UNITED STATES DEPARTMENT OF THE INTERIOR
RAY LYMAN WILBUR, Secretary
GEOLOGICAL SURVEY
W. C. MENDENHALL, Director

Water-Supply Paper 716

SURFACE WATER SUPPLY *of the* UNITED STATES

1931

PART 6

MISSOURI RIVER BASIN

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Prepared in cooperation with the States of
KANSAS, MISSOURI, MONTANA, NEBRASKA
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SURFACE WATER SUPPLY OF MISSOURI RIVER BASIN, 1931

AUTHORIZATION AND SCOPE OF WORK

This volume is one of a series of 14 reports presenting results of measurements of flow made on streams in the United States during the year ending September 30, 1931.

The data presented in these reports were collected by the United States Geological Survey under the following authority contained in the organic law (20 Stat. L., p. 394):

Provided, That this officer [the director] shall have the direction of the Geological Survey and the classification of public lands and examination of the geological structure, mineral resources, and products of the national domain.

The work was begun in 1888 in connection with special studies relating to irrigation. Since the fiscal year ending June 30, 1895, successive appropriation bills passed by Congress have carried the following items:

For gaging the streams and determining the water supply of the United States, and for the investigation of underground currents and artesian wells, and for the preparation of reports upon the best methods of utilizing the water resources.

Annual appropriations for the fiscal years ending June 30, 1895–1932

1895	$12, 500. 00	1920	$175, 000. 00
1896	24, 500. 00	1921–1923	180, 000. 00
1897–1899	50, 000. 00	1924–25	170, 000. 00
1900	70, 000. 00	1926	165, 000. 00
1901–2	100, 000. 00	1927	151, 000. 00
1903–1906	200, 000. 00	1928	147, 000. 00
1907	150, 000. 00	1929	270, 500. 00
1908–1910	100, 000. 00	1930	275, 000. 00
1911–1917	150, 000. 00	1931	565, 000. 00
1918	175, 000. 00	1932	711, 000. 00
1919	148, 244. 10		

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 10.

Measurements of stream flow have been made at about 6,270 points in the United States and also at many points in Alaska and the Hawaiian Islands. In July, 1931, 2,660 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 inches.

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

The following terms not in common use are here defined:

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

"Control," a term used to designate the natural section or stretch of the channel or artificial structure below the gage which determines the stage-discharge relation at the gage.

EXPLANATION OF DATA

The data presented in this report cover the year beginning October 1, 1930, and ending September 30, 1931. At the beginning of January in most parts of the United States much of the precipitation in the preceding three months is stored in the form of snow or ice, or in ponds, lakes, and swamps, or as underground water, and this stored water passes off in the streams during the spring break-up. At the end of September, on the other hand, the only stored water available for run-off is possibly a small quantity in the ground; therefore the run-off for the year beginning October 1 is practically all derived from precipitation within that year.

The base data collected at gaging stations consist of records of stage, measurements of discharge, and general information used to

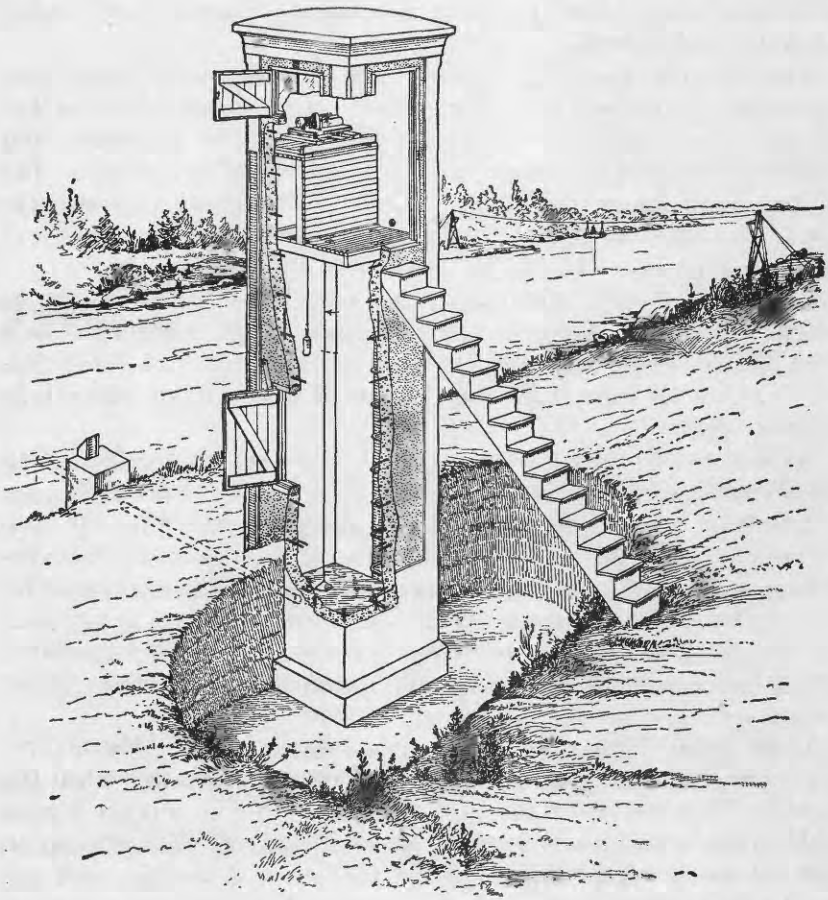

FIGURE 1.—Typical river-measurement station showing concrete well and house for water-stage recorder and staff gages, cable, and car

supplement the gage heights and discharge measurements in determining the daily flow. The records of stage are obtained either from direct readings on a staff or chain gage or from a water-stage recorder that gives a continuous record of the fluctuations. Measurements of discharge are made with a current meter by the general methods outlined in standard textbooks on the measurement of river discharge. A typical gaging station, equipped with water-stage recorder and measuring cable and car, is shown in Figure 1.

Rating tables giving the discharge for any stage are prepared from the discharge measurements. The application of the daily gage height 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 showing the daily discharge of the stream, and a table of monthly and yearly discharge and run-off.

The description of the station gives, in addition to statements regarding location and type of gage, information as to diversions that decrease the flow at the gage, artificial regulation, maximum and minimum recorded discharges, and the accuracy of the records. The maximum discharge given under "Extremes" does not represent the crest discharge unless a water-stage recorder was in operation or a nonrecording gage was read at the time of the crest.

The table of daily discharge gives, in general, the discharge in second-feet corresponding to the daily gage height, which may be a once daily reading or the mean of twice daily readings of a nonrecording gage, or the mean daily gage height obtained from a water-stage recorder graph.

At stations on streams subject to sudden or rapid diurnal fluctuation the discharge obtained from the rating table and the mean daily gage height may not be the true mean discharge for the day. If such stations are equipped with water-stage recorders, the mean daily discharge may be obtained by averaging discharge at regular intervals during the day or by using the discharge integrator, an instrument for obtaining mean daily discharge from a continuous gage-height graph and containing as an essential element the rating curve of the station.

In the table of monthly discharge the column headed "Maximum" gives the maximum daily discharge and not the discharge when the water surface was at crest height. Likewise, in the column headed "Minimum" the quantity given is the minimum daily discharge. The column headed "Mean" is the average flow in cubic feet per second during the month. On this average flow are based computations recorded in the remaining columns, which are defined on page 2.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

The accuracy of stream-flow data depends primarily (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.

The station description gives a statement in regard to the general accuracy of the records. "Excellent" indicates that records are accurate within 5 per cent; "good," within 10 per cent; "fair," within 15 per cent; and "poor," within 20 per cent or more.

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

The table of monthly discharge gives a general idea of the flow at the station. The table of daily discharge allows more detailed studies of the variation in flow. It should be borne in mind, however, that the observations in each succeeding year may be expected to throw new light on data previously published.

Many gaging stations on streams in the irrigated areas of the United States are situated above most of the diversions from those streams, and the discharge recorded does not show the water supply available for further development, as prior appropriations below the stations must first be satisfied.

PUBLICATIONS

Investigation of water resources by the United States Geological Survey has consisted in large part of measurements of the volume of flow of streams and studies of the conditions affecting that flow, but it has comprised also investigations of such closely allied subjects as irrigation, water storage, water powers, underground waters, and quality of waters. Most of the results of these investigations have been published in the series of water-supply papers, but some have appeared in the bulletins, professional papers, monographs, and annual reports.

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

Part 1. North Atlantic slope basins (St. John River to York River).
2. South Atlantic slope and eastern Gulf of Mexico basins (James River to Mississippi River).
3. Ohio River Basin.
4. St. Lawrence River Basin.
5. Hudson Bay and upper Mississippi River Basins.
6. Missouri River Basin.
7. Lower Mississippi River Basin.
8. Western Gulf of Mexico basins.
9. Colorado River Basin.
10. The Great Basin.
11. Pacific slope basins in California.
12. North Pacific slope drainage basins, in three parts:
    A, Pacific slope basins in Washington and upper Columbia River Basin.
    B, Snake River Basin.
    C, Pacific slope basins in Oregon and lower Columbia River Basin.

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

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

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

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

Augusta, Me., Statehouse.
Boston, Mass., 2500 Customhouse.
Hartford, Conn., 318 State Office Building.
Albany, N. Y., 603 State Public Works Building.
Trenton, N. J., 710 Trenton Trust Building.
Harrisburg, Pa., 604 Claster Building.
Charlottesville, Va., Brooks Museum, University of Virginia.
South Charleston, W. Va., Naval Ordnance Plant.
Asheville, N. C., 220 Post Office Building.
Columbia, S. C., 801 National Loan & Exchange Bank Building.
Ocala, Fla., Post Office Building.
Tuscaloosa, Ala., Post Office Building.
Chattanooga, Tenn., 630 Power Building.
Columbus, Ohio, Engineering Experiment Station, Ohio State University.
Indianapolis, Ind., 319 Federal Building.
Urbana, Ill., 302 University New Agricultural Building.
Madison, Wis., 337N State Capitol.
St. Paul, Minn., 632 State Office Building.
Topeka, Kans., 23 Federal Building.
Rolla, Mo., Rolla Building, School of Mines and Metallurgy.

Fort Smith, Ark., Post Office Building.
Austin, Tex., State Capitol.
Santa Fe, N. Mex., State Capitol.
Tucson, Ariz., 210 Post Office Building.
Denver, Colo., 403 Post Office Building.
Salt Lake City, Utah, 303 Federal Building.
Idaho Falls, Idaho, 228 Federal Building.
Boise, Idaho, Federal Building.
Helena, Mont., 416 Power Block.
Tacoma, Wash., 406 Federal Building.
Portland, Oreg., 606 Post Office Building.
San Francisco, Calif., 303 Customhouse.
Los Angeles, Calif., 751 South Figueroa Street, room 510.
Honolulu, Hawaii, Territorial Office Building.

A list of Geological Survey publications may be obtained by applying to the Director, United States Geological Survey, Washington, D. C.

Stream-flow records have been obtained at about 6,270 points in the United States, and the data obtained have been published in the reports tabulated as follows:

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 heights for earlier years)	1896.
18th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also similar data for some earlier years).	1895-96.
W 15	Descriptions, measurements, and gage heights, eastern United States, eastern Mississippi River, and Missouri River above junction with Kansas River.	1897.
W 16	Descriptions, measurements, and gage heights, western Mississippi River below junction of Missouri and Platte Rivers, 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, measurments, 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.

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

Report	Character of data	Year
W 381 to 394	Complete data	1914.
W 401 to 414	do	1915.
W 431 to 444	do	1916.
W 451 to 464	do	1917.
W 471 to 484	do	1918.
W 501 to 514	do	1919–20.
W 521 to 534	do	1921.
W 541 to 554	do	1922.
W 561 to 574	do	1923.
W 581 to 594	do	1924.
W 601 to 614	do	1925.
W 621 to 634	do	1926.
W 641 to 654	do	1927.
W 661 to 674	do	1928.
W 681 to 694	do	1929.
W 696 to 709	do	1930.
W 711 to 724	do	1931.

The records at most of the stations discussed in these reports extend over a series of years. Miscellaneous measurements at many points other than regular gaging stations have been made each year and are published under "Miscellaneous discharge measurements" at the end of each report in the same relative order as the regular gaging stations. An index of the reports containing records obtained prior to 1904 has been published in Water-Supply Paper 119.

The following table gives, by years and drainage basins, the numbers of the papers on surface-water supply published from 1899 to 1931. The data for any particular station will, as a rule, be found in the reports covering the years during which the station was maintained. For example, data from 1910 to 1920 for any station in the area covered by Part 3 are published in Water-Supply Papers 283, 303, 323, 353, 383, 403, 433, 453, 473, and 503, which contain records for the Ohio River Basin for those years.

Numbers of water-supply papers containing results of stream measurements, 1899–1931

[For basins included see p. 6]

Year	1	2	3	4	5	6	7	8	9	10	11	12-A	12-B	12-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 [a]	47, [h] 48	48	48, [i] 49	49	49	49, [j] 50	50	50	51	51	51	51	51	51
1901	65, 75	65, 75	65, 75	65, 75	[k] 65, 66, 75	66, 75	[k] 65, 66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75
1902	82	[b] 82, 83	83	[l] 82, 83	[k] 83, 85	84	[k] 83, 84	84	85	85	85	85	85	85
1903	97	[b] 97, 98	98	97	[k] 98, 99, [m] 100	99	[k] 98, 99	99	100	100	100	100	100	100
1904	[n] 124, [e] 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, [e] 166, [p] 167	[p] 167, 168	169	170	171	172	[k] 169, 173	174	175, [e] 177	176, [r] 177	177	178	178	[t] 177, 178
1906	[n] 201, [e] 202, [p] 203	[p] 203, 204	205	206	207	208	[k] 205, 209	210	211, [e] 213	212, [r] 213	211	214	214	214
1907–8	241	242	243	244	245	246	247	248	249	250, [r] 251	251	252	252	252
1909	261	262	263	264	265	266	267	268	269	270, [r] 271	271	272	272	272
1910	281	282	283	284	285	286	287	288	289	290	291	292	292	292
1911	301	302	303	304	305	306	307	308	309	310	311	312	312	312
1912	321	322	323	324	325	326	327	328	329	330	331	332-A	332-B	332-C
1913	351	352	353	354	355	356	357	358	359	360	361	362-A	362-B	362-C
1914	381	382	383	384	385	386	387	388	389	390	391	392	393	394
1915	401	402	403	404	405	406	407	408	409	410	411	412	413	414
1916	431	432	433	434	435	436	437	438	439	440	441	442	443	444
1917	451	452	453	454	455	456	457	458	459	460	461	462	463	464
1918	471	472	473	474	475	476	477	478	479	480	481	482	483	484
1919–20	501	502	503	504	505	506	507	508	509	510	511	512	513	514
1921	521	522	523	524	525	526	527	528	529	530	531	532	533	534
1922	541	542	543	544	545	546	547	548	549	550	551	552	553	554
1923	561	562	563	564	565	566	567	568	569	570	571	572	573	574
1924	581	582	583	584	585	586	587	588	589	590	591	592	593	594
1925	601	602	603	604	605	606	607	608	609	110	611	612	613	614
1926	621	622	623	624	625	626	627	628	629	630	631	632	633	634
1927	641	642	643	644	645	646	647	648	649	650	651	652	653	654
1928	661	662	663	664	665	666	667	668	669	670	671	672	673	674
1929	681	682	683	684	685	686	687	688	689	690	691	692	693	694
1930	696	697	698	699	700	701	702	703	704	705	706	707	708	709
1931	711	712	713	714	715	716	717	718	719	720	721	722	723	724

[a] Rating tables and index to Water-Supply Papers 35–39 contained in Water-Supply Paper 39. Tables of monthly discharge for 1899 in Twenty-first Annual Report, Part 4.
[b] James River only.
[c] Gallatin River.
[d] Green and Gunnison Rivers and Colorado River above junction with Gunnison River.
[e] Mohave River only.
[f] Kings and Kern Rivers and South Pacific slope basins.
[g] Rating tables and index to Water-Supply Papers 47–52 and data on precipitation, wells, and irrigation in California and Utah contained in Water-Supply Paper 52. Tables of monthly discharge for 1900 in Twenty-second Annual Report, Part 4.
[h] Wissahickon and Schuylkill Rivers to James River.
[i] Scioto River.
[j] Loup and Platte Rivers near Columbus, Nebr., and all tributaries below junction with Platte River.
[k] Tributaries of Mississippi River 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 River.
[r] The Great Basin in California, except Truckee and Carson River Basins.
[s] Below junction with Gila River.
[t] Rogue, Umpqua, and Siletz Rivers only.

COOPERATION

The work in the several States was done under cooperative agreements as follows: In Kansas with the water resources division of the State board of agriculture, George S. Knapp, chief engineer; in Missouri with the bureau of geology and mines, H. A. Buehler, State geologist, and the State game and fish department, J. H. Ross, commissioner; in Montana with the State engineer, J. S. James; in Nebraska with the State engineer, through R. H. Willis, chief, bureau of irrigation, water power and drainage; in North Dakota with the State engineer, Robert E. Kennedy; in Wyoming with the State engineer, John A. Whiting.

Twenty stations in Milk River Basin in Montana were maintained from funds appropriated by the Department of State of the United States.

Acknowledgment is due also to the Corps of Engineers, United States Army, for financial assistance in collecting records published herein.

Assistance in collecting records was also rendered by the following municipalities, organizations, corporations, and individuals: In Colorado by the city of Denver, and the city of Loveland through Ray Smith, manager, electrical department; in Missouri by the Missouri Electric Power Co., the Springfield City Water Co., the Union Electric Light & Power Co.; in Montana by the Liberty Montana Mines Co.; in Wyoming by the United States Bureau of Reclamation, the United States Indian Service, the Douglas Reservoirs Water Users' Association; in Yellowstone National Park by the National Park Service.

DIVISION OF WORK

The data for the stations in the several States were collected and prepared for publication as follows: In Colorado, Iowa, Nebraska (except for the station on Missouri River at Nebraska City), South Dakota, and Wyoming by Robert Follansbee, district engineer, assisted by P. V. Hodges, J. H. Baily, F. F. LeFever, R. E. Cabell, H. P. Eisenhuth, D. S. Jenkins, L. F. Hanks, F. M. Roush, A. W. Hall, A. E. Johnston, C. E. Franklin, Miss Nellie L. Esterly, and Mrs. Elsie L. Yeatman; in Kansas by J. B. Spiegel, district engineer, assisted by Chas. Wells, W. M. Littlefield, R. V. Smrha, and Mrs. Maude Moon; in Missouri and for the station on Missouri River at Nebraska City, Nebr., by H. C. Beckman, district engineer, assisted by H. C. Bolon, R. D. Schmickle, C. J. Eyberg, and C. H. Jennings; in Montana and North Dakota (except stations on Madison River near Yellowstone, Mont., and on Tongue River near Decker, Mont.) by W. A. Lamb, district engineer, assisted by A. H. Tuttle, C. S. Heidel, E. Post, E. H. Bekkedahl, H. C. Smith, and Mrs. G. Thomp-

son; in Yellowstone National Park and for the station on Madison River near West Yellowstone, Mont., by C. G. Paulsen and T. R. Newell, district engineers, assisted by F. M. Veatch, J. A. Allis, E. G. Bailey, Miss E. H. Haugse, and Miss Josephine Ruick.

The records were reviewed and manuscript assembled by C. E. Knox.

GAGING-STATION RECORDS

MISSOURI RIVER PROPER

RED ROCK RIVER BELOW RED ROCK RESERVOIR, NEAR MONIDA, MONT.

LOCATION.—Staff gage in SW. ¼ sec. 32, T. 13 S., R. 6 W., just below Red Rock Reservoir and 8 miles northwest of Monida.

DRAINAGE AREA.—560 square miles.

RECORDS AVAILABLE.—July, 1911, to September, 1918; May, 1925, to September, 1931.

EXTREMES.—Maximum discharge during year, 706 second-feet June 18 (gage height, 2.38 feet); minimum, 0.6 second-foot Sept. 27 (gage height, 0.01 foot). 1911–1918, 1925–1931: Maximum discharge, 1,220 second-feet Apr. 28, 1914 (gage height, 3.2 feet); minimum, that of Sept. 27, 1931.

REMARKS.—Records good. No records Nov. 21 to Mar. 31. Flood water stored in reservoir and released as required. Small diversions for irrigation on tributaries.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	45	20	4.2	117	166	637	31	2.4
2	45	20	4.2	111	164	174	25	2.4
3	45	20	4.2	108	227	31	17	2.4
4	45	20	4.2	99	314	30	12	2.4
5	45	19	5.4	95	314	28	7.8	3.0
6	45	19	6.6	95	314	26	6.6	3.0
7	45	19	6.6	95	314	22	5.4	2.4
8	45	20	7.8	92	353	22	5.4	1.8
9	45	20	9.0	90	373	24	5.4	1.8
10	45	19	10	99	373	24	4.2	1.2
11	45	19	14	100	373	22	4.2	1.2
12	45	17	20	102	501	30	5.4	1.2
13	44	16	20	102	637	20	5.4	1.2
14	41	13	20	102	637	2.4	5.4	1.8
15	40	12	20	142	614	2.4	3.0	2.4
16	38	11	20	174	660	1.2	4.2	2.4
17	37	11	24	172	706	1.2	6.6	2.4
18	37	11	41	172	706	1.2	6.6	2.4
19	36	11	64	172	006	1.2	6.6	2.4
20	35	10	80	172	706	1.2	5.4	2.4
21	32	------	85	172	706	1.8	5.4	3.0
22	31	------	100	172	637	2.4	5.4	2.4
23	28	------	127	172	591	2.4	4.2	1.8
24	27	------	138	172	568	2.4	4.2	1.2
25	25	------	138	172	568	2.4	4.2	1.2
26	24	------	154	172	591	7.8	4.2	1.2
27	21	------	177	169	614	17	4.2	1.2
28	20	------	169	169	637	14	3.0	1.2
29	20	------	156	166	660	18	3.0	1.2
30	20	------	138	166	706	45	2.4	1.2
31	20	------	------	166	------	30	2.4	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	45	20	36.0	2,210
November 1–20	20	10	16.3	647
April	177	4.2	58.9	3,500
May	174	90	138	8,480
June	706	164	515	30,600
July	637	1.2	40.1	2,470
August	31	2.4	6.94	427
September	3.0	1.2	1.94	115

BEAVERHEAD RIVER AT BARRATTS, MONT.

LOCATION.—Chain gage in SE. ¼ SW. ¼ sec. 20, T. 8 S., R. 9 W., 1 mile above Barratts and 10 miles southwest of Dillon.

DRAINAGE AREA.—2,850 square miles.

RECORDS AVAILABLE.—August, 1907, to September, 1931.

EXTREMES.—Maximum discharge during year, 535 second-feet Apr. 8 (gage height, 1.50 feet); minimum, 126 second-feet Aug. 28 to Sept. 15 (gage height, 0.42 foot).

1907–1931: Maximum discharge, 3,640 second-feet June 19, 20, 1908 (gage height, 6.0 feet); minimum, 106 second-feet July 28, 29, Aug. 19–31, Sept. 1, 10–17, 1919 (gage height, 0.50 foot).

REMARKS.—Records good except those for periods of ice effect, Nov. 14–27, Dec. 20 to Jan. 31, which are fair. Numerous diversions above station. Storage and release of flood waters of Red Rock River near Monida affect flow at this station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	202	325	386	182	251	237	345	230	169	287	150	126
2	209	325	365	182	251	237	406	230	182	325	150	126
3	209	325	365	182	251	237	406	230	182	269	150	126
4	209	325	365	216	251	251	386	269	406	269	150	126
5	209	325	365	216	251	251	386	269	325	163	150	126
6	209	345	365	202	251	251	325	244	237	163	132	126
7	209	365	365	196	251	251	365	244	216	166	132	126
8	209	365	325	189	251	251	535	237	182	163	132	126
9	209	365	325	182	251	251	513	216	182	163	132	126
10	216	365	325	182	251	251	448	209	182	163	132	126
11	216	386	325	182	251	251	448	209	182	163	132	126
12	216	386	325	182	251	251	448	182	182	163	132	126
13	216	386	325	176	244	251	448	182	182	150	132	126
14	216	365	325	169	244	251	448	182	182	150	132	126
15	230	345	345	156	244	251	365	182	182	150	132	126
16	230	325	365	163	244	251	269	176	230	150	132	132
17	230	325	365	169	230	251	251	176	230	144	132	132
18	230	306	365	176	230	287	251	176	251	144	132	132
19	230	306	365	182	244	287	251	176	251	144	132	132
20	230	287	365	176	230	287	251	169	325	144	132	132
21	287	287	306	176	230	287	251	169	325	138	144	132
22	287	306	287	169	230	325	306	169	365	138	144	163
23	287	306	287	169	230	325	269	169	365	132	144	163
24	287	325	251	182	237	306	251	169	345	132	144	163
25	306	325	234	189	237	287	251	169	269	132	144	163
26	306	345	216	189	237	287	251	169	244	132	132	163
27	306	345	199	192	237	269	251	179	244	132	132	163
28	306	365	166	196	237	269	237	176	287	132	126	176
29	306	365	182	199	------	251	237	182	287	132	126	182
30	306	386	182	216	------	251	230	176	287	150	126	176
31	306	------	199	234	------	251	------	169	------	182	126	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	306	202	246	15,100
November	386	287	340	20,200
December	386	166	307	18,900
January	234	156	186	11,400
February	251	230	243	13,500
March	325	237	264	16,200
April	535	230	336	20,000
May	269	169	196	12,100
June	406	169	249	14,800
July	325	132	167	10,300
August	150	126	136	8,360
September	182	126	140	8,330
The year	535	126	234	169,000

JEFFERSON RIVER NEAR SILVERSTAR, MONT.

LOCATION.—Cable gage in SE. ¼ sec. 23, T. 2 S., R. 6 W., at highway bridge 5 miles southwest of Silverstar and 5 miles below junction of Beaverhead and Big Hole Rivers.

DRAINAGE AREA.—7,840 square miles.

RECORDS AVAILABLE.—August, 1910, to September, 1916; July, 1920, to September, 1931.

EXTREMES.—Maximum discharge during year, 2,460 second-feet Apr. 14 (gage height, 3.40 feet); minimum, 55 second-feet Sept. 10, 14 (gage height, 0.87 foot).

1910–1916, 1920–1931: Maximum discharge, 19,800 second-feet June 15, 1927 (gage height, 9.85 feet); minimum, that of Sept. 10, 14, 1931.

REMARKS.—Records good except those for periods of ice effect, Nov. 14–30, Mar. 26–28, which are fair. Numerous diversions. Flow partly regulated by operation of two reservoirs.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	894	1,110	-------	855	1,060	855	1,560	317	93	66
2	894	1,160	-------	855	1,230	1,170	1,800	272	106	60
3	894	1,160	-------	855	1,360	1,230	1,800	282	110	64
4	894	1,160	-------	955	1,360	1,360	2,070	294	135	64
5	894	1,160	-------	855	1,290	1,420	2,160	294	106	58
6	894	1,160	-------	805	1,230	1,420	2,160	282	102	58
7	843	1,160	-------	855	1,360	1,360	1,890	272	93	58
8	894	1,110	-------	905	1,720	1,490	1,640	260	86	60
9	894	1,160	-------	905	1,980	1,360	1,640	272	79	60
10	1,060	1,160	-------	905	2,160	1,170	1,640	260	76	55
11	1,110	1,220	-------	905	2,160	1,060	1,800	242	71	70
12	1,110	1,220	-------	955	2,360	955	1,800	406	70	60
13	1,110	1,220	-------	1,010	2,460	1,010	1,640	198	70	58
14	1,110	1,110	-------	1,010	2,460	1,010	1,360	190	79	55
15	1,060	1,000	-------	1,060	1,860	1,290	1,230	182	76	76
16	1,060	1,000	905	1,010	1,560	1,420	1,120	148	76	79
17	1,060	1,000	855	1,010	1,420	1,640	1,010	154	70	82
18	1,110	945	905	1,010	1,420	1,720	905	135	70	82
19	1,110	894	905	1,010	1,420	1,490	805	135	60	167
20	1,160	843	905	955	1,290	1,360	755	97	60	141
21	1,160	875	905	1,010	1,170	1,290	755	89	64	130
22	1,110	905	855	1,060	1,120	1,170	705	102	60	125
23	1,110	945	855	1,120	1,010	905	646	84	60	154
24	1,060		805	1,120	955	805	626	70	70	167
25	1,110		855	1,120	1,290	1,170	588	66	72	182
26	1,110	950	855	1,000	1,230	1,360	512	70	70	260
27	1,160		855	950	1,060	1,890	456	58	70	206
28	1,160		855	1,000	1,010	1,640	440	64	70	214
29	1,110		-------	1,120	1,010	1,800	388	58	64	422
30	1,110		-------	1,010	1,060	1,680	359	64	70	550
31	1,110	-------	-------	1,010	-------	1,560	-------	72	70	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,160	843	1,040	64,000
November	1,220	843	1,040	61,900
February 16–28	905	805	870	22,400
March	1,120	805	974	59,900
April	2,460	955	1,470	87,500
May	1,890	805	1,330	81,800
June	2,160	359	1,210	72,000
July	406	58	177	10,900
August	135	60	78.3	4,810
September	550	55	129	7,680

NOTE.—No records Dec. 1 to Feb. 15.

MISSOURI RIVER BELOW HAUSER LAKE DAM, NEAR HELENA, MONT.

LOCATION.—Water-stage recorder in SW. ¼ sec. 29, T. 12 N., R. 2 W., at Hauser Lake power plant, 15 miles northeast of Helena.

DRAINAGE AREA.—16,600 square miles.

RECORDS AVAILABLE.—December, 1922, to September, 1931.

EXTREMES.—Maximum discharge during year, 6,690 second-feet Apr. 17 (gage height, 70.20 feet); minimum, 500 second-feet July 19 (gage height, 66.07 feet).

1922–1931: Maximum discharge, 33,300 second-feet June 14, 15, 18, 1927 (gage height, 78.80 feet); minimum, 500 second-feet Sept. 14, 1924, July 19, 1931 (gage height, 66.07 feet).

REMARKS.—Records good. Numerous diversions. Flow partly regulated by reservoirs and power plants above station. Records furnished by Montana Power Co.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,480	2,250	2,340	1,880	2,750	3,250	3,100	3,740	2,980	1,570	1,460	1,710
2	1,420	2,680	2,520	2,010	3,090	3,630	3,220	3,960	3,180	2,690	520	2,360
3	1,440	4,040	2,730	2,250	3,800	3,760	3,270	4,100	4,140	1,780	985	2,160
4	1,260	3,610	3,780	1,920	3,760	3,700	3,400	4,240	5,140	905	1,070	2,320
5	1,540	3,610	3,840	2,160	3,610	3,700	3,460	4,420	6,000	1,710	1,480	1,960
6	1,820	3,920	2,560	3,200	3,610	3,680	3,540	5,210	6,000	1,780	1,700	1,760
7	2,020	2,980	2,900	3,220	3,850	3,580	3,900	4,680	5,700	1,220	1,610	1,250
8	1,620	2,980	3,250	3,250	3,200	3,420	3,860	3,880	4,620	2,100	1,710	1,660
9	1,890	2,900	2,940	3,070	3,020	3,340	3,480	2,980	5,430	1,960	715	1,830
10	1,960	2,900	2,660	3,010	3,040	3,210	4,440	5,140	5,630	2,090	1,180	1,670
11	3,160	3,270	2,740	2,880	3,060	3,220	3,630	5,200	5,210	1,860	2,460	1,250
12	1,690	3,250	2,450	3,480	3,180	2,720	3,290	4,800	4,420	1,060	2,600	1,900
13	2,480	3,020	2,670	3,990	3,540	3,060	4,440	4,360	4,180	1,530	1,640	1,580
14	3,260	3,590	2,220	3,920	3,580	3,140	6,240	3,720	4,150	1,580	1,550	1,940
15	3,800	3,500	3,070	3,500	2,580	3,160	6,320	2,900	4,360	1,580	2,110	1,880
16	3,380	3,000	3,740	3,430	3,540	3,920	6,430	2,760	4,310	1,640	1,190	1,680
17	2,980	2,900	3,610	3,250	3,880	4,100	6,450	2,750	3,600	1,490	1,610	1,720
18	2,570	3,060	2,730	3,250	2,950	4,030	6,180	4,140	3,220	1,490	2,360	1,720
19	2,160	3,570	2,730	3,140	3,510	3,970	5,320	4,730	2,980	500	2,660	2,180
20	3,940	2,680	2,900	3,070	3,480	3,950	5,840	5,140	2,670	1,050	2,410	2,020
21	4,200	2,080	2,730	3,000	3,590	3,920	5,900	4,600	1,560	1,420	1,910	2,020
22	3,780	2,720	2,860	2,730	2,970	3,860	5,340	4,180	1,780	2,300	2,150	2,220
23	3,470	3,160	3,250	2,730	3,060	3,760	4,940	3,540	1,900	1,200	1,290	2,580
24	2,950	3,430	3,200	2,730	3,280	3,740	4,650	2,350	1,800	1,520	1,360	2,440
25	3,560	3,440	2,320	2,730	3,400	3,700	4,400	1,450	1,660	1,970	1,660	2,440
26	2,000	2,960	1,800	1,640	3,480	3,660	4,240	1,360	1,420	1,060	2,080	2,440
27	3,260	2,080	1,670	1,920	3,460	4,010	4,090	2,660	1,440	1,620	1,710	1,760
28	3,840	2,720	1,670	2,850	3,440	4,040	4,210	2,970	1,530	1,960	1,730	2,120
29	4,420	2,900	2,070	3,040	-------	2,940	4,000	2,970	1,420	2,020	1,700	2,360
30	4,330	2,000	2,250	3,040	-------	2,850	3,630	2,970	1,760	1,830	1,590	2,400
31	3,950	-------	2,250	3,070	-------	2,900	-------	2,970	-------	1,680	1,280	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	4,420	1,260	2,790	172,000
November	4,040	2,080	3,070	183,000
December	3,840	1,670	2,720	167,000
January	3,990	1,640	2,880	177,000
February	3,880	2,580	3,350	186,000
March	4,100	2,720	3,550	218,000
April	6,450	3,100	4,510	268,000
May	5,210	1,360	3,710	228,000
June	6,000	1,420	3,470	206,000
July	2,690	500	1,620	99,600
August	2,660	520	1,660	102,000
September	2,580	1,250	1,980	118,000
The year	6,450	500	2,940	2,120,000

MISSOURI RIVER AT FORT BENTON, MONT.

LOCATION.—Water-stage recorder in the NE. ¼ sec. 26, T. 24 N., R. 8 E., at highway bridge at Fort Benton.

DRAINAGE AREA.—24,600 square miles.

RECORDS AVAILABLE.—July, 1881, to November, 1891; July, 1902, to September, 1931.

EXTREMES.—Maximum discharge during year, 13,000 second-feet Feb. 1 (gage height, 4.00 feet); minimum discharge, 1,530 second-feet Feb. 2 (gage height, −0.25 foot).

1881–1891, 1902–1931: Maximum discharge, 107,000 second-feet June 7, 1908 (gage height, 16.3 feet); minimum, 1,420 second-feet Aug. 17, 1919.

REMARKS.—Records good except those for estimated periods, which are poor. Numerous diversions from tributaries. Flow partly regulated by storage in reservoirs.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,980				8,280	4,470	4,600	5,600	4,730	3,440	2,230	3,620
2	3,860				2,170	4,470	4,730	5,760	4,470	3,360	2,210	3,760
3	3,750				3,860	4,470	4,730	5,760	5,000	3,440	2,210	3,330
4	3,750			3,750	4,220	4,470	4,220	5,760	4,730	3,490	2,860	3,300
5	4,100	3,900	3,800		5,290	4,600	4,600	5,140	5,440	2,210	2,860	3,270
6	4,340				5,440	4,470	4,730	6,080	7,280	3,220	2,350	3,250
7	4,730				5,140	4,340	4,600	5,760	8,540	3,220	3,220	2,100
8	3,750			3,980	4,340	4,340	4,730	5,920	8,540	3,090	2,600	2,190
9	4,220			4,100	4,600		4,730	7,640	7,820	2,960	2,580	2,050
10	4,100			3,540	4,600		4,860	6,590	7,100	2,910	2,830	2,070
11	3,860			3,750	4,470		4,730	5,760	7,280	2,500	2,700	2,350
12	3,640			4,220	4,860		4,730	6,250	7,640	2,830	2,260	3,040
13	3,440			4,600	5,600	4,820	5,140	5,760	7,100	2,500	2,580	3,490
14	3,640			3,980	3,980		5,000	6,080	6,230	2,330	2,650	2,450
15	3,640			4,100	3,980		4,860	5,920	6,230	2,450	2,910	2,580
16	3,540	3,700	3,800	3,980	4,730		6,250	6,250	5,900	2,450	1,980	2,960
17	3,540			3,750	4,470		8,720	5,600	5,740	2,400	2,330	3,090
18	3,540			3,980	4,600		9,090	8,360	5,740	2,380	2,580	3,360
19	3,540			3,980	4,220		8,720	3,860	5,590	2,310	2,750	2,960
20				3,860	4,730	5,030	9,090	3,860	5,440	2,100	2,700	2,700
21				3,540	5,000		8,900	5,290	4,580	2,580	2,260	2,700
22				4,100	4,100		7,640	5,760	3,620	3,170	3,090	3,360
23				3,980	4,860		7,100	5,290	4,030	2,330	2,210	3,490
24				4,220	4,340		7,100	4,730	3,360	3,120	2,830	3,090
25	3,700	3,650	3,850	4,100	4,600		7,280	4,730	3,490	2,680	2,700	3,490
26				4,220	4,340		6,930	4,470	3,490	2,380	2,700	2,700
27				4,470	4,600		6,080	4,730	3,360	2,160	2,700	2,450
28				4,470	4,470	5,230	5,760	3,540	2,860	2,520	2,830	2,330
29				4,100	------		5,290	3,350	2,910	2,380	4,030	3,090
30				4,860	------		5,600	3,350	4,160	2,620	2,650	2,580
31				4,340	------		------	4,220	------	1,900	2,030	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	4,730	3,440	3,790	233,000
November			3,750	223,000
December			3,820	235,000
January	4,860	3,540	4,020	247,000
February	8,280	2,170	4,640	258,000
March		4,340	4,870	299,000
April	9,090	4,220	6,020	358,000
May	8,360	3,350	5,390	331,000
June	8,540	2,860	5,410	322,000
July	3,490	1,900	2,690	165,000
August	4,030	1,980	2,630	162,000
September	3,760	2,050	2,910	173,000
The year	9,090	1,900	4,150	3,010,000

MISSOURI RIVER NEAR WOLF POINT, MONT.

LOCATION.—Water-stage recorder installed Apr. 13, 1930, in NW. ¼ sec. 28, T. 27 N., R. 48 E., at highway bridge 6 miles southeast of Wolf Point.

DRAINAGE AREA.—82,400 square miles.

RECORDS AVAILABLE.—April, 1930, to September, 1931. September, 1928, to April, 1930, comparable record at ferry crossing at Wolf Point, 6 miles upstream.

EXTREMES.—Maximum discharge during year ending Sept. 30, 1929, 26,900 second-feet June 4 (gage height, 11.51 feet, at former site).

Maximum discharge during year ending Sept. 30, 1930, 21,000 second-feet Apr. 20 (gage height, 9.46 feet); minimum, 1,790 second-feet Dec. 18, 19.

Maximum discharge during year ending Sept. 30, 1931, 17,500 second-feet Mar. 23 (gage height, 8.40 feet); minimum discharge, 1,700 second-feet Nov. 23.

REMARKS.—Records fair. Stage-discharge relation affected by ice Dec. 9, 1928, to Mar. 25, 1929, Nov. 16, 1929, to Apr. 3, 1930, and Nov. 14, 1930, to Mar. 20, 1931. Numerous diversions from tributaries. Flow partly regulated by storage reservoirs above power plants. Because of silt covering intake, recorder records were not used after September, 1930, except Nov. 7–28. Readings from wire gage at same site used remainder of year. Records of discharge in the following tables for the years ending Sept. 30, 1929 and 1930, supersede those published in Water-Supply Paper 701.

Daily discharge, in second-feet, 1928–1931

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1928–29												
1	6,310	6,450	4,270				14,000	14,300	26,100	15,700	5,200	4,700
2	6,030	6,600	4,160				11,500	14,600	22,500	14,000	5,340	4,590
3	6,030	6,600	3,950			6,140	10,600	15,300	26,500	12,100	5,070	4,700
4	6,030	6,450	4,500				10,300	15,700	26,500	11,200	5,070	4,590
5	6,030	6,310	4,000	5,200	4,290		9,250	15,300	26,900	11,500	4,940	4,700
6	6,030	6,170	3,910				9,000	13,600	26,900	11,500	4,940	4,700
7	6,030	6,170	4,050				9,000	14,300	25,700	11,200	4,700	4,700
8	6,030	6,600	4,050			7,320	8,250	18,300	23,300	10,600	4,700	4,820
9	6,030	6,750					7,560	17,900	22,500	9,750	4,940	5,070
10	6,170	6,600					7,780	17,100	22,100	9,250	4,700	5,070
11	6,170	6,450	4,500				7,560	16,400	24,100	8,500	4,590	5,070
12	6,310	6,450					6,750	15,700	22,500	7,780	4,820	5,070
13	6,310	6,450		5,350			6,370	15,300	21,700	7,140	4,940	5,070
14	6,310	6,600					6,000	14,300	21,300	7,340	4,820	4,940
15	6,170	6,600			4,620		6,180	14,600	20,900	7,340	4,820	4,940
16	6,170	6,600					6,370	14,300	20,600	7,340	4,940	4,820
17	6,170	6,450					6,370	13,300	20,200	7,140	4,700	4,820
18	6,170	6,450	5,500	4,830		6,000	6,180	14,600	20,200	7,560	4,480	5,200
19	6,310	6,450					6,180	15,300	20,900	7,140	4,590	5,070
20	6,450	6,750					6,560	17,100	20,600	6,940	4,940	4,940
21	6,450	6,750					6,940	17,100	19,000	6,750	4,940	4,940
22	6,600	6,600					7,140	16,400	21,700	6,560	4,820	4,700
23	6,600	6,450		4,100			7,140	15,700	22,100	6,370	4,820	4,940
24	6,600	6,450					7,560	15,300	20,900	6,370	4,590	5,340
25	6,600	6,450			4,600		9,000	17,500	20,600	6,560	4,590	5,340
26	6,600	6,450	5,800			13,000	11,800	19,400	20,200	6,000	4,820	5,490
27	6,450	6,310				10,300	12,400	20,900	19,400	5,820	4,940	5,490
28	6,450	6,310		3,500		10,900	13,000	21,700	18,300	5,490	4,940	5,490
29	6,450	5,890			-------	11,800	13,000	23,700	17,100	5,490	5,070	5,200
30	6,450	5,100			-------	13,300	14,600	22,500	16,400	5,340	4,940	5,340
31	6,450	-------			-------	12,400	-------	20,900	-------	5,340	4,820	------

Daily discharge, in second-feet, of Missouri River near Wolf Point, Mont., 1928–1931—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1929–30												
1	5,340	5,340	4,370	5,340	4,610	4,590	13,000	17,600	8,690	6,290	4,160	3,980
2	5,340	5,200	4,370	5,340	4,850	4,700	13,300	16,900	8,120	6,040	4,160	3,980
3	5,490	5,340	4,480	5,490	5,090	4,480	14,600	16,900	8,120	5,800	4,160	3,980
4	5,650	5,490	4,480	5,650	5,330	4,480	15,300	15,900	8,980	5,680	4,790	4,070
5	5,490	5,820	4,480	5,650	5,570	4,820	14,300	14,300	9,880	5,320	3,600	4,070
6	5,650	5,650	4,060	5,650	5,810	4,940	15,300	14,300	10,800	5,320	3,600	3,980
7	6,000	5,490	3,600	5,490	6,050	4,820	16,100	14,300	9,280	5,440	3,600	4,070
8	5,820	5,490	3,960	6,180	5,650	5,070	16,400	16,200	9,880	5,320	3,600	3,980
9	5,490	5,340	3,690	6,180	4,820	5,070	16,800	18,200	12,000	5,320	3,510	3,980
10	5,490	5,340	3,510	6,180	4,260	5,650	18,300	18,600	14,900	4,320	3,410	3,980
11	5,340	5,200	3,260	5,340	5,650	6,750	16,800	16,900	15,600	4,880	3,410	3,880
12	5,200	5,340	3,000	5,200	7,560	9,250	14,000	15,900	14,000	4,880	3,410	3,980
13	5,070	5,340	2,760	5,070	9,500	11,800	14,900	14,900	11,700	4,880	3,410	3,980
14	5,200	5,200	2,510	4,940	9,500	13,000	15,600	14,900	10,500	4,990	3,410	3,980
15	5,340	5,200	2,350	5,070	10,000	12,700	17,600	15,600	10,500	6,160	3,410	3,980
16	5,490	5,070	2,080	4,820	11,200	12,400	18,200	15,200	8,690	6,290	3,410	3,980
17	5,490	5,070	1,820	4,260	11,800	12,400	19,600	14,900	8,400	4,360	3,410	4,070
18	5,340	4,940	1,790	4,370	11,800	11,800	20,600	14,600	8,400	4,260	3,410	4,160
19	5,200	4,820	1,790	3,960	11,800	11,500	21,000	15,200	8,400	4,260	3,410	4,160
20	5,200	4,700	1,990	3,960	12,100	10,600	21,000	14,900	8,400	4,360	3,410	4,260
21	5,200	3,600	2,190	4,370	11,800	9,750	20,600	14,600	8,980	4,260	3,410	4,160
22	5,070	3,690	2,390	4,820	10,000	9,500	19,600	14,000	9,280	4,360	3,500	4,160
23	5,070	3,780	2,590	4,820	9,500	9,500	18,900	13,300	8,980	4,360	3,500	4,560
24	5,070	4,260	2,960	5,200	8,500	9,500	18,600	13,000	8,120	4,360	3,600	4,880
25	4,940	4,590	3,340	5,150	8,000	10,000	18,200	12,400	7,580	4,360	3,600	4,770
26	5,070	4,590	3,600	5,070	7,340	10,000	17,600	11,700	7,050	4,360	3,600	4,560
27	5,200	8,000	3,870	4,370	6,370	12,700	17,900	11,100	6,540	4,360	3,690	4,160
28	5,340	5,200	4,180	4,370	5,490	13,300	17,900	10,500	6,540	4,260	3,690	3,780
29	5,490	4,700	4,480	4,370	-------	13,600	17,200	10,500	6,290	4,260	3,780	3,880
30	5,490	4,590	4,910	4,370	-------	14,000	18,200	9,580	6,290	4,260	3,880	3,880
31	5,340	-------	5,340	4,370	-------	11,200	-------	8,980	-------	4,160	3,880	------
1930–31												
1	4,260	4,720					6,430	7,780	5,910	3,900	3,640	2,770
2	7,850	4,770					6,040	7,240	5,650	4,500	4,150	2,680
3	6,200	4,820					5,650	6,700	5,400	4,710	4,660	2,600
4	4,560	4,880					5,520	6,430	5,160	4,880	5,160	2,770
5	4,320	4,670					5,400	6,160	5,400	5,050	4,530	2,600
			6,200	4,150	5,860	6,850						
6	4,070	4,460					5,280	6,160	5,650	5,220	3,900	2,870
7	4,120	4,260					5,160	6,160	5,820	5,400	3,800	3,140
8	4,160	6,040					5,160	6,160	5,990	4,500	3,710	2,770
9	4,210	6,100					5,160	6,430	6,160	4,710	3,800	3,330
10	4,260	6,170					5,400	6,700	7,530	4,210	3,900	3,520
11	4,660	6,230					5,320	6,430	8,900	3,710	3,900	3,710
12	5,050	6,290					5,240	6,970	8,900	3,900	3,900	3,140
13	5,440	6,040					5,160	7,240	10,100	4,100	3,900	2,790
14	5,530	5,800					5,160	7,510	9,650	3,900	4,000	2,440
15	5,620	5,800					5,160	7,780	9,200	3,710	4,100	2,600
			5,100	3,650	5,840	7,200						
16	5,710	5,800					5,280	8,050	9,050	3,710	3,330	2,770
17	5,800	6,290					5,400	7,780	8,900	3,710	3,240	2,290
18	3,690	6,290					5,900	7,510	8,330	3,480	3,140	2,900
19	3,880	5,800					5,900	7,240	7,780	3,240	3,240	3,520
20	4,070	5,800					5,900	7,380	7,240	3,000	3,330	3,710
21	4,260	4,070				13,000	7,260	7,510	7,100	2,770	3,140	3,900
22	4,680	1,910				15,200	8,610	7,780	6,970	2,950	3,520	6,430
23	5,100	1,700				17,500	9,010	7,780	7,380	3,140	3,140	6,970
24	6,080	2,780				16,400	9,410	7,240	7,780	3,330	2,770	3,710
25	7,050	4,070			6,350	15,400	9,820	6,700	7,510	3,190	2,680	4,100
26	7,050	5,560	3,900	4,480		14,200	9,320	6,160	7,240	3,050	2,600	4,300
27	6,180	5,560				13,000	8,820	7,510	7,510	2,910	2,770	4,500
28	5,320	5,560				11,900	8,330	7,510	6,340	2,770	2,600	4,710
29	4,840	5,560			-------	10,700	7,780	7,510	5,160	2,860	6,430	5,160
30	4,360	5,800			-------	9,510	7,780	6,430	4,530	2,950	4,520	4,300
31	4,660	-------			-------	8,330	-------	6,170	-------	3,140	2,600	------

Monthly discharge, in second-feet, of Missouri River at Wolf Point, Mont., 1928–1931

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1928–29				
October	6,600	6,030	6,290	387,000
November	6,750	5,100	6,420	382,000
December		3,910	5,020	309,000
January			4,660	287,000
February			4,500	250,000
March	13,300		7,390	454,000
April	14,600	6,000	8,810	524,000
May	23,700	13,300	16,700	1,030,000
June	26,900	16,400	21,900	1,300,000
July	15,700	5,340	8,290	510,000
August	5,340	4,480	4,860	299,000
September	5,490	4,590	5,000	298,000
The year	26,900		8,330	6,030,000
1929–30				
October	6,000	4,940	5,350	329,000
November	8,000	3,600	5,080	302,000
December	5,340	1,790	3,360	207,000
January	6,180	3,960	5,010	308,000
February	14,300	4,700	7,860	595,000
March	14,000	4,480	9,160	563,000
April	21,000	13,000	17,200	1,020,000
May	18,600	8,980	14,400	885,000
June	15,600	6,290	9,360	557,000
July	6,290	4,160	4,920	303,000
August	4,160	3,410	3,610	222,000
September	4,880	3,780	4,110	245,000
The year	21,000	1,790	7,430	5,536,000
1930–31				
October	7,850	3,690	5,070	312,000
November	6,290	1,700	5,120	305,000
December			5,030	309,000
January			4,110	253,000
February			5,990	333,000
March	17,500		9,210	566,000
April	9,820	5,160	6,530	389,000
May	8,050	6,160	7,040	433,000
June	10,100	4,530	7,140	425,000
July	5,400	2,770	3,760	231,000
August	6,430	2,600	3,680	226,000
September	6,970	2,290	3,570	212,000
The year	17,500	1,700	5,510	3,990,000

MISSOURI RIVER NEAR WILLISTON, N. DAK.

LOCATION.—Water-stage recorder in sec. 31, T. 154 N., R. 101 W., at Lewis & Clark highway bridge 7 miles west of Williston.

RECORDS AVAILABLE.—September, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year ending Sept. 30, 1929, 109,000 second-feet June 8; minimum, 5,650 second-feet Jan. 30, 31.

Maximum discharge during year ending Sept. 30, 1930, 231,000 second-feet Apr. 4 (gage height, 18.6 feet).

Maximum discharge during year ending Sept. 30, 1931, 52,000 second-feet June 13 (gage height, 7.75 feet); minimum, 3,930 second-feet July 30; minimum stage, 0.38 foot Sept. 18.

REMARKS.—Records good except those for ice effect, Nov. 30, 1928, to Mar. 23, 1929, Nov. 23, 1929, to Apr. 4, 1930, and Nov. 27, 1930, to Apr. 2, 1931, which are fair. Numerous diversions above station. Several storage reservoirs on tributary streams. Records of discharge in the following tables for the years ending Sept. 30, 1929 and 1930, supersede those published in Water-Supply Papers 686 and 701.

Daily discharge, in second-feet, 1928–1931

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1928–29												
1	14,000	15,400	12,300	13,100	5,910	8,380	45,000	27,200	76,100	54,400	12,900	8,380
2	14,000	14,700	12,300	13,400	6,100	8,720	52,400	28,700	58,300	55,300	12,900	8,380
3	13,400	14,700	12,300	13,400	6,100	9,080	52,400	30,200	54,400	55,300	12,900	8,720
4	13,400	14,700	12,300	13,100	6,400	9,080	38,000	28,700	54,400	56,300	12,900	9,080
5	•13,400	14,000	11,800	12,000	6,510	9,080	30,200	30,200	56,400	57,300	12,900	9,080
6	13,400	14,700	11,800	11,300	6,730	9,080	30,200	31,700	66,500	58,300	12,900	9,080
7	13,400	14,700	11,800	10,400	6,830	9,080	33,200	31,700	84,200	55,100	13,400	9,080
8	13,400	14,000	11,800	9,660	6,730	9,460	34,800	27,200	105,000	52,000	13,400	9,460
9	13,400	13,400	11,300	9,080	7,100	10,800	38,000	27,200	72,100	48,900	13,400	10,300
10	13,400	14,000	10,800	8,380	7,480		31,700	30,200	60,200	45,800	13,400	10,800
11	13,400	14,000	9,460	7,910	8,060		24,500	33,200	64,200	42,700	13,400	11,300
12	13,400	13,400	9,080	8,220	8,550		23,200	31,700	84,200	39,800	12,900	12,900
13	13,400	13,400	9,080	8,380	9,080		20,800	31,700	86,300	38,700	12,300	13,400
14	13,700	13,400	10,300	8,380	9,270		19,800	25,800	84,200	37,900	11,800	13,400
15	14,000	13,400	11,300	8,220	8,900		17,800	23,200	84,200	36,000	12,300	13,400
16	14,700	13,400	11,800	8,720	8,720	26,000	18,700	19,800	82,200	34,200	12,300	13,400
17	14,700	13,400		9,080	8,720		18,700	19,800	80,200	32,400	11,300	13,400
18	14,700	13,400		9,080	8,900		18,700	19,800	76,100	30,500	10,800	12,900
19	14,700	13,400		9,460	9,270		17,800	22,000	78,100	28,200	10,300	12,300
20	15,400	12,900		9,660	9,270		17,800	27,200	78,100	28,000	9,870	12,300
21	16,100	13,400		9,270	9,460		17,800	31,700	80,200	27,200	9,460	12,300
22	16,100	13,400		8,900	9,460		18,700	38,000	74,100	26,500	9,080	12,300
23	16,100	13,400		8,380	9,660		18,700	38,000	60,200	25,800	9,080	12,300
24	16,900	13,400	12,000	7,910	9,460	97,300	19,800	39,800	56,400	24,500	8,720	12,300
25	17,800	12,900		7,350	9,460	62,200	20,800	43,200	54,400	22,000	8,720	12,900
26	16,900	12,900		6,850	9,080	48,600	23,200	54,400	52,400	20,800	8,720	13,400
27	16,100	12,900		6,510	8,900	39,800	24,500	68,100	50,600	17,800	8,720	13,400
28	16,100	12,900		6,300	8,720	36,400	24,500	76,100	50,600	15,400	8,720	13,400
29	16,100	12,300		5,820	-------	56,600	24,500	86,300	52,400	15,400	8,380	14,000
30	15,400	12,300		5,650	-------	55,700	27,200	88,300	54,400	13,400	8,720	14,700
31	15,400	-------		5,650	-------	39,800	-------	92,400	-------	12,900	8,380	-------

Daily discharge, in second-feet, of Missouri River near Williston, N. Dak., 1928–1931—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1929–30												
1	14,600	13,000						33,300	26,400	26,400	12,200	15,400
2	14,600	13,000					35,100	34,300	38,800	25,100	11,500	15,000
3	15,000	13,000				21,400		34,300	49,200	25,100	11,500	15,000
4	15,000	13,400						34,300	47,800	23,300	11,100	14,200
5	15,000	13,400	9,260	12,200	10,400		77,800	34,300	43,800	22,200	10,700	13,400
6	15,000	13,400					26,400	33,300	41,200	21,700	10,000	13,000
7	15,000	13,400					22,700	30,400	36,500	21,200	10,000	13,000
8	14,600	13,400				14,900	22,700	31,300	33,300	21,700	11,100	13,000
9	14,200	13,400					22,700	32,300	29,500	21,700	11,900	12,600
10	14,600	13,800					23,300	36,500	27,900	21,700	11,900	11,900
11	14,600	13,800					24,500	37,600	28,700	21,200	12,200	12,200
12	14,200	13,800					26,400	36,500	35,400	20,700	12,200	12,600
13	14,200	13,400				15,300	25,700	33,300	41,200	19,700	12,200	12,600
14	14,200	12,600					26,400	31,300	41,200	20,700	12,200	14,200
15	14,200	13,000	8,450	11,600	18,800		29,500	29,500	42,500	23,300	12,600	15,800
16	14,200	13,000					32,300	27,100	45,100	25,100	16,600	15,800
17	14,200	12,600					34,300	27,100	45,100	27,900	21,700	14,600
18	13,800	12,200				22,200	33,300	26,400	38,800	30,400	28,700	13,000
19	13,800	11,900					35,400	25,100	34,300	26,400	33,300	12,200
20	13,400	11,900					36,500	24,500	32,300	23,300	31,300	12,600
21	13,400	9,280					36,500	25,100	33,300	21,700	30,400	12,200
22	13,800	8,200					35,400	25,100	38,800	20,700	26,400	11,900
23	13,400					21,900	33,300	25,100	37,600	19,700	24,500	11,500
24	13,000	7,840					31,300	25,100	36,500	18,300	22,700	11,100
25	13,000				29,300		30,400	25,700	35,400	17,500	22,200	11,100
26	12,600		8,900	9,150			29,500	25,700	35,400	16,200	20,700	11,500
27	12,600						28,700	26,400	35,400	15,400	19,700	11,100
28	12,600	8,060					28,700	26,400	34,300	14,600	18,800	11,100
29	12,600					29,700	30,400	25,100	31,300	13,800	17,000	11,100
30	12,600						31,300	24,500	27,900	13,400	16,200	10,700
31	13,000							24,500		13,000	15,800	
1930–31												
1	10,400	13,000	11,900	6,060	11,900	13,800	25,600	11,500	35,400	19,300	4,640	5,300
2	10,400	12,600	12,200	6,060	12,200	13,400	22,900	10,700	33,300	17,800	5,480	5,130
3	10,400	12,200	11,900	6,500	13,000	13,000	20,200	10,400	29,500	16,800	6,320	5,300
4	10,700	12,200	11,500	6,500	13,400	12,600	17,000	10,000	27,900	15,900	6,490	5,300
5	10,400	11,900	12,600	6,820	13,800	11,900	13,000	9,280	33,300	15,100	11,500	5,130
6	10,700	11,900	13,800	7,140	13,800	11,100	11,500	8,920	42,500	14,300	14,300	5,960
7	10,700	11,900	14,200	7,660	13,800	11,100	12,200	8,560	47,800	13,900	15,500	4,960
8	10,700	11,900	13,800	8,200	13,800	11,100	12,200	8,560	47,800	14,300	14,700	5,130
9	11,900	11,500	13,800	8,560	13,800	11,500	11,900	8,560	45,100	15,100	12,300	4,960
10	14,200	11,500	13,800	8,740	13,800	11,500	11,100	10,400	45,100	13,900	11,900	4,800
11	14,200	11,500	14,200	9,280	13,400	11,100	10,700	14,200	47,800	12,300	11,900	4,800
12	13,800	12,200	13,800	8,920	13,400	10,700	10,700	13,800	50,600	11,500	13,100	5,130
13	15,000	12,600	13,800	8,200	12,600	10,400	10,700	13,800	50,600	10,700	11,900	5,300
14	17,000	13,000	13,000	7,660	11,100	10,700	10,700	13,800	47,800	9,550	10,300	5,130
15	17,000	13,000	11,900	7,310	11,100	10,700	11,100	13,800	47,800	8,800	9,170	4,960
16	17,000	13,000	10,400	6,980	11,900	10,700	11,100	13,400	46,400	8,250	8,430	4,960
17	17,500	13,000	9,280	6,500	12,200	9,280	10,700	12,200	42,500	8,070	7,710	4,490
18	16,600	12,200	9,280	5,420	12,200	8,380	10,400	11,500	36,500	8,070	6,830	4,340
19	13,800	11,500	8,920	4,600	12,000	8,740	10,400	21,700	34,300	8,250	6,490	4,340
20	13,400	11,100	8,560	4,700	11,900	10,700	10,700	33,300	34,300	7,530	6,320	4,340
21	13,000	10,000	8,560	5,000	11,900	12,600	10,700	40,000	34,300	7,180	6,320	4,340
22	12,600	8,560	8,560	5,540	12,600	15,400	10,700	34,300	33,300	7,180	7,000	4,960
23	12,200	8,560	8,200	5,920	12,600	17,000	10,400	30,400	42,500	7,180	6,490	5,810
24	12,200	8,740	7,840	6,200	13,400	17,900	10,400	26,400	33,300	6,660	5,980	6,320
25	13,000	8,740	7,140	6,820	13,800	20,200	10,400	23,900	27,000	5,980	5,980	9,360
26	14,600	8,740	6,200	7,480	13,800	14,600	11,900	22,200	24,800	5,310	5,470	11,100
27	15,000	8,970	5,920	7,660	13,800	12,200	13,000	20,700	24,000	4,640	5,300	10,300
28	14,600	10,700	6,350	8,560	14,200	12,200	13,000	18,300	24,000	4,340	5,640	10,300
29	14,600	11,900	6,350	9,280		13,400	13,400	18,800	23,400	4,060	5,810	10,300
30	14,600	12,600	6,200	10,000		14,600	13,000	25,700	20,900	3,930	5,810	11,100
31	13,800		6,060	10,700		16,200		33,300		4,200	5,470	

Monthly discharge, in second-feet, of Missouri River near Williston, N. Dak., 1928–1931

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1928–29				
October	17,800	13,400	14,700	904,000
November	15,400	12,300	13,600	809,000
December	12,300	9,080	11,600	713,000
January	13,400	5,650	9,020	555,000
February	9,660	5,910	8,170	454,000
March	97,300	8,380	28,500	1,750,000
April	52,400	17,800	26,800	1,590,000
May	92,400	19,800	38,800	2,390,000
June	105,000	50,600	69,000	4,110,000
July	58,300	12,900	35,800	2,200,000
August	13,400	8,380	11,100	682,000
September	14,700	8,380	11,700	696,000
The year	105,000	5,650	23,300	16,900,000
1929–30				
October	15,000	12,600	13,900	855,000
November	13,800	----------	11,400	678,000
December	----------	----------	8,870	545,000
January	----------	----------	10,900	670,000
February	----------	----------	18,800	1,040,000
March	----------	----------	21,200	1,300,000
April	77,800	22,700	31,900	1,900,000
May	37,600	24,500	29,400	1,810,000
June	49,200	26,400	36,800	2,190,000
July	30,400	13,000	21,100	1,300,000
August	33,300	10,000	17,400	1,070,000
September	15,800	10,700	12,800	762,000
The year	77,800	----------	19,500	14,100,000
1930–31				
October	17,500	10,400	13,400	824,000
November	13,000	8,560	11,400	678,000
December	14,200	5,920	10,300	633,000
January	10,700	4,600	7,260	446,000
February	14,200	11,100	12,900	716,000
March	20,200	8,380	12,500	769,000
April	25,600	10,400	12,700	756,000
May	40,000	8,560	17,800	1,090,000
June	50,600	20,900	37,100	2,210,000
July	19,300	3,930	10,000	615,000
August	15,500	4,640	8,400	516,000
September	11,100	4,340	6,120	364,000
The year	50,600	3,930	13,300	9,620,000

MISSOURI RIVER AT SANISH, N. DAK.

LOCATION.—Wire gage in W. ½ sec. 14, T. 152 N., R. 93 W., at highway bridge at Sanish.

RECORDS AVAILABLE.—September, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year ending Sept. 30, 1929, 90,000 second-feet June 9 (gage height, 9.7 feet); minimum, 5,180 second-feet Feb. 3.

Maximum discharge during year ending Sept. 30, 1930, 81,000 second-feet Apr. 5; maximum gage height, 14.0 feet Feb. 27 (ice effect).

Maximum discharge during year ending Sept. 30, 1931, 47,400 second-feet June 12; minimum, 4,700 second-feet Sept. 20–22 (gage height, 0.03 foot).

REMARKS.—Records good except those for periods of ice effect, Nov. 19, 1928, to Mar. 25, 1929, Nov. 19, 1929, to Apr. 4, 1930, Nov. 14–21, 27, 1930, and Nov. 30, 1930, to Mar. 30, 1931, which are fair. Numerous diversions above station. Several storage reservoirs on tributary streams. Records of discharge in the following tables for the years ending Sept. 30, 1929 and 1930, supersede those published in Water-Supply Papers 686 and 701.

Daily discharge, in second-feet, of Missouri River at Sanish, N. Dak., 1928–1931

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1928–29												
1	13,500	15,400	12,300		6,300	9,260	38,800	29,800	73,200	58,700	16,100	8,820
2	13,500	15,400	12,300		6,000	8,820	50,900	30,900	63,900	60,000	15,400	8,820
3	13,500	15,400	12,300	11,500	5,720	8,820	48,400	32,000	60,000	58,700	14,700	8,820
4	13,500	15,400	11,700		6,000	8,820	40,000	32,000	60,000	58,700	13,500	8,820
5	14,100	14,700	11,200		6,300	10,200	35,300	33,100	63,900	53,500	12,900	8,820
6	14,100	14,700	12,300	10,700	7,200	10,200	32,000	33,100	69,100	52,200	12,900	8,400
7	13,500	14,100	12,300	10,700	6,920	9,700	28,700	33,100	73,200	49,600	12,300	8,820
8	13,500	14,700	12,300	10,200	6,600	8,820	34,200	34,200	81,600	49,600	11,700	8,400
9	13,500	14,700	12,300	10,200	6,600	8,820	33,100	35,300	90,000	47,200	11,700	9,260
10	13,500	14,700	11,200	10,200	6,600	9,260	32,000	30,900	67,800	44,800	10,700	9,260
11	13,500	14,700	10,700	9,260	6,600		34,200	33,100	63,900	42,400	12,300	11,200
12	13,500	14,700	10,200	8,820	6,920		27,600	34,200	77,400	41,200	11,700	11,200
13	13,500	14,700	10,200	9,700	7,260		26,600	34,200	84,400	37,600	11,200	11,200
14	13,500	14,100	10,200	9,260	7,620		24,500	30,900	80,200	36,400	11,200	12,900
15	12,900	14,100	9,700	9,260	8,820		22,500	27,600	78,800	32,000	11,200	14,100
16	12,900	14,100	9,260	9,260	8,820		22,500	27,600	76,000	29,800	11,200	13,500
17	14,100	14,100	9,260	9,260	8,820		21,600	25,500	73,200	26,600	11,200	13,500
18	14,700	14,100	9,700	9,260	9,260	26,200	19,900	24,500	77,400	26,600	10,700	12,900
19	14,700	14,100	9,700	8,820	9,260		19,900	24,500	78,800	28,700	10,700	12,900
20	15,400	14,100		8,820	9,260		19,900	25,500	78,800	27,600	10,200	12,900
21	15,400	13,500		8,820	9,260		19,100	34,200	80,200	26,600	10,200	12,300
22	16,100	14,100		9,260	8,820		19,900	38,800	76,000	29,800	9,700	12,900
23	16,100	14,100		9,700	8,400		20,700	42,400	67,800	29,800	9,260	14,100
24	16,800	13,500		9,260	10,200		20,700	43,600	62,600	26,600	9,260	14,100
25	16,800	13,500	10,000	8,820	10,200		21,600	44,800	58,700	25,500	9,260	13,500
26	17,600	13,500		8,400	10,200	85,800	24,500	48,400	57,400	23,500	9,260	12,900
27	18,300	13,500		8,400	10,200	63,900	26,600	60,000	58,700	23,500	9,260	12,300
28	17,600	13,500		8,400	9,700	50,900	27,600	65,200	56,100	21,600	8,820	12,900
29	16,800	13,500		7,620	-------	41,200	29,800	69,100	56,100	21,600	8,820	13,500
30	16,100	12,900		7,620	-------	63,900	30,900	71,800	56,100	16,800	8,400	14,100
31	16,100	-------		6,920	-------	52,200	-------	81,600	-------	16,800	8,820	-------

Daily discharges, in second-feet, of Missouri River at Sanish, N. Dak., 1928–1931—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1929–30												
1	13,300	12,500						35,000	25,400	32,200	13,300	17,900
2	13,300	12,500						37,000	29,500	28,600	12,500	16,400
3	14,100	12,900	9,500	13,500	8,790	28,500	47,700	40,100	45,800	28,600	12,100	16,400
4	13,700	12,900						38,000	44,600	27,000	11,500	15,400
5	14,500	13,300					81,000	36,000	42,300	27,000	11,200	15,400
6	14,100	13,300					27,800	34,000	41,200	23,300	10,500	14,100
7	14,900	14,100					26,200	34,000	38,000	24,700	10,500	14,100
8	14,500	13,700	8,730	12,800	9,660	16,900	24,700	33,100	34,000	24,000	10,200	13,700
9	14,500	13,700					25,400	35,000	32,200	24,700	10,200	13,700
10	14,100	13,300					24,000	36,000	30,400	23,300	10,500	13,300
11	14,100	13,300					26,200	35,000	30,400	24,000	11,200	12,500
12	13,300	12,900					28,600	32,200	31,300	22,600	11,800	12,900
13	13,300	12,900	8,100	9,740	9,500	13,000	29,500	30,400	43,400	22,600	12,500	12,900
14	14,100	12,500					27,800	27,800	49,400	21,400	12,100	13,300
15	14,500	12,900					27,800	27,000	44,600	21,400	12,900	13,700
16	13,700	12,500					27,800	27,000	44,600	24,000	12,500	15,900
17	14,100	13,300					30,400	27,000	47,000	27,800	14,100	17,400
18	14,100	13,300	6,890	6,850	17,400	18,900	30,400	26,200	41,200	32,200	22,000	16,400
19	14,100						33,100	24,700	38,000	34,000	32,200	14,500
20	13,700						34,000	24,700	28,600	29,500	31,300	13,700
21	13,700	9,610					37,000	27,000	29,500	27,000	32,200	13,300
22	13,300						35,000	27,800	39,000	24,000	27,800	13,300
23	13,700		8,370	6,880	30,100	25,300	34,000	27,800	42,300	23,300	24,000	13,300
24	12,900						30,400	27,000	40,100	20,800	23,300	12,500
25	12,900						31,300	27,800	39,000	20,200	23,300	12,100
26	12,500						27,800	27,800	37,000	17,900	23,300	12,100
27	12,900				28,000		27,800	30,400	39,000	16,900	22,600	12,100
28	12,500	9,430	11,200	8,190		23,200	27,800	31,300	38,000	15,900	21,400	11,800
29	13,300				-------		30,400	28,600	41,200	15,900	21,400	11,800
30	12,500				-------		33,100	27,800	34,000	14,500	18,400	11,800
31	12,500	-------			-------		-------	27,000	-------	13,700	17,900	-------
1930–31												
1	11,800	15,900	7,980	7,100	10,500	12,100	10,500	14,100	31,600	22,600	5,120	5,700
2	11,500	14,500	8,280	6,560	10,800	12,100	11,500	13,300	32,000	19,800	5,300	5,500
3	11,500	13,700	8,600	6,300	11,500	12,100	41,200	12,100	30,100	18,000	5,700	5,300
4	11,500	13,700	9,240	6,300	11,500	12,100	15,400	11,500	28,700	17,500	6,100	5,120
5	11,500	12,900	10,800	6,050	12,100	11,800	12,500	11,200	29,000	17,000	6,500	5,120
6	11,500	13,300	10,800	5,560	12,900	11,800	12,100	10,800	33,700	16,000	8,280	5,120
7	11,500	12,900	10,800	5,560	12,900	11,500	11,500	10,200	43,000	15,000	14,100	5,120
8	11,500	12,500	11,800	6,050	12,900	11,500	11,200	10,200	46,200	14,100	16,000	4,960
9	11,800	12,500	12,500	6,050	12,500	11,500	12,100	9,560	45,400	15,000	15,500	4,960
10	11,800	12,500	12,900	6,300	12,100	11,500	11,500	9,880	40,400	15,000	12,800	5,120
11	13,700	12,500	12,100	6,560	12,500	11,800	11,200	11,200	43,200	14,100	11,900	4,960
12	15,900	12,500	12,100	6,830	12,100	12,100	10,800	12,900	47,400	12,800	11,500	4,820
13	16,400	12,900	12,100	6,830	12,100	12,100	10,800	15,400	47,100	11,500	13,600	4,960
14	18,400	12,900	11,800	7,380	11,800	12,100	11,800	15,400	45,000	10,800	12,800	5,120
15	20,800	13,300	11,200	7,380	11,200	12,100	11,500	16,400	43,300	9,640	10,800	5,120
16	21,400	12,900	11,500	7,380	11,200	12,500	11,800	17,400	43,200	9,270	9,270	5,120
17	21,400	13,700	10,800	7,100	10,800	12,900	11,500	19,000	42,800	8,580	8,280	4,960
18	19,000	13,300	9,580	6,830	10,800	12,900	11,500	16,900	41,200	7,980	7,980	4,820
19	18,400	12,900	8,920	7,100	11,500	12,500	11,500	17,400	38,000	7,980	7,170	4,820
20	15,900	11,800	8,920	5,330	11,500	12,500	11,200	29,500	35,000	8,280	6,710	4,700
21	14,100	11,200	8,920	4,900	11,200	12,500	11,200	33,100	35,000	7,980	6,500	4,700
22	14,100	7,680	8,920	5,330	11,500	14,100	11,200	34,000	37,000	7,430	6,300	4,700
23	13,300	7,680	9,240	5,800	11,500	14,500	11,800	29,500	38,000	7,170	6,300	4,960
24	13,300	7,980	9,560	6,830	11,800	14,100	11,500	24,000	43,400	7,170	6,500	5,120
25	13,300	7,980	8,600	7,380	11,800	15,900	11,500	21,400	37,000	7,170	6,300	5,900
26	14,100	7,980	7,980	7,980	12,100	11,200	11,200	19,000	28,600	6,710	5,900	6,100
27	15,400	7,830	7,680	8,280	11,800	13,300	12,100	19,600	27,000	6,100	6,100	8,280
28	16,400	7,680	7,380	8,920	11,800	11,500	13,700	18,400	26,200	5,900	5,500	9,270
29	16,400	7,100	7,380	9,240	-------	9,560	14,500	18,400	26,200	5,500	5,500	9,270
30	16,400	7,100	7,100	9,560	-------	10,200	14,900	17,900	19,200	5,300	5,300	9,640
31	16,400	-------	7,380	9,880	-------	10,500	-------	26,200	-------	5,120	5,500	-------

Monthly discharge, in second-feet, of Missouri River at Sanish, N. Dak., 1928–1931

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1928–29				
October	18,300	12,900	14,800	910,000
November	15,400	12,900	14,300	851,000
December	12,300	9,260	10,600	652,000
January		6,920	9,500	584,000
February	10,200	5,720	8,000	444,000
March	85,800	8,820	27,200	1,670,000
April	50,900	19,100	28,500	1,700,000
May	81,600	24,500	39,100	2,400,000
June	90,000	56,100	70,000	4,170,000
July	60,000	16,800	36,300	2,230,000
August	16,100	8,400	11,100	682,000
September	14,100	8,400	11,600	690,000
The year	90,000	5,720	23,500	17,000,000
1929–30				
October	14,900	12,500	13,600	836,000
November	14,100		11,700	696,000
December			8,880	546,000
January			9,610	591,000
February			16,500	916,000
March			21,000	1,290,000
April	81,000	24,000	33,700	2,010,000
May	40,100	24,700	30,700	1,890,000
June	49,400	25,400	38,000	2,260,000
July	34,000	13,700	23,600	1,450,000
August	32,200	10,200	17,400	1,070,000
September	17,900	11,800	13,900	827,000
The year	81,000		19,900	14,400,000
1930–31				
October	21,400	11,500	14,900	916,000
November	15,900	7,100	11,400	678,000
December	12,900	7,100	9,780	601,000
January	9,880	4,900	6,920	425,000
February	12,900	10,500	11,700	650,000
March	15,900	9,560	12,200	750,000
April	41,200	10,500	12,900	768,000
May	34,000	9,560	17,600	1,080,000
June	47,400	19,200	36,800	2,190,000
July	22,600	5,120	11,000	676,000
August	16,000	5,120	8,420	518,000
September	9,640	4,700	5,650	336,000
The year	47,400	4,700	13,300	9,590,000

MISSOURI RIVER AT BISMARCK, N. DAK.

LOCATION.—Water-stage recorder in sec. 31, T. 139 N., R. 80 W., at Bismarck city water plant. Prior to Oct. 17, 1928, a chain gage at railroad bridge four-tenths mile upstream was used.

DRAINAGE AREA.—187,000 square miles.

RECORDS AVAILABLE.—September, 1904, to December, 1905; October, 1927, to September, 1931.

EXTREMES.—Maximum discharge during year ending Sept. 30, 1929, 112,000 second-feet June 10; maximum gage height, 17.8 feet Mar. 17 (ice gorge); minimum discharge, 6,080 second-feet Feb. 5–7.

Maximum discharge during year ending Sept. 30, 1930, 78,000 second-feet Apr. 5; maximum gage height, 11.38 feet Mar. 6 (ice jam); minimum discharge, 5,720 second-feet Dec. 23, 24.

Maximum discharge during year ending Sept. 30, 1931, 47,200 second-feet June 10 (gage height, 5.31 feet); minimum, 5,460 second-feet Sept. 15 (gage height −1.93 feet).

1904–5, 1928–1931: Maximum discharge recorded, 201,000 second-feet Mar. 24, 1928 (gage height, 13.2 feet); maximum gage, height, 17.8 feet Mar. 27, 1929, during ice gorge; minimum discharge, that of Sept. 15, 1931.

REMARKS.—Records good except those for periods of ice effect, Dec. 2, 1928, to Mar. 25, 1929, Nov. 21, 1929, to Apr. 2, 1930, Nov. 19, 1930, to Mar. 24, 1931, and Mar. 27–31, 1931, which are fair. Numerous diversions above station. Tributaries partly regulated by storage reservoirs. Records of discharge in the following tables for the years ending Sept. 30, 1929 and 1930, supersede those published in Water-Supply Papers 686 and 701.

