for the year ending September 30, 1922

Day	Apr.	May	June	Day	Apr.	May	June	Day	Apr.	May	June
1		5.3	0.2	11		46		21	35	49	
2		7.6	.2	12	0.9	35		22	35	32	
3		6.2	.1	13		68		23	21	23	
4		22	.1	14		117		24	17	17	
5		35		15	2	148		25	18	18	
6		86		16		149		26	17	16	
7		118		17		142		27	11	9.7	
8		67		18	11	145		28	6.9	5.8	
9		37		19	21	128		29	4.9	3.4	
10		27		20	28	91		30	2.1	1.5	
								31		0.8	

Monthly discharge of Duncan Creek near Silver Lake, Oreg., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April 12–30	35	0.9	12.6	474
May	149	.8	53.4	3,280
June 1–4	.2	.1	.15	1
The period				3,760

NOTE.—Run-off amounting to about 280 acre-feet occurred prior to Apr. 12, and was stored in Lutz Reservoir, below station.

MALHEUR AND HARNEY LAKES BASIN

MUD LAKE OUTLET NEAR NARROWS, OREG.

LOCATION.—In NW. ¼ sec. 17, T. 27 S., R. 30 E., half a mile from gap in sand reef through which outlet enters Harney Lake, 3 or 4 miles southwest of Mud Lake, and 6 miles southwest of Narrows, Harney County.

RECORDS AVAILABLE.—May 10, 1916, June 10, 1918; and June 6, 1921, to July 8, 1922 (fragmentary). Station discontinued.

GAGE.—Vertical staff on bent of bridge; read by G. H. Cawlfield.

DISCHARGE MEASUREMENTS.—Made from footbridge.

CHANNEL AND CONTROL.—Bed composed of mud and sand on top of hardpan; somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during season, 1.8 feet May 25 and 28 (discharge, 69 second-feet); stream bed dry up to about April 30 and after about July 18.

1916–1918; 1921–22: Maximum stage recorded, 4.6 feet June 6, 1921 (discharge, 245 second-feet); stream bed dry practically every summer and fall.

DIVERSIONS.—A little hay land is irrigated by natural overflow below gage on Malheur Lake outlet at Narrows.

ACCURACY.—Stage-discharge relation probably permanent during period of records in 1922. Rating curve fairly well defined. Gage read three times a week to half-tenths. Daily discharge ascertained by applying daily gage reading to rating table. Records fair.

Discharge measurements of Mud Lake outlet near Narrows, Oreg., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
May 13	J. W. Bones	1.55	54	June 4	R. D. Cooper	1.70	57
18	R. D. Cooper[a]	1.68	60	16	do	1.45	38.4
26	J. W. Bones	1.75	66	26	do	.81	13.8

[a] Employee of State engineer.

Daily discharge, in second-feet, of Mud Lake outlet near Narrows, Oreg., for the year ending September 30, 1922

Day	May	June	July	Day	May	June	July
1		65		16	54	44	
2			4	17			
3				18	60	20	
4		61		19	61		
5				20			
6	25			21	65	13	
7				22			
8		61	4	23			
9				24			
10				25	69	17	
11		58		26	65	13	
12				27			
13	50			28	69		
14				29		7	
15		47		30			
				31			

NOTE.—Mean discharge, May 1-12, estimated.

Monthly discharge of Mud Lake outlet near Narrows, Oreg., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
May	69		47.5	2,920
June	65	7	36.9	2,200
July	4	0	[a] 2	123
The period				5,240

[a] Estimated.

SILVIES RIVER NEAR SILVIES, OREG.

LOCATION.—In NE. ¼ sec. 14, T. 20 S., R. 31 E., at site of proposed storage dam, three-quarters of 1 mile below Trout Creek, 1 mile southwest of Craddock ranch, and 3 miles southwest of former post office of Silvies, Harney County.

DRAINAGE AREA.—510 square miles (measured on map prepared by United States Bureau of Reclamation).

RECORDS AVAILABLE.—May 9, 1903, to December 31, 1904; January 1, 1919, to June 30, 1911; April 11 to June 9, 1912; April 1 to June 13, 1916; March 1 to June 11, 1921; and April 16 to June 20, 1922.

GAGE.—Inclined staff read by G. W. Hankins.

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

CHANNEL AND CONTROL.—Stream tortuous and gradient flat, no defined control; water overflows to right at high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 9.2 feet April 24 (discharge, 1,050 second-feet); stream goes practically dry at times.

1903–4; 1909–1912; 1916; 1921–22: Maximum stage recorded, known to have been maximum for period, although records are fragmentary, 12.15 feet April 16, 1904 (discharge, 2,320 second-feet); stream bed dry in August and September, 1910, and probably at other times.

ICE.—No record during winter.

DIVERSIONS.—Several hundred acres irrigated from flood waters above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation probably permanent during year. Rating curve fairly well defined. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Silvies River near Silvies, Oreg., during the year ending September 30, 1922

[Made by J. W. Bones]

Date	Gage height	Discharge
	Feet	*Sec.-ft.*
May 23	6.97	492
June 1	4.38	166

Daily discharge, in second-feet, of Silvies River near Silvies, Oreg., for the year ending September 30, 1922

Day	Apr.	May	June	Day	Apr.	May	June	Day	Apr.	May	June
1		572	208	11		518	166	21	920	630	
2		590	166	12		464	166	22	920	590	
3		590	156	13		448	146	23	920	518	
4		630	146	14		416	136	24	1,050	432	
5		700	126	15		400	126	25	980	344	
6		750	136	16	500	432	68	26	920	296	
7		700	146	17	590	432	59	27	675	285	
8		750	146	18	700	464	59	28	700	274	
9		650	156	19	830	500	51	29	650	252	
10		590	161	20	830	554	51	30	590	230	
								31		208	

Monthly discharge of Silvies River near Silvies, Oreg., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April 16–30	1,050	500	785	23,400
May	750	208	491	30,200
June 1–20	208	51	129	5,120
The period				58,700

SILVIES RIVER NEAR BURNS, OREG.