Daily discharge, in second-feet, 1928–1931

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1928–29												
1	13,400	17,600	12,400		7,540	10,200	59,500	31,700	95,700	53,300	21,900	10,200
2	13,400	17,200	12,000		7,120	10,200	51,300	33,900	99,200	56,500	20,700	9,850
3	13,400	16,800	11,400		6,400	9,600	55,300	33,900	89,500	61,500	19,500	9,850
4	14,000	16,400	11,400		6,400	9,040	59,500	33,900	76,100	61,500	18,400	9,850
5	14,000	16,400	11,400		6,080	9,040	52,600	32,800	66,800	59,800	17,900	9,850
6	14,000	15,600	10,800	12,300	6,080	9,040	45,000	32,800	68,700	61,500	16,900	9,850
7	14,000	15,600	12,000		6,080	9,600	37,400	32,800	76,100	58,100	16,400	9,850
8	14,000	15,600	11,400		6,400	9,600	32,800	32,800	83,700	53,300	15,400	9,850
9	14,000	15,600	11,400		6,400	9,600	35,400	33,900	108,000	51,700	15,400	9,850
10	14,000	16,000	11,400		6,740	10,200	41,100	33,900	116,000	50,200	14,900	9,850
11	13,400	16,000	10,200	11,700	6,740	10,200	41,100	30,600	93,400	47,200	14,400	9,850
12	13,400	15,600	9,040	11,100	7,120	10,800	37,400	31,700	72,400	41,600	14,400	9,850
13	12,800	15,600	9,040	10,500	7,120	11,400	31,700	35,100	76,100	37,800	14,400	10,600
14	12,800	15,600	9,040	9,890	7,540	12,000	29,500	36,200	89,500	36,600	14,000	11,000
15	12,800	15,600	9,600	9,320	8,000	13,400	28,400	36,200	87,600	34,400	14,000	11,400
16	12,800	16,000	9,600	8,770	9,040		25,300	32,800	81,800	32,300	14,000	11,800
17	12,800	16,400	10,200	8,770	10,500		23,300	31,700	78,000	30,400	13,500	12,600
18	13,700	15,600	10,200	8,770	10,800		23,300	30,600	78,000	28,600	13,100	13,100
19	14,100	15,600	9,040	8,770	11,100		22,400	30,600	76,100	27,700	13,100	13,500
20	14,800	15,200	8,000	8,770	11,400		22,400	30,600	79,900	26,900	13,500	13,100
21	15,200	15,600		9,320	11,100	40,400	21,500	29,500	85,600	27,700	13,100	13,100
22	15,200	14,400		9,890	10,200		21,500	31,700	87,600	28,600	12,200	13,100
23	15,600	14,400		9,890	10,500		22,400	33,900	85,600	28,600	11,800	12,600
24	16,000	14,100		10,500	10,200		22,400	38,600	76,100	29,500	11,400	12,600
25	16,400	14,100		11,100	10,500		23,300	41,100	66,800	31,300	11,000	12,600
26	16,800	15,200	8,000	11,700	10,800	77,300	24,300	41,100	61,500	30,400	10,600	12,600
27	17,200	15,200		11,700	11,100	85,400	25,300	43,600	59,800	29,500	10,200	12,600
28	17,600	14,400		10,500	11,100	93,900	26,300	59,500	56,500	28,600	10,200	12,600
29	18,000	13,700		9,890	-------	77,300	28,400	66,700	54,900	27,700	10,200	12,200
30	18,000	13,700		9,320	-------	52,600	30,600	78,900	54,900	26,100	10,200	12,200
31	18,000	-------		8,250	-------	62,300	-------	87,100	-------	23,900	10,200	-------

Daily discharge, in second-feet, of Missouri River at Bismarck, N. Dak., 1928–1931—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1929–30												
1	12,200	13,500	6,700				48,700	26,900	30,400	36,600	14,900	20,600
2	12,200	13,500	6,970				58,100	28,600	29,500	34,400	14,400	19,500
3	12,600	13,100	7,540	7,000	6,450	30,600	59,800	32,300	28,600	31,300	13,500	18,400
4	12,600	13,100	8,470				68,700	36,600	43,700	29,500	13,500	17,400
5	13,100	13,500	9,140				72,400	39,000	59,800	28,600	12,600	17,400
6	13,500	13,100	11,000				59,800	35,500	59,800	26,900	12,200	16,900
7	14,000	13,100	14,400				47,200	33,300	50,200	25,400	12,200	16,400
8	14,000	13,100	14,000	9,500	7,300	21,800	27,700	32,300	42,900	23,200	11,800	15,900
9	14,400	13,500	11,400				24,600	33,300	37,800	21,900	11,000	15,400
10	14,900	13,500	8,800				24,600	34,400	35,500	21,300	11,000	14,900
11	14,900	13,500	7,540				24,600	35,500	33,300	20,700	10,600	14,400
12	14,400	13,500	7,250				24,600	36,600	34,400	20,700	10,600	14,400
13	14,400	13,500	7,540	13,500	8,700	19,900	25,400	40,300	35,500	20,700	11,800	14,400
14	14,400	13,500	7,540				26,100	39,000	39,800	20,700	12,200	14,000
15	14,400	13,500	7,250				27,700	40,300	48,700	20,700	12,200	13,500
16	14,000	13,500	7,250				28,600	37,800	44,300	19,500	12,600	13,500
17	14,000	13,500	6,970				30,400	35,500	42,900	19,000	12,600	14,000
18	14,000	13,100	6,970	10,400	16,000	28,100	30,400	27,700	44,300	19,000	12,600	15,900
19	14,000	13,100	7,250				33,300	26,900	42,900	20,700	13,100	16,900
20	14,000	12,600	7,250				34,400	26,900	36,600	23,900	17,200	16,900
21	14,000	12,600	6,700				34,400	27,700	32,300	27,700	32,800	16,400
22	14,400	13,500	6,190				35,500	26,900	31,300	28,600	39,000	14,900
23	14,400	12,600	5,720	6,800	32,000	33,800	33,300	25,400	30,300	26,100	33,300	14,000
24	14,000	12,200	5,720				31,300	25,400	33,300	23,200	26,100	13,100
25	14,000	11,800	5,950				28,600	26,100	35,500	21,300	23,900	13,100
26	14,000	11,400	6,190				26,700	26,100	36,600	20,100	23,200	12,600
27	13,500	11,000	6,700		32,000		26,900	26,900	36,600	19,000	23,200	12,200
28	13,500	9,850	7,540				26,100	27,700	36,600	17,900	22,500	11,800
29	13,500	8,150	8,150	6,000		35,700	26,100	28,600	35,500	16,900	23,200	11,800
30	13,500	7,540	7,840				26,100	31,300	36,600	16,400	22,500	11,400
31	13,500		7,540					31,300		15,400	21,900	
1930–31												
1	11,400	14,900	6,570	6,700	7,690	10,400	26,900	12,200	15,400	23,900	6,410	6,200
2	11,400	14,900	6,320	6,570	7,840	10,800	23,200	12,800	17,400	23,300	6,200	6,200
3	11,400	15,400	6,190	6,570	8,310	11,600	13,100	13,300	29,500	21,600	6,200	6,200
4	11,400	14,900	6,320	6,570	8,640	12,000	16,900	13,700	32,300	20,500	6,200	6,000
5	11,800	14,400	6,440	6,440	9,140	12,000	26,100	13,100	30,400	19,500	6,410	6,000
6	11,400	14,400	6,320	6,320	9,490	12,000	14,500	12,800	28,600	18,500	6,860	6,000
7	11,800	14,400	6,440	6,190	10,200	12,000	11,400	12,300	26,900	17,500	7,340	5,810
8	11,800	14,000	7,250	5,950	11,000	12,000	11,800	11,900	33,300	16,600	7,840	5,810
9	11,800	13,500	8,000	5,950	11,800	12,000	11,400	11,300	45,700	15,700	8,930	5,810
10	11,800	13,500	8,800	5,840	12,600	12,000	11,800	10,900	45,700	14,900	12,000	5,810
11	11,800	13,500	9,490	5,950	12,200	12,000	11,800	10,400	41,600	14,500	14,900	5,630
12	12,600	13,500	9,850	6,190	11,800	12,000	12,200	10,700	41,600	14,500	15,300	5,630
13	12,600	13,500	9,850	6,700	11,400	12,000	11,400	10,900	40,300	14,000	14,000	5,630
14	13,500	13,100	10,600	7,110	11,000	12,000	11,400	11,200	42,900	13,200	13,200	5,630
15	15,400	13,500	11,000	7,250	10,600	11,200	11,400	12,200	42,900	12,000	12,800	5,460
16	15,900	13,500	11,400	7,250	10,200	11,200	11,000	14,000	41,600	11,700	12,400	5,440
17	19,500	13,500	11,800	7,400	9,850	11,200	11,000	14,900	40,300	10,600	12,000	5,630
18	16,900	13,500	11,800	7,400	9,850	12,000	11,400	15,500	39,000	9,880	11,300	5,630
19	14,400	12,200	11,800	7,400	9,490	12,500	11,400	15,800	37,800	8,930	10,200	5,630
20	14,400	12,600	11,400	7,540	9,140	13,400	11,400	15,500	35,500	8,930	9,550	5,810
21	13,500	13,100	11,000	7,690	9,140	14,300	11,000	16,400	33,300	8,640	8,930	5,810
22	13,100	13,500	10,600	7,540	9,140	15,300	11,000	27,300	32,300	8,360	8,360	5,810
23	12,600	13,100	9,490	7,110	9,850	18,400	11,000	31,500	33,300	7,840	7,840	6,000
24	12,600	11,800	8,800	6,440	9,850	23,300	11,000	29,500	33,300	7,590	7,340	6,410
25	13,500	10,600	8,310	6,070	10,200	15,400	11,000	26,100	33,300	7,340	7,100	6,410
26	13,500	8,800	8,310	6,070	10,200	13,500	11,000	23,500	40,300	7,340	7,100	6,410
27	13,500	7,840	8,000	6,190	10,600	12,500	11,400	21,800	37,700	7,100	7,340	6,630
28	13,500	6,970	8,000	6,440	10,600	13,400	11,400	20,600	31,400	6,860	7,100	7,340
29	13,500	6,970	7,690	6,570		14,800	11,400	18,900	27,200	6,630	6,630	7,840
30	14,400	6,970	7,540	6,970		17,800	11,400	17,900	25,100	6,630	6,410	8,930
31	14,900		7,250	7,110		21,900		17,400		6,410	6,410	

Monthly discharge, in second-feet, of Missouri River at Bismarck, N. Dak., 1928–1931

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1928–29				
October	18,000	12,800	14,700	904,000
November	17,600	13,700	15,500	922,000
December	12,400		9,600	590,000
January		8,250	10,700	658,000
February	11,400	6,080	8,580	477,000
March	93,900	9,040	32,500	2,000,000
April	59,500	21,500	33,400	1,990,000
May	87,100	29,500	39,000	2,400,000
June	116,000	54,900	79,400	4,720,000
July	61,500	23,900	39,400	2,420,000
August	21,900	10,200	14,100	867,000
September	13,500	9,850	11,400	678,000
The year	116,000	6,080	25,700	18,600,000
1929–30				
October	14,900	12,200	13,800	848,000
November	13,500	7,540	12,600	750,000
December	14,400	5,720	7,920	487,000
January			8,770	539,000
February			16,000	889,000
March			28,600	1,760,000
April	72,400	24,600	35,700	2,120,000
May	40,300	25,400	31,700	1,950,000
June	59,800	28,600	38,800	2,310,000
July	36,600	15,400	23,100	1,420,000
August	39,000	10,600	17,600	1,080,000
September	20,600	11,400	15,100	898,000
The year	72,400	5,720	20,800	15,100,000
1930–31				
October	19,500	11,400	13,300	818,000
November	15,400	6,970	12,500	744,000
December	11,800	6,190	8,790	540,000
January	7,690	5,840	6,690	411,000
February	12,600	7,690	10,100	561,000
March	23,300	10,400	13,400	824,000
April	26,900	11,000	13,100	780,000
May	31,500	10,400	16,300	1,000,000
June	45,700	15,400	34,500	2,050,000
July	23,900	6,410	12,600	775,000
August	15,300	6,200	9,050	556,000
September	8,930	5,460	6,120	364,000
The year	45,700	5,460	13,000	9,420,000

MISSOURI RIVER NEAR MOBRIDGE, S. DAK.

LOCATION.—Wire gage in sec. 7, T. 18 N., R. 30 E., 3 miles west of Mobridge and 4 miles below mouth of Grand River. Prior to Mar. 28, 1929, station was 5 miles upstream at a site above mouth of Grand River, but records include flow of Grand River, as discharge measurements for that station were made at site of present station. Zero of present gage is 1,529.25 feet above mean sea level.

DRAINAGE AREA.—209,000 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year ending Sept. 30, 1929, 164,000 second-feet Mar. 29 (gage height, 11.4 feet).

Maximum discharge during year ending Sept. 30, 1930, 93,100 second-feet Apr. 6 (gage height, 8.49 feet).

Maximum discharge during year ending Sept. 30, 1931, 42,200 second-feet June 16 (gage height, 7.76 feet); minimum, 5,010 second-feet Sept. 16 (gage height, 0.25 foot).

1928–1931: Maximum discharge, 164,000 second-feet Mar. 29, 1929 (gage height, 11.4 feet); minimum, that of Sept. 16, 1931.

REMARKS.—Records good except those for periods of ice effect, Dec. 4, 1928, to Mar. 19, 1929, Nov. 22, 1929, to Mar. 31, 1930, and Nov. 26, 1930, to Apr. 6, 1931, which are fair and are based on temperature records and two current-meter measurements made in winter of 1928–29, one in winter of 1929–30, and six in winter of 1930–31. Records of discharge in the following tables for the years ending Sept. 30, 1929 and 1930, supersede those published in Water-Supply Papers 686 and 701.

Daily discharge, in second-feet, 1928–1931

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1928–29												
1	14,600	17,100	14,100				72,700	26,500	107,000	54,900	25,000	11,200
2	14,400	17,000	12,400				59,800	28,100	115,000	54,200	22,000	11,200
3	14,400	16,800	12,100			11,000	51,900	28,900	112,000	54,900	20,000	11,000
4	14,300	16,700					59,200	30,700	92,200	60,500	18,900	10,800
5	14,300	16,500		13,100	7,900		62,800	32,300	68,900	62,300	18,500	10,600
6	14,300	16,200					52,200	33,100	60,500	62,300	17,800	10,500
7	14,200	16,200	9,400				44,600	34,100	63,500	64,000	17,100	10,500
8	14,200	16,200					38,400	32,800	71,200	58,200	16,400	10,500
9	14,300	16,000					36,000	32,300	88,500	55,500	15,800	10,500
10	14,200	15,900				11,000	38,000	31,700	124,000	53,000	15,500	10,500
11	14,200	16,100					45,800	29,700	125,000	49,000	15,300	10,900
12	14,000	15,900					45,600	28,900	87,400	46,000	15,200	10,700
13	14,000	15,900					42,300	27,200	58,600	45,000	15,100	10,100
14	14,200	16,000					34,700	29,100	77,100	44,000	14,700	10,100
15	14,200	16,200					32,300	31,200	92,200	43,000	14,400	10,300
16	14,200	15,900	8,400	11,100	9,070	18,000	28,300	32,100	87,700	38,000	14,600	10,500
17	14,200	16,200					27,600	30,600	80,400	33,400	14,600	10,800
18	14,400	16,500					25,600	28,900	80,900	32,200	14,500	11,400
19	14,700	16,700					24,600	26,900	78,800	29,800	13,900	12,000
20	14,600	16,700				36,200	23,900	26,600	82,500	28,900	13,900	12,300
21	15,200	16,700				90,600	23,200	26,400	90,400	28,600	14,400	13,000
22	15,500	17,300				58,700	22,200	25,800	96,600	28,400	13,700	13,400
23	15,800	16,800				49,800	22,300	26,100	98,500	29,300	13,500	13,300
24	15,700	16,700				44,500	22,100	29,400	95,000	30,200	13,000	13,300
25	15,700	16,800			11,000	42,700	22,000	32,600	76,600	29,400	12,700	13,300
26	15,900	16,500	9,100	9,550		41,300	22,300	45,500	71,500	30,100	12,500	13,800
27	16,200	16,300				58,700	22,900	45,300	62,800	30,600	12,100	13,700
28	16,400	16,300				101,000	23,100	52,900	61,900	30,000	11,700	13,200
29	16,600	13,700				153,000	24,200	72,300	57,700	29,000	11,400	13,000
30	16,800	13,900				115,000	25,300	89,600	57,300	29,000	11,300	12,900
31	17,100	-------				53,200	-------	106,000	-------	28,000	11,300	-------

Daily discharge, in second-feet, of Missouri River near Mobridge, S. Dak., 1928–1931—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1929–30												
1	13,000	13,600					33,000	27,500	24,600	32,700	15,700	20,000
2	12,900	13,600					37,500	28,100	27,000	32,600	14,900	19,200
3	13,000	13,400				34,100	41,700	28,500	27,100	33,000	14,400	18,700
4	12,900	12,900					53,200	30,700	25,900	28,800	13,700	17,600
5	13,100	13,000	8,400		12,000		65,400	37,500	43,200	26,900	13,100	16,900
6	13,100	12,900					82,800	45,300	62,600	25,800	12,200	16,300
7	13,700	12,700					72,900	40,400	61,400	25,200	12,300	15,600
8	14,300	12,500		9,100		31,200	56,600	39,900	51,400	25,200	11,600	15,300
9	14,800	12,700					33,400	39,000	42,800	24,800	11,300	15,300
10	15,300	13,100					30,000	37,800	35,500	23,300	11,000	14,900
11	15,400	13,500					28,600	34,200	31,100	22,100	10,600	14,000
12	15,500	13,300					28,600	35,200	30,200	21,100	9,940	13,700
13	15,500	13,200	7,400			23,300	27,600	42,500	29,400	20,900	9,710	13,400
14	15,600	13,300					26,300	53,500	31,000	20,600	9,650	13,400
15	15,500	13,300			14,500		26,200	50,400	40,200	20,600	10,300	13,300
16	15,100	13,400					27,800	41,600	51,600	20,200	10,800	13,100
17	15,000	13,400					29,900	36,700	48,600	19,900	11,200	13,100
18	14,600	13,300	6,400			28,500	33,800	32,600	43,600	19,500	11,600	13,300
19	14,200	13,000					33,100	29,400	49,000	18,500	11,800	13,500
20	14,300	12,900					33,100	28,600	51,600	18,700	12,200	14,900
21	14,600	12,800				40,000	34,800	26,400	43,600	19,900	12,500	15,600
22	14,400					42,000	33,100	26,600	36,400	22,800	22,600	17,200
23	14,100	12,100	6,900	8,100		45,000	34,300	25,600	35,800	25,100	40,400	16,800
24	14,000					50,000	33,900	24,600	34,100	26,300	43,800	15,800
25	14,100				19,500	45,000	31,700	23,400	34,200	24,300	33,100	14,700
26	14,000					40,000	28,600	24,300	40,600	22,000	24,800	14,400
27	13,900					38,000	28,900	24,500	39,000	19,900	23,600	13,900
28	14,000	10,200	7,500			38,000	27,500	24,700	36,100	19,100	23,000	13,500
29	14,000				-------	38,000	28,700	24,700	32,600	18,400	22,100	13,200
30	13,900				-------	37,000	28,500	24,900	31,700	17,200	21,600	13,000
31	13,700	-------			-------	37,400	-------	25,900	-------	16,400	20,800	-------

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1930–31											
1	12,900	14,400				7,000	11,600	17,400	27,700	7,510	6,780
2	12,700	15,200				7,000	11,800	17,200	25,800	7,240	6,700
3	12,600	15,800		7,700	11,800	8,000	12,300	16,900	25,200	6,890	6,380
4	12,600	16,000				25,000	13,000	22,100	23,500	6,480	6,270
5	12,700	16,700	6,700			23,000	13,700	29,400	22,200	6,270	6,270
6	12,800	15,600				32,000	14,100	30,200	20,300	6,590	6,290
7	12,800	15,000				26,800	14,200	28,700	20,200	6,810	6,020
8	12,600	14,400		8,300	13,400	19,600	13,600	27,200	19,100	6,860	6,000
9	12,400	14,100				17,600	13,200	31,700	18,200	7,930	5,890
10	12,600	13,700				16,500	12,900	39,900	16,500	7,930	5,670
11	12,300	13,300	7,000			15,600	12,400	40,200	15,800	8,120	5,380
12	12,200	13,200	7,260			14,400	11,900	38,500	14,900	10,300	5,540
13	12,300	13,000	6,600	7,300	12,800	14,300	11,500	37,600	14,200	12,300	5,460
14	12,400	12,900	5,700			13,800	11,300	39,300	14,400	14,200	5,300
15	12,700	12,900	5,500			13,200	11,200	40,200	14,300	13,800	5,190
16	13,200	12,900				12,500	11,300	41,400	13,400	13,100	5,010
17	17,700	12,900				12,100	11,500	40,100	12,700	12,800	5,190
18	25,800	12,800	6,400	11,200	13,700	11,400	12,200	40,800	11,900	12,800	5,140
19	23,500	12,800				11,700	13,100	40,600	11,200	12,500	5,160
20	18,400	11,800				11,200	14,000	39,800	10,500	11,800	5,480
21	16,900	12,800				11,500	14,600	38,200	10,000	11,000	6,350
22	17,000	9,740				11,400	14,700	37,200	9,590	10,200	6,190
23	16,200	8,140		11,700	17,400	11,400	21,200	35,600	9,170	9,440	6,080
24	14,600	7,600				11,400	30,500	34,800	8,470	8,930	5,920
25	14,600	7,200				11,400	29,200	34,600	8,560	8,300	6,020
26	14,400		7,100			11,000	25,300	34,200	8,610	7,350	6,430
27	14,200			11,200		10,900	22,700	34,800	8,180	7,370	6,540
28	13,800	7,000			11,800	11,000	20,900	34,900	7,980	7,320	6,460
29	13,600			-------		11,200	18,800	34,400	7,870	7,480	6,380
30	13,500			-------		11,200	18,300	30,500	8,150	7,350	6,940
31	13,800	-------		-------		-------	17,700	-------	7,930	6,970	-------

Monthly discharge, in second-feet, of Missouri River near Mobridge, S. Dak., 1928–1931

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1928–29				
October	17,100	14,000	14,900	916,000
November	17,100	13,700	16,300	970,000
December	14,100		9,310	572,000
January			11,200	689,000
February			9,200	511,000
March	153,000		35,300	2,170,000
April	72,700	22,000	35,900	2,140,000
May	106,000	25,800	37,200	2,290,000
June	125,000	57,300	84,100	5,000,000
July	64,000	28,000	41,700	2,560,000
August	25,000	11,300	15,200	935,000
September	13,800	10,100	11,600	690,000
The year	153,000		26,800	19,400,000
1929–30				
October	15,600	12,900	14,200	873,000
November	13,600		12,500	744,000
December			7,500	461,000
January			8,580	528,000
February			15,000	833,000
March	50,000		33,400	2,050,000
April	82,800	26,200	37,000	2,200,000
May	45,300	23,400	32,700	2,010,000
June	62,600	24,600	39,100	2,330,000
July	33,000	16,400	23,000	1,410,000
August	43,800	9,650	17,000	1,050,000
September	20,000	13,000	15,100	898,000
The year	62,600		21,300	15,400,000
1930–31				
October	25,800	12,200	14,500	892,000
November	16,100		12,000	714,000
December			[a] 7,600	467,000
January			6,750	415,000
February			9,450	525,000
March			13,400	824,000
April	32,000	7,000	14,200	845,000
May	30,500	11,200	15,600	959,000
June	41,400	16,900	33,600	2,000,000
July	27,700	7,870	14,400	885,000
August	14,200	6,270	9,160	563,000
September	6,940	5,010	5,950	354,000
The year	41,400		13,000	9,440,000

[a] Estimated.

MISSOURI RIVER AT CHAMBERLAIN, S. DAK.

LOCATION.—Staff gage in sec. 16, T. 104 N., R. 71 W., at Chamberlain. Zero of gage is 1,330.8 feet above mean sea level.
DRAINAGE AREA.—250,000 square miles.
RECORDS AVAILABLE.—August, 1928, to September, 1929; discontinued.
EXTREMES.—Maximum discharge during year, 151,000 second-feet June 4; maximum gage height, 9.26 feet Mar. 30; minimum discharge, 7,680 second-feet Dec. 11 (gage height, −1.2 feet).
REMARKS.—Records fair. Discharge estimated because of ice Jan. 1 to Mar. 16

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15,800	15,600	15,100				77,000	25,100	113,000	65,300	27,700	12,300
2	15,800	16,500	14,700				69,100	24,700	118,000	63,100	27,400	11,900
3	15,800	16,800	13,600			16,000	75,400	25,800	140,000	61,200	26,000	12,300
4	15,600	16,800	10,400				68,000	27,300	146,000	60,100	23,800	11,900
5	15,300	17,400	12,300				61,600	29,200	138,000	59,000	22,600	11,900
6	15,300	17,400	10,800	12,000	8,600		66,800	31,500	117,000	62,300	21,900	11,900
7	15,300	17,400	8,620				66,600	33,000	96,600	68,200	20,600	12,300
8	15,300	17,400	9,160			18,000	57,300	34,600	89,000	68,400	20,000	12,300
9	15,300	17,400	8,490				52,800	36,400	93,000	70,000	19,100	12,700
10	15,000	17,100	7,820				53,800	38,400	100,000	68,400	18,600	12,300
11	15,000	16,800	7,680				56,500	39,200	122,000	62,400	18,100	12,300
12	14,800	16,800	7,820				53,200	39,300	147,000	55,600	18,000	12,300
13	15,300	16,800	9,570				52,400	40,700	131,000	54,000	17,900	12,300
14	15,300	17,100	9,710			35,000	52,200	41,200	97,000	54,000	17,500	11,800
15	15,800	16,200	9,850	11,500	9,800		50,600	40,300	85,600	51,400	17,300	11,400
16	15,800	16,200	9,710				44,800	38,800	100,000	44,400	16,600	11,300
17	15,800	16,800	9,160			52,800	39,600	38,900	106,000	39,900	16,100	11,200
18	15,800	16,500	8,490			39,600	37,900	39,200	98,600	37,900	15,600	11,000
19	14,800	17,100	8,360			31,600	35,500	42,600	96,000	37,900	15,500	11,000
20	14,800	16,800	8,080			27,500	32,400	42,400	88,200	36,700	15,200	11,000
21	14,800	16,800	9,160			46,600	29,000	39,600	97,800	36,100	14,600	11,400
22	14,800	16,800	9,300			61,200	28,200	37,200	94,200	32,400	14,400	11,400
23	14,800	16,800	9,440			84,000	26,800	33,200	103,000	31,900	14,200	12,000
24	14,800	16,600	9,570			82,100	26,800	31,200	105,000	31,600	13,900	12,500
25	14,600	16,200	9,030		11,800	77,400	33,300	30,900	97,200	29,800	13,300	13,100
26	15,000	16,200	8,760	9,300		63,800	32,000	28,400	81,900	31,200	13,400	13,700
27	15,100	15,600	9,160			54,600	27,800	30,400	76,000	32,200	13,500	14,300
28	15,200	15,100	9,300			55,400	32,800	36,600	71,600	32,100	13,500	14,300
29	15,200	15,000	10,800			80,200	29,300	50,300	72,500	31,400	13,300	14,300
30	15,400	15,200	10,900			120,000	27,300	84,000	68,900	31,900	12,300	14,300
31	15,600		10,800			103,000		91,600		30,700	12,300	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	15,800	14,600	15,300	941,000
November	17,400	15,000	16,600	988,000
December	15,100	7,680	9,860	606,000
January			10,900	670,000
February			9,940	552,000
March	120,000		43,900	2,700,000
April	77,000	26,800	46,600	2,770,000
May	91,600	24,700	38,800	2,390,000
June	147,000	68,900	103,000	6,130,000
July	70,000	29,800	47,500	2,920,000
August	27,700	12,300	17,600	1,080,000
September	14,300	11,000	12,300	732,000
The year	147,000	7,680	31,000	22,500,000

NOTE.—Record of discharge in the above table supersedes the record published in Water-Supply Paper 686 because of revision of records for January, 1929.

MISSOURI RIVER AT PIERRE, S. DAK.

LOCATION.—Chain gage in SW. ¼ sec. 32, T. 111 N., R. 79 W., at Chicago & North Western Railway bridge at Pierre, 1½ miles above mouth of Bad River. Zero of gage is 1,417.1 feet above mean sea level.

DRAINAGE AREA.—242,000 square miles.

RECORDS AVAILABLE.—October, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year ending Sept. 30, 1930, 74,600 second-feet Apr. 7, 1930 (gage height, 6.75 feet); minimum occurred during winter.

Maximum discharge during year ending Sept. 30, 1931, 46,400 second-feet June 12 (gage height, 6.58 feet); minimum, 5,640 second-feet Sept. 17, 20, 21.

Maximum stage known, 21.0 feet in March, 1881 (relation to present datum not known).

REMARKS.—Records good except those for periods of ice effect, Nov. 19, 1929, to Mar. 17, 1930, Nov. 21, 22, 1930, and Dec. 12, 1930, to Feb. 25, 1931, which are fair. Discharge for winter of 1930–31 based on four discharge measurements and temperature records. Records of discharge in the following tables for the year ending Sept. 30, 1930, supersede those published in Water-Supply Paper 701.

Daily and monthly discharge, in second-feet, 1929–1931

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1929-30												
1	14,800	14,500					37,300	30,500	25,300	34,400	17,300	22,200
2	14,200	14,600					35,300	31,100	24,400	33,400	15,900	22,300
3	14,200	14,000				37,000	37,300	31,200	27,200	24,000	14,800	21,000
4	14,200	13,600					44,400	30,600	28,200	35,200	14,000	20,000
5	14,200	13,400					52,100	30,600	27,800	35,300	13,100	19,400
6	14,200	13,300	8,400		11,000		68,000	32,200	33,400	31,100	12,800	19,200
7	14,200	13,200					74,300	36,000	62,600	28,800	12,400	19,600
8	15,300	13,400		7,900		33,700	69,900	44,200	57,700	26,400	11,900	19,200
9	15,300	13,300					54,800	44,400	52,200	24,800	11,100	18,100
10	15,100	13,400					35,100	43,000	47,800	24,000	10,300	17,400
11	15,400	13,500					30,300	41,700	41,800	23,400	9,680	16,900
12	15,600	13,700					27,500	41,000	37,800	21,900	9,190	16,600
13	15,200	14,400	7,300			26,300	27,300	42,500	33,300	20,400	9,020	16,100
14	15,300	14,500					28,500	45,200	31,000	19,900	8,560	15,000
15	15,300	14,600					29,300	47,200	30,400	19,200	8,300	14,600
16	15,000	14,600			12,800	30,000	29,300	50,200	35,200	19,000	8,220	14,400
17	15,000	14,500				40,000	31,600	46,400	51,800	19,600	8,810	14,400
18	14,800	14,500	6,200			52,800	33,800	39,900	51,800	19,400	12,400	14,200
19	14,800					56,000	37,100	35,000	45,700	19,200	19,200	13,600
20	14,700					51,900	37,100	32,700	45,400	18,800	19,400	13,400
21	14,600	12,200				46,000	36,900	31,700	50,700	18,300	15,800	13,500
22	14,400					47,800	37,000	30,700	47,900	17,600	14,800	14,000
23	14,200		6,600			50,700	36,700	30,400	44,400	18,500	15,000	15,000
24	14,000			9,500		54,900	37,300	29,600	38,800	21,100	20,700	15,700
25	14,000				20,600	51,200	37,800	28,500	36,800	25,000	41,000	16,500
26	13,800						44,100	37,300	26,600	37,500	26,500	44,700	16,700
26	14,400						41,400	34,600	25,800	39,900	25,300	39,200	15,000
28	14,300	10,300	7,000				40,000	32,900	26,200	40,500	23,000	30,300	14,200
29	14,800						41,400	30,200	25,900	39,400	21,000	27,400	13,700
30	14,400						42,700	29,200	25,600	36,300	19,700	24,700	13,600
31	14,500						43,100		25,200		18,400	22,700	

Daily and monthly discharge, in second-feet, of Missouri River at Pierre, S. Dak., 1929–1931—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1930-31												
1	13,600	14,300	6,830			12,100	8,320	11,800	17,700	33,900	8,110	7,590
2	13,600	14,300	7,120			11,900	7,650	11,600	17,800	31,900	7,950	7,460
3	13,800	14,600	6,320	6,700	9,600	12,000	16,500	11,700	17,600	28,200	7,850	7,210
4	13,900	15,000	6,440			12,600	27,200	11,500	17,200	24,800	7,650	7,000
5	14,300	15,300	6,830			12,900	25,200	11,600	16,600	22,900	7,490	6,750
6	16,000	15,100	7,750			12,900	22,400	11,900	17,300	27,700	7,430	6,590
7	15,200	15,500	8,080			12,900	33,100	12,400	22,700	22,700	8,460	6,490
8	15,100	15,600	8,460	6,700	9,600	13,400	31,200	13,200	28,800	21,300	8,840	6,370
9	14,900	15,500	8,880			13,700	24,500	13,700	28,800	20,400	7,210	6,340
10	14,300	15,000	8,800			13,700	17,900	13,300	29,200	19,900	6,980	6,230
11	14,100	14,500	9,230	7,100		13,700	16,600	13,300	37,900	18,400	7,060	6,040
12	13,800	14,300	8,400	7,200		14,100	15,600	13,100	45,900	17,600	7,460	5,940
13	13,400	14,000	8,300	6,300	10,000	13,900	15,100	12,900	44,800	16,500	7,590	5,940
14	13,200	13,600	8,100	5,440		13,500	14,800	12,400	42,500	15,900	8,520	5,880
15	12,900	13,300	7,900	5,500		13,800	14,500	11,900	41,500	15,400	10,400	5,800
16	12,600	13,300		5,900		13,600	14,300	11,600	41,700	15,200	13,300	5,770
17	12,500	13,200		6,500		13,800	14,000	11,500	43,500	15,000	13,900	5,640
18	12,400	13,100	7,900	7,480	12,000	14,000	13,600	11,000	44,000	14,700	13,700	5,670
19	18,200	13,000		7,300		14,500	12,800	10,900	43,300	13,700	13,300	5,670
20	25,000	13,200		6,900		14,600	12,700	11,400	43,100	12,800	13,100	5,640
21	21,000	11,000				14,000	12,100	12,200	41,700	12,100	13,100	5,640
22	15,300	10,000				14,200	12,300	13,200	40,600	11,500	13,600	5,690
23	15,100	7,430	7,700	7,100	13,000	15,900	12,200	13,900	38,100	10,800	12,900	5,690
24	15,800	7,120				18,200	12,200	14,400	36,000	10,000	12,300	6,170
25	15,700	7,650				17,000	12,100	21,500	34,300	9,890	11,200	6,640
26	15,100	7,280			14,500	17,500	11,900	30,400	33,500	9,590	10,400	6,250
27	15,000	7,460			13,400	23,300	12,000	31,200	32,700	9,190	9,440	6,120
28	14,800	7,950	6,800	7,600	12,500	13,600	11,800	26,900	32,000	8,880	8,600	6,100
29	14,700	6,720				9,590	11,700	24,000	31,500	8,600	8,250	6,250
30	14,700	6,230				7,750	11,800	21,600	34,400	8,320	7,980	6,460
31	14,600					8,490		19,800		8,180	7,950	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1929-30				
October	15,600	13,800	14,700	904,000
November	14,600		12,900	768,000
December			7,310	449,000
January			8,730	537,000
February			14,400	800,000
March	56,000		39,300	2,420,000
April	74,300	27,300	39,000	2,320,000
May	50,200	25,200	34,900	2,150,000
June	62,600	25,300	40,100	2,390,000
July	35,300	17,600	24,000	1,480,000
August	44,700	8,220	17,500	1,080,000
September	22,300	13,400	16,500	982,000
The year	74,300		22,500	16,300,000
1930-31				
October	25,000	12,400	15,000	922,000
November	15,600	6,230	12,200	726,000
December	9,230		7,620	469,000
January			6,890	424,000
February			11,100	616,000
March	23,300	7,750	13,800	848,000
April	33,100	7,650	15,900	946,000
May	31,200	10,900	15,200	935,000
June	45,900	16,600	33,200	1,980,000
July	33,900	8,180	16,600	1,020,000
August	13,900	6,980	9,740	599,000
September	7,590	5,640	6,230	371,000
The year	45,900		13,600	9,860,000

MISSOURI RIVER AT YANKTON, S. DAK.

LOCATION.—Chain gage between sec. 18, T. 93 N., R. 55 W., and sec. 13, T. 93 N., R. 56 W., in Yankton. Zero of gage is 1,161.15 feet above mean sea level.

DRAINAGE AREA.—269,000 square miles.

RECORDS AVAILABLE.—November, 1930, to September, 1931.

EXTREMES.—Maximum discharge during year, 46,500 second-feet June 15 (gage height, 7.22 feet); minimum, 5,900 second-feet Nov. 30.

REMARKS.—Records good except those for periods Nov. 1–14, Nov. 25 to Feb. 3, which were estimated.

Daily and monthly discharge, in second-feet, 1930–31

Day	Nov.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a15,600	a16,000	17,100	18,700	14,100	25,700	32,100	9,720	10,800
2	a15,000	a17,000	17,000	16,500	14,000	23,800	32,400	9,350	10,100
3	a15,000	a18,300	16,600	14,600	14,000	22,600	33,600	9,550	10,100
4	a14,400	18,600	16,000	13,300	13,500	21,700	34,600	9,350	9,990
5	a14,400	18,300	15,000	11,800	13,500	21,100	33,800	9,230	9,680
6	a14,400	18,100	14,600	12,900	13,400	21,000	32,000	9,040	9,320
7	a14,700	17,200	13,900	29,600	13,400	20,400	29,100	9,390	9,070
8	a14,400	15,500	15,100	30,400	12,900	19,500	24,900	9,550	8,750
9	a14,700	15,300	15,000	28,800	13,400	19,300	26,700	8,780	8,660
10	a14,700	14,000	14,000	42,500	14,600	18,700	28,300	8,360	8,340
11	a15,500	13,300	14,400	34,500	15,900	19,800	26,200	9,720	7,870
12	a16,400	13,700	13,000	26,200	16,200	27,200	23,700	9,850	7,800
13	a16,400	14,000	14,500	22,100	16,200	31,300	22,500	9,850	7,710
14	a16,600	12,800	14,600	19,800	16,400	38,100	21,600	9,010	7,800
15	16,000	12,600	15,600	18,400	16,400	46,100	20,600	8,440	7,710
16	15,700	13,200	16,200	17,200	16,200	44,600	18,700	8,360	7,600
17	15,400	13,800	16,200	16,200	15,900	41,300	18,100	8,500	7,710
18	15,200	14,200	16,400	15,800	15,300	39,700	17,200	8,520	7,560
19	15,400	15,600	15,900	15,800	14,800	39,500	16,400	8,950	7,870
20	16,800	17,500	15,700	15,800	14,300	42,500	16,000	10,400	8,040
21	18,400	17,200	15,800	16,400	13,500	44,700	15,800	13,000	7,920
22	16,600	17,500	16,400	16,000	13,200	40,700	15,800	14,400	7,670
23	15,300	17,800	16,200	15,600	12,900	40,500	15,000	14,600	7,440
24	15,000	17,600	17,200	15,200	12,700	39,000	14,100	14,300	7,480
25	a13,500	17,700	17,000	14,800	12,700	38,600	13,300	13,900	7,730
26	a12,000	17,600	16,600	14,600	13,200	37,500	12,800	14,100	7,870
27	a7,400	16,900	17,000	14,600	13,100	35,200	12,100	14,200	7,710
28	a7,400	17,000	16,200	14,200	13,900	33,600	11,600	14,000	7,600
29	a6,000	-------	24,600	14,200	19,400	32,800	11,300	13,400	7,650
30	a5,900	-------	27,600	14,200	29,400	31,800	10,700	12,500	8,040
31	-------	-------	20,100	-------	28,300	-------	10,200	11,800	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
November	18,400	5,900	14,100	839,000
December	-------	-------	a7,900	486,000
January	-------	-------	a8,500	523,000
February	18,600	12,600	16,000	889,000
March	27,600	13,000	16,500	1,010,000
April	42,500	11,800	19,000	1,130,000
May	29,400	12,700	15,400	947,000
June	46,100	18,700	31,900	1,900,000
July	34,600	10,200	21,000	1,290,000
August	14,600	8,360	10,800	664,000
September	10,800	7,440	8,320	495,000
The period	-------	-------	-------	10,200,000

a Estimated by comparison with records at Pierre, S. Dak., and Sioux City, Iowa.

MISSOURI RIVER AT SIOUX CITY, IOWA

LOCATION.—Chain gage in Sioux City, half a mile below Big Sioux River. Zero of gage is 1,078.64 feet above mean sea level.

DRAINAGE AREA.—314,000 square miles.

RECORDS AVAILABLE.—September, 1928, to September, 1931 (discontinued).

EXTREMES.—Maximum discharge during year ending Sept. 30, 1929, 190,000 second-feet Apr. 1 (gage height, 12.4 feet); minimum occurred during winter.

Maximum discharge during year ending Sept. 30, 1930, 108,000 second-feet Mar. 6 (gage height, 9.4 feet).

Maximum discharge during year ending Sept. 30, 1931, 54,700 second-feet June 16 (gage height, 9.79 feet); minimum, 5,510 second-feet Dec. 2 (gage height, 2.21 feet).

REMARKS.—Records fair. Discharge estimated Dec. 19, 1928, to Mar. 15, 1929, Apr. 28–30, 1929, Nov. 20, 1929, to Mar. 5, 1930, Dec. 1, 3, 1930, and Dec. 26, 1930, to Jan. 18, 1931. Records of discharge Sept. 1, 1928, to Sept. 30, 1930, in the following tables supersede those published in Water-Supply Papers 686 and 701.

Daily discharge, in second-feet, 1928–1931

Day	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1928-29													
1	23,000	17,000	16,900	17,600			17,900	178,000	39,200	104,000	71,400	30,900	14,600
2	23,000	17,400	16,900	17,700			18,500	102,000	33,300	150,000	68,900	32,100	15,300
3	22,200	17,400	16,900	17,700	7,200		20,000	71,900	31,700	166,000	67,600	31,500	14,600
4	21,600	18,200	18,500	17,300			18,700	59,800	30,600	171,000	62,800	30,900	14,600
5	20,700	18,200	16,900	15,000			21,900	79,500	30,600	171,000	59,400	29,800	14,100
6	20,600	17,400	16,900	12,000			24,800	64,500	31,700	174,000	61,700	27,600	13,600
7	20,600	17,400	17,300	11,600			26,300	61,000	35,000	163,000	64,000	26,500	13,600
8	19,800	18,200	18,500	11,300	8,800		28,100	66,900	37,000	125,000	65,000	24,400	13,600
9	18,900	17,400	19,300	11,600			27,500	61,000	37,700	97,200	68,600	22,400	13,800
10	19,800	16,600	19,300	11,000			35,500	53,400	41,600	90,000	72,400	22,400	14,600
11	20,600	16,600	19,300	9,700			51,200	62,100	44,200	92,800	68,900	20,600	14,600
12	21,400	17,000	19,300	9,700			68,500	59,800	42,500	112,000	64,000	20,100	14,600
13	23,700	18,200	19,500	9,580	10,300		32,200	56,500	42,500	153,000	61,700	19,300	13,600
14	24,600	17,000	19,800	10,100			52,000	52,500	41,600	158,000	58,300	18,600	13,400
15	22,500	15,900	19,800	10,700		11,500	83,500	48,800	41,600	115,000	56,200	18,600	12,700
16	22,100	22,200	19,900	11,000			55,800	51,500	39,900	88,600	60,500	19,000	12,700
17	21,200	22,600	20,100	10,100			43,000	56,500	46,900	79,200	58,300	19,000	12,700
18	21,000	20,800	20,200	9,700	12,500		67,400	51,500	40,800	94,300	52,100	19,000	12,300
19	21,500	22,600	19,500	7,900			85,300	47,000	40,800	102,000	47,500	19,000	12,400
20	21,000	20,800	19,500	8,500			60,200	42,700	39,900	88,600	45,700	19,000	12,400
21	19,900	19,900	18,800	10,000			44,800	37,800	38,400	84,500	43,100	17,500	12,400
22	19,100	18,700	19,000	9,600			36,000	40,100	37,000	84,500	40,600	18,200	12,600
23	41,200	17,500	19,200	8,600	11,500		65,000	37,100	37,000	81,800	40,600	17,500	12,000
24	36,000	17,500	19,300	8,600			98,000	37,800	34,400	77,900	39,000	17,200	12,000
25	27,200	16,700	19,500	8,600			100,000	38,600	33,900	81,800	39,800	16,900	12,000
26	20,000	16,300	19,300	7,750			90,800	45,300	32,800	90,000	38,200	16,300	12,400
27	19,200	16,000	19,300	7,750			80,000	43,500	31,700	99,400	36,000	16,300	12,900
28	17,800	16,000	19,200	7,750	10,900		61,400	41,000	35,000	85,600	34,000	16,000	14,600
29	17,400	16,000	19,000	8,000			55,800	40,000	51,400	70,200	33,400	15,100	15,700
30	17,000	16,000	18,400	8,100			60,200	40,000	70,400	66,400	33,400	14,600	14,600
31		16,700		8,100			123,000		65,500		33,400	14,600	

Daily discharge, in second-feet, of Missouri River at Sioux City, Iowa, 1928–1931—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1929–30												
1	14,900	17,800				11,500	43,100	36,200	28,400	36,600	27,300	29,900
2	15,700	18,500				11,500	40,900	33,900	27,400	35,900	25,300	25,800
3	15,700	18,500				12,600	40,600	32,300	28,900	38,100	22,400	24,400
4	15,700	18,500				13,100	37,500	32,300	30,400	35,200	20,900	24,400
5	15,400	18,500			11,500	17,800	32,200	33,900	32,800	30,800	21,200	24,800
6	16,600	18,500				42,400	32,300	35,900	35,900	29,900	20,600	23,700
7	17,900	18,500				66,800	38,100	40,400	38,100	29,400	19,900	22,900
8	17,600	18,500		8,500		50,000	59,200	38,800	35,200	31,300	18,700	24,400
9	16,300	18,500				44,100	74,900	37,300	32,300	31,300	18,400	25,700
10	16,300	18,500				63,600	80,100	40,400	59,600	31,300	17,800	25,600
11	16,100	18,500				65,000	67,400	52,300	63,800	29,900	17,200	24,000
12	15,500	18,500				61,800	51,900	63,800	59,200	29,900	17,100	22,000
13	15,500	18,200				74,300	39,600	63,800	55,900	29,900	16,600	21,200
14	16,100	16,800				83,800	36,000	66,200	51,900	28,600	15,400	20,500
15	16,100	15,900	8,200		13,500	77,700	34,600	59,900	46,400	26,600	15,400	19,000
16	16,100	15,900				64,800	35,900	51,900	42,900	26,200	14,200	18,100
17	16,100	15,300				58,600	35,700	47,800	37,200	25,400	13,700	16,700
18	16,100	15,300				62,300	34,200	46,400	33,900	23,700	13,700	16,300
19	17,000	15,300				57,300	33,900	47,800	31,300	22,600	14,200	15,100
20	15,800	15,000				43,300	39,600	44,600	33,400	22,300	13,700	16,000
21	15,600	10,000				45,300	46,000	40,400	51,500	21,200	18,700	16,300
22	16,200	7,400				42,400	46,000	37,300	55,000	20,700	22,300	15,700
23	16,500	6,100		10,600		45,300	46,400	34,600	48,200	20,600	22,600	15,400
24	16,800	7,500			26,000	44,300	42,100	34,600	45,500	21,600	22,400	15,100
25	16,800	12,000				41,500	39,300	35,200	49,100	19,600	23,000	14,800
26	16,500	15,000				43,300	36,600	32,800	47,300	19,600	20,900	15,100
27	16,800	14,000				53,600	37,300	32,300	44,300	19,600	18,400	14,500
28	16,800	12,000				51,000	38,400	31,300	42,400	19,300	16,900	14,200
29	16,800	9,000				42,400	39,600	30,400	37,600	19,900	19,900	14,200
30	17,300	7,000				42,600	39,600	29,900	35,800	22,600	30,400	15,700
31	17,600					44,900		28,600		25,800	32,800	
1930–31												
1	16,300	16,600	5,700			16,500	17,400	22,000	14,400	29,600	31,700	10,600	11,500
2	16,300	15,700	5,510			18,600	17,600	20,200	14,600	27,200	31,700	10,300	11,100
3	16,000	15,100	5,550	7,800		17,800	17,800	19,000	14,100	23,900	31,700	10,000	10,500
4	15,700	15,100	5,590			17,100	17,400	16,800	13,800	23,200	32,100	9,800	10,300
5	16,300	14,500	6,030			16,000	16,500	15,100	14,000	22,000	34,200	9,560	9,650
6	16,300	14,500	6,590			17,600	15,800	13,100	13,900	20,600	35,000	9,870	9,430
7	16,000	14,500	7,280			17,500	15,000	12,600	14,200	20,600	31,200	9,650	8,900
8	16,900	14,800	7,860	8,200		17,200	14,700	27,000	14,000	20,800	28,900	10,600	8,750
9	16,600	14,500	7,860			15,100	14,700	29,300	13,800	19,200	26,500	10,300	8,530
10	16,600	14,800	8,500			15,400	15,200	28,300	13,500	19,200	25,800	9,340	8,370
11	16,900	14,800	9,200			15,600	15,000	38,600	14,200	19,800	26,800	9,250	8,260
12	17,800	15,700	8,960			14,900	15,000	31,600	15,000	19,300	28,000	9,800	7,690
13	17,200	16,600	9,200	7,200		14,400	15,000	25,200	15,600	23,700	25,900	10,100	7,890
14	17,800	16,600	8,720			14,400	15,000	22,600	16,000	32,600	23,800	10,100	7,740
15	19,000	17,200	8,720			14,200	15,200	21,900	16,000	42,600	21,800	9,960	7,550
16	19,500	16,300	9,200	7,200		14,200	15,700	19,600	16,100	53,600	20,600	9,190	7,580
17	17,800	15,900	9,450	8,000		13,900	15,700	19,000	16,100	48,600	19,700	9,040	7,550
18	16,300	16,000	8,960	8,800		14,400	15,700	17,800	15,400	41,700	18,800	9,040	7,770
19	16,000	15,400	9,450	8,920		14,500	15,000	16,800	15,400	39,200	17,900	9,340	7,960
20	15,100	17,800	8,960	7,520		15,800	15,400	16,800	14,600	39,800	16,900	9,340	8,010
21	14,500	17,200	8,960	7,850		16,800	16,000	15,800	13,800	43,400	16,400	9,370	8,040
22	14,500	17,500	8,720	9,700		17,200	16,400	16,100	13,000	47,400	15,600	11,000	8,010
23	15,100	17,500	8,960	9,300		17,600	16,800	15,800	12,600	46,100	15,600	12,900	7,650
24	21,600	14,600	8,070	8,020		18,200	16,600	14,800	12,600	39,800	15,600	14,100	7,390
25	23,000	13,000	7,660	8,370		18,200	16,500	14,200	12,400	38,100	14,300	14,200	7,550
26	19,000	12,100	7,500	8,550		18,500	16,700	13,600	12,300	38,100	13,200	13,700	7,580
27	16,900	7,470	7,500	8,550		18,300	16,700	14,100	12,600	40,400	12,900	13,400	7,740
28	16,100	7,470	7,500	12,600		17,600	17,800	14,600	13,100	35,300	13,000	13,200	7,770
29	15,400	6,150	7,500	12,600			17,300	14,100	13,400	34,600	12,300	12,800	7,480
30	16,300	5,910	7,500	13,600			25,000	14,100	15,800	32,100	11,300	12,600	7,580
31	17,200		7,400	13,600			29,700		27,200		11,100	12,000	

Monthly discharge, in second-feet, of Missouri River at Sioux City, Iowa, 1928–1931

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1928				
September	41,100	17,000	22,200	1,320,000
1928–29				
October	22,600	15,900	17,900	1,100,000
November	20,200	16,900	18,800	1,120,000
December	17,700	7,750	10,700	658,000
January			10,200	627,000
February			11,500	639,000
March	123,000	17,900	53,300	3,280,000
April	178,000	37,100	57,600	3,430,000
May	70,400	30,600	39,900	2,450,000
June	174,000	66,400	111,000	6,600,000
July	72,400	33,400	53,100	3,260,000
August	32,100	14,600	21,000	1,290,000
September	15,700	12,000	13,500	803,000
The year	178,000		34,900	25,300,000
1929–30				
October	17,900	14,900	16,300	1,000,000
November	18,500	6,100	15,000	893,000
December			8,200	504,000
January			9,580	589,000
February			16,400	911,000
March	83,800	11,500	47,700	2,930,000
April	80,100	32,200	43,300	2,580,000
May	66,200	28,600	41,100	2,530,000
June	63,800	27,400	42,000	2,500,000
July	38,100	19,300	26,600	1,640,000
August	32,800	13,700	19,700	1,210,000
September	29,900	14,200	19,700	1,170,000
The year	83,800		25,500	18,500,000
1930–31				
October	23,000	14,500	17,000	1,050,000
November	17,800	5,910	14,400	857,000
December	9,450	5,510	7,890	485,000
January	13,600		8,680	534,000
February	18,600	13,900	16,300	905,000
March	29,700	14,700	16,800	1,030,000
April	38,600	12,600	19,400	1,150,000
May	27,200	12,300	14,600	898,000
June	53,600	19,200	32,800	1,950,000
July	35,000	11,100	21,900	1,350,000
August	14,200	9,040	10,800	664,000
September	11,500	7,390	8,390	499,000
The year	53,600	5,510	15,700	11,400,000

MISSOURI RIVER AT OMAHA, NEBR.

LOCATION.—Chain gage in sec. 23, T. 15 N., R. 14 E., at Douglas Street toll bridge at Omaha. Zero of gage is 959.71 feet above mean sea level.

DRAINAGE AREA.—323,000 square miles.

RECORDS AVAILABLE.—September, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 52,800 second-feet June 18 (gage height, 10.85 feet); minimum, 5,750 second-feet Dec. 4 (gage height, 3.32 feet).

1928–1931: Maximum discharge, 198,000 second-feet June 7, 1929 (gage height, 14.28 feet); minimum, 5,720 second-feet Dec. 12, 1929 (gage height, 3.3 feet).

REMARKS.—Records good except those for period Dec. 29 to Feb. 4, which were based on one discharge measurement and temperature records.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15,400	15,900	7,720		14,000	18,200	30,400	14,500	14,800	32,600	11,200	14,900
2	15,400	16,200	6,920		16,700	18,400	21,000	14,000	24,800	31,400	11,500	12,900
3	16,100	16,200	6,520	8,100	18,800	17,800	17,600	14,000	27,200	30,200	12,100	12,400
4	16,200	15,900	5,750		18,500	18,000	16,900	14,200	26,000	30,600	11,200	11,800
5	16,400	15,600	5,830		18,300	17,500	16,400	14,500	25,900	32,600	10,700	10,800
6	16,300	15,600	6,740		17,600	17,500	15,200	14,500	23,400	33,800	10,500	10,400
7	16,200	15,400	7,120		17,100	17,500	14,900	14,600	21,400	34,300	10,400	9,790
8	16,200	15,000	7,240	8,400	17,300	16,700	15,000	14,000	21,100	34,300	10,700	9,500
9	16,200	15,000	7,940		18,000	15,900	19,000	13,700	20,500	31,500	10,600	9,010
10	16,600	14,800	8,730		16,900	15,500	30,100	13,900	20,300	27,100	11,000	8,650
11	16,300	14,600	9,040		16,500	15,500	27,200	13,800	19,500	25,200	11,500	8,210
12	16,300	14,700	8,850		16,500	15,400	37,500	13,900	20,000	25,100	10,700	8,050
13	16,600	15,000	8,960	7,600	16,300	15,700	37,500	14,000	20,300	26,400	10,000	8,210
14	17,200	15,300	9,180		15,400	15,500	26,900	14,100	19,400	26,600	10,100	8,100
15	16,900	15,600	9,210		14,500	15,400	21,800	14,900	21,500	23,400	10,500	7,940
16	17,600	16,000	9,100		14,800	15,600	20,400	15,200	35,700	22,600	10,600	8,000
17	19,900	16,200	9,410		14,600	15,600	19,100	15,600	50,900	21,100	10,400	7,870
18	19,400	16,100	9,240	8,470	14,600	15,700	18,400	15,600	51,700	20,800	9,880	8,510
19	17,700	16,000	9,410		14,600	16,300	18,200	15,800	42,400	20,900	9,790	8,900
20	16,300	17,000	9,010		14,700	16,400	18,000	15,600	40,400	18,900	9,210	8,240
21	15,900	17,900	9,150		15,000	16,900	17,300	15,200	44,800	17,200	9,470	11,600
22	15,400	17,800	8,870		15,400	17,100	16,900	14,600	45,200	16,700	9,410	10,800
23	15,100	17,400	9,070	9,200	16,300	16,800	16,300	14,500	49,000	16,000	9,640	8,820
24	14,900	17,400	8,850		16,800	16,800	15,900	14,100	46,100	15,700	10,800	8,650
25	15,300	17,100	8,320		17,400	17,300	16,100	13,500	41,900	15,600	12,300	12,700
26	20,600	16,200	7,570		17,700	17,000	15,400	13,200	40,200	15,400	13,900	11,800
27	21,400	13,800	7,620		17,500	17,700	15,300	12,900	39,100	14,500	14,200	9,820
28	18,800	14,700	7,660		18,000	18,100	15,200	13,700	38,400	13,600	14,000	8,710
29	17,000	11,000	7,600	11,400	-------	18,300	14,800	15,100	36,000	13,000	13,600	8,240
30	15,900	8,290	7,600		-------	18,300	14,600	14,300	33,200	12,400	13,600	8,150
31	16,000	-------	7,700		-------	24,800	-------	14,300	-------	11,600	13,700	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	21,400	14,900	16,800	1,030,000
November	17,900	8,290	15,500	922,000
December	9,410	5,750	8,120	499,000
January	-------	-------	8,940	550,000
February	18,800	14,000	16,400	911,000
March	24,800	15,400	17,100	1,050,000
April	37,500	14,600	20,000	1,190,000
May	15,800	12,900	14,400	885,000
June	51,700	14,800	32,000	1,900,000
July	34,300	11,600	22,900	1,410,000
August	14,200	9,210	11,200	689,000
September	14,900	7,870	9,720	578,000
The year	51,700	-------	16,100	11,600,000

MISSOURI RIVER AT NEBRASKA CITY, NEBR.

LOCATION.—Chain gage in sec. 10, T. 8 N., R. 14 E., at Chicago, Burlington & Quincy Railroad bridge at Nebraska City. Zero of gage is 903.94 feet above mean sea level (revised).

DRAINAGE AREA.—414,000 square miles (revised).

RECORDS AVAILABLE.—August, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 56,200 second-feet June 24; maximum gage height, 11.02 feet Jan. 5; minimum discharge, 8,900 second-feet Sept. 18 (gage height, 4.73 feet).

1929–1931: Maximum discharge, 95,200 second-feet May 11, 1930 (gage height, 11.63 feet); minimum, 4,500 second-feet Dec. 3, 1929 (gage height, 4.30 feet).

Maximum stage known, 17.6 feet in April, 1881.

REMARKS.—Records good except those for periods of ice effect, Nov. 27 to Dec. 3, Dec. 30 to Jan. 30, which are poor. Discharge estimated Jan. 1–7.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18,600	21,500	11,400	12,900	29,200	28,100	37,700	21,000	17,000	36,500	13,400	19,600
2	18,600	22,500	10,800	13,500	27,000	28,100	32,300	20,200	18,600	41,300	13,400	18,100
3	19,400	22,500	10,200	14,100	24,000	26,900	27,800	19,400	30,300	33,300	13,700	15,600
4	20,200	23,500	9,600	14,100	30,400	26,900	27,800	20,200	30,300	33,300	14,000	14,800
5	21,000	22,500	13,200	14,900	30,400	26,900	26,900	19,400	32,300	33,300	13,000	14,400
6	21,000	21,500	14,600	14,900	29,200	26,900	25,200	22,600	37,100	34,300	12,000	13,400
7	21,000	21,500	16,200	15,700	28,000	28,100	26,000	24,400	28,500	35,300	12,000	12,600
8	25,000	21,500	16,200	15,700	27,000	23,900	25,200	23,500	26,800	36,500	12,000	12,000
9	26,000	21,500	17,000	16,500	28,000	20,900	27,800	22,600	25,100	35,300	13,700	11,600
10	25,000	21,500	20,200	18,100	27,000	20,900	42,500	22,600	24,200	31,300	12,300	10,700
11	26,000	21,500	20,200	18,100	25,000	20,900	41,300	22,600	25,100	30,300	13,400	10,400
12	25,000	21,500	22,000	15,700	24,000	21,900	42,500	23,500	26,800	28,600	14,000	10,100
13	25,000	22,500	21,000	14,100	24,000	23,900	46,700	25,200	27,600	30,300	13,000	10,200
14	27,000	22,500	20,200	12,300	23,000	25,900	40,100	23,500	26,800	28,600	12,300	9,900
15	35,800	23,500	19,400	11,100	22,000	25,900	32,300	21,800	33,500	28,600	12,300	9,500
16	34,400	25,000	20,200	10,500	22,000	24,900	28,600	21,800	28,400	26,000	12,600	9,200
17	33,000	26,200	19,400	9,900	22,000	24,900	26,900	22,600	50,100	24,400	12,600	9,200
18	31,800	26,200	18,600	9,900	22,000	25,900	24,400	24,400	54,600	23,500	12,300	9,200
19	26,000	26,200	18,600	9,900	21,200	25,900	22,600	21,800	47,100	22,600	12,300	10,200
20	27,000	29,800	13,200	9,900	21,200	24,900	23,500	24,400	42,900	23,500	11,600	11,600
21	24,000	35,800	13,200	10,500	21,200	25,900	22,600	22,600	53,100	21,000	11,200	14,000
22	23,000	41,400	13,800	11,100	22,000	25,900	22,600	20,200	48,600	19,400	11,200	14,800
23	22,000	38,600	13,800	11,100	23,000	23,900	22,600	19,400	51,600	18,600	11,600	13,000
24	22,000	31,800	12,000	11,100	24,000	22,900	21,800	19,400	56,200	17,000	11,600	12,300
25	22,000	28,200	11,400	11,700	26,000	25,900	23,500	17,800	42,900	17,000	12,600	14,800
26	26,000	29,400	10,200	11,700	27,000	24,900	22,600	15,400	40,300	17,000	14,400	17,600
27	34,400	25,200	10,800	12,900	29,200	23,900	22,600	14,600	39,100	16,200	15,600	15,600
28	30,600	21,400	13,200	15,700	30,400	23,900	21,800	17,000	39,100	15,400	16,100	14,400
29	26,000	17,400	12,000	20,500	-------	24,900	21,800	22,600	37,900	14,600	15,600	12,600
30	24,000	13,800	12,600	37,500	-------	22,900	21,000	22,600	36,700	14,600	15,200	11,600
31	23,000	-------	12,600	30,900	-------	21,900	-------	20,200	-------	13,800	14,800	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	35,800	18,600	25,300	1,560,000
November	41,400	13,800	24,900	1,480,000
December	22,000	9,600	15,100	928,000
January	37,500	9,900	14,700	904,000
February	30,400	21,200	25,300	1,410,000
March	28,100	20,900	24,800	1,520,000
April	46,700	21,000	28,400	1,690,000
May	25,200	14,600	21,300	1,310,000
June	56,200	17,000	36,000	2,140,000
July	41,300	13,800	25,900	1,590,000
August	16,100	11,200	13,100	806,000
September	19,600	9,200	12,800	762,000
The year	56,200	9,200	22,200	16,100,000

MISSOURI RIVER AT ST. JOSEPH, MO.

LOCATION.—Chain gage in sec. 17, T. 57 N., R. 35 W., at St. Joseph & Grand Island Railway bridge at St. Joseph, Buchanan County. Zero of gage is 793.69 feet above mean sea level (revised).

DRAINAGE AREA.—424,000 square miles (revised).

RECORDS AVAILABLE.—August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 65,600 second-feet June 23 (gage height, 6.8 feet); minimum discharge, 8,900 second-feet Jan. 21; minimum gage height, −2.0 feet Jan. 20, 21.

1928–1931: Maximum discharge, 196,000 second-feet June 4, 1929 (gage height, 10.1 feet); minimum discharge, 8,800 second-feet Dec. 26, 27, 1929; minimum gage height, −2.7 feet Jan. 10, 1930.

Maximum stage known, 21.7 feet Apr. 29, 1881.

REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19,300	23,300	17,200	14,000	36,300	28,300	25,300	20,700	26,300	38,000	15,300	16,900
2	19,300	22,700	16,100	12,500	31,600	28,300	35,100	20,700	23,200	38,000	16,100	20,200
3	18,700	22,700	14,700	11,900	28,300	28,300	33,300	20,200	20,600	41,200	16,900	23,700
4	18,700	22,700	14,400	12,200	26,100	26,900	28,500	19,700	21,800	40,100	15,300	20,200
5	18,100	23,300	13,700	13,200	28,300	24,600	27,800	19,700	31,000	36,000	14,500	17,300
6	19,300	23,300	13,100	15,600	32,500	24,600	25,900	19,700	38,000	36,000	14,100	15,700
7	20,700	22,200	14,000	16,000	29,100	25,800	24,700	20,700	48,600	36,000	13,000	15,300
8	21,400	21,700	16,200	16,800	28,300	27,100	24,200	21,700	37,000	37,000	12,200	14,100
9	21,400	21,700	16,200	17,600	26,800	24,200	24,200	23,900	31,000	39,000	13,000	12,600
10	24,400	21,700	17,000	17,200	26,800	22,100	24,200	23,900	28,800	39,000	15,700	12,200
11	26,800	21,700	17,600	18,500	26,800	22,100	32,400	22,700	26,500	37,000	16,900	11,900
12	25,200	21,700	19,200	20,500	25,400	22,100	40,000	21,700	27,100	34,000	14,100	10,900
13	26,800	21,200	20,000	20,500	24,800	23,100	40,000	22,200	28,500	34,000	14,100	10,300
14	26,800	20,700	20,900	17,200	23,600	24,200	47,600	23,300	27,800	36,000	13,700	10,300
15	25,200	21,700	20,000	16,400	23,000	26,000	45,400	23,300	34,200	34,000	12,600	10,300
16	31,300	23,900	19,200	14,900	22,500	26,000	38,000	22,700	42,100	33,100	12,200	10,300
17	37,000	24,500	18,400	12,800	22,500	25,400	31,600	22,700	34,000	29,600	12,200	9,700
18	39,000	25,100	18,000	10,700	22,500	25,400	29,200	23,900	35,000	28,000	13,000	9,400
19	35,000	25,800	18,400	10,700	22,500	26,000	27,800	23,900	53,800	26,500	13,000	9,400
20	34,000	28,800	19,200	9,200	22,500	26,000	27,800	26,500	52,600	25,800	13,700	9,700
21	31,300	32,200	17,600	8,900	22,000	25,400	27,100	25,800	45,600	25,100	13,700	13,000
22	26,800	36,000	14,400	9,200	22,500	25,400	27,100	25,800	55,000	23,900	13,000	13,300
23	24,400	40,100	13,400	10,400	22,500	24,800	25,900	23,900	64,200	21,200	12,200	16,100
24	22,800	44,500	11,900	10,700	23,600	25,400	25,300	20,700	60,000	20,200	11,600	18,700
25	22,400	36,000	11,900	11,300	23,600	26,000	24,700	20,700	60,000	18,800	11,600	25,700
26	22,400	33,100	11,600	11,300	24,800	24,800	25,300	19,200	50,200	18,000	11,600	33,700
27	22,400	27,200	11,600	12,200	26,100	25,400	25,300	18,400	43,400	17,600	12,600	27,400
28	27,800	24,500	12,800	14,200	27,500	25,400	24,700	17,200	42,300	17,200	14,500	22,200
29	35,000	20,200	13,700	15,600	-------	26,000	24,200	18,000	40,100	16,800	15,300	18,700
30	31,400	19,700	13,100	19,500	-------	26,000	23,700	21,200	39,000	16,100	16,100	16,100
31	25,400	-------	13,100	36,800	-------	25,400	-------	24,500	-------	15,400	16,100	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	39,000	18,100	25,800	1,590,000
November	44,500	19,700	25,800	1,540,000
December	20,900	11,600	15,800	972,000
January	36,800	8,900	14,800	910,000
February	36,300	22,000	25,800	1,430,000
March	28,300	22,100	25,400	1,560,000
April	47,600	23,700	29,500	1,760,000
May	26,500	17,200	21,900	1,350,000
June	64,200	20,600	38,900	2,310,000
July	41,200	15,400	29,300	1,800,000
August	16,900	11,600	13,900	855,000
September	33,700	9,400	15,800	940,000
The year	64,200	8,900	23,500	17,000,000

MISSOURI RIVER AT KANSAS CITY, MO.

LOCATION.—Water-stage recorder in sec. 31, T. 50 N., R. 33 W., at Chicago, Burlington & Quincy Railroad bridge at Kansas City, 1 mile below Kansas River. Chain gage at same site used prior to May 13, 1931. Zero of gage is 715.79 feet above mean sea level (revised).

DRAINAGE AREA.—489,000 square miles (revised).

RECORDS AVAILABLE.—August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 64,000 second-feet June 24 (gage height, 12.0 feet); minimum discharge, 10,600 second-feet Sept. 19; minimum gage height, 2.4 feet Dec. 27.

1928–1931: Maximum discharge, 254,000 second-feet June 5, 1929 (gage height, 23.4 feet); minimum discharge, 9,500 second-feet Dec. 26, 27, 1929; minimum gage height, 2.4 feet Jan. 10, Dec. 27, 1930.

Maximum stage known, 38.0 feet June 20, 1844.

REMARKS.—Records good. Gage-height record until May 12 furnished by United States Weather Bureau.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22,000	29,400	27,500	13,700	45,000	30,600	28,200	28,900	29,600	42,400	16,600	20,700
2	22,000	26,500	24,200	13,200	41,000	31,300	26,200	28,900	33,300	40,800	16,600	33,600
3	22,000	25,800	22,900	15,400	35,400	31,300	38,500	27,500	31,100	41,600	21,000	48,900
4	21,400	25,800	20,300	14,800	31,000	30,600	37,700	26,800	26,200	44,000	30,400	39,900
5	20,100	25,800	19,000	14,800	27,300	29,900	32,500	26,200	24,800	48,000	31,800	30,000
6	20,100	25,800	18,400	14,300	30,200	29,900	31,100	24,800	33,300	44,000	26,800	23,700
7	22,000	25,200	17,800	15,400	33,900	29,500	30,400	25,500	47,200	43,200	28,200	20,700
8	22,000	25,500	17,800	17,500	31,000	29,500	28,200	27,500	52,800	40,800	22,000	18,700
9	22,000	24,800	17,800	20,000	28,700	28,800	26,200	29,600	42,400	40,800	18,700	17,200
10	22,600	24,800	19,000	20,700	27,300	27,300	26,200	35,500	36,200	40,800	19,100	15,700
11	24,600	24,800	19,700	20,700	28,900	25,900	26,200	34,800	33,300	40,800	26,600	14,600
12	27,900	24,800	21,000	22,600	28,200	24,600	34,800	33,300	34,000	40,000	27,700	13,900
13	27,900	24,200	22,200	23,300	27,500	25,100	41,600	31,800	36,200	39,200	21,100	13,500
14	27,900	24,200	24,800	22,600	26,100	26,400	42,400	31,100	39,200	39,200	18,700	12,500
15	31,500	24,200	25,500	19,700	24,800	27,100	50,400	29,600	35,500	40,000	19,100	12,500
16	32,900	24,800	26,200	19,700	26,100	30,000	46,400	28,900	40,000	39,200	17,200	11,700
17	51,600	27,200	23,500	19,700	25,500	30,000	39,200	27,500	48,800	37,000	15,700	11,700
18	52,400	27,900	20,300	18,400	24,800	28,500	33,300	28,200	43,200	34,800	17,200	11,400
19	44,400	28,600	22,200	15,000	24,800	27,800	31,800	36,200	41,600	31,800	17,200	10,700
20	43,600	33,800	22,900	12,900	24,800	27,800	31,800	31,100	56,000	31,100	18,400	10,700
21	40,400	35,200	22,900	12,300	24,500	27,300	34,000	29,600	55,200	30,400	19,100	13,500
22	37,400	46,800	22,900	12,300	24,500	25,900	39,200	29,600	48,800	29,600	18,700	21,600
23	34,400	41,200	17,200	13,400	23,800	26,800	37,700	29,600	57,700	27,500	16,800	34,200
24	32,200	48,400	13,700	14,300	25,200	26,800	33,300	27,500	63,100	24,800	15,700	31,200
25	30,000	49,200	15,400	14,800	25,200	28,200	30,400	26,200	61,300	22,900	16,100	29,400
26	27,900	42,000	12,600	15,400	25,200	28,200	31,100	24,800	59,500	22,200	15,300	38,600
27	27,900	35,700	11,600	16,600	26,500	28,200	32,500	22,200	50,400	21,600	14,600	44,400
28	27,200	34,200	13,200	17,200	28,600	27,500	33,300	21,000	45,600	20,300	15,000	43,800
29	32,200	32,000	13,700	18,400	-------	28,200	32,500	19,700	44,800	19,700	16,500	39,900
30	38,100	29,100	15,400	22,200	-------	28,900	31,800	21,600	42,400	18,400	17,200	30,000
31	35,200	-------	13,700	27,500	-------	28,200	-------	25,500	-------	17,200	17,600	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	52,400	20,100	30,400	1,870,000
November	49,200	24,200	30,600	1,820,000
December	27,500	11,600	19,500	1,200,000
January	27,500	12,300	17,400	1,070,000
February	45,000	23,800	28,400	1,580,000
March	31,300	24,600	28,300	1,740,000
April	50,400	26,200	34,000	2,020,000
May	36,200	19,700	28,100	1,730,000
June	63,100	24,800	43,100	2,560,000
July	48,000	17,200	34,000	2,090,000
August	31,800	14,600	19,800	1,220,000
September	48,900	10,700	24,000	1,430,000
The year	63,100	10,700	28,100	20,300,000

MISSOURI RIVER AT WAVERLY, MO.

LOCATION.—Wire gage in sec. 14, T. 51 N., R. 24 W., at bridge on State highway 24 at Waverly. Zero of gage is 640.49 feet above mean sea level (revised).
DRAINAGE AREA.—491,000 square miles (revised).
RECORDS AVAILABLE.—March, 1929, to September, 1931.
EXTREMES.—Maximum discharge during year, 65,500 second-feet June 25 (gage height, 17.4 feet); minimum, 10,900 second-feet Sept. 20, 21; minimum gage height, 8.3 feet Dec. 29.

1929–1931: Maximum discharge, 263,000 second-feet June 5, 1929 (gage height, 24.9 feet); minimum, 8,200 second-feet Dec. 27, 1929; minimum gage height, 5.4 feet Jan. 12, 1930.

Maximum stage known, 25.9 feet July 22, 1915.
REMARKS.—Records good. Gage-height record furnished by Corps of Engineers, United States Army.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22,200	32,400	27,000	13,700	28,900	28,600	29,100	29,400	27,600	42,600	18,900	19,100
2	22,200	28,800	26,000	13,700	43,300	29,800	28,500	29,400	30,000	42,000	18,400	23,000
3	22,200	27,600	23,800	14,100	38,100	29,800	27,900	28,200	32,400	41,300	18,400	34,600
4	22,700	26,500	21,600	14,600	34,300	31,000	37,700	26,000	33,000	41,300	19,900	48,300
5	22,200	27,000	20,400	14,600	30,100	30,400	37,100	26,000	29,400	44,500	25,400	41,200
6	22,200	26,000	20,400	15,000	27,800	29,800	32,700	25,400	27,600	46,600	29,400	32,200
7	22,700	26,000	19,900	14,600	31,300	29,400	30,900	24,880	32,400	44,500	27,000	25,700
8	23,200	26,100	19,400	15,400	33,700	30,000	29,700	25,400	50,700	43,100	26,000	21,800
9	23,200	25,500	19,400	17,400	31,900	29,400	27,900	26,500	52,300	41,100	23,800	19,600
10	23,800	25,500	19,400	19,400	30,100	28,200	27,300	27,000	43,300	40,500	20,400	17,600
11	23,800	25,500	19,900	19,900	28,900	27,000	26,800	33,000	38,000	41,100	18,400	16,400
12	25,400	25,500	20,400	20,400	27,700	25,400	26,800	31,800	38,700	41,100	23,800	15,000
13	27,600	25,500	21,600	21,600	28,300	25,600	34,500	30,600	37,400	40,500	27,600	14,100
14	27,100	25,500	22,100	21,000	27,200	26,200	40,900	29,400	38,700	38,500	22,100	13,300
15	29,500	25,000	22,600	22,600	26,100	27,300	43,600	29,400	39,400	38,000	19,400	12,500
16	31,900	25,000	24,800	22,100	26,100	28,400	48,600	28,200	38,000	37,400	19,400	12,100
17	36,100	26,100	24,300	21,600	26,100	30,800	45,000	28,000	40,000	38,000	18,900	11,700
18	50,200	27,200	22,100	21,000	25,500	30,800	39,700	27,500	46,800	35,400	16,900	11,300
19	43,900	28,300	22,100	18,400	24,500	29,600	35,100	30,400	42,600	33,600	18,400	11,300
20	42,900	30,700	22,100	15,900	25,000	28,400	33,900	37,800	42,600	33,600	18,400	11,300
21	41,500	33,100	21,000	14,600	24,700	29,000	33,900	37,100	55,800	31,800	18,400	10,900
22	39,600	38,700	21,000	13,300	24,700	29,000	36,400	32,200	54,900	30,700	19,900	14,100
23	38,300	43,900	19,400	13,300	25,300	29,000	39,000	32,200	49,100	28,900	19,900	21,000
24	35,900	42,600	16,400	14,100	24,800	27,800	38,300	31,600	59,500	27,700	17,900	34,800
25	33,500	48,800	15,900	15,000	25,300	27,800	33,900	29,800	65,500	24,900	16,400	33,000
26	32,300	43,300	15,000	15,000	25,300	28,400	32,700	28,600	63,500	23,800	16,400	29,800
27	29,000	38,100	14,100	15,900	25,300	29,600	32,700	28,600	59,500	22,700	15,400	37,200
28	29,000	34,300	13,300	15,900	26,400	28,400	32,100	25,300	49,900	21,600	15,000	46,000
29	29,000	31,900	12,900	15,900	-------	28,400	32,700	25,300	45,400	20,500	15,000	44,600
30	34,400	30,700	13,700	17,900	-------	28,400	31,500	25,800	44,000	19,900	15,900	40,500
31	36,900	-------	14,100	19,900	-------	29,600	-------	25,800	-------	19,400	16,900	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	50,200	22,200	30,500	1,880,000
November	48,800	25,000	30,700	1,830,000
December	27,000	12,900	19,900	1,220,000
January	22,600	13,300	17,000	1,050,000
February	43,300	24,500	28,500	1,580,000
March	31,000	25,400	28,800	1,770,000
April	48,600	26,800	34,200	2,040,000
May	37,800	24,800	28,900	1,780,000
June	65,500	27,600	43,600	2,590,000
July	46,600	19,400	34,700	2,130,000
August	29,400	15,000	19,900	1,220,000
September	48,300	10,900	24,100	1,430,000
The year	65,500	10,900	28,300	20,500,000

MISSOURI RIVER AT BOONVILLE, MO.

LOCATION.—Water-stage recorder in sec. 35, T. 49 N., R. 17 W., at Missouri-Kansas-Texas Railroad bridge at Boonville. Chain gage at same site used prior to May 10, 1931. Zero of gage is 564.95 feet above mean sea level (revised).

DRAINAGE AREA.—506,000 square miles (revised).

RECORDS AVAILABLE.—October, 1925, to September, 1931.

EXTREMES.—Maximum discharge during year, 79,200 second-feet June 9, 10 (gage height, 12.8 feet); minimum, 11,600 second-feet Sept. 22; minimum gage height, 3.4 feet Dec. 31, Jan 1.

1925–1931: Maximum discharge, 381,000 second-feet Apr. 23, 1927 (gage height, 23.9 feet); minimum, 9,550 second-feet Dec. 24, 1929 (gage height, 2.1 feet).

Maximum stage known, 32.7 feet June 21, 1844.

REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1930–31

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

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	50,500	23,900	31,100	1,910,000
November	47,400	25,300	31,200	1,860,000
December	34,700	13,100	21,800	1,340,000
January	22,900	13,100	17,100	1,050,000
February	41,100	18,200	29,100	1,620,000
March	40,300	25,700	32,100	1,970,000
April	72,800	26,900	43,900	2,610,000
May	55,000	25,700	34,400	2,120,000
June	74,000	31,700	52,300	3,110,000
July	46,000	20,800	36,300	2,230,000
August	31,700	15,300	21,900	1,350,000
September	65,400	11,600	31,300	1,860,000
The year	74,000	11,600	31,800	23,000,000

MISSOURI RIVER AT ISBELL, MO.