LOCATION.—In or near SE. ¼ sec. 25, T. 21 S., R. 29 E., 1 mile below dam site for proposed lower Silvies Reservoir and 15 miles northwest of Burns, Harney County.

DRAINAGE AREA.—940 square miles (measured on map prepared by United States Bureau of Reclamation).

RECORDS AVAILABLE.—May 10, 1903, to July 24, 1906; December 14, 1908, to July 31, 1922.

GAGE.—Stevens continuous water-stage recorder on left bank; installed April 7, 1922. Staff gage in sec. 7, T. 21 S., R. 30 E., at Parker ranch used prior to April 6, 1922.

DISCHARGE MEASUREMENTS.—Made from cable about 1½ miles below recorder or by wading.

CHANNEL AND CONTROL.—Low-water control is a gravel riffle about 200 feet below gage; fairly permanent. In times of flood river overflows its banks near both gages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.1 feet at 2 p. m. April 25 (discharge, 1,640 second-feet); no record of minimum.

1904–1906; 1909–1922: Maximum stage recorded, 17.12 feet on original datum April 15, 1904 (discharge, 4,730 second-feet); minimum discharge estimated at 1 second-foot July 4 and 5, 1920.

ICE.—Stage-discharge relation probably unaffected by ice.

DIVERSIONS.—A large area of land in headwaters of Silvies River is irrigated with flood water.

REGULATION.—None at recorder; flow at lower station occasionally affected by operation of Sylvester Dam half a mile above.

ACCURACY.—Stage-discharge relation permanent. Rating curves fairly well defined. Staff gage at old site read to tenths once or twice a day March 15 to April 5. Water-stage recorder operated satisfactorily April 7 to July 21. Daily discharge March 15 to April 6 ascertained by applying to rating table for old station mean daily gage height. Discharge April 7 to July 21 ascertained by applying to rating table for new station mean daily gage height determined by inspecting recorder graph. Mean discharge March 1–15 and July 22–31 estimated. Records good.

Discharge measurements of Silvies River near Burns, Oreg., during the year ending September 30, 1922

[Made by J. W. Bones]

Date	Gage height in feet		Discharge	Date	Gage height in feet		Discharge
	Gage at Parker ranch	Gage below dam site			Gage at Parker ranch	Gage below dam site	
			Sec.-ft.				*Sec.-ft.*
Mar. 30	1.75	----------	130	Apr. 23	----------	12.90	1,550
Apr. 7	6.18	6.48	402	May 5	----------	12.20	1,440
16	3.55	4.36	222	22	----------	9.98	950
22	----------	12.24	1,460	June 2	----------	4.70	281

Daily discharge, in second-feet, of Silvies River near Burns, Oreg., for the year ending September 30, 1922

Day	Mar.	Apr.	May	June	July	Day	Mar.	Apr.	May	June	July
1		144	1,380	285	41	16	34	259	920	134	18
2		281	1,400	268	36	17	34	232	920	122	17
3		317	1,380	232	30	18	44	241	905	115	16
4		416	1,360	191	27	19	49	340	920	104	16
5		335	1,430	175	24	20	64	598	940	108	17
6		326	1,470	183	22	21	76	920	980	82	
7	30	435	1,500	200	22	22	96	1,360	960	78	
8		710	1,470	200	19	23	96	1,540	885	65	
9		620	1,380	216	18	24	96	1,590	725	65	
10		515	1,270	232	19	25	100	1,620	605	68	
11		420	1,140	241	18	26	104	1,590	525	65	16
12		360	1,000	232	18	27	144	1,590	465	59	
13		330	905	208	18	28	128	1,570	435	55	
14		303	885	183	18	29	128	1,500	400	50	
15	34	276	920	160	18	30	136	1,500	380	45	
						31	136	-------	340	-------	

Note.—Mean discharge, Mar. 1–14 and July 21–31, estimated; no gage-height record obtained.

Monthly discharge of Silvies River near Burns, Oreg., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
March	144	----------	61.9	3,810
April	1,620	144	741	44,100
May	1,500	340	974	59,900
June	285	45	147	8,750
July	41	----------	19.7	1,210
The period	----------	----------	----------	118,000

WEST FORK OF SILVIES RIVER NEAR LAWEN, OREG.

LOCATION.—In SW. ¼ sec. 24, T. 25 S., R. 32 E., at Crowley Bridge, one-fourth mile from Herman Ruh's house and 5 miles southeast of Lawen, Harney County.

DRAINAGE AREA.—Indeterminate.

RECORDS AVAILABLE.—March 31 to July 1, 1916; April 15 to July 11, 1917; April 9 to June 2, 1919; and April 3 to June 30, 1922.

GAGE.—Vertical staff on abutment of bridge; read by Frank A. Ruh.

DISCHARGE MEASUREMENTS.—Made from bridge.

CHANNEL AND CONTROL.—Channel deep at bridge and bends to left just above it. Old Crowley Dam acts as a partial control; but stage-discharge relation is also affected by slope of river below dam.

EXTREMES OF DISCHARGE.—Maximum discharge probably occurred at or near time of measurement on June 4 when 232 second-feet was measured by current-meter (gage height, 8.5 feet); no flow prior to April 1 or after about July 1.

ICE.—No record during period when stream was frozen.

DIVERSIONS.—Many thousand acres of hay land irrigated from flood water above this point. East Fork diverts water about a mile southeast of Burns the main channel below the bifurcation being known as West Fork.