LOCATION.—Staff gage in SW. ¼ sec. 34, T. 45 N., R. 9 W., at Isbell. Zero of gage is 510.00 feet above mean sea level.
DRAINAGE AREA.—523,000 square miles (revised).
RECORDS AVAILABLE.—December, 1928, to September, 1931.
EXTREMES.—Maximum discharge during year, 92,600 second-feet May 20 (gage height, 10.5 feet); minimum, 15,500 second-feet Dec. 31; minimum gage height, 0.8 foot Jan. 2.
1929–1931: Maximum discharge, 399,000 second-feet June 8, 1929 (gage height, 21.1 feet); minimum, 11,000 second-feet Dec. 25, 26, 1929 (gage height, 0.5 foot).
REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26,100	31,900	40,400	16,700	16,300	27,200	36,800	44,900	33,200	49,400	23,500	27,800
2	25,500	36,700	38,000	16,300	17,100	26,500	38,400	41,300	41,300	46,700	22,400	56,400
3	25,500	35,900	39,600	16,700	24,100	27,200	41,100	38,000	42,200	44,900	22,400	40,700
4	25,500	34,300	38,800	17,100	41,300	28,600	41,100	37,200	40,400	44,900	21,400	46,400
5	25,500	29,500	35,600	17,500	39,600	30,000	41,100	34,000	38,800	44,900	20,900	51,600
6	24,700	27,400	32,400	17,100	36,400	30,800	46,500	32,400	37,200	43,100	21,400	62,700
7	25,900	27,400	29,300	16,700	33,200	31,600	50,200	31,600	34,800	44,900	23,500	53,400
8	27,900	27,400	29,300	16,700	33,200	31,600	42,000	30,800	39,600	46,700	32,400	41,500
9	27,900	27,400	30,800	16,700	33,200	30,000	38,400	30,000	58,300	45,800	36,400	35,500
10	26,500	27,400	30,000	17,100	35,600	30,800	34,400	30,000	78,600	44,000	42,200	34,000
11	26,500	26,700	27,900	17,900	36,400	34,000	33,200	30,000	76,200	42,200	38,000	30,500
12	27,900	26,700	27,200	19,100	34,800	36,400	30,800	32,400	71,500	40,400	32,400	28,400
13	27,200	26,000	25,900	20,300	33,200	38,000	29,300	35,600	76,200	40,400	24,700	23,500
14	27,900	26,000	24,700	21,600	34,000	38,000	28,600	38,800	68,200	41,300	23,500	20,900
15	29,300	26,700	24,700	22,100	33,200	38,000	30,800	36,400	61,600	40,400	27,200	18,700
16	30,800	26,000	24,700	21,200	31,600	40,400	38,800	33,200	54,200	39,600	27,900	19,500
17	31,600	26,000	24,700	18,300	33,200	42,200	44,000	30,800	51,200	39,600	23,500	19,500
18	32,400	26,700	25,300	18,700	33,200	39,600	50,300	29,300	49,400	38,800	21,900	20,400
19	39,600	25,400	25,300	20,300	33,200	36,400	52,200	58,300	44,000	39,600	22,400	22,400
20	55,200	26,700	24,700	22,100	32,400	34,800	47,600	88,700	48,500	40,400	21,900	18,700
21	51,200	28,100	23,500	21,200	28,600	33,200	39,400	64,900	46,700	39,600	20,900	16,300
22	47,600	29,500	21,900	19,500	26,500	32,400	42,100	67,100	43,100	39,600	20,900	15,900
23	46,700	32,700	21,900	17,900	25,900	33,200	61,700	66,000	52,200	38,000	21,400	17,900
24	44,000	38,300	21,400	17,500	27,200	32,400	69,400	55,200	59,400	36,400	20,900	25,300
25	41,300	46,200	19,100	16,700	25,900	31,600	71,600	47,600	56,200	33,200	21,400	40,700
26	39,600	47,100	18,300	17,500	25,900	30,000	63,900	42,200	61,600	31,600	21,900	58,400
27	36,400	53,700	17,900	16,700	25,900	34,800	55,200	41,300	69,300	32,400	20,000	58,400
28	32,400	49,800	17,900	16,700	26,500	51,200	52,200	38,000	68,200	27,900	18,700	55,400
29	30,000	43,500	17,500	16,700	-------	49,400	50,200	34,000	64,900	25,900	19,600	60,500
30	30,000	40,800	16,300	16,700	-------	42,200	46,600	30,800	54,200	24,100	20,400	66,000
31	29,200	-------	15,500	17,500	-------	38,800	-------	29,300	-------	23,500	20,000	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	55,200	24,700	32,800	2,020,000
November	53,700	25,400	32,600	1,940,000
December	40,400	15,500	26,100	1,600,000
January	22,100	16,300	18,200	1,120,000
February	41,300	16,300	30,600	1,700,000
March	51,200	26,500	34,900	2,150,000
April	71,600	28,600	44,900	2,670,000
May	88,700	29,300	41,300	2,540,000
June	78,600	33,200	54,000	3,210,000
July	49,400	23,500	39,000	2,400,000
August	42,200	18,700	24,400	1,500,000
September	66,000	15,900	36,200	2,150,000
The year	88,700	15,500	34,600	25,000,000

MISSOURI RIVER AT HERMANN, MO.

LOCATION.—Wire gage in SW. ¼ sec. 25, T. 46 N., R. 5 W., at Hermann. Zero of gage is 481.49 feet above mean sea level (revised).

DRAINAGE AREA.—528,000 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 123,000 second-feet May 20 (gage height, 13.5 feet); minimum, 15,800 second-feet Dec. 31, Jan. 1.

1928–1931: Maximum discharge, 407,000 second-feet June 8, 1929 (gage height, 24.6 feet); minimum, 15,000 second-feet Dec. 25–28, 1929; minimum gage height, 0.9 foot Dec. 31, 1930, Jan. 1, 2, Sept. 22, 1931.

Maximum stage known, 35.7 feet in June, 1844.

REMARKS.—Records good. Gage-height record until Jan. 25 furnished by United States Weather Bureau.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26,900	31,800	43,600	15,800	18,500	32,500	42,800	48,400	37,100	54,000	24,200	28,600
2	26,400	35,200	43,000	16,200	18,900	31,400	42,800	44,800	41,200	50,800	23,200	57,000
3	26,400	38,400	41,800	16,500	20,600	30,800	44,000	42,400	45,400	49,000	22,800	49,600
4	26,400	36,100	42,400	16,900	34,800	31,400	44,000	39,400	44,800	49,000	22,300	43,600
5	25,800	33,300	41,200	17,700	40,600	32,000	44,000	37,100	42,400	48,400	21,400	49,600
6	25,800	31,600	37,100	17,700	37,100	32,000	44,600	35,900	41,200	47,200	21,400	59,000
7	26,400	28,500	34,800	17,700	34,800	33,600	48,800	33,100	40,000	47,200	22,300	60,000
8	28,600	29,000	34,200	17,700	34,200	33,100	47,600	32,500	40,000	48,400	27,500	47,800
9	29,200	29,000	35,400	17,700	33,600	33,100	42,800	32,000	49,600	47,800	34,800	40,000
10	28,600	28,500	36,500	18,500	35,400	35,400	40,400	32,500	73,000	46,600	41,800	36,500
11	28,600	28,500	34,800	18,900	37,100	37,100	38,700	33,600	84,000	44,800	41,200	34,200
12	28,600	27,900	33,100	19,700	37,100	40,600	35,800	35,900	74,100	43,000	35,400	31,400
13	29,200	27,400	31,400	21,000	37,100	43,000	34,600	38,800	79,600	42,400	30,300	26,900
14	29,200	27,400	29,700	21,000	38,300	44,200	33,500	41,200	76,300	42,400	25,200	23,200
15	30,300	27,400	29,200	21,400	37,100	43,000	34,100	40,600	68,600	42,400	26,900	21,400
16	33,100	27,900	28,600	22,700	35,900	41,800	38,700	38,800	60,000	41,200	29,700	19,700
17	33,600	27,900	28,600	21,800	36,500	43,600	44,600	37,100	54,000	40,000	29,700	21,400
18	34,200	27,900	29,200	20,100	38,300	43,000	49,400	34,200	51,400	40,000	25,800	19,700
19	36,500	27,400	29,200	20,100	37,700	40,600	53,000	50,200	47,800	40,000	24,200	23,200
20	48,400	28,500	29,200	20,600	38,300	38,300	51,800	121,000	47,800	40,000	25,200	22,300
21	52,000	29,000	27,500	22,300	36,500	37,700	47,200	91,200	49,600	39,400	24,200	18,500
22	49,000	30,700	26,400	22,300	33,100	36,500	43,600	71,900	46,600	39,400	23,700	17,300
23	46,600	38,100	24,700	21,000	32,000	35,900	55,000	78,500	48,400	38,300	23,700	19,300
24	44,200	38,100	22,800	19,300	33,600	35,400	74,100	63,100	57,000	35,900	22,800	21,400
25	43,000	46,200	22,800	18,500	33,600	35,400	79,600	62,000	58,000	33,600	22,800	34,800
26	40,600	48,000	21,900	18,500	33,600	34,800	77,200	55,000	57,000	32,500	23,700	47,800
27	36,500	51,000	21,400	19,300	33,100	35,400	65,100	46,000	66,400	30,800	22,800	58,000
28	34,800	52,200	20,600	18,500	32,000	52,000	59,000	44,200	69,700	28,600	21,400	54,000
29	33,600	48,600	18,900	18,500	-------	56,000	57,000	40,600	69,700	26,900	20,600	53,000
30	30,800	45,000	17,700	18,100	-------	47,200	55,000	37,100	61,000	26,400	20,600	61,000
31	30,800	-------	15,800	18,900	-------	43,600	-------	35,400	-------	25,200	21,400	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	52,000	25,800	33,700	2,070,000
November	52,200	27,400	34,200	2,040,000
December	43,600	15,800	30,100	1,850,000
January	22,700	15,800	19,200	1,180,000
February	40,600	18,500	33,900	1,880,000
March	56,000	30,800	38,400	2,360,000
April	79,600	33,500	49,000	2,920,000
May	121,000	32,000	47,600	2,930,000
June	84,000	37,100	56,100	3,340,000
July	54,000	25,200	40,700	2,500,000
August	41,800	20,600	25,900	1,590,000
September	61,000	17,300	36,700	2,180,000
The year	121,000	15,800	37,100	26,840,000

GRASSHOPPER CREEK BASIN

GRASSHOPPER CREEK NEAR DILLON, MONT.

LOCATION.—Chain gage in the NW. ¼ sec. 26, T. 8 S., R. 10 W., 5 miles above Barratts and 14 miles southwest of Dillon.
DRAINAGE AREA.—360 square miles.
RECORDS AVAILABLE.—March, 1921, to September, 1931.
EXTREMES.—Maximum discharge during year, 85 second-feet Apr. 4 (gage height, 5.02 feet); no flow Aug. 5, 6 (gage height, 4.00 feet).
1921–1931: Maximum discharge, 557 second-feet June 5, 1925 (gage height, 6.52 feet); no flow July 5–11, Aug. 3, 1930, Aug. 5–6, 1931.
REMARKS.—Records fair. Mumerous small diversions above gage.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	35	27	------	59	48	13	------	0.5	0.2
2	27	42	27	------	76	50	19	------	.3	.2
3	29	48	35	------	76	56	21	------	.2	.3
4	27	37	35	------	85	80	76	------	.2	.3
5	29	43	33	------	79	78	48	------	0	.3
6	29	46	30	------	73	59	39	------	0	.3
7	31	39	26	------	68	61	24	------	.2	.3
8	31	29	21	------	64	57	22	------	.3	.3
9	31	42	24	------	76	40	18	------	.3	.3
10	33	56	22	------	76	35	19	------	.3	.3
11	31	46	24	------	64	29	24	------	.3	.3
12	39	46	27	------	70	23	29	------	.3	.3
13	43	44	29	------	76	17	24	------	.3	.3
14	39	41	27	------	66	16	21	------	.3	.3
15	39		31	------	56	11	19	------	.3	.5
16	39	30	29	------	56	9.6	17	------	.3	.5
17	41		------	------	56	9.6	15	------	.3	.5
18	39		------	------	51	11	13	------	.3	.5
19	41		------	------	48	11	11	------	.3	.5
20	43	26	------	------	46	9.6	9.0	------	.3	.5
21	46	24	------	------	46	11	7.0	------	.5	.5
22	46	33	------	------	39	13	8.0	0.2	.3	.5
23	43	35	------	46	37	11	8.0	.3	.2	.6
24	46	35	------	51	46	10	------	.2	.2	3.1
25	46	39	------	43	46	7.0	------	.3	.2	5.6
26	48	41	------	37	42	8.0	------	.2	.2	8.0
27	48	33	------		39	8.0	------	.2	.2	10
28	46	31	------		41	21	------	.2	.2	12
29	39	31	------	30	41	21	------	.2	.2	14
30	33	33	------		48	16	------	.5	.2	16
31	29	------	------		------	13	------	.5	.2	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	48	26	37.3	2,290
November	56	24	36.8	2,190
December 1–16	35	21	27.9	885
March 23–31	51	----------	36.3	648
April	85	37	58.2	3,460
May	80	7.0	27.4	1,680
June 1–23	76	7.0	21.9	999
July 22–31	.5	.2	.28	5.6
August	.5	0	.25	15
September	16	.2	2.58	154

NOTE.—No records Dec. 26 to Mar. 22, June 24 to July 21.

RUBY RIVER BASIN

RUBY RIVER NEAR ALDER, MONT.

LOCATION.—Staff gage in SW. ¼ sec. 21, T. 6 S., R. 4 W., 1,000 feet below highway bridge 1½ miles south of Alder.

RECORDS AVAILABLE.—April, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 470 second-feet May 17 (gage height, 2.78 feet); minimum, 10 second-feet July 2–5.

1929–1931: Maximum discharge, 745 second-feet May 25, 1929 (gage height, 3.55 feet); minimum, 5 second-feet Aug. 30, 1929 (gage height, 0.50 foot).

REMARKS.—Records good except those for period of ice effect, Jan. 28 to Feb. 16, which are fair. No records Nov. 18 to Jan. 27.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	39	110	------	164	87	119	233	66	11	34	28
2	45	106	------	92	90	115	208	112	10	28	21
3	47	96	------	117	97	97	260	119	10	30	25
4	47	99	------	133	104	101	233	119	10	28	28
5	47	92	------	57	87	104	233	104	10	24	27
6	43	96	------	82	84	108	208	115	12	25	27
7	29	96	------	89	101	123	233	78	19	28	25
8	30	96	------	99	84	154	233	90	19	30	33
9	29	99	------	74	90	133	220	66	16	25	31
10	34	102	------	110	94	143	185	64	12	21	30
11	76	102	------	72	90	133	164	48	12	20	27
12	82	110	------	65	94	143	233	44	15	20	25
13	71	114	------	69	104	164	302	33	16	20	20
14	82	99	------	62	97	185	406	36	16	28	21
15	80	96	------	87	94	154	438	33	27	31	24
16	89	92	------	92	97	154	470	30	21	21	24
17	92	82	------	90	101	154	470	28	27	20	25
18	99	------	------	94	97	164	196	31	22	27	27
19	96	------	------	97	97	164	164	27	22	25	31
20	96	------	------	94	101	143	123	27	12	25	40
21	92	------	------	97	97	143	87	18	14	22	36
22	89	------	------	104	123	112	84	21	21	21	34
23	89	------	------	94	104	108	46	20	21	21	33
24	82	------	------	90	90	143	48	21	18	24	28
25	99	------	------	94	94	119	154	17	20	21	30
26	106	------	------	108	95	108	119	14	25	21	25
27	99	------	------	94	96	115	143	12	28	21	22
28	92	------	87	94	97	119	97	11	33	22	21
29	102	------	80	------	97	164	64	11	28	21	25
30	110	------	117	------	94	164	53	12	33	28	28
31	114	------	154	------	97	------	48	------	25	28	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	114	29	75.1	4,620
November 1–17	114	82	99.2	3,340
January 28–31	154	80	110	873
February	164	57	93.4	5,190
March	123	84	95.9	5,900
April	185	97	135	8,040
May	470	46	199	12,200
June	119	11	47.6	2,830
July	33	10	18.9	1,160
August	34	20	24.5	1,510
September	40	20	27.4	1,630

BIG HOLE RIVER BASIN

BIG HOLE RIVER NEAR MELROSE, MONT.

LOCATION.—Chain gage in the SE. ¼ sec. 27, T. 3 S., R. 9 W., at highway bridge at Brown's siding on Oregon Shore Line Railroad, 8 miles south of Melrose.
RECORDS AVAILABLE.—March, 1924, to September, 1931.
EXTREMES.—Maximum discharge during year, 2,160 second-feet June 5 (gage height, 3.60 feet); minimum, 49 second-feet Aug. 17 (gage height, 0.70 foot).
1924–1931: Maximum stage, 14.0 feet June 10, 1927 (discharge not determined); minimum, that of Aug. 17, 1931.
REMARKS.—Records good. No records Nov. 21 to Feb. 6. Discharge estimated Feb. 8–11, May 9, 10, 17. Some small diversions above station. Flow partly regulated.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	449	494	-------	225	352	825	1,510	375	232	93
2	449	494	-------	240	680	865	1,630	352	240	93
3	470	494	-------	269	555	1,080	1,750	352	232	93
4	470	470	-------	232	555	1,040	2,020	352	225	88
5	449	449	-------	232	527	1,240	2,160	375	192	93
6	428	470	-------	232	647	1,180	2,020	398	205	93
7	428	428	331	240	990	1,130	1,630	352	179	76
8	470	428	331	172	1,180	1,080	1,400	331	172	71
9	470	470	331	240	1,290	980	1,400	309	141	82
10	569	517	352	240	1,400	880	1,400	309	135	88
11	598	470	352	269	1,400	788	1,750	309	117	76
12	598	470	352	269	1,510	750	1,630	269	111	88
13	598	470	309	269	1,510	905	1,510	269	99	105
14	598	428	473	289	1,630	947	1,240	232	88	111
15	569	300	309	269	1,180	1,180	1,180	232	82	117
16	543	327	240	289	905	1,240	1,240	225	71	123
17	517	357	212	289	865	1,320	905	232	49	111
18	543	391	269	331	947	1,400	750	232	88	105
19	543	327	240	331	865	1,400	647	205	93	105
20	543	357	212	352	750	1,240	647	198	76	166
21	543	-------	232	352	499	1,080	555	192	82	185
22	543	-------	212	398	473	1,040	447	179	76	192
23	569	-------	225	447	555	947	585	147	82	205
24	517	-------	212	447	647	1,040	585	160	93	212
25	517	-------	225	473	680	1,180	499	185	99	225
26	517	-------	212	309	680	1,630	473	192	82	232
27	543	-------	232	309	680	2,020	447	172	93	240
28	543	-------	212	309	750	1,510	422	185	99	240
29	517	-------	-------	375	680	1,630	447	160	93	269
30	470	-------	-------	352	788	1,630	398	179	99	240
31	449	-------	-------	331	-------	1,630	-------	201	111	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	598	428	517	31,800
November 1–20	517	300	287	11,400
February 7–28	473	212	276	11,500
March	473	172	303	18,600
April	1,630	352	872	51,900
May	2,020	750	1,190	73,200
June	2,160	398	1,110	66,000
July	398	147	254	15,600
August	240	49	124	7,620
September	269	71	141	8,390

BOULDER RIVER BASIN

BOULDER RIVER NEAR BOULDER, MONT.

LOCATION.—Wire gage in sec. 32, T. 6 N., R. 4 W., at highway bridge 2 miles west of Boulder.

RECORDS AVAILABLE.—April, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 418 second-feet May 18 (gage height, 7.86 feet); no flow Mar. 5, July 15–17, 21 (gage height, about 5.58 feet).

1929–1931: Maximum discharge for period, 1,480 second-feet May 25, 1929 (gage height, 9.90 feet); minimum, that of Mar. 5, July 15–17, 21, 1931.

REMARKS.—Records fair except those for period Oct. 1 to Nov. 20, which are poor. Numerous diversions above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	41	26	11	26	22	62	218	261	30	7.5	7.5
2	25	36	27	12	26	26	60	261	246	22	6.5	7.5
3	22	41	28	12	28	26	62	261	232	26	6.5	7.5
4	22	46	28	12	28	20	65	261	261	24	6.5	7.5
5	22	52	28	13	28	0	65	276	218	24	5.5	7.5
6	22	52	25	12	28	16	65	292	192	35	6.5	7.5
7	18	52	24	13	28	30	70	292	205	28	7.5	7.5
8	26	58	22	14	27	29	70	292	146	22	6.5	7.5
9	25	58	18	14	26	33	72	276	146	11	6.5	6.5
10	22	46	17	14	26	35	88	218	136	13	7.5	6.5
11	22	51	18	16	20	35	157	218	117	11	7.5	7.5
12	31	51	18	16	20	35	157	232	114	5.5	9.2	7.5
13	22	52	18	16	24	37	157	232	100	5.5	9.2	9.2
14	22	18	18	16	24	37	157	398	82	5.5	7.5	11
15	31	14	22	18	24	36	157	398	78	0	7.5	9.2
16	31	17	22	18	24	37	157	418	60	0	6.5	9.2
17	31	17	22	20	20	39	157	398	41	0	9.2	11
18	37	14	23	20	20	44	157	418	35	5.5	7.5	11
19	41	14	23	20	18	44	157	398	30	4.5	7.5	13
20	41	14	23	20	24	44	107	276	48	9.2	7.5	11
21	41	18	23	20	24	41	100	261	41	0	9.2	13
22	41	21	23	20	26	44	82	232	44	9.2	6.5	13
23	41	26	23	20	24	44	85	261	37	5.5	5.5	13
24	41	26	23	20	22	41	88	292	37	4.5	5.5	13
25	41	28	24	20	20	39	88	276	28	4.5	7.5	11
26	41	28	20	22	20	37	85	292	26	2.0	6.5	11
27	41	28	16	22	20	35	85	292	16	2.0	7.5	11
28	41	27	13	22	18	34	126	379	30	4.5	5.5	13
29	41	28	14	22	-------	46	136	325	24	6.5	6.5	13
30	36	26	13	22	-------	53	146	292	22	9.2	6.5	13
31	31	-------	12	24	-------	60	-------	261	-------	9.2	7.5	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	41	18	31.5	1,940
November	58	14	33.3	1,980
December	28	12	21.1	1,300
January	24	11	17.5	1,080
February	28	18	23.7	1,320
March	60	0	35.5	2,180
April	157	60	107	6,370
May	418	218	297	18,300
June	261	16	102	6,070
July	35	0	10.9	670
August	9.2	5.5	7.11	437
September	13	6.5	9.89	588
The year	418	0	58.2	42,200

SOUTH BOULDER CREEK BASIN

SOUTH BOULDER CREEK NEAR JEFFERSON ISLAND, MONT.

LOCATION.—Water-stage recorder in sec. 18, T. 2 S., R. 3 W., about 200 feet above headworks of pipe line of Liberty-Montana Mines Co. and 16 miles southwest of Jefferson Island.

RECORDS AVAILABLE.—May, 1926, to September, 1931.

EXTREMES.—Maximum discharge during year, 132 second-feet June 2 (gage height, 2.24 feet); minimum, 8.2 second-feet Dec. 22 (ice measurement).

1926–1931: Maximum discharge, 434 second-feet June 16, 1929 (gage height, 3.50 feet); minimum, 2.0 second-feet Apr. 12, 1929 (gage height, 0.90 foot).

REMARKS.—Records good. No diversions.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	17				17	122	46	26	10
2	19	17				21	128	43	24	10
3	18	18				19	126	41	23	9.5
4	17	18				20	119	40	22	9.5
5	18	17				20	113	40	22	9.5
6	18	18				23	115	38	21	9.0
7	23	18		[a] 11		30	119	36	21	9.0
8	23	19				25	122	34	20	9.0
9	23	19				23	122	33	20	9.0
10	23	19				20	120	32	20	9.0
11	23	19				23	111	32		9.0
12	23	19				30	106	31		9.5
13	23	19				38	102	30		10
14	23	19				50	104	29	18	10
15	22	19				73	103	29		10
16	22					96	110	29		10
17	23					90	106	28	15	10
18	23					73	96	28	15	10
19	22					63	87	28	14	10
20	22					57	82	28	13	10
21	21					48	68	25	12	11
22	21		[a] 8.2			46	68	25	13	
23	20					55	68	24	11	
24	20					74	64	23	10	
25	19					97	62	22	10	10
26	19				9.0	111	62	21	10	
27	18				10	94	62	22	10	
28	18				12	86	57	22	10	
29	17				13	82	53	22	10	36
30	17				14	92	53	27	10	36
31	17					106		26	10	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	23	17	20.5	1,260
November 1–15	19	17	18.3	545
April 26–30	14.0	9.0	11.6	115
May	111	17	54.9	3,380
June	128	53	94.3	5,610
July	46	21	30.1	1,850
August	26	10	16.1	990
September	36	9.0	11.5	683

[a] Discharge measurement.

NOTE.—No records for periods omitted.

WILLOW CREEK BASIN

WILLOW CREEK NEAR WILLOW CREEK, MONT.

LOCATION.—Wire gage in SW. ¼ sec. 18, T. 1 S., R. 1 E., at highway bridge 7 miles south of Willow Creek.

DRAINAGE AREA.—164 square miles.

RECORDS AVAILABLE.—September, 1919, to September, 1931.

EXTREMES.—Maximum discharge recorded during year, 99 second-feet June 2 (gage height, 2.18 feet); minimum, 6.2 second-feet Sept. 11 (gage height, 0.98 foot).

1919–1931: Maximum discharge, 456 second-feet June 21, 22, 1922 (gage height, 3.50 feet); minimum, 3 second-feet Nov. 27, 1926 (gage height, 1.40 feet).

REMARKS.—Records poor. Insufficient data to compute discharge for period Nov. 16 to Feb. 28. Numerous small diversons above and below station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	66	66	e 56	27	81	33	30	11
2	31	66	68	60	27	99	33	24	12
3	31	66	68	38	26	87	33	24	11
4	31	66	71	59	26	93	38	23	11
5	31	62	42	49	26	75	30	e 22	10
6	32	66	73	54	38	60	38	22	8.6
7	33	66	56	54	43	62	33	21	8.6
8	36	66	e 44	49	46	87	31	20	e 9.3
9	40	64	33	39	40	e 82	30	21	10
10	46	66	93	e 37	43	75	26	20	8.6
11	60	66	64	35	40	87	30	17	6.2
12	54	66	66	35	43	62	30	15	7.0
13	50	64	62	35	e 50	62	31	14	11
14	48	64	49	36	56	66	25	14	12
15	48	68	54	33	54	60	23	17	12
16	49	------	58	32	66	60	25	16	13
17	71	------	54	26	87	56	30	16	11
18	66	------	56	26	54	52	31	16	11
19	81	------	58	26	60	62	30	15	18
20	75	------	54	26	51	56	28	15	28
21	73	------	54	28	48	58	24	15	17
22	68	------	51	27	43	58	19	15	20
23	68	------	51	36	45	54	21	12	17
24	71	------	51	40	52	58	19	11	16
25	81	------	46	33	68	49	23	11	17
26	e 72	------	26	33	75	43	23	12	16
27	64	------	e 30	33	81	40	24	16	15
28	62	------	64	27	71	42	20	17	e 28
29	66	------	71	27	66	39	18	14	40
30	64	------	71	31	66	38	27	12	35
31	66	------	52	------	75	------	52	12	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	81	30	54.8	3,370
November 1–15	68	62	65.5	1,950
March	93	26	56.6	3,480
April	60	26	37.3	2,220
May	87	26	51.4	3,160
June	99	38	63.4	3,770
July	52	18	28.3	1,740
August	30	11	17.1	1,050
September	40	6.2	15.0	893

e Estimated.

MADISON RIVER BASIN

MADISON RIVER NEAR WEST YELLOWSTONE, MONT.

LOCATION.—Water-stage recorder a quarter of a mile upstream from Riverside ranger station and 1½ miles east of West Yellowstone and west boundary of Yellowstone National Park.

DRAINAGE AREA.—419 square miles.

RECORDS AVAILABLE.—June, 1913, to September, 1931.

EXTREMES.—Maximum discharge during year, 902 second-feet May 16 (gage height, 2.39 feet); minimum, 266 second-feet Aug. 7–12 (gage height, 1.63 feet).

1913–1931: Maximum discharge, 1,950 second-feet June 10, 1917; minimum, that of Aug. 7–12, 1931.

REMARKS.—Records excellent except those for period November to March and those estimated for periods June 10–17, 19, 21–23, 25, 26, 28, 29, which are fair. No diversions or regulation. Gage observations furnished by officials of Yellowstone Park.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	356	350	366	340	328	322	393	460	365	287	292	276
2	370	356	368	350	322	322	393	452	379	287	287	276
3	376	356	370	345	315	322	359	460	468	287	282	271
4	409	356	371	340	309	328	340	492	500	292	276	271
5	382	363	370	335	303	328	340	500	422	292	276	271
6	376	363	363	330	303	322	346	492	386	292	271	271
7	453	356	370	340	303	315	386	578	365	287	266	271
8	698	356	363	335	303	309	436	484	353	287	266	271
9	516	350	396	334	303	322	386	444	346	282	266	271
10	524	350	370	328	309	328	365	429	360	282	266	271
11	541	350	356	328	315	334	386	429	350	282	266	271
12	483	356	356	328	315	340	415	492	342	282	266	271
13	438	376	370	328	315	340	436	569	335	282	282	271
14	417	350	370	328	315	340	429	614	330	276	303	271
15	417	363	363	334	315	336	386	662	325	276	303	271
16	389	376	370	334	322	332	372	741	320	271	292	282
17	370	376	363	334	322	328	393	741	317	271	292	282
18	389	376	356	334	322	334	422	542	315	271	287	282
19	396	370	360	334	322	346	408	468	315	271	292	282
20	389	370	360	328	328	340	372	429	315	271	287	292
21	376	370	350	328	328	334	359	408	313	271	282	309
22	376	370	355	328	328	365	359	400	310	271	282	298
23	370	369	355	328	328	359	346	429	306	276	276	292
24	370	368	350	328	328	346	359	444	303	276	271	298
25	370	367	340	328	322	340	359	422	303	276	271	298
26	376	366	335	328	328	328	359	386	303	282	271	292
27	376	365	330	328	328	328	359	379	303	292	271	292
28	363	364	325	328	328	334	365	400	298	292	271	292
29	356	363	320	328	-------	334	415	444	292	287	271	303
30	350	364	320	328	-------	334	460	393	287	292	271	292
31	350	-------	325	328	-------	340	-------	372	-------	292	276	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	698	350	410	0.979	1.13	25,200
November	376	350	363	.866	.97	21,600
December	396	320	356	.850	.98	21,900
January	350	328	332	.792	.91	20,400
February	328	303	318	.759	.79	17,700
March	365	309	333	.795	.92	20,500
April	460	340	383	.914	1.02	22,800
May	741	372	482	1.15	1.33	29,600
June	500	287	341	.814	.91	20,300
July	292	271	282	.673	.78	17,300
August	303	266	278	.663	.76	17,100
September	309	271	282	.673	.75	16,800
The year	741	266	347	.828	11.25	251,000

MADISON RIVER AT LYON, MONT.

LOCATION.—Staff gage in SE. ¼ sec. 29, T. 10 S., R. 1 E., at highway bridge at Lyon.

RECORDS AVAILABLE.—August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year ending Sept. 30, 1930, 1,720 second-feet Nov. 13–17 (gage height, 1.60 feet); minimum, 255 second-feet Mar. 24, 26–31 (gage height, 0.20 foot).

Maximum discharge during year ending Sept. 30, 1931, 2,000 second-feet May 4–5 (gage height, 1.75 feet); minimum discharge, 313 second-feet Oct. 1–7 (gage height, 0.35 foot).

1928–1931: Maximum discharge, 3,360 second-feet Aug. 13–14, 1929 (gage height, 2.40 feet); minimum, 255 second-feet Mar. 24, 26–31, 1930 (gage height, 0.20 foot).

REMARKS.—Records fair. Flow not computed for period of ice effect, Nov. 1, 1930, to Jan. 31, 1931. No diversions. Complete regulation at Hebgen Reservoir.

Daily and monthly discharge, in second-feet, 1929–1931

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1929–30												
1	1,390	1,390	1,390	1,240	880	385	291	445	1,090	515	1,390	313
2	1,390	1,550	1,390	1,240	945	360	334	600	815	515	1,390	313
3	1,390	1,550	1,390	1,240	945	334	334	700	700	515	1,390	313
4	1,390	1,550	1,320	1,240	945	291	334	650	600	515	1,390	313
5	1,390	1,390	1,240	1,240	815	291	334	600	600	515	1,390	313
6	1,390	1,390	1,240	1,240	815	291	334	600	600	445	1,390	334
7	1,390	1,240	1,240	1,240	945	291	334	515	700	445	1,320	360
8	1,240	1,390	1,240	1,240	945	291	334	445	1,090	515	1,240	360
9	1,240	1,240	1,240	1,240	945	291	385	415	1,020	600	1,160	334
10	1,240	1,390	1,240	1,090	815	291	385	445	1,240	760	1,240	334
11	1,240	1,550	1,160	1,090	880	291	385	415	945	760	1,240	334
12	1,240	1,550	1,090	1,090	945	291	385	445	1,240	700	1,240	334
13	1,240	1,720	1,090	1,020	945	291	385	445	815	700	1,320	313
14	1,240	1,720	1,090	945	945	291	385	515	700	700	1,090	313
15	1,240	1,720	1,090	815	945	291	385	557	700	815	1,020	313
16	1,240	1,720	1,090	815	815	291	334	650	760	760	1,020	313
17	1,090	1,720	1,090	945	650	291	334	700	700	815	1,020	313
18	1,090	1,550	1,090	945	515	291	334	700	650	815	1,020	313
19	1,090	1,470	1,090	945	480	291	334	700	815	815	1,020	313
20	1,090	1,240	1,240	1,020	385	291	385	700	815	700	815	313
21	1,090	1,090	1,240	1,090	313	291	385	700	700	700	600	313
22	1,090	1,470	1,240	1,090	291	291	445	815	700	700	334	313
23	945	1,720	1,240	1,090	291	291	445	700	700	700	334	313
24	945	1,550	1,240	1,090	334	255	515	600	557	700	334	313
25	945	1,550	1,240	1,090	334	273	557	700	515	880	334	313
26	945	1,550	1,240	945	313	255	600	700	515	1,090	334	313
27	1,090	1,640	1,160	815	415	255	515	945	600	1,090	334	313
28	945	1,550	1,090	700	385	255	480	1,020	515	1,090	334	313
29	945	1,390	1,240	815	-------	255	480	1,160	515	1,090	334	313
30	1,090	1,390	1,240	880	-------	255	415	1,470	515	600	334	313
31	1,390	-------	1,240	880	-------	255	-------	1,090	-------	600	334	------

Daily and monthly discharge, in second-feet, of Madison River at Lyon, Mont., 1929–1931—Continued

Day	Oct.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1930–31									
1	313	815	700	700	1,810	1,160	700	1,390	1,390
2	313	815	700	700	1,900	1,090	700	1,470	1,390
3	313	760	700	700	1,900	1,090	700	1,470	1,160
4	313	760	700	700	2,000	945	700	1,470	1,240
5	313	760	760	815	2,000	945	700	1,390	1,240
6	313	760	760	815	1,900	945	700	1,390	1,240
7	313	760	760	1,090	1,900	945	700	1,240	1,240
8	445	760	760	1,390	1,900	945	700	1,090	1,240
9	385	760	760	1,470	1,810	945	760	1,090	1,240
10	385	760	760	1,670	1,720	1,090	815	1,090	1,240
11	385	760	700	1,720	1,720	1,090	815	1,090	1,240
12	385	760	700	1,720	1,720	815	1,090	1,090	1,240
13	385	700	700	1,810	1,640	700	1,160	1,160	1,240
14	385	700	700	1,720	1,320	600	1,240	1,090	1,320
15	415	700	700	1,720	1,160	700	1,240	1,160	1,320
16	445	700	700	1,720	1,090	815	1,160	1,160	1,320
17	515	700	700	1,720	815	1,160	1,320	1,160	1,320
18	515	700	700	1,720	700	1,090	1,470	1,160	1,320
19	515	700	700	1,720	760	1,090	1,550	1,160	1,320
20	515	700	700	1,720	1,160	1,090	1,550	1,160	1,320
21	515	700	700	1,720	1,090	1,090	1,550	1,160	1,240
22	515	700	700	1,720	815	945	1,390	1,160	1,240
23	480	700	700	1,720	815	700	1,390	1,090	1,240
24	480	700	700	1,720	557	700	1,390	1,090	1,240
25	515	700	700	1,720	515	700	1,470	1,090	1,060
26	515	700	700	1,720	650	700	1,550	1,090	1,090
27	515	700	700	1,720	815	700	1,550	1,240	1,090
28	515	700	700	1,720	945	700	1,390	1,320	1,090
29	515	------	700	1,720	1,090	700	1,390	1,390	1,240
30	515	------	700	1,720	1,090	700	1,390	1,390	1,240
31	480	------	700	------	1,090	------	1,390	1,390	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1929–30				
October	1,390	945	1,180	72,600
November	1,720	1,090	1,500	89,300
December	1,390	1,090	1,210	74,400
January	1,240	700	1,040	64,000
February	945	291	685	38,000
March	385	255	289	17,800
April	600	291	396	23,600
May	1,470	415	682	41,900
June	1,240	515	748	44,500
July	1,090	445	715	44,000
August	1,390	334	905	55,600
September	360	313	320	19,000
The year	1,720	255	808	585,000
1930–31				
October	515	313	433	26,600
February	815	700	730	40,500
March	760	700	712	43,800
April	1,810	700	1,480	88,100
May	2,000	515	1,300	79,900
June	1,160	700	896	53,300
July	1,550	700	1,150	70,700
August	1,470	1,090	1,220	75,000
September	1,390	1,090	1,250	74,400

MADISON RIVER NEAR THREE FORKS, MONT.

LOCATION.—Wire gage in sec. 29, T. 2 N., R. 2 E., at highway bridge 1½ miles east of Three Forks.

RECORDS AVAILABLE.—November, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 2,320 second-feet Apr. 24, 25, 28, 30 (gage height, 3.25 feet); maximum gage height, 4.79 feet Jan. 10–12; minimum discharge, 620 second-feet May 27 (gage height, 1.89 feet).

1929–1931: Maximum discharge, 3,280 second-feet Sept. 4, 1929; minimum, 416 second-feet Feb. 27, 1930.

REMARKS.—Records fair. Discharge not computed for period Dec. 1 to Jan. 28. Flow regulated for power by storage in Hebgen Reservoir and by Madison River power dam. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	660	990	-------	1,350	1,410	1,190	2,200	940	750	1,410	1,540
2	660	890	-------	1,350	1,350	1,240	2,200	990	750	1,410	1,540
3	660	840	-------	1,350	1,300	1,350	2,200	1,410	890	1,410	1,540
4	660	840	-------	1,350	1,350	1,410	2,200	1,610	890	1,410	1,540
5	660	840	-------	1,410	1,350	1,410	1,980	1,610	890	1,410	1,470
6	660	890	-------	1,350	1,300	1,350	1,980	1,240	795	1,410	1,470
7	660	940	-------	1,350	1,300	1,350	1,880	1,190	750	1,240	1,470
8	940	940	-------	1,350	1,240	1,470	2,090	1,240	795	1,140	1,470
9	1,040	890	-------	1,350	1,240	1,780	2,090	1,190	795	1,140	1,350
10	660	840	-------	1,300	1,240	1,780	1,980	1,090	840	1,140	1,410
11	1,040	940	-------	1,240	1,240	1,780	2,090	1,040	840	1,140	1,410
12	840	940	-------	1,240	1,300	2,090	1,470	1,190	795	1,140	1,250
13	750	990	-------	1,240	1,350	2,090	1,470	1,140	795	1,190	1,090
14	840	1,040	-------	1,240	1,410	2,090	1,470	1,040	890	1,470	990
15	750		-------	1,190	1,410	2,090	1,470	990	890	1,410	1,350
16	750		-------	1,240	1,410	2,200	1,540	940	1,090	1,350	1,350
17	840	950	-------	1,240	1,410	2,200	1,540	1,040	1,140	1,300	1,410
18	940		-------	1,240	1,470	2,090	1,700	1,040	1,140	1,350	1,410
19	990		-------	1,240	1,410	2,090	1,700	1,040	1,140	1,610	1,350
20	990		-------	1,240	1,410	2,090	1,300	990	1,190	1,610	1,410
21	990		-------	1,240	1,190	2,090	1,300	990	1,190	1,610	1,410
22	940		-------	1,240	1,410	1,880	990	795	1,190	1,540	1,410
23	990	850	-------	1,190	1,190	1,780	990	795	1,300	1,610	1,410
24	940		-------	1,140	1,240	2,320	705	940	1,410	1,540	1,350
25	990		-------	1,140	1,300	2,320	660	890	1,410	1,540	1,350
26	990		-------	1,190	1,410	2,200	660	795	1,410	1,540	1,410
27	940		-------	1,140	1,410	2,200	620	795	1,300	1,610	1,350
28	940	750	-------	1,190	1,410	2,320	990	750	1,410	1,610	1,350
29	1,140		1,610	-------	1,140	2,200	1,140	705	1,410	1,610	1,190
30	1,090		1,470	-------	1,240	2,320	1,140	705	940	1,610	1,190
31	1,040	-------	1,470	-------	1,240	-------	840	-------	1,410	1,610	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,140	660	870	53,500
November	1,040	----------	884	52,600
February	1,410	1,140	1,260	70,000
March	1,470	1,140	1,330	81,800
April	2,320	1,190	1,890	112,000
May	2,200	620	1,500	92,200
June	1,610	705	1,040	61,900
July	1,410	750	1,050	64,600
August	1,610	1,140	1,420	87,300
September	1,540	1,190	1,370	81,500

GALLATIN RIVER BASIN

GALLATIN RIVER NEAR GALLATIN GATEWAY, MONT.

LOCATION.—Wire gage in SE. ¼ sec. 7, T. 4 S., R. 4 E., three-quarters of a mile below mouth of Spanish Creek and 8 miles south of Gallatin Gateway.

RECORDS AVAILABLE.—June, 1930, to September, 1931.

EXTREMES.—Maximum discharge during year, 2,940 second-feet June 2 (gage height, 4.23 feet); minimum, 178 second-feet Jan. 22 (gage height, 0.78 feet).

1930–31: Maximum discharge, 2,940 second-feet June 8, 1930, June 2, 1931 (gage height, 4.23 feet); minimum, that of Jan. 22, 1931.

REMARKS.—Records good. Discharge not computed during periods of ice effect. One small diversion above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	415	465	------	------	308	415	664	2,580	695	465	220
2	415	440	------	------	327	369	664	2,940	727	392	220
3	415	415	------	------	[a]327	348	868	2,820	727	348	220
4	415	392	------	------	327	348	727	2,700	727	348	220
5	392	369	------	------	327	348	760	2,580	633	348	220
6	392	369	------	------	308	348	905	2,580	604	348	225
7	633	369	------	308	289	604	1,180	2,700	574	348	225
8	727	369	------	273	308	604	905	2,700	546	327	225
9	760	369	------	327	308	492	795	2,580	546	327	225
10	664	392	------	327	327	465	760	2,460	518	327	225
11	633	------	------	308	327	492	727	2,120	492	327	225
12	633	------	------	327	327	518	947	1,900	492	327	225
13	604	------	------	327	327	664	1,470	1,790	465	327	225
14	604	------	191	327	327	760	2,010	1,790	465	327	225
15	604	------	204	[a]338	327	664	2,120	1,680	440	327	220
16	604	------	204	348	327	604	2,580	1,680	415	308	220
17	604	------	204	327	327	695	2,580	1,680	372	289	220
18	574	------	204	327	327	830	2,120	1,680	369	273	220
19	546	------	178	327	348	633	1,680	1,370	369	257	220
20	518	------	178	327	348	574	1,270	1,270	369	257	327
21	492	------	178	327	392	392	1,130	1,130	348	244	289
22	492	------	178	327	392	392	1,040	[a]1,100	348	244	257
23	465	------	178	308	348	392	1,470	1,080	348	257	244
24	440	------	178	308	327	392	1,470	990	369	257	230
25	440	------	------	308	327	392	2,010	947	369	244	230
26	440	------	------	308	308	415	2,460	868	369	230	225
27	415	------	------	308	308	440	2,230	868	369	225	220
28	415	------	------	[a]308	308	415	2,120	905	369	220	220
29	392	------	------	------	348	518	1,680	830	369	214	220
30	392	------	------	------	327	574	1,790	760	440	214	308
31	415	------	------	------	369	------	2,120	------	492	220	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	760	392	515	31,700
November 1–10	465	369	395	7,830
January 14–24	204	178	189	4,120
February 7–28	348	273	319	13,900
March	392	289	330	20,300
April	830	348	503	29,900
May	2,580	664	1,460	89,800
June	2,940	760	1,770	105,000
July	727	348	475	29,200
August	465	214	296	18,200
September	327	220	233	13,900

[a] Interpolated.

GALLATIN RIVER AT LOGAN, MONT.

LOCATION.—Wire gage in sec. 26, T. 2 N., R. 2 E., at highway bridge half a mile west of Logan.

RECORDS AVAILABLE.—August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 2,970 second-feet June 3 (gage height, 5.46 feet); minimum, 153 second-feet July 24, 25 (gage height, 2.24 feet).

1928–1931: Maximum discharge, 4,570 second-feet June 17, 1929 (gage height, 6.44 feet); minimum, that of July 24, 25, 1931.

REMARKS.—Records good except those for period of ice effect, Nov. 9 to Mar. 15, which are fair. Numerous diversions above station.

Daily and monthly discharge, in second-feet, 1930-31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	665	905					988	905	1,630	193	230	285
2	665	865					1,310	988	2,820	186	230	265
3	e638	865					725	988	2,970	179	207	265
4	610	e885					e776	1,120	2,820	222	207	245
5	610	905					828	1,080	2,530	245	200	245
6	638	905	750	665	575		790	1,080	2,670	237	207	245
7	e698	865					828	988	2,670	207	207	245
8	758	865				675	905	1,160	2,670	200	207	245
9	945						905	988	2,670	193	207	245
10	988						828	905	2,250	200	215	265
11	988						790	828	2,390	215	230	265
12	1,030						828	758	2,120	215	230	265
13	945						905	758	1,870	200	230	265
14	865	710					1,030	988	1,630	193	230	265
15	e905		640	575	535		1,080	1,410	1,750	200	230	265
16	945					945	945	2,120	1,630	179	230	265
17	865					865	945	2,120	1,410	179	230	265
18	1,030					945	905	1,870	1,080	172	230	265
19	1,030					1,160	905	1,410	905	166	230	265
20	1,030					945	905	1,160	725	166	230	415
21	1,030					945	905	905	610	160	245	370
22	1,030					1,160	828	695	510	160	245	348
23	1,030					1,080	758	638	438	160	245	348
24	1,030					865	790	905	348	153	245	348
25	e1,030					790	828	790	305	153	245	370
26	e1,030	690	575	620	505	725	758	1,210	245	166	245	370
27	1,030					638	695	1,750	226	166	265	370
28	988					638	758	1,630	204	179	285	348
29	945				------	695	758	1,520	204	166	285	392
30	e932				------	725	865	1,310	176	211	265	460
31	e918	------			------	725	------	1,410	------	230	285	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,030	610	898	55,200
November	905	----------	749	44,600
December	----------	----------	652	40,100
January	----------	----------	620	38,100
February	----------	----------	541	30,000
March	1,160	638	773	47,500
April	1,310	695	869	51,700
May	2,120	638	1,170	71,900
June	2,970	176	1,480	88,100
July	245	153	189	11,600
August	285	200	235	14,400
September	460	245	302	18,000
The year	2,970	153	707	511,000

e Interpolated.

PRICKLY PEAR CREEK BASIN

PRICKLY PEAR CREEK NEAR CLANCY, MONT.

LOCATION.—Staff gage in the SW. ¼ sec. 34, T. 9 N., R. 3 W., a quarter of a mile below mouth of Lump Gulch Creek and 1¼ miles north of Clancy.

DRAINAGE AREA.—178 square miles.

RECORDS AVAILABLE.—July, 1910, to September, 1916; July, 1921, to September, 1931. July, 1908, to June, 1909, at site 1 mile downstream.

EXTREMES.—Maximum discharge during year ending Sept. 30, 1930, 189 second-feet Apr. 22, 24, 26, 27; minimum, 12 second-feet at various times during August, September (gage height, 0.70 foot).

Maximum discharge during year ending Sept. 30, 1931, 56 second-feet May 27 (gage height, 1.30 feet); minimum, 4.1 second-feet Aug. 12 (gage height, 0.49 foot).

1909–1916, 1921–1931: Maximum discharge recorded, 492 second-feet June 3, 1927 (gage height, 3.8 feet); minimum, 4.1 second-feet Aug. 12, 1931 (gage height, 0.49 foot).

REMARKS.—Records for year ending Sept. 30, 1930, fair. Records for year ending Sept. 30, 1931, good except those for periods of ice effect, Nov. 11–20, Dec. 8–13, which are fair. Several diversions above station.

Daily and monthly discharge, in second-feet, 1929–1931

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1929-30									
1	34	27	------	44	138	84	36	16	15
2	32	27	------	51	138	84	35	19	14
3	30	27	------	81	154	97	29	17	12
4	29	27	------	99	146	84	29	19	12
5	29	28	------	85	122	67	28	25	12
6	29	27	39	99	130	69	27	23	12
7	28	27	35	122	114	69	27	20	17
8	27	27	32	130	99	71	28	17	15
9	27	26	30	130	99	72	27	19	18
10	27	27	31	130	90	64	27	19	18
11	27	28	36	122	84	53	41	19	23
12	27	27	43	122	90	50	52	19	18
13	27	26	34	138	84	47	40	20	18
14	26	25	34	138	84	47	34	19	18
15	26	24	32	138	97	47	29	19	17
16	24	25	30	122	90	46	28	19	15
17	24	26	35	122	84	47	26	18	15
18	23	25	36	130	84	55	23	17	15
19	23	[a]24	50	106	84	44	22	17	15
20	23	[a]22	42	114	84	45	23	19	14
21	23	[a]20	44	154	104	42	22	19	16
22	23	27	54	189	104	46	20	18	15
23	24	27	41	180	90	53	18	19	27
24	23	26	42	189	84	54	19	12	24
25	23	24	44	180	84	49	17	13	24
26	23	24	45	189	84	43	16	14	22
27	24	23	38	189	90	41	16	12	22
28	26	22	42	163	90	38	15	12	22
29	26	21	46	138	84	36	16	14	20
30	27	21	46	130	78	36	16	13	19
31	27	------	57	------	84	------	16	12	------

[a] Estimated.

Daily and monthly discharge, in second-feet, of Prickly Pear Creek near Clancy, Mont., 1929–1931—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1930–31												
1	18	23	16	------	17	12	22	27	45	15	9.7	5.7
2	20	23	16	------	16	15	22	28	46	14	9.7	5.7
3	22	23	16	------	17	16	20	29	43	16	8.3	6.0
4	22	23	16	------	18	17	21	34	46	19	7.1	6.0
5	21	23	15	------	19	18	23	37	52	19	6.4	5.0
6	20	19	16	------	16	17	28	39	39	20	5.7	5.0
7	22	19	17	------	19	19	29	45	36	16	5.7	5.4
8	28	23	16	------	19	19	29	35	36	14	5.7	5.7
9	28	23	16	------	19	18	25	32	46	14	5.4	5.7
10	28	23	16	------	12	18	25	31	37	14	4.6	5.7
11	33	22	15	14	12	18	27	28	32	13	4.3	6.0
12	31	22	15	13	12	19	26	29	30	12	4.1	5.7
13	31	21	14	12	12	19	30	38	26	11	4.6	5.7
14	28	21	14	12	12	19	31	48	24	10	5.0	5.7
15	28	18	15	12	12	18	26	42	26	9.2	5.0	5.7
16	24	18	14	12	12	21	25	42	22	7.4	5.0	5.7
17	25	19	14	13	12	22	22	42	19	7.8	5.7	5.7
18	29	19	14	13	12	22	25	38	17	7.8	7.4	5.7
19	29	18	13	14	12	20	24	41	19	6.4	9.7	6.8
20	28	18	12	17	14	20	20	37	19	5.7	8.7	18
21	28	18	------	17	12	20	21	33	21	5.7	7.4	17
22	28	17	------	14	12	24	22	35	17	6.0	7.1	17
23	26	17	------	12	12	24	23	36	17	5.7	7.1	16
24	26	17	------	13	12	22	20	35	19	5.7	6.0	12
25	27	17	------	16	12	24	19	34	16	5.4	5.4	12
26	28	17	------	12	12	[a]24	16	51	14	5.4	5.7	12
27	27	17	------	12	12	[a]23	16	56	13	5.0	5.7	12
28	26	17	------	14	12	23	16	53	15	5.0	6.0	14
29	26	17	------	16	------	23	15	50	16	5.0	6.8	19
30	24	17	------	18	------	18	20	44	15	6.8	5.4	22
31	23	------	------	18	------	19	------	41	------	8.7	5.7	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1929–30				
October	34	23	26.2	1,610
November	28	20	25.2	1,500
March 6–31	57	30	39.9	2,060
April	189	44	131	7,800
May	154	78	99.1	6,090
June	97	36	56.0	3,330
July	52	15	25.9	1,590
August	25	12	17.4	1,070
September	27	12	17.5	1,040
1930–31				
October	33	18	25.9	1,590
November	23	17	19.6	1,170
December 1–20	17	12	15.0	595
January 11–31	18	12	14.0	583
February	19	12	13.9	772
March	24	12	19.7	1,210
April	31	15	22.9	1,360
May	56	27	38.4	2,360
June	52	13	27.4	1,630
July	20	5.0	10.2	627
August	9.7	4.1	6.33	389
September	22	5.0	9.32	555

[a] Interpolated.

NOTE.—Flow not computed Dec. 1, 1929, to Mar. 5, 1930, Dec. 21, 1930, to Jan. 10, 1931. Records for year ending Sept. 30, 1930, are revised and supersede those published in Water-Supply Paper 701.

TENMILE CREEK NEAR RIMINI, MONT.

LOCATION.—Water-stage recorder in NE. ¼ sec. 20, T. 9 N., R. 5 W., at Moose Creek ranger station, 500 feet above mouth of Moose Creek and 3 miles north of Rimini.

DRAINAGE AREA.—34 square miles.

RECORDS AVAILABLE.—March, 1915, to September, 1931.

EXTREMES.—Maximum discharge during year, 41 second-feet May 13 (gage height, 1.18 feet); no flow Aug. 31 to Sept. 7.

1915–1931: Maximum discharge, 948 second-feet May 15, 1917 (gage height, 4.87 feet); no flow at times during 1928, 1929, 1931.

REMARKS.—Records good. City water supply of Helena diverted above station. Flow partly regulated by reservoir on tributary above station.

Daily and monthly discharge, in second-feet, 1931

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1			21	0.9	2.9	0	16	8.0	36	1.7	0.4	0.2	0.1
2		20	19	.6	.6	0	17	8.1	35	1.4	.4	.1	.1
3			19	1.0	.4	0	18	8.3	27	1.0	.3	.1	.1
4		20	19	3.9	.4	0	19	6.9	24	1.0	.3	.1	.3
5		21	16	1.0	.4	0	20	8.3	23	.9	.3	.2	4.1
6		26	14	.8	.4	0	21	10	23	.8	.2	.1	3.1
7		29	13	.6	.3	0	22	12	24	.8	.2	.2	.6
8		23	13	.6	.3	.1	23	15	24	.8	.2	.1	.5
9		21	12	.5	.3	.1	24	20	20	.7	.2	.1	.6
10		20	9.1	.4	.2	.1	25	20	18	.6	.2	.1	.4
11		23	9.1	.4	.2	.2	26		23	.4	.2	.1	.4
12		28	6.3	.4	.2	.1	27		27	.4	.2	.1	.4
13	7.5	35	4.1	.4	.2	.2	28	20	28	.6	.2	.1	.4
14	7.7	35	3.3	.4	.2	.2	29		26	1.4	.2	.1	.4
15	7.8	36	3.7	.4	.1	.1	30		23	3.7	.3	.1	.4
							31		22		.7	0	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 13–30	20	6.9	13.3	475
May	36	18	25.2	1,550
June	21	.4	6.59	392
July	3.9	.2	.54	33
August	2.9	0	.29	18
September	4.1	0	.43	26
The period				2,490

NOTE.—No record for period omitted.

TENMILE CREEK NEAR HELENA, MONT.

LOCATION.—Water-stage recorder in SE. ¼ sec. 22, T. 10 N., R. 4 W., opposite Broadwater Hotel, near Helena.

DRAINAGE AREA.—103 square miles.

RECORDS AVAILABLE.—July, 1908, to September, 1931.

EXTREMES.—Maximum discharge during year, 37 second-feet May 17 (gage height, 1.32 feet); no flow Oct. 1–14.

1908–1931: Maximum discharge, 865 second-feet May 28, 1917, June 11, 1927; maximum gage height, 6.58 feet (old datum) June 11, 1927; no flow at various times.

REMARKS.—Records good except those for period Jan. 20 to Apr. 26, which are fair. No records Nov. 16 to Jan. 19. Diversions for irrigation and city water supply of Helena above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	3.5	-------	1.6	1.6	4.2	9.9	23	0.9	2.5	1.0
2	0	3.7	-------	1.6	1.8	3.4	14	18	1.1	2.0	.9
3	0	4.7	-------	1.6	1.8	2.5	15	17	1.2	1.6	1.1
4	0	4.7	-------	1.6	1.8	3.6	15	20	1.2	1.2	1.2
5	0	4.4	-------	1.8	1.8	4.8	19	15	1.2	1.4	1.6
6	0	5.1	-------	1.8	1.8	4.2	20	14	1.2	.9	1.6
7	0	5.1	-------	1.6	1.8	4.5	28	12	1.2	.9	.9
8	0	4.7	-------	1.6	1.6	4.2	20	9.9	1.2	1.1	.9
9	0	4.7	-------	1.4	1.8	3.9	18	9.9	1.1	1.2	1.1
10	0	4.7	-------	1.6	1.6	3.6	15	9.4	.9	1.2	.7
11	0	4.7	-------	1.8	1.8	3.6	15	8.9	.9	1.4	1.6
12	0	6.2	-------	1.8	1.8	4.2	20	5.5	.9	1.2	1.6
13	0	5.8	-------	1.6	1.6	3.9	26	3.4	1.1	1.4	1.6
14	0	2.2	-------	1.4	1.6	3.1	25	4.2	.5	.9	1.4
15	1.3	2.6	-------	1.4	1.4	2.0	29	3.9	.5	1.4	1.4
16	5.1	-------	-------	1.6	1.6	2.2	29	3.4	.5	1.1	1.1
17	5.1	-------	-------	1.8	1.8	6.2	34	3.1	.3	1.2	1.1
18	5.5	-------	-------	1.6	1.8	8.5	31	3.1	.2	1.6	.7
19	5.8	-------	-------	1.4	2.8	7.8	28	1.6	.2	2.0	.5
20	5.8	-------	1.6	1.6	2.8	7.8	27	.7	.2	1.8	.3
21	[a] 5.6	-------	2.0	1.6	3.1	7.0	22	.7	.2	2.0	.7
22	[a] 5.4	-------	1.8	1.6	3.4	5.9	23	.5	.2	2.2	.9
23	[a] 5.3	-------	1.8	1.6	1.8	6.6	29	.5	.2	2.2	.7
24	[a] 5.2	-------	1.8	1.6	2.0	5.5	25	.7	.2	1.8	.7
25	[a] 5.1	-------	1.6	1.4	2.5	5.9	20	1.4	.2	1.1	.7
26	[a] 5.0	-------	1.6	1.4	2.0	5.9	20	1.1	.2	.7	1.2
27	[a] 4.9	-------	1.8	1.6	2.2	5.9	25	.7	.2	1.8	1.4
28	[a] 4.8	-------	2.0	1.4	2.5	7.4	29	.9	.3	1.8	1.2
29	4.7	-------	2.5	-------	2.8	8.9	29	1.1	.5	1.4	1.8
30	4.4	-------	2.2	-------	3.1	8.9	25	1.1	1.2	1.2	2.0
31	4.0	-------	1.6	-------	3.6	-------	20	-------	2.5	1.1	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	5.8	.0	2.68	165
November 1–15	6.2	2.2	4.45	132
January 20–31	2.5	1.6	1.86	44
February	1.8	1.4	1.59	88
March	3.6	1.4	2.11	130
April	8.9	2.0	5.20	309
May	34	9.9	22.7	1,400
June	23	.5	6.49	386
July	2.5	.2	.72	44
August	2.5	.7	1.46	90
September	2.0	.3	1.12	67

[a] Interpolated.

LITTLE PRICKLY PEAR CREEK BASIN

LITTLE PRICKLY PEAR CREEK NEAR MARYSVILLE, MONT.

LOCATION.—Staff gage in the SW. ¼ sec. 18, T. 12 N., R. 6 W., a quarter of a mile below mouth of Deadman Creek and 6 miles northwest of Marysville.
DRAINAGE AREA.—69 square miles.
RECORDS AVAILABLE.—May, 1913, to September, 1931; April to May, 1913, at site a quarter of a mile upstream; May, 1909, to December, 1911, at site above mouth of Deadman Creek.
EXTREMES.—Maximum discharge during year, 29 second-feet May 16–18 (gage height, 0.92 foot); minimum, 4.0 second-feet Nov. 22–30.
foot).
1909–1911, 1913–1931: Maximum discharge, 454 second-feet May 25, 26, 1917 (gage height, 3.8 feet); minimum, 1.2 second-feet Mar. 7–13, 1911.
REMARKS.—Records good except those for period May 19 to June 18, which are fair. No records Dec. 1 to Mar. 31. Some diversions above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	6.5	9.0	-------	6.0	26	14	7.9	5.7
2	6.5	9.0	-------	8.2	24	13	7.9	5.0
3	6.5	9.0	-------	10	24	13	7.9	7.0
4	6.5	9.0	-------	13	24	13	7.0	7.0
5	6.5	8.5	-------	18	24	12	7.0	7.0
6	6.5	8.5	-------	20	23	12	7.0	7.9
7	6.5	8.5	4.2	24	22	11	6.7	7.9
8	6.5	8.5	4.2	24	21	11	7.0	7.9
9	6.5	8.5	4.2	24	20	9.8	7.0	7.9
10	6.5	8.5	4.2	22	20	9.8	7.0	7.9
11	6.5	8.5	4.2	21	21	8.9	7.0	7.9
12	6.5	9.0	4.2	21	21	8.9	7.0	7.9
13	8.5	9.0	4.2	22	20	8.9	7.0	7.9
14	8.5	9.0	4.2	23	17	7.9	7.0	7.9
15	8.5	8.0	4.2	24	19	7.9	7.0	7.9
16	8.5	8.5	4.2	28	19	7.0	7.0	7.9
17	8.5	8.5	4.8	29	17	7.0	7.0	7.9
18	8.5	8.5	5.8	28	17	6.3	7.0	7.9
19	8.5	6.5	6.2	28	17	6.3	7.0	7.9
20	8.5	6.5	5.8	26	17	6.3	7.0	8.9
21	8.5	6.5	5.8	24	17	6.3	7.0	8.9
22	9.0	4.0	5.8	24	17	5.7	7.0	8.9
23	9.0	4.0	6.2	24	17	7.9	7.0	8.9
24	9.0	4.0	6.2	24	15	7.0	7.9	8.9
25	9.0	4.0	6.2	25	15	7.0	7.9	7.9
26	9.0	4.0	6.2	27	15	7.0	7.9	7.9
27	9.0	4.0	5.8	27	15	7.0	7.9	7.0
28	9.0	4.0	5.8	27	15	7.0	7.9	6.3
29	9.0	4.0	5.2	27	15	7.0	7.0	e6.3
30	9.0	e4.0	5.8	26	15	7.0	7.0	6.3
31	9.0	-------	-------	25	-------	7.0	6.3	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	9.0	6.5	7.89	485
November	9.0	4.0	7.08	421
April 7-30	6.2	4.2	5.15	245
May	29	6.0	22.6	1,390
June	26	15	19.0	1,130
July	14	5.7	8.71	536
August	7.9	6.3	7.20	443
September	8.9	5.0	7.62	453

e Estimated.

DEARBORN RIVER BASIN

DEARBORN RIVER NEAR CLEMONS, MONT.

LOCATION.—Water-stage recorder in NW. ¼ sec. 26, T. 18 N., R. 7 W., 300 feet above highway bridge 2 miles below mouth of Falls Creek and 5 miles southwest of Clemons.

DRAINAGE AREA.—122 square miles.

RECORDS AVAILABLE.—April, 1921, to September, 1923; July, 1929, to September, 1931. May, 1908, to December, 1911, at station half a mile above mouth of Falls Creek.

EXTREMES.—Maximum discharge during year, 56 second-feet May 19 (gage height, 1.18 feet); minimum, 10.6 second-feet Sept. 4–7 (gage height, 0.66 foot).

1921–1923, 1929–1931: Maximum discharge, 1,340 second-feet June 6, 1922 (gage height, 3.70 feet); minimum, 10 second-feet Oct. 17–21, 1922 (gage height, 0.84 foot).

REMARKS.—Records good. Several small diversions above gage.

Daily and monthly discharge, in second-feet, 1930–31

Day	Jan.	Mar.	Apr.	May	June	July	Aug.	Sept.
1					34	15	12	11
2					36	14	12	11
3					38	14	12	11
4			a 30		32	14	12	11
5					29	14	12	11
6					28	14	12	11
7					26	14	12	11
8			a 19		26	14	12	11
9					25	14	12	11
10		a 28			24	14	12	11
11					24	15	12	11
12					25	15	12	11
13					24	14	12	11
14					23	14	12	11
15					23	14	12	11
16					23	14	12	11
17					22	14	12	11
18					21	14	12	11
19				56	21	14	12	11
20				52	20	13	12	11
21				49	20	14	12	12
22				45	19	13	12	12
23				41	19	13	11	11
24				38	18	13	11	11
25				34	18	12	11	11
26				42	17	12	11	11
27	a 28			44	16	12	11	11
28				40	16	12	11	11
29				41	16	12	11	11
30				38	15	12	11	11
31				34		12	11	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 19–31	56	34	42.6	1,100
June	38	15	23.3	1,390
July	15	12	13.5	830
August	12	11	11.7	719
September	12	11	11.1	660

a Discharge measurement.

NOTE.—No records other than discharge measurements Oct. 1 to May 19.

SMITH RIVER BASIN

SMITH RIVER NEAR WHITE SULPHUR SPRINGS, MONT.

LOCATION.—Wire gage in SE. ¼ sec. 33, T. 11 N., R. 8 E., at Meachen's ranch 14 miles northeast of White Sulphur Springs.

RECORDS AVAILABLE.—September, 1922, to September, 1931 (discontinued).

EXTREMES.—Maximum discharge during year, 53 second-feet Mar. 23 (gage height, 2.60 feet); no flow Sept. 8, 12.

1922–1931: Maximum discharge, 224 second-feet June 21, 1923 (gage height, 3.15 feet); minimum, that of Sept. 8, 12, 1931.

REMARKS.—Records good. Discharge not computed Nov. 11 to Jan. 31 on account of severe ice effect. A few small diversions above gage.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.2		[a]4.0	4.3	6.2	6.2	17	4.3	9.5	0.4
2	5.4		[a]4.0	6.2	6.2	8.6	18	5.0	7.0	.8
3	5.8	[a]7.5	4.3		18	11	15	6.6	7.4	.9
4	5.4		4.6		18	15	15	7.4	7.0	.6
5	5.0		4.6	[a]5.0	10	15	15	6.2	7.0	.9
6	8.2	5.0	4.6		13	14	15	5.4	7.0	.2
7	14	5.0	5.0		16	14	14	5.4	7.0	.4
8	12	5.0	6.2	4.6	12	26	15	5.8	7.4	0
9	9.0	5.0	6.6	5.8	10	23	17	5.8	9.0	.3
10	10	6.6	6.2	5.8	11	25	15	7.4	9.0	.9
11	13	------	5.4	4.6	10	24	13	7.4	6.2	.4
12	10	------	5.0	5.0	10	22	13	6.2	6.2	0
13	8.2	------	5.8	4.3	10	18	11	7.0	5.4	.8
14	7.8	------	5.8	4.6	10	20	12	7.8	4.6	1.5
15	7.8	------	4.0	5.8	10	20	12	7.8	2.9	1.8
16	9.0	------	4.0	4.3	8.6	28	11	7.8	1.5	2.6
17	[a]9.0	------	4.3	5.4	8.6	28	10	5.8	.4	2.6
18	[a]10	------	4.0	5.8	8.6	22	8.6	5.8	.2	2.6
19	[a]10	------	3.6	6.6	7.8	15	9.0	5.8	.2	1.5
20	10	------	4.0	9.0	7.8	15	9.0	5.8	.4	2.6
21	10	------	4.3	10	8.6	19	8.2	4.0	.9	3.6
22	10	------	4.3	10	8.2	19	10	5.0	.9	7.8
23	10	------	3.6	29	10	19	10	5.0	1.5	5.8
24	10	------	3.6	26	10	18	10	4.6	1.2	4.6
25	10	------	3.2	10	7.8	22	8.2	4.6	1.0	4.6
26	10	------	3.2	23	7.8	21	8.2	4.6	1.4	3.2
27	10	------	3.2	14	8.6	19	7.8	6.2	1.8	2.2
28	10	------	[a]3.0	14	8.2	18	8.2	4.6	1.2	2.2
29	10	------	------	12	9.0	18	8.6	4.0	1.0	9.0
30	10	------	------	10	8.6	15	9.0	9.5	.8	5.4
31	[a]10	------	------	10	------	15	------	15	.8	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	14.0	5.0	9.22	567
November 1–10	7.5	5.0	6.41	127
February	6.6	3.2	4.44	247
March	29	4.3	8.87	545
April	18	6.2	9.95	592
May	26	11	18.5	1,140
June	18	7.8	11.8	702
July	15	4.0	6.25	384
August	9.5	.2	3.80	234
September	9.0	.0	2.34	139

[a] Estimated.

SMITH RIVER AT TRULY, MONT.

LOCATION.—Wire gage in SW. ¼ sec. 35, T. 9 N., R. 2 E., at highway bridge at former post office of Truly.

RECORDS AVAILABLE.—March, 1905, to June, 1907; March, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 597 second-feet Apr. 8 (gage height, 2.55 feet); minimum, 0.2 second-foot Sept. 10 (gage height, 0.20 foot).

1905–1907, 1929–1931: Maximum discharge, 4,010 second-feet June 24, 1907 (gage height, 9.00 feet, old datum); minimum, that of Sept. 10, 1931.

REMARKS.—Records good except those for periods of ice effect, which are fair. Several diversions above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	89	135	102	95	100	a 68	157	178	294	76	43	2.7
2	89	135	105	89	95	97	152	196	275	62	49	2.7
3	93	135	109	100	91	102	152	210	294	69	43	1.7
4	93	132	97	117	87	107	128	241	352	72	40	1.7
5	97	132	107	74	83	89	152	241	372	86	32	1.7
6	93	129	97	89	87	47	168	226	352	83	30	4.4
7	97	129	97	a 93	87	56	294	241	275	72	27	3.0
8	112	124	93	a 87	a 87	a 56	597	226	275	69	28	1.7
9	135	122	81	a 77	a 77	a 60	372	226	275	62	27	1.2
10	148	119	72	a 77	a 72	a 68	241	210	258	58	25	.2
11	156	132	79	a 75	83	a 75	226	210	312	55	21	2.2
12	165	137	93	a 81	72	103	226	196	275	46	16	6.2
13	165	a 127	95	a 77	83	115	226	196	258	40	13	8.6
14	156	a 95	105	a 74	83	120	258	196	241	37	10	8.6
15	151	a 75	91	a 62	75	124	258	226	241	37	8.6	10
16	151	68	a 85	a 79	75	124	196	258	226	35	8.6	10
17	119	52	79	a 75	72	128	196	294	196	30	8.2	10
18	109	a 54	a 79	a 70	87	142	196	332	181	27	7.8	12
19	132	a 58	a 77	a 68	79	152	196	332	144	21	7.8	14
20	156	a 64	77	a 68	75	178	173	312	144	17	7.8	16
21	142	a 63	a 85	a 79	75	196	157	294	140	16	5.5	25
22	159	a 66	93	a 81	a 75	196	157	275	122	14	5.5	37
23	153	a 69	85	a 89	a 75	241	137	241	122	14	5.5	49
24	142	a 74	102	a 79	a 75	210	124	226	117	9.4	4.8	46
25	153	a 72	85	a 85	a 72	162	128	210	117	8.6	4.1	44
26	162	a 97	112	a 107	a 72	88	132	210	101	7.8	4.1	43
27	159	97	89	a 107	a 79	70	142	275	83	7.8	6.2	40
28	159	95	69	a 117	a 69	64	142	372	98	7.8	4.8	39
29	153	100	87	100	------	107	152	352	126	7.4	4.1	46
30	142	102	a 83	109	------	128	168	332	94	9.4	2.7	55
31	127	------	74	79	------	157	------	312	------	23	3.4	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	165	89	134	8,240
November	135	52	99.6	5,930
December	112	69	89.8	5,520
January	117	62	85.8	5,280
February	100	69	80.1	4,450
March	241	47	117	7,190
April	597	124	200	11,900
May	372	178	253	15,600
June	372	83	212	12,600
July	86	7.4	38.0	2,340
August	49	2.7	16.2	996
September	55	.2	18.1	1,080
The year	597	.2	112	81,100

a Estimated because of ice.

MARIAS RIVER BASIN

MARIAS RIVER NEAR SHELBY, MONT.

LOCATION.—Water-stage recorder in sec. 20, T. 31 N., R. 2 W., at highway bridge 7 miles south of Shelby.

DRAINAGE AREA.—2,610 square miles.

RECORDS AVAILABLE.—April, 1902, to January, 1908; April, 1911, to September, 1931.

EXTREMES.—Maximum discharge during year, 2,290 second-feet May 18 (gage height, 4.60 feet); minimum, 87 second-feet Jan. 22 (gage height, 2.50 feet). 1902–1907, 1911–1931: Maximum discharge, 29,500 second-feet June 24, 1907 (gage height, 14.9 feet); minimum, 10 second-feet Aug. 20, 1919 (gage height, 1.50 feet).

REMARKS.—Records good except those for periods Oct. 1–20, Jan. 15 to Mar. 14, Mar. 28–30, Apr. 16 to May 1, May 17, Aug. 1, 3–5. Numerous diversions from tributaries. Flow partly regulated by storage in several reservoirs on tributaries.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	230	220	-------	178	206	174	720	1,330	458	400	154
2	230	214	-------	150	206	186	990	1,430	441	533	145
3	200	214	-------	154	208	194	1,230	1,480	452	475	147
4	200	214	-------	140	186	194	1,330	1,480	521	417	145
5	200	214	-------	132	140	194	1,430	1,330	527	359	143
6	215	214	-------	138	168	194	1,480	1,140	515	302	138
7	215	214	-------	140	161	192	1,480	1,010	509	331	134
8	220	214	-------	138	174	197	1,700	953	458	294	138
9	215	214	-------	132	171	203	1,700	990	404	278	164
10	215	211	-------	124	171	224	1,540	962	363	250	253
11	220	214	-------	128	166	264	1,380	917	331	250	298
12	220	214	-------	128	166	314	1,330	866	318	240	257
13	230	194	-------	126	168	322	1,330	810	302	243	243
14	240	161	-------	132	206	340	1,480	765	286	250	240
15	230	180	118	134	240	348	1,640	720	326	246	246
16	220	180	118	136	211	350	1,780	677	290	246	250
17	210	180	115	134	211	320	1,970	642	233	243	243
18	200	178	113	143	230	290	2,160	616	208	243	243
19	220	-------	111	152	236	270	2,100	649	192	240	271
20	230	-------	101	154	230	270	1,920	552	184	230	282
21	294	-------	90	128	227	250	1,810	452	164	224	282
22	310	-------	87	147	233	240	1,700	409	154	217	298
23	322	-------	99	192	236	270	1,640	373	143	257	314
24	322	-------	113	154	240	300	1,590	336	134	253	314
25	275	-------	116	164	236	300	1,380	340	118	230	302
26	250	-------	122	194	236	330	1,280	373	110	208	290
27	246	-------	152	192	214	360	1,430	368	132	194	286
28	243	-------	206	189	206	380	1,480	368	132	186	278
29	233	-------	271	-------	178	400	1,480	373	126	181	275
30	230	-------	220	-------	176	520	1,430	373	132	166	275
31	220	-------	206	-------	168	-------	1,330	-------	266	161	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	322	200	236	14,500
November 1–18	220	161	202	7,210
January 15–31	271	87	139	4,690
February	194	124	148	8,220
March	240	140	200	12,300
April	520	174	280	16,700
May	2,160	720	1,520	93,500
June	1,480	336	769	45,800
July	527	110	288	17,700
August	533	161	269	16,500
September	314	134	235	14,000

NOTE.—Discharge not computed for period of no record.

MARIAS RIVER NEAR BRINKMAN, MONT.

LOCATION.—Wire gage in NW. ¼ sec. 21, T. 29 N., R. 8 E., 4 miles southwest of Brinkman post office.

RECORDS AVAILABLE.—October, 1921, to September, 1931.

EXTREMES.—Maximum discharge during year, 4,500 second-feet June 29 (gage height, 4.55 feet); minimum, 81 second-feet Sept. 12 (gage height, 1.02 feet).

1921–1931: Maximum discharge, 14,300 second-feet June 1, 1927 (gage height, 9.2 feet); minimum, that of Sept. 12, 1931.

Maximum stage known, 18.00 feet during 1908 flood.

REMARKS.—Records good. Discharge not computed for period of ice effect, Nov. 12 to Mar. 13. Numerous diversions. Flow partly regulated by storage on tributaries.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	236	236	------	242	375	1,590	382	139	136
2	236	236	------	292	480	1,660	364	208	128
3	208	231	------	278	725	1,730	520	427	117
4	208	226	------	247	1,080	1,800	440	496	109
5	208	226	------	238	1,200	1,660	456	408	92
6	217	221	------	233	1,460	1,590	548	332	88
7	217	208	------	255	1,590	1,330	520	414	88
8	221	208	------	265	1,660	2,010	496	326	88
9	217	208	------	269	1,800	1,080	448	283	88
10	217	217	------	273	1,660	1,020	408	269	88
11	226	236	------	316	1,520	1,020	370	246	88
12	226	------	------	337	1,400	960	332	233	106
13	236	------	------	316	1,330	900	316	212	233
14	246	------	229	302	1,660	760	297	195	269
15	238	------	229	282	1,870	703	292	183	247
16	230	------	251	307	1,730	692	269	208	221
17	221	------	302	326	2,010	648	264	200	221
18	208	------	302	375	2,460	577	278	191	221
19	231	------	321	370	2,310	530	238	195	229
20	246	------	337	348	2,310	520	208	195	233
21	272	------	348	307	1,870	480	179	191	260
22	305	------	307	287	1,660	375	147	179	287
23	327	------	287	287	1,590	364	120	175	292
24	364	------	287	273	1,330	359	117	171	292
25	382	------	287	255	1,200	332	109	183	297
26	394	------	302	269	1,200	302	102	175	311
27	382	------	326	269	1,200	278	95	187	311
28	294	------	337	277	1,330	343	102	183	307
29	272	------	302	292	1,400	2,010	98	179	307
30	257	------	255	332	1,460	1,140	102	159	287
31	246	------	251	------	1,520	------	117	139	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	394	208	258	15,900
November 1–11	236	208	223	4,870
March 14–31	348	229	292	10,400
April	375	233	291	17,300
May	2,460	375	1,500	92,200
June	2,010	278	959	57,100
July	548	95	282	17,300
August	496	139	235	14,400
September	311	88	201	12,000

BIRCH CREEK NEAR DUPUYER, MONT.

LOCATION.—Staff gage in sec. 28, T. 29 N., R. 8 W., half a mile above head gates of B Canal and 12 miles west of Dupuyer.

DRAINAGE AREA.—110 square miles.

RECORDS AVAILABLE.—July, 1907, to September, 1926; October, 1927, to September, 1931.

EXTREMES.—Maximum discharge during year, 315 second-feet Aug. 12 (gage height, 1.88 feet); minimum, 4 second-feet at various times from October to December.

1907–1926, 1927–1931: Maximum discharge (estimated), 5,000 second-feet June 21, 1916 (gage height, 10.0 feet); minimum, 3 second-feet Apr. 7, 1921.

REMARKS.—Records good. Discharge not computed for period Nov. 1 to Mar. 23. Two or three small diversions above station. Flow largely controlled by gate operations at Swift Dam. Records furnished by Valier-Montana Land & Water Co.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	32	------	11	30	95	280	57	20
2	26	------	6	42	86	311	43	20
3	26	------	16	37	80	289	47	20
4	37	------	8	40	73	235	93	20
5	46	------	7	41	71	257	62	19
6	48	------	6	41	69	162	60	18
7	48	------	7	42	69	128	52	19
8	59	------	7	47	69	123	48	43
9	59	------	7	54	69	113	47	46
10	50	------	5	59	71	111	52	41
11	47	------	5	73	71	109	51	50
12	47	------	5	80	73	128	71	51
13	45	------	6	82	80	128	73	47
14	37	------	7	82	80	139	93	45
15	36	------	54	86	80	134	109	43
16	37	------	71	86	77	126	66	43
17	28	------	59	86	86	123	54	43
18	22	------	55	86	86	156	50	45
19	18	------	37	86	91	156	48	37
20	15	------	34	86	95	153	32	30
21	12	------	26	86	95	156	29	32
22	12	------	28	95	95	181	28	30
23	10	------	21	97	95	210	26	29
24	10	4	68	100	109	235	24	20
25	8	11	104	104	109	253	23	16
26	8	8	52	102	121	257	22	14
27	8	3	50	100	171	289	23	17
28	8	17	50	111	187	298	21	17
29	8	15	47	104	225	315	20	22
30	8	17	37	95	261	298	18	102
31	7	17	------	95	------	214	20	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	59	7	27.8	1,710
March 24–31	17	4	11.5	182
April	104	5	29.9	1,780
May	111	30	76.0	4,670
June	261	69	101	6,010
July	315	109	196	12,100
August	109	18	47.2	2,900
September	102	14	33.3	1,980

DUPUYER CREEK NEAR VALIER, MONT.