ACCURACY.—Stage-discharge relation not permanent. Poorly defined rating curves used April 3–20, May 1–25, and June 4–30. Gage read once a day to half-tenths. Daily discharge ascertained by applying mean daily height to rating table. Records poor.

Discharge measurements of West Fork of Silvies River near Lawen, Oreg., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Apr. 3	J. W. Bones	7.6	0	June 17	R. D. Cooper	7.7	30
May 24	do	8.9	20	27	do	7.52	11
June 4	R. D. Cooper	8.5	232	July 28	do	6.60	0

Daily discharge, in second-feet, of West Fork of Silvies River near Lawen, Oreg., for the year ending September 30, 1922

Day	Apr.	May	June	Day	Apr.	May	June	Day	Apr.	May	June
1	------	12	20	11	15	25	52	21		18	25
2	------	15	20	12	20	25	45	22		18	25
3	5	18	20	13	30	25	45	23		18	20
4	8	20	230	14	35	25	45	24		20	20
5	8	20	75	15	40	25	38	25			15
6	8	20	68	16	40	22	38	26	10		10
7	8	20	60	17	35	22	60	27		20	10
8	10	20	60	18	20	20	30	28			8
9	10	25	52	19	15	20	30	29			8
10	12	25	52	20	10	22	30	30			5
								31			.....

NOTE.—Mean discharge, Apr. 21–30 and May 25–31, estimated.

Monthly discharge of West Fork of Silvies River near Lawen, Oreg., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April 3-30	40	5	15.3	850
May	25	12	20.6	1,270
June	230	5	39.5	2,350
The period				4,470

POISON CREEK NEAR BURNS, OREG.

LOCATION.—In sec. 34, T. 22 S., R. 31 E., at Jackson ranch, 6 miles from Burns, Harney County, on Canyon City road.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 7 to May 27, 1921, and April 2 to May 21, 1922.

GAGE.—Vertical, enamel staff, 100 feet above highway bridge.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Gravel and cobbles; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, 4.3 feet April 21 or 22 noted from high-water mark (discharge, 476 second-feet); stream dry except after rains or during spring break-up.

ICE.—No record during frozen period.

DIVERSIONS.—Small irrigation canal diverts out of creek half a mile above gage and may carry a little water around station during spring run-off.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined below 300 second-feet and fairly well defined from 300 to 500 second-feet. Staff gage read once a day to tenths; gage record fair but not enough daily readings to obtain mean daily gage height. Daily discharge determined by applying daily gage reading to rating table. Records fair.

Discharge measurements of Poison Creek near Burns, Oreg., during the year ending September 30, 1922

[Made by J. W. Bones.]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Apr. 6	1.58	17.4	May 4	1.72	26.9
22	3.18	230	21	1.15	[a] 1.0

[a] Estimated.

Daily discharge, in second-feet, of Poison Creek near Burns, Oreg., for the year ending September 30, 1922

Day	Apr.	May	Day	Apr.	May	Day	Apr.	May
1		43	11	13	8.3	21	303	1.2
2	44	34	12	19	4.6	22	255	
3	52	26	13	19	4.6	23	216	
4	29	27	14	13	2.0	24	162	
5	15	26	15	16	2.0	25	115	
6	34	22	16	13	2.0	26	115	
7	34	19	17	13	2.0	27	101	
8	53	13	18	8.3	2.0	28	88	
9	34	13	19	34	2.0	29	53	
10	19	8.3	20	64	2.0	30	43	
						31		

Monthly discharge of Poison Creek near Burns, Oreg., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April 2–30	303	8.3	68.2	3,920
May 1–21	43	1.2	12.6	524
The period				4,440

PRATHER CREEK NEAR BURNS, OREG.

LOCATION.—In sec. 25, T. 22 S., R. 31 E., just above bridge on road from Burns to Canyon City and 9 miles northeast of Burns, Harney County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 8 to June 18, 1921, and March 29 to June 24, 1922.

GAGE.—Vertical staff on left bank read by Dave Fowler.

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

CHANNEL AND CONTROL.—Gravel; slightly shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 3.8 feet at 6 p. m. April 6 (discharge, from extension of rating curve, 115 second-feet); stream dry at times.

DIVERSIONS.—None above gage.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve based on three discharge measurements fairly well defined between 2 and 30 second-feet but poorly defined below and above. Staff gage read to tenths twice daily. Daily discharge determined by applying mean daily gage height to rating table. Records fair except those below 2 second-feet and above 25 second-feet which are poor.

Discharge measurements of Prather Creek near Burns, Oreg., during the year ending September 30, 1922

[Made by J. W. Bones]

Date	Gage height	Discharge
	Feet	*Sec-ft.*
Mar. 31	2.58	3.6
Apr. 22	3.06	21.0
May 21	2.60	5.0

Daily discharge, in second-feet, of Prather Creek near Burns, Oreg., for the year ending September 30, 1922

Day	Mar.	Apr.	May	June	Day	Mar.	Apr.	May	June
1		8.8	21	2.3	16		2.9	5.3	0.8
2		25	21	1.2	17		2.9	3.6	.8
3		15	40	1.2	18		4.4	5.3	.8
4		10	17	.8	19		17	7.5	.8
5		5.3	15	1.2	20		15	5.3	.2
6		30	15	.8	21		10	5.3	.5
7		40	15	.8	22		21	5.3	.2
8		10	15	1.2	23		35	3.6	.2
9		7.5	15	1.2	24		30	2.9	.2
10		6.2	15	1.2	25		65	2.9	
11		4.4	8.8	.5	26		46	2.9	
12		3.6	8.8	.8	27		35	2.9	
13		2.9	10	.8	28		21	2.9	
14		3.6	6.2	.8	29	4.4	72	2.3	
15		2.9	5.3	.8	30	3.6	17	2.3	
					31	8.8		2.3	

Monthly discharge of Prather Creek near Burns, Oreg. for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
March 29–31	8.8	3.6	5.60	33.3
April	65	2.9	19.0	1,130
May	40	2.3	9.38	577
June 1–24	2.3	.2	.838	39.9
The period				1,780

DONNER UND BLITZEN RIVER NEAR VOLTAGE, OREG.