LOCATION.—Water-stage recorder in NW. ¼ sec. 33, T. 29 N., R. 6 W., 6 miles below mouth of Sheep Creek and 11 miles southwest of Valier.

DRAINAGE AREA.—111 square miles.

RECORDS AVAILABLE.—July, 1912, to September, 1926; October, 1927, to September, 1931.

EXTREMES.—Maximum discharge during year, 21 second-feet Oct. 21 (gage height, 2.78 feet); no flow various times during June, July, September.

1912–1926, 1927–1931: Maximum discharge, 2,180 second-feet June 21, 1916 (gage height, 6.5 feet); no flow Sept. 19, 1919, Sept. 1, 2, 1929, and various times in 1931.

REMARKS.—Records fair. Several diversions above station. Flow somewhat regulated by operation of head gates upstream. Records furnished by Valier-Montana Land & Water Co.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	a 14				a 20	a 9	6	6	0	3	1
2	13	a 10				a 20	a 9	5	6	0	10	0
3	13	9			b 17	a 20	a 7	4	6	0	10	0
4	13	19				a 18	19	4	7	0	8	0
5	14	17				a 13	17	4	7	2	8	0
6	15	16				a 13	18	5	6	0	8	0
7	16	18				a 13	18	4	5	1	8	0
8	17	18				a 15	18	4	4	2	9	0
9	17	16				a 12	16	4	6	2	8	0
10	17	14				a 12	14	3	4	2	8	0
11	18	13				a 12	13	3	4	1	7	1
12	18	13				a 10	13	3	3	0	6	1
13	18	13				a 15	13	3	3	0	4	2
14	18	12		b 10		a 19	12	3	2	0	3	3
15	a 19	12				a 19	13	3	3	0	3	4
16	a 16	a 11				a 19	19	3	2	0	3	4
17	a 14	a 11				19	12	2	1	0	3	4
18	a 14	11				18	11	2	1	0	2	4
19	a 14	9				16	9	3	1	0	2	9
20	a 14	a 8				a 16	a 7	3	1	0	2	7
21	a 16	6				16	a 7	4	0	0	3	7
22	a 17	a 5				a 17	a 7	6	0	0	3	9
23	a 18	a 5				18	a 7	6	0	0	2	10
24	20	a 6				12	a 7	4	0	0	2	8
25	a 20	7				a 8	7	4	0	0	1	6
26	a 20	6				a 8	6	4	0	0	1	6
27	a 20	6	b 9.9			a 8	6	4	0	0	1	6
28	a 20	6				a 8	6	4	0	0	1	6
29	21	6				a 8	6	7	0	0	1	6
30	a 20	6				a 8	6	6	0	0	1	6
31	20					a 8		5		2	1	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	21	13	16.9	1,040
November	19	5	10.8	643
December			a 9.0	553
January			a 10.0	615
February			a 14.0	778
March	20	8	14.1	867
April	19	6	11.1	660
May	7	2	4.0	246
June	7	0	2.6	155
July	2	0	.4	25
August	10	1	4.3	264
September	10	0	3.7	220
The year	21	0	8.4	6,070

a Estimated. b Discharge measurement.

DRY FORK OF MARIAS RIVER AT FOWLER, MONT.

LOCATION.—Wire gage near center of sec. 31, T. 30 N., R. 1 W., at highway bridge a quarter of a mile northeast of depot at Fowler.

RECORDS AVAILABLE.—March, 1920, to December, 1931 (discontinued).

EXTREMES.—Maximum discharge during year, 146 second-feet Aug. 1 (gage height, 1.76 feet); minimum, 0.7 second-foot Dec. 15, 1931 (gage height, 0.22 foot).

1920–1931: Maximum discharge, 1,220 second-feet Apr. 14, 1920 (gage height, 6.20 feet); no flow at various times.

REMARKS.—Records fair. Insufficient data to compute discharge Dec. 11 to Mar. 12. Practically all flow is regulated and diverted.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.5	13	6.1		14	1.2	16	5.3	146	1.0	2.5	3.5	1.8
2	5.3	14	6.1		15	1.0	76	4.5	48	1.3	2.5	3.5	1.8
3	7.7	14	5.7		11	1.2	54	23	17	1.3	2.5	3.5	1.8
4	9.4	13	6.1		8.1	1.2	43	33	9.4	1.3	3.1	3.3	1.8
5	12	11	6.9		8.1	1.2	39	31	6.9	1.3	4.1	3.1	
6	12	8.5	5.3		7.3	1.2	38	28	38	1.3	[a]3.7	3.1	
7	14	7.7	5.3		8.5	1.2	32	23	9.4	1.2	[a]3.3	3.1	
8	26	6.1	6.9		7.7	1.2	32	22	14	1.3	[a]2.9	3.1	
9	23	5.3	6.1		6.9	1.0	15	17	10	2.2	[a]2.5	3.1	
10	25	4.5	6.1		5.7	1.0	11	15	6.1	1.9	[a]2.1	3.1	1.2
11	23	4.5			4.9	1.0	7.3	14	6.1	1.6	1.8	3.5	
12	26				4.9	.9	6.9	9.4	6.1	1.3	2.4	3.5	
13	31			3.3	4.1	1.2	6.1	7.7	5.3	1.3	3.1	3.1	
14	32			2.7	4.1	1.2	4.5	6.1	5.7	1.9	3.5	2.7	
15	34	4.0		2.7	3.7	1.0	5.3	6.9	5.3	1.6	3.5	2.7	.7
16	31			3.5	3.7	.9	4.5	3.3	5.3	1.3	3.5	2.7	1.2
17	25			4.5	3.1	1.0	4.5	6.9	5.3	1.3	3.1		1.4
18	20	4.5		9.8	2.7	1.0	5.3	6.9	5.3	1.3	3.3		1.4
19	20	4.5		11	2.2	1.4	5.3	6.1	3.7	1.3	3.9		1.4
20	19	5.3		14	2.4	2.0	4.1	6.1	2.9	1.4	3.9		1.4
21	17	5.3		15	2.5	2.4	4.1	6.1	2.2	2.2	3.9		1.4
22	17	5.7		13	2.4	2.4	4.1	5.3	2.2	2.5	3.9		1.2
23	18	7.7		11	2.4	2.0	4.5	5.3	1.9	2.9	4.3	2.0	1.2
24	20	8.5		9.8	2.0	2.0	4.1	6.9	1.6	2.9	4.3		1.2
25	18	12		8.1	1.9	2.0	3.7	6.9	1.6	2.5	4.3		1.4
26	17	8.5		7.3	1.9	1.9	5.3	6.9	1.6	2.2	3.9		1.4
27	17	6.9		7.3	1.9	2.0	5.3	7.7	1.6	1.9	3.9		1.4
28	14	6.1		7.3	1.6	2.2	4.5	6.9	1.9	1.9	3.9		1.4
29	15	5.3		6.9	1.6	1.3	4.5	6.9	1.6	2.5	3.9		1.4
30	13	5.3		8.5	1.3	4.3	6.1	9.4	1.3	2.2	3.5	1.8	1.3
31	13			14		11		86	1.3		3.5		1.2

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1930–31				
October	34	4.5	18.7	1,150
November	14		7.04	419
December 1–10	6.9	5.3	6.06	120
March 13–31	15	2.7	8.41	317
April	15	1.3	4.92	293
May	11	.9	1.82	112
June	76	3.7	15.2	904
July	86	4.5	13.9	855
August	146	1.3	12.1	744
September	2.9	1.0	1.74	104
1931				
October	4.3	1.8	3.37	207
November	3.5	1.8	2.61	155
December	1.8	.7	1.33	82

[a] Interpolated.

TETON RIVER NEAR FORT BENTON, MONT.

LOCATION.—Wire gage in SE. ¼ sec. 31, T. 25 N., R. 9 E., at Embleton's ranch 6 miles north of Fort Benton.

RECORDS AVAILABLE.—March, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 700 second-feet June 30 (gage height, 2.98 feet); no flow at various times from June to September.

1929–1931: Maximum discharge for period, 970 second-feet Feb. 19, 1930 (gage height, 3.40 feet); no flow at various times each year.

REMARKS.—Records good except those during periods of ice effect, November to March, which are fair. Flow regulated by numerous diversions for storage and irrigation.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
1	10	34	74	45	105	74	59	23	1.8	63	0.3
2	8.0	34	79	45	118	82	61	21	6.2	15	.2
3	8.8	34	70	42	82	72	74	20	6.2	17	.1
4	7.0	34	74	39	74	68	79	18	7.6	19	.0
5	6.0	31	74	36	68	63	76	18	7.2	12	.0
6	5.5	30	79	35	63	55	59	16	6.2	15	.0
7	5.5	29	70	35	59	35	61	19	4.0	14	.4
8	7.0	31	74	30	55	34	61	20	.9	9.2	.4
9	7.5	29	93	44	53	35	55	18	1.8	9.2	17
10	8.8	30	82	26	57	32	49	16	2.8	8.0	19
11	13	29	82	24	57	31	45	14	1.4	8.5	15
12	14	29	93	26	55	32	42	13	1.4	8.5	10
13	15	27	115	26	55	39	39	13	1.0	4.2	8.0
14	15	23	76	16	63	55	39	12	.7	4.4	5.4
15	18	17	82	16	76	74	35	11	.8	3.0	3.8
16	15	19	96	15	59	79	31	13	.8	2.0	3.5
17	9.6	18	85	16	45	102	30	13	.7	1.2	1.4
18	10	21	82	12	66	93	27	12	.4	1.0	.9
19	14	16	79	10	66	88	26	11	.3	.4	.5
20	19	24	79	10	76	88	25	9.2	.3	.3	.3
21	13	32	74	13	41	82	24	7.6	.2	.1	.2
22	14	38	66	14	49	79	24	4.0	.3	0	.1
23	30	39	61	19	52	79	24	6.2	.3	0	0
24	41	39	63	30	57	76	24	5.8	.2	0	0
25	53	44	52	41	55	66	24	3.2	.2	0	0
26	61	47	50	53	55	61	23	3.8	.1	0	0
27	55	53	47	74	55	63	23	5.8	0	0	0
28	45	57	49	96	68	59	24	6.2	0	0	0
29	39	57	44	131	------	57	27	9.2	0	0	0
30	36	66	45	112	------	55	26	7.6	304	0	0
31	35	------	45	118	------	57	------	3.8	------	.4	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	61	5.5	20.6	1,270
November	66	16	33.7	2,010
December	115	44	72.1	4,430
January	131	10	40.3	2,480
February	118	41	63.7	3,540
March	102	31	63.4	3,900
April	79	23	40.5	2,410
May	23	3.2	12.0	738
June	304	0	11.9	708
July	63	0	6.95	427
August	19	0	2.79	172
The year	304	0	30.5	22,100

NOTE.—No flow during September.

JUDITH RIVER BASIN

JUDITH RIVER NEAR UTICA, MONT.

LOCATION.—Wire gage in NW. ¼ sec. 17, T. 13 N., R. 12 E., at Noel's ranch 10 miles above Utica.

DRAINAGE AREA.—326 square miles.

RECORDS AVAILABLE.—October, 1919, to September, 1931.

EXTREMES.—Maximum discharge during year, 57 second-feet June 3, 4 (gage height, 2.13 feet); minimum, 1.1 second-feet Apr. 30 to May 15 (gage height, 1.32 feet).

1919–1931: Maximum discharge, 1,070 second-feet June 11, 1927 (gage height, 5.70 feet); minimum, 0.5 second-foot Nov. 16 to Dec. 1, 1919, Mar. 31 to Apr. 20, 1922 (gage height, 1.00 foot).

REMARKS.—Records good. Several diversions above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.1	8.1	7.2	4.1	2.9	1.8	1.8	1.1	48	12	11	4.1
2	8.1	8.1	7.2	4.1	2.9	1.8	1.8	1.1	49	12	11	4.1
3	8.1	7.2	7.2	4.1	2.9	1.8	1.8	1.1	49	12	10	4.1
4	8.1	7.2	7.2	4.1	2.9	1.8	1.8	1.1	57	13	10	4.1
5	8.1	7.2	7.2	4.1	2.9	1.8	1.8	1.1	57	13	9.3	4.1
6	8.1	7.2	6.5	4.1	2.9	1.8	1.8	1.1	50	14	9.3	4.1
7	8.1	7.2	6.5	4.1	2.9	1.8	1.8	1.1	48	13	8.5	3.4
8	8.1	7.2	6.5	4.1	2.4	1.8	1.8	1.1	48	13	8.5	3.4
9	8.1	7.2	6.5	4.1	2.4	1.8	1.3	1.1	51	13	7.6	3.4
10	8.1	6.5	6.5	4.1	2.4	1.8	1.3	1.1	50	11	7.6	2.9
11	8.1	6.5	5.8	4.1	2.4	1.8	1.3	1.1	43	11	7.6	2.9
12	8.1	6.5	5.8	3.4	2.4	1.8	1.3	1.1	41	11	6.8	2.9
13	8.1	6.5	5.8	3.4	2.4	1.8	1.3	1.1	38	11	6.8	2.9
14	8.1	7.2	5.8	2.9	2.4	1.8	1.3	1.1	36	11	6.8	2.9
15	8.1	7.2	5.8	2.9	2.4	1.8	1.3	1.1	34	11	6.8	2.9
16	8.1	7.2	5.8	3.4	2.4	1.8	1.3	15	29	11	6.8	2.9
17	8.1	7.2	5.8	2.9	2.4	1.8	1.3	31	28	11	6.1	2.9
18	8.1	7.2	5.8	2.9	2.4	1.8	1.3	34	27	11	6.1	2.9
19	8.1	7.2	5.8	2.9	2.4	1.8	1.3	40	25	11	6.1	2.9
20	8.1	7.2	5.8	2.9	2.4	1.8	1.3	40	23	11	6.1	2.9
21	8.1	7.2	5.8	2.9	2.4	1.8	1.3	39	22	10	6.1	2.9
22	8.1	7.2	5.8	2.9	1.8	1.8	1.3	35	22	9.3	5.4	2.9
23	8.1	7.2	5.8	2.9	1.8	1.8	1.3	34	22	9.3	5.4	2.9
24	8.1	7.2	5.1	3.4	1.8	1.8	1.3	34	22	9.3	5.4	2.9
25	8.1	7.2	5.1	2.9	1.8	1.8	1.3	32	22	9.3	5.4	2.9
26	8.1	7.2	5.1	2.9	1.8	1.8	1.3	34	19	9.3	5.4	2.9
27	8.1	7.2	4.4	2.9	1.8	1.8	1.3	43	17	9.3	4.8	2.9
28	8.1	7.2	4.4	2.9	1.8	1.8	1.3	45	16	9.3	4.8	2.9
29	8.1	7.2	4.4	2.9	------	1.8	1.3	46	16	9.3	4.8	2.9
30	8.1	7.2	4.4	2.9	------	1.8	1.1	46	13	10	4.1	2.9
31	8.1	------	4.4	2.9	------	1.8	------	46	------	11	4.1	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	8.1	8.1	8.10	498
November	8.1	6.5	7.17	427
December	7.2	4.4	5.85	360
January	4.1	2.9	3.39	202
February	2.9	1.8	2.37	132
March	1.8	1.8	1.80	111
April	1.8	1.1	1.43	85
May	46	1.1	19.7	1,210
June	57	1.3	34.1	2,030
July	14	9.3	11.0	676
August	11	4.1	6.92	425
September	4.1	2.9	3.19	190
The year	57	1.1	8.77	6,350

JUDITH RIVER NEAR WINIFRED, MONT.

LOCATION.—Wire gage near center of sec. 30, T. 21 N., R. 17 E., at Anderson ranch near Winifred.

RECORDS AVAILABLE.—May, 1929, to September, 1931.

EXTREMES.—Maximum discharge, 403 second-feet Jan. 31 (gage height, 0.92 foot); minimum, 167 second-feet July 25–29 (gage height, 0.52 foot).

1929–1931: Maximum discharge, 4,510 second-feet Feb. 18, 1930 (gage height, 5.10 feet); minimum, that of July 25–29, 1931.

REMARKS.—Records good except those for periods July 15–29, Aug. 15–29, which are poor. Severe ice effect Dec. 23 to Jan. 23, flow not computed. Numerous diversions above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	311	333	289	-------	379	311	322	247	258	247	300	247
2	311	333	289	-------	368	311	311	247	278	247	247	237
3	322	345	300	-------	333	322	300	247	289	247	247	237
4	322	322	322	-------	322	322	278	227	300	247	237	237
5	333	278	322	-------	333	311	322	218	278	237	237	237
6	333	268	322	-------	345	300	345	199	278	237	237	237
7	345	268	311	-------	345	300	345	227	268	227	227	237
8	345	278	278	-------	345	300	345	258	268	218	227	237
9	345	278	268	-------	345	300	345	268	278	218	227	237
10	345	268	247	-------	300	311	345	237	278	218	227	237
11	345	268	237	-------	311	311	333	237	278	218	227	237
12	356	268	237	-------	311	333	333	227	268	218	218	237
13	345	300	247	-------	322	333	333	227	268	218	218	247
14	300	311	247	-------	311	333	345	218	258	208	208	247
15	300		227	-------	311	345	345	208	258	189	189	247
16	311		237	-------	322	345	333	208	247	189	189	258
17	311		237	-------	311	345	300	208	247	189	189	258
18	311		247	-------	311	356	311	227	227	180	189	247
19	322		237	-------	300	356	311	227	227	176	185	247
20	322	280	237	-------	311	356	311	247	227	176	185	258
21	322		247	-------	300	356	311	247	237	171	185	268
22	333		311	-------	300	345	311	258	237	171	185	300
23	333		-------	-------	300	333	322	258	247	171	180	311
24	333		-------	322	311	333	322	258	247	171	189	322
25	333	278	-------	322	311	333	322	247	247	167	189	322
26	333	278	-------	333	322	333	300	247	247	167	189	268
27	333	289	-------	333	322	345	311	247	247	167	185	278
28	345	300	-------	356	322	345	300	258	247	167	185	278
29	345	289	-------	391	-------	345	289	258	247	167	185	289
30	345	289	-------	391	-------	345	278	258	247	218	237	278
31	322	-------	-------	403	-------	345	-------	258	-------	278	247	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	356	300	329	20,200
November	345	268	288	17,100
December 1–22	322	227	268	11,700
January 24–31	403	322	356	5,650
February	379	300	322	17,900
March	356	300	331	20,400
April	345	278	319	19,000
May	268	199	239	14,700
June	300	227	258	15,400
July	278	167	202	12,400
August	300	185	212	13,000
September	322	237	259	15,400

MUSSELSHELL RIVER BASIN

NORTH FORK OF MUSSELSHELL RIVER AT DELPINE, MONT.

LOCATION.—Wire gage in SW. ¼ sec. 35, T. 10 N., R. 9 E., at Delpine.
DRAINAGE AREA.—48 square miles.
RECORDS AVAILABLE.—May, 1909, to October, 1911; March, 1922, to September, 1931.
EXTREMES.—Maximum discharge during year, 11 second-feet Apr. 1, 2 (gage height, 1.57 feet); minimum, 0.1 second-foot Mar. 28 (gage height, 1.17 feet).

1909–1911; 1922–1931: Maximum discharge, 545 second-feet July 21, 1923 (gage height, 4.5 feet); minimum, that of Mar. 28, 1931.
REMARKS.—Records fair. No records Nov. 15 to Mar. 13, Apr. 15 to June 23. One small ditch diverts above gage.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	June	July	Aug.	Sept.
1	5.6	5.6	------	11	------	3.2	5.9	1.8
2	5.6	5.1	------	11	------	3.7	4.8	1.8
3	5.6	5.1	------	10	------	5.4	5.4	2.1
4	5.6	5.1	------	9.0	------	4.8	5.4	2.1
5	5.6	4.6	------	5.9	------	4.3	5.4	1.8
6	9.0	4.6	------	6.9	------	5.4	4.8	1.8
7	9.0	4.6	------	7.3	------	5.4	4.8	1.4
8	9.7	4.6	------	8.3	------	5.4	5.4	1.8
9	9.7	4.6	------	8.6	------	4.8	5.4	2.1
10	9.7	4.6	------	8.3	------	4.8	4.8	2.1
11	9.7	4.6	------	8.6	------	4.8	4.3	2.1
12	9.7	4.6	------	9.0	------	4.3	4.8	2.5
13	9.0	4.6	------	9.0	------	3.7	5.4	2.1
14	8.3	4.6	4.6	9.0	------	3.7	4.8	2.1
15	5.1	------	4.0	------	------	3.2	4.8	2.5
16	5.1	------	3.5	------	------	3.2	4.3	2.5
17	6.2	------	3.0	------	------	2.8	4.3	2.1
18	6.2	------	3.5	------	------	2.8	3.7	2.5
19	5.6	------	4.6	------	------	3.2	3.7	2.1
20	5.6	------	5.6	------	------	3.7	3.7	2.5
21	5.6	------	5.6	------	------	4.3	3.2	2.8
22	5.6	------	2.8	------	------	4.3	3.2	2.8
23	5.6	------	3.5	------	------	4.3	2.8	2.8
24	5.6	------	3.5	------	6.2	3.7	3.2	2.8
25	6.2	------	3.2	------	5.6	3.7	2.8	2.8
26	6.2	------	.3	------	5.1	3.7	2.5	2.8
27	6.9	------	.4	------	4.0	3.7	2.5	2.8
28	6.2	------	.1	------	4.0	4.3	2.1	3.2
29	6.2	------	4.8	------	4.0	4.3	2.8	4.3
30	5.6	------	6.9	------	3.5	5.9	1.8	4.3
31	5.6	------	9.0	------	------	5.9	2.1	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	9.7	5.1	6.80	418
November 1–14	5.6	4.6	4.78	133
March 14–31	9.0	.1	3.83	137
April 1–14	11	5.9	8.71	242
June 24–30	6.2	3.5	4.63	64
July	5.9	2.8	4.22	259
August	5.9	1.8	4.03	248
September	4.3	1.4	2.44	145

MUSSELSHELL RIVER AT HARLOWTON, MONT.

LOCATION.—Chain gage in sec. 26, T. 8 N., R. 15 E., at highway bridge 1 mile south of Harlowton.

DRAINAGE AREA.—1,130 square miles.

RECORDS AVAILABLE.—July, 1907, to September, 1931.

EXTREMES.—Maximum discharge during year, 155 second-feet June 5 (gage height, 3.40 feet); no flow July 19 to Sept. 30.

1907–1931: Maximum discharge, 4,020 second-feet May 27, 1917 (gage height, 7.3 feet); no flow Aug. 4–11, 1910, Sept. 11–15, 1919, during August and September, 1929, July and August, 1930, July to September, 1931.

REMARKS.—Records good except those during periods of ice effect, Oct. 15, 16, 18, Mar. 5–9, 26–30. No records Nov. 15 to Feb. 25. Numerous diversions.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Feb.	Mar.	Apr.	May	June	July
1	8.2	54	------	69	47	8.2	39	8.2
2	11	53	------	46	44	6.6	39	9.6
3	12	53	------	44	41	7.0	61	7.0
4	13	52	------	39	38	8.2	125	7.0
5	14	51	------		39	7.0	149	7.0
6	14	51	------	30	39	5.6	122	5.6
7	17	51	------		39	4.9	99	4.9
8	20	51	------		51	4.2	84	2.0
9	25	51	------		48	4.2	84	1.5
10	27	51	33	46	36	4.2	115	1.8
11	30	51	------	61	30	4.2	120	1.5
12	32	51	------	46	22	4.2	90	1.8
13	35	50	------	36	20	4.2	74	1.5
14	36	50	------	35	17	4.2	79	1.0
15	32	------	------	41	16	4.2	74	.7
16	29	------	------	46	14	4.2	60	.3
17	26	------	------	42	11	8.2	58	.1
18	34	------	------	45	9.4	22	47	.1
19	41	------	------	44	11	22	41	0
20	44	------	------	45	10	16	36	0
21	44	------	------	46	10	14	33	0
22	51	------	------	51	11	10	32	0
23	53	------	------	71	7.6	8.2	30	0
24	56	------	------	67	7.0	8.2	32	0
25	64	------	------	48	7.0	8.2	30	0
26	69	------	54		7.0	8.2	23	0
27	64	------	54		8.2	6.3	16	0
28	61	------	53	40	7.0	22	15	0
29	58	------	------		7.6	41	14	0
30	58	------	------		7.0	46	11	0
31	56	------	------	48	------	40	------	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	69	8.2	36.6	2,250
November 1–14	54	50	51.4	1,430
March	71	----------	44.1	2,710
April	51	7.0	22.1	1,320
May	46	4.2	11.8	726
June	144	11	61.1	3,640
July	9.6	0	1.98	122

NOTE.—No flow during August and September.

MUSSELSHELL RIVER AT MUSSELSHELL, MONT.

LOCATION.—Wire gage in NW. ¼ sec. 28, T. 9 N., R. 29 E., at highway bridge at Musselshell.

RECORDS AVAILABLE.—August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 72 second-feet Nov. 1, 2 (gage height, 1.64 feet); no flow various times from May to September.

1928–1931: Maximum discharge, 1,590 second-feet Aug. 22, 1930 (gage height, 4.80 feet); no flow at various times.

REMARKS.—Records poor. Insufficient data to determine discharge during period of ice effect, Nov. 14 to Mar. 14. Numerous diversions above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	May	June	Day	Oct.	Nov.	Mar.	Apr.	May	June
1	0	72	------	46	0.7	0	16	.4	------	34	1.5	.3	0
2	0	72	------	38	.6	0	17	.4	------	43	1.4	.3	0
3	0	67	------	33	.6	.1	18	.4	------	48	1.1	.3	0
4	0	60	------	27	.7	.1	19	.5	------	37	1.0	.2	0
5	0	59	------	27	.8	.1	20	.5	------	30	1.5	.2	0
6	0	57	------	23	.8	.1	21	.6	------	30	1.5	.2	0
7	0	51	------	20	.8	.1	22	.6	------	26	1.7	.2	11
8	0	37	------	19	.6	.1	23	.6	------	18	2.1	.2	1.5
9	0	30	------	15	.6	.1	24	1.7	------	9.1	2.1	.1	.6
10	0	27	------	15	.6	0	25	28	------	4.5	2.1	.1	.4
11	.1	26	------	13	.5	0	26	34	------	3.0	1.1	.2	.3
12	.2	27	------	11	.4	0	27	32	------	2.1	.9	.1	.2
13	.3	27	------	4.8	.4	0	28	38	------	1.0	.9	.1	.1
14	.3	------	------	3.6	.3	0	29	42	------	2.1	.8	0	0
15	.3	------	33	1.8	.3	0	30	43	------	63	.6	0	0
							31	60	------	48	------	0	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	60	0	9.16	563
November 1–13	72	26	47.1	1,210
March 15–31	63	1.0	25.4	856
April	46	.6	10.6	631
May	.8	0	.36	22
June	11	0	.49	29

NOTE.—No flow during July, August, September. Discharge of 126 second-feet measured with current meter Feb. 8.

MUSSELSHELL RIVER AT MOSBY, MONT.

LOCATION.—Wire gage in NW. ¼ sec. 11, T. 14 N., R. 30 E., at highway bridge half a mile west of Mosby.
RECORDS AVAILABLE.—May, 1929, to September, 1930.
EXTREMES.—Maximum discharge during year, 1,100 second-feet June 22 (gage height, 3.18 feet); no flow at various times.
1929–1931: Maximum discharge, 1,400 second-feet July 19, 1929 (gage height, 5.60 feet); no flow at various times.
REMARKS.—Records fair. Numerous diversions.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	June	July	Aug.	Sept.
1	0	28	0			8.0	0	1.7	0	0
2	0	0	0			9.2	0	1.2	0	0
3	0	0	0	120	40	13	0	.6	0	0
4	0	0	0			14	0	.4	0	0
5	0	0	0			10	0	.2	0	0
6	0	0	0			9.2	0	0	0	0
7	0	0	0			8.0	0	0	795	0
8	0	0	0	75	30	7.0	0	0	365	0
9	0	0	0			6.0	0	0	124	0
10	0	0	0			4.0	0	0	95	0
11	0	0	0			2.5	0	0	38	0
12	0	.3	0			.9	0	0	18	0
13	0	0	0	50	20	1.4	0	0	5.5	0
14	0	0	0			.3	0	0	1.7	0
15	16	0	0			.2	0	0	1.2	0
16	7.0	0				.4	0	0	.6	0
17	6.0	0				0	0	0	.4	0
18	4.0	0	5	55	30	0	0	0	.3	0
19	42	0				0	0	0	0	0
20	20	0				0	0	0	0	0
21	7.0	0			30	0	0	0	0	0
22	.3	0			26	0	1,100	0	0	0
23	.3	0	40	60	24	0	26	0	0	0
24	0	0			24	0	13	0	0	.2
25	0	0			22	0	10	0	0	.4
26	1.4	0			20	0	4.0	0	0	.3
27	.9	0		45	17	0	3.0	0	0	.2
28	.4	0			13	0	2.0	0	0	0
29	0	0	115		9.2	0	245	0	0	0
30	0	0			8.0	0	20	0	0	0
31	28				7.0			0	0	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	42	0	4.30	264
November	28	0	.94	56
January			29.5	1,810
February			69.1	3,840
March		7.0	25.8	1,590
April	14	0	3.14	187
June	1,100	0	47.4	2,820
July	1.7	0	.13	8.0
August	795	0	46.6	2,870
September	.4	0	.04	2.4
The year	1,100	0	18.6	13,400

NOTE.—No flow during December and May.

CHECKERBOARD CREEK AT DELPINE, MONT.

LOCATION.—Staff gage in NE. ¼ sec. 2, T. 9 N., R. 9 E., just below highway bridge a quarter of a mile southeast of Delpine and half a mile above junction with North Fork of Musselshell.

DRAINAGE AREA.—24.3 square miles.

RECORDS AVAILABLE.—March, 1922, to September, 1931. May, 1909, to December, 1911; May, 1913, to December, 1924, at site 2 miles above present station.

EXTREMES.—Maximum discharge during year, 6.7 second-feet Apr. 3, 9 (gage height, 1.26 feet); minimum, 0.6 second-foot July 13–15 (gage height, 0.96 foot).

1909–1911, 1913–14, 1922–1931: Maximum discharge, 167 second-feet July 16, 1923 (gage height, 3.1 feet); minimum, that of July 13–15, 1931.

REMARKS.—Records good June 24 to Sept. 30; others fair. No records Nov. 15 to Dec. 31, Apr. 15 to June 23. One small diversion above gage.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	June	July	Aug.	Sept.
1	1.6	1.8	1.6	1.3	1.7	3.7	-------	1.6	2.1	3.1
2	1.6	1.8	1.6	1.6	1.7	4.4	-------	1.6	1.8	3.1
3	1.6	1.6	1.6	1.6	2.0	6.7	-------	2.1	1.8	3.5
4	1.6	1.3	1.3	1.6	2.3	5.3	-------	1.8	1.6	3.5
5	1.8	1.3	1.6	1.3	2.6	4.0	-------	1.6	1.6	3.5
6	1.8	1.3	1.6	1.7	2.6	4.9	-------	1.8	1.5	3.1
7	1.8	1.3	1.3	1.7	2.3	6.2	-------	1.8	1.6	3.1
8	1.8	1.3	1.3	1.6	2.3	6.2	-------	1.6	1.6	3.5
9	1.8	1.3	1.0	1.5	2.3	6.7	-------	1.3	1.6	3.5
10	1.8	1.3	1.0	1.4	2.3	6.2	-------	1.3	1.6	3.1
11	1.8	1.3	1.0	1.4	2.0	6.2	-------	.8	1.8	3.1
12	1.8	1.3	.8	1.4	2.0	6.2	-------	.8	2.1	3.5
13	1.6	1.3	.8	1.4	2.3	5.8	-------	.6	2.1	3.1
14	1.3	1.3	.8	1.1	2.3	5.3	-------	.6	1.8	2.8
15	1.0	-------	.7	1.1	2.6	-------	-------	.6	1.8	3.1
16	1.0	-------	.7	1.1	2.6	-------	-------	.8	2.1	2.8
17	1.0	-------	.7	.9	2.6	-------	-------	.8	2.4	2.4
18	1.0	-------	.7	.9	2.9	-------	-------	1.0	2.4	2.4
19	1.0	-------	.7	1.4	2.9	-------	-------	1.3	2.4	2.4
20	2.1	-------	.7	1.4	3.3	-------	-------	1.6	2.8	2.4
21	2.1	-------	.8	.7	3.7	-------	-------	1.6	2.4	2.1
22	2.1	-------	.8	.7	3.7	-------	-------	1.6	2.8	2.1
23	2.1	-------	.8	1.4	4.0	-------	-------	1.6	2.8	2.1
24	2.1	-------	.8	1.7	4.0	-------	1.8	1.6	3.1	2.1
25	2.1	-------	.8	2.6	4.0	-------	1.6	1.3	3.1	2.1
26	2.1	-------	.9	2.0	2.0	-------	1.8	1.3	2.8	2.1
27	2.1	-------	1.1	1.4	2.0	-------	1.8	1.3	3.1	2.4
28	1.8	-------	1.4	1.4	2.3	-------	1.8	1.6	2.8	2.8
29	1.8	-------	1.7	-------	2.6	-------	1.8	1.6	3.1	3.1
30	1.8	-------	2.0	-------	2.9	-------	1.6	2.1	3.1	3.1
31	1.8	-------	2.0	-------	3.3	-------	-------	2.1	3.5	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2.1	1.0	1.70	105
November 1–14	1.8	1.3	1.39	39
January	2.0	.7	1.12	69
February	2.6	.7	1.40	78
March	4.0	1.7	2.65	163
April 1–14	6.7	3.7	5.56	154
June 24–30	1.8	1.6	1.74	24
July	2.1	.6	1.39	85
August	3.5	1.5	2.29	141
September	3.5	2.1	2.83	168

SOUTH FORK OF MUSSELSHELL RIVER NEAR MARTINSDALE, MONT.

LOCATION.—Staff gage in NW. ¼ sec. 12, T. 8 N., R. 11 E., 1½ miles northeast of Martinsdale.

RECORDS AVAILABLE.—June, 1907, to November, 1914; June, 1930, to September, 1931.

EXTREMES.—Maximum discharge during year, 28 second-feet June 24 (gage height, 1.06 feet); no flow Aug. 30 to Sept. 28.

1907–1914, 1930–31: Maximum discharge, 1,260 second-feet June 2–4, 1911 (gage height, 5.8 feet); no flow August 7, 9, 11, 13–15, Sept. 13, 1908, Aug. 30 to Sept. 28, 1931.

REMARKS.—Records good. Numerous diversions above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Feb.	Apr.	June	July	Aug.	Sept.
1	1.6	13				7.3	1.8	0
2	1.6	13				5.8	1.9	0
3	1.8	13				5.5	1.6	0
4	1.8	12				5.8	1.3	0
5	1.8	12				5.3	1.4	0
6	2.6	11				4.8	1.5	0
7	2.9	11				3.7	1.4	0
8	2.9	10				3.5	1.4	0
9	2.9	10				3.1	1.3	0
10	3.7	10	[a] 0.8			2.5	1.3	0
11	4.8	11				2.5	1.1	0
12	4.8	10				2.1	1.2	0
13	5.0					2.1	1.3	0
14	4.5			[a] 15		2.1	1.2	0
15	4.2					1.6	1.3	0
16	[b] 4.0					1.5	1.1	0
17	[b] 4.0					1.4	1.1	0
18	[b] 7.0					1.2	.8	0
19	10					1.2	.6	0
20	12					1.2	.6	0
21	13					1.0	.4	0
22	14					.9	.4	0
23	15					1.0	.3	0
24	16				28	1.0	.3	0
25	20				[b] 24	1.1	.2	0
26	19				[b] 20	1.0	.2	0
27	16				[b] 15	1.1	.2	0
28	16				11	1.2	.2	0
29	15				10	1.2	.1	.1
30	15				9.1	1.7	0	.2
31	14					2.6	0	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	20	1.6	8.29	510
November 1–12	13	10	11.3	269
June 24–30	28	9.1	16.7	232
July	7.3	.9	2.52	155
August	1.9	0	.89	55
September	.2	0	.01	.6

[a] Discharge measurement. [b] Estimated.

NOTE.—No records for periods omitted.

AMERICAN FORK NEAR HARLOWTON, MONT.

LOCATION.—Chain gage in SW. ¼ sec. 12, T. 7 N., R. 15 E., half a mile above Lebo Creek and 5 miles southeast of Harlowton.

RECORDS AVAILABLE.—July, 1907, to December, 1911; May to December, 1913; May, 1924, to September, 1931.

EXTREMES.—Maximum discharge for year, 1.0 second-foot Apr. 1, 2, 13–16 (gage height, 0.74 foot); no flow for long periods during year.

1907–1911, 1913, 1924–1931: Maximum discharge, 870 second-feet June 1, 1908 (gage height, 4.40 feet); no flow at various times.

REMARKS.—Records fair. No records Jan. 1 to Mar. 31. No diversions.

Daily and monthly discharge, in second-feet, 1930–31

Day	Apr.	May	June	Day	Apr.	May	June	Day	Apr.	May	June
1	1.0	0.6	0.4	11	0.9	0.5	0.3	21	0.5	0.5	0
2	1.0	.5	.3	12	.9	.5	.3	22	.5	.5	0
3	.7	.4	.3	13	1.0	.4	.3	23	.5	.4	0
4	.7	.4	.4	14	1.0	.2	.2	24	.5	.4	0
5	.8	.4	.4	15	1.0	.4	.2	25	.7	.4	0
6	1.0	.4	.4	16	1.0	.4	.2	26	.7	.5	0
7	1.0	.4	.3	17	.9	.4	.1	27	.8	.5	0
8	.9	.5	.3	18	.7	.4	0	28	.7	.5	0
9	1.0	.5	.2	19	.7	.5	0	29	.6	.5	0
10	.9	.5	.3	20	.6	.5	0	30	.6	.5	0
								31		.4	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April	1.0	0.5	0.79	47
May	.6	.2	.45	28
June	.4	0	.16	9.5

NOTE.—No flow October to December and July to September.

LEBO CREEK NEAR HARLOWTON, MONT.

LOCATION.—Staff gage in SW. ¼ sec. 12, T. 7 N., R. 15 E., half a mile above junction with American Fork and 5 miles southeast of Harlowton.

DRAINAGE AREA.—48 square miles.

RECORDS AVAILABLE.—July, 1907, to December, 1911; May to November, 1913; May, 1924, to September, 1931.

EXTREMES.—Maximum discharge during year, 32 second-feet Nov. 28 to Dec. 7 (gage height, 2.40 feet); minimum, 0.2 second-foot Aug. 21–22 (gage height, 1.45 feet).

1907–1911, 1913, 1924–1931: Maximum discharge, 417 second-feet July 6, 1928 (gage height, 6.90 feet); no flow at various times during 1908, 1929, 1930.

REMARKS.—Records good. No records Dec. 23 to Mar. 31. Numerous diversions and some storage above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Apr.	May	June	July	Aug.	Sept.
1	9	15	32	9.0	3.3	5.8	3.3	3.3	3.3
2	11	15	32	9.0	3.3	3.3	3.3	2.4	3.3
3	5.8	15	32	7.4	3.3	3.3	3.3	2.4	2.4
4	9.0	15	32	7.4	3.3	3.3	3.3	2.4	2.4
5	11	15	32	5.8	3.3	13	3.3	3.3	2.4
6	11	15	32	3.3	3.3	2.9	2.9	9.0	2.4
7	11	15	32	3.3	3.3	3.3	2.9	9.0	3.3
8	13	15	29	3.3	3.3	3.3	3.3	9.0	3.3
9	13	15	29	3.3	3.3	2.9	2.9	2.4	3.3
10	13	15	26	3.3	3.3	2.4	2.9	2.4	1.5
11	15	15	21	3.3	3.3	2.4	2.9	2.4	1.5
12	13	15	17	3.3	3.3	2.4	1.5	2.4	1.5
13	13	15	15	3.3	3.3	2.4	2.4	3.3	1.5
14	11	15	17	3.3	3.3	2.4	2.4	3.3	1.5
15	13	13	17	3.3	3.3	2.4	2.4	2.4	1.5
16	17	11	21	3.3	3.3	1.5	2.4	2.4	1.5
17	13	11	21	3.3	3.3	1.5	2.4	2.4	1.5
18	13	11	24	1.5	3.3	1.5	2.4	2.4	1.5
19	13	13	24	1.5	3.3	1.5	1.5	3.3	.9
20	17	13	26	1.5	3.3	1.5	1.5	2.4	.9
21	17	15	26	1.5	3.3	3.3	.3	.2	1.5
22	17	15	26	1.5	3.3	3.3	.3	.2	1.5
23	17	15	------	2.4	3.3	3.3	1.5	.3	1.5
24	17	15	------	3.3	3.3	2.4	1.5	.3	1.5
25	17	15	------	3.3	3.3	2.4	1.5	.3	1.5
26	17	15	------	3.3	3.3	2.4	1.5	.3	1.5
27	15	15	------	2.4	3.3	2.4	1.5	1.5	.9
28	15	32	------	3.3	3.3	2.4	1.5	1.5	1.5
29	15	32	------	3.3	3.3	3.3	1.5	3.3	1.5
30	15	32	------	3.3	5.8	3.3	3.3	3.3	2.4
31	17	------	------	------	3.3	------	3.3	3.3	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	17	5.8	13.7	842
November	32	11	16.1	958
December 1–22	32	15	25.6	1,120
April	9.0	1.5	3.68	219
May	5.8	3.3	3.38	208
June	13	1.5	3.05	181
July	3.3	.3	2.29	141
August	9.0	.2	2.80	172
September	3.3	.9	1.89	112

FLATWILLOW CREEK NEAR FLATWILLOW, MONT.

LOCATION.—Chain gage in NE. ¼ sec. 19, T. 12 N., R. 25 E., on Flatwillow Land & Livestock Co.'s ranch, 12 miles above Flatwillow.

DRAINAGE AREA.—195 square miles.

RECORDS AVAILABLE.—April, 1918, to September, 1931. May, 1911, to April, 1918, at station in sec. 23, T. 12 N., R. 25 E., 4 miles downstream.

EXTREMES.—Maximum discharge during year, 37 second-feet Jan. 31 (gage height, 1.7 feet; no flow Apr. 24 to Sept. 30.

1911–1931: Maximum discharge, 954 second-feet June 4–10, 1917 (gage height, 9.0 feet; no flow at various times.

REMARKS.—Records good except those for estimated periods, which are fair. Several diversions above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
1	0.2	8.1	9.2	9.2	36	4.0	1.4
2	.3	7.5	8.6	11	33	5.0	1.7
3	1.0	8.1	9.2	11	34	4.5	2.0
4	1.3	7.5	8.6	12	30	3.6	2.8
5	3.0	7.0	8.1	12	29	2.0	3.6
6	4.2	7.0	7.5	12	31	2.8	4.0
7	3.0	7.5	7.5		33	1.7	5.0
8	1.3	7.0	7.0		30	1.4	5.4
9	6.2	7.5	7.0		29	1.7	4.5
10	6.7	7.5	7.5		30	1.2	3.6
11	8.4	7.0	7.0		28	.6	2.8
12	7.2	7.5	7.0		26	1.2	2.0
13	7.8	8.1	6.4		28	.9	1.7
14	7.8	8.1	7.0		24	1.4	1.2
15	6.7	8.6	6.4	15	23	1.2	1.2
16	4.2	8.6	6.4		23	.9	.6
17	4.7	9.2			20	.5	.5
18	5.2	9.2			19	.6	.4
19		9.2			20	1.2	.3
20		9.2			18	1.2	.3
21	5.0	9.2	7.0		16	.6	.2
22		8.6			13	1.2	.2
23		9.2		23	12	.9	.1
24		10		25	11	.9	0
25	7.5	9.2		25	8.1		0
26	7.5	11		29	8.6	1.0	0
27	8.1	11	8.6	30	7.5		0
28	8.6	12	8.6	29	6.4		0
29	8.1	12	9.2	31	-------		0
30	8.1	11	9.2	33	-------	1.4	0
31	8.6	-------	10	37	-------	2.0	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	8.6	0.2	5.35	329
November	12	7.0	8.75	521
December	10	6.4	7.61	468
January	37	9.2	18.4	1,130
February	36	6.4	22.4	1,240
March	5.0	.5	1.60	98
April	5.4	0	1.52	90
The year				3,880

NOTE.—No flow during months omitted.

FLATWILLOW CREEK AT PETROLIA, MONT.

LOCATION.—Chain gage in NE. ¼ sec. 25, T. 14 N., R. 28 E., 2 miles above Box Elder Creek, 1 mile south of Petrolia, and 16 miles southeast of Winnett.
DRAINAGE AREA.—650 square miles.
RECORDS AVAILABLE.—June, 1921, to September, 1931.
EXTREMES.—Maximum discharge during year, 120 second-feet Feb. 26 (gage height, 2.38 feet); no flow at various times.
1921–1931: Maximum discharge, 3,700 second-feet July 5, 1923 (gage height, 12.94 feet); no flow at various times.
REMARKS.—Records fair. Flow not computed Dec. 11 to Feb. 21 because of ice effect. Numerous diversions.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.
1	0	0	4.6	------	14	4.2
2	0	0	9.0	------	49	4.6
3	0	0	7.4	------	37	4.2
4	0	0	6.8	------	12	3.4
5	0	0	5.6	------	11	3.4
6	0	0	5.0	------	8.0	3.8
7	0	2.0	4.6	------	10	3.0
8	0	2.2	4.6	------	8.0	2.2
9	0	2.4	5.0	------	9.0	1.8
10	0	2.6	6.2	------	5.6	0
11	0	2.8	------	------	5.0	0
12	0	2.8	------	------	6.8	0
13	49	3.8	------	------	7.4	0
14	11	3.0	------	------	7.4	0
15	4.2	2.4	------	------	6.8	0
16	2.0	2.8	------	------	5.0	0
17	1.6	2.8	------	------	5.0	0
18	1.1	2.8	------	------	5.0	0
19	.3	2.8	------	------	5.0	0
20	.3	2.8	------	------	5.0	0
21	0	2.8	------	------	5.0	0
22	0	3.0	------	23	5.0	0
23	0	3.4	------	30	4.6	0
24	0	3.4	------	47	4.2	0
25	0	3.4	------	39	4.2	0
26	0	3.4	------	120	4.2	0
27	0	3.4	------	68	4.2	0
28	0	3.4	------	37	4.6	0
29	0	3.8	------	------	3.4	0
30	0	4.2	------	------	3.8	0
31	0	------	------	------	3.8	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	49	0	2.24	138
November	4.2	0	2.41	143
December 1–10	9.0	4.6	5.88	117
February 22–28	120	23	52	722
March	49	3.4	8.68	534
April	4.6	0	1.02	61

NOTE.—No flow May to September.

McDONALD CREEK AT WINNETT, MONT.

LOCATION.—Wire gage in NE. ¼ sec. 6, T. 14 N., R. 27 E., at highway bridge at Winnett.

RECORDS AVAILABLE.—April, 1930, to September, 1931.

EXTREMES.—Maximum discharge, 4.7 second-feet Mar. 3 (gage height, 13.30 feet); no flow at various times.

1930–31: Maximum discharge, 46 second-feet Apr. 18, 1930 (gage height, 14.80 feet); no flow at various times during 1930, 1931.

REMARKS.—Records fair. Numerous diversions.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Jan.	Feb.	Mar.	Apr.	May	June	July
1	0	0	2.7	4.2	0.3	0.3	0.3	0.3
2	0	0	2.7	4.2	.3	.3	.3	.3
3	0	0	3.3	4.7	.3	.3	.3	.3
4	0	0	3.3	3.5	.3	.3	.3	.3
5	0	0	3.3	3.5	.3	.3	.3	.3
6	0	0	3.3	3.5	.3	.3	.3	.3
7	0	0	3.3	3.5	.3	.3	.3	.3
8	0	0	3.3	3.5	.3	.3	.3	.3
9	0	0	3.3	3.5	.3	.6	.3	.3
10	0	0	3.3	3.5	.6	.6	.3	.3
11	0.	0	3.3	3.5	.6	.6	.3	.3
12	.4	0	3.3	3.5	.3	.6	.3	.3
13	1.5	0	3.3	3.5	.3	.6	.3	.3
14	2.2	0	3.3	3.5	1.1	.6	.3	.3
15	1.5	0	3.3	2.2	.6	.6	.3	.3
16	0	0	3.3	.9	.6	.6	.3	.3
17	.1	0	3.3	.9	.6	.6	.3	0
18	0	0	3.3	.9	.6	.6	0	0
19	0	0	3.3	.5	.6	.6	0	0
20	0	0	3.3	.5	.3	.6	0	0
21	0	0	3.3	.5	.6	.3	0	0
22	0	0	3.3	.5	.6	.3	0	0
23	0	0	3.3	.5	.6	.3	.3	0
24	0	0	3.3	.5	.6	.3	.3	0
25	0	0	3.3	.5	.6	.3	.3	0
26	0	0	3.3	.5	.6	.6	.3	0
27	0		3.3	.5	.3	.6	0	0
28	0		3.3	.5	.3	.6	0	0
29	0	2.0	------	.5	.3	.6	0	0
30	0		------	.5	.3	.6	0	0
31	0		------	.5	------	.3	------	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2.2	0	0.18	11
January	------	0	.32	20
February	3.3	2.7	3.26	181
March	4.7	.5	2.03	125
April	1.1	.3	.46	27
May	.6	.3	.46	28
June	.3	0	.21	12
July	.3	0	.15	9.2
The year	4.7	0	.57	413

NOTE.—No flow during months omitted.

MILK RIVER BASIN

SOUTH FORK OF MILK RIVER NEAR INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in NW. ¼ sec. 6, T. 1, R. 19 W. 4th meridian, 1 mile north of international boundary and 20 miles west of Milk River, Alberta.

DRAINAGE AREA.—433 square miles.

RECORDS AVAILABLE.—March to September, 1931. April, 1905, to October, 1930, at location 5 miles south of international boundary.

EXTREMES.—Maximum discharge during year, 275 second-feet Apr. 7 (gage height, 2.25 feet); no flow at various times.

1905–1931: Maximum gage height, 15.4 feet June 6, 1908 (discharge not determined); no flow at times during 1919 and 1931.

REMARKS.—Records good. Stage-discharge relation affected by ice Mar. 1 to Apr. 3; discharge computed by a study of gage heights, temperature records, and three discharge measurements. Discharge estimated or interpolated Oct. 11–21, Apr. 12, 19, Aug. 9, 16, 23, 30, Sept. 6–9. Station maintained jointly with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17.7	19.0	36.0	50	28.9	1.7	0	0
2	17.7	19.0	61	42.0	23.4	1.7	0	0
3	16.8	17.7	72	40.5	22.3	1.6	10.2	0
4	15.0	16.4	89	42.0	20.1	2.5	17.7	0
5	15.0	5.2	65	45.0	21.2	2.2	11.9	0
6	15.0	5.2	100	46.8	20.1	2.1	9.7	0
7	15.0	2.5	230	46.8	19.0	5.2	9.2	0
8	15.9	2.0	155	45.0	15.0	8.6	8.1	0
9	17.7	1.8	113	43.5	12.4	8.6	7.1	0
10	19.5	3.4	89	39.0	9.7	8.1	6.1	3.0
11	19.5	1.8	59	33.0	8.1	6.1	5.2	1.9
12	19.5	4.2	56	30.0	11.3	3.9	3.9	1.6
13	19.5	9.2	52	27.8	9.7	3.7	3.4	11.3
14	19.5	20.1	50	25.6	6.5	3.4	3.0	9.2
15	19.5	25.0	44.0	25.6	6.1	3.2	2.7	8.1
16	19.5	33.0	44.0	24.5	5.7	2.7	2.6	7.5
17	18.6	52	30.0	20.1	3.2	1.9	2.4	7.5
18	18.6	56	33.0	24.5	2.7	2.1	1.9	7.0
19	18.6	91	33.0	30.0	3.2	2.1	1.8	7.0
20	18.6	94	33.0	33.0	3.2	1.9	1.7	7.0
21	18.6	140	31.5	34.5	2.5	1.9	1.6	7.0
22	18.6	74	37.5	34.5	2.4	1.7	1.3	10.8
23	24.0	81	39.0	37.5	2.4	1.6	1.1	15.0
24	28.8	72	36.0	34.5	1.8	1.3	.9	17.7
25	25.2	70	48.6	31.5	1.6	1.1	.7	15.7
26	22.2	68	58	30.0	1.4	.8	.5	15.0
27	19.5	34.5	74	26.7	1.6	.6	.4	13.7
28	21.3	23.4	65	26.7	1.6	.5	.2	13.1
29	17.7	30.0	54	23.4	1.6	.3	.1	12.4
30	18.6	52.0	50	25.6	1.6	.1	.1	12.4
31	22.2	45.0	-------	34.5	-------	0	0	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	28.8	15.0	19.1	1,170
March	140	1.8	37.7	2,320
April	230	30.0	64.6	3,840
May	50	20.1	34.0	2,090
June	28.9	1.4	8.98	534
July	8.6	0	2.68	165
August	17.7	0	3.73	229
September	17.7	0	6.80	405

NOTE.—No records for months omitted.

MILK RIVER AT MILK RIVER, ALBERTA

LOCATION.—Water-stage recorder in SE. ¼ sec. 28, T. 2, R. 16 W. fourth meridian, at Milk River, Alberta.

DRAINAGE AREA.—1,104 square miles.

RECORDS AVAILABLE.—July, 1909, to September, 1931. Prior to October, 1920, station maintained by Department of the Interior, Canada.

EXTREMES.—Maximum discharge during year, 570 second-feet July 3 (gage height, 2.96 feet); minimum, 10.2 second-feet Mar. 9.

1909–1931: Maximum discharge, 7,460 second-feet May 22, 1927 (gage height, 11.41 feet); no flow at various times during 1922, 1923, 1927.

REMARKS.—Records good. Stage-discharge relation affected by ice Oct. 15–25, Nov. 5 to Apr. 3. Discharge computed by a study of weather records, gage heights, and nine discharge measurements. Flow increased by water from St. Mary Canal, which diverts from St. Mary River during irrigation season. Station maintained jointly with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	59	56	53	47.4	59	19.0	199	298	342	520	550	500
2	59	57	53	42.6	62	19.0	127	316	440	515	510	500
3	57	56	55	43.8	59	14.4	98	329	490	545	480	500
4	56	55	52	43.8	57	43	105	374	515	540	470	495
5	53	46.2	53	45.0	59	57	147	426	515	525	480	485
6	53	46.2	55	43.8	48.6	47.4	147	435	515	520	490	460
7	53	46.2	57	45.0	47.4	36.6	174	440	510	525	490	347
8	53	47.4	59	43.8	46.2	18.2	237	455	505	530	490	184
9	57	48.6	59	40.2	43.8	12.6	141	445	510	520	495	124
10	57	53	59	37.8	41.4	14.4	105	465	490	515	500	86
11	56	48.6	59	32.0	40.2	21.4	81	470	485	510	495	66
12	57	45.0	59	29.0	40.2	32.0	61	490	480	505	490	48.5
13	56	40.2	57	28.0	40.2	37.8	51	500	490	510	490	44.3
14	55	39.0	55	24.0	39.0	32.0	42.2	505	495	515	490	42.2
15	45.0	35.4	57	25.0	39.0	35.4	38.0	500	500	540	500	42.2
16	46.2	34.2	59	23.0	39.0	181	34.8	500	505	530	505	42.2
17	42.6	35.4	59	23.0	37.8	445	30.0	490	505	530	505	36.4
18	42.6	37.8	59	24.0	37.8	412	23.6	495	505	525	500	34.8
19	40.2	39.0	57	23.0	39.0	359	20.7	515	500	525	505	34.8
20	43.8	43.8	48.6	23.0	42.6	318	33.2	510	505	530	505	31.6
21	45.0	45.0	47.4	24.5	41.4	291	23.6	515	505	515	505	38.0
22	45.0	51	51	25.0	42.6	220	28.4	515	500	520	495	40.1
23	51	49.8	52	34.2	32.0	167	30.0	505	490	510	500	38.0
24	70	51	51	31.0	37.8	104	33.2	495	485	510	490	40.1
25	71	51	51	27.0	31.0	53	34.8	342	490	505	490	38.0
26	86	53	49.8	33.0	29.0	48.6	46.4	168	490	505	490	36.4
27	62	52	48.6	40.2	21.4	66	88	105	495	505	490	33.2
28	77	53	45.0	49.8	22.2	77	226	83	495	510	495	30.0
29	62	51	45.0	80	------	62	270	74	500	510	500	25.2
30	64	51	43.8	84	------	51	286	63	510	530	495	20.7
31	57	------	42.6	61	------	82	------	83	------	545	495	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	86	40.2	55.9	3,440
November	57	34.2	47.3	2,810
December	59	42.6	53.3	3,280
January	84	23.0	38.0	2,340
February	62	21.4	42.0	2,330
March	445	12.6	109	6,700
April	286	20.7	98.7	5,870
May	515	63.0	384	23,600
June	515	342	492	29,300
July	545	505	521	32,000
August	550	470	496	30,500
September	500	20.7	148	8,810
The year	550	12.6	209	151,000

MILK RIVER AT EASTERN CROSSING OF INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in NE. ¼ sec. 6, T. 37 N., R. 9 E., at eastern crossing of international boundary, 30 miles north of Rudyard, Mont., and 37 miles south of Many Berries, Alberta. Zero of gage is 2,698.92 feet above mean sea level.

DRAINAGE AREA.—2,514 square miles.

RECORDS AVAILABLE.—April, 1913, to September, 1931. From August, 1909, to November, 1912, maintained by Irrigation Branch, Department of the Interior, Canada.

EXTREMES.—Maximum discharge during year, 1,100 second-feet July 31 (gage height, 3.02 feet); minimum, 29.3 second-feet Oct. 17, 18.

1909–1931: Maximum discharge, 12,000 second-feet May 23, 1927 (gage height, 10.16 feet); no flow at various times in 1914, 1922, and 1923.

REMARKS.—Records good. No diversions. Flow increased by water from St. Mary Canal during irrigation season. Station maintained jointly with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	60	-------	a 130	a 170	95	520	756	558
2	59	-------	150	285	82	592	558	553
3	56	-------	148	298	82	581	570	531
4	53	-------	171	302	329	633	575	520
5	50	-------	164	311	443	604	525	515
6	48.0	-------	a 150	324	473	621	604	499
7	46.9	-------	138	395	483	581	531	468
8	50	-------	255	433	520	581	520	504
9	63	-------	171	448	564	575	499	494
10	59	-------	248	448	592	558	510	320
11	54	-------	201	419	586	531	525	181
12	50	-------	150	428	536	520	536	157
13	49.2	-------	119	443	510	515	575	121
14	52	-------	96	468	525	494	575	98
15	38.1	-------	85	478	525	510	564	86
16	32.6	a 71	76	488	553	531	558	84
17	29.3	a 126	66	494	547	499	542	81
18	29.3	a 298	63	510	553	483	525	71
19	30.4	499	a 63	483	499	463	520	62
20	31.5	390	63	483	473	473	515	61
21	32.6	362	64	494	531	478	525	a 72
22	35.9	324	69	478	547	473	536	84
23	43.6	316	65	488	570	478	536	89
24	71	264	63	504	564	494	542	79
25	92	240	63	494	542	499	542	84
26	95	77	61	499	547	499	542	60
27	82	146	63	468	558	510	542	a 54
28	71	146	63	347	553	504	542	48.6
29	68	119	60	223	598	504	547	46.4
30	76	95	64	148	662	609	547	44.2
31	68	121	-------	118	-------	894	547	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	95	29.3	54.1	3,330
Mar. 16–31	499	71	225	7,140
April	255	60	111	6,600
May	510	118	399	24,500
June	662	82	488	29,000
July	894	463	542	33,300
August	756	499	549	33,800
September	558	44.2	221	13,200

a Estimated.

NOTE.—No records for periods omitted.

MILK RIVER ABOVE HAVRE, MONT.

LOCATION.—Water-stage recorder in SE. ¼ SW. ¼ sec. 32., T. 33 N., R. 15 E., a quarter of a mile above Big Sandy Creek and 6 miles west of Havre.

RECORDS AVAILABLE.—May, 1928, to September, 1931.

EXTREMES.—Maximum discharge, 1,420 second-feet July 31 (gage height, 5.33 feet); minimum, 30 second-feet Nov. 26 (gage height, 2.41 feet).

1928–1931: Maximum discharge, 2,540 second-feet June 21, 1928; maximum gage height, 5.96 feet Apr. 1, 1930; minimum discharge, that of Nov. 26, 1930.

REMARKS.—Records good except those for period of ice effect Mar. 1 to Apr. 6, which are fair. No records Dec. 4 to Feb. 28. Discharge for period May 27 to June 7 computed by comparison with Milk River at eastern crossing. No diversions. Flow increased by diversion from St. Mary River during irrigation season.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	94	79	50		242	70	122	678	1,140	498
2	86	82	51		207	62	108	499	710	488
3	82	70	52		218	126	99	607	444	478
4	77	68	------		207	258	96	600	456	483
5	71	57	------	60	207	311	211	556	493	473
6	66	43	------		207	306	448	524	481	468
7	63	45	------		207	311	426	562	468	483
8	60	51	------	65	183	395	450	550	426	478
9	62	50	------	66	192	343	487	550	407	468
10	64	49	------	68	264	395	556	575	407	473
11	68	47	------	69	255	438	556	587	413	428
12	77	50	------	70	255	468	512	568	419	256
13	75	a 46	------	71	259	487	481	581	419	196
14	64	a 42	------	72	221	506	499	562	426	152
15	52	a 38	------	74	198	562	524	556	432	135
16	50	34	------	76	192	568	537	600	438	115
17	60	a 34	------	77	155	562	575	639	424	96
18	62	a 35	------	94	138	450	462	543	424	82
19	58	a 35	------	111	111	462	413	487	414	75
20	46	a 36	------	228	102	413	432	450	448	71
21	41	36	------	438	94	419	432	456	463	64
22	46	34	------	426	102	475	512	487	488	71
23	47	34	------	372	90	481	607	493	498	67
24	a 58	34	------	321	94	487	587	493	478	67
25	a 69	32	------	372	96	481	613	499	473	89
26	a 80	31	------	183	80	432	600	518	483	87
27	92	32	------	63	80	474	543	550	498	61
28	166	34	------	133	84	454	550	562	493	57
29	131	44	------	161	79	321	678	562	488	51
30	90	46	------	126	75	198	757	658	498	46
31	86	------	------	153	------	156	------	1,070	519	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	166	41	72.4	4,450
November	82	31	44.9	2,670
March	438	----------	139	8,550
April	264	75	163	9,700
May	568	62	383	23,600
June	757	96	462	27,500
July	1,070	450	568	34,900
August	1,140	407	486	29,900
September	498	46	235	14,000

a Estimated or interpolated.

MILK RIVER NEAR VANDALIA, MONT.

LOCATION.—Staff gage in NE. ¼ sec. 7, T. 30 N., R. 37 E., just below Vandalia Dam, 2 miles west of Vandalia.

RECORDS AVAILABLE.—May, 1915, to September, 1920; August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 1,370 second-feet Oct. 10 (gage height, 8.50 feet); minimum, 1.5 second-feet at various times from April to August.

1915–1920, 1928–1931: Maximum discharge, 25,200 second-feet Apr. 11, 1917 (gage height, 34.5 feet; no flow Aug. 9–13, 1910, June 5, 1919, Sept. 4, 7–16, 1929.

REMARKS.—Records good except those for periods of ice effect, Nov. 19–27. Jan. 1 to Feb. 28, which are fair. Numerous diversions from river and tributaries above station, including Vandalia Canal, which diverts at dam above gage. Some regulation at Vandalia Dam and some storage in Nelson Reservoir.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	100	128	109			219	116	3.2	1.5	5.0	1.5	26
2	100	118	104			219	116	3.2	1.5	5.0	1.5	20
3	100	118	100			188	114	3.2	1.5	11	1.5	20
4	100	118	100			167	114	3.2	1.5	36	1.5	16
5	100	118	100			147	122	3.2	1.5	45	1.5	16
6	100	118	100			147	122	3.2	1.5	43	1.5	16
7	96	118	92			147	120	3.2	1.5	40	4.3	16
8	90	118	92			133	118	3.2	1.5	15	84	15
9	210	118	92			129	116	3.2	1.5	1.5	147	15
10	945	118	92			128	114	3.2	2.2	1.5	84	15
11	157	118	84			109	66	3.2	3.2	1.5	51	15
12	157	114	84			107	30	3.2	3.2	1.5	43	15
13	157	109	84			107	13	3.2	3.2	1.5	29	15
14	157	100	84			105	2.9	3.2	3.2	1.5	18	15
15	157	100	84		250	105	2.6	3.2	3.2	1.5	15	9.0
16	157	100	84	75		104	2.2	3.2	3.2	1.5	10	6.0
17	70	100	77			104	1.8	3.2	3.2	1.5	10	6.0
18	70	100	77			120	1.5	3.2	3.2	1.5	10	7.0
19	137		77			120	1.5	2.2	3.2	1.5	13	7.5
20	137		77			118	1.5	1.5	3.2	1.5	13	7.5
21	137		70			137	1.5	1.5	3.2	1.5	13	7.5
22	137		70			135	1.5	1.5	3.2	1.5	13	7.5
23	137	80	70			135	1.5	1.5	3.2	1.5	13	7.5
24	137		70			133	1.5	1.5	3.2	1.5	13	7.5
25	137		70			133	2.2	1.5	3.2	1.5	13	7.5
26	128		70			122	3.2	1.5	3.2	1.5	13	7.5
27	128		70			97	3.2	1.5	3.2	1.5	13	9.0
28	128	118	70			94	3.2	1.5	3.2	1.5	13	24
29	128	118	64		------	94	3.2	1.5	5.0	1.5	16	20
30	128	109	64		------	92	3.2	1.5	5.0	1.5	24	16
31	128	------	64		------	113	------	1.5	------	1.5	29	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	945	70	153	9,410
November	128	----------	103	6,130
December	109	64	82.1	5,050
January	----------	----------	75.0	4,610
February	----------	----------	250	13,900
March	219	92	129	7,930
April	122	1.5	44.0	2,620
May	3.2	1.5	2.51	154
June	5.0	1.5	2.78	165
July	45	1.5	7.56	465
August	147	1.5	23.0	1,410
September	26	6.0	13.1	780
The year	945	1.5	72.7	52,600

NORTH FORK OF MILK RIVER ABOVE ST. MARY CANAL, NEAR BROWNING, MONT.

LOCATION.—Water-stage recorder in SW. ¼ sec. 16, T. 37 N., R. 11 W., about 1¼ miles above outlet of canal, 3 miles south of international boundary, and 30 miles north of Browning.

DRAINAGE AREA.—62 square miles.

RECORDS AVAILABLE.—June, 1921, to September, 1931 (irrigation seasons only).

EXTREMES.—Maximum discharge during year, 29.3 second-feet Apr. 6 (gage height, 0.86 foot); minimum, 8.9 second-feet July 24–27 (gage height, 0.45 foot).

1921–1931: Maximum discharge, 363 second-feet May 29, 1927 (gage height, 4.93 feet); minimum, 7.3 second-feet Sept. 22, 1922.

REMARKS.—Records good. No diversions or regulation. Station maintained jointly with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1931

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1		16.5	12.6	11.2	14.1	10.2	16	16.9	14.1	11.8	10.5	10.5	11.5
2		16.0	12.6	11.5	11.5	9.9	17	16.9	13.7	11.8	10.2	10.2	11.5
3	20.0	16.0	12.9	14.8	10.5	9.9	18	19.9	14.5	11.8	9.9	10.2	11.2
4		16.5	13.3	13.7	10.2	9.9	19	16.9	15.6	12.2	10.2	10.2	
5		16.5	12.9	13.3	10.5	9.9	20	16.9	16.0	11.8	9.9	10.2	
6	22.2	15.6	12.9	13.7	11.2	9.9	21	18.2	16.0	11.8	9.6	10.2	
7	23.9	15.2	12.6	13.3	11.5	9.9	22	16.5	15.6	12.2	9.2	10.2	
8	21.1	15.2	12.6	12.6	10.8	14.1	23	18.2	14.5	11.8	9.2	10.2	
9	18.2	14.8	12.6	11.5	10.8	17.4	24	18.7	13.7	11.5	9.2	10.2	11.2
10	18.2	14.8	12.2	11.8	10.5	12.6	25	19.1	13.3	11.5	9.2	10.2	
11	18.2	14.5	11.8	11.2	10.2	11.8	26	17.8	13.3	11.5	9.2	10.2	
12	17.8	14.5	11.5	10.8	10.2	11.5	27	16.9	13.3	11.5	9.6	11.5	
13	17.8	14.1	11.8	10.5	10.2	11.5	28	16.9	15.2	11.2	9.9	11.2	
14	17.4	14.1	11.8	10.8	10.2	11.5	29	16.9	14.8	11.2	10.2	10.5	11.2
15	16.9	14.1	11.8	11.2	10.8	11.5	30	16.9	13.7	11.2	13.3	10.2	11.2
							31		12.9		18.3	10.2	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April	23.9	16.9	18.4	1,090
May	16.5	12.9	14.8	910
June	13.3	11.2	12.0	714
July	18.3	9.2	11.3	695
August	14.1	10.2	10.6	652
September	17.4	9.9	11.3	672
The period				4,730

NORTH FORK OF MILK RIVER NEAR INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in NE. ¼ sec. 11, T. 1, R. 23 W. fourth meridian, 2 miles north of international boundary and 18 miles east of Kimball, Alberta.

DRAINAGE AREA.—101 square miles.

RECORDS AVAILABLE.—January, 1913, to September, 1931. July, 1909, to December, 1912, at station in NE. ¼ sec. 13, T. 1, R. 23 W. fourth meridian, 2 miles downstream; May, 1911, to December, 1912, at station 2 miles south of international boundary.

EXTREMES.—Maximum discharge during year, 615 second-feet June 30 (gage height, 3.92 feet); minimum, 10 second-feet Mar. 4.

1909–1931: Maximum discharge, 1,070 second-feet May 8, 1920 (gage height, 4.14 feet); minimum, 3.2 second-feet Mar. 1, 1927.

REMARKS.—Records good. Stage-discharge relation effected by ice Mar. 1–21. No diversions. Flow increased by discharge of St. Mary Canal, which diverts from St. Mary River during irrigation season. Station maintained jointly with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19.0	18.1	30.4	304	488	548	544	522
2	19.0	11.4	32.0	322	522	556	518	518
3	19.0	10.4	33.1	364	537	575	510	503
4	19.0	10.0	38.6	399	540	567	503	488
5	19.0	11.4	29.6	406	540	559	507	399
6	19.0	13.9	49.4	413	537	563	510	108
7	19.5	21.5	27.2	410	529	559	503	31.2
8	20.5	51.0	24.0	406	525	556	514	29.6
9	21.5	35.6	21.9	431	529	559	514	24.8
10	21.0	17.8	19.8	449	540	559	510	20.5
11	21.0	24.0	19.8	474	533	552	518	19.8
12	21.0	36.8	20.5	496	537	559	514	19.1
13	20.5	29.6	20.5	499	537	563	514	19.1
14	20.5	25.6	19.1	503	544	559	525	19.1
15	21.0	27.2	19.1	507	548	563	533	17.0
16	21.0	64.0	19.1	510	544	559	533	15.8
17	22.0	68.0	18.4	514	567	559	533	15.8
18	22.5	34.4	19.1	510	548	556	529	15.8
19	23.5	34.4	18.4	514	548	559	525	15.8
20	23.5	29.6	19.1	507	559	559	525	15.8
21	23.0	33.2	20.5	499	548	563	525	15.8
22	23.5	32.0	17.7	492	548	556	525	15.8
23	23.5	25.6	17.7	488	544	556	525	15.2
24	23.0	34.2	20.5	280	544	556	525	12.2
25	22.0	25.6	22.6	64.0	540	556	525	12.2
26	26.4	28.0	175	30.4	548	556	525	11.6
27	21.0	33.1	245	23.3	544	556	525	11.0
28	20.5	41.9	284	[a] 24.0	548	552	525	10.7
29	20.5	40.8	294	[a] 34.0	548	552	522	10.7
30	20.5	38.6	304	[a]285	571	575	518	10.7
31	19.0	33.1	------	[a]421	------	591	522	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	26.4	19.0	21.2	1,300
March	68	10.0	30.3	1,860
April	304	17.7	63.3	3,770
May	514	23.3	374	23,000
June	571	488	541	32,200
July	591	548	560	34,400
August	544	503	521	32,000
September	522	10.7	98.1	5,840

[a] Estimated.

NOTE.—No records for period omitted.

BIG SANDY CREEK NEAR BOXELDER, MONT.

LOCATION.—Staff gage in NE. ¼ sec. 13, T. 30 N., R. 13 E., at Cowan ranch 3 miles north of Boxelder.

RECORDS AVAILABLE.—March, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 74 second-feet Jan. 29 (gage height, 4.72 feet); minimum, 0.06 second-foot Mar. 11, 12 (gage height, 1.73 feet).

1928–1931: Maximum discharge, 338 second-feet Mar. 25, 1928 (gage height, 10.96 feet); no flow Mar. 17, 1929.

REMARKS.—Records fair. Stage-discharge relation affected by ice Nov. 13–24, Feb. 8, 9, 12–15, Mar. 26–30. Insufficient data to compute flow Dec. 19 to Jan. 20. Flow regulated by storage in Cowan Reservoir. Small diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.2	0.6	0.5	------	18	2.8	0.2	0.3	0.3	0.9	1.1	1.0
2	.2	.6	10	------	6.8	2.5	.3	.3	.3	.5	1.0	1.0
3	.3	.6	27	------	3.8	2.7	.3	.3	.3	1.0	1.0	.8
4	.3	.6	5.4	------	3.1	3.1	.3	.3	.3	.8	1.5	.8
5	.3	.7	2.5	------	1.4	3.0	.3	.3	.3	.7	1.6	.8
6	.3	.7	1.8	------	1.1	1.1	.3	.3	.3	.8	1.5	.8
7	.4	.7	1.5	------	.8	.5	.2	.3	.3	.8	1.8	.8
8	.4	.7	1.4	------	.8	.2	.2	.3	.3	.7	1.5	.8
9	.4	3.5	1.5	------	.7	.2	.3	.3	.3	.7	1.7	.8
10	.4	4.1	1.1	------	.7	.2	.3	.3	.3	.8	1.8	.8
11	.4	2.1	3.5	------	.7	.1	.3	.3	.3	.4	1.8	.8
12	.4	4.5	1.0	------	.7	.1	.3	.3	.3	.8	1.8	.7
13	.4	5.1	1.1	------	.7	.2	.3	.3	.3	.8	1.9	.8
14	.4	6.8	1.1	------	.8	.2	.4	.2	.3	.8	1.9	.7
15	.5	.5	1.2	------	.8	.2	.3	.2	.3	.7	2.0	.7
16	.5	.4	1.0	------	.8	.2	.3	.3	.4	.6	1.9	.6
17	.5	.4	1.2	------	2.6	.2	.3	.3	.4	.6	2.1	.6
18	.5	.4	1.0	------	1.8	.2	.3	.3	.4	.6	2.1	.6
19	.5	.3	------	------	1.5	.2	.3	.3	.5	.6	2.1	.6
20	.4	.6	------	------	1.3	.2	.3	.3	.4	.8	2.2	.6
21	.4	.8	------	25	1.6	.2	.4	.3	.4	.8	2.1	.5
22	.4	.5	------	27	1.6	.2	.4	.2	.4	.6	2.1	.6
23	.5	.8	------	28	1.7	.2	.3	.2	.4	.8	1.9	.6
24	.4	1.2	------	34	1.6	.2	.3	.2	.4	.8	1.6	.5
25	.4	.8	------	49	1.8	.2	.3	.2	.4	.6	1.6	.5
26	.5	.6	------	39	2.4	.1	.3	.2	.4	1.0	1.6	.5
27	.5	.5	------	38	2.4	.1	.3	.2	.4	1.0	1.3	.4
28	.5	.5	------	63	2.6	.1	.3	.2	.5	.9	1.2	.4
29	.5	.4	------	73	------	.2	.3	.2	.6	.9	1.1	.5
30	.5	.5	------	21	------	.2	.3	.2	1.3	1.8	1.0	.4
31	.5	------	------	16	------	.2	------	.2	------	1.5	1.1	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	0.5	0.2	0.41	25
November	6.8	.4	1.35	80
December 1–18	27	1.0	3.54	126
January 21–31	73	16	37.5	818
February	18	.7	2.31	128
March	3.1	.1	.65	40
April	.4	.2	.30	18
May	.3	.2	.26	16
June	1.3	.3	.39	23
July	1.8	.4	.81	50
August	2.2	1.0	1.64	101
September	1.0	.4	.67	40

LODGE CREEK AT INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in SE. ¼ sec. 12, T. 1, R. 29 W. third meridian, in Saskatchewan, Canada, 1 mile north of international boundary line and 30 miles northwest of Havre, Mont.

DRAINAGE AREA.—797 square miles.

RECORDS AVAILABLE.—April, 1917, to September, 1931. April, 1910, to October, 1916, maintained by Irrigation Branch, Department of the Interior, Canada.

EXTREMES.—Maximum discharge during year, 164 second-feet July 1 (gage height, 3.13 feet); no flow at various times.

1917–1931: Maximum discharge, 3,680 second-feet May 23, 1927 (gage height, 12.40 feet); no flow at times usually after July 15 of each year.

REMARKS.—Records good. Several diversions above gage. Station maintained jointly with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1930–31

Day	Apr.	May	June	July	Aug.	Day	Apr.	May	June	July	Aug.
1	2.6	0.2	0	84	14.1	16	0.5	0	0	0.3	0
2	2.8	.1	0	22.2	1.6	17	.5	0	0	.3	0
3	2.4	.1	0	28.0	.7	18	.4	0	0	.2	0
4	2.4	0	0	12.1	.5	19	.4	0	0	.2	0
5	2.0	0	0	4.3	.4	20	.3	0	0	0	0
6	1.8	0	0	1.5	.4	21	.3	0	0	0	0
7	2.0	0	0	1.2	.3	22	.3	0	0	0	0
8	2.2	0	0	1.1	.3	23	.3	0	0	0	0
9	2.0	0	0	.8	.2	24	.3	0	0	0	0
10	1.2	0	0	.7	.2	25	.3	0	0	0	0
11	1.0	0	0	.6	.1	26	.3	0	0	0	0
12	.9	0	0	.5	.1	27	.2	0	0	0	0
13	.8	0	0	.4	0	28	.2	0	0	0	0
14	.7	0	0	.3	0	29	.2	0	2.4	0	0
15	.7	0	0	.3	0	30	.2	0	35.6	0	0
						31	-------	0	-------	0	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April	2.8	0.2	1.01	60
May	.2	0	.013	.8
June	35.6	0	1.27	76
July	84	0	5.13	315
August	14.1	0	.610	38
The year	----------	----------	----------	490

NOTE.—No flow during months omitted.

McREA COULEE AT INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in NW. ¼ sec. 5, T. 1, R. 28 W. third meridian, in Saskatchewan, Canada, three-quarters of a mile north of international boundary and a quarter of a mile above mouth.
DRAINAGE AREA.—53 square miles.
RECORDS AVAILABLE.—March, 1927, to September, 1931.
EXTREMES.—Maximum discharge during year, 150 second-feet June 30 (gage height, 4.15 feet); no flow at various times.
1927–1931: Maximum discharge, 486 second-feet May 23, 1927 (gage height, 5.74 feet); no flow at various times.
REMARKS.—Records fair. No regulation or diversion. Station maintained jointly with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

Daily discharge, in second-feet, 1930–31

June 30	36.0	July 4	0.5
July 1	5.4	July 5	.2
July 2	.5	Aug. 2	.1
July 3	.7		

NOTE.—No flow during year ending Sept. 30, 1931, except on days given above. Run-off in acre-feet for June, 71, July, 15, August, 0.2; the year, 86.2.

NORTH CHINOOK CANAL NEAR HAVRE, MONT.

LOCATION.—Water-stage recorder in SE. ¼ sec. 2, T. 35 N., R. 17 E., 1 mile below headworks of canal and 23 miles northeast of Havre.
RECORDS AVAILABLE.—May, 1928, to September, 1931.
REMARKS.—Records good. Canal diverts flood water from Lodge Creek in sec. 3, T. 35 N., R. 17 E., and stores in North Chinook Reservoir for irrigation of lands between Lodge Creek and Battle Creek, north of Chinook.

Daily discharge, in second-feet, 1930–31

July 4	9.0	July 9	3.5
July 5	36	July 10	.2
July 6	24	July 31	8.7
July 7	12.2	Aug. 1	.8
July 8	7.3		

NOTE.—No flow during year ending Sept. 30, 1931, except on days given above. Run-off in acre-feet for July, 200, August, 1.6; the year, 202.

BATTLE CREEK AT INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in SE. ¼ sec. 4, T. 1, R. 26 W. third meridian, in Saskatchewan, a quarter of a mile above international boundary and 35 miles north of Chinook.

DRAINAGE AREA.—726 square miles.

RECORDS AVAILABLE.—April, 1917, to September, 1931.

EXTREMES.—Maximum discharge during year, 66 second-feet Apr. 7 (gage height, 2.91 feet); no flow after June 4.

1917–1931: Maximum discharge, 3,200 second-feet Apr. 13, 1917 (gage height, 8.50 feet); no flow at various times.

REMARKS.—Records good. Stage-discharge relation affected by ice Oct. 15–26, Mar. 1 to Apr. 6. Numerous diversions above station. Station maintained jointly with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Mar.	Apr.	May	June	Day	Oct.	Mar.	Apr.	May	June
1	12.7	14.0	29.2	2.0	0.2	16	7.7	18.5	21.0	1.1	0
2	12.7	14.0	20.2	1.3	.1	17	7.7	17.1	20.2	1.0	0
3	12.7	14.0	20.2	1.5	.2	18	7.7	15.6	18.5	1.0	0
4	[a]14.9	14.0	24.4	2.7	.1	19	7.5	15.0	14.9	1.1	0
5	17.1	14.0	29.2	2.4	0	20	7.3	21.9	12.7	1.5	0
6	16.3	11.0	33.6	2.7	0	21	7.2	27.0	9.6	2.0	0
7	16.3	11.0	53.0	2.4	0	22	7.2	32.5	7.4	2.2	0
8	15.6	11.0	42.8	3.1	0	23	9.3	38.0	6.4	1.1	0
9	14.2	8.8	36.9	2.2	0	24	10.8	44.0	8.6	.7	0
10	14.9	9.3	31.4	1.5	0	25	11.3	38.0	8.6	.7	0
11	13.5	10.8	31.4	1.3	0	26	11.3	20.0	5.8	.4	0
12	12.0	12.7	34.7	1.3	0	27	14.2	15.0	4.1	.3	0
13	11.3	14.2	28.1	1.5	0	28	17.1	20.0	3.8	.3	0
14	11.3	16.3	17.1	1.5	0	29	12.7	24.4	4.1	.3	0
15	11.3	18.5	21.0	1.3	0	30	12.7	20.2	2.7	.2	0
						31	12.0	21.0	-------	.2	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	17.1	7.2	12.0	738
March	44.0	8.8	18.8	1,160
April	53	2.7	20.1	1,200
May	3.1	.2	1.38	85
June	.2	0	.02	1.2

[a] Interpolated.

NOTE.—No records Nov. 1 to Feb. 28. No flow during July, August, September.

WOODPILE COULEE NEAR INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in NW. ¼ sec. 8, T. 37 N., R. 17 E., just below Antelope Coulee and 1⅛ miles south of international boundary.

DRAINAGE AREA.—70 square miles.

EXTREMES.—Maximum discharge during year, 0.4 second-foot Aug. 1; no flow during most of year. See footnote.

1927–1931: Maximum discharge, 423 second-feet Apr. 4, 1927 (gage height, 16.69 feet, old datum); no flow at various times.

REMARKS.—Records fair. No diversions. Station maintained jointly with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

NOTE.—No run-off during 1930-31 except for three periods estimated as follows: Mar. 21–22, 1 acre-foot; Apr. 2–5, 1 acre-foot; Aug. 1–3, 1 acre-foot; the year, 3 acre-feet.

EAST FORK OF BATTLE CREEK NEAR INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in NW. ¼ sec. 17, T. 37 N., R. 20 E., 2 miles south of international boundary and 7 miles east of Norheim, Mont.
DRAINAGE AREA.—98 square miles.
RECORDS AVAILABLE.—March, 1927, to September, 1931.
EXTREMES.—1927–1931: Maximum discharge, 432 second-feet Apr. 1, 1928 (gage height, 5.48 feet); no flow at various times.
REMARKS—No flow during year except unmeasured run-off June 30 to July 2, estimated 2 acre-feet. No diversions. Station maintained jointly with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

LYONS COULEE AT INTERNATIONAL BOUNDARY

LOCATION.—Chain gage in NE. ¼ sec. 4, T. 37 N., R. 19 E., half a mile south of international boundary at Norheim, Mont. (Post office moved to present location at gaging station in 1931.)
DRAINAGE AREA.—47 square miles.
RECORDS AVAILABLE.—March, 1927, to September, 1931.
EXTREMES.—1927–1931: Maximum discharge, 668 second-feet Apr. 3, 1927 (gage height, 7.65 feet); no flow at various times.
REMARKS.—No flow during year. Some small diversions above gage. Station maintained jointly with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

MATHESON CANAL NEAR CHINOOK, MONT.

LOCATION.—Recording gage in the NW. ¼ sec. 29, T. 33 N., R. 20 E., at headworks of canal, 3½ miles east of Chinook.
RECORDS AVAILABLE.—April, 1905, to October, 1921; May, 1928, to September, 1931.
REMARKS.—Records fair. Canal diverts water from right bank of Battle Creek for irrigation of lands between Battle Creek and Milk River.

Daily and monthly discharge, in second-feet, 1930–31

Day	Mar.	Apr.	May	June	July	Day	Mar.	Apr.	May	June	July
1	0	9.0	0.70	0	0.10	16	0	9.7	0	0	0
2	0	9.7	.55	0	0	17	0	9.7	0	0	0
3	0	2.0	.45	0	0	18	0	9.0	0	0	0
4	0	6.4	.32	0	0	19	0	8.2	0	0	0
5	0	9.0	.20	0	0	20	0	7.4	0	0	0
6	0	10.3	.06	0	0	21	0	7.3	0	0	0
7	0	10.5	.04	0	0	22	0	6.7	0	0	0
8	0	11.5	0	0	0	23	0	5.5	0	0	0
9	0	13.1	0	0	0	24	1.9	4.4	0	0	0
10	0	13.5	0	0	0	25	4.5	3.2	0	0	.06
11	0	13.9	0	0	0	26	.5	2.1	0	0	.31
12	0	12.2	0	0	0	27	.6	1.5	0	0	.24
13	0	11.3	0	0	0	28	4.5	1.1	0	0	0
14	0	11.8	0	0	0	29	6.2	1.0	0	0	0
15	0	12.2	0	0	0	30	9.4	.82	0	.21	0
						31	8.1		0		0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March	9.4	0	1.15	71
April	13.9	.82	7.80	464
May	.70	0	.075	4.6
June	.21	0	.007	.42
July	.24	0	.023	1.4
The period				541

NOTE.—No flow during months omitted.

WHITEWATER CREEK NEAR INTERNATIONAL BOUNDARY

LOCATION—Water-stage recorder in NW. ¼ sec. 24, T. 37 N., R. 29 E., just below mouth of North Fork of Whitewater Creek, 3½ miles south of international boundary, and 5 miles northeast of Lowrane, Mont.

RECORDS AVAILABLE.—March, 1927, to September, 1931.

EXTREMES.—Maximum discharge during year, 374 second-feet June 30 (gage height, 4.13 feet); minimum, 0.01 second-foot Aug. 5 (gage height, 0.67 foot). 1927–1931: Maximum discharge, 1,140 second-feet Apr. 5, 1927 (gage height, 4.71 feet); no flow at various times in 1927, 1929, 1930.

REMARKS.—Records fair. Ice effect Oct. 18–31, Mar. 1 to Apr. 2. No records Nov. 1 to Feb. 28. No diversions. Station maintained jointly with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second feet, 1930–31

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.08	0.4	0.5	0.1	0.3	22.8	0.20	0.05
2	.08	.3	.5	.1	.2	8.8	.06	.08
3	.08	.3	.7	.1	.3	[a]1.9	.06	.05
4	.08	.3	.6	.1	.3	[a]1.3	.04	.05
5	.08	.3	.5	.1	.3	.7	.02	.04
6	.09	.3	.5	.1	.3	.5	.05	.05
7	.10	.2	.5	.1	.3	.4	.12	.05
8	.10	.2	.3	.1	.3	.3	.06	.06
9	.09	.2	.1	.1	.3	.2	.05	.10
10	.10	.3	.2	.2	.3	[a].2	.05	.12
11	.10	.3	.2	.2	.2	.1	.04	.14
12	.10	.3	.2	.2	.2	.05	.05	.14
13	.09	.3	.2	.1	.2	.06	.05	.14
14	.09	.3	.2	.1	.2	.06	.04	.14
15	.08	.3	.1	.1	.2	.08	.05	.14
16	.10	.3	.1	.1	.2	.17	.05	.14
17	.20	.4	.1	.1	.1	.12	.05	.14
18		.3	.1	.1	.04	.06	.05	.14
19		.6	.1	.1	.04	.10	.05	.20
20		.3	.1	.2	.1	.14	.05	.14
21	.08	.3	.2	.3	.2	.14	.06	.14
22		.2	.2	.3	.2	.14	.06	.12
23		.2	.2	.2	.2	.12	.06	.12
24		.2	.2	.1	.1	.12	.08	.17
25		.2	.2	.1	.1	.12	.08	.17
26	.07	.2	.2	.2	.1	.10	.06	.17
27		.3	.2	.2	.1	.12	.04	.17
28		.3	.2	.2	.1	.14	.04	.14
29		.3	.2	.3	.1	.14	.04	.10
30	.06	.3	.2	.3	113	.20	.04	.10
31		.4	------	.3	------	.34	.04	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	0.20	----------	0.085	5.2
March	.6	.2	.29	18
April	.7	.1	.26	15
May	.3	.1	.16	9.8
June	113	.04	3.95	235
July	22.8	.05	1.28	79
August	.20	.02	.058	3.6
September	.20	.04	.117	7.0

[a] Estimated.

FRENCHMAN RIVER AT INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in the SW. ¼ sec. 4, T. 1, R. 10 W. third meridian, in Saskatchewan, just across international boundary from east side of lot 3, sec. 6, T. 37 N., R. 34 E., in Montana.

DRAINAGE AREA.—1,875 square miles.

RECORDS AVAILABLE.—April, 1917, to September, 1931.

EXTREMES.—Maximum discharge during year, 538 second-feet June 29 (gage height, 3.89 feet); no flow at times.

1917–1931: Maximum discharge, 5,440 second-feet Mar. 29, 1925 (gage height, 13.12 feet); no flow at various times.

REMARKS.—Records good except those for period of ice effect, Mar. 1 to Apr. 5, which are fair. No records Nov. 1 to Feb. 28. Numerous diversions in Canada. Station maintained jointly with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12.4	21.0	77	33.0	25.0	416	2.1	0.2
2	12.0	20.7	128	32.0	25.0	292	2.0	.1
3	11.1	20.0	185	32.0	24.3	165	1.5	0
4	16.2	20.0	128	31.0	23.6	71	2.3	0
5	19.4	20.0	118	31.0	22.9	52	1.6	0
6	23.6	20.0	120	31.0	20.7	42.0	1.3	0
7	23.6	19.4	110	32.0	19.4	37.5	1.5	0
8	23.6	25.8	120	32.0	17.5	30.4	1.8	0
9	22.2	18.7	74	33.0	16.8	24.8	1.7	0
10	21.4	24.0	74	30.1	15.6	20.5	1.4	0
11	23.6	28.2	75	31.0	15.0	18.7	1.1	0
12	25.8	29.0	63	30.1	13.3	18.7	.7	0
13	22.2	20.7	56	30.1	12.0	14.9	.4	0
14	18.7	21.4	57	30.1	11.1	11.7	.1	0
15	18.7	22.1	57	29.1	12.0	10.3	0	0
16	16.8	22.9	53	27.2	11.6	10.0	0	0
17	13.7	23.6	48.0	26.5	10.7	8.9	0	0
18	9.4	24.3	44.6	27.2	9.0	7.4	0	0
19	9.4	28.0	41.3	31.0	7.9	6.4	0	.4
20	9.0	32.0	39.0	32.0	6.8	5.2	3.4	.3
21	8.3	13.7	36.8	31.0	6.4	6.6	9.2	.1
22	7.6	13.7	35.8	30.1	6.1	6.6	7.7	0
23	7.2	19.4	35.8	30.1	8.7	5.4	6.1	0
24	7.2	39.0	35.8	28.2	10.3	4.5	4.5	0
25	7.9	100	35.8	28.2	7.9	3.6	3.3	0
26	8.7	74	35.8	26.5	9.8	2.8	2.2	0
27	11.6	45.9	36.8	25.0	7.6	2.2	1.6	0
28	14.3	41.3	36.8	24.3	6.1	1.8	1.1	0
29	18.1	35.8	33.9	24.3	30.0	1.5	.7	0
30	20.0	36.8	33.9	23.6	179	1.3	.4	0
31	22.0	52	-------	23.6	-------	1.4	.4	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	25.8	7.2	15.7	965
March	100	13.7	30.1	1,850
April	185	33.9	67.5	4,020
May	33.0	23.6	29.2	1,800
June	179	6.1	19.7	1,170
July	416	1.3	42.0	2,580
August	9.2	0	1.94	119
September	.4	0	.04	2.4

FRENCHMAN CANAL NEAR SACO, MONT.

LOCATION.—Water-stage recorder in NE. ¼ sec. 27, T. 33 N., R. 34 E., 14 miles northeast of Saco.
RECORDS AVAILABLE.—May, 1928, to September, 1931.
REMARKS.—Records fair. Canal diverts water from Frenchman River for irrigation of land in Frenchman Valley.

Daily and monthly discharge, in second-feet, 1930–31

Day	Apr.	May	June	July	Aug.	Day	Apr.	May	June	July	Aug.
1	0	15.0	8.4	20.6	0.4	16	9.9	13.5	7.5	6.9	0
2	0	20.2	13.5	17.4	.4	17	10.2	14.4	6.0	7.1	0
3	0	15.0	7.7	17.0	.4	18	7.7	14.4	5.1	7.5	0
4	0	12.6	15.4	12.6	.4	19	6.8	15.0	4.2	6.6	0
5	0	12.6	16.2	4.5	.3	20	6.0	15.0	3.5	4.2	0
6	11.1	12.6	14.4	2.5	.2	21	5.1	18.6	3.1	8.6	0
7	10.8	12.6	13.2	2.3	.1	22	5.0	20.6	2.9	6.5	0
8	10.2	12.6	12.9	4.3	.1	23	4.5	20.2	3.4	3.1	0
9	14.1	12.6	13.8	5.2	0	24	4.3	19.4	4.8	.3	0
10	10.8	12.6	12.9	5.8	0	25	4.5	18.2	4.9	.4	0
11	9.9	12.3	12.3	9.6	0	26	4.2	15.0	4.9	1.1	0
12	13.2	12.0	10.5	8.4	0	27	4.3	13.2	3.1	.7	0
13	12.0	12.3	11.4	8.0	0	28	7.1	10.5	2.6	.4	0
14	10.8	12.9	11.4	8.0	0	29	12.0	10.5	2.8	.3	0
15	9.9	13.2	9.0	7.5	0	30	13.8	10.8	3.0	.2	0
						31		8.8		.2	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April	14.1	0	7.27	433
May	20.6	8.8	14.2	873
June	16.2	2.6	8.16	486
July	20.6	.2	6.06	373
August	.4	0	.074	4.6
The period				2,170

NOTE.—No flow during months omitted.

ROCK CREEK AT INTERNATIONAL BOUNDARY

LOCATION.—Chain gage in SE. ¼ sec. 1, T. 37 N., R. 37 E., three-quarters of a mile south of international boundary, 2 miles above mouth of Horse Creek, and 5 miles west of Barnard, Mont.

DRAINAGE AREA.—242 square miles.

RECORDS AVAILABLE.—March, 1927, to September, 1931.

EXTREMES.—Maximum discharge during year, 48.5 second-feet Mar. 19 (gage height, 3.03 feet); no flow at various times.

1927–1931: Maximum discharge, 982 second-feet Apr. 6, 1927 (gage height, 10.51 feet); no flow at various times.

REMARKS.—Records poor. No records Nov. 1 to Feb. 28. Stage-discharge relation affected by ice Mar. 1–22. One small diversion above gage. Station maintained jointly with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Mar.	Apr.	May	June	July	Aug
1	3.2	18.9	5.6	0	0.6	2.0	0
2	3.5	13.1	5.3	0	.6	e 2.0	0
3	3.2	12.2	5.7	0	.4	e 2.0	0
4	3.2	11.7	4.2	0	1.2	2.0	0
5	3.4	13.5	1.4	0	1.6	1.9	0
6	3.2	12.8	.8	0	1.6	e 2.0	0
7	2.2	9.3	3.3	0	2.2	2.3	0
8	2.8	6.8	2.5	0	1.5	1.6	0
9	3.4	5.1	2.4	.4	1.4	1.2	0
10	3.5	3.1	2.4	.7	2.1	1.0	0
11	4.7	3.0	3.5	.7	2.3	.6	0
12	6.8	2.5	3.2	1.5	e 2.8	.6	0
13	7.7	2.7	2.6	1.4	3.3	.1	0
14	8.0	3.0	2.8	1.6	2.6	e .1	0
15	8.9	3.6	1.5	1.6	2.3	0	0
16	6.6	4.0	1.6	1.7	1.9	0	0
17		5.3	1.4	2.0	1.7	0	.5
18	e 6.0	10.0	.9	e 2.3	1.7	0	.2
19		48.5	.9	e 2.6	1.8	0	0
20		33.7	e .6	2.9	2.3	0	0
21		39.1	.2	2.9	2.8	0	0
22	e 5.0	44.2	0	1.8	2.6	0	0
23		28.2	0	.1	2.6	0	0
24	5.1	19.6	0	0	2.6	0	0
25	6.5	e 13.0	0	0	2.5	0	0
26	7.1	6.2	0	0	2.4	0	0
27	7.6	5.0	0	0	2.1	0	0
28	8.5	e 4.9	0	0	2.2	0	0
29	8.7	e 4.8	0	.6	2.2	0	0
30	7.8	4.8	0	.7	e 2.1	0	0
31	7.0	1.4	-------	.7	-------	0	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	8.9	2.2	5.54	341
March	48.5	1.4	12.7	781
April	5.7	0	1.76	105
May	2.9	0	.85	52
June	3.3	.4	2.00	119
July	2.3	0	.63	39
August	.5	0	.02	1.2

e Estimated or interpolated.

NOTE.—No flow during September.

HORSE CREEK AT INTERNATIONAL BOUNDARY

LOCATION.—Staff gage in SE. ¼ sec. 3, T. 37 N., R. 37 E., three-quarters of a mile south of international boundary.

DRAINAGE AREA.—71 square miles.

RECORDS AVAILABLE.—March, 1927, to September, 1931; May, 1914, to October, 1926, maintained at same location by Department of the Interior, Canada.

EXTREMES.—Maximum discharge during year, 6.9 second-feet Mar. 21 (gage height, 2.26 feet); no flow at various times.

1914–1931: Maximum discharge, 1,040 second-feet Mar. 30, 1925 (gage height, 10.85 feet); no flow at various times.

REMARKS.—Records fair. No records Nov. 1 to Feb. 28. No diversions. Station maintained jointly with the Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Mar.	Apr.	May	June
1	0.02		1.9	[a] 0.1	0.1
2	[a].02		[a] 1.6	[a].1	[a].1
3	[a].02		[a] 1.3	.1	[a].1
4	.02	0.4	[a] 1.0	[a].1	[a].1
5	[a].02		.8	[a].1	.1
6	[a].02		.5	.1	[a].1
7	[a].02	1.2	[a].5	[a].1	[a].1
8	[a].03	2.4	.5	[a].1	0
9	[a].04		.2	[a].1	0
10	[a].05	.6	.2	.1	0
11	[a].10		.2	[a] 1	0
12	.10		.1	.1	0
13	[a].02		.1	[a].1	0
14	.03		[a].1	.1	0
15	[a].03	2.5	.1	[a].1	0
16	[a].03		[a].1	.1	0
17	.03	5.5	[a].1	[a].1	0
18	[a].03	2.8	.1	[a].1	0
19	[a].03	4.1	[a].1	.1	0
20	[a].03	5.3	[a].1	[a].1	0
21	[a].02	6.9	.1	[a].1	0
22	[a].02	[a] 5.0	[a].1	[a].1	0
23	[a].02	[a] 3.0	.1	[a].1	0
24	.02	[a] 2.0	[a].1	.1	0
25	[a].02	.9	.1	[a].1	0
26	[a].02		[a].1	.1	0
27	[a].03		.1	[a].1	0
28	[a].03	.4	.1	[a].1	0
29	[a].03		[a].1	.1	0
30	.03	[a].6	.1	.1	0
31	.03	1.0	-------	[a].1	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	0.10	0.02	0.031	1.9
March	6.9	----------	1.84	113
April	1.9	.1	.35	21
May	.1	.1	.10	6.1
June	.1	0	.02	1.2

[a] Interpolated.

McEACHERN CREEK AT INTERNATIONAL BOUNDARY

LOCATION.—Staff gage in SW. ¼ sec. 1, T. 37 N., R. 36 E., at Dolson ranch, half a mile south of international boundary and 7 miles north of Thoeny.

DRAINAGE AREA.—160 square miles.

RECORDS AVAILABLE.—March, 1927, to September, 1931. March, 1924, to October, 1926, station above East Fork maintained by the Department of the Interior, Canada.

EXTREMES.—Maximum discharge during year, 518 second-feet June 30 (gage height, 6.05 feet); no flow at various times.

1927–1931: Maximum discharge, 1,850 second-feet Apr. 9, 1927 (gage height, 10.42 feet); no flow at various times.

REMARKS.—Records fair. No records Nov. 1 to Feb. 28. No diversions. Station maintained jointly with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1930–31

Day	Mar.	Apr.	May	June	July	Day	Mar.	Apr.	May	June	July
1		0.3	0.1	0	74	16		a0.3	0.1	0	0.1
2		.3	.1	0	14.1	17	a 0.1	a.2	.1	0	0
3		.4	.1	0	6.4	18		a.2	.2	0	0
4		.4	.1	0	2.9	19		a.2	.4	0	0
5		.5	.1	0	1.5	20	.1	a.2	.7	0	0
6		.9	.1	0	1.4	21	1.3	.1	.7	0	0
7		.9	.1	0	1.3	22	a 1.0	.1	.4	0	0
8	a 0.1	.6	.1	0	1.0	23	a.8	.1	.4	0	0
9		.6	.1	0	.8	24	a.6	.1	.4	0	0
10		.6	.2	0	.4	25	a.4	.1	.2	0	0
11		.4	.2	0	.2	26	.1	.1	.1	0	0
12		.5	.2	0	.1	27		.1	.1	0	0
13		.3	.2	0	.1	28	a.1	.1	0	0	0
14		.3	a.2	0	.1	29		.1	0	0	0
15		.3	a.2	0	0	30	a.2	.1	.1	54	0
						31	a.3		0		0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March	1.3	0.1	0.23	14
April	.9	.1	.31	18
May	.7	0	.19	12
June	54	0	1.80	107
July	74	0	3.37	207
The period				358

a Estimated.

NOTE.—No flow during October, August, September.

REDWATER CREEK BASIN

REDWATER CREEK AT CIRCLE, MONT.

LOCATION.—Wire gage in NE. ¼ sec. 15, T. 19 N., R. 48 E., at highway bridge half a mile south of Circle.

RECORDS AVAILABLE.—April, 1929, to September, 1931.

EXTREMES.—1929–1931: Maximum discharge, 572 second-feet Mar. 12, 1930, and June 7, 1929 (gage height, 6.70 feet); no flow at various times during 1930 and 1931.

REMARKS.—No records Nov. 13 to July 8. No flow during rest of year except Oct. 11–15 (estimated run-off, 10 acre-feet) and Sept. 13, 14 (estimated run-off, 4 acre-feet). Some storage on tributary and some irrigation above station.

POPLAR RIVER BASIN

MIDDLE FORK OF POPLAR RIVER AT INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in SE. ¼ sec. 6, T. 37 N., R. 46 E., half a mile south of international boundary and 20 miles northwest of Scobey, Mont.
DRAINAGE AREA.—381 square miles.
RECORDS AVAILABLE.—March to September, 1931.
EXTREMES.—Maximum discharge during year, 86 second-feet Sept. 19 (gage height, 3.48 feet); minimum, 0.1 second-foot at various times.
REMARKS.—Records good. Stage-discharge relation affected by ice Mar. 1–20, 25–28. Station maintained jointly with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1931

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.0	17.8	4.4	1.0	11.6	0.7	0.2
2		16.7	4.1	.9	7.3	.7	.1
3		18.9	4.1	.7	4.1	.6	.1
4		21.9	3.8	1.0	3.4	.3	.1
5	8.0	13.5	3.8	1.0	2.6	.3	.1
6	5.5	11.6	4.1	1.2	2.4	.3	.1
7	3.4	11.2	4.1	1.0	2.4	.3	.1
8	2.9	9.1	4.4	.9	2.4	.3	.1
9	3.1	7.6	4.4	.6	2.9	.3	.1
10	2.9	6.6	3.8	.6	2.9	.2	.1
11	4.1	5.8	3.4	2.1	1.7	.3	.3
12	6.2	5.8	3.8	1.9	1.0	.3	.3
13	5.2	6.2	3.4	1.4	.6	.2	.3
14	3.1	5.8	3.1	1.2	.4	.1	.2
15	1.4	6.9	2.4	.9	.4	.1	.2
16	2.1	6.2	2.6	.6	.6	.1	.2
17	3.4	6.2	2.9	.3	.7	.1	.1
18	9.8	5.2	3.1	.3	.4	.1	.2
19	24.1	5.2	3.4	.2	.4	.1	18.6
20	30.0	4.8	3.8	.2	.4	.2	47.6
21	37.6	5.2	4.1	.3	.4	.1	10.1
22	32.3	5.5	4.1	.3	.4	.1	3.1
23	27.0	5.5	3.4	.3	.4	.1	1.2
24	29.7	5.2	2.9	.3	.3	.1	1.4
25	28.9	5.2	2.6	.3	.3	.1	4.8
26	28.5	4.8	1.9	.3	.3	.1	3.4
27	16.0	4.8	1.7	.3	.3	.1	3.8
28	17.8	4.8	1.4	.3	.2	.1	2.6
29	21.1	4.8	1.2	.3	.3	.1	1.9
30	21.1	4.8	1.2	17.0	.3	.1	1.4
31	19.6	-------	1.2	-------	.4	.1	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March	37.6	1.4	13.5	830
April	21.9	4.8	8.12	483
May	4.4	1.2	3.18	196
June	17.0	.2	1.26	75
July	11.6	.2	1.68	103
August	.7	.1	.22	14
September	47.6	.1	3.43	204
The period				1,900

EAST FORK OF POPLAR RIVER AT INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in SW. ¼ sec. 3, T. 1, R. 26 W. second meridian, at international boundary, in Saskatchewan, 16 miles north of Scobey, Mont.

DRAINAGE AREA.—256 square miles.

RECORDS AVAILABLE.—March to September, 1931.

EXTREMES.—Maximum discharge during year, 36.9 second-feet Sept. 20 (gage height, 4.53 feet); minimum, 1.0 second-foot Aug. 17 (gage height, 2.07 feet).

REMARKS.—Records fair. Stage-discharge relation affected by ice Mar. 1 to Apr. 6. Station maintained jointly with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1931

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.7	7.6	6.8	2.8	2.6	1.8	2.2
2	9.6	7.6	6.4	2.7	3.5	2.0	2.3
3	9.5	9.0	6.3	2.4	3.1	2.1	2.5
4	9.2	8.7	6.0	2.5	3.1	2.1	2.5
5	6.0	9.2	5.6	2.5	3.0	1.9	2.6
6	5.8	10.0	5.6	2.5	3.1	1.6	2.6
7	5.3	10.8	5.6	2.4	2.9	1.8	2.6
8	4.4	10.4	5.8	2.2	2.8	2.0	2.3
9	4.2	10.6	5.3	2.0	2.5	1.8	2.3
10	3.6	9.9	5.0	2.3	2.0	1.6	2.5
11	3.9	9.2	4.6	3.4	2.3	1.5	3.6
12	4.3	9.0	4.4	3.6	1.8	1.5	3.6
13	4.0	8.6	4.3	3.2	1.7	1.5	3.4
14	3.8	8.6	4.2	2.8	1.5	1.3	3.6
15	3.8	8.6	4.0	2.7	1.6	1.2	3.6
16	3.9	8.5	3.5	2.5	1.8	1.2	3.8
17	4.4	8.5	3.6	2.5	1.8	1.2	4.0
18	5.8	8.7	3.4	2.4	2.0	1.9	3.7
19	7.3	8.6	3.2	2.1	1.9	2.0	9.7
20	7.4	8.5	3.1	1.8	1.8	1.8	19.7
21	8.0	8.0	3.2	2.0	1.7	1.7	7.5
22	9.1	8.0	3.3	2.2	1.5	1.6	4.8
23	9.5	8.0	3.4	2.5	1.5	1.6	4.2
24	10.9	7.9	3.2	2.7	1.5	1.5	4.2
25	8.6	7.5	3.2	2.5	1.5	1.5	4.7
26	8.0	7.3	3.1	2.2	1.3	1.7	4.3
27	7.0	7.3	2.8	2.2	1.3	1.9	4.0
28	7.3	7.3	2.8	2.0	1.3	1.7	4.0
29	7.7	7.0	2.8	1.6	1.2	1.8	3.9
30	7.7	6.9	2.8	2.2	1.2	2.0	3.7
31	7.7	------	2.8	------	1.6	2.2	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March	10.9	3.6	6.69	411
April	10.8	6.9	8.53	508
May	6.8	2.8	4.20	258
June	3.6	1.6	2.45	146
July	3.5	1.2	2.01	124
August	2.2	1.2	1.71	105
September	19.7	2.2	4.28	255
The period				1,810

WEST FORK OF POPLAR RIVER AT INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in SE. ¼ sec. 5, T. 1, R. 3 W. third meridian, at international boundary in Saskatchewan at West Poplar River Canadian Customs Post, 11 miles north and three-quarters of a mile east of Opheim, Mont.

DRAINAGE AREA.—141 square miles.

RECORDS AVAILABLE.—March to September, 1931.

EXTREMES.—Maximum discharge during year, 9.1 second-feet Mar. 21 (gage height, 1.52 feet); no flow at various times.

REMARKS.—Records good. Stage-discharge relation affected by ice Mar. 1–15. Station maintained jointly with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1931

Day	Mar.	Apr.	May	June	July	Sept.	Day	Mar.	Apr.	May	June	July	Sept.
1		1.3	0.6	0.4	0.2	0	16	1.3	.8	.4	.2	0	0
2		1.4	.6	.4	.2	0	17	1.2	1.0	.3	.2	0	0
3		1.4	.6	.4	.2	0	18	1.2	.6	.3	0	.01	0
4	0.5	1.7	.6	.4	.1	0	19	1.6	.8	.3	0	0	0
5		1.7	.6	.4	.1	0	20	7.9	.6	.4	0	0	0
6		1.7	.5	.4	.2	0	21	8.7	.8	.5	0	0	0
7	.9	1.4	.5	.3	.1	0	22	5.6	.7	.5	0	0	0
8	.6	1.0	.4	.3	.1	0	23	6.3	.8	.5	0	0	0
9	.6	.9	.5	.3	.1	0	24	6.3	.8	.4	.1	0	0
10	.5	1.0	.4	.2	.1	0	25	6.3	.7	.5	.2	0	0
11	.6	1.0	.5	.2	.1	0	26	2.3	.7	.4	.2	0	
12	.6	1.0	.5	.2	.01	0	27	2.0	.7	.4	.2	0	.1
13	.6	.9	.5	.2	.01	0	28	1.7	.7	.4	.2	0	.2
14	.7	1.0	.5	.2	0	0	29	1.4	.6	.3	.2	0	.2
15	1.0	.9	.5	.2	0	0	30	1.3	.6	.4	.2	0	.2
							31	1.3		.4		0	.2

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March	8.7	0.5	2.11	130
April	1.7	.6	.97	58
May	.6	.3	.46	28
June	.4	0	.21	12
July	.2	0	.049	3.0
September	.2	0	.03	1.8
The period				233

NOTE.—No flow during August.

YELLOWSTONE RIVER BASIN

YELLOWSTONE LAKE AT LAKE HOTEL, YELLOWSTONE NATIONAL PARK

LOCATION.—Staff gage at boat landing at Lake Hotel, 1½ miles southwest of lake outlet. Zero of gage is 7,729.51 feet above mean sea level.

DRAINAGE AREA.—1,010 square miles.

RECORDS AVAILABLE.—October, 1921, to September, 1931.

EXTREMES.—Maximum stage during year, 3.20 feet June 18, 19; minimum, 0.27 foot Mar. 5–8.

1921–1931: Maximum stage, 6.12 feet June 30, 1927; minimum, that of Mar. 5–8, 1931.

REMARKS.—Records good. Gage read daily June to September; Dec. 21 to May 8 stage was estimated on basis of hydrographic comparison with gage-height record at outlet; at other times gage was read at infrequent intervals and stage estimated for days of no gage-height record. No regulation. Records furnished by officials of Yellowstone Park.

Daily gage height, in feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.37	1.09	0.75	0.51	0.38	0.28	0.30	0.42	1.78	3.04	2.03	1.24
2	1.35	1.06	.74	.52	.37	.28	.32	.43	1.92	3.00	1.98	1.20
3	1.35	1.07	.72	.51	.37	.28	.31	.45	2.10	2.98	1.96	1.17
4	1.34	1.06	.70	.50	.36	.28	.30	.46	2.20	2.95	1.94	1.17
5	1.33	1.06	.68	.49	.35	.27	.30	.47	2.30	2.92	1.93	1.16
6	1.33	1.05	.66	.49	.35	.27	.30	.48	2.38	2.89	1.89	1.14
7	1.35	1.04	.65	.49	.34	.27	.30	.50	2.51	2.81	1.84	1.13
8	1.39	1.03	.64	.48	.34	.27	.30	.51	2.63	2.76	1.81	1.10
9	1.41	1.03	.63	.48	.33	.29	.30	.52	2.75	2.72	1.76	1.07
10	1.43	1.02	.63	.48	.32	.32	.30	.54	2.83	2.69	1.74	1.04
11	1.44	1.01	.62	.48	.32	.33	.30	.56	2.92	2.64	1.72	1.03
12	1.44	.99	.62	.47	.31	.34	.30	.59	2.98	2.58	1.71	1.00
13	1.43	.99	.61	.46	.30	.34	.31	.64	3.02	2.56	1.72	.91
14	1.43	.97	.55	.46	.30	.33	.32	.68	3.06	2.54	1.74	.88
15	1.41	.96	.55	.46	.30	.31	.31	.75	3.10	2.52	1.74	.86
16	1.40	.95	.54	.45	.29	.30	.31	.84	3.15	2.48	1.72	.85
17	1.37	.93	.53	.46	.29	.29	.31	.93	3.19	2.43	1.71	.84
18	1.35	.90	.52	.47	.29	.28	.31	.97	3.20	2.37	1.64	.84
19	1.32	.90	.51	.47	.29	.28	.31	.99	3.20	2.34	1.63	.80
20	1.30	.90	.51	.47	.28	.28	.31	1.01	3.18	2.31	1.59	.80
21	1.28	.89	.52	.46	.28	.28	.31	1.03	3.16	2.27	1.56	.79
22	1.27	.84	.51	.46	.28	.29	.31	1.04	3.17	2.25	1.56	.75
23	1.26	.84	.51	.45	.28	.30	.31	1.06	3.17	2.21	1.53	.74
24	1.25	.83	.50	.45	.28	.30	.31	1.14	3.17	2.18	1.49	.73
25	1.24	.82	.50	.44	.28	.29	.32	1.20	3.16	2.15	1.46	.73
26	1.23	.80	.50	.43	.28	.29	.32	1.28	3.16	2.12	1.43	.72
27	1.21	.78	.50	.43	.28	.28	.33	1.38	3.16	2.10	1.38	.71
28	1.19	.77	.50	.42	.28	.28	.35	1.49	3.13	2.09	1.36	.69
29	1.17	.76	.50	.41	------	.28	.38	1.55	3.10	2.08	1.33	.67
30	1.14	.76	.50	.40	------	.28	.40	1.62	3.07	2.06	1.27	.65
31	1.12	------	.51	.39	------	.29	------	1.69	------	2.05	1.26	------

YELLOWSTONE RIVER AT YELLOWSTONE LAKE OUTLET, YELLOWSTONE NATIONAL PARK

LOCATION.—Water-stage recorder 550 feet below Fishing Bridge and a quarter of a mile below outlet of Yellowstone Lake. Staff gage at Fishing Bridge is also used. Elevation of zero of gage at recorder site is 7,727.84 feet, and of staff gage at Fishing Bridge, 7,728.90 feet, above mean sea level.

DRAINAGE AREA.—1,010 square miles.

RECORDS AVAILABLE.—December, 1922, to September, 1931. Gage-height records only prior to October, 1926.

EXTREMES.—Maximum discharge during year, 2,480 second-feet June 18, 19 (gage height, 4.39 feet); minimum, 385 second-feet Mar. 5–8 (gage height, 1.90 feet).

1922–1931: Maximum discharge, 7,420 second-feet June 29, 30, July 1, 1927 (gage height, 6.3 feet at Fishing Bridge site); minimum, that of Mar. 5–8, 1931.

REMARKS.—Records good. Discharge estimated Nov. 3–14, 16, 17, Dec. 5, Aug. 28–31. No regulation. Gage-height record furnished by Yellowstone Park officials.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	965	786	596	495	434	390	398	452	1,160	2,270	1,350	780
2	951	780	586	500	430	390	403	457	1,270	2,230	1,340	760
3	951	773	586	495	430	390	398	462	1,410	2,190	1,320	747
4	951	773	580	490	426	390	398	470	1,520	2,150	1,280	740
5	944	766	569	485	421	385	398	475	1,630	2,110	1,280	734
6	944	760	558	485	421	385	398	480	1,690	2,060	1,250	721
7	958	760	547	485	416	385	398	490	1,770	2,000	1,220	702
8	980	754	542	480	416	385	398	495	1,880	1,980	1,180	689
9	980	747	536	480	412	394	398	500	1,960	1,940	1,140	683
10	1,000	740	536	480	408	403	398	510	2,070	1,910	1,110	671
11	1,000	734	536	480	408	408	398	515	2,170	1,880	1,090	647
12	1,010	728	536	475	403	412	398	525	2,240	1,850	1,070	624
13	995	721	505	470	398	412	403	536	2,280	1,810	1,090	613
14	995	714	510	470	398	408	408	569	2,330	1,780	1,100	586
15	980	708	510	470	398	403	403	602	2,370	1,760	1,100	580
16	958	695	515	466	394	398	403	624	2,420	1,730	1,070	574
17	944	677	510	470	394	394	403	708	2,460	1,700	1,060	564
18	923	665	505	475	394	390	403	740	2,480	1,660	1,030	552
19	916	671	500	475	394	390	403	754	2,480	1,630	1,020	542
20	909	671	495	475	390	390	403	760	2,460	1,600	1,000	552
21	902	659	505	470	390	390	403	773	2,450	1,570	980	530
22	895	647	500	470	390	394	403	773	2,460	1,530	972	510
23	888	635	495	466	390	398	403	780	2,460	1,510	951	505
24	881	630	495	466	390	398	403	806	2,450	1,490	930	505
25	867	624	490	462	390	394	408	846	2,440	1,470	916	505
26	874	618	490	457	390	394	408	895	2,440	1,440	888	490
27	846	618	490	457	390	390	412	951	2,420	1,420	839	485
28	839	618	490	452	390	390	416	1,020	2,400	1,410	818	475
29	825	613	490	448	------	390	426	1,050	2,370	1,400	818	470
30	818	602	490	444	------	390	439	1,070	2,320	1,390	799	462
31	812	------	495	439	------	394	------	1,100	------	1,370	792	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,010	812	926	0.917	1.06	56,900
November	786	602	696	.689	.77	41,400
December	596	490	522	.517	.60	32,100
January	500	439	472	.467	.54	29,000
February	434	390	404	.400	.42	22,400
March	412	385	394	.390	.45	24,200
April	439	398	704	.697	.78	41,900
May	1,100	452	683	.676	.78	42,000
June	2,480	1,160	2,140	2.12	2.38	127,000
July	2,270	1,370	1,750	1.73	1.99	108,000
August	1,350	792	1,060	1.05	1.21	65,200
September	780	462	600	.594	.66	35,700
The year	2,480	385	865	.856	11.62	626,000

YELLOWSTONE RIVER NEAR CANYON HOTEL, YELLOWSTONE NATIONAL PARK

LOCATION.—Water-stage recorder half a mile upstream from Upper Falls and Canyon ranger station and 1¼ miles south of Canyon Hotel.

DRAINAGE AREA.—1,160 square miles (revised).

RECORDS AVAILABLE.—June, 1913, to September, 1931 (except winters).

EXTREMES.—Maximum discharge during year, 2,700 second-feet June 18 (gage height, 2.24 feet); minimum occurred during period of no record.

1913–1931: Maximum discharge, 8,550 second-feet June 27, 1918 (gage height, 4.50 feet); minimum occurred during winter period of no record.

REMARKS.—Records good except those for August and September, which are fair. Discharge estimated Nov. 13, July 28–31, Aug. 2–7, 9–14, 16–19. No regulation or diversions. Gage observations furnished by officials of Yellowstone Park.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	May	June	July	Aug.	Sept.
1	975	842	693	1,300	2,410	1,370	818
2	958	834	686	1,380	2,370	1,350	802
3	975	826	707	1,680	2,330	1,340	788
4	993	818	728	1,780	2,250	1,310	772
5	975	810	707	1,790	2,230	1,290	758
6	975	802	714	1,840	2,150	1,270	750
7	1,020	795	758	1,890	2,120	1,240	728
8	1,080	788	658	2,000	2,080	1,190	707
9	1,050	780	652	2,130	2,040	1,160	700
10	1,060	780	658	2,270	2,000	1,130	679
11	1,100	772	686	2,370	1,970	1,100	672
12	1,080	772	735	2,470	1,910	1,080	646
13	1,050	760	788	2,520	1,880	1,100	626
14	1,040	------	826	2,560	1,840	1,110	613
15	1,040	------	842	2,580	1,790	1,120	594
16	1,010	------	874	2,620	1,760	1,100	600
17	984	------	907	2,680	1,740	1,090	587
18	993	------	907	2,700	1,700	1,070	574
19	984	------	890	2,680	1,660	1,060	568
20	975	------	890	2,660	1,620	1,040	574
21	966	------	898	2,660	1,590	1,020	574
22	958	------	907	2,640	1,560	1,000	542
23	950	------	916	2,640	1,530	975	529
24	941	------	932	2,620	1,500	958	529
25	932	------	966	2,580	1,480	941	523
26	924	------	1,010	2,580	1,450	924	511
27	924	------	1,080	2,560	1,450	890	505
28	890	------	1,160	2,540	1,430	866	499
29	882	------	1,220	2,490	1,410	866	493
30	866	------	1,260	2,450	1,400	858	487
31	858	------	1,260	------	1,390	850	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,100	858	981	0.846	0.98	60,300
November 1–13	842	760	798	.688	.33	20,600
May	1,260	652	868	.748	.86	53,400
June	2,700	1,300	2,320	2.00	2.23	138,000
July	2,410	1,390	1,810	1.56	1.80	111,000
August	1,370	850	1,090	.940	1.08	67,000
September	818	487	625	.539	.60	37,200

NOTE.—No records during period omitted.

YELLOWSTONE RIVER AT CORWIN SPRINGS, MONT.

LOCATION.—Chain gage in NW. ¼ sec. 30, T. 8 S., R. 8 E., at highway bridge at Corwin Springs, 8 miles north of Gardiner.

DRAINAGE AREA.—2,630 square miles.

RECORDS AVAILABLE.—September, 1910, to September, 1931.

EXTREMES.—Maximum discharge during year, 13,000 second-feet June 3 (gage height, 7.00 feet); minimum, 800 second-feet Mar. 26–28.

1910–1931: Maximum discharge, 26,500 second-feet June 14, 15, 1918 (gage height, 11.5 feet); minimum (estimated), 720 second-feet Jan. 8–10, 1920.

REMARKS.—Records good except those for estimated periods, Nov. 21–25, Dec. 26 to Jan. 3, which are fair. No diversions. Natural storage in Yellowstone Lake.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,500	1,500	1,080		895	845	895	1,700	7,610	3,680	1,930	1,310
2	1,500	1,400	1,080	950	895	845	895	1,810	8,420	3,510	1,930	1,220
3	1,400	1,400	1,140		895	845	895	2,190	13,000	3,190	1,930	1,220
4	1,500	1,310	1,080	895	895	845	895	2,320	11,700	3,190	1,930	1,140
5	1,500	1,310	1,080	895	895	845	950	2,600	8,700	3,190	1,810	1,140
6	1,500	1,310	1,080	895	895	845	950	2,190	8,980	3,190	1,700	1,140
7	2,740	1,310	1,080	895	895	845	950	2,190	8,700	3,190	1,700	1,140
8	4,030	1,310	1,080	895	895	845	1,080	2,190	8,700	3,030	1,700	1,080
9	3,030	1,310	1,080	895	895	845	1,010	2,320	8,150	2,880	1,600	1,080
10	2,600	1,310	1,010	895	895	845	1,010	2,320	8,700	2,880	1,600	1,080
11	2,880	1,310	1,010	895	895	845	1,010	2,460	8,700	2,880	1,500	1,080
12	2,600	1,220	1,010	895	895	845	1,140	2,880	8,700	2,740	1,500	1,080
13	2,320	1,220	1,010	895	895	845	1,310	3,680	7,350	2,740	1,600	1,080
14	2,320	1,220	1,010	895	895	845	1,400	6,590	7,090	2,600	1,600	1,010
15	2,190	1,140	1,010	895	895	845	1,220	5,430	7,090	2,600	1,700	1,010
16	1,930	1,140	950	895	845	845	1,310	8,700	7,090	2,460	1,600	1,010
17	1,930	1,140	950	895	845	895	1,500	8,700	7,090	2,460	1,500	1,010
18	1,700	1,080	950	895	845	895	1,810	8,700	7,090	2,460	1,500	1,010
19	1,810	1,080	950	895	845	895	1,700	4,400	5,650	2,320	1,500	1,010
20	1,810	1,080	950	895	845	895	1,400	4,030	5,000	2,320	1,500	1,010
21	1,810		950	895	845	895	1,140	3,850	5,000	2,190	1,500	1,010
22	1,810		950	895	845	895	1,140	3,680	4,790	2,190	1,500	1,080
23	1,700	1,080	1,010	895	845	895	1,080	3,510	4,790	2,190	1,400	1,080
24	1,700		1,010	895	845	845	1,080	4,790	4,790	2,190	1,310	1,080
25	1,700		1,010	895	845	845	1,080	6,590	4,400	2,190	1,310	1,080
26	1,600	1,220		895	845	800	1,080	7,090	4,400	2,060	1,220	1,080
27	1,600	1,140		895	845	800	1,080	7,610	4,400	2,060	1,220	1,080
28	1,600	1,140		895	845	800	1,080	6,110	4,400	2,060	1,220	1,080
29	1,500	1,140	1,010	895	-------	845	1,400	5,210	4,030	2,060	1,220	1,080
30	1,500	1,140		895	-------	845	1,600	5,650	3,680	1,930	1,220	1,080
31	1,500	-------		895	-------	895	-------	6,590	-------	1,930	1,310	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	4,030	1,400	1,960	0.745	0.86	121,000
November	1,500	1,080	1,210	.460	.51	72,000
December	1,140	950	1,020	.388	.45	62,700
January	-------	895	900	.342	.39	55,300
February	895	845	872	.332	.35	48,400
March	895	800	854	.325	.37	52,500
April	1,810	895	1,170	.445	.50	69,600
May	8,700	1,700	4,450	1.69	1.95	274,000
June	13,000	3,680	6,940	2.64	2.94	413,000
July	3,680	1,930	2,600	.989	1.14	160,000
August	1,930	1,220	1,540	.586	.68	94,700
September	1,310	1,010	1,090	.414	.46	64,900
The year	13,000	800	2,050	.779	10.60	1,490,000

YELLOWSTONE RIVER NEAR LIVINGSTON, MONT.

LOCATION.—Chain gage in NW. ¼ sec. 12, T. 3 S., R. 9 E., at highway bridge on Yellowstone Trail 5 miles south of Livingston.

DRAINAGE AREA.—3,580 square miles.

RECORDS AVAILABLE.—May 1897, to December, 1905; August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 14,200 second-feet June 4 (gage height, 6.31 feet); minimum, 825 second-feet Mar. 27 (gage height, 0.80 foot).

1897–1905, 1928–1931: Maximum discharge, 26,800 second-feet June 1, 1897; minimum, that of Mar. 27, 1931.

REMARKS.—Records good except those for periods of ice effect, Nov. 14–22, Jan. 6–22, which are fair. Some diversions.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,060	1,880	1,430	1,190	1,240	1,190	1,190	1,880	7,780	3,960	2,320	1,530
2	2,060	1,880	1,530	1,190	1,190	1,190	1,240	2,010	10,200	3,560	2,010	1,430
3	2,060	1,880	1,640	1,240	1,240	1,190	1,140	2,160	12,900	3,660	2,010	1,430
4	2,060	1,760	1,530	1,240	1,240	1,190	1,140	2,650	14,200	3,760	2,010	1,430
5	2,060	1,880	1,430	1,190	1,240	1,190	1,140	2,650	11,300	3,560	2,010	1,430
6	2,060	1,760	1,430	1,100	1,190	1,100	1,190	2,650	12,100	3,370	1,880	1,330
7	2,200	1,760	1,330	965	1,240	1,050	1,240	2,650	12,100	3,370	1,880	1,330
8	4,160	1,760	1,330	890	1,140	1,050	1,240	2,650	12,500	3,180	1,880	1,330
9	3,560	1,760	1,330	890	1,100	1,050	1,330	2,650	10,900	3,000	1,880	1,330
10	3,180	1,760	1,240	825	1,190	1,140	1,330	2,480	10,500	3,000	1,760	1,330
11	3,180	1,760	1,330	858	1,190	1,140	1,330	2,480	10,900	3,000	1,760	1,330
12	3,180	1,760	1,330	928	1,240	1,190	1,430	2,480	10,500	2,820	1,760	1,330
13	3,180	1,760	1,430	928	1,140	1,190	1,530	4,580	8,430	2,820	1,760	1,330
14	3,000	1,640	1,430	965	1,100	1,140	1,760	6,850	8,760	2,650	1,880	1,330
15	2,650	1,640	1,330	1,050	1,140	1,140	1,530	9,440	8,100	2,650	2,010	1,330
16	2,480	1,640	1,330	1,100	1,190	1,140	1,530	10,900	7,780	2,650	1,880	1,330
17	2,480	1,640	1,330	1,140	1,190	1,140	1,640	10,900	7,460	2,650	1,760	1,330
18	2,480	1,530	1,430	1,140	1,190	1,140	1,530	6,560	6,280	2,480	1,760	1,330
19	2,480	1,530	1,430	1,100	1,190	1,140	2,010	4,800	6,010	2,480	1,760	1,330
20	2,320	1,640	1,430	1,010	1,190	1,190	1,760	4,160	5,500	2,320	1,760	1,330
21	2,480	1,640	1,240	1,010	1,190	1,190	1,530	3,760	5,500	2,320	1,640	1,330
22	2,320	1,640	1,140	1,100	1,140	1,240	1,430	3,370	5,260	2,320	1,640	1,430
23	2,320	1,640	1,190	1,330	1,140	1,240	1,530	3,180	5,030	2,160	1,640	1,430
24	2,320	1,640	1,240	1,330	1,190	1,240	1,430	5,500	4,800	2,160	1,530	1,430
25	2,320	1,530	1,190	1,330	1,190	1,190	1,430	7,150	4,580	2,160	1,530	1,430
26	2,160	1,640	1,140	1,240	1,190	1,010	1,430	8,430	4,580	2,160	1,530	1,330
27	2,010	1,430	1,140	1,330	1,190	825	1,330	8,430	4,580	2,160	1,530	1,330
28	2,010	1,430	1,140	1,330	1,190	1,010	1,330	7,150	4,580	2,160	1,530	1,330
29	1,880	1,430	1,140	1,190	-------	1,140	1,530	5,750	4,370	2,160	1,530	1,430
30	1,880	1,430	1,140	1,330	-------	1,140	1,760	6,010	4,160	2,160	1,530	1,430
31	1,880	-------	1,140	1,330	-------	1,140	-------	6,850	-------	2,320	1,530	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	4,160	1,880	2,470	152,000
November	1,880	1,430	1,670	99,400
December	1,640	1,140	1,320	81,200
January	1,330	825	1,120	68,900
February	1,240	1,100	1,190	66,100
March	1,240	825	1,140	70,100
April	2,010	1,140	1,430	85,100
May	10,900	1,880	4,940	304,000
June	14,200	4,160	8,050	479,000
July	3,960	2,160	2,750	169,000
August	2,320	1,530	1,770	109,000
September	1,530	1,330	1,370	81,500
The year	14,200	825	2,440	1,760,000

YELLOWSTONE RIVER AT BILLINGS, MONT.

LOCATION.—Wire gage in SE. ¼ sec. 34, T. 1 N., R. 26 E., at bridge on Custer Battlefield highway at Billings.

RECORDS AVAILABLE.—May, 1904, to December, 1905; August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 27,100 second-feet June 4 (gage height, 8.10 feet); minimum, 1,730 second-feet Sept. 15 (gage height, 0.36 foot).

1904–5, 1928–1931: Maximum discharge, 32,600 second-feet June 20, 1904 (gage height, 10.6 feet); minimum, 1,600 second-feet Jan. 8, 1930.

REMARKS.—Records good. Stage-discharge relation affected by ice Nov. 17–19, Dec. 22 to Feb. 3, Mar. 24–27. Numerous diversions above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,360	3,530	2,500	2,380	2,620	2,440	2,870	2,720	15,300	6,740	5,400	1,900
2	3,200	3,530	2,500	2,500	2,620	2,300	2,870	2,870	17,700	5,910	4,680	1,900
3	3,200	3,530	2,500	2,620	2,620	2,300	2,870	2,870	21,600	5,650	4,250	2,030
4	3,200	3,530	2,500	2,620	2,580	2,440	[a] 2,870	3,340	25,700	5,650	3,680	1,900
5	3,360	3,360	2,500	2,620	2,580	[a] 2,440	[a] 2,870	3,860	24,700	5,400	3,510	1,900
6	3,700	3,360	2,500	2,500	2,580	2,440	[a] 2,870	4,460	22,900	5,400	3,340	1,900
7	3,700	3,360	2,380	2,380	2,580	2,440	[a] 2,870	4,680	22,400	4,910	3,340	2,030
8	3,880	3,200	2,380	[a] 2,270	2,580	2,440	[a] 2,870	4,910	22,900	4,460	3,860	2,030
9	6,300	3,040	2,380	2,160	2,580	2,440	2,870	5,150	23,800	4,250	3,860	1,900
10	7,100	3,040	2,380	2,270	[a] 2,580	2,440	3,020	4,250	22,000	3,860	3,340	1,900
11	7,100	3,040	2,380	2,380	2,580	2,440	3,020	3,680	21,600	3,860	2,870	1,900
12	6,830	3,040	2,380	2,270	2,580	2,440	2,720	3,020	20,200	3,860	2,580	1,900
13	6,830	2,890	2,380	2,270	2,580	2,440	2,720	3,340	18,500	3,860	2,300	1,900
14	6,830	2,750	2,380	2,060	2,580	2,440	3,020		17,700	3,510	2,300	1,900
15	6,560	2,750	2,380	2,060	2,580	2,440	3,180		17,300	3,340	2,300	1,780
16	6,040	2,750	2,270	2,380	2,580	2,440	3,180	9,300	17,300	3,340	2,870	1,900
17	5,550	2,750	2,270	2,380	2,580	2,440	3,020		16,500	3,180	2,870	2,030
18	4,880	2,750	2,270	2,380	2,580	2,440	3,020		15,300	3,020	2,580	2,160
19	4,670	2,750	2,270	2,270	2,440	2,440	3,020		13,700	2,870	2,300	2,160
20	4,670	2,750	2,160	2,380	2,440	2,440	3,180	9,220	12,500	2,870	2,300	3,020
21	4,670	2,750	1,980	2,500	2,440	2,440	3,340	7,330	11,000	2,720	2,160	4,050
22	4,460	2,750	1,980	2,380	2,440	2,440	3,180	5,910	10,200	2,580	2,160	3,510
23	4,460	2,750	2,060	2,380	2,440	2,580	3,020	5,400	9,220	2,580	2,300	3,340
24	4,460	2,750	2,060	2,380	2,440	2,550	2,870	4,910	10,200	2,440	2,160	3,510
25	4,260	2,750	2,160	2,500	2,440	[a] 2,530	2,720	7,940	9,560	2,300	2,030	3,340
26	4,260	2,750	2,160	2,380	2,440	2,500	2,720	11,000	8,890	2,440	2,030	3,340
27	4,070	2,750	2,270	2,380	2,440	2,470	2,580	15,300	8,890	3,020	1,900	3,340
28	4,070	2,620	2,270	2,380	2,440	2,440	2,440	15,300	8,890	3,020	1,900	3,510
29	3,880	2,620	2,270	2,500	-------	2,580	2,580	14,100	8,570	2,870	1,900	3,680
30	3,880	2,500	2,270	2,620	-------	2,580	2,440	11,700	7,940	3,020	2,030	3,860
31	3,700	-------	2,270	2,750	-------	2,870	-------	12,500	-------	4,050	2,030	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	7,100	3,200	4,750	292,000
November	3,530	2,500	2,960	176,000
December	2,500	1,980	2,300	141,000
January	2,750	2,060	2,400	148,000
February	2,620	2,440	2,530	141,000
March	2,870	2,300	2,470	152,000
April	3,340	2,440	2,890	172,000
May	15,300	2,720	7,280	448,000
June	25,700	7,940	16,100	958,000
July	6,740	2,300	3,770	232,000
August	5,400	1,900	2,810	173,000
September	4,050	1,780	2,520	150,000
The year	25,700	1,780	4,390	3,180,000

[a] Interpolated.

YELLOWSTONE RIVER AT MILES CITY, MONT.

LOCATION.—Wire gage on highway bridge just below mouth of Tongue River, at Miles City.

RECORDS AVAILABLE.—September, 1922, to August, 1923; August, 1928, to September, 1931.

EXTREMES.—Maximum discharge, 45,000 second-feet June 11 (gage height, 9.49 feet); minimum, 2,500 second-feet July 27 (gage height, 0.57 foot).

1922–23, 1928–1931: Maximum discharge, 60,300 second-feet June 18, 1929 (gage height, 11.20 feet); minimum (estimated), 1,800 second-feet Dec. 7, 1922.

REMARKS.—Records good except those for periods of ice effect, Dec. 28, Jan. 15–23, Mar. 5–12, which are fair. Numerous diversions from stream and tributaries above gage. Some storage on tributary streams.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6,900	7,820	6,110	3,700	5,630	4,590	4,780	3,700	21,800	10,000	3,550	3,130
2	6,620	7,500	6,110	3,700	5,190	4,590	4,780	3,550	21,200	9,220	9,600	3,000
3	6,620	7,500	6,360	4,030	4,980	4,400	4,980	3,550	25,700	8,160	8,500	3,000
4	6,900	7,200	6,360	4,030	5,190	4,590	5,190	3,860	32,600	8,160	10,400	2,740
5	6,900	7,200	6,360	4,210	4,980	4,210	5,190	4,590	38,300	7,200	9,600	2,740
6	7,500	7,200	6,360	4,400	4,780	4,210	4,980	4,980	44,300	7,200	7,200	2,740
7	10,000	7,200	6,360	4,590	5,190	4,210	4,780	5,190	41,300	6,900	6,110	2,740
8	9,600	7,200	6,110	4,210	5,190	4,210	4,590	6,620	39,800	6,620	7,500	2,740
9	8,860	7,200	5,870	4,400	5,190	4,210	4,400	7,200	40,600	5,870	9,600	2,620
10	10,000	7,200	5,630	4,210	4,780	4,030	4,590	6,620	44,300	5,630	7,200	2,620
11	14,000	7,200	5,630	4,030	4,780	3,860	4,980	7,820	45,000	5,190	8,500	2,500
12	13,100	7,200	5,870	4,030	4,980	4,210	5,410	7,500	43,500	4,590	4,980	2,620
13	13,500	7,200	5,630	3,270	4,980	4,210	4,980	6,620	39,800	4,400	4,400	2,740
14	14,000	7,820	5,630	2,870	4,980	4,400	4,780	5,630	36,900	4,590	4,030	2,620
15	12,600	7,820	5,410	3,270	4,980	4,400	4,780	4,980	34,000	4,210	3,700	2,620
16	11,700	7,820	5,410	3,270	4,780	4,400	4,980	6,110	31,200	3,860	3,700	2,870
17	11,200	7,820	5,870	3,270	4,590	4,590	5,190	19,400	29,800	4,030	3,550	3,000
18	10,800	6,900	5,190	3,270	5,190	4,590	5,190	25,700	29,800	3,550	4,210	3,000
19	10,000	6,360	4,980	3,270	4,980	4,210	4,780	30,500	28,400	3,270	4,210	3,130
20	10,000	6,620	5,190	3,410	4,780	4,400	4,590	28,400	24,300	3,270	3,700	3,130
21	10,000	6,620	4,780	3,700	4,780	4,590	4,590	21,800	26,300	3,130	3,410	3,270
22	8,860	6,110	4,210	4,030	4,780	4,590	4,590	16,600	19,400	3,000	3,550	7,200
23	9,220	6,620	4,400	4,590	4,780	4,590	4,980	12,100	14,500	2,740	3,550	5,870
24	9,220	6,360	4,210	4,980	4,780	4,590	4,780	10,400	16,000	2,740	3,550	5,630
25	8,860	6,900	3,860	5,410	4,590	4,980	4,780	8,500	14,500	2,500	3,410	5,410
26	8,860	6,360	3,860	5,190	4,780	4,590	4,400	8,500	14,500	2,500	3,270	5,410
27	8,500	6,620	4,210	5,410	4,780	4,400	4,210	13,500	12,600	2,500	3,270	5,630
28	8,500	6,900	4,040	5,630	4,590	3,410	4,210	21,200	11,200	2,500	3,130	5,630
29	8,160	6,620	3,860	5,190	-------	3,270	4,030	25,700	11,200	2,870	3,130	5,410
30	8,160	6,360	3,270	5,870	-------	3,410	3,700	30,500	11,200	2,870	3,130	5,190
31	8,160	-------	3,860	6,110	-------	4,210	-------	25,000	-------	3,410	3,270	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	14,000	6,620	9,590	590,000
November	7,820	6,110	7,050	420,000
December	6,360	3,270	5,190	319,000
January	6,110	2,870	4,240	261,000
February	5,630	4,590	4,930	274,000
March	4,980	3,270	4,300	264,000
April	5,410	3,700	4,740	282,000
May	30,500	3,550	12,500	769,000
June	45,000	11,200	28,100	1,670,000
July	10,000	2,500	4,730	291,000
August	10,400	3,130	5,190	319,000
September	7,200	2,500	3,700	220,000
The year	45,000	2,500	7,850	5,680,000

YELLOWSTONE RIVER AT INTAKE, MONT.

LOCATION.—Chain gage in NW. ¼ sec. 36, T. 18 N., R. 56 E., at Lower Yellowstone diversion dam at Intake.

DRAINAGE AREA.—66,800 square miles.

RECORDS AVAILABLE.—January, 1911, to September, 1931; August, 1903, to December, 1910, at Glendive, 18 miles upstream.

EXTREMES.—Maximum discharge during year ending Sept. 30, 1929, 94,600 second-feet June 7 (gage height, 9.0 feet); minimum, 1,930 second-feet Dec. 8, 9 (gage height, 0.45 foot).

Maximum discharge during year ending Sept. 30, 1930, 40,800 second-feet June 2 (gage height, 5.45 feet); minimum, 1,600 second-feet Dec. 18.

Maximum discharge during year ending Sept. 30, 1931, 46,100 second-feet June 11 (gage height, 5.30 feet); minimum, 1,310 second-feet Sept. 13 (gage height, 0.64 foot).

1903–1931: Maximum discharge, 159,000 second-feet June 21, 1921 (gage height, 12.6 feet); minimum, 1,200 second-feet Dec. 6–8, 1922, Jan. 6–7, 1923 (gage height, 0.20 foot).

REMARKS.—Records good except those for periods of ice effect, Dec. 29–31, 1928, Jan. 1 to Mar. 15, Dec. 7–26, 1929, Jan. 6 to Feb. 20, Mar. 7–31, Nov. 15–22, Dec. 4–31, 1930, Jan. 1 to Mar. 28, 1931, and July 22 to Sept. 30, 1931, when sand bags were placed on crest of dam. Numerous diversions above station. Some storage on tributaries. Records of discharge for years ending Sept. 30, 1929 and 1930, in the following tables supersede those published in Water-Supply Papers 686 and 701.

Daily discharge, in second-feet, 1928–1931

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1928–29												
1	7,810	7,810	6,500	5,760	3,680	7,010	33,200	13,900	39,400	38,100	9,660	5,080
2	7,540	7,810	6,250	5,280	3,900	7,270	26,900	13,900	35,600	40,800	9,660	5,560
3	7,270	7,810	6,250	5,280	3,900	7,270	18,700	14,600	36,800	40,800	8,400	5,560
4	7,540	7,810	5,040	5,040	3,900	7,270	15,400	14,600	46,400	36,800	8,400	5,560
5	7,810	7,810	4,350	5,040	3,900	7,810	15,400	13,900	52,200	34,400	8,400	5,560
6	7,540	7,540	4,350	5,040	4,120	8,370	18,700	11,700	49,400	33,200	9,020	6,060
7	7,270	7,270	3,900	4,810	4,120	12,200	24,100	11,000	84,800	32,100	9,020	6,060
8	7,270	7,540	1,930	5,280	4,120	21,500	23,200	11,000	39,400	28,900	8,400	6,600
9	7,270	7,810	1,930	5,760	4,120	23,200	18,700	11,700	36,800	27,900	8,400	6,890
10	7,270	7,810	2,570	5,760	4,350	27,600	16,200	13,100	43,600	26,900	8,400	8,400
11	7,270	7,810	3,230	5,520	4,350	27,600	13,900	12,400	59,800	25,000	8,400	8,400
12	7,270	7,810	4,120	5,520	4,350	29,600	13,100	11,700	56,800	22,300	8,400	8,400
13	7,270	7,810	5,040	5,520	4,350	50,800	11,700	11,000	56,800	20,500	8,400	8,400
14	7,270	7,810	6,500	6,000	4,580	50,800	11,700	10,300	53,800	20,500	8,400	8,400
15	7,540	7,810	5,040	5,520	4,580	32,700	11,000	11,000	50,800	18,700	7,780	7,780
16	7,810	7,810	4,810	4,810	4,580	26,000	10,300	10,300	47,900	18,700	7,180	7,780
17	8,370	7,810	6,500	5,040	4,350	18,700	9,660	11,700	53,800	20,500	6,600	7,180
18	8,370	7,810	6,250	4,580	4,120	17,000	9,660	13,900	58,200	19,600	6,060	7,180
19	8,370	7,810	6,500	4,810	3,900	18,700	9,660	15,400	61,400	18,700	5,810	7,180
20	8,370	7,810	7,010	4,810	4,350	22,300	9,660	16,200	59,800	22,300	5,560	7,180
21	8,950	7,810	6,500	4,810	4,580	26,000	10,300	18,700	50,800	19,600	5,560	7,180
22	8,950	7,810	7,270	4,810	4,580	27,900	10,300	19,600	56,800	18,700	5,560	7,180
23	8,950	7,810	6,750	4,580	4,350	27,900	11,000	20,500	34,400	18,700	5,320	7,180
24	8,370	7,270	7,010	4,350	4,580	25,000	11,700	23,200	31,000	17,000	5,320	7,480
25	8,370	[a]7,100	6,250	4,120	4,580	21,400	12,400	26,900	31,000	15,400	5,080	7,480
26	8,370	[a]6,930	7,010	3,900	4,810	17,000	12,400	35,600	31,000	13,900	5,080	7,780
27	8,370	6,750	7,010	3,900	5,040	15,400	13,900	47,900	31,000	13,100	5,080	7,780
28	8,370	6,750	7,010	3,900	5,280	13,900	15,400	62,900	32,100	12,400	5,080	8,400
29	7,810	6,750	6,750	3,900	-------	15,400	13,900	67,600	34,400	11,700	5,080	8,400
30	7,810	6,750	6,750	4,120	-------	18,700	13,900	72,200	38,100	11,000	5,080	8,400
31	7,810	-------	6,750	3,900	-------	26,000	-------	50,800	-------	10,300	5,080	-------

[a] Interpolated.

Daily discharge, in second-feet, of Yellowstone River at Intake, Mont., 1928–1931—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1929–30												
1	8,400	7,180	7,780	11,000	5,320	15,200	7,140	16,800	27,400	17,600	7,430	11,500
2	9,020	7,180	10,300	10,700	5,810	15,200	7,430	16,000	40,800	16,800	6,860	11,500
3	9,020	7,780	12,400	11,000	5,810	12,900	7,430	15,200	39,500	16,000	6,860	10,200
4	9,020	7,780	10,300	9,660	6,060	8,900	7,430	15,200	39,500	15,200	5,780	10,200
5	9,020	7,180	8,400	8,710	6,330	7,720	7,140	15,200	33,600	15,200	6,040	9,520
6	9,020	7,180	6,600	8,090	5,810	7,430	7,720	15,200	27,400	15,200	7,430	10,800
7	8,400	7,180	6,330	7,780	5,560	7,430	8,300	16,800	21,900	16,000	8,300	9,520
8	8,400	7,780	6,060	7,180	5,560	8,300	9,520	17,600	20,200	15,200	8,900	8,900
9	8,400	7,180	5,810	6,060	6,600	8,900	9,520	18,400	18,400	15,200	8,300	9,520
10	8,400	7,180	5,080	4,400	6,600	10,800	9,520	18,400	18,400	15,200	8,900	9,520
11	8,400	7,180	4,620	3,360	6,890	13,600	9,520	16,800	23,700	13,600	9,520	9,520
12	8,400	7,180	4,180	2,100	7,480	10,800	10,800	16,000	25,500	13,600	9,520	10,200
13	8,400	6,600	3,760	2,620	7,780	13,600	10,800	15,200	26,400	16,000	9,520	12,900
14	8,400	7,180	2,980	2,270	7,780	12,900	12,200	15,200	29,400	18,400	10,800	12,900
15	8,400	7,780	2,620	1,830	7,480	13,600	12,200	13,600	33,600	20,200	18,400	11,500
16	8,400	6,600	1,930	1,760	7,780	16,800	12,200	12,200	30,400	21,000	21,000	9,520
17	7,780	6,330	1,680	1,760	9,020	15,200	12,200	11,500	27,400	21,000	23,700	8,900
18	7,780	6,060	1,600	1,760	10,300	15,200	12,200	10,800	23,700	20,200	27,400	8,300
19	7,780	5,560	1,760	1,930	17,000	13,600	11,500	11,500	22,800	17,600	29,400	8,300
20	7,480	5,080	2,100	1,930	22,300	12,200	12,200	12,200	25,500	15,200	26,400	8,300
21	7,180	4,400	2,270	1,930	23,700	12,200	10,800	13,600	26,400	15,200	23,700	7,720
22	7,180	4,180	2,800	2,620	25,500	12,200	10,800	13,600	25,500	14,400	21,000	7,720
23	7,180	3,970	3,560	2,620	23,700	11,500	9,520	13,600	23,700	13,600	19,300	7,140
24	7,180	3,970	4,180	2,980	22,800	11,500	8,900	15,200	23,700	12,200	18,400	7,140
25	6,600	3,760	5,560	3,170	20,200	10,800	10,200	16,800	23,700	12,200	16,800	7,430
26	6,330	4,400	6,060	3,360	20,200	12,200	10,800	16,800	23,700	11,500	15,200	7,140
27	6,330	4,620	7,180	3,360	17,600	13,600	12,200	14,400	23,700	10,200	14,400	7,720
28	6,330	5,080	10,300	3,360	16,800	12,200	13,600	14,400	21,900	9,520	12,200	7,720
29	6,330	6,330	11,000	3,840	-------	10,800	15,200	13,600	20,200	8,900	12,200	7,140
30	6,600	7,180	9,660	3,840	-------	9,520	17,600	13,600	17,600	8,300	12,200	7,720
31	6,600	-------	11,000	4,620	-------	9,520	-------	17,600	-------	8,300	11,500	-------
1930–31												
1	7,720	8,900	8,300	4,000	6,580	5,260	5,750	4,000	27,400	11,800	2,940	1,930
2	7,720	8,900	8,300	4,250	6,310	5,520	7,220	4,000	25,200	10,200	2,940	1,890
3	7,430	8,300	8,300	4,500	6,310	5,520	6,910	3,320	24,100	9,820	8,160	1,790
4	7,720	8,300		4,500	6,310	5,520	6,600	3,100	28,500	9,050	10,700	1,730
5	7,720	8,300		4,750	6,040	5,260	7,220	3,540	35,400	7,920	11,500	1,700
6	7,720	8,300		5,000	5,780	5,000	7,200	4,220	41,300	7,920	9,950	1,600
7	8,300	8,300		5,000	5,520	5,000	6,600	4,970	44,900	7,920	7,820	1,600
8	11,500	8,300		4,500	5,000	4,750	6,600	6,020	41,300	7,920	8,500	1,600
9	11,500	8,300	7,200	4,250	4,750	5,000	6,020	8,670	41,300	7,570	8,160	1,600
10	10,200	8,300		4,000	4,750	5,000	6,020	9,430	42,500	6,910	9,950	1,540
11	10,800	8,300		4,000	5,000	4,750	6,020	7,570	44,900	5,750	8,500	1,540
12	13,600	8,300		4,250	5,000	4,750	6,020	8,670	44,900	5,220	6,240	1,450
13	13,600	8,300		4,250	5,260	4,750	6,600	9,430	42,500	4,480	5,060	1,370
14	12,900	8,300		3,520	5,520	5,000	6,600	8,300	40,100	4,000	4,300	1,510
15	13,600	8,230		3,520	5,520	5,000	6,600	6,600	37,800	3,770	3,330	1,480
16	12,900	8,160	6,100	3,520	5,520	5,260	6,020	5,480	35,400	4,220	2,900	1,450
17	12,200	8,090	6,040	3,520	5,260	5,520	6,020	6,600	33,100	3,320	2,900	1,570
18	12,200	8,020	6,040	3,290	5,520	5,520	6,020	17,700	30,800	3,100	2,900	1,640
19	12,200	7,960	5,260	3,520	5,520	6,040	6,020	27,400	30,800	2,780	3,230	1,640
20	12,200	7,900	5,260	3,760	5,260	6,040	5,480	32,000	28,500	2,630	3,560	1,790
21	10,800	7,840	5,000	4,000	5,000	5,520	5,480	28,500	27,400	2,090	3,330	2,130
22	10,800	7,780	4,750	4,500	5,000	5,780	5,480	21,900	34,300	1,990	2,500	1,990
23	10,200	7,720	5,000	4,750	5,260	5,780	5,480	17,700	25,200	2,500	2,350	5,380
24	10,200	7,140	4,750	4,750	5,000	5,520	5,480	13,700	19,800	1,700	2,280	6,540
25	10,200	7,430	4,500	5,000	4,750	5,520	5,480	11,800	17,700	1,540	2,350	5,380
26	10,200	7,720	4,750	5,260	4,750	5,520	4,970	9,820	15,700	1,480	2,430	5,380
27	10,200	7,720	4,500	5,520	4,750	5,480	4,970	9,050	14,700	1,340	2,350	5,380
28	9,520	7,720	4,000	6,040	5,000	5,750	4,220	15,700	12,800	1,200	2,170	5,660
29	9,520	8,300	4,000	6,580	-------	4,480	4,000	21,900	12,800	1,280	2,100	5,660
30	9,520	8,300	4,000	6,860	-------	3,540	4,220	28,500	12,800	1,640	1,820	5,660
31	9,520	-------	3,760	6,860	-------	4,220	-------	28,500	-------	3,800	1,670	-------

Monthly discharge, in second-feet, of Yellowstone River at Intake, Mont., 1928–1931

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1928–29				
October	8,950	7,270	7,890	485,000
November	7,810	6,750	7,560	450,000
December	7,270	1,930	5,580	343,000
January	6,000	3,900	4,890	301,000
February	5,280	3,680	4,340	241,000
March	50,800	7,010	21,200	1,300,000
April	33,200	9,660	14,900	887,000
May	72,200	10,300	22,600	1,390,000
June	84,800	31,000	46,500	2,770,000
July	40,800	10,300	22,900	1,410,000
August	9,660	5,080	7,020	432,000
September	8,400	5,080	7,220	430,000
The year	84,800	1,930	14,400	10,400,000
1929–30				
October	9,020	6,330	7,810	480,000
November	7,780	3,760	6,230	371,000
December	12,400	1,600	5,800	357,000
January	11,000	1,760	4,570	281,000
February	25,500	5,320	11,900	661,000
March	16,800	7,430	11,800	726,000
April	17,600	7,140	10,600	631,000
May	18,400	10,800	14,900	916,000
June	40,800	17,600	26,200	1,560,000
July	21,000	8,300	14,800	910,000
August	29,400	5,780	14,100	867,000
September	12,900	7,140	9,200	547,000
The year	40,800	1,600	11,500	8,310,000
1930–31				
October	13,600	7,430	10,500	646,000
November	8,900	7,140	8,110	483,000
December	8,300	3,760	6,100	375,000
January	6,860	3,290	4,580	282,000
February	6,580	4,750	5,370	298,000
March	6,040	3,540	5,210	320,000
April	7,220	4,000	5,910	352,000
May	32,000	3,100	12,500	769,000
June	44,900	12,800	30,500	1,810,000
July	11,800	1,200	4,740	291,000
August	11,500	1,670	4,800	295,000
September	6,540	1,370	2,720	162,000
The year	44,900	1,200	8,400	6,080,000

TOWER CREEK AT TOWER FALLS, YELLOWSTONE NATIONAL PARK

LOCATION.—Staff gage a short distance above Tower Falls, a quarter of a mile above mouth, and 2 miles southeast of Camp Roosevelt.

DRAINAGE AREA.—51 square miles.

RECORDS AVAILABLE.—September, 1922, to September, 1931.

EXTREMES.—Maximum discharge during year (estimated), 250 second-feet June 3; minimum (estimated), 16 second-feet Apr. 23–26 (gage height, 3.62 feet). 1922–1931: Maximum discharge, 642 second-feet May 30, 1925; maximum gage height, 6.27 feet May 28, 1928; minimum discharge, 13 second-feet May 6, 1924 (gage height, 3.38 feet).