LOCATION.—In sec. 35, T. 26 S., R. 31 E., at bridge on road known as "Sodhouse Lane," along original meander line of Malheur Lake, 2 miles west of Voltage post office and 6 miles east of Narrows, Harney County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 6, 1916, to September 30, 1917; April 17 to May 25, 1918; March 20 to June 6, 1919; March 1 to August 5, 1921; and March 17 to June 26, 1922, when station was discontinued.

GAGE.—Vertical staff on abutment of bridge, also a gage on one of the main overflow channels about a mile west of main channel. Gage reader, Charles Beckley.

DISCHARGE MEASUREMENTS.—Made from bridges across main channel and 16 culverts which carry water at high stages; measuring conditions poor.

CHANNEL AND CONTROL.—Channel crooked and turns abruptly to right just below bridge; no well-defined control.

EXTREMES OF DISCHARGE.—Maximum discharge recorded during period, 295 second-feet April 21; no record of minimum stage.

1916–1919; 1921–22: Maximum stage recorded, 3.3 feet May 21, 1917 (discharge, 800 second-feet); discharge practically zero during summer of 1918.

DIVERSIONS.—Several thousand acres irrigated from river and its tributaries; discharge at station is largely return water.

ACCURACY.—Stage-discharge relation not permanent. Gages read to hundredths three times a week. Daily discharge ascertained by applying daily gage reading to rating table, using shifting-control method. Records poor.

Discharge measurements of Donner und Blitzen River near Voltage, Oreg., during the year ending September 30, 1922

Date	Made by—	Discharge in second-feet			Gage height in feet	
		Main channel	Overflow	Total	Main channel	Overflow
Apr. 4	J. W. Bones	171	0	171	2.15	
May 12	do	16	[a] 20	36	.13	0.40
18	R. D. Cooper [b]	[a] 25	[a] 76	101	.10	.00
26	J. W. Bones	27	60	87	.32	.66
June 4	R. D. Cooper	[c] 20	[a] 159	179	[d] 1.50	.70
16	do	[c] 23	[a] 214	237	.55	1.10
26	do	[a] 22	[a] 27	49	.24	.54
July 29	do	8	0	8	.07	

[a] Estimated.
[b] Employee of State engineer.
[c] Measured by floats.
[d] Backwater from dam.

Daily discharge, in second-feet, of Donner und Blitzen River near Voltage, Oreg., for the year ending September 30, 1922

Day	Mar.	Apr.	May.	June	Day	Mar.	Apr.	May	June
1			179		16				235
2				163	17	126	126	85	
3		109	166		18			101	
4		179		179	19		72	101	157
5		225	93	180	20	76			
6					21		295		102
7		225		180	22	135		108	
8			65		23				62
9				230	24	245	295	107	
10		245	65		25				
11					26		245	88	42
12		155	36	260	27	86			
13					28		245		
14		145		260	29	101		118	
15			62		30				
					31	93		138	

Monthly discharge of Donner und Blitzen River near Voltage, Oreg., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
March 17-31	245	76	123	3,660
April	295	72	197	11,700
May	179	36	101	6,210
June 1-26	260	42	171	8,810
The period				30,400

SILVER CREEK ABOVE SUNTEX, OREG.

LOCATION.—In NW. ¼ sec. 30, T. 22 S., R. 26 E., at Cecil ranch, 3 miles below mouth of Nicoll Creek and 5 miles above Suntex, Harney County.

DRAINAGE AREA.—260 square miles (measured on maps prepared by United States Bureau of Reclamation).

RECORDS AVAILABLE.—April 19, 1904, to July 14, 1906; February 16 to December 12, 1909; April 6 to October 19, 1910; flood periods of 1911, 1912, and 1914–1922.

GAGE.—Stevens eight-day recorder referred to 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 March 6, 1921. Gage reader, J. C. Cecil. Staff gage used prior to 1921.

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

CHANNEL AND CONTROL.—Bed composed of clean gravel; slightly shifting. Banks heavily covered with willows, which may affect stage-discharge relation somewhat.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 7.9 feet at 6 a.m. April 23 (discharge, 955 second-feet). No record of minimum.

1904–1906; 1909–1922: Maximum stage recorded, 13.95 feet on original gage, observed from high-water mark April 14, 1904 (discharge, 1,760 second-feet); stream bed dry in August and September, 1910.

DIVERSIONS.—About 300 acres irrigated above station, large areas irrigated below.

ACCURACY.—Stage-discharge relation practically permanent during year. Rating curve well defined. Gage read to half-tenths twice a day April 2–22; operation of water-stage recorder satisfactory April 23 to June 30. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph. Records good.

Discharge measurements of Silver Creek above Suntex, Oreg., during the year ending September 30, 1922

[Made by R. D. Cooper [a]]

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Apr. 9	3.27	170	Apr. 25	7.29	783	May 8	5.38	389
17	1.83	56	25	7.36	752	10	4.40	278
20	4.74	298	27	7.49	843	12	3.78	221
21	6.19	480	29	6.86	678	28	2.08	65
22	7.37	790	30	6.25	540	June 12	1.50	38.2
22	7.28	764	May 2	6.56	594	23	1.00	16.4
24	7.50	827	4	6.14	471	Aug. 13	.53	2.2

[a] Engineer for Silver Creek Valley Irrigation District.