REMARKS.—Records fair except those for period Nov. 15 to Apr. 13, which are poor. Gage read daily June 5 to Sept. 19; during remainder of year gage read about once a week except that no readings were obtained from December to March. Discharge estimated for days on which no gage-height record was obtained. No diversions or regulation. Gage-height record furnished by officials of Yellowstone Park.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	29						22	172	48	25	23
2	24	30						23	143	48	24	22
3	24	32						24	200	43	23	21
4	26	33						24	250	43	23	20
5	24	35						25	216	41	24	19
6	25	36						25	162	40	23	18
7	40	37					17	40	172	38	22	18
8	80	38	23					35	134	38	22	18
9	44	35						30	126	47	22	19
10	42	35						29	134	47	21	19
11	44							28	126	45	20	19
12	41	30						49	109	44	22	19
13	37							70	101	43	29	19
14	32						18	92	101	43	24	19
15	30				17		18	113	89	42	23	22
16	25			19		18	20	134	80	41	22	20
17	25						22	150	75	40	20	19
18	33						23	100	72	40	22	21
19	33						21	66	69	27	22	22
20	33						20	62	66	27	22	30
21	32						18	58	66	27	22	40
22	32	25					17	55	59	27	22	30
23	31						16	72	55	27	20	
24	31		20				16	95	56	27	20	20
25	30						16	120	54	27	22	
26	30						16	130	50	27	22	23
27	30						17	120	50	25	22	
28	29						18	115	48	25	19	20
29	30				-------		20	108	46	27	19	
30	29				-------		21	101	48	30	19	
31	29	-------			-------		-------	135	-------	27	21	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	80	24	32.9	0.645	0.74	2,020
November	38	-------	28.5	.559	.62	1,700
December	-------	-------	21.5	.422	.49	1,320
January	-------	-------	19.0	.373	.43	1,170
February	-------	-------	17.0	.333	.35	944
March	-------	-------	18.0	.353	.41	1,110
April	23	16	17.9	.351	.39	1,070
May	150	22	72.6	1.42	1.64	4,460
June	250	46	104	2.04	2.28	6,190
July	48	25	36.2	.710	.82	2,230
August	29	19	22.0	.431	.50	1,350
September	40	18	21.3	.418	.47	1,270
The year	250	16	34.3	.673	9.14	24,800

LAMAR RIVER NEAR TOWER FALLS RANGER STATION, YELLOWSTONE NATIONAL PARK

LOCATION.—Water-stage recorder half a mile north of Cooke City road, three-quarters of a mile above mouth, and 2 miles northeast of Tower Falls ranger station.

DRAINAGE AREA.—640 square miles.

RECORDS AVAILABLE.—September, 1922, to September, 1931.

EXTREMES.—Maximum discharge during year, 8,650 second-feet June 3 (gage height, 7.7 feet); minimum (estimated), 120 second-feet Dec. 16–31.

1922–1931: Maximum discharge, 13,600 second-feet May 25, 1928 (gage height, 9.75 feet); minimum, 104 second-feet Apr. 20, 1924 (gage height, 0.92 foot, present datum).

REMARKS.—Records good except those for estimated periods, Nov. 15 to Apr. 13, 15–17, 19–24, 26–28, May 3, 4, which are poor. No regulation or diversions. Gage-height record furnished by officials of Yellowstone National Park.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	193	268						470	3,560	638	245	196
2	191	271						562	4,120	591	227	166
3	196	248						750	6,240	556	215	153
4	262	245						840	5,220	528	204	146
5	236	245						842	4,120	501	199	142
6	296	239					200	773	4,200	476	196	140
7	956	230						1,320	4,200	450	193	138
8	1,500	236	150					919	4,040	426	186	134
9	891	230						773	3,560	407	178	132
10	773	252						657	3,630	372	176	130
11	870	221					245	688	3,560	354	171	130
12	753	236					290	1,270	3,110	338	171	130
13	626	233					320	2,160	2,700	318	193	130
14	573	171					346	3,110	2,580	310	380	128
15	523			140	130		335	3,870	2,450	303	258	130
16	412					140	350	4,290	2,330	292	207	146
17	380						430	4,200	2,050	292	188	149
18	465						486	2,450	1,640	278	176	140
19	455						460	1,690	1,500	265	181	136
20	450						420	1,360	1,320	252	171	140
21	436						360	1,180	1,270	245	164	248
22	403	170					300	1,070	1,220	233	164	221
23	372		120				240	1,500	1,140	230	162	183
24	380						230	2,510	1,080	233	155	204
25	376						233	3,180	980	233	151	215
26	354						240	3,560	956	245	146	248
27	346						260	3,330	933	252	144	224
28	271						300	2,510	849	275	144	212
29	268				-------		354	2,050	753	248	142	224
30	268				-------		394	2,270	701	268	142	218
31	262	-------			-------	-------	-------	2,900	-------	258	199	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,500	191	475	0.742	0.86	29,200
November	271	-------	202	.316	.35	12,000
December	-------	-------	135	.211	.24	8,300
January	-------	-------	140	.219	.25	8,610
February	-------	-------	130	.203	.21	7,220
March	-------	-------	140	.219	.25	8,610
April	486	-------	286	.447	.50	17,000
May	4,290	470	1,900	2.97	3.42	117,000
June	6,240	701	2,530	3.95	4.41	151,000
July	638	230	344	.538	.62	21,200
August	380	142	188	.294	.34	11,600
September	248	128	168	.262	.29	10,000
The year	6,240	-------	555	.867	11.74	402,000

GARDINER RIVER AT MAMMOTH HOTEL, YELLOWSTONE NATIONAL PARK

LOCATION.—Water-stage recorder a quarter of a mile below footbridge on Mount Everts trail, three-eighths of a mile below Mammoth Hot Spring and nine-tenths of a mile east of Mammoth Hotel.

DRAINAGE AREA.—201 square miles.

RECORDS AVAILABLE.—September, 1922, to September, 1931.

EXTREMES.—Maximum discharge during year, 553 second-feet May 16, June 4 (gage height, 2.13 feet); minimum, 36 second-feet Apr. 3 (gage height, 0.51 foot).

1922–1931: Maximum discharge, 1,790 second-feet May 28, 1928 (gage height, 3.59 feet); minimum discharge, 31 second-feet Apr. 7, 1928; minimum gage height, 0.51 foot Apr. 3, 1931.

REMARKS.—Records excellent except those estimated Nov. 17–30, which are fair. No regulation or diversions. Gage-height record furnished by officials of Yellowstone National Park.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	88	98	94	78	67	68	68	150	379	110	86	73
2	88	96	98	80	71	68	65	144	383	108	81	70
3	88	94	98	81	70	70	63	150	435	108	80	68
4	94	94	96	80	71	68	65	158	470	110	76	67
5	92	90	94	78	71	65	65	155	402	104	74	67
6	90	88	86	76	71	81	68	150	370	104	76	67
7	126	90	92	80	71	71	71	189	343	102	74	65
8	252	90	90	78	70	74	76	161	323	98	73	65
9	192	90	90	76	73	73	73	147	306	96	71	63
10	183	96	92	74	76	70	76	139	331	96	71	64
11	189	92	94	71	71	70	85	134	323	96	68	64
12	174	96	96	71	70	70	98	150	294	94	68	64
13	150	94	96	71	68	71	120	213	263	90	81	64
14	139	86	96	71	68	68	122	294	252	88	83	64
15	134	83	94	71	73	68	115	365	237	86	83	65
16	115	85	92	73	70	70	124	440	223	86	76	67
17	115		92	73	68	68	150	460	206	86	71	67
18	129		88	71	70	71	161	335	189	85	71	67
19	129		92	71	70	70	126	259	180	83	74	68
20	124		92	68	71	68	104	227	170	83	70	76
21	120		80	71	70	70	98	203	164	80	70	80
22	117		86	74	70	74	90	189	155	80	70	78
23	113	90	92	71	67	70	86	216	147	81	68	76
24	115		86	70	70	67	88	286	142	83	68	76
25	115		81	70	67	67	88	339	134	83	68	76
26	110		81	70	70	60	90	365	131	83	67	73
27	110		81	70	70	73	98	343	129	83	68	71
28	98		80	71	67	68	106	318	126	81	68	74
29	102		80	71	-------	65	122	278	122	81	68	90
30	98	96	80	70	-------	61	155	267	115	92	67	78
31	98	-------	78	68	-------	64	-------	302	-------	90	73	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	252	88	125	0.622	0.72	7,690
November	----------	----------	90.9	.452	.50	5,410
December	98	78	89.3	.444	.51	5,490
January	81	68	73.2	.364	.42	4,500
February	76	67	70.0	.348	.36	3,890
March	81	60	69.1	.344	.40	4,250
April	161	63	97.2	.484	.54	5,780
May	460	134	243	1.21	1.40	14,900
June	470	115	248	1.23	1.37	14,800
July	110	80	91.3	.454	.52	5,610
August	86	67	73.0	.363	.42	4,490
September	90	63	70.2	.349	.39	4,180
The year	470	60	112	.557	7.55	75,500

SHIELDS RIVER AT CLYDE PARK, MONT.

LOCATION.—Wire gage in NW. ¼ sec. 33, T. 2 N., R. 9 E., at highway bridge one-fourth mile northwest of Clyde Park and 2 miles south of mouth of Brackett Creek.

DRAINAGE AREA.—544 square miles.

RECORDS AVAILABLE.—March, 1921, to September, 1923; April, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 507 second-feet June 3, 4 (gage height, 2.56 feet); minimum, 4.3 second-feet Sept. 4–9 (gage height, 0.90 foot). 1921–1923, 1929–1931: Maximum discharge, 1,880 second-feet May 26, 1923; minimum, that of Sept. 4–9, 1931.

REMARKS.—Records good except those for periods of ice effect, Nov. 14 to Mar. 14, Mar. 20–23, which are fair. Numerous diversions above and below station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	83	71	39	39	36	131	87	410	37	14	6.4
2	30	83	71	40	40	39	183	108	442	35	11	5.5
3	31	80		40	38	37	125	117	507	31	11	4.9
4	33	78		39	38	35	106	144	507	29	11	4.3
5	34	78		42	36	32	157	161	507	29	12	4.3
6	36	78		39	35	32	202	161	442	26	12	4.3
7	36	78		38	32	35	244	161	442	24	11	4.3
8	37	78		37	28	39	282	164	410	23	10	4.3
9	48	78	70	37	30	42	187	131	385	22	10	4.3
10	53	78		39	32	44	144	106	410	20	10	4.9
11	85	80		39	31	46	140	96	352	19	9.0	4.9
12	73	80		43	30	52	154	90	310	18	8.5	4.9
13	78	80		44	30	58	202	99	261	16	7.5	4.9
14	83	76	61	47	32	60	194	190	315	14	7.0	4.9
15	83	72	55	49	35	80	164	310	271	13	6.4	4.6
16	80	78	49	47	32	96	131	410	227	13	6.1	5.2
17	78	74	48	44	32	103	131	442	171	13	6.4	5.5
18	75	71	44	39	35	96	137	381	144	13	6.4	5.5
19	80	67	39	37	34	101	134	280	122	14	6.1	11
20	85	67	39	37	32	101	117	231	103	14	5.5	13
21	93	71	35	37	32	108	111	164	92	13	5.5	15
22	93	71	34	39	32	122	96	144	85	12	5.5	18
23	88	71	35	40	34	137	94	120	81	12	5.2	16
24	88	72	32	38	35	122	87	101	71	12	5.2	13
25	88	72	34	39	36	106	85	161	61	12	5.8	13
26	83	72	35	40	36	99	90	248	55	12	5.8	13
27	83	71	32	42	35	64	96	294	52	14	6.1	13
28	83	71	34	42	34	83	103	285	51	14	7.5	15
29	83	67	35	44	------	92	103	248	46	14	7.5	20
30	83	69	36	44	------	81	94	248	42	16	7.5	27
31	83	------	37	42	------	92	------	261	------	16	7.0	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	93	30	68.3	4,200
November	83	67	74.8	4,450
December	71	32	52.5	3,230
January	49	37	40.7	2,500
February	40	28	33.8	1,880
March	137	32	73.2	4,500
April	282	85	141	8,390
May	442	87	198	12,200
June	507	42	246	14,600
July	37	12	18.4	1,130
August	14	5.2	8.05	495
September	27	4.3	9.16	545
The year	507	4.3	80.3	58,100

STILLWATER RIVER NEAR NYE, MONT.

LOCATION.—Chain gage in SE. ¼ sec. 32, T. 5 S., R. 15 E., at Beartooth Ranch, 8 miles southwest of Nye and 1,000 feet below mouth of Woodbine Creek.

RECORDS AVAILABLE.—May, 1929, to September, 1931. May, 1924, to September, 1927, at site above mouth of Woodbine Creek.

EXTREMES.—Maximum discharge during year, 2,580 second-feet June 4 (gage height, 6.20 feet); minimum, 15 second-feet Mar. 17 (gage height, 2.48 feet).

1929–1931: Maximum discharge, 3,120 second-feet June 12, 1930; minimum, that of Mar. 17, 1931.

REMARKS.—Records good except those for periods of ice effect, Nov. 15–20, Dec. 15–31, Jan. 26, Mar. 26–31, which are fair. No diversions.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	170	175	112	129	45	42	55	150	1,680	446	287	145
2	170	170	103	105	42	45	62	170	1,950	398	272	125
3	170	162	101	85	45	42	46	228	2,250	377	257	123
4	180	155	101	85	45	42	24	242	2,250	398	228	123
5	180	150	101	85	44	48	41	228	1,810	356	228	123
6	170	162	99	85	42	42	56	228	1,950	320	228	127
7	170	150	93	85	42	48	56	257	2,100	304	228	125
8	330	150	95	85	42	58	71	257	2,580	287	228	162
9	446	138	91	85	44	55	58	257	2,250	287	201	201
10	356	132	81	85	44	44	58	228	2,250	257	201	201
11	320	114	89	85	44	42	58	228	1,680	257	201	175
12	320	127	97	87	38	45	72	287	1,420	257	175	138
13	304	136	93	87	44	45	67	446	1,550	257	201	125
14	287	138	93	89	45	24	81	870	1,680	257	188	123
15	272	127	89	85	42	39	76	1,550	1,810	257	175	150
16	242	134	91	69	45	39	76	1,680	1,680	257	175	201
17	214	141	91	54	34	37	83	1,550	1,550	257	175	188
18	257	150	93	55	55	56	99	780	1,060	257	201	138
19	242	145	91	78	42	51	103	531	825	257	214	127
20	228	145	93	64	42	56	80	446	700	257	188	132
21	228	150	93	52	42	48	74	377	627	228	175	162
22	228	145	97	51	28	48	76	338	825	214	175	162
23	228	132	101	55	32	54	74	377	700	228	170	132
24	201	125	105	58	30	78	76	627	664	228	155	138
25	201	114	105	60	71	69	76	1,170	627	228	145	175
26	201	112	114	56	50	60	74	1,290	531	242	138	138
27	201	105	116	52	28	60	81	1,230	561	257	138	162
28	201	109	123	52	34	61	99	1,320	561	287	132	162
29	201	114	120	51	------	67	123	780	501	257	127	175
30	175	109	127	50	------	78	141	700	531	257	127	150
31	162	------	127	50	------	93	------	1,170	------	304	138	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	446	162	234	14,400
November	175	105	137	8,150
December	127	81	101	6,210
January	129	50	72.7	4,470
February	71	28	42.2	2,340
March	93	24	52.1	3,200
April	141	24	73.9	4,400
May	1,680	150	645	39,700
June	2,580	501	1,370	81,500
July	446	214	282	17,300
August	287	127	189	11,600
September	201	123	150	8,930
The year	2,580	24	279	202,000

CLARK FORK AT CHANCE, MONT.

LOCATION.—Staff gage in NW. ¼ sec. 32, T. 9 S., R. 22 E., at highway bridge at Chance, just above mouth of Sand Coulee and half a mile north of Wyoming State line.

RECORDS AVAILABLE.—July, 1921, to September, 1931.

EXTREMES.—Maximum discharge during year, 6,130 second-feet June 3 (gage height, 4.75 feet); minimum, 121 second-feet Sept. 18 (gage height, 0.50 foot).

1921–1931: Maximum discharge, 10,900 second-feet May 26, 1928 (gage height, 6.5 feet); minimum, 72 second-feet Mar. 19, 1927 (gage height, 0.50 foot).

REMARKS.—Records good. No records Jan. 1 to Mar. 31. Numerous diversions.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Apr.	May	June	July	Aug.	Sept.
1	237	455	368	140	286	3,410	1,200	471	165
2	268	395	341	147	250	4,100	995	471	165
3	317	368	341	156	370	5,870	850	394	165
4	331	368	327	160	471	5,350	720	370	165
5	341	341	302	165	567	5,090	679	326	165
6	341	341	298	178	532	5,090	640	306	190
7	425	341	285	190	567	4,840	567	286	138
8	1,760	331	268	218	679	4,840	532	286	154
9	1,320	341	259	268	532	4,590	471	286	154
10	1,200	331	244	250	532	4,100	444	250	190
11	1,260	331	237	218	532	4,100	418	250	160
12	1,260	341	226	218	640	3,630	418	234	165
13	1,260	341	215	348	1,200	3,200	394	234	154
14	1,260	341	209	348	2,420	3,000	370	394	160
15	1,200	341	203	286	3,410	3,200	370	602	138
16	805	368	196	234	3,860	3,200	348	502	160
17	558	368	193	234	3,410	3,000	348	418	154
18	675	368	190	250	2,610	2,610	326	394	132
19	675	368	190	250	1,620	2,240	286	348	178
20	675	368	184	218	1,370	1,910	286	306	160
21	635	368	181	190	1,150	1,910	286	268	154
22	595	395	176	178	808	1,910	250	268	160
23	595	395	174	165	1,040	1,760	250	250	204
24	558	395	168	160	1,760	1,620	250	234	218
25	522	395	171	147	1,910	1,620	250	204	234
26	675	395	168	142	2,070	1,430	234	190	218
27	595	395	174	140	2,240	1,560	268	190	
28	558	395	174	142	2,610	1,760	306	204	200
29	558	395	174	142	2,800	1,760	370	250	
30	522	368	174	178	3,000	1,430	850	204	
31	488	-------	174	-------	3,200	-------	567	178	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,760	237	725	44,600
November	455	331	368	21,900
December	368	168	225	13,800
April	348	140	202	12,000
May	3,860	250	1,560	95,900
June	5,870	1,430	3,140	187,000
July	1,200	234	469	28,800
August	602	178	309	19,000
September	234	132	173	10,300

CLARK FORK AT EDGAR, MONT.

LOCATION.—Wire gage in SW. ¼ sec. 24, T. 4 S., R. 23 E., on highway bridge half a mile east of Edgar.

RECORDS AVAILABLE.—July, 1921, to September, 1931.

EXTREMES.—Maximum discharge during year, 5,600 second-feet June 3 (gage height, 6.80 feet); minimum, 41 second-feet July 25 (gage height, 1.55 feet). 1921–1931: Maximum discharge, 10,600 second-feet May 26, 1928 (gage height, 8.25 feet); minimum, that of July 25, 1931.

REMARKS.—Records good. Discharge estimated because of ice Dec. 18, Dec. 20 to Feb. 1, Mar. 27–30. Numerous diversions.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	430	554	430	430	395	288	347	383	2,680	956	706	171
2	459	554	459	402	414	279	395	459	3,210	785	668	230
3	459	521	459	430	459	308	342	459	4,830	706	526	217
4	430	521	430	430	383	293	319	596	4,980	785	401	199
5	1,530	521	430	430	414	319	303	631	4,230	706	314	192
6	1,530	490	402	430	298	264	308	668	4,080	631	288	165
7	1,430	490	376	402	319	242	288	596	4,080	459	298	159
8	1,430	490	402	402	303	259	336	912	4,380	414	203	129
9	1,630	490	402	402	293	255	426	706	4,380	314	213	123
10	1,530	490	402	430	303	274	426	668	3,780	251	203	129
11	1,430	490	430	402	303	269	383	631	3,630	203	137	129
12	1,530	490	376	402	308	259	383	526	3,350	210	118	155
13	1,190	490	402	376	293	269	459	631	3,070	195	123	152
14	1,050	490	402	402	284	255	526	1,940	2,940	143	140	175
15	1,010	459	376	402	279	255	492	2,420	2,940	112	303	159
16	925	430	376		330	255	401	2,940	2,940	118	526	185
17	810	430	350		308	264	376	3,490	2,940	95	420	178
18	848	430	350		288	269	414	2,810	2,810	74	358	168
19	810	459	350		314	259	526	1,940	2,300	74	314	199
20	810	402	350		376	269	426	1,360	3,070	84	264	1,050
21	810	376	402		308	259	395	1,000	1,700	62	246	706
22	772	430	430		293	288	376	746	1,700	55	242	596
23	698	459	430		288	319	342	596	1,580	77	251	492
24	698	490	430	400	279	330	319	1,150	1,580	53	251	560
25	698	521	402		303	255	308	1,940	1,470	43	210	492
26	660	490	430		279	140	274	2,420	1,360	64	185	492
27	660	459	402		293	140	264	2,940	1,300	868	159	526
28	624	430	430		279	150	259	2,940	1,470	242	171	560
29	588	459	402		-------	170	259	2,420	1,360	264	165	526
30	588	430	430		-------	240	293	1,940	1,150	279	181	526
31	554	-------	402		-------	342	-------	2,180	-------	706	192	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,630	430	923	56,800
November	554	376	474	28,200
December	459	350	405	24,900
January	430	376	406	25,000
February	459	279	321	17,800
March	342	140	259	15,900
April	526	259	366	21,800
May	3,490	383	1,450	89,200
June	4,980	1,150	2,840	169,000
July	956	43	323	19,900
August	706	118	283	17,400
September	1,050	123	325	19,300
The year	4,980	43	698	505,000

SUNLIGHT CREEK NEAR PAINTER, WYO.

LOCATION.—Water-stage recorder in sec. 16, T. 55 N., R. 105 W., 1 mile east of Painter.
DRAINAGE AREA.—139 square miles.
RECORDS AVAILABLE.—August, 1929, to September, 1931.
EXTREMES.—Maximum discharge during year, 1,190 second-feet June 3 (gage height, 3.02 feet); minimum occurred during winter.
1929–1931: Maximum discharge, 1,260 second-feet July 12, 1930 (gage height, 3.07 feet); minimum occurred during winter.
REMARKS.—Records excellent except those for period Nov. 15 to Apr. 22, which were based on three discharge measurements and temperature records. Minor diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	68	54					44	395	182	118	64
2	67	53					48	517	164	104	59
3	98	53					52	920	153	94	57
4	94	53					59	663	143	88	56
5	94	52					57	554	129	88	55
6	93	51				30	58	649	124	84	53
7	162	49					82	740	115	82	52
8	226	48					58	755	106	78	52
9	166	50					55	635	99	75	51
10	151	47					52	487	94	72	49
11	162	48	31				51	505	93	70	48
12	135	47					57	464	90	67	47
13	118	47					90	442	88	80	45
14	110	51					172	481	86	143	44
15	104						250	517	87	111	45
16	87					35	274	548	87	88	47
17	84	40					232	481	84	82	45
18	82						137	352	81	78	43
19	82						80	313	79	76	43
20	81						71	264	78	73	77
21	79					38	62	264	75	72	78
22	76					34	63	264	75	70	62
23	74	35			24	34	106	274	74	67	59
24	71					34	244	271	75	66	60
25	73					34	301	250	75	66	60
26	70			25		34	334	250	75	65	66
27	68					34	293	241	88	63	62
28	63	32				36	223	238	94	61	61
29	59					37	220	223	125	59	61
30	58					44	192	202	188	58	58
31	58						254		135	69	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	226	58	97.2	5,980
November	54		42.6	2,530
December			27	1,660
January			25	1,540
February			25	1,390
March			27	1,660
April	44		33.6	2,000
May	334	44	138	8,480
June	920	202	439	26,100
July	188	74	105	6,460
August	143	58	79.6	4,890
September	78	43	55.3	3,290
The year	920		91.3	66,000

WIND RIVER AT RIVERTON, WYO.

LOCATION.—Water-stage recorder in sec. 2, T. 1 S., R. 4 E., three-quarters of a mile east of Riverton. Zero of gage is 4,844.38 feet above mean sea level.

DRAINAGE AREA.—2,320 square miles.

RECORDS AVAILABLE.—May, 1906, to November, 1908; May, 1911, to September, 1927; October, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 7,770 second-feet June 8 (gage height, 6.43 feet); minimum probably occurred during winter.

1906–1908, 1911–1927, 1928–1931: Maximum discharge, 12,300 second-feet June 14, 1906; minimum, 170 second-feet Dec. 16, 1926.

REMARKS.—Records excellent except those for period Jan. 1 to Mar. 14, which were estimated because of ice. Diversions for irrigation above station. Slight regulation, owing to operation of Pilot Butte Canal, which diverts water 30 miles above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	446	591	504		244	496	4,040	1,800	2,720	665
2	454	591	504		284	530	5,710	1,550	2,090	636
3	1,080	582	512		284	627	5,850	1,320	1,620	618
4	984	573	504		272	735	5,850	1,150	1,360	618
5	808	546	470		266	685	5,150	1,060	1,240	627
6	735	538	454	280	260	949	5,150	927	1,190	645
7	695	530	422		278	1,100	5,570	818	1,190	665
8	735	538	422		341	1,330	6,270	715	1,160	675
9	1,290	582	414		430	850	5,850	609	1,130	665
10	1,430	591	414		398	725	4,870	546	1,060	665
11	1,360	609	438		362	573	4,310	504	949	618
12	1,450	591	438		406	512	3,640	538	883	555
13	1,240	609	398	270	496	1,060	3,000	538	840	496
14	1,120	609	414		573	2,230	2,960	591	883	430
15	984	573	406	278	538	2,870	3,240	665	1,030	369
16	916	398	341	290	462	3,770	3,770	725	1,210	362
17	818	376	355	296	430	4,180	3,770	808	1,250	320
18	756	414	348	302	538	3,640	3,240	872	1,210	341
19	808	362	284	314	695	2,350	2,480	872	1,160	308
20	766	355	232	308	573	1,560	2,070	861	1,140	369
21	735	341	260	327	430	1,230	1,940	850	1,040	470
22	776	334	227	327	383	960	1,780	829	1,030	446
23	787	369	200	314	398	850	1,720	818	1,020	478
24	735	398	222	296	327	1,880	1,630	725	1,010	546
25	829	406	216	284	327	3,000	1,560	725	960	504
26	829	446	205	232	348	3,640	1,520	872	905	496
27	798	470	190	196	348	3,900	1,620	984	829	504
28	675	496	174	178	341	3,640	1,860	1,040	787	504
29	618	530	220	210	341	3,640	2,040	1,200	756	406
30	582	504	266	244	454	2,660	2,020	2,350	685	302
31	591	------	250	249	------	2,870	------	2,820	665	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,450	446	865	53,200
November	609	334	495	29,500
December	512	174	345	21,200
January	----------	----------	240	14,800
February	----------	----------	280	15,600
March	327	178	275	16,900
April	695	244	394	23,400
May	4,180	496	1,900	117,000
June	6,270	1,520	3,480	207,000
July	2,820	504	990	60,900
August	2,720	665	1,130	69,500
September	675	302	510	30,300
The year	6,270	----------	911	659,000

BIG HORN RIVER AT THERMOPOLIS, WYO.

LOCATION.—Chain gage in sec. 36, T. 43 N., R. 95 W., at Thermopolis. Zero of gage is 4,304.80 feet above mean sea level.

DRAINAGE AREA.—8,080 square miles.

RECORDS AVAILABLE.—May, 1900, to December, 1905; June, 1910, to September, 1931.

EXTREMES.—Maximum discharge during year, 8,700 second-feet June 9 (gage height, 6.51 feet); minimum occurred during winter.

1900–1905, 1910–1931: Maximum discharge, 29,800 second-feet July 24, 1923 (gage height, 16.2 feet); minimum, 180 second-feet Apr. 5, 1904 (gage height, 0.2 foot).

REMARKS.—Records fair. Discharge for period Dec. 12 to Jan. 20 based on one discharge measurement and temperature records. Practically no diversions between mouth of Wind River and Thermopolis.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,160	1,060	802		505	630	746	870	5,250	2,040	4,510	774
2	1,270	1,040	790	400	501	640	735	1,000	5,200	1,790	3,310	768
3	3,150	1,040	774		509	651	762	1,020	8,070	1,560	2,110	768
4	2,700	1,060	774		505	604	703	1,080	8,660	1,320	1,680	714
5	1,560	1,060	790		513	604	708	1,240	8,050	1,130	1,400	698
6	1,470	1,040	802		526	698	698	1,410	7,310	1,110	1,320	698
7	1,390	1,050	656	410	522	604	687	1,410	7,860	1,020	1,270	714
8	1,280	1,060	480		526	604	703	2,060	7,460	928	1,220	703
9	1,460	954	473		530	517	896	2,010	8,640	838	1,240	703
10	1,940	980	522		530	540	967	1,750	7,900	774	1,180	693
11	2,240	954	588		535	620	863	2,330	6,640	698	1,130	693
12	2,010	922			513	620	844	2,350	6,140	687	1,060	682
13	1,890	934	550	380	517	703	882	2,260	5,090	682	1,010	625
14	1,780	928			492	796	974	2,300	4,040	661	908	568
15	1,600	915			517	808	1,040	4,380	4,580	682	1,050	526
16	1,510	882			488	796	974	4,380	4,690	730	1,130	484
17	1,410	850	515		526	796	808	5,990	4,960	757	1,030	477
18	1,350	838		350	549	870	796	6,980	4,690	826	1,340	473
19	1,280	802			550	844	838	5,270	3,380	844	1,260	480
20	1,320	746			559	870	987	4,090	2,840	863	1,240	473
21	1,330	698		360	540	922	856	2,940	2,440	870	1,200	505
22	1,340	666		380	578	1,000	779	1,640	2,370	832	1,130	677
23	1,290	640	380	400	578	974	724	1,410	2,190	832	1,140	640
24	1,230	625		432	578	802	762	1,400	2,010	850	1,110	703
25	1,270	651		429	594	735	677	3,280	1,880	796	1,170	724
26	1,280	746		454	583	672	682	5,030	1,770	796	1,130	796
27	1,320	863		450	635	526	746	5,530	1,760	796	967	719
28	1,320	820	375	454	640	461	746	5,530	1,890	994	908	735
29	1,210	808		469	-------	450	740	6,310	2,040	1,020	870	735
30	1,080	826		480	-------	564	762	5,120	2,200	1,750	826	682
31	1,050	-------		488	-------	693	-------	4,170	-------	7,200	814	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	3,150	1,050	1,530	94,100
November	1,060	625	882	52,500
December	802	----------	527	32,400
January	488	----------	403	24,800
February	640	488	541	30,000
March	1,000	450	697	42,900
April	1,040	677	803	47,800
May	6,980	870	3,110	191,000
June	8,660	1,760	4,730	281,000
July	7,200	661	1,180	72,600
August	4,510	814	1,340	82,400
September	796	473	654	38,900
The year	8,660	----------	1,370	990,000

BIG HORN RIVER AT KANE, WYO.

LOCATION.—Chain gage in sec. 4, T. 56 N., R. 93 W., half a mile east of Kane. Zero of gage is 3,610.23 feet above mean sea level.

DRAINAGE AREA.—15,900 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 12,200 second-feet May 28 (gage height, 7.26 feet); minimum discharge, 250 second-feet July 19 (gage height, 0.00 foot).

1928–1931: Maximum discharge, 16,200 second-feet Aug. 17, 1930 (gage height, 7.68 feet); minimum, that of July 19, 1931.

REMARKS—Records good except those for period of ice effect, Dec. 1 to Feb. 28, which were based on two discharge measurements and temperature records. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,550	2,250	------	------	1,160	1,250	700	9,140	1,970	6,800	668
2	1,550	2,120	------	------	1,160	1,440	1,340	10,400	1,630	7,020	605
3	1,550	1,990	------	------	1,250	1,340	1,250	10,600	1,530	5,320	575
4	1,650	1,990	------	------	1,250	1,250	1,340	11,600	1,530	3,180	515
5	1,650	1,870	------	------	1,250	1,250	1,340	11,600	1,250	2,340	435
6	1,650	1,870	------	------	1,160	1,250	1,440	11,100	1,160	1,970	435
7	1,650	1,870	------	------	1,080	1,250	2,870	10,800	955	1,530	410
8	1,760	1,760	------	------	1,080	1,340	3,020	11,100	878	1,340	435
9	2,250	1,760	------	------	1,160	1,630	2,870	11,600	805	1,250	435
10	2,530	1,760	------	------	1,160	1,630	2,870	11,600	700	1,160	435
11	2,820	1,760	------	------	1,250	1,630	2,870	11,100	605	1,160	435
12	3,130	1,760	------	------	1,340	1,630	1,970	9,380	488	878	435
13	3,290	1,760	------	1,280	1,440	1,530	1,630	8,180	388	668	435
14	2,970	1,760	------	------	1,340	1,630	1,970	7,250	365	770	515
15	2,390	1,760	767	------	1,440	1,630	4,900	6,580	365	770	515
16	1,550	1,760	------	------	1,530	1,530	8,180	6,370	305	1,530	488
17	1,180	1,650	------	------	1,530	1,530	9,140	6,800	285	1,080	488
18	1,010	1,650	------	------	1,530	1,440	9,620	5,950	250	995	460
19	1,260	1,550	------	------	1,530	1,340	8,660	5,530	250	1,080	460
20	1,350	1,440	------	------	1,530	1,160	6,160	4,300	285	1,080	575
21	1,550	1,440	------	------	1,530	1,080	5,530	3,350	325	1,160	955
22	1,990	1,440	------	------	1,530	1,080	3,020	3,180	410	1,160	995
23	2,250	1,440	------	------	1,530	1,080	2,090	2,340	410	1,080	995
24	2,250	1,440	------	------	1,530	995	3,180	2,090	460	995	1,160
25	2,250	1,440	------	------	1,300	1,080	4,900	2,090	515	995	1,340
26	2,120	1,440	------	------	800	955	5,530	1,850	515	995	1,250
27	2,120	1,440	------	------	770	840	8,420	1,740	515	915	1,250
28	2,250	1,440	------	------	770	805	11,400	1,740	460	805	1,160
29	2,390	1,440	------	------	1,080	770	10,100	1,630	915	770	1,080
30	2,530	1,350	------	------	1,160	735	9,140	1,740	2,600	735	995
31	2,390	------	------	------	1,160	------	8,900	------	5,530	668	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	3,290	1,010	2,030	125,000
November	2,250	1,350	1,680	100,000
December	------	------	1,000	61,500
January	------	------	775	47,700
February	------	------	1,030	57,200
March	1,530	770	1,270	78,100
April	1,630	735	1,270	75,600
May	11,400	700	4,720	290,000
June	11,600	1,630	6,760	402,000
July	5,530	250	924	56,800
August	7,020	668	1,680	103,000
September	1,340	410	698	41,500
The year	11,600	250	1,990	1,440,000

BIG HORN RIVER NEAR HARDIN, MONT.

LOCATION.—Chain gage in NW. ¼ sec. 19, T. 1 S., R. 34 E., at highway bridge on Crow Indian Reservation, half a mile above mouth of Little Horn River and 2 miles northeast of Hardin.

DRAINAGE AREA.—20,700 square miles.

RECORDS AVAILABLE.—June, 1904, to May, 1925; August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 19,600 second-feet June 10 (gage height, 7.80 feet); minimum, 440 second-feet July 23 (gage height, 1.50 feet).

1904–1925, 1928–1931: Maximum discharge, 45,900 second-feet Mar. 11, 1929 (gage height, 11.1 feet); minimum, that of July 23, 1931.

REMARKS.—Records good except those for periods of ice effect, Jan. 14–16, 23, which are fair. Numerous diversions. Some storage on tributary streams.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,710	3,630	2,510	1,410	1,800	1,940	2,020	1,240	8,580	2,680	3,080	785
2	2,710	3,630	2,510	1,410	1,870	2,020	2,020	1,240	10,400	2,510	8,580	825
3	2,600	3,420	2,510	1,470	1,730	2,180	2,020	1,870	11,500	2,510	6,240	825
4	2,500	3,420	2,680	1,660	1,730	2,020	1,870	1,870	14,700	2,510	5,070	825
5	3,220	3,420	2,510	1,870	1,660	1,870	1,870	1,870	15,300	2,180	3,630	865
6	3,220	3,420	2,510	1,870	1,730	1,660	2,180	1,730	15,900	2,020	2,340	907
7	4,080	3,420	2,510	1,940	1,730	1,730	2,180	2,020	15,900	2,020	2,020	950
8	4,320	3,420	2,510	2,020	1,870	1,800	2,180	2,850	15,900	1,800	1,730	907
9	4,320	3,420	2,510	2,180	1,940	1,800	2,340	3,220	15,900	1,660	1,730	865
10	4,320	3,420	2,510	2,180	1,800	1,800	2,340	3,220	19,600	1,470	1,800	865
11	4,560	3,420	2,510	2,180	1,800	1,800	2,340	3,030	18,300	1,300	1,800	865
12	4,810	3,630	2,510	2,180	1,730	1,800	2,180	2,680	14,700	1,190	1,800	907
13	5,620	3,630	2,340	2,180	1,730	1,800	2,020	2,510	13,600	1,090	1,540	907
14	5,070	3,630	2,340	2,180	1,660	1,870	2,020	2,680	12,500	907	1,540	907
15	5,070	3,850	1,870	2,180	1,600	2,020	2,020	3,030	10,900	825	1,600	907
16	4,560	3,630	2,180	2,180	1,730	2,180	2,020	3,220	9,490	750	1,730	907
17	4,560	3,420	2,180	2,180	1,800	2,020	2,180	13,100	9,490	682	1,730	907
18	4,320	3,420	2,020	2,020	1,800	1,940	2,020	13,100	8,580	590	1,660	950
19	4,080	3,220	1,940	2,180	1,940	2,020	1,870	12,000	8,580	620	1,470	995
20	3,850	3,220	1,870	2,180	1,870	2,020	1,730	10,900	7,720	485	1,600	2,020
21	3,630	3,220	1,730	2,180	1,870	2,180	1,660	9,490	6,580	485	2,020	2,510
22	3,630	3,030	1,600	2,180	1,870	2,180	1,800	6,240	5,340	485	2,180	1,800
23	3,850	3,030	1,600	2,100	1,800	2,180	1,800	6,240	4,080	440	2,020	1,940
24	3,850	3,030	1,600	2,020	1,940	2,020	1,800	5,340	4,080	535	1,800	1,940
25	3,630	2,850	1,540	1,800	1,940	2,020	1,660	5,340	3,850	650	1,350	1,870
26	3,630	3,220	1,540	1,660	1,870	2,020	1,600	4,810	3,480	785	1,350	2,020
27	3,630	2,850	1,540	1,660	1,870	1,600	1,660	5,070	3,220	907	1,410	1,870
28	3,630	2,680	1,540	1,730	1,730	1,350	1,600	14,200	3,030	950	1,350	1,870
29	3,630	2,680	1,540	1,660	-------	1,410	1,350	13,600	2,850	950	1,240	1,870
30	3,420	2,680	1,470	1,730	-------	1,600	1,240	10,400	2,680	995	1,140	2,340
31	3,420	-------	1,410	1,730	-------	1,940	-------	9,490	--------	1,190	907	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	5,620	2,500	3,890	239,000
November	3,850	2,680	3,300	196,000
December	2,680	1,410	2,070	127,000
January	2,180	1,410	1,940	119,000
February	1,940	1,600	1,800	100,000
March	2,180	1,350	1,900	117,000
April	2,340	1,240	1,920	114,000
May	14,200	1,240	5,730	352,000
June	19,600	2,680	9,890	588,000
July	2,680	440	1,230	75,600
August	8,580	907	2,240	138,000
September	2,510	785	1,300	77,400
The year	19,600	440	3,100	2,240,000

DRY CREEK NEAR BURRIS, WYO.

LOCATION.—Water-stage recorder in SW. ¼ sec. 12, T. 4 N., R. 5 W., above head of Dry Creek Ditch and 2 miles south of Burris.
DRAINAGE AREA.—57 square miles (revised).
RECORDS AVAILABLE.—May, 1921, to September, 1931.
EXTREMES.—Maximum discharge during year, 400 second-feet June 8 (gage height, 2.31 feet); minimum occurred during winter.
1921–1931: Maximum discharge, 1,100 second-feet June 12, 1921 (gage height, 3.9 feet); minimum, 2 second-feet Feb. 23, 1921.
REMARKS.—Records good. No records Dec. 1 to Mar. 31. Dry Creek Ditch diverts water for irrigation above station. Gage-height record furnished by United States Indian Service.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	22	20		9	296	102	139	23
2	27	20		11	303	88	111	23
3	34	20	5	11	282	82	88	22
4	32	19		13	275	74	76	22
5	31	18		32	237	65	67	22
6	30	18		34	275	58	63	22
7	31	16		49	314	52	60	22
8	46	17	7	31	314	46	59	22
9	62	16		27	269	43	52	20
10	63	15		22	217	43	48	19
11	59	14		24	201	43	44	18
12	53	15	10	36	177	42	41	17
13	44	15		72	160	41	42	17
14	42	14	9	139	196	42	42	16
15	41		9	228	228	45	46	16
16	40		7	257	251	47	52	15
17	35	10	7	263	231	48	55	14
18	35		9	163	160	47	54	14
19	35		10	91	134	47	48	13
20	34		9	60	122	47	46	14
21	32		8	52	134	47	43	14
22	31		8	46	118	46	40	14
23	28	9	8	82	122	45	39	15
24	27		8	165	132	47	38	15
25	27		8	242	126	49	37	15
26	27		8	228	137	53	34	14
27	26		8	194	165	54	31	14
28	24	11	8	156	160	57	28	14
29	22		8	147	143	132	27	14
30	21		8	167	126	143	25	13
31	20			231		167	24	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	63	20	34.9	2,150
November	20		13.2	786
April			7.7	458
May	263	9	106	6,520
June	314	118	200	11,900
July	167	41	62.6	3,850
August	139	24	51.6	3,170
September	23	13	17.1	1,020

WILLOW CREEK NEAR CROWHEART, WYO.

LOCATION.—Water-stage recorder in SW. ¼ sec. 20, T. 3 N., R. 4 W., 2 miles southwest of Crowheart.

RECORDS AVAILABLE.—May to October, 1909; May, 1921, to June, 1923; April, 1925, to September, 1931.

EXTREMES.—Maximum discharge during year, 411 second-feet June 1 (gage height, 2.83 feet); minimum occurred during winter.

1921–1923, 1925–1931: Maximum discharge, 750 second-feet July 26, 1923; minimum occurred during winter.

REMARKS.—Records good. No records Dec. 1 to Mar. 31. Small diversion for irrigation above station. Gage-height record furnished by United States Indian Service.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	16	13		9	278	20	12	6
2	23	14		10	242	19	10	6
3	19	13	4	9	236	18	9	6
4	17	12		9	189	18	8	6
5	17	12		9	148	17	8	6
6	17	12		9	186	17	8	6
7	19	12		9	206	16	8	6
8	22	12	6	9	181	16	8	6
9	23	12		10	122	15	7	6
10	23	12		9	99	14	7	6
11	23	12	8	9	103	14	7	6
12	21	12	8	9	78	14	7	6
13	20	12	8	14	86	12	7	6
14	20	12	8	109	109	10	7	6
15	20	10	8	192	96	9	7	6
16	15		8	262	90	9	6	6
17	16		8	275	67	9	6	6
18	17		8	150	45	9	7	6
19	16		8	110	44	9	7	6
20	16		8	90	41	9	6	7
21	16	8	8	70	42	9	6	6
22	16		9	100	36	8	6	7
23	16		9	150	35	8	7	7
24	16		8	184	34	8	7	7
25	16		8	208	31	8	6	7
26	17		8	168	33	8	6	7
27	16		8	124	33	8	6	7
28	14	9	8	83	28	8	6	7
29	13		8	59	25	14	6	7
30	13		8	62	22	13	6	7
31	13	------	------	153	------	13	6	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	23	13	17.6	1,080
November	14	----------	10.2	607
April	9	----------	7.1	422
May	275	9	86.2	5,300
June	278	22	98.8	5,880
July	20	8	12.2	750
August	12	6	7.1	437
September	7	6	6.3	375

BULL LAKE CREEK NEAR LENORE, WYO.

LOCATION.—Water-stage recorder in sec. 17, T. 3 N., R. 2 W., 14 miles southeast of Lenore and a quarter of a mile above mouth.

DRAINAGE AREA.—222 square miles (revised).

RECORDS AVAILABLE.—May, 1918, to September, 1931.

EXTREMES.—Maximum discharge during year, 1,260 second-feet June 8 (gage height, 5.80 feet); minimum, 9 second-feet Mar. 23, 30 (gage height, 3.18 feet).

1918–1931: Maximum discharge, 3,990 second-feet June 16, 1918 (gage height, 4.3 feet, old datum); minimum, that of Mar. 23, 30, 1931.

REMARKS.—Records good except those for period Nov. 19 to May 5, which were based on scattering gage heights and temperature records. Flow naturally regulated by Bull Lake Creek. Minor diversion for irrigation above station. Gage-height record furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	112	90	42	------	------	------	------	30	757	672	688	236
2	110	88	------	------	12	12	------	36	869	594	601	232
3	160	85	------	------	------	------	------	42	988	515	528	220
4	164	80	------	------	------	------	------	48	1,060	467	461	220
5	154	78	------	------	------	------	------	46	1,010	438	422	228
6	144	76	------	------	------	------	10	96	953	385	406	228
7	140	73	------	------	------	------	------	121	1,020	360	390	228
8	140	71	35	------	------	------	------	124	1,160	332	370	240
9	213	66	------	------	12	11	------	121	1,200	318	360	248
10	256	66	------	------	------	------	------	110	1,100	314	350	236
11	264	64	------	------	------	------	------	96	970	310	341	224
12	269	61	------	------	------	------	------	88	885	314	341	199
13	252	61	------	------	------	------	12	93	773	314	332	174
14	236	55	------	------	------	------	------	147	718	318	350	147
15	202	53	32	------	------	------	------	256	749	346	360	134
16	182	73	------	------	11	10	------	438	845	365	390	128
17	157	48	------	------	------	------	------	643	928	411	406	121
18	154	57	------	------	------	------	------	665	894	428	428	121
19	137	}	------	------	------	------	------	534	765	433	416	110
20	134		------	------	------	------	12	422	650	444	385	115
21	131	} 52	------	------	------	------	------	332	587	444	375	112
22	121		------	------	------	------	------	260	560	438	365	110
23	118		------	------	12	9	------	228	548	422	365	104
24	115		------	------	------	------	------	248	541	416	370	104
25	112	}	------	------	------	------	------	365	560	428	355	96
26	115	}	------	10	------	------	------	528	567	450	341	85
27	110		------	------	------	------	27	636	608	479	300	83
28	104	48	------	------	------	------	------	702	695	497	282	80
29	101		------	------	------	------	------	718	757	554	264	78
30	93	}	------	------	------	9	------	672	741	702	248	73
31	93	------	------	------	------	------	------	680	------	718	240	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	269	93	155	9,530
November	90	----------	61.6	3,670
December	----------	----------	*28.0	1,720
January	----------	----------	*11.0	676
February	----------	----------	*12.0	666
March	----------	----------	*10.0	615
April	----------	----------	*16.0	952
May	718	30	307	18,900
June	1,200	541	815	48,500
July	718	310	440	27,100
August	688	240	382	23,500
September	248	73	157	9,340
The year	1,200	----------	200	145,000

* Estimated.

LITTLE WIND RIVER NEAR FORT WASHAKIE, WYO.

LOCATION.—Water-stage recorder in SE. ¼ sec. 1, T. 1 S., R. 2 W., above Ray Ditch and 6 miles above mouth of North Fork at Fort Washakie.

DRAINAGE AREA.—118 square miles (revised).

RECORDS AVAILABLE.—May, 1921, to September, 1931.

EXTREMES.—Maximum discharge during year, 785 second-feet June 8 (gage height, 3.94 feet); minimum occurred during winter.

1921–1931: Maximum discharge, 5,220 second-feet July 9, 1926 (gage height, 7.59 feet); minimum occurred during winter.

REMARKS.—Records good except those for periods Oct. 26–31, Nov. 16–30, Mar. 1–8, Apr. 12–14, May 17–22, Aug. 16–23, Sept. 20–26, which were estimated. No records for period Dec. 1 to Feb. 28. Water diverted for irrigation above station. Gage-height record furnished by United States Indian Service.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	47	37		11	57	416	154	89	29
2	65	44		10	70	476	135	81	27
3	79	38		10	90	529	121	71	26
4	81	37		10	78	588	114	66	25
5	81	35	8.0	10	106	492	106	59	24
6	76	37		11	95	488	97	58	24
7	109	32		13	152	583	92	57	24
8	162	30		20	99	642	83	52	23
9	146	31	8.6	22	72	504	78	48	22
10	128	32	8.6	20	53	396	74	45	21
11	133	27	8.8	24	43	400	70	41	20
12	118	33	9.4	25	75	365	67	37	20
13	104	27	9.2	26	169	340	63	36	20
14	96	29	9.0	27	267	376	61	37	20
15	89	20	9.0	24	354	393	63	47	19
16	78		9.4	22	456	420	63	60	18
17	72		9.6	24	480	386	61	65	18
18	75		10.0	29	320	309	62	64	18
19	68		9.8	29	160	249	63	64	18
20	66		9.6	25	95	230	62	62	18
21	63		9.4	20	85	230	62	58	24
22	61		10.0	21	80	220	58	56	26
23	58	12	9.2	16	156	208	57	54	28
24	58		9.0	18	258	208	57	54	28
25	58		8.8	18	376	202	57	50	28
26			8.8	18	348	197	58	44	28
27			8.8	21	315	204	58	88	28
28	50		12.0	25	294	195	59	36	28
29			9.4	44	306	185	67	32	27
30			9.8	52	288	171	78	32	27
31		------	10.0	------	380	------	89	31	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	162	----------	79.7	4,900
November	44	----------	22.3	1,330
March	12	----------	9.04	556
April	52	10	21.5	1,280
May	480	43	199	12,200
June	642	171	353	21,000
July	154	57	77.1	4,740
August	89	31	52.4	3,220
September	29	18	23.5	1,400

NORTH FORK OF LITTLE WIND RIVER AT FORT WASHAKIE, WYO.

LOCATION.—Water-stage recorder in SW. ¼ sec. 33, T. 1 N., R. 1 W., at Fort Washakie, a quarter of a mile above mouth.

DRAINAGE AREA.—127 square miles (revised).

RECORDS AVAILABLE.—May, 1921, to September, 1931.

EXTREMES.—Maximum discharge during year, 710 second-feet June 8 (gage height, 2.70 feet); minimum occurred during winter.

1921–1931: Maximum discharge, 2,640 second-feet July 9, 1926 (gage height, 4.85 feet); minimum, 16 second-feet Jan. 9, 1922.

REMARKS.—Records good except those for periods Oct. 26–31, Nov. 23–30, Mar. 1–8, Apr. 12–14, Aug. 15–23, Sept. 20–26, which were estimated. No records for period Dec. 1 to Feb. 28. Water diverted for irrigation above station. Gage-height record furnished by United States Indian Service.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	53	53	26	20	42	545	107	57	31
2	76	52	26	19	57	600	100	57	29
3	98	48	26	19	70	633	92	56	28
4	80	47	26	19	62	633	84	55	28
5	78	45	26	19	86	530	77	56	27
6	77	44	28	19	84	550	68	56	27
7	98	42	28	22	134	600	64	53	27
8	138	42	28	31	90	622	60	51	26
9	148	42	28	24	68	550	56	48	25
10	131	44	29	23	62	465	53	47	25
11	127	39	36	25	56	414	50	46	25
12	122	41	40	25	74	364	47	42	24
13	109	38	36	30	124	332	44	41	24
14	102	39	36	27	214	318	39	41	24
15	94	29	35	25	297	304	37	41	24
16	82	38	34	24	427	300	36	41	24
17	74	38	35	25	550	294	34	41	24
18	77	36	34	29	409	270	33	41	24
19	76	38	30	28	297	234	31	41	24
20	76	35	27	27	231	208	31	42	24
21	72	36	24	24	189	186	30	46	28
22	70	36	22	25	158	168	30	45	30
23	68	}	21	24	181	152	30	44	36
24	71	} 36	20	26	256	145	30	44	34
25	68	}	20	27	368	138	30	41	33
26	64	}	20	28	422	129	30	37	32
27	60	}	20	27	418	124	30	36	31
28	58	} 38	20	29	388	120	29	35	30
29	56	}	20	42	392	118	31	34	30
30	55	}	20	39	384	115	38	34	29
31	55		20	------	465	------	53	32	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	148	53	84.3	5,180
November	53	29	40.0	2,380
March	40	20	27.1	1,670
April	42	19	25.7	1,530
May	550	42	228	14,000
June	633	115	339	20,200
July	107	29	48.5	2,980
August	57	32	44.5	2,740
September	36	24	27.6	1,640

SOUTH FORK OF OWL CREEK NEAR THERMOPOLIS, WYO.

LOCATION.—Chain gage in sec. 34, T. 9 N., R. 2 E., 26 miles northwest of Thermopolis and 200 feet below Red Creek (revised).

DRAINAGE AREA.—191 square miles (revised).

RECORDS AVAILABLE.—July, 1921, to September, 1922; May, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 301 second-feet June 7 (gage height, 3.60 feet); no flow July 17, 21, 24.

1921–22, 1929–1931: Maximum discharge, 480 second-feet Aug. 15, 1930 (gage height, 3.90 feet); minimum, that of July 17, 21, 24, 1931.

REMARKS.—Records fair. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	31			13	7	126	193	28	24	12
2	31	36			14	10	129	195	27	23	12
3	38	37			12	11	123	203	25	21	10
4	38	38			14	10	107	193	26	19	10
5	44	38			15	10	83	211	26	20	8
6	41	36			15	7	64	272	24	20	8
7	36	38			19	8	80	279	23	22	8
8	31	39			25	7	119	211	19	20	8
9	27	40			37	8	116	193	9	20	8
10	33	38			38	8	87	158	8	20	7
11	38	35			38	8	36	130	7	22	7
12	39	31		12	32	8	31	113	4	23	7
13	33	27			24	9	179	107	4	24	7
14	38	25			17	10	234	139	2	20	8
15	38	26			12	10	262	144	2	20	8
16	35	27			10	12	219	89	1	20	8
17	33	28			7	10	185	65	0	21	8
18	32	29			7	8	148	58	1	19	9
19	27	29	7		8	9	70	56	1	21	10
20	29	25			8	12	23	53	1	21	10
21	25	28			10	12	26	59	0	20	10
22	26	25			12	10	35	75	1	20	11
23	28	26			10	12	55	68	1	19	11
24	32	28			8	12	83	53	0	18	12
25	34	26			7	12	136	45	1	19	14
26	32	28			8	16	142	43	1	20	15
27	33	29			8	28	122	40	1	19	15
28	31	25			8	38	112	35	4	20	10
29	26	26			7	48	99	33	8	20	7
30	26	25			8	81	117	28	37	18	4
31	29				8		151		31	17	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	44	12	32.1	1,970
November	40	25	30.6	1,820
December			a 15	922
January			a 10	615
February			a 12	666
March	38	7	14.8	910
April	81	7	15.0	893
May	262	23	113	6,950
June	279	28	118	7,020
July	37	0	10.4	640
August	24	17	20.3	1,250
September	15	4	9.4	559
The year	279	0	33.4	24,200

a Estimated.

NORTH FORK OF OWL CREEK NEAR THERMOPOLIS, WYO.

LOCATION.—Chain gage in sec. 34, T. 44 N., R. 98 W., 25 miles northwest of Thermopolis and 1 mile above junction with South Fork.

DRAINAGE AREA.—100 square miles (revised).

RECORDS AVAILABLE.—April, 1930, to September, 1931.

EXTREMES.—Maximum discharge during year, 600 second-feet May 15 (gage height, 4.60 feet); no flow for part of March, April, June, July, August, September.

1930–31: Maximum discharge, 3,380 second-feet Aug. 15, 1930 (gage height, 8.65 feet).

REMARKS.—Records fair. No records for period of ice effect, Dec. 1 to Mar. 29. Several small diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3	18	------	0	7	179	0	6	2
2	84	16	------	1	34	212	0	6	1
3	72	16	------	2	54	215	0	2	1
4	38	14	------	6	74	190	0	1	0
5	28	20	------	13	90	175	0	1	0
6	25	25	------	40	41	188	0	0	0
7	34	24	------	53	192	36	0	3	0
8	37	26	------	56	66	53	0	1	0
9	42	22	------	9	29	70	0	1	0
10	47	20	------	11	16	75	0	1	0
11	84	15	------	11	10	75	0	1	0
12	69	16	------	14	16	43	0	1	0
13	56	16	------	13	37	37	0	1	0
14	45	15	------	8	315	21	0	75	0
15	38	13	------	5	405	43	0	1	0
16	26	13	------	2	414	20	0	2	0
17	28	13	------	1	251	12	0	1	0
18	29	12	------	2	49	7	0	0	0
19	30	12	------	2	23	2	0	2	0
20	24	12	------	1	17	1	0	1	0
21	23	11	------	1	15	0	0	0	0
22	24	11	------	0	12	0	0	0	0
23	25	11	------	1	37	0	0	0	0
24	23	10	------	0	46	1	0	1	11
25	22	10	------	0	45	1	0	1	4
26	23	9	------	0	46	1	0	0	3
27	28	8	------	0	75	0	0	0	2
28	28	8	------	0	70	0	0	0	1
29	18	7	------	0	78	0	63	0	0
30	16	7	0	31	81	0	31	0	0
31	16	------	0	------	119	------	54	33	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	84	3	35.0	2,150
November	26	7	14.3	851
April	56	0	9.4	559
May	414	7	89.2	5,480
June	215	0	55.2	3,280
July	63	0	4.8	295
August	75	0	4.6	283
September	11	0	.8	48

GREYBULL RIVER AT MEETEETSE, WYO.

LOCATION.—Water-stage recorder in sec. 4, T. 48 N., R. 100 W., at Meeteetse. Zero of gage is 5,718.63 feet above mean sea level.

DRAINAGE AREA.—690 square miles.

RECORDS AVAILABLE.—June to September, 1897; April to October, 1903; July, 1920, to September, 1931.

EXTREMES.—Maximum discharge during year, 5,030 second-feet June 7 (gage height, 7.14 feet); minimum, 11 second-feet Mar. 26 (gage height, 3.42 feet). 1897, 1903, 1920–1931: Maximum discharge, 7,320 second-feet Aug. 14, 1930 (gage height, 8.2 feet); minimum, that of Mar. 26, 1931.

REMARKS.—Records good except those for periods of ice effect, Nov. 21–30, Dec. 15 to Mar. 21, which were estimated. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	209	253	209			123	490	2,700	360	768	187
2	253	245	209			129	500	2,370	300	472	168
3	742	222	196			117	577	3,280	306	400	163
4	406	230	177			141	830	3,110	318	360	163
5	376	216	180			196	1,110	3,210	294	354	163
6	366	209	184		70	468	1,050	3,450	300	336	183
7	366	203	170			670	2,030	3,580	272	324	183
8	437	209	184			416	1,290	2,400	250	300	168
9	479	196	170			310	874	2,260	255	289	168
10	694	222	152			338	682	1,970	244	272	168
11	588	203	158			406	588	1,970	250	244	149
12	577	209	135			338	1,050	1,740	223	234	140
13	479	222	152			300	2,530	1,760	234	261	124
14	426	190	146			284	3,300	2,200	218	266	124
15	406	112				277	3,350	2,620	218	283	119
16	338	184			90	284	2,150	2,660	202	250	124
17	319	203	120	68		328	2,100	1,720	192	234	128
18	338	164				328	972	1,190	187	244	132
19	328	146				209	646	1,030	192	244	163
20	310	170				171	479	914	182	213	183
21	300					117	357	1,150	173	208	168
22	300				123	123	319	823	178	223	182
23	277		100		72	117	855	809	187	223	218
24	292				72	112	1,730	792	197	208	250
25	292				76	112	2,270	644	255	192	197
26	292	200			34	96	1,910	809	278	187	192
27	310				72	112	1,640	836	250	182	182
28	261				152	92	1,090	691	289	187	168
29	245		85		171	222	914	540	380	178	168
30	253				129	426	1,070	434	882	183	168
31	253				129		2,150		946	250	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	742	209	371	22,800
November	253	212	200	11,900
December	209		134	8,240
January			70	4,300
February			70	3,890
March	171	34	80.6	4,960
April	670	92	245	14,600
May	3,350	319	1,320	81,200
June	3,580	434	1,790	107,000
July	946	173	291	17,900
August	768	178	276	17,000
September	250	119	166	9,880
The year	3,580		419	304,000

GREYBULL RIVER NEAR BASIN, WYO.

LOCATION.—Chain gage in sec. 17, T. 51 N., R. 94 W., at highway bridge 8 miles west of Basin.

DRAINAGE AREA.—1,130 square miles.

RECORDS AVAILABLE.—April, 1930, to September, 1931.

EXTREMES.—Maximum discharge during year, 3,120 second-feet June 8 (gage height, 6.4 feet); no flow several days during July.

1930–31: Maximum and minimum discharge same as above.

REMARKS.—Records good. No records for period of ice effect, Dec. 1 to Mar. 14. Numerous diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	110	211	-------	124	166	1,900	4	83	2
2	108	205	-------	119	196	2,280	0	16	5
3	158	199	-------	108	141	2,280	0	16	2
4	244	190	-------	120	110	2,720	0	15	2
5	797	188	-------	126	305	1,880	0	82	1
6	275	180	-------	134	455	2,720	31	60	2
7	211	173	-------	158	634	2,800	35	18	2
8	214	176	-------	176	518	2,900	23	6	2
9	183	168	-------	190	316	1,580	4	2	2
10	790	164	-------	217	183	1,300	15	2	3
11	859	162	-------	224	244	1,360	12	2	3
12	680	164	-------	244	589	1,170	13	6	2
13	407	158	-------	240	831	922	7	3	2
14	377	156	-------	176	1,040	1,090	12	3	2
15	338	153	190	137	1,360	1,010	6	12	2
16	321	156	193	105	2,000	936	2	17	2
17	316	160	196	48	1,640	887	14	7	2
18	300	160	202	23	866	667	0	2	2
19	280	164	208	10	285	511	0	2	2
20	248	176	205	6	193	413	2	5	7
21	240	168	202	1	164	220	4	2	84
22	244	168	196	6	285	196	9	2	171
23	232	173	185	33	1,020	149	5	2	126
24	236	173	188	7	1,530	178	12	3	52
25	240	168	183	3	1,480	105	43	4	20
26	236	173	168	2	985	89	4	2	7
27	244	180	80	8	2,120	105	6	2	2
28	240	178	100	2	873	78	12	4	2
29	236	183	110	3	582	66	43	5	2
30	224	190	113	12	570	8	35	4	1
31	211	-------	120	-------	634	-------	42	2	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	859	108	316	19,400
November	211	153	174	10,400
March 15–31	208	80	167	5,630
April	244	1	92.1	5,480
May	2,120	110	720	44,300
June	2,900	8	1,080	64,300
July	43	0	12.7	781
August	83	2	12.6	775
September	171	1	17.2	1,020

WOOD RIVER NEAR MEETEETSE, WYO.

LOCATION.—Chain gage in sec. 27, T. 48 N., R. 101 W., 7 miles southwest of Meeteetse and 1,200 feet above mouth.

DRAINAGE AREA.—218 square miles.

RECORDS AVAILABLE.—September, 1910, to October, 1912; May, 1915, to September, 1917; April, 1930, to September, 1931.

EXTREMES.—Maximum discharge during year, 633 second-feet June 7 (gage height, 3.3 feet); minimum, 27 second-feet Mar. 26, 29, 1931.

1910–1912, 1915–16, 1930–31: Maximum discharge (estimated), 1,700 second-feet June 8, 1912; minimum, that of Mar. 26, 29, 1931.

REMARKS.—Records fair. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	90	85		50	55	148	394	92	209	96
2	96	90		55	62	155	453	85	224	83
3	122	79		57	66	144	449	74	230	78
4	109	83		54	70	267	469	70	222	74
5	96	78		57	65	307	293	65	213	83
6	98	83	[a] 60	74	70	277	465	72	215	74
7	100	78		58	148	380	577	87	204	72
8	115	76		46	102	255	293	85	160	71
9	119	72		46	79	233	277	107	130	74
10	126	76		49	74	183	255	96	134	78
11	126	74		92	83	168	219	103	126	66
12	109	76		62	88	222	213	96	124	62
13	126	76		96	87	394	199	96	107	62
14	109	71		102	83	433	204	94	126	60
15	87	54	[a] 50	49	68	557	321	88	130	54
16	87	55		48	65	541	264	68	115	64
17	79	60		55	70	501	293	60	119	55
18	100	67		62	66	284	261	58	122	52
19	96	70		72	60	202	277	57	134	65
20	94	72	48	53	57	185	252	60	119	72
21	92	70	49	51	38	178	213	65	117	62
22	87	72	53	46	44	158	196	55	119	71
23	85	[a] 70	52	45	44	196	170	78	126	55
24	81	[a] 68	49	35	49	310	216	74	109	92
25	96	65	46	30	41	405	158	105	111	83
26	98	68	47	28	37	346	158	105	85	83
27	98	72	44	30	43	421	170	107	81	59
28	83	70		34	64	188	165	102	83	62
29	78	67	[a] 40	30	72	239	153	210	85	87
30	74	72		52	134	222	111	304	78	83
31	87	------		58	------	465	------	233	96	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	126	74	98.2	6,040
November	90	54	72.3	4,300
December	----------	----------	51.5	3,170
January	----------	----------	[a] 35	2,150
February	----------	----------	[a] 35	1,940
March	102	28	54.1	3,330
April	148	37	69.5	4,140
May	557	144	289.	17,800
June	577	111	272	16,200
July	304	55	98.4	6,050
August	230	78	137	8,420
September	95	52	71.1	4,230
The year	577	----------	107	77,800

[a] Estimated.

BENCH CANAL NEAR BURLINGTON, WYO.

LOCATION.—Staff gage in sec. 8, T. 51 N., R. 97 W., 200 yards below head gate and 7 miles southwest of Burlington. Prior to May 24, 1931, staff gage at site 2 miles upstream was used.

RECORDS AVAILABLE.—April, 1930, to September, 1931.

EXTREMES.—Maximum discharge during year, 218 second-feet July 31 (gage height, 1.64 feet); no flow during winter.

1930–31: Maximum discharge, that of July 31, 1931.

REMARKS.—Records fair. Complete regulation at head gate. Gage-height record furnished by Bench Canal Co. Canal diverts water from Greybull River for irrigation of 10,000 to 15,000 acres around Burlington.

Daily and monthly discharge, in second-feet, 1930–31

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1			87	97	213		16		70	174	16		
2			90	96	190		17		47	187	7		
3			64	97	16		18		63	188	10	60	
4		60	47	104	16		19		40	199	33		
5			45	44	16		20	25	39	202	19		
6			47	16	59		21		42	159	0		
7		62	50	66	19		22		48	176	0		
8		63	48	8	45		23		55	174	0	70	
9		47	47	8	89		24	23	86	174	0		
10		46	50	33	75		25		160	185	0		
11		49	106	19	20		26		157	187	0		
12		61	118	0	19		27	40	69	188	58		
13		43	117	0	20		28		76	146	7	70	
14	25	55	118	0	31		29		78	173	58		
15		53	170	16	58	[a] 23	30		76	160	215		
							31		86		215		

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 13–30			30.0	1,070
May	160	39	65.2	4,010
June	202	45	129	7,680
July	215	0	40.1	2,470
August	213	16	63.1	3,880
The period				19,100

[a] Discharge measurement.

SHOSHONE RIVER BELOW SHOSHONE RESERVOIR, WYO.

LOCATION.—Water-stage recorder in lot 76, T. 52 N., R. 102 W., about 4½ miles west of Cody.

DRAINAGE AREA.—1,470 square miles.

RECORDS AVAILABLE.—January, 1921, to September, 1931.

REMARKS.—No diversions between station and Shoshone Dam. Flow completely regulated by storage in Shoshone Reservoir; capacity, 456,000 acre-feet. Complete records furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,000	701	1,070	419	284	164	86	568	1,290	1,980	1,120	600
2	981	811	1,060	414	288	84	86	531	1,340	1,830	1,060	694
3	975	811	1,060	370	288	84	86	219	1,580	1,760	1,040	922
4	975	800	1,060	327	288	84	88	442	1,580	1,710	1,030	934
5	956	794	981	353	288	84	116	688	1,660	1,680	1,070	871
6	962	794	907	383	292	84	250	660	2,230	1,630	1,050	774
7	968	1,010	835	353	288	84	353	649	3,940	1,580	1,010	739
8	1,000	1,000	765	340	276	84	250	716	5,720	1,540	915	716
9	1,020	1,040	695	348	284	84	300	751	6,370	1,490	884	649
10	1,040	1,230	622	340	288	86	307	774	5,820	1,450	896	606
11	1,050	1,340	724	340	288	84	303	774	5,500	1,400	877	574
12	1,060	1,320	724	340	284	86	307	623	5,100	1,360	915	568
13	1,060	1,290	724	340	288	86	357	666	4,570	1,320	947	542
14	1,070	1,260	724	327	288	86	344	967	4,560	1,280	890	552
15	1,060	1,230	724	311	284	80	344	1,070	4,680	1,260	768	558
16	1,060	1,180	724	319	296	82	300	1,180	5,000	1,210	733	585
17	877	1,170	724	319	296	82	383	1,220	5,000	1,190	804	590
18	633	1,150	724	307	296	84	480	1,180	4,190	1,150	853	595
19	600	1,130	724	319	296	82	490	1,190	3,640	1,120	859	590
20	645	1,120	724	311	284	82	495	1,110	3,140	1,160	922	558
21	678	1,100	724	319	269	80	500	1,070	2,940	1,160	934	574
22	684	1,100	724	315	262	73	506	1,130	2,830	1,190	934	537
23	684	1,080	724	311	269	80	506	1,160	2,730	1,190	922	433
24	684	1,080	507	296	265	80	500	1,250	2,630	1,320	928	451
25	684	1,070	502	284	265	88	500	1,240	2,530	1,450	896	423
26	678	1,060	497	292	265	90	495	1,210	2,430	1,380	890	370
27	678	1,060	486	296	265	84	516	1,300	2,410	1,350	739	834
28	673	1,060	460	296	265	80	542	1,360	2,330	1,320	194	1,320
29	667	1,060	449	288	-------	75	547	1,400	2,280	1,290	194	666
30	667	1,060	439	288	-------	80	568	1,430	2,140	1,230	206	273
31	667	-------	423	284	-------	80	-------	1,450	-------	1,160	374	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,070	600	853	52,400
November	1,340	701	1,060	63,100
December	1,070	423	717	44,100
January	419	284	327	20,100
February	296	262	282	15,700
March	164	73	85.4	5,250
April	568	86	364	21,700
May	1,450	219	967	59,500
June	6,370	1,290	3,410	203,000
July	1,980	1,120	1,390	85,500
August	1,120	194	834	51,300
September	1,320	273	637	37,900
The year	6,370	73	911	660,000

SHOSHONE RIVER AT BYRON, WYO.

LOCATION.—Chain gage in sec. 34, T. 56 N., R. 97 W., at Byron.
DRAINAGE AREA.—2,300 square miles.
RECORDS AVAILABLE.—January, 1929, to September, 1931.
EXTREMES.—Maximum discharge during year, 6,190 second-feet June 9 (gage height, 5.6 feet); minimum, 38 second-feet Mar. 16 (gage height, 0.70 foot). 1929–1931: Maximum discharge, 6,920 second-feet June 12, 1930 (gage height, 5.9 feet); minimum, that of Mar. 16, 1931.
REMARKS.—Records good except those for periods of ice effect, Nov. 18 to Jan. 25, Mar. 25–29, which were based on one discharge measurement and temperature records. Water diverted for irrigation above station. Flow regulated by Shoshone Reservoir.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	970	715			323	233	125	85	729	902	443	114
2	930	766			334	187	144	89	722	830	376	122
3	980	701			349	173	144	91	1,130	743	365	130
4	1,110	687			354	125	139	85	1,710	758	318	128
5	1,130	687			354	130	125	99	1,820	743	284	274
6	1,130	701	660		344	142	65	112	2,520	673	386	242
7	1,090	701			349	147	256	122	3,650	617	431	251
8	1,090	687		480	354	147	153	112	4,780	521	420	233
9	1,080	708			354	142	118	104	6,160	552	365	224
10	1,100	715			365	153	110	157	5,820	485	365	191
11	1,150	729			381	160	99	204	5,580	437	308	176
12	1,150	715			354	147	108	242	5,920	431	318	170
13	1,140	715			344	157	133	110	5,770	392	349	173
14	1,130	715			354	97	110	85	4,780	284	381	170
15	1,130	729		475	354	57	102	110	4,550	298	344	163
16	1,080	715	540		334	38	81	83	4,620	251	308	150
17	1,150	701			334	112	66	242	4,550	274	284	139
18	1,090				344	68	60	83	3,910	208	246	150
19	1,050	670			344	47	60	479	3,080	204	238	144
20	940				354	47	81	398	1,920	160	220	814
21	798			425	344	47	97	354	2,270	166	246	334
22	743				334	51	128	376	2,190	176	260	328
23	701				344	46	180	308	1,940	170	238	479
24	708				339	72	208	328	1,760	212	246	408
25	701				349	80	224	467	1,590	360	228	414
26	687	650	500	354	334	80	208	365	1,560	455	246	349
27	694			334	294	80	163	425	1,610	408	743	376
28	701			344	256	90	59	970	1,510	414	376	1,000
29	687			334	-------	200	48	798	1,180	370	116	673
30	687			344	-------	150	72	758	1,060	376	125	260
31	687	-------		334	-------	133	-------	694	-------	398	122	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,150	687	949	58,400
November	766	----------	687	40,900
December	----------	----------	565	34,700
January	----------	334	435	26,700
February	381	256	342	19,000
March	233	38	114	7,010
April	256	48	122	7,260
May	970	83	288	17,700
June	6,160	722	3,010	179,000
July	902	160	428	26,300
August	743	116	313	19,200
September	1,000	114	293	17,400
The year	6,160	38	627	454,000

LITTLE HORN RIVER NEAR CROW AGENCY, MONT.

LOCATION.—Chain gage in NE. ¼ sec. 13, T. 3 S., R. 34 E., at Chicago, Burlington & Quincy Railroad bridge 2 miles south of Crow Agency.

DRAINAGE AREA.—1,190 square miles.

RECORDS AVAILABLE.—September, 1911, to September, 1924; August, 1928, to September, 1931. March, 1905, to June, 1906, at Crow Agency, about 2 miles below present site. Crow Agency Ditch diverts water between two locations.

EXTREMES.—Maximum discharge during year, 713 second-feet June 5, 7 (gage height, 5.74 feet); minimum, 5.4 second-feet Sept. 8–11 (gage height, 3.42 feet).

1905–6, 1912–1924, 1928–1931: Maximum discharge, 8,200 second-feet July 23, 1923 (gage height, 14.0 feet); no flow July 28 to Aug. 6, 1921.

REMARKS.—Records good except those for period of ice effect, Dec. 15 to Mar. 1 and those estimated Apr. 18–20, May 21–29. No records Apr. 1–16. Several diversions above station. Some regulation caused by head-gate operations.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	108	136	133			122	-------	157	343	71	92	17
2	115	136	136			122	-------	166	503	71	92	17
3	126	140	129			119	-------	201	653	71	54	14
4	161	133	133			115	-------	272	713	71	64	13
5	157	136	140			126	-------	343	623	74	54	13
6	161	136	144	116	144	122	-------	476	683	71	34	11
7	157	136	136			119	-------	448	713	71	32	11
8	157	136	140			122	-------	448	683	71	30	5.4
9	155	136	133			133	-------	420	623	69	28	5.4
10	157	133	133			126	-------	320	533	66	17	5.4
11	157	133	126			136	-------	272	503	64	17	5.4
12	157	133	129			126	-------	220	503	61	17	6.8
13	166	136	122			122	-------	249	420	56	26	8.2
14	157	136	126			133	-------	297	393	54	28	11
15	157	136		109	131	157	-------	448	393	47	26	11
16	157	136				122	-------	533	420	45	45	11
17	161	136				133	185	503	393	42	40	9.6
18	155	136				144	178	503	207	36	26	9.6
19	155	136				136	171	563	194	32	34	11
20	157	140				157	164	593	183	30	32	17
21	157	140				161	157		166	28	34	71
22	155	136				126	140		148	28	32	77
23	155	140	121			112	144		102	40	30	77
24	155	140				99	148		126	21	26	77
25	155	144			125	89	153	480	122	17	23	126
26	155	136		128		119	161		122	16	21	126
27	148	136				161	166		115	13	17	122
28	148	133				74	157		112	13	11	115
29	144	133			-------	80	153		108	66	13	102
30	136	136			-------	77	140	368	105	66	14	77
31	140	-------			-------	74	-------	368	-------	86	17	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	166	108	151	9,280
November	144	133	136	8,090
December	144	----------	126	7,750
January	----------	----------	118	7,260
February	----------	----------	134	7,440
March	161	74	121	7,440
April 17–30	185	140	158	4,390
May	593	157	403	24,800
June	713	102	364	21,700
July	86	13	50.6	3,110
August	92	11	33.1	2,040
September	126	5.4	39.4	2,340

TONGUE RIVER NEAR DECKER, MONT.

LOCATION.—Chain gage in sec. 23, T. 9 S., R. 40 E., 1½ miles east of Decker and 2 miles north of Wyoming State line.
DRAINAGE AREA.—1,610 square miles.
RECORDS AVAILABLE.—April, 1928, to September, 1931.
EXTREMES.—Maximum discharge during year, 3,640 second-feet May 17 (gage height, 5.14 feet); minimum, 8 second-feet July 29 (gage height, 0.02 foot). 1928–1931: Maximum discharge, 7,220 second-feet June 2, 1929 (gage height, 8.25 feet); minimum, that of July 29, 1931.
REMARKS.—Records good except those for periods Nov. 29–30, Mar. 1–14, 27–28, which were estimated. No records for period Dec. 1 to Feb. 28. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	205	220		204	395	895	112	88	31
2	205	220		330	510	1,260	108	139	30
3	220	220	160	292	535	1,750	108	100	31
4	235	220		198	705	2,090	100	87	28
5	235	205		195	928	1,860	88	81	27
6	235	205		212	765	1,350	92	74	31
7	235	192		258	798	1,350	96	68	30
8	270	192	150	274	895	1,260	79	64	30
9	252	192		310	705	1,260	79	61	30
10	235	192		242	645	1,180	74	60	28
11	252	178		242	590	1,100	58	61	28
12	270	178		227	645	1,100	64	52	27
13	270	192	170	258	1,030	830	69	43	24
14	252	205		292	1,260	705	63	49	26
15	235	192	184	372	2,450	590	52	46	29
16	235	163	168	330	2,970	510	56	35	28
17	220	178	174	330	3,360	485	58	35	26
18	220	205	163	330	2,330	418	54	33	20
19	252	205	179	418	1,440	330	40	30	28
20	252	192	176	350	1,030	292	35	38	43
21	252	192	176	258	960	258	38	35	72
22	252	178	227	242	830	227	34	40	108
23	252	205	242	227	798	195	31	36	171
24	252	220	242	212	830	174	16	38	163
25	252	220	198	242	1,970	146	14	39	179
26	235	205	174	227	1,970	132	12	40	195
27	235	192	140	227	1,750	125	10	38	201
28	220	178	155	212	1,440	121	9	38	184
29	220	175	168	242	960	119	8	35	179
30	220	170	181	292	735	112	21	33	168
31	220	------	201	------	735	------	30	34	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	270	205	239	14,700
November	220	163	196	11,700
March	242	140	173	10,600
April	418	195	268	15,900
May	3,360	395	1,190	73,200
June	2,090	112	741	44,100
July	112	8	55.1	3,390
August	139	30	53.2	3,270
September	201	20	73.0	4,340

TONGUE RIVER NEAR MILES CITY, MONT.

LOCATION.—Staff gage in NE. ¼ SW. ¼ sec. 29, T. 6 N., R. 48 E., at Tongue and Yellowstone River Irrigation District Dam, 12 miles south of Miles City.

RECORDS AVAILABLE.—May, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 2,560 second-feet May 19 (gage height, 2.96 feet); no flow July 3–15, 18–31, Aug. 1–7, Aug. 11 to Sept. 30.

1929–1931: Maximum discharge, 5,910 second-feet June 5, 1929; maximum gage height, 5.72 feet Feb. 20, 1930; no flow at various times after July 4, 1931.