Daily discharge, in second-feet, of Silver Creek above Suntex, Oreg., for the year ending September 30, 1922

Day	Apr.	May	June	Day	Apr.	May	June	Day	Apr.	May	June
1	[a] 15	550	51	11	89	253	[a] 37	21	530	147	[a] 16
2	17	570	42	12	89	223	36	22	805	129	[a] 15
3	78	510	30	13	93	213	36	23	835	113	15
4	93	492	30	14	97	203	36	24	775	105	13
5	40	492	30	15	78	193	36	25	775	93	12
6	76	476	30	16	68	183	32	26	775	89	12
7	316	444	30	17	58	165	25	27	805	82	12
8	336	391	30	18	75	156	21	28	745	75	11
9	133	347	42	19	183	156	17	29	665	72	11
10	147	293	[a] 38	20	382	156	[a] 17	30	550	64	11
								31	------	58	------

[a] Estimated or interpolated.

Monthly discharge of Silver Creek above Suntex, Oreg., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April	835	15	324	19,300
May	570	58	242	14,900
June	51	11	25.8	1,540
The period				35,700

SILVER CREEK BELOW SUNTEX, OREG.

LOCATION.—In NE. ¼ sec. 14, T. 24 S., R. 27 E., three-fourths mile southwest of Cryder ranch and 15 miles southeast of Suntex post office, Harney County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 12 to June 21, 1912; May 6 to June 7, 1913; February 23 to June 30, 1914; fragmentary records in 1915 and 1917; March 21 to May 17, 1919; February 28 to June 30, 1921; and April 1 to June 17, 1922.

GAGE.—Water-stage recorder referred to vertical staff on left bank; inspected by A. D. Cryder. Staff gage used prior to 1921.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Gravel and small boulders; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 4.20 feet at 2 p. m. April 28 (discharge, 764 second-feet); stream dry October to March and July to September.

1912–1914; 1919; 1921–1922: Maximum discharge that of April 28, 1922; creek dry practically every summer.

ICE.—No flow during winter.

DIVERSIONS.—About 3,800 acres irrigated from Silver Creek above station.

REGULATION.—None, except by irrigation dams.

ACCURACY.—Stage-discharge relation practically permanent during year. Rating curve well defined. Operation of water-stage recorder satisfactory. Daily discharge obtained by applying mean daily gage height to rating table, or in case of considerable fluctuation by subdividing days. Records good.

Discharge measurements of Silver Creek below Suntex, Oreg., during the year ending September 30, 1922

[Made by R. D. Cooper[a]]

Date	Gage height	Discharge in second-feet		Date	Gage height	Discharge in second-feet	
		Main channel	Sloughs			Main channel	Sloughs
	Feet				*Feet*		
Apr. 2	0.89	13.8	----------	May 9	3.08	379	11.0
6	1.55	99	----------	12	2.48	237	2.0
22	3.52	486	----------	14	2.15	180	----------
24	4.08	619	103	14	2.15	183	----------
26	4.10	628	98	29	1.06	35.4	----------
May 7	3.68	496	51				

[a] Engineer for Silver Creek Valley Irrigation District.

Daily discharge, in second-feet, of Silver Creek below Suntex, Oreg., for the year ending September 30, 1922

Day	Apr.	May	June	Day	Apr.	May	June	Day	Apr.	May	June
1	0	575	14	11	143	278	3.1	21	387	126	
2	18	575	10	12	111	236	2.4	22	474	113	
3	64	575	6.8	13	88	208	1.5	23	612	95	
4	100	540	5.6	14	88	192	1.2	24	726	82	
5	118	506	5.6	15	75	176	1.2	25	726	73	
6	132	506	4.0	16	66	161	1.2	26	726	64	
7	208	474	3.3	17	61	150	1.0	27	726	58	
8	332	458	2.8	18	57	139		28	764	52	
9	314	400	3.1	19	83	136		29	726	37	
10	200	337	3.1	20	220	132		30	688	25	
								31		19	

Monthly discharge of Silver Creek below Suntex, Oreg., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April	726	0	301	17,900
May	575	19	242	14,900
June 1–17	14	1	4.11	139
The period				32,900

SILVER CREEK NEAR NARROWS, OREG.

LOCATION.—In NW. ¼ sec. 21, T. 25 S., R. 28 E., a quarter of a mile north of house at Dunn Field, 20 miles southeast of Suntex, and 25 miles northwest of Narrows, Harney County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—Flood periods of 1917 and 1919 to 1922.

GAGE.—Vertical staff on right bank 200 feet below diversion dam; read by employees of Wm. Hanley Co.

DISCHARGE MEASUREMENTS.—Made from road bridge 200 yards below gage or by wading near gage.

CHANNEL AND CONTROL.—Bed slightly shifting. Grass grows in channel before water ceases to flow. Control not well defined.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.3 feet at 6 p. m. April 29 and 6 a. m. and 6 p. m. April 30 (discharge, including overflow channels, 538 second-feet); stream dry up to April 4 and after about June 16.

1917–1922: Maximum discharge recorded, that of April 29 and 30, 1922.

DIVERSIONS.—About 4,000 acres of land, mostly in wild hay is irrigated above station. Dunn Field ditch diverted from 16 to 27 second-feet of water past gage April 28 to May 1, and 33 second-feet May 2–4 and 18–23, 1922. These diversions included in determinations of discharge of Silver Creek at gaging station.

REGULATION.—Small amount of water is stored in dams used to subirrigate lands within a few miles above station.

ACCURACY.—Stage-discharge relation practically permanent during year. Rating curve well defined. Gage read to half-tenths twice a day. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Silver Creek near Narrows, Oreg., during the year ending September 30, 1922

[Made by R. D. Cooper]

Date	Gage height	Discharge in second-feet		Date	Gage height	Discharge in second-feet	
		Creek	Culverts			Creek	Culvert
	Feet				*Feet*		
Apr. 27	5.20	467		May 11	4.19	272	5
28	5.22	469	50	13	3.80	211	5
May 1	5.22	469	54	13	3.79	211	
5	5.08	452	34	29	2.42	36.6	
9	4.80	383	20				

NOTE.—The discharge of Dunn Field ditch on May 1, 1922, was 28 second-feet, measured by current meter.

Daily discharge, in second-feet, of Silver Creek near Narrows, Oreg., for the year ending September 30, 1922

Day	Apr	May	June	Day	Apr.	May	June
1		520	23	16	56	162	
2		473	23	17	48	150	
3		447		18	35	130	
4	82	441		19	39	94	
5	71	449		20	100	94	
6	88	457		21	260	88	
7	107	438		22	357	76	
8	133	438	12	23	394	76	
9	217	398		24	443	82	
10	278	353		25	471	61	
11	242	300		26	491	61	
12	140	251		27	491	35	
13	140	217		28	491	34	
14	82	193		29	526	32	
15	66	174	1.0	30	538	28	
				31		28	

NOTE.—Discharge, June 3–14, estimated.

Monthly discharge of Silver Creek near Narrows, Oreg., for the year ending September 30, 1922.

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April 4–30	538	35	237	12,700
May	520	28	219	13,500
June 1–15			12.7	378
The period				26,600

CHICKAHOMINY CREEK NEAR SUNTEX, OREG.

LOCATION.—In sec. 29, T. 23 S., R. 26 E., at crossing of Bend-Burns road and 2 miles south of Suntex post office, Harney County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 24 to April 26, 1917; March 30 to May 5, 1922. Records for 1917 published as "Chickahominy Creek near Riley, Oreg."

GAGE.—Vertical staff gage on bridge.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Gravel and boulders; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 1.94 feet, at 7.45 a. m. April 22 (discharge, 264 second-feet); stream dry except during spring break-up or after unusual rains.

DIVERSIONS.—Some water diverted for irrigation from a northerly tributary.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined above 16 second-feet. Gage read to hundredths, usually twice a day. Daily discharge ascertained by applying mean daily gage height to rating table. Record only fair on account of extreme diurnal fluctuation.

Discharge measurements of Chickahominy Creek near Suntex, Oreg., during the year ending September 30, 1922

[Made by R. D. Cooper]

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Apr. 1	0.52	17.0	Apr. 19	0.84	39.8	Apr. 20	1.76	194
3	.58	21.2	19	.88	42.5	22	1.92	256
6	1.05	61						

Daily discharge, in second-feet, of Chickahominy Creek near Suntex, Oreg., for the year ending September 30, 1922

Day	Mar.	Apr.	Day	Mar.	Apr.	Day	Mar.	Apr.
1		19	11		16	21		116
2		16	12		12	22		158
3		28	13		11	23		60
4		75	14		9.1	24		21
5		49	15		8.2	25		16
6		57	16		7.2	26		9.5
7		103	17		5.8	27		8.0
8		160	18		11	28		6.9
9		35	19		62	28		5.0
10		33	20		144	30	4.4	5.0
						31	4.4	

Monthly discharge of Chickahominy Creek near Suntex, Oreg., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
March 30–31			4.4	17.5
April	160		42.2	2,510
May 1–5			[a] 2	19.8
The period	160		34.7	2,550

[a] Estimated.

ROCK QUARRY CREEK NEAR SUNTEX, OREG.

LOCATION.—At bridge on old road from Riley to Burns, 4 miles above mouth and 12 miles east of Suntex post office, Harney County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 30 to April 20, 1922.

GAGE.—Stevens eight-day water-stage recorder.

DISCHARGE MEASUREMENTS.—Made from timbers of old bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of heavy gravel and rock; practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage from water-stage recorder, 2.92 feet at 6 p. m. April 6 (discharge, 432 second-feet); stream dry up to March 29 and after April 20.

ICE.—None.

DIVERSIONS.—None above station. Water spreads out in sage brush flats near mouth and only a small part reaches Silver Creek.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve wel defined above 10 second-feet. Operation of water-stage recorder satisfactory. Daily discharge obtained by applying to rating table mean daily gage height obtained by inspecting recorder graph or for days of considerable diurnal fluctuation by averaging discharge for intervals of day. Records good.

Discharge measurements of Rock Quarry Creek near Suntex, Oreg., during the year ending September 30, 1922

[Made by R. D. Cooper [a]]

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Mar. 31	0.88	10.0	Apr 2	2.14	160	Apr. 6	2.92	432
Apr. 2	2.00	131	4	1.40	46.1			

[a] Engineer, Silver Creek Valley Irrigation District.

Daily discharge, in second-feet, of Rock Quarry Creek near Suntex, Oreg., for the period March 30 to April 20, 1922

Day	Discharge	Day	Discharge	Day	Discharge
Mar. 30	0.5	Apr. 7	133	Apr. 14	0.5
31	2.2	8	32	15	.8
Apr. 1	5.1	9	4.2	16	.1
2	54	10	3.5	17	2.0
3	63	11	1.0	18	3.5
4	44	12	.6	19	3.5
5	34	13	.5	20	2.2
6	127				

NOTE.—Total run-off Mar. 30 to Apr. 20 was 1,030 acre-feet.

ALVORD LAKE BASIN

TROUT CREEK NEAR DENIO, OREG.