REMARKS.—Records fair except those for periods of ice effect, Nov. 18 to Mar. 13, Mar. 26–31.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
1	113	229				210	302	110	1,480	46	0
2	102	238				210	262	100	1,480	24	0
3	86	238				229	235	90	1,220	6	0
4	96	229				229	235	100	1,100	0	0
5	113	229	130	150	230	195	208	190	1,390	0	0
6	135	210				180	208	346	1,670	0	0
7	188	202				188	208	390	1,670	0	0
8	238	202				172	190	650	1,580	0	190
9	286	220				180	190	710	1,390	0	450
10	286	229				210	183	650	1,300	0	80
11	338	210				202	169	622	1,130	0	0
12	382	220				210	169	538	1,100	0	0
13	371	220				202	183	462	994	0	0
14	393	248				202	199	390	960	0	0
15	404	267	90	150	200	190	190	390	880	0	0
16	382	286				208	190	390	755	438	0
17	286	286				208	190	1,130	608	54	0
18	180	258				208	134	2,060	474	0	0
19	327	248				226	162	2,560	402	0	0
20	305	229				208	162	2,160	346	0	0
21	426	248				190	169	1,670	2,060	0	0
22	450	286				190	155	1,130	390	0	0
23	920	305				190	155	960	280	0	0
24	349	286				176	155	896	162	0	0
25	238	305			200	176	148	710	148	0	0
26	220	286	90	265		134	134	800	134	0	0
27	195	267				120	120	1,130	100	0	0
28	195	305				120	110	1,390	85	0	0
29	220	286			-------	155	105	1,580	58	0	0
30	238	267			-------	190	105	1,670	50	0	0
31	248	-------			-------	244	-------	1,580	-------	0	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	920	86	281	17,300
November	305	202	251	14,900
December	-------	-------	103	6,330
January	-------	-------	191	11,700
February	-------	-------	211	11,700
March	244	120	192	11,800
April	302	105	178	10,600
May	2,560	90	889	54,700
June	2,060	50	847	50,400
July	438	0	18.3	1,130
August	450	0	23.2	1,430
The year	2,560	0	265	192,000

NOTE.—No flow during September.

GOOSE CREEK NEAR SHERIDAN, WYO.

LOCATION.—Water-stage recorder in sec. 35, T. 55 N., R. 86 W., 14 miles southwest of Sheridan and half a mile above Cave Creek.

DRAINAGE AREA.—110 square miles.

RECORDS AVAILABLE.—September, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 756 second-feet June 3 (gage height, 3.94 feet); minimum probably occurred during winter.

1930–31: Maximum discharge, that of June 3, 1931.

REMARKS.—Records good except those for periods Dec. 21 to Feb. 17 and Mar. 11–13, which were estimated. Water diverted above station from East Fork of Goose Creek into Little Goose Creek. Flow partly regulated by storage in Dome Lake.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	26	16		6.5	11	75	418	50	51.0	10.0
2	14	27	16		6.6	10	77	566	45	32.0	9.5
3	34	25	17		6.8	10	81	716	42	22.0	9.2
4	31	25	16		7.1	12	123	740	39	17.0	8.9
5	25	25	17		7.0	12	111	510	36	16.0	8.6
6	28	23	15	6.0	7.0	14	108	502	35	22.0	8.3
7	25	22	16		7.1	17	133	541	34	22.0	8.2
8	26	24	17		7.1	23	98	440	31	21.0	8.0
9	29	22	17		7.2	17	85	527	30	20.0	7.7
10	31	23	16		7.4	17	81	450	31	20.0	7.4
11	49	20	14		7.6	19	84	432	32	19.0	7.4
12	61	24	15		7.8	26	120	340	29	17.0	7.4
13	54	24	14		8.0	46	186	233	28	20.0	7.4
14	58	14	14		8.2	61	262	220	26	18.0	7.4
15	53	12	13	6.0	8.6	49	446	206	25	13.0	7.6
16	37	20	14		8.8	51	660	259	24	11.0	7.7
17	38	19	14		8.8	66	590	199	22	9.5	7.7
18	50	17	14	6.5	9.2	69	422	126	32	8.8	7.4
19	42	17	13	6.4	10.0	41	262	107	39	10.0	7.6
20	39	17	13	6.3	9.8	25	236	86	42	13.0	11.0
21	36	22		6.2	9.5	18	206	62	38	12.0	13.0
22	35	21		6.2	11.0	18	165	51	38	12.0	11.0
23	32	22		6.2	10.0	20	206	45	36	12.0	11.0
24	33	20		6.2	9.5	18	403	42	40	11.0	18.0
25	33	20		6.3	10.0	18	541	44	38	11.0	35.0
26	39	20	8	6.4	8.2	20	548	45	38	10.0	27.0
27	36	18		6.4	10.0	20	513	43	36	9.8	16.0
28	26	17		6.4	12.0	26	355	40	32	10.0	14.0
29	28	16		------	12.0	52	206	54	32	9.8	14.0
30	28	16		------	11.0	71	182	53	45	9.5	17.0
31	30	------		------	11.0	------	245	------	52	9.8	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	61	14	35.4	2,180
November	27	12	20.6	1,230
December	17	------	12.5	769
January	------	------	7.0	430
February	------	------	6.12	340
March	12	6.5	8.74	537
April	71	10	29.2	1,740
May	660	75	252	15,500
June	740	40	270	16,100
July	52	22	35.4	2,180
August	51	8.8	16.1	990
September	35	7.4	11.3	672
The year	660	------	58.9	42,700

POWDER RIVER AT ARVADA, WYO.

LOCATION.—Chain gage in sec. 16, T. 54 N., R. 77 W., at Arvada, a quarter of a mile above Wildhorse Creek. Zero of gage is 3,623.8 feet above mean sea level.

DRAINAGE AREA.—6,050 square miles.

RECORDS AVAILABLE.—May, 1919, to September, 1931. From July, 1915, to April, 1919, just above mouth of Clear Creek, 16 miles downstream.

EXTREMES.—Maximum discharge during year, 6,960 second-feet July 18 (gage height, 5.75 feet); no flow several days during July and September.

1919–1931: Maximum discharge determined by slope-area method, 95,000 second-feet Sept. 29, 1923 (gage height, 23.7 feet); no flow during parts of summers of 1919, 1921–1923, 1931.

REMARKS.—Records good except those for periods Nov. 13–14, 20–22, 26–29, Dec. 1–14, Dec. 18 to Mar. 4, Mar. 26–30, which were estimated. Diversions from tributaries upstream.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	68	128					510	170	703	8	2,020	4
2	90	130				400	430	280	400	5	1,280	3
3	87	135					300	582	240	4	490	2
4	2,080	125					260	736	280	3	410	2
5	1,940	125				430	220	2,930	1,120	2	138	1
6	582	132				270	170	2,690	780	1	107	25
7	310	128				152	155	1,790	604	1	81	22
8	180	135	100			410	210	864	571	1	69	10
9	140	130				150	300	626	780	1	52	4
10	120	125		81		160	280	560	900	1	45	3
11	115	125				155	280	450	1,950	1	35	2
12	115	110				200	180	320	2,780	1	29	1
13	118	109				360	145	250	1,190	0	24	1
14	120	108				500	152	220	604	0	16	0
15	115	107	86			380	155	220	390	0	15	0
16	122	83	81			280	240	340	240	0	10	0
17	132	85	96			180	310	550	155	0	67	0
18	130	90			171	170	240	540	120	4,260	400	0
19	120	93				170	220	500	104	100	360	0
20	106					158	200	400	88	48	118	135
21	104	93	95			180	330	390	78	29	83	160
22	120					280	260	350	71	17	64	130
23	125	93				158	180	180	60	12	53	152
24	120	96				158	150	160	58	9	45	135
25	122	97				155	160	135	43	5	36	95
26	135						145	122	37	5	25	86
27	132	98					135	152	31	3	17	130
28	125		90			130	145	200	24	3	16	99
29	135						142	220	15	3	11	79
30	128	99					152	2,500	12	5	10	67
31	130					370		1,500		66	5	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,080	68	263	16,200
November	135		109	6,490
December			95.6	5,880
January			100	6,150
February			140	7,780
March	500		248	15,300
April	510	135	225	13,400
May	2,930	122	675	41,500
June	2,780	12	481	28,600
July	4,260	0	148	9,100
August	2,020	5	198	12,200
September	160	0	44.9	2,670
The year	4,260	0	228	165,000

POWDER RIVER AT MOORHEAD, MONT.

LOCATION.—Water-stage recorder in sec. 5, T. 9 S., R. 48 E., at Moorhead. Staff gage at site half a mile downstream used prior to Aug. 28, 1931.

RECORDS AVAILABLE.—May, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 6,040 second-feet May 6 (gage height, 6.75 feet); no flow July 15–17.

1929–1931: Maximum discharge, 8,610 second-feet June 3, 1929 (gage height, 7.90 feet); minimum, that of July 15–17, 1931.

REMARKS.—Records fair except those for September, which are good. Flow not computed for period of ice, Dec. 20 to Mar. 8. Discharge estimated for periods July 1–14, 24–31, Aug. 8–19, 21–27, 29–31, Sept. 2, 4. Some diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	136	273	453	-------	216	216	1,290		670	8.6
2	157	273	453	-------	634	171	670		3,000	8.6
3	189	273	340	-------	327	250	780		3,000	8.6
4	189	262	402	-------	371	470	900		1,160	7.2
5	2,160	262	470	-------	340	589	1,160		532	5.8
6	1,150	262	488	-------	273	6,040	1,220		257	3.5
7	730	262	402	-------	250	3,040	780		6.8	6.2
8	548	250	371	-------	250	2,090	780	4.0		12
9	402	262	402	682	250	1,080	622			15
10	327	250	386	589	417	798	575			14
11	313	244	180	417	326	670	532			10
12	300	227	180	568	313	670	1,660			9.0
13	300	216	250	506	250	417	1,740		3.5	8.2
14	300	212	180	488	216	386	900			6.6
15	300	212	171	386	227	402	622	0		5.0
16	286	198	198	488	250	658	415	0		4.7
17	300	198	198	340	300	1,080	257	0		4.7
18	300	198	198	340	273	1,370	235	2,800		5.0
19	262	198	207	273	262	1,010	148	670		4.7
20	273	54	-------	273	227	865	138	177	382	13
21	300	54	-------	262	239	757	129	124	150	198
22	300	273	-------	262	273	506	106	60	100	200
23	300	198	-------	286	262	415	86	27	75	180
24	300	262	-------	273	250	294	76		50	190
25	300	273	-------	239	250	285	68		40	200
26	300	216	-------	30	250	350	49		35	190
27	273	180	-------	122	216	670	32	5	30	190
28	286	300	-------	327	198	670	13		29	200
29	300	386	-------	327	171	670	8		21	200
30	286	506	-------	150	136	1,290	8		16	180
31	273	-------	-------	108	-------	3,410	-------		11	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,160	136	392	24,100
November	506	54	241	14,300
December 1–18	488	----------	312	11,800
March 9–31	682	30	336	15,300
April	634	136	274	16,300
May	6,040	171	1,020	62,700
June	1,740	8.0	533	31,700
July	2,800	0	128	7,870
August	3,000	----------	310	19,100
September	200	3.5	69.6	4,140

POWDER RIVER NEAR MIZPAH, MONT.

LOCATION.—Wire gage near center of sec. 30, T. 6 N., R. 52 E., at highway bridge 2 miles southeast of Mizpah and 36 miles southeast of Miles City.
RECORDS AVAILABLE.—August, 1928, to September, 1931.
EXTREMES.—Maximum discharge during year, 3,500 second-feet May 7 (gage height, 5.0 feet); minimum (estimated), 10 second-feet Sept. 8–24.
1928–1931: Maximum discharge, 14,700 second-feet Mar. 12, 1929 (gage height, 8.9 feet); minimum, that of Sept. 8–24.
REMARKS.—Records fair. Ice effect Nov. 18, 1929, to Feb. 17, 1931 (discharge not determined), Oct. 16–23, Nov. 14–21, Nov. 27 to Dec. 7, Dec. 16, 1930, to Mar. 17, 1931, Mar. 26–31.

Daily and monthly discharge, in second-feet, 1929–1931

Day	Oct.	Nov.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1929–30										
1	506	1,150	-------	e3,200	596	1,350	3,270	e98	e117	176
2	426	1,150	-------	3,730	515	1,250	2,500	e71	103	e162
3	412	e706	-------	2,830	498	1,350	1,660	45	97	149
4	356	262	-------	2,830	482	1,150	1,970	100	86	135
5	356	273	-------	3,270	474	975	1,150	45	e82	149
6	356	319	-------	1,970	482	1,150	825	76	78	138
7	300	344	-------	1,450	490	1,550	762	76	e84	176
8	241	319	-------	1,350	533	1,150	700	78	e90	152
9	294	319	-------	762	617	1,150	560	68	97	112
10	241	370	-------	e956	627	1,450	442	68	86	e308
11	262	370	-------	1,150	638	e1,010	e284	58	86	e504
12	196	363	-------	1,250	e658	578	125	74	e328	700
13	188	384	-------	e1,450	700	825	294	81	569	344
14	164	370	-------	1,660	700	700	405	88	363	222
15	156	172	-------	1,550	648	700	267	52	3,500	337
16	135	149	-------	1,150	700	578	184	2,280	3,050	e1,580
17	188	172	-------	1,660	e680	515	226	e1,670	3,050	2,830
18	172	-------	5,770	e1,400	648	e515	210	1,060	2,180	97
19	172	-------	8,700	1,150	638	515	168	e860	825	86
20	172	-------	9,600	975	648	498	184	e660	e1,040	86
21	156	-------	8,100	1,060	638	533	160	466	1,250	86
22	156	-------	7,500	e982	606	569	131	350	900	84
23	188	-------	5,230	900	578	606	145	306	1,860	78
24	196	-------	3,730	975	533	e544	1,450	283	482	84
25	205	-------	3,730	900	442	482	1,450	e256	e382	86
26	172	-------	3,270	975	e492	648	325	228	283	81
27	e184	-------	2,180	700	542	648	241	196	e390	78
28	196	-------	e2,680	e762	738	515	168	196	498	62
29	156	-------	-------	825	1,450	434	125	e174	405	66
30	241	-------	-------	648	1,550	377	125	e152	257	68
31	2,180	-------	-------	596	-------	648	-------	131	252	-------

e Interpolated.

Daily and monthly discharge, in second-feet, of Powder River near Mizpah, Mont., 1929–1931—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1930–31												
1	64	278	135	97	188	a 280	695	311	a 1,430	136	48	a 30
2	74	a 270	142	103	a 184	283	462	a 306	1,750	112	44	27
3	84	262	142	97	180	283	a 628	300	975	a 86	1,860	20
4	94	252	128	a 68	a 150	283	795	300	1,040	59	1,040	23
5	97	232	180	40	121	262	a 664	300	1,040		610	a 18
6	a 724	a 234	180	a 53	100	252	532	532	1,750		610	14
7	1,350	236	192	66	86	262	532	3,500	1,650		2,170	11
8	762	232	214	a 63	91	232	497	3,050	1,120		2,830	
9	a 634	223	283	a 60	91	241	462	1,750	1,120		852	
10	a 506	210	a 278	a 58	86	290	430	1,120	1,040		290	
11	377	a 173	273	56	a 95	276	430	1,040	a 918	20	139	
12	350	a 136	a 293	a 51	a 105	290	532	910	795		106	
13	a 347	a 99	313	46	115	331	497	745	a 1,330		a 92	
14	344	62	a 303	50	144	316	497	652	1,860		a 79	10
15	319	46	a 293	54	172	342	388	571	a 1,380		66	
16		a 49	283	62	a 180	462	353	a 754	795		168	
17		52	232	a 58	188	497	365	a 937	a 685		93	
18		a 49	172	54	252	a 514	353	1,120	462		66	
19		46	a 160	62	a 268	532	365	1,360	399	b 2,500	48	
20	300	29	149	62	283	497	430	1,280	321	695	a 36	
21		25	132	76	a 258	a 480	399	1,190	610	388	25	
22		a 123	a 132	a 94	232	462	388	a 996	183	a 254	199	10
23		a 221	132	a 112	319	462	388	a 803	180	119	139	
24	319	319	a 140	a 130	325	462	497	610	a 166	82	a 116	
25	a 310	241	149	a 147	289	462	462	497	153	82	93	
26	300	164	142	164	257	399	a 430	399	a 138	44	77	
27	a 281	149	132	164	268		399	430	122	20	a 67	20
28	262	142	a 128	164	278	410	376	a 562	a 117	a 30	57	
29	294	160	a 124	356	-------		342	695	112	a 40	a 47	
30	273	156	121	294	-------	462	321	795	a 124	a 51	37	
31	257	-------	112	a 242	-------	610	-------	a 1,110	-------	62	34	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1929–30				
October	2,180	135	301	18,500
November	1,150	149	423	14,300
February 18–28	9,600	2,180	5,500	120,000
March	3,730	596	1,450	89,200
April	1,550	442	651	38,700
May	1,550	377	805	49,500
June	3,270	125	684	40,700
July	2,280	45	334	20,500
August	3,500	78	738	45,400
September	2,830	62	307	18,300
1930–31				
October	1,350	64	349	21,500
November	319	25	162	9,640
December	313	112	187	11,500
January	356	40	103	6,330
February	325	86	189	10,500
March	610	232	379	23,300
April	795	321	464	27,600
May	3,500	300	933	57,400
June	1,860	112	792	47,100
July	2,500	----------	163	10,000
August	2,830	25	392	24,100
September	30	----------	14.4	857
The year	----------	----------	----------	250,000

a Interpolated. b Estimated.

NOTE.—Records for year ending Sept. 30, 1930, are revised and supersede those published in Water-Supply Paper 701.

MIDDLE FORK OF POWDER RIVER AT KAYCEE, WYO.

LOCATION.—Chain gage in sec. 1, T. 43 N., R. 82 W., at Kaycee.
DRAINAGE AREA.—647 square miles.
RECORDS AVAILABLE.—May, 1911, to October, 1912; May, 1929, to September, 1931, discontinued.
EXTREMES.—Maximum discharge during year, 1,120 second-feet May 4 (gage height, 5.00 feet); minimum, 19 second-feet July 20, 26, 27.
1911–12, 1929–1931: Maximum discharge, 1,610 second-feet June 2, 1929 (gage height, 6.42 feet); minimum, that of July 20, 26, 27, 1931.
REMARKS.—Records good except those for period of ice effect, Dec. 18 to Mar. 14, which were based on two discharge measurements and temperature records, and for periods Apr. 4–8, Sept. 1–30, which were estimated. Minor diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	84	79	------	------		75	472	186	34	184	------
2	70	84	84	------	------		78	465	273	32	83	------
3	398	84	82	------	------		75	462	388	32	63	------
4	187	85	83	------	------		65	807	415	32	58	43
5	167	80	87	------	------		70	430	202	33	55	------
6	94	80	82	------	------		75	362	191	32	52	------
7	91	82	83	------	------		80	368	167	33	52	------
8	91	83	83	------	------	100	88	283	171	34	52	------
9	78	89	79	------	------		85	289	191	35	48	------
10	84	78	69	------	------		84	236	196	32	40	------
11	89	88	65	------	------		82	234	174	29	36	------
12	94	84	91	------	------		98	229	167	28	37	------
13	89	83	69	77	------		132	338	147	28	37	------
14	85	84	71	------	------		242	388	127	28	35	------
15	79	79	64	------	------	80	174	530	128	25	39	------
16	84	87	43	------	89	79	164	458	109	23	57	------
17	79	83	41	------	------	76	158	410	98	23	107	------
18	76	80				75	301	365	96	22	64	------
19	87	67				75	254	247	93	20	61	------
20	89	62				82	213	215	91	19	55	------
21	89	75	45	------	------	80	156	201	91	20	47	------
22	91	84		------	------	78	150	177	88	20	47	------
23	88	87		------	------	78	150	174	70	20	47	------
24	85	89		------	------	75	148	189	59	20	47	------
25	85	92		------	------	70	153	169	64	20	47	------
26	85	87		------	------	73	153	395	53	19	47	------
27	88	82		------	------	65	156	238	53	19	47	------
28	85	79		------	------	73	171	260	49	20	47	------
29	89	75	50	------	------	74	275	225	48	20	47	------
30	83	78		------	------	74	355	201	45	26	47	------
31	89	------		------	------	82	------	196	------	365	47	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	398	70	101	6,210
November	92	62	81.8	4,870
December	91	------	61.8	3,800
January	------	------	70	4,300
February	------	------	80	4,440
March	------	65	86.7	5,330
April	355	65	149	8,870
May	807	169	323	19,900
June	415	45	141	8,390
July	365	19	36.9	2,270
August	184	35	55.9	3,440
September	------	------	36	2,140
The year	807	19	102	74,000

RED FORK NEAR BARNUM, WYO.

LOCATION.—Chain gage in sec. 34, T. 43 N., R. 83 W., 6 miles east of Barnum.
DRAINAGE AREA.—149 square miles.
RECORDS AVAILABLE.—May, 1929, to September, 1931.
EXTREMES.—Maximum discharge during year, 370 second-feet June 9 (gage height, 2.40 feet); no flow July 12–23.
1929–1931: Maximum discharge, 754 second-feet May 25, 1929 (gage height, 3.57 feet); minimum, that of July 12–23, 1931.
REMARKS.—Records good except those for periods Dec. 1 to Jan. 31, July 26 to Aug. 1, Aug. 23–29, which were estimated. Small diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	48	-------	28	29	34	72	43	3	55	14
2	13	48	-------	31	31	36	74	79	3	8	14
3	84	47	-------	31	31	34	103	39	4	6	15
4	51	45	-------	26	32	32	100	58	3	2	17
5	48	47	-------	31	28	36	98	51	3	4	15
6	47	46	-------	28	28	31	92	47	3	10	15
7	45	44	-------	29	28	32	101	43	3	12	14
8	41	45	-------	32	29	43	77	37	3	10	14
9	42	45	-------	18	30	56	79	152	3	8	15
10	46	45	-------	40	26	64	77	72	1	8	18
11	41	44	-------	34	32	70	67	56	1	7	14
12	41	47	-------	28	33	58	67	55	0	6	16
13	39	45	15	28	34	68	71	56	0	5	11
14	39	43	-------	30	30	111	74	52	0	4	2
15	40	43	-------	29	30	170	58	47	0	22	3
16	42	45	-------	28	32	147	52	44	0	12	5
17	42	43	-------	28	32	152	46	39	0	39	4
18	43	45	-------	28	32	115	45	37	0	21	5
19	45	42	-------	31	32	95	47	37	0	18	5
20	48	43	-------	27	28	72	47	40	0	13	7
21	50	46	-------	32	30	50	42	42	0	12	5
22	50	37	-------	31	34	54	38	42	0	15	4
23	50	33	-------	28	30	53	39	37	0	13	5
24	50	31	-------	28	34	48	38	32	1	11	7
25	51	33	-------	30	34	45	40	30	1	13	6
26	47	30	-------	32	10	46	38	18	1	10	7
27	47	35	-------	31	36	46	51	14	1	10	7
28	48	38	-------	35	32	78	48	8	1	10	7
29	46	39	-------	-------	32	115	48	4	1	13	8
30	46	39	-------	-------	30	110	48	4	3	19	13
31	47	-------	-------	-------	34	-------	42	-------	110	8	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	84	13	44.7	2,750
November	48	30	42.0	2,500
December	----------	----------	30	1,840
January	----------	----------	25	1,540
February	40	18	29.7	1,650
March	36	10	30.4	1,870
April	170	31	70.0	4,170
May	103	38	61.9	3,810
June	152	4	43.8	2,610
July	110	0	4.8	295
August	55	2	13.0	799
September	18	2	9.7	577
The year	170	0	33.7	24,400

NORTH FORK OF POWDER RIVER NEAR KAYCEE, WYO.

LOCATION.—Chain gage in sec. 13, T. 44 N., R. 82 W., 5 miles north of Kaycee.
DRAINAGE AREA.—244 square miles.
RECORDS AVAILABLE.—May to November, 1911; May, 1929, to September, 1931.
EXTREMES.—Maximum discharge during year, 474 second-feet May 4 (gage height, 2.47 feet); no flow for several days during June, July, August.
1911, 1929–1931: Maximum discharge, 617 second-feet May 26, 1929 (gage height, 2.77 feet); no flow for several days in 1930 and 1931.
REMARKS.—Records good except those for periods of ice effect, Dec. 1 to Mar. 14, Mar. 26–28, which were estimated. Diversions for irrigation above station..

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	28	------	------		52	120	39	1.2	42	2.5
2	20	28	------	------		48	103	38	.4	25	3.2
3	55	27	------	------	35	44	82	40	.1	17	5.0
4	81	28	------	------		34	308	72	0	2.8	4.5
5	69	28	------	------		29	278	41	.6	1.5	4.5
6	58	28	------	------		29	52	31	.7	.9	4.0
7	39	28	------	------		29	61	30	.9	.6	4.5
8	32	27	------	------	35	29	120	27	.6	.4	2.2
9	31	28	------	------		31	73	31	.7	.2	1.5
10	29	28	------	------		29	40	42	.8	2.3	1.4
11	32	27	------	------		29	30	33	1.2	2.3	1.3
12	34	29	------	------		28	25	24	1.0	1.7	1.3
13	29	29	13	------	40	66	23	22	.8	1.2	1.4
14	28	29	------	------		109	66	20	.4	.6	1.6
15	29	27	------	------	44	56	100	15	.9	.4	3.2
16	28	27	------	26	41	44	84	8.0	.1	2.0	4.0
17	29	28	------	------	40	41	61	3.2	0	4.0	4.5
18	29	28	------	------	38	72	45	1.5	0	6.0	4.5
19	31	28	------	------	35	106	31	1.5	0	2.5	6.0
20	33	27	------	------	32	97	20	1.2	0	2.2	13
21	33	25	------	------	30	92	16	1.0	0	1.9	20
22	33	25	------	------	29	43	14	.8	1.5	.6	22
23	37	23	------	------	28	38	11	.9	.1	0	21
24	33	23	------	------	26	34	10	0	.1	0	22
25	32	23	------	------	25	33	26	.1	.1	0	23
26	33	26	------	------	16	36	20	0	.1	0	25
27	33	25	------	------	18	34	49	0	.2	0	23
28	31	23	------	------	20	34	31	0	7.0	0	22
29	29	21	------	------	23	36	27	0	4.0	0	20
20	29	21	------	------	26	86	27	1.3	2.5	.8	19
31	29	------	------	------	48	------	33	------	300	1.7	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	81	19	35.1	2,160
November	29	21	26.4	1,570
December	----------	----------	17	1,050
January	----------	----------	12	738
February	----------	----------	25	1,390
March	48	----------	33.2	2,040
April	109	28	48.9	2,910
May	308	10	64.1	3,940
June	72	0	17.5	1,040
July	300	0	10.5	646
August	42	0	3.89	239
September	25	1.3	9.70	577
The year	308	0	25.3	18,300

CRAZY WOMAN CREEK NEAR BUFFALO, WYO.

LOCATION.—Chain gage in sec. 36, T. 48 N., R. 81 W., 21 miles southeast of Buffalo.

DRAINAGE AREA.—464 square miles.

RECORDS AVAILABLE.—June, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 473 second-feet June 11 (gage height, 2.48 feet); no flow during greater part of August, September.

1929–1931: Maximum discharge, 2,640 second-feet June 2, 1929 (gage height, 5.36 feet); minimum, that of August, September, 1931.

REMARKS.—Records fair except those for periods of ice effect, Nov. 16 to Mar. 14, Mar. 26–30, which were estimated. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	32				38	6	19	4	80	0
2	19	31				29	16	51	5	25	0
3	67	32				24	7	35	7	7	0
4	75	31				27	12	36	6	3	0
5	46	31				29	21	47	5	1	0
6	36	35				24	14	24	5	1	0
7	29	32				35	16	19	5	0	0
8	28	30			40	58	36	12	3	0	0
9	26	28				60	28	14	2	0	0
10	21	29				25	a 20	47	1	0	0
11	27	29				11	a 16	122	2	0	0
12	31	29	18			10	a 13	85	2	0	0
13	32	32				12	a 10	46	1	0	0
14	31	32				26	a 21	32	2	0	0
15	28	28			55	24	a 46	20	2	2	0
16	24				67	10	a 37	16	2	1	0
17	24			26	51	5	a 30	10	2	1	0
18	26				31	4	a 24	7	1	1	0
19	29				31	3	a 18	8	1	2	0
20	31				30	2	13	7	1	1	174
21	32				25	2	6	5	1	0	51
22	32				26	2	2	5	2	0	14
23	34	25			31	2	2	5	2	0	5
24	31				27	4	2	6	1	0	4
25	31				36	3	3	7	0	0	3
26	31					2	4	8	0	0	2
27	31					3	a 35	7	0	0	0
28	31				25	5	25	6	1	0	0
29	28					3	19	5	7	0	0
30	28					4	12	5	82	0	0
31	30				40		11		111	0	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	75	19	31.9	1,960
November	35		27.9	1,660
December			a 22	1,350
January			a 18	1,110
February			a 25	1,390
March	67		36.6	2,250
April	60	2	16.2	964
May	46	2	16.9	1,040
June	122	5	23.9	1,420
July	111	0	8.6	529
August	80	0	4.0	246
September	174	0	8.4	500
The year	174		19.9	14,400

a Estimated.

LITTLE MISSOURI RIVER BASIN

LITTLE MISSOURI RIVER NEAR ALZADA, MONT.

LOCATION.—Chain gage near southwest corner of T. 8 S., R. 60 E., at John Walker's ranch, 3 miles below mouth of Thompson Creek and 4 miles below Alzada.

DRAINAGE AREA.—780 square miles.

RECORDS AVAILABLE.—June, 1911, to September, 1925; August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 164 second-feet May 28 (gage height, 3.43 feet); no flow at various times.

1911–1925, 1928–1931: Maximum discharge, 4,550 second-feet Apr. 6, 1912 (gage height, 15.3 feet); no flow at various times.

REMARKS.—Records fair. Some small diversions. Small storage in coulees.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0	0.1	0.1	0.2	0.6	0.5	0.2	12	0	96	0.3
2	0	0	.1	.1	.3	.7	.7	.1	5.7	33	93	.2
3	0	.1	.1	.1	.5	.5	9.4	.2	7.0	78	65	.1
4	0	.1	.1	0	.6	.6	5.7	.2	5.7	52	23	0
5	0	.1	.1	.1	.5	.5	6.4	.2	2.0	13	22	0
6	0	.1	.1	.1	.5	.7	6.4	.1	.5	3.2	13	0
7	0	.1	.1	.1	.5	.7	3.2	.1	.6	.5	7.0	0
8	0	.1	.2	.1	.5	.6	2.6	.2	.5	.3	3.2	0
9	0	.1	.1	.1	.5	*.6	.7	.2	.5	.1	1.3	0
10	0	.1	.1	.1	.5	.6	5.1	.2	2.0	.1	129	0
11	0	.1	.1	0	.5	.6	3.2	.2	7.0	.1	51	0
12	0	.1	.1	0	.5	.5	2.6	.2	10	0	24	0
13	0	.1	.1	0	.5	*.6	.7	.1	16	0	16	0
14	0	.1	.2	.1	.5	.6	.6	.1	17	0	8.6	0
15	0	.1	.1	0	.5	.7	.5	.2	11	0	5.7	0
16	0	.1	.1	0	.5	.5	.4	.2	6.7	0	2.0	0
17	0	.1	.1	0	.5	1.3	.4	.2	7.0	0	.7	0
18	0	.2	.1	0	.5	1.3	.3	.2	4.5	0	.5	0
19	0	.2	.1	0	.5	.7	.3	.2	1.3	0	.4	0
20	0	.2	.1	0	.6	3.2	.3	.2	.5	0	0	0
21	0	.2	.1	.1	.5	2.0	.3	.2	.3	0	0	0
22	.1	.2	.2	.1	.7	3.2	.3	.2	.3	0	0	0
23	.1	.2	.1	.1	1.3	4.5	.2	.2	.3	0	40	7.0
24	0	.2	.1	.1	.7	2.6	.2	.1	.2	0	24	25
25	0	.1	.2	.1	.7	3.2	.2	.1	.1	0	13	36
26	0	.1	.1	.1	.7	1.3	.2	.1	0	0	5.1	46
27	0	.2	.1	.2	.7	.7	.1	15	0	0	5.7	37
28	0	.1	.1	.2	.7	.5	.1	154	0	0	2.0	25
29	0	.1	.2	.3	------	.7	.1	76	0	0	.6	13
30	0	.1	.1	.2	------	.5	.1	42	0	134	.5	3.8
31	0	------	.1	.2	------	.5	------	22	------	80	.5	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	0.1	0	0.01	0.6
November	.2	0	.12	7.1
December	.2	.1	.12	7.4
January	.3	0	.09	5.5
February	1.3	.2	.56	31
March	4.5	.5	1.15	71
April	9.4	.1	1.73	103
May	154	.1	10.1	621
June	17	0	3.96	236
July	134	0	12.7	781
August	129	0	21.1	1,300
September	46	0	6.45	384
The year	154	0	4.89	3,480

*Estimated.

LITTLE MISSOURI RIVER AT MEDORA, N. DAK.

LOCATION.—Wire gage in NE. ¼ sec. 27, T. 140 N., R. 102 W., at highway bridge at Medora.

DRAINAGE AREA.—6,190 square miles.

RECORDS AVAILABLE.—May, 1903, to October, 1908; October, 1921, to September, 1924; August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 1,660 second-feet June 22 (gage height, 4.52 feet); minimum, 16 second-feet Nov. 21–23, Nov. 26 to Dec. 1. 1903–1908, 1921–1924, 1928–1931: Maximum discharge, 38,700 second feet June 7, 1929 (gage height, 17.2 feet); minimum, 2 second-feet Sept. 28, 1905 (gage height, 2.4 feet, old datum).

REMARKS.—Records fair. Stage-discharge relation affected by ice Dec. 17 to Mar. 31. Insufficient data to compute dsicharge for period Jan. 1 to Mar. 31. Small diversions for irrigation from tributaries on headwaters.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Apr.	May	June	July	Aug.	Sept
1	29	29	16	163	23	50	466	778	
2	29	31	18	137	22	57	522	778	
3	28	29	18	104	21	68	778	742	
4	28	28	18	391	20	63	814	778	
5	25	25	18	368	19	58	742	708	
6	58	28	18	234	18	73	708	674	
7	52	25	18	169	18	65	642	610	
8	52	23	18	142	25	63	440	580	
9	44	23	18	122	25	368	391	550	
10	42	24	20	100	26	88	286	522	60
11	52	23	23	80	26	75	286	466	
12	58	25	22	70	24	73	251	1,130	
13	56	20	26	63	22	82	234	890	
14	44	18	29	48	22	77	218	522	
15	34	18	33	43	20	86	203	391	
16	31	22	29	36	20	113	174	305	
17	23	25		36	20	86		251	
18	23	25		34	18	77		203	
19	29	20		29	17	65		152	
20	25	18		29	20	60		134	66
21	28	16		29	21	814		142	150
22	28	16		30	20	1,660		144	134
23	29	16		28	20	1,480	100	142	124
24	33	18	20	26	20	1,210		120	251
25	32	18		26	20	708		100	346
26	33	16		26	20	466		82	416
27	33	16		27	48	326		77	326
28	34	16		25	44	305		70	326
29	33	16		25	43	466			203
30	31	16		24	28	268		70	155
31	31	------		------	23	------	610		------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	58	23	35.7	2,200
November	31	16	21.4	1,270
December	33	16	20.7	1,270
April	391	24	88.8	5,280
May	48	17	23.6	1,450
June	1,660	50	315	18,700
July	814	----------	296	18,200
August	1,130	70	395	24,300
September	416	----------	121	7,200

KNIFE RIVER BASIN

KNIFE RIVER AT HAZEN, N. DAK.

LOCATION.—Wire gage in NE. ¼ sec. 19, T. 144 N., R. 86 W., at Hazen.
RECORDS AVAILABLE.—October, 1928, to September, 1931.
EXTREMES.—Maximum discharge during year, 1,190 second-feet Sept. 22 (gage height, 11.28 feet); minimum, 3.8 second-feet Sept. 9, 10.
1928–1931: Maximum discharge, 3,070 second-feet Feb. 21, 1930 (gage height, 23.2 feet); minimum, 1.2 second-feet Aug. 27, 1929.
REMARKS.—Records good except those for period Oct. 1 to Nov. 18, which are fair. Data insufficient to compute discharge for period Nov. 19 to Mar. 15. Stage-discharge relation affected by ice Oct. 16–17, Nov. 19 to Mar. 15. Some diversions above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	92	16	------	69	16	17	22	15	15
2	92	16	------	65	16	17	20	18	13
3	92	15	------	65	16	16	34	18	11
4	92	15	------	57	15	16	194	25	11
5	96	16	------	57	16	16	194	25	8.2
6	100	13	------	57	17	16	182	32	8.2
7	105	11	------	57	17	16	97	32	6.6
8	120	8.4	------	57	18	16	81	35	4.4
9	105	11	------	54	18	16	42	73	3.8
10	105	14	------	50	19	496	40	97	3.8
11	115	19	------	49	19	130	57	146	4.4
12	125	18	------	47	18	93	40	170	4.4
13	120	22	------	50	18	105	32	114	4.4
14	120	20	------	49	18	93	23	73	5.0
15	115	19	------	49	18	93	22	65	4.4
16	83	18	65	46	18	85	20	65	5.0
17	50	16	65	34	18	85	23	35	5.0
18	18	11	65	28	18	81	13	31	7.4
19	18	------	81	28	18	77	11	31	24
20	18	------	81	28	16	77	8.2	24	114
21	18	------	81	23	16	35	7.4	20	800
22	16	------	81	22	16	30	7.4	18	986
23	9.6	------	73	21	16	13	6.2	18	620
24	8.8	------	73	20	16	12	8.2	21	146
25	8.8	------	69	20	16	12	8.2	22	254
26	8.8	------	69	20	15	11	6.2	28	194
27	8.8	------	73	20	16	11	7.4	35	194
28	12	------	69	20	17	14	7.4	35	218
29	14	------	54	20	18	20	7.4	23	242
30	14	------	49	18	18	30	6.6	23	182
31	16	------	44	------	17	------	8.2	20	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	125	8.8	61.8	3,800
November 1–18	22	8.4	15.5	553
March 16–31	81	44	68.2	2,160
April	69	18	40.0	2,380
May	19	15	17.0	1,050
June	496	11	58.3	3,470
July	194	6.2	39.9	2,450
August	170	15	44.7	2,750
September	986	3.8	137	8,150

HEART RIVER BASIN

HEART RIVER AT SUNNY, N. DAK.

LOCATION.—Chain gage in NE. ¼ sec. 25, T. 39 N., R. 82 W., at highway bridge nine-tenths of a mile west of Sunny.

DRAINAGE AREA.—3,320 square miles.

RECORDS AVAILABLE.—April to September, 1924; March, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 209 second-feet June 30 (gage height, 5.70 feet); minimum, 1.3 second-feet Sept. 18 (gage height, 3.98 feet).

1924, 1928–1931: Maximum discharge, 3,300 second-feet Mar. 24, 1930 (gage height, 17.58 feet); no flow Aug. 20, 1929.

Maximum stage recorded, 20.36 feet Mar. 18, 1930.

REMARKS.—Records fair except those for period Nov. 21 to Mar. 23, which are poor. No diversions.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	17					167	28	19	167	53	9.5
2	10	17					177	25	18	120	56	7.8
3	10	17			150	75	177	22	23	92	56	7.0
4	12	17					157	20	19	77	51	6.2
5	13	16					147	24	15	61	49	5.4
6	14	16	15	10			137	23	13	58	49	5.4
7	16	16					135	22	13	58	46	4.7
8	16	16			100	75	129	22	17	64	46	3.5
9	17	16					107	22	18	105	46	3.5
10	18	16					83	22	22	95	42	2.9
11	20	16					74	22	22	92	42	2.3
12	25	16					70	34	52	92	38	1.9
13	28	16			75	50	67	39	55	80	36	1.8
14	28	18					66	18	37	64	34	1.7
15	25	18					64	19	21	51	30	1.7
16	23	19	12	7			56	22	16	53	30	1.5
17	22	19					57	21	15	46	27	1.5
18	22	20			100		53	20	14	38	22	1.3
19	20	22					51	18	12	30	21	5.4
20	20	22				100	49	17	12	27	20	12
21	19						45	16	12	22	20	14
22	18						43	16	17	18	18	10
23	18						41	15	20	16	18	8.6
24	18					198	39	15	36	14	16	7.8
25	18				150	137	36	14	36	12	14	83
26	18	18	10	40		137	34	13	36	12	14	120
27	18					137	29	12	34	12	12	116
28	18					133	27	13	188	10	12	109
29	18				-------	133	23	23	188	9.5	10	102
30	18				-------	137	22	20	209	27	10	102
31	17	-------			-------	157	-------	19	-------	46	9.5	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	28	10	18.3	1,130
November	22	16	17.7	1,050
December	----------	----------	12.3	756
January	----------	----------	19.7	1,210
February	----------	----------	119	6,610
March	198	----------	95.8	5,890
April	177	22	78.7	4,680
May	39	12	20.5	1,260
June	209	12	40.3	2,400
July	167	9.5	53.8	3,310
August	56	9.5	30.6	1,880
September	120	1.3	25.3	1,510
The year	209	1.3	43.7	31,700

CANNONBALL RIVER BASIN

CANNONBALL RIVER NEAR TIMMER, N. DAK.

LOCATION.—Chain gage in NW. ¼ sec. 21, T. 133 N., R. 82 W., about 4 miles southeast of Timmer and 4 miles above mouth of Dogtooth Creek.

DRAINAGE AREA.—3,650 square miles.

RECORDS AVAILABLE.—June, 1903, to November, 1908; August, 1911, to September, 1918; October, 1921, to September, 1922; October, 1923, to September, 1924; March, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 1,150 second-feet June 22 (gage height, 6.08 feet); no flow Sept. 14–18.

1903–1908, 1911–1918, 1921–1924, 1928–1931: Maximum discharge, 6,520 second-feet Mar. 18, 1929 (gage height, 11.1 feet); maximum gage height, 12.7 feet Feb. 20, 1930; no flow during periods in 1904–1908, 1913, 1929–1931.

REMARKS.—Records fair, except those for periods of ice effect, Oct. 19–21, Nov. 18 to Apr. 3. No diversions.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.7	5.4					140	14	6.5	96	50	2.6
2	64	4.1					200	14	6.5	80	28	3.4
3	21	5.4			60		200	14	5.8	72	15	2.6
4	11	4.8					121	12	5.1	64	10	1.7
5	10	5.4				25	117	11	4.4	51	6.5	1.2
6	8.5	6.1					73	12	4.4	39	14	1.1
7	6.8	6.8					73	12	3.2	31	136	1.1
8	15	6.1			15		52	12	3.2	24	40	.8
9	9.3	5.4					47	12	4.4	16	28	.6
10	6.8	6.1					36	15	5.1	16	17	.5
11	4.1	6.1					32	14	121	44	14	.4
12	3.4	5.4					30	11	45	56	11	.3
13	66	5.4		5	10	10	30	10	36	37	8.1	.2
14	28	4.8					28	9.3	24	25	12	0
15	20	5.4					30	9.3	15	33	9.7	0
16	11	6.1	5				30	9.3	12	29	12	0
17	7.6	6.1					32	9.3	7.6	25	19	0
18	5.4				15		28	8.5	4.8	24	16	0
19	5.0						24	7.6	2.6	18	13	52
20	5.0						24	6.8	2.6	12	9.7	29
21	5.0						21	6.1	2.6	11	8.1	19
22	7.6					70	23	6.1	1,080	8.5	6.5	8.9
23	7.6				60		26	6.1	193	6.8	5.4	5.1
24	6.8	5.0					24	6.1	82	4.8	4.1	14
25	6.1						24	6.1	47	4.8	4.1	8.9
26	4.8						23	5.4	30	4.1	3.4	13
27	3.4				110		21	4.8	23	3.0	7.6	14
28	4.8						21	18	17	2.1	3.4	7.6
29	4.1			40		70	21	40	11	1.7	3.0	3.4
30	5.4						21	23	88	345	2.6	3.4
31	6.1							12		158	3.4	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	66	0.7	11.9	732
November	6.8	4.1	5.33	317
December			5.0	307
January			11.8	726
February			40.4	2,240
March			36.6	2,250
April		21	52.4	3,120
May	40	4.8	11.5	707
June	1,080	2.6	63.1	3,750
July	345	1.7	43.3	2,660
August	136	2.6	16.8	1,030
September	52	0	6.49	386
The year		0	25.2	18,200

GRAND RIVER BASIN

GRAND RIVER NEAR WAKPALA, S. DAK.

LOCATION.—Chain gage in sec. 26, T. 19 N., R. 29 E., at bridge on Yellowstone highway, 5 miles south of Wakpala.

DRAINAGE AREA.—5,640 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1931. From September, 1911, to March, 1918, at site 5 miles upstream.

EXTREMES.—Maximum discharge during year, 843 second-feet June 12 (gage height, 3.94 feet); minimum, 0.2 second-foot Jan. 12.

1911–1918, 1928–1931: Maximum discharge, 7,130 second-feet June 17, 19, 1915; no flow Sept. 13, 1929.

REMARKS.—Records good except those for period of ice effect, Nov. 21 to Mar. 10, which were based on two discharge measurements and temperature records. No diversions or regulation.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	24	------	80	500	32	77	45	12	5
2	15	24	------		720	30	69	42	56	5
3	31	25	------		665	30	46	42	139	4
4	53	29	------		610	28	36	40	56	4
5	94	27	------		575	28	25	40	56	4
6	153	24	------	75	500	26	20	97	141	4
7	155	22	------		345	26	17	298	137	3
8	111	22	------		321	28	15	172	440	3
9	86	23	------		294	28	14	106	329	3
10	74	22	------		263	28	18	101	242	3
11	64	20	------	158	195	27	19	79	128	2
12	61	17	[a] 0.2	165	165	26	288	79	107	2
13	61	18	------	170	139	25	580	79	87	1
14	55	17	------	178	121	24	350	68	66	1
15	62	18	------	188	109	26	160	54	48	1
16	104	18	------	172	97	28	109	49	34	1
17	69	18	------	145	88	26	80	40	29	1
18	59	12	------	151	71	24	68	27	29	1
19	53	7	------	114	65	23	61	21	32	1
20	50	7	------	98	64	21	55	15	31	2
21	55	4	------	97	60	21	50	10	25	1
22	55		------	124	55	19	45	8	17	1
23	50		------	190	50	19	47	10	12	1
24	46		------	277	47	18	42	12	10	8
25	41		------	540	47	18	39	12	8	59
26	39		------	520	44	20	305	12	7	40
27	37		------	[b] 270	39	25	417	10	6	13
28	31		------	[b] 150	35	37	98	9	7	26
29	39		------	170	32	54	56	9	7	59
30	37		------	205	32	60	48	9	6	38
31	32	------	------	249	------	69	------	10	6	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	155	12	60.8	3,740
November	29	----------	14.5	863
December	----------	----------	3.0	184
January	----------	----------	2.0	123
February	----------	----------	20.0	1,110
March	540	----------	165	10,100
April	720	32	212	12,600
May	69	18	28.8	1,770
June	580	14	108	6,430
July	298	9	51.8	3,190
August	440	6	74.5	4,580
September	59	1	9.9	589
The year	720	----------	62.6	45,300

[a] Discharge measurement. [b] Estimated.

MOREAU RIVER BASIN

MOREAU RIVER AT PROMISE, S. DAK.

LOCATION.—Chain gage in sec. 17, T. 16 N., R. 29 E., three-quarters of a mile north of Promise and half a mile below Virgin Creek.

DRAINAGE AREA.—5,220 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 1,370 second-feet Apr. 2 (gage height, 5.3 feet); no flow during parts of October, January, July, August, September.

1928–1931: Maximum discharge, 13,400 second-feet Sept. 17, 1928 (gage height, 14.6 feet); no flow during parts of several months each year.

REMARKS.—Records good except those for periods of ice effect, Nov. 23 to Feb. 2, Feb. 16 to Mar. 14, which were based on two discharge measurements and temperature records. No diversions or regulation.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July
1	0	2	------	700		770	12	26	2
2	0	2	------	680		1,280	11	16	2
3	1	2	------	673	30	832	8	12	2
4	1	2	------	525		449	10	6	2
5	2	10	------	197		324	9	20	1
6	2	9	------	188		1,090	8	18	1
7	2	11	------	225		972	8	8	1
8	2	7	------	193	34	765	10	10	1
9	2	6	------	205		537	13	10	1
10	2	7	------	160		389	12	11	0
11	2	6	------	174		241	10	10	0
12	3	7	0	149	40	174	10	6	0
13	3	7	------	128		126	8	7	0
14	2	6	------	132		105	8	6	0
15	2	6	------	135	49	134	8	66	0
16	2	8	------		59	108	7	46	0
17	2	7	------		78	87	6	30	0
18	2	7	------	120	56	63	5	20	0
19	2	6	0		56	54	5	103	0
20	2	6	2		70	48	5	82	0
21	2	6	10		73	37	6	56	0
22	2	6	20		84	28	6	72	0
23	2		30	80	174	30	5	39	0
24	2		60		469	23	4	25	0
25	1		100		258	22	4	20	
26	2	3	150	60	202	18	3	14	0
27	2		200	50	183	17	6	11	0
28	2		300	40	165	18	8	7	0
29	2		350	------	a 110	16	174	6	0
30	2		400	------	134	14	62	2	0
31	2	------	500	------	114	------	36	------	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	3	0	1.8	111
November	11	2	5.3	315
December	----------	----------	2.0	123
January	500	----------	68.5	4,210
February	700	40	200	11,100
March	469	----------	90.8	5,580
April	1,280	14	292	17,400
May	174	3	15.7	965
June	103	2	25.5	1,520
July	2	0	0.4	25
The year	1,280	0	57.2	41,300

a Estimated.

NOTE.—No flow during August, September.

CHEYENNE RIVER BASIN

CHEYENNE RIVER AT EDGEMONT, S. DAK.

LOCATION.—Chain gage in sec. 36, T. 8 S., R. 2 E., at Edgemont, 600 feet above Cottonwood Creek. Zero of gage is 3,416.2 feet above mean sea level.

DRAINAGE AREA.—6,050 square miles.

RECORDS AVAILABLE.—June, 1903, to November, 1906; April, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 3,240 second-feet Oct. 4 (gage-height, 4.7 feet); no flow during several days in June, July, September.

1903–1906, 1928–1931: Maximum discharge, 10,500 second-feet June 3, 1929 (gage height, 7.86 feet); no flow Jan. 5, 1929, and days in June, July, September, 1931.

Maximum stage known, 12.0 feet about May 1, 1922.

REMARKS.—Records fair except those for periods of ice effect, Nov. 17 to Feb. 23, Mar. 26–30. Minor diversions above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	45	26			39	68	16	11	0	2,220	17
2	324	30			55	72	22	16	0	710	14
3	940	29		40	45	53	18	18	1	460	11
4	2,880	29			29	53	29	490	1	203	e5
5	2,100	30			30	65	20	1,410	135	65	e3
6	1,310	32			58	68	24	510	29	29	e1
7	510	32	7		53	72	16	277	9	14	e1
8	277	32		35	72	80	30	178	5	810	e1
9	152	32			68	70	60	96	3	118	e1
10	75	35			49	58	58	740	2	186	0
11	58	35			45	53	47	2,210	1	268	0
12	53	35			43	45	37	1,560	1	78	0
13	60	34		40	32	39	29	660	1	32	0
14	41	35			37	30	26	334	0	12	0
15	96	39			34	29	18	1,570	0	8	0
16	49	22			62	29	18	930	0	1,090	0
17	34	25			58	23	26	334	0	2,900	0
18	39	30		42	45	19	17	108	0	2,210	0
19	32	30			60	23	14	55	0	1,010	0
20	26	30			41	20	10	30	0	1,720	0
21	23			45	45	17	10	19	0	520	0
22	20			45	43	17	8	13	0	152	0
23	22			45	41	18	6	6	0	55	0
24	23			51	37	19	6	3	0	32	0
25	22			43	37	20	6	1	0	450	0
26	23	25		55	30	26	6	0	0	124	0
27	23			45	35	23	18	0	0	65	0
28	23			51	40	20	8	0	0	e20	e1
29	23				40	20	39	0	1	e5	e1
30	24				45	18	20	0	1	12	e2
31	28				53		10		680	14	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,880	20	302	18,600
November	39		29.1	1,730
December			e25	1,540
January			e21	1,290
February	55		41.6	2,310
March	72	30	45.8	2,820
April	80	17	38.9	2,310
May	60	6	21.7	1,330
June	2,210	0	386	23,000
July	680	0	28.1	1,730
August	2,900	5	503	30,900
September	17	0	1.9	113
The year	2,900	0	121	87,700

e Estimated.

CHEYENNE RIVER NEAR WASTA, S. DAK.

LOCATION.—Chain gage in sec. 2, T. 1 N., R. 14 E., at highway bridge 3 miles east of Wasta. Zero of gage is 2,263.4 feet above mean sea level.

DRAINAGE AREA.—11,700 square miles.

RECORDS AVAILABLE.—July, 1914, to June, 1915; August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 2,560 second-feet Oct. 6 (gage height, 4.2 feet); minimum, 15 second-feet July 26, 27 (gage height, 0.92 foot).

1914–15, 1928–1931: Maximum discharge, 34,200 second-feet June 13, 1915 (gage height, 12.5 feet); minimum, that of July 26, 27, 1931.

REMARKS.—Records good except those for period of ice effect, Nov. 16 to Feb. 17, which were based on two discharge measurements and temperature records, and for periods Mar. 26 to Apr. 4, Apr. 15–20, which were estimated. Minor diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	646	227	------		225		126	98	60	62	86
2	2,270	220	------		232		128	94	56	80	84
3	1,570	216	------		230	1,200	132	90	111	1,200	76
4	1,000	174	------		232		150	96	1,100	904	70
5	1,780	182	------		238	1,390	195	105	251	834	68
6	2,560	220	------	260	245	1,440	208	101	117	613	62
7	2,270	216	------		240	1,390	230	396	72	438	60
8	2,130	208	------		248	1,370	326	493	72	299	56
9	2,130	208	------		263	1,340	311	446	88	272	50
10	1,990	212	144		257	1,340	235	493	72	359	46
11	1,920	204	------		238	1,300	220	550	72	320	42
12	1,850	204	------		242	1,260	195	1,290	134	266	38
13	1,710	208	------	250	248	1,290	167	1,990	208	225	35
14	1,640	178	------		254	1,250	174	1,930	120	179	33
15	1,500	185	------	243	248	900	167	1,690	68	148	31
16	1,370		------	252	238	700	156	1,490	62	154	26
17	764		------	262	242	500	148	1,330	52	307	26
18	360	170	------	272	248	400	141	1,250	31	1,380	27
19	336		------	287	238	300	137	1,150	26	2,360	29
20	312		------	272	248	200	130	952	44	1,240	40
21	295		------	266	240	148	126	512	52	1,070	66
22	250		------	266	248	150	122	342	40	822	58
23	258		------	251	245	145	128	283	33	550	54
24	239		------	248	245	150	126	230	22	295	76
25	227		------	242	248	154	117	163	17	220	311
26	208	150	------	238		150	111	117	15	170	206
27	165		------	232		154	107	84	15	143	90
28	182		------	235	225	145	101	72	26	141	58
29	227		------	------		145	103	66	38	128	48
30	223		------	------		137	103	60	44	122	38
31	220	------	------	------		------	101	------	48	109	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,560	155	1,050	64,600
November	227	----------	180	10,700
December	----------	----------	150	9,220
January	----------	----------	165	10,100
February	287	232	256	14,200
March	263	----------	240	14,800
April	1,440	137	755	44,900
May	326	101	159	9,780
June	1,990	60	599	35,600
July	1,100	15	102	6,270
August	2,360	62	497	30,600
September	311	26	66.3	3,950
The year	2,560	15	352	255,000

CHEYENNE RIVER NEAR CARLIN, S. DAK.

LOCATION.—Chain gage in sec. 31, T. 9. N., R. 24 E., 4 miles northeast of Carlin and half a mile above Hermaphrodite Creek.

DRAINAGE AREA.—23,400 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 8,600 second-feet July 4 (gage height, 5.8 feet); minimum, 35 second-feet Sept. 18.

1928–1931: Maximum discharge, 49,600 second-feet June 3, 6, 1929 (gage height, 10.12 feet); minimum, that of Sept. 18, 1931.

Maximum floods known, 18.1 feet in May, 1920 and 1927.

REMARKS.—Records good except those for periods of ice effect, Nov. 20 to Feb. 21, Mar. 28–31, which were based on two discharge measurements and temperature records. Minor diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	488	298				416	338	218	328	318	166	236
2	607	292				396	300	186	328	290	166	227
3	652	292			550	385	523	162	300	290	149	183
4	2,530	298				376	1,560	168	274	4,830	183	166
5	2,550	287		210		385	1,240	274	218	4,260	768	158
6	2,400	287				448	1,650	501	210	1,060	942	106
7	2,750	287				376	2,230	396	210	730	818	106
8	2,190	292	250		500	376	2,170	356	218	1,000	527	97
9	1,820	292				328	1,630	309	438	742	445	102
10	1,360	292				448	1,370	282	600	465	356	97
11	1,100	287		182		396	1,110	416	567	356	475	84
12	928	287			500	356	920	406	1,720	309	705	70
13	825	283				406	772	376	1,440	245	569	60
14	1,380	255		130		438	624	338	2,100	149	395	58
15	770	238			526	490	512	282	1,830	192	338	55
16	625	234			540	416	448	234	1,380	254	290	55
17	580	246			535	396	376	204	1,050	192	290	[a] 45
18	529	264		170	520	356	328	186	824	174	272	[a] 35
19	472	283			520	376	290	198	759	166	254	[a] 58
20	442				530	356	282	198	1,060	149	858	[a] 68
21	413				535	338	258	192	759	158	1,440	[a] 50
22	413				545	366	226	186	556	183	1,110	[a] 48
23	413			300	501	396	210	204	480	272	1,160	[a] 50
24	406	250	220		490	396	198	210	396	236	900	70
25	413				458	338	192	204	406	183	613	74
26	370				448	318	186	198	376	192	485	79
27	348				458	309	192	226	347	174	366	356
28	342	320		600	512		204	218	328	158	300	218
29	342	310			-------	275	186	210	318	132	263	183
30	337	275			-------		210	218	309	92	245	158
31	326	-------			-------		-------	328	-------	140	236	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,750	326	939	57,700
November	----------	234	273	16,200
December	----------	----------	235	14,400
January	----------	----------	282	17,300
February	----------	448	515	28,600
March	490	----------	370	22,800
April	2,230	186	691	41,100
May	501	162	261	16,000
June	2,100	210	671	39,900
July	4,830	92	584	35,900
August	1,440	149	519	31,900
September	356	35	112	6,660
The year	4,830	35	454	328,000

[a] Estimated.

BEAVER CREEK NEAR BURDOCK, S. DAK.

LOCATION.—Chain gage in sec. 8, T. 7 S., R. 1 E., at highway bridge 2 miles west of Burdock. Zero of gage is 3,547.1 feet above mean sea level.

DRAINAGE AREA.—1,480 square miles.

RECORDS AVAILABLE.—April, 1905, to November, 1906; April, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 900 second-feet Oct. 3 (gage height, 3.78 feet); no flow during days in June, July, August, September.

1905–6, 1929–1931: Maximum discharge, 3,570 second-feet Feb. 20, 1930 (gage height, 8.37 feet); no flow during parts of summer months in 1906, 1930, 1931.

REMARKS.—Records good except those for periods of ice effect, Nov. 19 to Mar. 14, Mar. 26–28, which were based on two discharge measurements and temperature records. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	37	24				61	8	4	0	0	0
2	247	24				58	8	8	0	0	0
3	895	22		35		56	8	6	3		0
4	462	24				91	10	6	4	0	0
5	552	24				39	11	49	4	0	0
6	154	24	15			34	6	11	3	0	0
7	78	24				71	22	5	2	0	0
8	49	24		30	40	66	15	4	2	0	0
9	41	24				46	15	4	2	0	0
10	39	29				37	12	5	1	0	0
11	32	24				32	10	476	1	0	0
12	34	24				29	8	494	0	0	0
13	32	24	13	30		29	8	98	0	0	0
14	27	26				26	8	34	0	0	0
15	24	24			58	24	11	46	0	0	0
16	26	24			64	22	10	51	0	0	0
17	27	24			46	26	11	26	0	0	0
18	24	24	16	35	58	24	11	11	0	10	0
19	26				44	15	8	8	0	8	0
20	26				46	16	6	6	0	5	0
21	22				34	15	5	5	0	3	9
22	21				32	12	4	4	0	2	9
23	22		25		39	15	5	3	0	0	9
24	24	24			27	16	5	3	0	0	8
25	24			35	27	18	4	2	0	0	8
26	24					12	4	2	0	0	8
27	24				20	12	5	2	0	0	6
28	22		35			11	4	1	0	0	6
29	29					11	4	1	0	0	7
30	24				41	9	4	0	0	0	5
31	22				49		4		0	0	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	895	21	99.7	6,130
November	29	22	24.2	1,440
December			20.0	1,230
January			20.3	1,250
February			33.2	1,840
March	64		38.9	2,390
April	91	9	31.1	1,850
May	22	4	8.2	504
June	494	0	45.8	2,730
July	4	0	.7	43
August	10	0	.9	55
September	9	0	2.5	149
The year	895	0	27.1	19,600

RAPID CREEK NEAR PACTOLA, S. DAK.

LOCATION.—Staff gage in sec. 2, T. 1 N., R. 5 E., at flume crossing half a mile below Pactola.

DRAINAGE AREA.—319 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year (creek and flume), 124 second-feet Apr. 8; minimum, 20 second-feet July 22–25, Sept. 14–17.

1929–1931: Maximum discharge (creek and flume), 794 second-feet June 3, 1929; minimum, that of July 22–25, Sept. 14–17, 1931.

REMARKS.—Records of creek and flume good except those for period Nov. 19 to Mar. 9, which were based on two discharge measurements and temperature records. Flow of creek regulated by power flume which diverts water three-quarters of a mile above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	3				3	0.7	0.6	0.7	1	1
2	3	1				3	.7	.6	.8	1	1
3	3	1				4	.7	.6	.8	1	1
4	7	1				4	2	.6	1	1	1
5	7	1			45	6	2	.7	.8	1	1
6	5	1				16	.7	.6	.8	1	1
7	3	.9				44	.7	.6	.8	1	1
8	2	.9	46			57	.8	.6	.8	1	1
9	1	.9				10	.8	.7	.8	1	1
10	1	.9		48	2	4	.7	.8	.8	1	1
11	1	.9			2	5	.7	.8	.8	1	1
12	1	.9			4	14	.6	.8	.8	1	1
13	1	.8			13	14	.7	.7	.8	1	1
14	1	.7			2	12	.6	.7	.8	1	1
15	1	.7			62	4	.6	.7	.8	1	1
16	1	.7			36	1	.7	.7	.8	1	1
17	1	.7			31	.8	.7	.7	.8	1	1
18	1	.7			14	.7	.7	.7	.8	1	1
19	1				5	.7	.7	.7	.8	1	1
20	1				2	.7	.6	.7	.8	1	1
21	1				2	.7	.7	.7	.8	1	1
22	1				1	.7	.7	.7	.8	1	1
23	.9				2	.7	.6	.7	.8	1	1
24	.9				.9	.7	.6	.7	.8	1	1
25	.9	35			.8	.6	.6	.7	.8	1	1
26	.9				1	.6	.6	.7	.8	1	1
27	.9				1	.6	.8	.7	.9	1	1
28	1				1	.6	.7	.7	.9	1	1
29	.9				3	.7	.7	.7	.9	1	1
30	.9				4	.6	.7	.8	1	1	1
31	1				9		.6		1	1	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	11	0.9	2.04	125
November		.7	14.6	869
December			45	2,770
January			48	2,950
February			50	2,780
March	62	.8	19.5	1,200
April	57	.6	7.01	417
May	2	.6	.76	47
June	.8	.6	.69	41
July	1	.7	.83	51
August	1	1	1.0	61
September	1	1	1.0	60
The year	62	.6	15.7	11,400

Daily and monthly combined discharge, in second-feet, of Rapid Creek and Dakota Power & Light Co.'s flume near Pactola, S. Dak., 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	53	61	------	------		52	62	36	23	27	26
2	76	44	------	------		46	57	35	22	26	25
3	101	53	------	------		40	53	33	24	24	24
4	104	53	------	------		34	82	39	70	23	23
5	102	48	------	------	45	40	87	39	33	23	22
6	82	44	------	------		74	69	35	26	25	22
7	65	44	------	------		109	60	32	25	26	22
8	57	35	46	------		124	66	30	24	25	21
9	54	32	------	------		73	65	30	23	24	21
10	53	33	------	48	49	70	67	33	23	24	21
11	53	34	------	------	59	76	62	45	23	23	21
12	54	34	------	------	69	93	62	41	22	23	21
13	44	34	------	------	76	94	59	36	24	22	21
14	53	35	------	------	52	92	54	36	22	22	20
15	62	35	------	------	82	79	49	37	21	23	20
16	49	35	------	------	41	69	49	33	21	27	20
17	35	35	------	------	33	64	49	31	21	28	20
18	35	35	------	------	109	59	49	28	20	25	21
19	63		------	------	69	56	48	27	21	24	21
20	58		------	------	56	52	48	27	21	24	21
21	56		------	------	53	45	45	27	21	24	22
22	54		------	------	68	59	45	26	20	23	22
23	54		------	------	69	46	42	25	20	23	24
24	51		------	------	57	54	41	23	20	23	25
25	53	35	------	------	53	52	39	23	20	23	25
26	53		------	------	41	49	37	22	21	23	26
27	53		------	------	40	48	45	22	21	23	25
28	53		------	------	39	47	47	21	22	22	25
29	51		------	------	41	46	42	21	23	23	24
30	50		------	------	45	48	40	23	25	22	23
31	50	------	------	------	53	------	37	------	26	22	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	104	35	59.1	3,630
November	61	32	38.1	2,270
December	----------	----------	45	2,770
January	----------	----------	48	2,950
February	----------	----------	50	2,780
March	109	33	53.5	3,290
April	124	34	63.0	3,750
May	87	37	53.5	3,290
June	45	21	30.5	1,810
July	70	20	24.1	1,480
August	28	22	23.8	1,460
September	26	20	22.5	1,340
The year	124	20	42.6	30,800

RAPID CREEK AT CRESTON, S. DAK.

LOCATION.—Staff gage in sec. 4, T. 2 S., R. 12 E., at Creston. Staff gage three-quarters of a mile upstream used prior to Nov. 7, 1930.
DRAINAGE AREA.—710 square miles.
RECORDS AVAILABLE.—April, 1929, to September, 1931.
EXTREMES.—Maximum discharge during year, 575 second-feet May 3–4 (gage height, 3.7 feet); no flow June 24 to July 3, July 15 to Sept. 30.
1929–1931: Maximum discharge, 2,740 second-feet June 2, 1929 (gage height, 8.6 feet); no flow during summer months of 1930, 1931.
REMARKS.—Records good. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1	39	83				77	141	24	11	0
2	122	81				76	149	16	13	0
3	300	81	80		86	73	155	14	13	0
4	137	78				73	202	316	12	10
5	124	76				72	205	51	9	4
6	105	75				73	158	41	8	1
7	95	76				85	147	41	8	3
8	87	76	88	85	88	96	168	48	7	17
9	88	77				97	155	43	7	16
10	85	76				92	158	40	9	11
11	91	73	86		[a]89	85	129	56	3	4
12	199	72	86			85	117	50	10	3
13	158	75	88			85	103	47	27	9
14	124	75	88		90	86	85	58	10	1
15	104	76	86			86	81	56	9	0
16	97	76	86			85	77	40	7	0
17	91	75	90			82	82	29	7	0
18	85	75	86		95	82	81	27	8	0
19	81	76	86			78	62	27	3	0
20	78	75	84			76	64	28	3	0
21	80	78			88	77	49	27	2	0
22	81	81			88	81	43	32	2	0
23	84	77	84		81	81	33	26	1	0
24	85	76			77	76	29	30	0	0
25	82	78			76	73	29	31	0	0
26	81	77			71	78	28	26	0	0
27	80	76			80		29	13	0	0
28	80	77	84		80		29	11	0	0
29	79	77				50	27	10	0	0
30	80	81					26	10	0	0
31	83							9		0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	300	39	103	6,330
November	83	72	76.8	4,570
December	90		84.8	5,210
January			[a]85.0	5,230
February		71	87.0	4,830
March	97		76.1	4,680
April	205	26	94.7	5,640
May	316	9	41.2	2,530
June	27	0	6.3	375
July	17	0	2.5	154
The year	316	0	54.6	39,500

[a] Estimated.

NOTE.—No flow during months omitted.

BELLE FOURCHE RIVER NEAR MOORCROFT, WYO.

LOCATION.—Chain gage in sec. 36, T. 50 N., R. 68 W., 1½ miles west of Moorcroft and 1 mile above Donkey Creek. Zero of gage is 4,133.44 feet above mean sea level.

DRAINAGE AREA.—1,380 square miles.

RECORDS AVAILABLE.—September, 1923, to September, 1931.

EXTREMES.—Maximum discharge during year, 221 second-feet Oct. 2 (gage height, 2.02 feet); no flow during part of June, July, August, September.

1923–1931: Maximum discharge, 12,500 second-feet Apr. 7, 1924 (gage height, 12.6 feet); no flow during parts of 1928, 1931.

REMARKS.—Records good. Small diversion by railroad pump just above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1	3	3	6	2	0.8	2	0	0
2	38	3	3	4	2	1	3	0	0
3	45	3	3	4	7	1	1	3	0
4	81	3	3	5	8	2	.3	.4	0
5	12	3	3	6	22	51	0	0	0
6	8	3	3	6	19	20	0	0	0
7	7	3	3	7	11	9	0	0	0
8	5	2	3	5	8	7	0	0	0
9	4	3	4	5	6	5	0	0	0
10	4	3	4	5	5	5	0	0	0
11	4	3	4	4	4	4	0	0	0
12	4	3	5	4	4	4	0	0	0
13	5	3	7	3	4	5	0	0	0
14	11	3	6	3	3	8	0	0	0
15	7	3	5	3	2	6	0	0	0
16	5	3	5	3	2	4	0	0	0
17	4	3	5	3	1	2	0	0	0
18	5	3	7	3	1	.9	0	0	0
19	4	3	8	2	1	.5	0	0	0
20	4	3	6	2	1	.4	0	0	0
21	4	3	6	2	1	.2	0	0	0
22	4	3	7	2	1	0	0	0	5
23	3	3	6	2	.8	0	0	0	2
24	3	3	7	2	.8	0	0	0	0
25	3	3	6	2	.7	0	0	0	0
26	3	3	e 4	2	.7	0	0	0	0
27	3	3	3	2	2	0	0	0	0
28	3	3	2	2	2	0	0	0	0
29	3	3	3	2	2	0	0	0	0
30	3	3	4	2	1	0	0	0	0
31	3	------	5	------	.8	------	0	0	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	81	1	9.5	584
November	3	2	3.0	179
December	------	------	e 2	123
January	------	------	e 2	123
February	------	------	e 2	111
March	8	2	4.6	283
April	7	2	3.4	202
May	22	.7	4.1	252
June	51	0	4.6	274
July	3	0	.2	12
August	3	0	.1	6
September	5	0	.2	12
The year	81	0	3.0	2,160

e Estimated.

BELLE FOURCHE RIVER AT HULETT, WYO.

LOCATION.—Chain gage in sec. 12, T. 54 N., R. 65 W., at south edge of Hulett. Zero of gage is 3,742.05 feet above mean sea level.

DRAINAGE AREA.—2,800 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 544 second-feet Oct. 4 (gage height, 3.33 feet); no flow July 18–23.

1929–1931: Maximum discharge, 6,230 second-feet May 31, 1929 (gage height, 8.9 feet); minimum, that of July 18–23, 1931.

REMARKS.—Records good except those for period Nov. 16 to Mar. 14, which were based on one discharge measurement and temperature records. No diversions above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	7			63	12	7	7	7	1
2	18	7			60	10	10	9	4	2
3	193	6		40	65	12	6	5	3	1
4	494	6			87	12	11	5	3	2
5	319	6			81	14	7	5	3	1
6	125	7			60	16	8	5	2	.6
7	69	7			36	12	19	4	2	.6
8	44	7		35	38	12	38	5	2	.4
9	36	5	5		33	14	27	4	1	.6
10	26	6			35	23	26	3	1	.4
11	20	7			33	27	23	3	1	.6
12	23	6			35	25	77	3	2	.4
13	23	6		55	32	10	87	2	1	.4
14	22	6			32	11	63	2	1	.6
15	9	5		62	29	11	63	2	2	.6
16	5				44	25	10	41	.6	2	.6
17	5				41	23	12	26	.4	1	.6
18	6	4			44	25	10	15	0	1	.4
19	7				54	26	9	9	0	2	.6
20	9				51	20	10	6	0	1	2
21	17				49	22	10	6	0	1	2
22	7				47	20	11	4	0	1	3
23	7	3			51	19	8	2	0	.6	3
24	8				58	19	7	2	.8	.8	4
25	5				46	19	7	2	1	1	6
26	6				47	18	7	2	.4	1	4
27	6				46	15	27	1	.8	1	2
28	6	3			12	29	1	2	1	3
29	7			30	12	23	.6	3	1	2
30	8				12	23	33	6	1	2
31	7			55		10		4	1	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	494	5	50.0	3,070
November	7		4.8	286
December			4	246
January			5	307
February			25	1,390
March	62		44.5	2,740
April	87	12	33.5	1,990
May	29	7	14.0	861
June	87	0.6	20.8	1,240
July	9	0	2.7	166
August	7	0.6	1.7	105
September	6	0.4	1.6	95
The year	494	.4	17.0	12,500

BELLE FOURCHE RIVER NEAR BELLE FOURCHE, S. DAK.

LOCATION.—Staff gage in sec. 2, T. 8 N., R. 2 E., at diversion dam of Belle Fourche irrigation project 1½ miles below Belle Fourche.

DRAINAGE AREA.—4,310 square miles.

RECORDS AVAILABLE.—May to November, 1906; January, 1912, to September, 1931.

EXTREMES.—Maximum discharge during year, 848 second-feet June 11; minimum, 5 second-feet July 23, 24, 27.

1912–1931: Maximum discharge, 22,400 second-feet Apr. 9, 1924; no flow for several days during 1914 and 1919.

REMARKS.—Diversions for irrigation above station. Flow regulated by Belle Fourche Reservoir, capacity, 203,770 acre-feet. Records include amount diverted at Belle Fourche diversion dam. Records furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	140	206	243	245	158	183	251	174	125	12	16	34
2	182	206	252	259	161	222	368	169	112	13	17	34
3	175	206	263	240	164	174	369	169	112	14	16	44
4	163	206	259	240	161	212	238	181	123	28	67	48
5	163	206	251	255	168	197	257	182	129	52	77	49
6	229	206	251	246	170	189	253	134	106	52	72	51
7	460	206	251	252	167	160	266	131	107	56	40	54
8	318	206	255	230	155	187	292	137	106	35	129	24
9	317	206	255	230	155	184	263	155	94	28	60	44
10	277	221	254	294	161	207	249	164	93	24	49	27
11	270	224	240	381	161	221	249	161	392	19	36	33
12	270	201	259	120	161	207	249	156	92	20	31	32
13	246	222	262	69	161	206	251	164	71	18	25	47
14	248	233	256	65	149	201	257	148	63	12	20	36
15	246	219	260	128	158	202	260	138	72	11	19	41
16	238	212	201	85	161	206	257	114	87	13	24	41
17	181	220	248	84	168	206	244	104	81	11	27	40
18	169	229	257	76	165	204	244	97	57	10	25	47
19	170	238	251	80	170	228	244	97	62	10	24	51
20	184	236	253	117	174	236	272	94	47	7	23	54
21	203	238	253	172	174	236	278	96	42	7	27	92
22	206	236	253	165	177	230	218	107	40	7	22	106
23	164	258	253	165	172	242	191	107	32	5	29	86
24	233	217	253	151	178	259	194	107	29	5	32	99
25	233	243	245	149	167	249	190	92	24	7	34	116
26	233	241	218	148	174	229	190	71	26	7	34	75
27	224	247	252	149	184	189	204	106	22	5	38	59
28	200	245	236	154	181	216	203	164	24	7	53	58
29	202	248	243	155	-------	213	178	121	13	10	21	60
30	204	248	247	155	-------	233	171	128	10	10	23	59
31	204	-------	243	155	-------	227	-------	128	-------	10	54	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	460	140	224	13,800
November	258	201	224	13,300
December	263	201	249	15,300
January	381	65	175	10,800
February	184	149	166	9,220
March	259	160	211	13,000
April	369	171	245	14,600
May	182	71	132	8,120
June	392	10	79.8	4,750
July	56	5	16.9	1,040
August	129	16	37.5	2,310
September	116	24	54.7	3,250
The year	460	5	151	109,000

BELLE FOURCHE RIVER NEAR ELM SPRINGS, S. DAK.

LOCATION.—Chain gage in sec. 26, T. 5 N., R. 13 E., 6 miles northeast of Elm Springs.
DRAINAGE AREA.—7,130 square miles.
RECORDS AVAILABLE.—August, 1928, to September, 1931.
EXTREMES.—Maximum discharge during year, 17,000 second-feet July 3 (gage height, 8.4 feet); minimum, 18 second-feet Sept. 16 (gage height, 1.58 feet)
1928–1931: Maximum discharge, 33,500 second-feet June 3, 1929 (gage height, 11.3 feet); minimum, that of Sept. 18, 1931.
Maximum flood known, 21.8 feet in May, 1927.
REMARKS.—Records fair. Diversions for irrigation above station. Flow partly regulated by Belle Fourche Reservoir.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	255	62	------	------	32	90	36	175	174	86	35
2	528	65	------	------	47	97	35	166	212	105	30
3	796	78	------	------	47	362	79	152	2,510	132	33
4	963	81	------	------	52	305	520	159	2,830	123	30
5	430	81	------	------	54	431	193	156	373	117	28
6	201	81	------	------	47	514	139	152	340	111	32
7	154	69	------	------	22	455	135	166	325	97	30
8	110	78	------	------	36	330	126	196	242	86	30
9	98	76	------	------	50	229	132	264	170	105	30
10	98	71	51	------	120	159	142	189	142	120	30
11	102	76	------	------	126	117	174	221	105	132	29
12	123	76	------	------	76	94	114	449	89	105	26
13	123	76	------	------	49	76	102	310	84	84	25
14	108	71	------	------	65	56	86	212	74	61	23
15	112	71	------	------	74	58	65	189	79	58	23
16	123	}	------	102	67	58	86	196	114	67	18
17	154	}	------	------	63	54	102	156	89	74	19
18	46	} 60	------	------	61	52	99	135	79	76	19
19	71	}	------	------	65	35	99	120	89	79	19
20	118	}	------	------	69	29	129	126	200	84	21
21	144	}	------	------	67	33	132	135	196	69	25
22	120	}	------	------	76	35	152	132	152	74	35
23	129	}	------	------	84	40	166	181	108	79	38
24	123	}	------	------	81	36	145	200	81	79	43
25	95	}	------	------	76	45	132	177	67	61	58
26	90	} 50	------	------	81	50	132	166	61	56	45
27	95	}	------	------	67	36	139	163	56	52	61
28	90	}	------	------	70	36	174	212	63	49	49
29	78	}	------	------	70	43	305	212	79	38	45
30	76	}	------	------	80	41	295	189	79	32	56
31	71	------	------	------	80	------	185	------	79	32	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	963	46	188	11,600
November	81	----------	63.7	3,790
December	----------	----------	*60	3,690
January	----------	----------	*50	3,070
February	----------	----------	*80	4,440
March	126	22	66.3	4,080
April	514	29	133	7,910
May	520	35	147	9,040
June	449	120	189	11,200
July	2,830	56	301	18,500
August	132	32	81.4	5,010
September	61	18	32.8	1,950
The year	2,830	18	116	84,300

* Estimated.

REDWATER CREEK NEAR BEULAH, WYO.