LOCATION.—In SW. ¼ sec. 26, T. 39 S., R. 36 E., 800 feet above bridge at mouth of canyon 5 miles east of Trout Creek ranch, and 14 miles northeast of Denio, Harney County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 25, 1911, to March 31, 1912; and April 15 to September 30, 1922.

GAGE.—Stevens eight-day water-stage recorder on right bank, inspected by Fred Kerlee. Staff gage at bridge used in 1911–12.

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

CHANNEL AND CONTROL.—Control of fairly large gravel and boulders shifting at high stages. Banks fairly high, covered with willows.

EXTREMES OF DISCHARGE.—Maximum stage from water-stage recorder, 3.07 feet at 8 a. m. May 19 (discharge, 149 second-feet); minimum stage from recorder, 0.72 foot July 18 (discharge, 0.3 second-foot).

ICE.—None during period of records.

DIVERSIONS.—A little water diverted for irrigating small ranch fields above station. Large area irrigated below mouth of canyon.

REGULATION.—None.

ACCURACY.—Stage-discharge relation unstable up to May 19; apparently permanent thereafter. Rating curve fairly well defined. Operation of water-stage recorder satisfactory except for a few gaps in record. Daily discharge after May 19, ascertained by applying to rating table mean daily gage height, obtained by inspecting r ecorder graph; shifting-control method used May 3–19. Discharge April 15–25, 27, and April 29 to May 2 obtained from daily readings on Cippoletti weirs on two branches of creek about 1 mile below recorder. Records good.

Discharge measurements of Trout Creek near Denio, Oreg., during the year ending September 30, 1922

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Apr. 26	J. W. Bones		19.4	June 12	J. W. Bones	1.72	38.3
28	do	2.09	38.9	Aug. 10	R. D. Cooper	.83	1.1
May 19	do	2.90	134				

Daily discharge, in second-feet, of Trout Creek near Denio, Oreg., for the year ending September 30, 1922

Day	Apr.	May	June	July	Aug.	Sept.
1		27		11.0		
2		29		11.0		
3		43		9.2		
4		54	72	10.0		
5		70		11.0	1.0	
6		79		11.0		
7			60	10.0		
8		85	58	12.0		1.0
9			57	15.0		
10		72	51	14.0	1.0	
11		65	46	14.0	1.0	
12		61	44	13.0	1.2	
13		68	43	12.0	1.4	
14		83	37	11.0	1.9	
15	4		35	10.0	2.3	
16	4	94	37	8.4	2.3	1.4
17	5	105	38	3.5	2.3	.5
18	11	118	38	.4	2.1	1.0
19	12	134	24	.3	1.9	1.2
20	12	124	24	1.0	1.9	1.0
21	12	106	23	2.8	1.9	.5
22	13	102	21	2.1	2.1	1.0
23	17	100	20		2.1	1.2
24	18		17			2.1
25	20	97	14			5.4
26	19		14	2.0	1.0	5.1
27	24		14			4.8
28	32	84	14			6.9
29	25		12			8.0
30	26		12			
31						

NOTE.—Braced figures show estimated discharge for periods indicated.

Monthly discharge of Trout Creek near Denio, Oreg., for the year ending September 30, 1922

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April 15–30	32	4	15.9	504
May	134	27	83.4	5,130
June		12	39.5	2,350
July	15	.3	6.80	418
August	2.3		1.37	84
September		.5	2.10	125
The period				8,610

MISCELLANEOUS DISCHARGE MEASUREMENTS

Discharge measurements of streams in the Great Basin at points other than regular gaging stations, made during the year ending September 30, 1922, are listed in the following table:

Miscellaneous discharge measurements in Great Basin during the year ending September 30, 1922

Bear River Basin

Date	Stream	Tributary to or diverting from—	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
Aug. 26	Bear River	Great Salt Lake	Sec. 31, T. 12 S., R. 44 E., at Bern Bridge, 1½ miles west of Montpelier, Idaho.	13.19	727
27	do	do	Sec. 6, T. 12 S., R. 46 E., directly opposite Pescadero siding on Oregon Short Line Railroad and 6 miles northwest of Montpelier, Idaho.	7.77	792
28	do	do	NE. ¼ sec. 1, T. 10 S., R. 40 E. 200 feet below Grace Dam at Grace, Idaho.	11.11	36.7
30	do	do	Sec. 26, T. 13 S., R. 40 E., immediately below junction of Oneida tailrace with river near Mink Creek, Idaho.	5.10	2,240
June 19	do	do	Sec. 20, T. 6 N., R. 4 W., at mouth of river, half a mile west of Bagley, Utah.		8,940
Aug. 25	Rainbow inlet canal	Bear River	Sec. 10, T. 14 S., R. 44 E., 2 miles west of Dingle, Idaho.	22.99	69.3
24	Bear Lake outlet canal	do	Sec. 8, T. 14 S., R. 44 E., 1,000 feet below dike, near Paris, Idaho.	15.10	312
28	Last Chance Canal	do	Sec. 30, T. 9 S., R. 41 E., immediately above entrance to tunnel 1½ miles north of Grace, Idaho.	5.90	289
28	Bench B Canal	do	Sec. 1, T. 10 S., R. 40 E., 1,000 feet below canal head, about 1 mile north of Grace, Idaho.	3.97	97.7
28	Tanner B Canal	do	Sec. 1, T. 10 S., R. 40 E., 200 feet below head gates, 1 mile north of Grace, Idaho.	3.10	1.9

Weber River Basin

May 18	East Canyon Creek	Weber River	NE. ¼ sec. 9, T. 2 N., R. 3 E., at old measuring weirs, three-eighths mile below Davis and Weber Counties reservoir.	2.18	318
Aug. 2	do	do	do	1.33	149

Jordan River Basin

Sept 19	High Line Canal	Spanish Fork River	SE. ¼ sec. 27, T. 9 S., R. 1 E. at Goshen Pass, 6 miles southwest of Payson, Utah.	2.16	55
20	do	do	do	1.80	43.8
21	do	do	do	1.49	28.6
19	do	do	NW. ¼ sec. 27, T. 9 S., R. 1 E., 7 miles southwest of Payson, Utah.	1.11	6.9
19	do	do	SW. ¼ sec. 22, T. 9 S., R. 1 E., 7 miles southwest of Payson, Utah.	1.07	12.7
19	do	do	do	1.50	25.5

Miscellaneous discharge measurements in Great Basin during the year ending September 30, 1922—Continued

Beaver River Basin

Date	Stream	Tributary to or diverting from—	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
Nov. 6	Coal Creek		E. ½ sec. 13, T. 36 S., R. 11 W., 500 feet above power plant of Cedar Electric Co. and 1¾ miles southeast of Cedar City, Utah.	3.48	14.1

Minor basins in Nevada

Apr. 30	Big Warm Spring Creek	Duckwater Creek	Former gaging station maintained in 1916, 1 mile south of Duckwater, Nev.		13.6
29	Currant Creek		Sec. 25, T. 11 N., R. 58 E., 10 feet above highway bridge at Cazier ranch, 2 miles above Currant, Nev.	1.47	21.2
June 4	do	do	do	1.36	15.8

Walker Lake Basin

Jan. 13	Topaz Lake feeder canal.	West Walker River	Sec. 12, T. 9 N., R. 22 E., 4 miles north of Topaz, Calif.		39.8
May 5	do	do	do	4.07	242

Humboldt-Carson Sink Basin

Oct. 13	West Fork of Carson River.	Carson River	SE. ¼ sec. 34, T. 11 N., R. 19 E., at highway bridge at Woodfords, Calif.	.73	4.0
Jan. 14	do	do	do	1.37	20.9
June 30	do	do	do	2.68	263
Oct. 13	Ellis and Dudley Canal	West Fork of Carson River.	Sec. 34, T. 11 N., R. 19 E at Woodfords, Calif.		.7
June 30	do	do	do		9.4
Oct. 13	Springmeyer Canal	do	do		3.6
June 30	do	do	do		9.8
Oct. 13	Snowshoe-Thompson Canal.	do	do		7.9
June 30	do	do	do		9.0
Oct. 1	Humboldt River	Humboldt Sink	Sec. 21, T. 36 N., R. 38 E., at Winnemucca, Nev.	1.75	32.5
21	do	do	do	1.62	28.2
Apr. 1	do	do	do	7.46	1,050
May 26	do	do	do	9.53	2,490
Oct. 6	do	do	Sec. 29, T. 33 N., R. 35 E., 100 feet above dam and 2 miles north of Mill City, Nev.		51
Nov. 22	North Fork of Humboldt River.	Humboldt River	Sec. 13, T. 38 N., R. 57 E., at narrows, 3½ miles above buildings of Charles Clayton ranch, and 17 miles north of Halleck, Nev.	1.80	24.6
Jan. 26	do	do	do		1.2
Apr. 11	do	do	do	3.36	142
July 11	Lamoille High Line Canal.	Lamoille Creek	Sec. 6, T. 32 N., R. 58 E., 2 miles from Lamoille, and 22 miles from Elko, Nev.		16.2
11	do	do	do		17.3
Oct. 5	Humboldt Hot Spring.	Little Humboldt River.	NE. ¼ sec. 19, T. 41 N., R. 41 E., 300 feet above gaging station, Little Humboldt River near Paradise Valley, Nev.		.08
Apr. 1	Cottonwood Creek	do	Highway bridge in town of Paradise Valley, Humboldt County, Nev.		70

Miscellaneous discharge measurements in Great Basin during the year ending September 30, 1922—Continued

Warner Lakes Basin

Date	Stream	Tributary to or diverting from—	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
May 28	Deep Creek	Crump Lake	Old gaging station above Dismal Creek near Warner Lake, Oreg.	3.88	127
June 25	do	do	do	3.12	31.5
25	do	do	Below Dismal Creek, in SW. ¼ sec. 29, T. 40 S., R. 22 E., Oreg.	1.43	54
May 29	Dismal Creek	Deep Creek	Old gaging station above Big Valley, near Warner Lake, Oreg.	2.30	107
June 24	do	do	do	1.75	24.4

Summer Lake Basin

Oct. 19	Ana River	Summer Lake	Sec. 6, T. 30 S., R. 17 E., near Summer Lake, Oreg.	0.83	128
Apr. 4	do	do	do	2.21	130
Aug. 17	do	do	do	2.22	*106

Malheur Lake Basin

May 24	East Fork of Silvies River.	Malheur Lake	Bridge in sec. 5, T. 25 S., R. 33 E., half a mile south of Lawen, Oreg.		115
June 4	do	do	do		232
17	do	do	do		12
27	do	do	do		9
July 28	do	do	do		0
Mar. 29	Sagehen Creek	Silvies River	On Riley-Burns road, in sec. 8, T. 24 S., R. 30 E., Oreg.		0
May 4	do	do	do	0.78	1.2
July 10	do	do	do	.61	.4

Harney Lake Basin

Apr. 25	Silver Creek	Harney Lake	Mouth, near Narrows, Oreg.	0.14	0.1
May 17	do	do	do	.60	12.0
26	do	do	do	.47	5.4
June 16	do	do	do	.10	.1
Apr. 25	"OO" ranch drainage canal.	do	do		10.2
May 17	do	do	do	1.90	78
26	do	do	do	1.61	31.4
June 16	do	do	do	1.22	4.0

* Discharge probably reduced by pondage above dam.

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