LOCATION.—Chain gage in sec. 29, T. 7 N., R. 60 W., 1½ miles downstream from Beulah. Staff gage at same site used prior to Jan. 8, 1931.
DRAINAGE AREA.—459 square miles.
RECORDS AVAILABLE.—April, 1929, to September, 1931.
EXTREMES.—Maximum discharge during year, 62 second-feet Apr. 15 to May 24 (gage height, 4.90 feet); minimum, 18 second-feet July 15–19 (gage height, 4.30 feet).
1929–1931: Maximum discharge, 515 second-feet May 26, 27, 1929 (gage height, 6.2 feet); no flow Aug. 13–15, 1929.
REMARKS.—Records good. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	53	58	58	54	55	57	58	62	53	40	25	44
2	58	58	58	54	55	57	58	62	50	40	28	44
3	58	58	58	54	55	57	58	62	47	40	27	44
4	55	58	58	54	55	57	58	62	47	40	26	44
5	53	58	58	54	55	57	58	62	47	44	31	43
6	53	58	58	54	55	57	58	62	47	42	32	47
7	53	58	58	54	55	57	58	62	47	40	32	47
8	53	58	58	54	55	57	58	62	47	41	32	47
9	53	58	58	54	55	57	58	62	46	41	32	47
10	53	58	58	49	55	57	58	62	47	40	32	48
11	53	58	58	54	55	57	59	62	44	40	34	49
12	53	58	58	54	55	57	59	62	44	40	35	49
13	53	58	58	54	55	57	59	62	44	53	37	51
14	53	58	58	54	55	57	59	62	40	48	37	51
15	53	58	58	54	55	57	58	62	38	24	37	51
16	53	58	58	54	55	57	62	62	39	18	38	51
17	53	58	58	54	55	57	62	62	38	18	35	51
18	53	58	58	54	55	57	62	61	37	18	32	51
19	53	58	58	54	55	57	62	62	37	20	32	51
20	53	58	58	54	55	57	62	62	38	22	34	51
21	53	58	58	54	55	57	62	62	38	21	37	51
22	53	58	58	54	55	57	62	62	37	21	37	51
23	53	58	58	54	55	57	62	62	37	21	36	51
24	55	58	58	54	55	57	62	62	37	21	35	51
25	58	58	58	54	55	57	62	59	37	21	35	51
26	58	58	58	54	55	57	62	55	34	22	35	62
27	58	58	58	54	55	57	62	60	32	22	35	62
28	58	58	58	54	55	57	62	60	32	22	36	61
29	58	58	58	54	------	57	62	60	38	22	39	60
30	58	58	58	54	------	57	62	56	40	22	44	60
31	58	------	58	54	------	57	------	53	------	25	44	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	58	53	54.6	3,360
November	58	58	58.0	3,450
December	58	58	58.0	3,570
January	54	49	53.8	3,310
February	55	55	55.0	3,050
March	57	57	57.0	3,500
April	62	58	60.1	3,580
May	62	53	61.0	3,750
June	53	32	41.3	2,460
July	53	18	30.6	1,880
August	44	25	34.2	2,100
September	62	43	50.7	3,020
The year	62	18	51.2	37,000

BAD RIVER BASIN

BAD RIVER NEAR FORT PIERRE, S. DAK.

LOCATION.—Chain gage in NW. ¼ sec. 10, T. 4 N., R. 31 E., 2½ miles south of Fort Pierre. Zero of gage is 1,427.83 feet above mean sea level.

DRAINAGE AREA.—3,170 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 2,300 second-feet Jan. 30 (gage height, 8.4 feet); no flow during several months.

1928–1931: Maximum discharge, 12,600 second-feet (revised) Apr. 25, 1929 (gage height, 21.18 feet); no flow for several months each year.

Maximum stage known, 30.89 feet in 1927, as shown by well-defined high-water mark (estimated discharge, about 35,000 second-feet).

REMARKS.—Records good except those for period Jan. 20–29, which were estimated because of ice. No diversions.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July
1	2	3	0	1,630	41	232	6	7	1
2	3	3	0	1,100	42	520	5	5	1
3	10	3	0	863	37	544	5	3	1
4	23	3	0	700	37	422	3	1	0
5	29	2	0	598	34	754	5	1	0
6	377	2	0	408	25	1,240	4	1	0
7	464	2	0	408	35	1,080	3	1	0
8	222	2	0	359	24	764	5	1	0
9	108	3	0	257	26	467	8	5	0
10	59	3	0	284	19	295	8	37	0
11	35	2	0	232	17	210	7	825	0
12	27	2	0	253	18	143	6	825	0
13	18	2	0	197	17	104	35	764	0
14	15	2	0	176	19	73	24	391	0
15	11	3	0	168	24	55	18	176	0
16	12	3	0	411	16	39	15	100	0
17	11	3	0	188	15	27	10	61	0
18	7	2	0	176	12	25	9	42	0
19	5	3	0	142	14	19	8	26	0
20	5	2	2	156	16	19	7	19	0
21	4	1	4	149	17	16	6	17	0
22	5	0	8	133	16	14	4	14	0
23	4	0	10	116	23	12	4	8	0
24	3	0	40	132	146	12	3	2	0
25	3	0	100	133	78	10	3	4	0
26	2	0	300	109	10	9	1	3	0
27	4	0	500	84	5	7	274	1	0
28	4	0	1,000	76	4	8	95	1	0
29	5	0	1,500	-------	25	8	40	1	0
30	3	0	2,300	-------	50	6	20	1	0
31	4	-------	2,110	-------	100	-------	9	-------	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	464	2	47.9	2,950
November	3	0	1.7	101
January	2,300	0	254	15,600
February	1,630	76	344	19,100
March	146	4	31.0	1,910
April	1,240	6	238	14,200
May	274	1	21.0	1,290
June	825	1	111	6,600
July	1	0	.1	6
The period	2,300	0	85.3	61,800

NOTE.—No flow during December, August, September.

WHITE RIVER BASIN

WHITE RIVER AT CRAWFORD, NEBR.

LOCATION.—Staff gage in sec. 10, T. 31 N., R. 52 W., half a mile west of Crawford.
DRAINAGE AREA.—295 square miles.
RECORDS AVAILABLE.—February to September, 1931.
EXTREMES.—Maximum discharge during year, 93 second-feet Aug. 16, 17 (gage height, 2.94 feet); minimum, 9 second-feet Sept. 6–15 (gage height, 1.52 feet).
REMARKS.—Records fair. No diversions or regulation.

Daily and monthly discharge, in second-feet, 1931

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			31	30	28	25	18	14	12
2			32	31	39	24	18	14	12
3			32	30	30	24	18	13	12
4			32	31	31	23	18	12	12
5			33	33	34	25	18	12	11
6			30	31	32	26	18	13	9
7			50	31	32	24	18	15	9
8			23	30	31	23	18	13	9
9			51	30	31	21	16	15	9
10			33	30	31	23	16	15	9
11			33	30	28	26	16	15	9
12			32	30	30	24	16	12	9
13			36	30	30	24	16	11	9
14			32	29	28	23	15	13	9
15			28	29	28	79	15	14	9
16	[a] 33		30	29	27	27	14	93	11
17			30	29	27	27	14	93	11
18			30	29	28	22	13	20	11
19			30	29	28	21	13	16	11
20			30	29	28	20	15	16	11
21			28	29	28	20	14	16	11
22			32	29	27	20	13	16	11
23			31	30	27	20	12	34	12
24			30	30	26	20	12	18	14
25		32	30	30	26	20	12	11	14
26		32	30	28	27	20	12	11	14
27		31	[b] 20	28	33	20	12	11	14
28		31	[b] 22	28	31	20	12	11	14
29			[b] 24	28	31	18	12	11	14
30			27	28	32	18	12	11	14
31			27		27		12	11	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March	51	20	30.9	1,900
April	33	28	29.6	1,760
May	39	26	29.5	1,810
June	79	18	24.2	1,440
July	18	12	14.8	910
August	93	11	19.4	1,190
September	14	9	11.2	666
The period				9,680

[a] Discharge measurement. [b] Estimated.

WHITE RIVER NEAR INTERIOR, S. DAK.

LOCATION.—Staff gage in sec. 7, T. 4 S., R. 18 E., 3 miles southwest of Interior.
DRAINAGE AREA.—4,120 square miles.
RECORDS AVAILABLE.—June, 1904, to November, 1906; August, 1911, to September, 1918; August, 1928, to September, 1931.
EXTREMES.—Maximum discharge during year, 2,960 second-feet Oct. 3 (gage height, 6.0 feet); no flow July 27, Aug. 5, 6, 30, 31, Sept. 1, 5–22.
1904–1906, 1911–1918, 1928–1931: Maximum discharge, 16,500 second-feet Mar. 8, 1905 (gage height, 14 feet); no flow for several days during 1914 and 1931.
REMARKS.—Records fair. No diversions or regulation.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	117	39	------		39	e280	46	41	2	3	0
2	45	39	------		82	668	54	27	2	4	1
3	940	36	------	100	58	996	46	19	1	2	2
4	1,750	36	------		43	680	43	16	1,070	1	1
5	919	32	------		69	432	45	16	269	0	0
6	380	36	------		21	626	58	19	87	0	0
7	202	43	------		69	584	60	19	36	12	0
8	171	45	------	90	71	353	196	15	15	41	0
9	142	43	------		69	311	396	15	11	22	0
10	80	46	------		150	305	231	10	7	99	0
11	65	43	------	80	166	188	160	1,420	7	400	0
12	155	48	------	80	225	152	142	347	180	246	0
13	281	54	------	75	191	125	115	214	293	73	0
14	160	46	------	70	185	104	94	142	163	18	0
15	85	30	------	75	166	94	87	104	34	12	0
16	50	e32	------	75	139	89	82	45	15	12	0
17	18	29	------	117	134	87	76	54	10	8	0
18	115	e26	------	128	177	71	65	22	7	7	0
19	76	25	------	89	171	67	60	9	6	43	0
20	36	25	18	80	174	76	67	8	69	39	0
21	48		------	92	163	67	54	9	41	12	0
22	32		------	85	115	58	50	5	12	58	0
23	26		------	92	266	52	50	6	5	41	1
24	22		------	92	302	45	50	5	4	9	202
25	19		------	85	152	43	45	4	2	6	722
26	30	22	------	85	e130	45	45	3	1	4	208
27	29		------	82	e90	41	182	2	0	4	54
28	30		------	58	e70	43	60	8	71	3	18
29	24		------	------	e40	43	87	3	8	1	8
30	18		------	------	e80	43	76	2	22	0	6
31	36	------	------	------	e110	------	54	------	6	0	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,750	18	197	12,100
November	54	----------	32.4	1,930
December	----------	----------	e25.0	1,540
January	----------	----------	e25.0	1,540
February	----------	----------	88.9	4,940
March	302	----------	126	7,750
April	996	41	226	13,400
May	396	43	92.8	5,710
June	1,420	2	87.0	5,180
July	1,070	0	79.2	4,870
August	400	0	38.1	2,340
September	722	0	40.8	2,430
The year	1,750	0	88.1	63,700

e Estimated.

WHITE RIVER NEAR OACOMA, S. DAK.

LOCATION.—Chain gage in sec. 21, T. 103 N., R. 72 W., 6 miles southwest of Oacoma.
DRAINAGE AREA.—10,100 square miles.
RECORDS AVAILABLE.—August, 1928, to September, 1931.
EXTREMES.—Maximum discharge during year, 5,470 second-feet Oct. 6 (gage height, 5.02 feet); minimum, 18 second-feet Sept. 16 (gage height, 1.10 feet).
1928–1931: Maximum discharge, 9,860 second-feet May 13, 1930 (gage height, 6.62 feet); minimum, that of Sept. 16, 1931.
REMARKS.—Records good. No diversions or regulation.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	732	148			387	405	181	213	93	65	88
2	470	138			418	1,400	184	250	92	59	79
3	470	141		650	405	1,050	174	231	66	55	71
4	457	141			381	630	167	188	52	51	52
5	457	138			357	2,180	167	170	60	77	47
6	4,980	141			334	2,590	167	150	47	48	40
7	2,810	138			312	2,100	174	150	47	55	40
8	2,040	136		600	312	2,060	181	150	48	1,420	38
9	1,360	132			357	1,940	270	155	431	690	34
10	866	132			301	1,570	381	155	424	399	31
11	680	136			245	1,630	318	153	280	148	30
12	700	141			265	1,560	1,630	150	226	130	30
13	393	141		550	270	1,040	720	141	174	114	26
14	312	141			270	804	640	128	141	77	21
15	334	143			290	670	620	213	128	84	20
16	250	146		[a]450	457	580	498	357	63	62	18
17	192	146		[a]450	498	512	399	604	200	477	19
18	195	141	74	[a]450	556	457	357	556	167	301	21
19	526	132		444	540	393	312	572	312	245	22
20	323	120		484	540	393	323	323	218	208	23
21	240	98		457	526	334	296	275	143	148	24
22	184	88		470	498	301	285	208	116	109	24
23	174	88		540	484	275	236	158	103	95	26
24	164	88		512	512	270	204	153	98	85	27
25	174	88		505	564	236	188	150	92	87	33
26	181	88		470	540	240	181	118	85	393	46
27	167	88		438	381	231	181	93	74	204	47
28	164	88		450	345	222	204	92	76	134	44
29	160	88			393	195	195	84	76	95	44
30	160	88			280	192	195	76	68	98	357
31	150				184		188		55	109	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	4,980	150	660	40,600
November	148	88	122	7,260
December			[a] 95.0	5,840
January			[a] 150	9,220
February		438	540	30,000
March	564	184	394	24,200
April	2,590	192	882	52,500
May	1,630	167	330	20,300
June	604	76	214	12,700
July	431	47	137	8,420
August	1,420	48	204	12,500
September	357	18	47.4	2,820
The year	4,980	18	313	226,000

[a] Estimated.

SOUTH FORK OF WHITE RIVER NEAR WHITE RIVER, S. DAK.

LOCATION.—Chain gage in sec. 14, T. 41 N., R. 28 W., 4½ miles south of White River.

DRAINAGE AREA.—1,390 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 409 second-feet Feb. 4 (gage height, 3.48 feet); minimum, 34 second-feet Sept. 11–14 (gage height, 2.28 feet).

1929–1931: Maximum discharge, 1,300 second-feet May 11, 1930 (gage height, 5.16 feet); minimum, that of Sept. 11–14, 1931.

REMARKS.—Records good except those for period Nov. 20 to Feb. 3, which were based on one discharge measurement and temperature records. No regulation.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	104	116	------	350	214	196	134	114	52	49	41
2	111	111	------	350	196	206	134	114	56	50	41
3	132	111	------	400	192	210	124	119	50	46	46
4	104	109	------	409	157	217	132	119	63	42	39
5	160	106	------	330	148	225	126	134	66	41	41
6	114	109	------	299	166	273	124	124	56	42	39
7	129	111	------	312	137	290	124	111	50	81	39
8	139	116	------	282	132	278	166	119	49	72	38
9	137	114	------	257	142	282	203	114	50	70	39
10	142	119	------	240	145	286	175	104	50	59	36
11	145	109	------	248	151	252	163	111	49	52	34
12	154	111	------	240	166	229	145	116	90	49	34
13	137	111	------	252	192	196	139	119	65	47	34
14	129	114	------	189	203	203	142	102	59	44	34
15	124	116	------	186	221	189	142	109	50	46	36
16	121	111	------	196	214	206	145	102	44	94	39
17	106	109	------	196	236	175	137	97	42	52	41
18	106	102	------	199	236	163	142	92	42	50	42
19	102	109	96	182	240	157	139	94	44	50	56
20	106	105	------	199	244	151	134	85	47	50	47
21	114	90	------	206	196	148	126	85	47	81	47
22	106	80	------	217	189	137	121	83	44	67	42
23	111	80	------	214	233	142	119	72	38	52	44
24	109	75	------	210	221	134	119	70	41	49	65
25	111	70	------	221	196	142	114	72	38	47	72
26	109		------	221	160	126	119	68	38	39	67
27	116		------	217	140	121	129	59	36	38	63
28	106	70	------	217	130	126	124	52	39	39	61
29	109		------	------	172	129	119	50	35	39	59
30	109		------	------	172	126	114	46	35	39	63
31	111	------	------	------	236	------	116	------	41	42	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	160	104	120	7,380
November	119	----------	98.8	5,880
December	----------	----------	90.0	5,530
January	----------	----------	100	6,150
February	409	182	251	13,900
March	244	130	186	11,400
April	290	121	190	11,300
May	203	114	135	8,300
June	134	46	95.2	5,660
July	90	35	48.6	2,990
August	94	38	52.2	3,210
September	72	34	46.0	2,740
The year	409	34	117	84,400

NIOBRARA RIVER BASIN

NIOBRARA RIVER AT DUNLAP, NEBR.

LOCATION.—Staff gage on line between secs. 26 and 27, T. 29 N., R. 48 W., half a mile east of Dunlap and half a mile above Cottonwood Creek.
DRAINAGE AREA.—1,550 square miles.
RECORDS AVAILABLE.—February to September, 1931.
EXTREMES—Maximum discharge during year, 627 second-feet Aug. 6 (gage height, 4.70 feet); minimum, 2 second-feet July 4, 5 (gage height, 1.20 feet).
REMARKS.—Records fair. No diversions or regulation.

Daily and monthly discharge, in second-feet, 1931

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	84	126	90	14	4	6	16
2	------	84	126	105	12	3	6	18
3	------	84	94	76	12	3	6	18
4	------	84	110	76	14	2	6	18
5	------	84	126	76	7	2	6	18
6	------	84	126	63	7	4	627	18
7	------	70	110	76	34	4	24	17
8	------	70	108	63	17	4	22	17
9	------	84	93	63	8	4	19	18
10	------	84	79	63	12	4	29	21
11	------	99	79	63	10	3	24	22
12	------	84	93	63	12	4	26	22
13	------	84	79	63	12	4	26	22
14	------	84	79	63	10	4	26	23
15	------	84	79	76	15	4	33	19
16	------	70	65	50	11	4	33	18
17	------	84	79	50	8	3	33	19
18	------	70	65	50	5	3	50	18
19	------	84	65	63	4	3	44	19
20	------	84	65	56	4	3	46	6
21	------	70	65	56	3	4	36	6
22	------	84	65	56	3	4	36	8
23	------	70	65	56	3	5	36	8
24	------	70	65	56	3	6	38	10
25	83	84	65	52	3	6	39	9
26	113	[a] 75	79	48	4	6	39	8
27	83	[a] 60	79	28	4	6	38	5
28	83	[a] 45	65	24	4	6	38	5
29	------	[a] 55	65	21	3	6	17	6
30	------	[a] 80	65	16	3	6	17	6
31	------	105	------	13	------	6	17	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March	105	45	78.6	4,830
April	126	65	84.1	5,000
May	105	13	57.2	3,520
June	34	3	8.7	518
July	6	2	4.2	258
August	627	6	46.5	2,860
September	23	5	14.6	869
The period	------	------	------	17,900

[a] Estimated.

NIOBRARA RIVER NEAR GORDON, NEBR.

LOCATION.—Staff gage in sec. 15, T. 31 N., R. 41 W., 14 miles southeast of Gordon.

DRAINAGE AREA.—3,050 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 1,220 second-feet Apr. 1 (gage height, 1.66 feet); minimum, 58 second-feet July 29, 30 (gage height, 0.28 foot).

1928–1931: Maximum discharge, 1,230 second-feet June 2, 1929 (gage height, 1.8 feet); minimum, that of July 29, 30, 1931.

REMARKS.—Records fair. No diversions or regulation.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	170	174		146		174	1000	170	102	66	66	68
2	178	167		150		163	354	163	91	77	66	82
3	262	167	160	153	200	186	268	197	86	73	69	64
4	210	167		153		194	233	188	89	100	66	75
5	219	174		153		186	268	210	126	102	63	75
6	198	170		156	180	206	298	149	118	93	526	75
7	186	174		170	170	174	194	179	100	77	163	71
8	186	174	170	170	160	219	194	175	82	84	112	78
9	202	170		167	156	178	178	179	84	84	115	75
10	198	174		136	153	190	182	129	124	80	86	73
11	219	170		130	156	219	186	118	175	73	69	69
12	238	170	155	120	170	198	146	132	166	86	71	68
13	198	167		100	160	182	143	121	118	69	75	71
14	170	160	143	90	163	202	143	152	95	66	69	71
15	202	163	150	80	198	186	190	166	89	66	71	78
16	198	156	150	85	219	206	186	159	82	63	71	78
17	167	170	136	90	202	206	182	135	86	63	142	86
18	170	178	136	100	202	194	170	121	80	63	132	95
19	198	160	156	110	194	202	174	107	84	93	75	149
20	160	78	131	130	194	206	150	124	73	107	86	146
21	153	160	124	140	163	202	156	121	77	95	80	91
22	160		126	150	170	194	163	132	77	78	75	82
23	170	165	139	160	174	198	178	132	77	71	139	82
24	174		146	170	160	210	198	132	73	64	100	135
25	170		143	180	178	202	170	126	73	61	91	118
26	170		124	200	163	[a] 180	156	135	71	64	86	115
27	202		124	210	228	[a] 150	153	139	73	61	77	100
28	170	160	128	220	186	[a] 100	146	132	71	61	75	95
29	167		139	220	-------	[a] 140	150	129	63	58	75	95
30	167		146	220	-------	[a] 200	153	129	61	58	68	91
31	170	-------	146	220	-------	[a] 600	-------	112	-------	61	63	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	262	153	187	11,500
November	178	78	163	9,700
December	----------	124	148	9,100
January	220	80	151	9,280
February	202	153	182	10,100
March	600	100	202	12,400
April	1,000	143	215	12,800
May	210	107	145	8,920
June	175	61	92.2	5,490
July	107	58	74.7	4,590
August	526	63	101	6,210
September	149	64	88.4	5,260
The year	1,000	58	146	105,000

[a] Estimated.

NIOBRARA RIVER NEAR VALENTINE, NEBR.

LOCATION.—Chain gage in sec. 30, T. 33 N., R. 28 W., 7 miles southwest of Valentine.

DRAINAGE AREA.—6,160 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1931. At station 8 miles downstream from July to October, 1897; April to September, 1899; June, 1901, to November, 1906.

REMARKS.—Records of daily discharge not sufficiently accurate for publication, estimated on basis of percentage study of Niobrara near Gordon and near Spencer. No diversions or regulation.

Monthly discharge, in second-feet, 1930–31

Month	Mean	Run-off in acre-feet	Month	Mean	Run-off in acre-feet
October	974	59,900	May	873	53,700
November	808	48,100	June	743	44,200
December	773	47,500	July	658	40,500
January	823	50,600	August	677	41,600
February	1,050	58,300	September	717	42,700
March	966	59,400			
April	953	56,700	The year	833	603,000

NIOBRARA RIVER NEAR SPENCER, NEBR.

LOCATION.—At power plant of Northern Nebraska Power Co. in N. ½ sec. 30, T. 33 N., R. 11 W., 5 miles southeast of Spencer.

DRAINAGE AREA.—10,800 square miles.

RECORDS AVAILABLE.—May to December, 1908; August, 1927, to September, 1931.

EXTREMES.—Maximum discharge during year, 7,180 second-feet Mar. 31; minimum, 10 second-feet, leakage through gates at times.

1927–1931: Maximum discharge, 15,200 second-feet Sept. 6, 1930.

REMARKS.—Records good except those for winter period, which are fair. Flow regulated by Spencer Reservoir, capacity, 2,300 acre-feet. Discharge computed from flow over spillway and through turbines and gates. Base data furnished by Northern Nebraska Power Co.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,060	1,300	1,400	1,080	2,770	1,550	2,660	1,150	956	865	582	830
2	994	1,150	1,140	1,200	2,640	1,560	2,360	1,190	885	895	990	882
3	1,000	1,340	1,320	1,190	2,700	1,550	2,120	1,140	973	811	1,040	851
4	1,740	1,220	1,260	1,260	2,440	1,440	2,330	1,250	1,330	981	710	751
5	1,800	1,200	1,480	1,240	2,090	1,100	2,190	1,260	1,260	1,100	1,470	725
6	1,680	1,240	1,650	1,210	1,930	1,070	2,240	1,190	1,230	1,300	840	639
7	1,510	1,230	1,560	1,230	1,890	1,600	2,080	1,180	1,170	844	700	799
8	1,380	1,310	1,620	1,240	1,890	1,620	1,990	1,180	1,180	893	635	647
9	1,170	1,140	1,610	1,320	1,490	1,360	1,800	1,880	973	850	889	661
10	1,210	1,320	1,720	1,330	1,420	1,680	1,730	2,230	945	924	1,660	640
11	1,100	1,340	1,650	1,230	1,920	1,490	1,560	2,040	1,270	860	1,220	602
12	1,930	1,240	1,420	1,210	1,790	1,500	1,390	1,740	1,490	744	835	717
13	1,870	1,220	1,510	939	1,540	1,650	1,400	1,500	1,200	732	688	621
14	1,480	1,270	1,360	539	1,500	1,710	1,350	1,360	1,150	862	732	661
15	1,280	1,310	1,110	449	1,810	1,740	1,300	1,200	1,080	795	667	822
16	1,450	1,230	1,060	366	1,670	1,900	1,330	1,160	1,080	647	559	820
17	1,180	1,420	1,140	473	1,510	1,770	1,330	1,170	967	642	640	794
18	1,270	1,290	1,270	632	1,550	1,600	1,170	1,210	835	633	675	893
19	1,090	1,320	1,200	780	1,540	1,580	1,360	1,180	854	684	740	1,010
20	1,270	2,050	1,070	1,090	1,530	1,690	1,480	1,180	912	777	703	1,050
21	1,230	1,060	825	1,300	1,600	1,730	1,290	1,200	1,200	735	907	887
22	1,310	1,000	876	1,230	1,590	1,520	1,240	1,110	982	646	946	934
23	1,240	1,000	1,100	1,180	1,740	1,580	1,240	1,030	850	649	1,020	923
24	1,260	1,160	1,190	1,390	1,690	1,770	1,230	908	813	782	1,020	1,140
25	1,260	1,450	1,230	1,710	1,740	1,680	1,300	1,080	793	799	765	1,280
26	1,120	901	1,160	1,800	1,570	1,520	1,240	889	761	618	883	1,120
27	1,390	1,010	1,150	1,880	1,690	258	1,290	932	654	638	809	961
28	1,300	858	1,140	2,010	1,620	220	1,210	1,040	603	592	848	978
29	1,310	1,280	1,210	2,410	-------	362	1,160	1,090	597	548	789	836
30	1,250	1,440	1,060	2,690	-------	1,120	1,170	1,220	588	559	643	847
31	1,200	-------	1,110	2,870	-------	3,560	-------	909	-------	598	665	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,930	994	1,330	81,800
November	2,050	858	1,240	73,800
December	1,720	825	1,280	78,700
January	2,870	366	1,310	80,600
February	2,770	1,420	1,820	101,000
March	3,560	220	1,500	92,200
April	2,660	1,160	1,580	94,000
May	2,230	889	1,250	76,900
June	1,490	588	986	58,700
July	1,300	548	774	47,600
August	1,660	559	847	52,100
September	1,280	602	844	50,200
The year	3,560	220	1,230	888,000

JAMES RIVER BASIN

JAMES RIVER AT JAMESTOWN, N. DAK.

LOCATION.—Staff gage in SE. ¼ sec. 36, T. 140 N., R. 64 W., 1 mile southeast of Northern Pacific Railway depot at Jamestown.
DRAINAGE AREA.—3,140 square miles.
RECORDS AVAILABLE.—June, 1928, to September, 1931.
EXTREMES.—Maximum discharge during year, 91 second-feet Apr. 6 (gage height, 7.44 feet); minimum, 0.4 second-foot Oct. 16–26 (gage height, 6.06 feet).

1928–1931: Maximum discharge, 1,100 second-feet Mar. 14, 1929 (gage height, 14.2 feet); minimum, 0.2 second-foot Sept. 15–18, 1929.
REMARKS.—Records fair. No diversions.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.8	0.8	0.8	0.8	5.0	2.2	44	2.6	1.8	1.4	1.6	1.0
2	.8	.8	.8	.8	9.5	2.4	70	2.6	1.4	1.4	1.6	1.0
3	.8	.8	.8	.8	15	2.8	75	2.6	1.6	1.4	1.8	1.0
4	.8	.8	.8	.8	13	2.8	80	2.6	1.4	1.2	2.0	1.2
5	.8	.8	.8	.8	9.5	2.8	86	2.6	1.4	1.2	2.0	1.4
6	.8	.8	.8	.8	9.5	3.0	91	2.6	1.2	1.2	2.0	1.2
7	.8	.8	.8	.8	9.5	3.2	86	2.8	1.2	1.0	2.2	1.2
8	1.0	1.0	.8	.8	8.7	3.6	80	2.8	1.2	1.0	2.4	1.0
9	1.0	1.0	.8	.8	6.9	5.0	66	3.2	1.0	.6	1.6	1.0
10	1.0	1.0	.8	.8	6.0	5.8	58	3.2	.8	.6	1.0	1.2
11	1.0	1.4	.8	.8	5.8	10	40	3.0	.8	.8	1.0	1.2
12	1.2	1.4	.8	.8	4.2	13	29	2.6	.8	.8	.8	1.2
13	1.0	1.4	.8	.8	3.0	16	18	2.4	.6	.6	.6	1.2
14	.8	1.6	.8	.8	2.2	13	17	2.4	1.0	.6	.6	1.2
15	.6	1.6	.8	.8	1.8	14	13	2.4	1.0	.6	.6	1.2
16	.4	1.4	.8	.8	1.4	12	11	2.4	1.2	.8	.8	1.4
17	.4	1.2	.8	.8	1.2	12	10	2.2	1.4	.8	.8	1.4
18	.4	1.2	.8	.8	1.0	12	9.1	2.2	1.4	.8	.8	1.4
19	.4	1.2	.6	.8	1.4	12	9.1	2.2	1.4	.8	.8	1.4
20	.4	1.0	.6	.8	2.2	12	9.1	2.0	1.4	.8	.8	2.0
21	.4	1.0	.6	.8	2.4	13	6.9	1.6	1.4	1.0	.8	2.8
22	.4	.8	.6	.8	2.6	9.5	5.2	1.4	1.4	1.0	.8	3.4
23	.4	.8	.6	.8	2.4	13	3.8	1.2	1.4	1.0	.8	3.6
24	.4	.8	.6	.8	2.2	14	3.2	1.2	1.4	1.0	.8	3.6
25	.4	.6	.6	.8	1.8	17	2.6	1.6	1.4	1.0	.8	4.2
26	.4	.6	.6	1.0	1.8	26	2.6	1.6	1.4	1.2	.8	2.4
27	.6	.6	.6	1.2	2.0	24	2.6	1.6	1.4	1.2	.8	2.0
28	.6	.6	.6	1.4	2.0	22	2.6	1.8	1.4	1.2	.8	1.8
29	.6	.6	.6	1.6	-------	28	2.6	2.0	1.4	1.2	.8	1.6
30	.6	.6	.6	2.2	-------	35	2.6	2.0	1.4	1.2	.8	1.6
31	.6	-------	.6	3.4	-------	40	-------	2.0	-------	1.2	.8	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1.2	0.4	0.66	41
November	1.6	.6	.97	58
December	.8	.6	.72	44
January	3.4	.8	.99	61
February	15	1.0	4.79	266
March	40	2.2	12.9	793
April	91	2.6	31.2	1,860
May	3.2	1.2	2.24	138
June	1.8	.6	1.27	76
July	1.4	.6	.99	61
August	2.4	.6	1.12	69
September	4.2	1.0	1.73	103
The year	91	.4	4.93	3,570

JAMES RIVER AT HURON, S. DAK.

LOCATION.—Chain gage in sec. 6, T. 110 N., R. 61 W., at Huron. Zero of gage is 1,228.70 feet above mean sea level.
DRAINAGE AREA.—11,500 square miles,
RECORDS AVAILABLE.—August, 1928, to September, 1931.
EXTREMES.—Maximum discharge during year, 345 second-feet Apr. 24 (gage height, 4.1 feet); no flow during part of February, August, September.
1928–1931: Maximum discharge, 2,110 second-feet Mar. 20, 1929 (gage height, 12.0 feet); no flow during parts of 1930 and 1931.
REMARKS.—Records good except those for period Nov. 13 to Feb. 22, which were based on 2 discharge measurements and temperature records. Minor diversions for city water supplies above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5	5			7	7	162	99	50	0.5	0
2	7	5			8	7	160	138	57	.5	0
3	11	5			9	18	154	248	51	.5	0
4	10	5			10	45	133	225	51	.5	0
5	9	5			9	37	188	200	57	.5	0
6	10	5			7	17	162	160	56	.5	0
7	11	5			5	31	129	144	52	.5	0
8	10	5			6	52	108	115	50	.5	0
9	11	5			5	68	135	114	45	.5	0
10	10	5			5	72	170	110	27	.5	0
11	9	5			4	76	119	95	20	.5	.5
12	10	5			4	71	98	90	15	.5	.5
13	15				4	91	105	164	20	.5	.5
14	18				5	105	93	250	15	.4	0
15	15		0.4		7	154	104	250	13	.2	0
16	16				5	208	108	225	10	0	0
17	18				4	194	103	126	10	0	0
18	18				3	218	95	66	12	0	0
19	16				3	304	122	59	8	0	0
20	12				3	307	108	55	9	0	0
21	8	3			3	301	93	51	9	0	0
22	6				3	292	93	46	8	0	0
23	5			6	5	301	90	36	8	0	0
24	5			6	12	345	72	34	5	0	0
25	5			7	9	295	71	25	4	0	0
26	5			6	6	256	71	20	4	0	0
27	5			6	4	240	75	14	3	0	0
28	5			7	4	205	93	13	1	0	0
29	5				5	196	93	15	.5	0	0
30	5				3	182	119	15	.5	0	0
31	5				4		103		.5	0	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	18	5	9.7	596
November	5		3.8	226
December			[a]1.0	61
January			[a].5	30
February	7		2.1	117
March	12	3	5.5	338
April	345	7	156	9,280
May	188	71	114	7,010
June	250	13	107	6,370
July	57	.5	21.7	1,330
August	.5	0	.23	14
September	.5	0	.05	3
The year	345	0	35.0	25,400

[a] Estimated.

JAMES RIVER NEAR SCOTLAND, S. DAK.

LOCATION.—Chain gage in SW. ¼ sec. 30, T. 97 N., R. 57 W., 5 miles northeast of Scotland and 200 yards above Dawson Creek.
DRAINAGE AREA.—15,800 square miles.
RECORDS AVAILABLE.—September, 1928, to September, 1931.
EXTREMES.—Maximum discharge during year, 289 second-feet Apr. 27 (gage height, 3.12 feet); minimum, 2 second-feet Sept. 14–18.
1928–1931: Maximum discharge, 2,970 second-feet Mar. 31, 1929 (gage height, 11.92 feet); minimum, that of Sept. 14–18, 1931.
REMARKS.—Records good except those for period Nov. 17 to Feb. 15, which were based on two discharge measurements and temperature records. Operation of water power plant 20 miles upstream may affect flow slightly.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	82	28	------		29	35	265	59	32	13	9
2	145	33	------		30	45	265	62	36	14	9
3	83	37	------	18	33	51	237	65	35	13	9
4	49	36	------		33	41	241	79	37	12	8
5	32	34	------		33	39	219	93	28	11	8
6	31	31	------		24	42	235	110	26	12	7
7	31	29	------		32	38	203	117	24	13	8
8	31	28	------	18	30	43	177	118	24	13	7
9	30	26	------		28	54	152	135	24	10	7
10	28	25	------		31	51	185	150	22	11	6
11	28	26	------		28	49	193	157	21	9	4
12	34	30	------		28	40	183	161	19	12	3
13	30	32	------	20	30	38	159	161	18	16	4
14	24	32	------		30	38	148	137	17	16	2
15	34	31	------		27	57	145	161	22	12	2
16	36	26	------	26	26	61	150	168	22	13	2
17	33		17	25	26	57	164	140	20	12	2
18	34		------	27	35	74	134	111	20	12	2
19	31		------	26	35	83	127	101	24	12	6
20	29		------	25	37	87	123	97	19	10	17
21	29		------	22	32	145	107	92	21	10	19
22	28		------	26	28	164	107	95	20	10	10
23	28		------	26	31	177	75	102	18	12	7
24	26	22	------	26	35	205	70	85	14	14	7
25	26		------	28	46	241	75	71	13	14	11
26	26		------	26	53	271	91	62	15	13	12
27	30		------	28	48	285	75	52	15	13	11
28	36		------	28	51	285	78	46	14	11	9
29	33		------	------	58	283	89	36	15	10	8
30	35		------	------	43	271	84	35	15	10	7
31	32	------	------	------	36	------	79	------	15	10	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	145	24	38.2	2,350
November	37	------	26.4	1,570
December	------	------	20.0	1,230
January	------	------	17.0	1,040
February	28	------	22.1	1,230
March	58	24	34.4	2,120
April	285	35	112	6,660
May	265	70	150	9,220
June	168	35	102	6,070
July	37	13	21.5	1,320
August	16	9	12.0	738
September	19	2	7.4	440
The year	285	2	46.9	34,000

BIG SIOUX RIVER BASIN

BIG SIOUX RIVER NEAR FLANDREAU, S. DAK.

LOCATION.—Chain gage in sec. 9, T. 107 N., R. 48 W., 2 miles north of Flandreau.
DRAINAGE AREA.—2,520 square miles.
RECORDS AVAILABLE.—August, 1928, to September, 1931.
EXTREMES.—Maximum discharge during year, 396 second-feet June 1 (gage height, 3.38 feet); no flow Sept. 14–18.
1928–1931: Maximum discharge, 5,200 second-feet Mar. 15, 1929 (gage height, 14.04 feet); minimum, that of Sept. 14–18, 1931.
REMARKS.—Records good except those for period Nov. 24 to Feb. 28, which were based on two discharge measurements and temperature records. No diversions or regulation.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	15	37	28	17	366	25	7	2
2	12	15	35	27	17	358	23	7	2
3	12	14	32	28	17	201	22	7	1
4	16	14	30	28	17	175	21	6	1
5	18	15	28	26	17	139	20	6	1
6	18	15	28	24	15	145	18	5	1
7	18	17	28	22	15	158	17	5	.8
8	17	17	25	22	17	126	17	11	.8
9	15	17	28	20	18	99	15	27	.6
10	15	17	28	20	18	85	14	17	.4
11	15	17	30	20	18	70	14	15	.4
12	15	17	28	21	19	65	15	10	.4
13	14	15	27	20	19	60	15	7	.4
14	15	18	23	21	18	60	14	6	0
15	15	18	25	22	17	58	13	7	0
16	17	18	22	22	15	54	12	6	0
17	17	18	20	22	14	47	10	6	0
18	17	19	21	22	14	40	9	5	0
19	16	20	20	22	12	38	8	5	2
20	15	20	21	20	11	106	7	4	2
21	15	19	21	21	10	88	7	4	2
22	15	19	20	22	10	54	6	3	1
23	14	20	25	23	10	43	6	3	.8
24	17		28	20	11	38	5	3	2
25	18		27	22	10	34	5	3	4
26	18		28	20	10	28	4	3	4
27	17	18	30	20	9	26	4	2	4
28	15		32	19	9	26	5	2	4
29	17		32	18	154	22	6	2	4
30	17		32	19	201	20	6	2	3
31	15	------	25	------	254	------	7	2	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	18	12	15.7	965
November	20	14	17.3	1,030
December	----------	----------	10	615
January	----------	----------	6	369
February	----------	----------	25	1,390
March	37	20	27.0	1,660
April	28	18	22.0	1,310
May	254	9	32.7	2,010
June	366	20	94.3	5,610
July	25	4	11.9	732
August	27	2	6.4	394
September	4	0	1.5	89
The year	366	0	22.3	16,200

BIG SIOUX RIVER AT AKRON, IOWA

LOCATION.—Chain gage in sec. 31, T. 93 N., R. 48 W., at Akron.
DRAINAGE AREA.—7,080 square miles.
RECORDS AVAILABLE.—October, 1928, to September, 1931.
EXTREMES.—Maximum discharge during year, 1,370 second-feet Aug. 9 (gage height, 5.6 feet); minimum, 26 second-feet Aug. 7 (gage height, 1.34 feet).
1928–1931: Maximum discharge, 14,000 second-feet Mar. 15, 1929 (gage height, 18.63 feet); minimum, that of Aug. 7, 1931.
REMARKS.—Records good except those for period Nov. 28 to Feb. 18, which were based on two discharge measurements and temperature records. No diversions.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	130	119	------		135	144	125	69	72	30	223
2	130	119	------		123	152	125	76	74	37	76
3	128	116	------		123	147	125	62	74	33	69
4	209	119	------		116	149	125	76	83	32	72
5	234	116	------		113	152	130	81	90	28	72
6	185	114	------	120	120	152	123	81	72	28	60
7	177	114	------		99	149	120	78	65	26	58
8	173	114	------		108	149	118	137	65	33	58
9	168	114	------		116	147	128	152	60	592	54
10	158	114	------		116	142	120	142	58	1,260	54
11	140	114	------		111	137	118	327	52	613	54
12	137	112	------		113	130	116	149	67	356	50
13	128	114	------		120	128	116	135	52	269	42
14	128	114	------		113	123	113	135	52	258	42
15	128	114	------	130	116	142	113	128	50	271	42
16	170	119	60		128	130	116	120	46	216	42
17	170	119	------		128	125	113	111	44	178	42
18	156	116	------	140	128	128	116	104	40	164	48
19	128	114	------	135	123	140	104	99	42	159	529
20	130	204	------	135	132	142	106	106	44	152	335
21	126	311	------	130	120	140	104	460	38	142	140
22	130	269	------	130	111	140	101	220	38	128	94
23	128	299	------	135	120	140	88	140	35	116	72
24	133	353	------	135	135	140	88	118	35	113	65
25	123	322	------	132	149	144	90	106	33	120	76
26	123	137	------	135	149	140	88	101	33	104	69
27	128	180	------	132	140	140	88	92	33	104	56
28	121		------	135	130	130	85	92	33	90	54
29	123	150	------	------	135	128	83	88	33	88	62
30	123		------	------	132	125	83	78	30	85	65
31	121	------	------	------	132	------	83	------	30	88	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	234	121	145	8,920
November	353	112	157	9,340
December	------	------	100	6,150
January	------	------	75	4,610
February	------	------	128	7,110
March	149	99	124	7,620
April	152	123	139	8,270
May	130	83	108	6,640
June	460	62	129	7,680
July	90	30	50.7	3,120
August	1,260	26	191	11,700
September	529	42	92.5	5,500
The year	1,260	26	120	86,700

LITTLE SIOUX RIVER BASIN

LITTLE SIOUX RIVER AT CORRECTIONVILLE, IOWA

LOCATION.—Chain gage in sec. 34, T. 89 N., R. 42 W., half a mile west of Correctionville and 1,000 feet above Bacon Creek.

DRAINAGE AREA.—2,450 square miles.

RECORDS AVAILABLE.—May, 1918, to September, 1924; October, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 2,540 second-feet July 17 (gage height, 10.32 feet); minimum, 9 second-feet Aug. 29, 31, Sept. 16, 17 (gage height, 1.85 feet).

1918–1924, 1928–1931: Maximum discharge (estimated), 20,700 second-feet Mar. 12, 1919 (gage height, 19.57 feet); minimum, 5 second-feet Aug. 18, 1922.

REMARKS.—Records good except those for period Nov. 27 to Feb. 13, which were based on one discharge measurement and temperature records. No diversions.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	31	39				58	66	53	36	244	16	24
2	35	36				55	67	50	31	94	30	33
3	41	36	40	24	28	56	65	49	32	121	20	197
4	40	38				53	70	45	34	75	16	63
5	40	36				56	67	71	31	90	14	35
6	43	37			33	41	65	76	31	61	14	28
7	41	37			38	50	68	75	27	48	16	24
8	42	38	35	22	36	32	63	71	22	40	16	19
9	40	38			26	46	69	68	19	38	14	14
10	36	39			18	44	58	73	27	36	14	12
11	36	35			20	50	55	79	28	30	13	10
12	35	38			24	53	48	70	34	57	13	12
13	32	37	26	18	27	47	40	65	31	35	13	10
14	40	37			52	49	48	57	30	28	12	10
15	42	39			63	50	54	59	34	22	11	10
16	57	40	20		46	44	48	57	27	23	11	9
17	41	40		22	51	45	46	61	26	2,530	11	9
18	41	45	22		58	51	56	57	27	710	12	14
19	45	48		18	56	49	74	52	29	377	17	36
20	41	236		21	46	53	82	48	50	147	31	20
21	39	141			50	51	83	47	191	120	38	19
22	40	60			57	51	74	45	286	66	16	19
23	43	115	24	22	61	54	66	43	236	48	13	21
24	42	86			53	57	61	43	80	34	12	24
25	41	79			50	63	67	40	55	31	12	40
26	43	60			61	64	62	34	52	25	11	33
27	40	50			57	63	62	30	128	24	10	28
28	40	50	24	28	64	71	63	110	124	20	10	28
29	39	50			-------	67	57	56	75	20	9	28
30	36	50			-------	70	54	54	59	18	10	25
31	37	-------			-------	65	-------	39	-------	16	9	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	57	31	40.0	2,460
November	236	35	57.0	3,390
December	----------	----------	28.3	1,740
January	----------	----------	22.7	1,400
February	64	18	42.4	2,350
March	71	32	53.5	3,290
April	83	40	61.9	3,680
May	110	30	57.3	3,520
June	286	19	63.1	3,750
July	2,530	16	169	10,400
August	38	9	15.0	922
September	197	9	28.5	1,700
The year	2,530	9	53.3	38,600

PLATTE RIVER BASIN

NORTH PLATTE RIVER NEAR NORTHGATE, COLO.

LOCATION.—Water-stage recorder in sec. 11, T. 11 N., R. 80 W., 6 miles south of Colorado-Wyoming line and 6 miles northwest of Northgate.

DRAINAGE AREA.—1,440 square miles.

RECORDS AVAILABLE.—May, 1915, to September, 1931.

EXTREMES.—Maximum discharge during year (estimated), 2,600 second-feet about Apr. 14; minimum, 33 second-feet Sept. 14 (gage height, 0.80 foot).

1915–1931: Maximum discharge, 6,720 second-feet June 11, 1923 (gage height, 6.24 feet); minimum, that of Sept. 14, 1931.

REMARKS.—Records good except those for period of missing gage heights, Nov. 15 to Apr. 14, which were estimated by comparison with flow of North Platte River at Saratoga. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	256	180		679	374	379	130	69
2	265	203		613	434	318	157	78
3	273	195	185	550	626	253	148	86
4	328	199		512	713	266	130	78
5	342	180		506	854	249	119	67
6	353	180		464	956	197	111	59
7	337	195		440	904	157	114	52
8	328	199	540	412	983	133	114	50
9	314	154		412	1,180	116	106	50
10	314	126		363	1,120	106	94	45
11	332	142		348	1,140	106	84	40
12	369	134		337	1,090	98	76	35
13	365	151	1,600	298	1,010	84	71	33
14	340	137		275	929	80	67	33
15	320		1,730	289	808	71	63	33
16	300		1,670	358	748	69	80	35
17	285		1,650	500	652	67	122	41
18	290		1,540	600	537	69	114	43
19	290		1,340	581	440	80	108	49
20	290		1,140	488	374	63	122	59
21	282		920	423	294	52	128	64
22	265	95	588	374	253	49	122	74
23	256		430	322	212	49	193	76
24	240		410	253	193	52	190	130
25	233		395	258	183	54	136	220
26	233		410	337	176	63	111	224
27	214		410	470	176	76	94	193
28	225		470	519	197	84	80	176
29	214		506	537	294	116	71	154
30	188		613	494	379	130	65	136
31	184			429		133	65	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	369	184	285	17,500
November	203		130	7,740
December			90	5,530
January			100	6,150
February			120	6,660
March			140	8,610
April			808	48,100
May	679	253	434	26,700
June	1,180	176	608	36,200
July	379	49	123	7,560
August	193	63	109	6,700
September	224	33	82.7	4,920
The year		33	252	182,000

NORTH PLATTE RIVER AT SARATOGA, WYO.

LOCATION.—Water-stage recorder in sec. 14, T. 17 N., R. 84 W., at Saratoga. Zero of gage is 6,773.8 feet above mean sea level. Chain gage at same site used prior to Nov. 1, 1930.

DRAINAGE AREA.—2,880 square miles.

RECORDS AVAILABLE.—June, 1903, to October, 1906; April to December, 1909; April, 1911, to September, 1931.

EXTREMES.—Maximum discharge during year, 4,060 second-feet June 8 (gage height, 6.45 feet); minimum, 106 second-feet July 25 (gage height, 3.33 feet). 1903–1906, 1909, 1911–1931: Maximum discharge, 18,000 second-feet June 8, 1909 (gage height, 11.06 feet); minimum, 87 second-feet Sept. 7, 1924.

REMARKS.—Records excellent except those for period Nov. 20 to Mar. 28, which were based on three discharge measurements and temperature records. A few diversions between Northgate and Saratoga.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	612	411			280	250	399	1,420	2,600	750	355	207
2	696	405			275	271	477	1,400	2,940	652	285	188
3	714	411	179	180	263	263	399	1,420	3,300	542	275	179
4	732	405			255	275	375	1,430	3,320	477	263	176
5	777	405			242	263	399	1,300	3,230	463	243	158
6	750	399				250	463	1,160	3,390	429	228	152
7	714	381				263	565	1,240	3,500	365	218	149
8	696	365	195	195	220	263	777	1,460	3,570	325	214	140
9	678	360				265	939	1,170	3,570	285	221	136
10	628	340				270	1,620	1,100	3,500	251	207	128
11	644	325			230	280	1,790	950	3,660	235	194	124
12	768	330			240	271	2,020	950	3,340	221	182	120
13	741	365	242	200	250	271	2,390	1,150	3,570	214	167	114
14	678	355			260	276	3,320	1,480	3,100	194	155	110
15	696	387			267	290	2,990	2,040	2,640	170	146	114
16	628	355			280	325	2,330	2,680	2,270	152	146	120
17	565	330			280	315	2,170	2,790	2,020	132	188	122
18	580	259	202	220	285	330	2,330	3,460	1,680	136	235	126
19	580	185			290	345	2,560	2,600	1,400	138	232	146
20	612	------			285	355	2,270	2,110	1,150	136	221	176
21	628				275	370	1,620	1,680	974	138	204	182
22	596	165			275	374	1,300	1,420	840	136	207	197
23	572		183	240	280	360	1,010	1,490	714	126	235	207
24	535				275	365	862	2,000	596	118	263	365
25	520				270	340	804	2,560	542	108	232	520
26	535			250	270	305	777	2,940	542	114	194	423
27	505			260	259	285	813	3,140	542	124	173	417
28	528	198		270	275	335	804	2,700	588	146	161	365
29	442		164	275	------	335	928	2,660	822	155	149	320
30	405			284	------	330	1,170	2,150	732	221	140	295
31	423	------		284	------	340	------	2,170	------	484	164	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	777	405	619	38,100
November	------	------	292	17,400
December	------	------	193	11,900
January	------	------	219	13,500
February	------	------	259	14,400
March	374	250	304	18,700
April	3,320	375	1,360	80,900
May	3,460	950	1,880	116,000
June	3,660	542	2,150	128,000
July	750	108	262	16,100
August	355	140	210	12,900
September	520	110	206	12,300
The year	3,660	108	662	480,000

NORTH PLATTE RIVER ABOVE PATHFINDER RESERVOIR, WYO.

LOCATION.—Water-stage recorder in sec. 27, T. 26 N., R. 84 W., 900 feet below mouth of Lost Creek.

DRAINAGE AREA.—7,410 square miles.

RECORDS AVAILABLE.—October, 1913, to September, 1925; June, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 6,740 second-feet June 4 (gage height, 4.00 feet); minimum, 86 second-feet Sept. 17 (gage height, 0.18 foot). 1913–1925, 1929–1931: Maximum discharge, 18,800 second-feet June 26, 1917 (gage height, 6.2 feet); minimum, 72 second-feet Nov. 14, 1922.

REMARKS.—Records excellent except those during winter, which were based on comparison with flow of North Platte River at Saratoga. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	631	515			739	1,330	2,850	882	462	199
2	613	508			945	1,870	2,990	798	728	322
3	958	487			882	1,820	3,260	706	515	196
4	1,060	494			1,360	1,870	4,020	586	374	183
5	1,300	494			1,180	1,820	4,410	487	363	180
6	1,330	487	210	280	882	1,750	4,160	456	327	174
7	1,120	487			834	1,650	4,380	426	296	168
8	1,050	480			958	1,540	4,500	397	276	144
9	958	456			1,360	1,800	4,300	343	258	141
10	895	444			1,490	1,660	4,300	312	241	133
11	882	432			1,910	1,550	4,130	280	228	122
12	822	420			2,120	1,420	4,100	235	222	111
13	834	414		300	2,380	1,320	3,740	225	202	111
14	895	420			2,620	1,420	3,850	214	186	100
15	870	432	245	360	3,560	1,730	3,430	208	177	96
16	834	374		374	3,530	2,080	3,060	199	183	90
17	786	388		390	2,850	2,710	2,640	199	196	86
18	706	397		550	2,560	3,040	2,320	190	193	90
19	673	269		604	2,620	3,800	1,970	190	183	100
20	706	248		631	2,730	3,180	1,660	145	241	100
21	739	212		651	2,580	2,730	1,390	100	262	100
22	739			739	2,220	2,160	1,140	98	255	116
23	728			786	1,750	1,840	970	98	231	177
24	695			846	1,480	1,750	834	88	218	613
25	651			798	1,220	2,000	684	93	212	487
26	613	210	195	353	1,140	2,600	613	93	205	501
27	586			474	1,150	2,990	543	90	241	515
28	586			487	1,110	3,460	480	88	225	438
29	559			774	1,090	3,330	559	374	199	414
30	568			810	1,220	3,460	1,230	559	183	363
31	529	------		774	------	3,110	------	522	171	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,330	529	804	49,400
November	515	------	357	21,200
December	------	------	216	13,300
January	------	------	245	15,100
February	------	------	290	16,100
March	846	------	465	28,600
April	3,560	739	1,750	104,000
May	3,800	1,320	2,220	136,000
June	4,500	480	2,620	156,000
July	882	88	312	19,200
August	728	171	266	16,400
September	613	86	219	13,000
The year	4,500	86	813	588,000

NORTH PLATTE RIVER BELOW PATHFINDER RESERVOIR, WYO.

LOCATION.—Chain gage in sec. 24, T. 29 N., R. 84 W., a quarter of a mile below Pathfinder Dam.
DRAINAGE AREA.—10,700 square miles.
RECORDS AVAILABLE.—May, 1905, to September, 1931.
EXTREMES.—1905–1931: Maximum discharge, 18,900 second-feet June 25–27, 1917; no flow Nov. 23, 1928.
REMARKS.—Flow regulated by Pathfinder Reservoir, capacity, 1,070,000 acre-feet. Records furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	530	300	86	187	50	50	50	50	6,450	5,710	3,970	940
2	370	300	86	187	50	50	50	50	6,400	5,700	3,920	1,170
3	270	300	77	177	50	50	50	50	6,040	5,660	3,870	1,230
4	250	300	77	177	50	50	50	50	5,980	5,730	3,950	1,130
5	120	300	86	177	50	50	50	50	5,970	5,690	3,910	970
6	80	300	86	177	50	50	50	50	5,130	5,700	4,010	660
7	90	300	86	177	50	50	40	50	4,970	5,660	3,940	410
8	90	300	86	177	50	50	40	50	4,970	5,710	4,020	285
9	90	300	75	177	46	50	40	50	4,970	5,680	4,350	235
10	95	300	75	177	46	50	40	50	4,970	5,640	4,350	220
11	95	300	75	177	46	50	40	50	5,070	5,700	4,250	220
12	95	300	75	177	46	50	40	55	4,450	5,200	4,160	208
13	95	300	75	66	46	50	40	55	4,350	5,180	4,060	202
14	95	300	75	66	50	50	40	55	4,350	5,150	3,910	193
15	15	300	75	66	50	50	40	55	4,350	5,200	3,800	174
16	80	300	75	66	50	50	40	55	4,350	5,180	3,700	165
17	90	300	75	50	50	50	40	500	4,350	4,670	3,570	162
18	90	95	75	50	50	50	40	1,020	4,340	4,730	3,430	160
19	90	86	75	50	50	50	40	1,810	4,990	4,690	3,280	160
20	90	86	174	50	50	50	40	2,350	5,070	4,630	3,110	173
21	210	86	174	50	50	50	40	2,970	5,070	4,690	2,940	184
22	300	86	174	50	50	50	40	3,820	5,070	3,810	2,730	197
23	300	72	174	50	50	50	40	3,970	5,540	3,650	2,530	220
24	300	86	170	50	50	50	40	4,000	6,140	3,610	2,340	273
25	300	80	161	50	50	50	40	4,000	6,150	3,580	2,150	462
26	300	86	161	50	50	50	40	4,380	6,120	3,540	1,970	549
27	300	86	187	50	50	50	40	5,300	6,090	3,500	1,800	692
28	300	86	187	50	50	50	50	6,310	6,060	3,430	1,640	678
29	300	86	187	50	------	50	50	6,500	6,090	4,000	1,420	635
30	300	86	187	50	------	50	50	6,480	5,740	4,000	1,200	570
31	300	------	187	50	------	50	------	6,450	------	4,000	1,040	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	530	15	195	12,000
November	300	72	207	12,300
December	187	75	117	7,190
January	187	50	102	6,270
February	50	46	49.3	2,740
March	50	50	50.0	3,070
April	50	40	43.0	2,560
May	6,500	50	1,960	121,000
June	6,450	4,350	5,320	317,000
July	5,730	3,430	4,810	296,000
August	4,350	1,040	3,200	197,000
September	1,230	160	451	26,800
The year	6,500	15	1,380	1,000,000

NORTH PLATTE RIVER AT CASPER, WYO.

LOCATION.—Chain gage in sec. 4, T. 33 N., R. 79 W., at Casper, 1½ miles below mouth of Casper Creek.

DRAINAGE AREA.—12,500 square miles.

RECORDS AVAILABLE.—May, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 12,700 second-feet June 5 (gage height, 7.16 feet); minimum occurred during winter.

1929–1931: Maximum discharge, 13,800 second-feet May 30, 1929.

REMARKS.—Records good except those during period Nov. 19 to Feb. 17, which were based on three discharge measurements and temperature records. Flow regulated by Pathfinder Reservoir. Gage-height record furnished by Midwest Refining Co.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	920	344	------		149	209	167	6,720	5,810	5,200	1,360
2	702	352	------		180	328	124	6,810	5,850	4,540	1,330
3	530	344	------	95	180	239	135	6,190	5,810	4,310	1,370
4	660	352	------		191	176	203	6,170	5,790	4,310	1,320
5	485	352	------		185	154	485	9,880	5,790	4,230	1,140
6	282	352	------			167	305	5,890	5,810	4,310	966
7	176	352	------			209	140	5,200	5,790	4,210	642
8	176	344	------	90	160	245	105	5,120	5,850	4,230	442
9	167	344	------			384	78	5,020	5,810	4,610	328
10	167	344	------			154	84	5,060	5,770	4,590	384
11	197	344	------	94	252	126	85	5,790	5,810	4,520	328
12	172	336	------		290	111	80	4,460	5,520	4,380	305
13	154	344	------		167	121	74	4,520	5,300	4,360	282
14	135	344	159		176	132	64	4,440	5,240	4,310	245
15	137	368	------	90	149	203	57	4,400	5,360	4,120	252
16	132	400	------		144	197	60	4,420	5,280	5,260	245
17	121	434	------		158	149	64	4,400	4,690	3,930	227
18	126	384	------	113	162	132	1,110	4,380	5,380	3,760	221
19	140		------	180	144	149	1,470	5,060	4,780	3,580	215
20	144		------	191	135	132	2,010	5,060	4,840	3,390	209
21	135	190	90	209	132	111	2,990	5,120	4,880	3,230	221
22	132		------	191	135	111	3,890	5,120	3,910	3,010	227
23	328		------	137	149	98	4,050	5,600	3,850	2,790	227
24	328		------	162	149	105	4,140	6,210	3,780	2,540	733
25	344		------	176	144	89	4,230	6,210	3,710	2,320	476
26	336		------	191		90	4,920	6,190	3,730	2,100	797
27	312		------	191		87	6,380	6,170	3,690	1,980	1,360
28	352	180	------	191	135	84	7,120	6,190	3,620	1,810	1,270
29	320		------	------		82	8,190	6,100	4,310	1,640	1,130
30	344		------	------		100	7,100	5,810	4,330	1,440	977
31	344	------	------	------		------	6,830	------	7,980	1,230	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	920	121	290	17,800
November	434	----------	289	17,200
December	----------	----------	165	10,100
January	----------	----------	140	8,610
February	209	----------	125	6,940
March	290	132	161	9,900
April	384	82	156	9,280
May	8,190	57	2,150	132,000
June	9,880	4,380	5,590	333,000
July	7,980	3,620	5,100	314,000
August	5,260	1,230	3,560	219,000
September	1,370	209	641	38,100
The year	9,880	----------	1,540	1,120,000

NORTH PLATTE RIVER AT DOUGLAS, WYO.

LOCATION.—Chain gage in sec. 8, T 32 N., R. 71 W., half a mile northwest of Douglas.

DRAINAGE AREA.—14,200 square miles.

RECORDS AVAILABLE.—May, 1891, to September, 1894; April, 1919, to September, 1923; April, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 8,110 second-feet May 30 (gage height, 5.98 feet); minimum occurred during winter.

1891–1894, 1919–1923, 1929–1931: Maximum discharge, 16,600 second-feet Sept. 28, 1923; minimum, 95 second-feet Apr. 1, 4, 1923.

REMARKS.—Records good except those for period Dec. 1 to Mar. 14, which were based on two discharge measurements and temperature records. Flow regulated by Pathfinder Reservoir.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,300	415				200	456	6,600	5,740	5,550	1,430
2	1,250	447				216	715	6,620	5,780	5,740	1,800
3	1,580	438				273	938	6,490	4,790	4,410	1,770
4	1,210	438				267	772	6,040	5,620	4,430	1,450
5	998	438				243	890	7,060	5,680	3,920	1,400
6	914	447				220	1,230	7,060	5,550	3,860	1,370
7	600	438				207	1,010	5,380	5,680	3,960	1,110
8	464	447			220	216	950	5,320	5,720	3,900	890
9	430	430				267	914	5,400	5,660	4,410	631
10	430	430				273	784	5,240	5,550	4,330	562
11	447	430				327	673	5,780	5,590	4,130	447
12	400	430				334	553	5,380	5,450	4,170	430
13	355	430				378	544	4,750	5,280	4,130	392
14	313	430				415	524	4,670	5,170	3,940	327
15	299	430			198	662	515	4,520	5,200	3,940	341
16	292	430			184	620	534	4,470	5,260	4,170	334
17	320	456			184	631	481	4,290	5,220	4,190	299
18	249	498			176	684	544	4,310	5,090	3,620	292
19	225	498			189	715	506	4,390	4,770	3,660	292
20	202	225		216	184	738	1,120	4,930	4,650	3,370	306
21	216	438			184	673	2,240	4,910	4,650	3,330	292
22	243	225	185		184	506	2,860	4,910	4,490	2,860	306
23	225	285			194	506	3,800	5,050	4,290	3,280	313
24	378	335			198	438	3,900	5,550	3,750	2,880	320
25	385	385			194	438	4,030	5,890	3,670	2,660	334
26	355	430				392	4,000	6,010	3,730	2,420	447
27	355	464				392	4,930	5,930	3,750	2,210	582
28	362	285				385	5,950	6,010	3,580	2,100	750
29	430	285			180	362	6,820	5,970	3,840	2,000	796
30	464	285				370	8,090	5,930	4,930	1,840	796
31	447						6,930		5,700	1,560	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,580	202	521	32,000
November	498	225	401	23,900
December			230	14,100
January			190	11,700
February			195	10,800
March			201	12,400
April	738	200	412	24,500
May	8,090	456	2,200	135,000
June	7,060	4,290	5,500	327,000
July	5,780	3,580	4,960	305,000
August	5,740	1,560	3,580	220,000
September	1,800	292	694	41,300
The year	8,090		1,600	1,160,000

NORTH PLATTE RIVER BELOW GUERNSEY RESERVOIR, WYO.

LOCATION.—Water-stage recorder in sec. 35, T. 27 N., R. 66 W., three-quarters of a mile below Guernsey Dam and 1 mile northwest of Guernsey.
DRAINAGE AREA.—16,200 square miles.
RECORDS AVAILABLE.—June, 1900, to November, 1908; March to October, 1912; January, 1928, to September, 1931.
REMARKS.—Flow regulated by Pathfinder and Guernsey Reservoirs. Only a few minor diversions for irrigation between this station and diversion dam at Whalen. Records furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,360	455	340	323	280	318	334	1,220	5,630	5,460	4,600	3,400
2	1,390	450	440	215	210	185	356	1,190	5,740	5,440	4,620	2,950
3	1,370	373	440	301	318	345	356	1,180	5,810	5,440	4,600	2,200
4	1,530	490	430	301	340	356	323	1,200	5,860	5,440	4,540	1,780
5	1,670	485	410	190	323	356	373	1,240	5,940	5,350	4,560	1,610
6	1,690	475	420	350	312	306	240	1,200	5,670	5,260	4,820	1,790
7	1,300	533	500	290	334	290	367	1,180	5,700	5,240	4,910	1,530
8	1,240	539	330	301	329	340	460	1,210	5,680	5,190	4,860	1,180
9	1,200	573	430	312	195	215	406	1,210	5,590	5,110	4,820	1,080
10	862	496	393	265	340	306	395	1,330	5,570	5,060	4,430	1,050
11	823	567	375	296	285	329	361	1,340	5,350	5,020	4,410	1,070
12	743	550	380	210	306	312	345	1,340	5,040	5,000	4,310	985
13	661	480	370	345	270	400	285	1,360	5,000	5,020	4,370	640
14	480	516	389	312	260	436	460	1,390	4,970	4,950	4,230	484
15	475	511	299	290	290	361	412	1,490	4,970	4,860	4,130	442
16	500	480	380	345	165	240	502	1,740	5,110	4,730	4,090	460
17	355	475	380	306	301	400	502	2,250	4,970	4,750	4,070	378
18	490	573	412	329	280	389	580	2,640	5,190	4,780	4,090	412
19	400	495	357	195	290	340	496	2,840	5,370	4,580	4,170	260
20	378	377	350	323	275	345	442	3,020	5,460	4,500	3,810	240
21	516	355	367	255	275	312	466	3,100	5,440	4,480	3,620	245
22	415	400	270	255	329	356	604	3,200	5,410	3,270	3,550	329
23	400	385	412	270	185	285	767	3,220	5,480	3,940	3,500	270
24	395	364	376	270	285	378	795	3,250	5,550	3,980	3,500	306
25	440	430	362	270	296	424	838	3,610	5,440	4,250	3,430	301
26	550	400	247	170	312	490	913	3,830	5,440	4,450	3,380	329
27	382	405	326	296	301	240	945	4,500	5,460	4,450	3,400	306
28	522	310	344	296	345	296	905	4,840	5,370	4,350	3,430	260
29	505	360	278	280	-------	260	913	5,060	5,440	4,670	3,390	367
30	495	435	389	260	-------	230	1,310	5,350	5,520	4,600	3,420	340
31	485	-------	371	265	-------	373	-------	5,390	-------	4,600	3,590	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,690	355	775	47,700
November	573	310	458	27,300
December	500	247	373	22,900
January	350	170	280	17,200
February	345	165	287	15,900
March	490	185	329	20,200
April	1,310	240	548	32,600
May	5,390	1,180	2,480	152,000
June	5,940	4,970	5,440	324,000
July	5,460	3,270	4,780	294,000
August	4,910	3,380	4,090	251,000
September	3,400	240	900	53,600
The year	5,940	165	1,740	1,260,000

NORTH PLATTE RIVER BELOW WHALEN, WYO.

LOCATION.—In sec. 11, T. 26 N., R. 65 W., at diversion dam at Whalen, 7 miles below Guernsey Dam.
DRAINAGE AREA.—16,300 square miles.
RECORDS AVAILABLE.—May, 1909, to September, 1931.
REMARKS.—Discharge records obtained by subtracting flow of Interstate and Fort Laramie Canals from flow below Guernsey Reservoir. Flow regulated by Pathfinder and Guernsey Reservoirs.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	241	344	225	143	179	222	280	96	2,120	1,840	1,380	518
2	258	273	266	132	155	191	290	40	2,220	1,860	1,430	439
3	231	322	250	143	222	291	290	17	2,250	1,870	1,420	375
4	416	464	222	159	248	272	260	30	2,310	1,930	1,400	281
5	1,310	436	224	175	222	287	305	32	2,350	1,880	1,460	231
6	1,290	515	321	230	208	221	180	33	2,130	1,820	1,780	407
7	1,040	557	368	184	237	259	302	31	2,190	1,810	1,840	481
8	793	525	239	205	204	277	356	43	2,170	1,780	1,860	153
9	831	484	227	198	204	187	331	42	2,140	1,800	1,860	83
10	556	455	205	172	231	249	304	104	2,140	1,790	1,480	65
11	508	636	197	182	210	218	289	65	2,060	1,730	1,470	82
12	333	505	228	178	191	380	265	50	1,800	1,670	1,340	97
13	310	518	232	220	154	357	206	48	1,850	1,690	1,380	132
14	209	504	178	184	165	285	360	65	1,870	1,640	1,200	97
15	134	520	188	180	176	405	203	144	1,810	1,560	1,120	104
16	149	260	218	210	162	310	51	216	1,850	1,430	1,060	172
17	120	392	216	187	212	298	60	532	1,610	1,430	1,040	115
18	257	586	238	177	200	220	104	823	1,780	1,440	1,070	145
19	209	342	161	135	189	273	107	939	1,930	1,310	1,220	30
20	223	199	175	169	180	235	88	988	2,030	1,330	1,070	30
21	283	287	154	148	189	225	103	941	1,970	1,350	769	30
22	211	280	180	149	189	244	83	946	1,900	1,170	712	30
23	188	249	228	168	162	255	95	928	1,890	1,320	673	30
24	312	387	173	174	191	365	102	907	1,920	1,470	669	30
25	474	350	153	154	195	400	65	1,080	1,810	1,590	652	30
26	388	305	95	167	213	232	49	1,100	1,780	1,540	611	30
27	380	214	182	194	197	143	86	1,490	1,800	1,370	603	30
28	378	201	166	162	212	183	61	1,660	1,730	1,250	541	30
29	399	226	180	182	------	172	103	1,780	1,790	1,480	507	45
30	373	216	222	172	------	289	156	1,920	1,890	1,380	525	61
31	323	------	225	175	------	263	------	1,830	------	1,340	652	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,310	120	423	26,000
November	586	199	385	22,900
December	368	95	211	13,000
January	230	132	171	10,500
February	248	154	196	10,900
March	405	143	265	16,300
April	356	51	184	10,900
May	1,920	17	610	37,500
June	2,350	1,610	1,970	117,000
July	1,930	1,170	1,580	97,200
August	1,860	507	1,120	68,900
September	518	30	146	8,690
The year	2,350	17	608	440,000

NORTH PLATTE RIVER AT TORRINGTON, WYO.

LOCATION.—Staff gage in sec. 15, T. 24 N., R. 61 W., at Torrington.
DRAINAGE AREA.—21,700 square miles.
RECORDS AVAILABLE.—October, 1930, to September, 1931.
EXTREMES.—Maximum discharge during year, 3,000 second-feet May 29 (gage height, 1.80 feet); minimum, 279 second-feet May 13 (gage height, 0.26 foot).
REMARKS.—Records good. Small diversions for irrigation above station. Flow regulated by Pathfinder and Guernsey Reservoirs.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,080	950	800	625	575	600	675	428	2,320	1,880	1,320	936
2	1,050	950	900	612	564	552	662	355	2,360	1,860	1,340	920
3	1,100	900	900	625	612	575	688	386	2,320	2,060	1,360	826
4	1,300	900	800	638	612	638	662	376	2,180	2,200	1,360	826
5	2,180	900	800	650	612	688	612	386	2,450	2,000	1,380	812
6	2,200	975	750	728	588	588	529	376	2,470	1,980	1,860	968
7	1,800	975	975	688	600	575	564	346	2,400	2,000	1,760	984
8	1,520	975	750	714	675	588	650	317	2,470	1,980	2,160	856
9	1,520	1,020	800	700	552	588	552	317	2,490	1,880	2,140	742
10	1,350	900	775	638	575	600	552	317	2,510	1,740	2,060	742
11	1,520	975	775	564	575	600	575	308	2,510	1,760	1,860	675
12	1,480	1,020	775	564	625	600	552	298	1,980	1,760	1,600	675
13	1,320	1,020	950	625	588	600	540	279	2,120	1,720	1,680	675
14	1,200	1,020	800	625	552	600	518	317	2,140	1,640	1,680	688
15	1,200	1,020	775	600	564	600	650	336	1,920	1,600	1,340	662
16	1,200	1,020	775	625	552	620	518	326	1,900	1,520	1,300	688
17	1,050	1,020	775	600	552	638	518	336	1,820	1,490	1,720	714
18	1,050	1,250	750	600	552	600	355	700	1,780	1,490	1,290	675
19	1,050	1,150	775	552	506	588	346	984	1,820	1,520	1,320	650
20	1,020	1,050	750	575	552	625	355	1,080	1,840	1,660	1,600	588
21	950	975	750	575	575	612	376	1,050	1,880	1,680	1,200	518
22	950	975	750	552	564	600	439	1,070	1,900	1,580	1,120	529
23	1,000	975	750	552	600	590	439	1,240	2,020	1,660	1,130	552
24	1,000	975	750	575	600	575	450	1,270	1,880	1,490	1,050	575
25	1,020	975	725	575	588	575	460	1,250	1,880	1,490	1,100	575
26	1,150	975	700	575	625	575	450	1,300	1,900	1,320	1,020	564
27	1,050	900	700	564	638	575	408	1,340	1,820	1,250	1,080	564
28	1,050	750	700	588	588	575	397	1,980	1,760	1,130	1,020	662
29	1,020	750	700	625	------	565	418	3,000	1,760	1,240	968	552
30	1,020	900	700	625	------	555	418	1,940	1,880	1,360	952	575
31	1,020	------	700	600	------	540	------	1,920	------	1,240	936	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,200	950	1,240	76,200
November	1,250	750	971	57,800
December	975	700	777	47,800
January	728	552	611	37,600
February	675	506	584	32,400
March	688	540	594	36,500
April	688	346	511	30,400
May	3,000	279	836	51,400
June	2,510	1,760	2,080	124,000
July	2,200	1,130	1,650	101,000
August	2,160	936	1,410	86,700
September	984	518	699	41,600
The year	3,000	279	1,000	723,000

NORTH PLATTE RIVER AT WYOMING-NEBRASKA LINE

LOCATION.—Water-stage recorder in sec. 10, T. 23 N., R. 60 W., a quarter of a mile above Wyoming-Nebraska line and 1 mile above Henry.
DRAINAGE AREA.—22,100 square miles.
RECORDS AVAILABLE.—April, 1929, to September, 1931.
EXTREMES.—Maximum discharge during year, 2,300 second-feet Oct. 6; minimum, 209 second-feet Mar. 27.
1929–1931: Maximum discharge, 17,900 second-feet June 2, 1929 (gage height, 6.04 feet); minimum, that of Mar. 27, 1931.
REMARKS.—Records good. Large diversions for irrigation above station. Flow regulated by Pathfinder and Guernsey Reservoirs.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,100	1,040	858	665	627	562	618	469	1,770	1,540	1,240	770
2	1,110	1,030	833	636	618	580	656	445	1,960	1,560	1,250	803
3	1,250	1,010	858	586	608	580	646	421	1,980	1,560	1,270	858
4	1,480	964	869	580	646	627	608	405	1,960	1,560	1,320	825
5	1,960	976	880	553	656	646	589	383	2,020	1,650	1,430	792
6	2,250	1,060	858	553	676	636	580	398	1,940	1,590	1,650	803
7	2,230	1,010	892	636	696	627	589	429	1,980	1,560	1,730	916
8	2,020	1,060	904	676	665	636	627	437	2,090	1,540	1,790	869
9	2,020	1,110	836	696	646	627	636	421	2,050	1,580	1,790	728
10	1,940	1,110	858	a560	608	598	636	413	2,000	1,580	1,650	676
11	1,750	1,130	836	a520	627	570	627	398	2,090	1,540	1,520	627
12	1,730	1,170	825	a530	627	580	618	398	1,690	1,480	1,440	598
13	1,580	1,140	825	a560	598	562	618	390	1,630	1,480	1,350	598
14	1,520	1,060	814	a540	598	553	627	361	1,650	1,460	1,280	562
15	1,410	1,060	781	a500	598	553	749	361	1,670	1,350	1,200	544
16	1,320	1,040	738	a520	598	598	738	361	1,690	1,270	1,220	544
17	1,280	964	750	a530	589	562	665	398	1,690	1,160	1,250	570
18	1,190	1,010	738	a540	618	598	646	528	1,610	1,080	1,170	562
19	1,200	1,130	760	a540	618	598	570	676	1,630	1,130	1,190	528
20	1,200	1,080	792	a560	589	570	536	811	1,610	1,320	1,190	510
21	1,160	1,000	718	598	608	553	494	858	1,590	1,340	1,080	494
22	1,270	964	676	562	608	536	485	836	1,610	1,350	1,000	469
23	1,160	1,000	696	544	618	553	528	836	1,650	1,320	976	477
24	1,270	940	696	562	589	544	580	847	1,690	1,270	940	528
25	1,240	976	728	562	589	598	570	880	1,670	1,250	880	536
26	1,250	964	728	570	589	598	570	916	1,650	1,160	858	562
27	1,250	964	707	570	570	354	528	1,030	1,630	1,130	836	570
28	1,130	964	728	618	553	686	494	1,200	1,520	1,110	803	580
29	1,140	904	707	656	-------	858	469	1,340	1,480	1,160	814	570
30	1,080	869	656	665	-------	836	461	1,460	1,540	1,220	781	570
31	1,060	-------	696	656	-------	580	-------	1,540	-------	1,220	760	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,250	1,060	1,440	88,500
November	1,170	869	1,020	60,700
December	904	656	782	48,100
January	696	500	582	35,800
February	696	553	615	34,200
March	858	354	599	36,800
April	749	461	592	35,200
May	1,540	361	666	41,000
June	2,090	1,480	1,760	105,000
July	1,650	1,080	1,370	84,200
August	1,790	760	1,210	74,400
September	916	469	635	37,800
The year	2,250	354	942	682,000

a Estimated.

NORTH PLATTE RIVER AT MITCHELL, NEBR.

LOCATION.—Water-stage recorder in sec. 27, T. 23 N., R. 56 W., half a mile south of Mitchell.

DRAINAGE AREA.—24,300 square miles.

RECORDS AVAILABLE.—October, 1930, to September, 1931; June, 1901, to July, 1913, near Mitchell. Records April, 1916, to September, 1930, published by State engineer.

EXTREMES.—Maximum discharge during year, 2,750 second-feet Oct. 6, 7 (gage height, 2.22 feet); minimum, 185 second-feet Sept. 26 (gage height, 0.56 foot).

1901–1913, 1930–31: Maximum discharge, 19,000 second-feet June 10, 1909; minimum, that of Sept. 26, 1931.

Maximum discharge known, 23,600 second-feet June 17, 1921.

REMARKS.—Records good. Numerous diversions for irrigation. Flow partly regulated by Pathfinder and Guernsey Reservoirs.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,000	1,620	1,550	1,370	1,050	912	1,280	951	420	345	355	225
2	2,000	1,550	1,480	1,270	1,130	854	1,350	932	645	345	325	225
3	2,250	1,620	1,480	1,230	1,110	912	1,460	932	725	370	345	225
4	2,300	1,550	1,550	1,210	1,090	951	1,320	1,010	740	485	345	220
5	2,320	1,550	1,480	1,170	1,090	932	1,210	1,110	780	580	420	220
6	2,750	1,620	1,480	1,110	1,090	932	1,130	1,170	873	550	485	220
7	2,750	1,620	1,350	1,190	1,110	873	1,090	1,070	834	500	705	240
8	2,600	1,620	1,400	1,130	1,110	815	1,110	893	971	500	893	265
9	2,400	1,620	1,350	1,070	1,130	854	1,090	780	971	460	990	225
10	2,250	1,620	1,400	1,050	1,010	854	1,070	834	912	435	1,050	215
11	2,100	1,550	1,400	1,070	990	815	1,050	760	1,190	395	893	215
12	2,250	1,620	1,400	1,050	990	815	990	665	873	345	795	215
13	2,100	1,620	1,480	1,010	1,010	815	912	595	685	310	595	210
14	1,920	1,550	1,400	1,010	1,030	834	795	550	705	295	460	215
15	1,850	1,620	1,350	1,050	1,030	873	893	485	610	275	395	215
16	1,780	1,550	1,350	1,130	1,010	912	990	435	565	260	485	210
17	1,780	1,500	1,400	1,210	990	854	932	410	460	265	515	210
18	1,750	1,500	1,350	1,170	1,030	873	912	355	370	265	395	215
19	1,780	1,620	1,400	1,210	1,050	893	854	355	355	260	335	225
20	1,780	1,620	1,400	1,070	1,030	893	893	410	355	260	320	235
21	1,780	1,550	1,350	1,090	1,010	893	834	380	410	310	295	225
22	1,700	1,500	1,400	990	1,010	912	854	335	420	335	265	225
23	1,700	1,550	1,400	971	990	951	932	335	435	320	220	235
24	1,700	1,350	1,350	990	932	893	990	345	515	310	210	235
25	1,700	1,500	1,350	990	834	912	971	265	435	310	215	220
26	1,700	1,620	1,400	1,010	834	[a]700	932	255	395	305	220	210
27	1,700	1,550	1,350	971	912	485	912	305	355	320	220	210
28	1,620	1,550	1,350	971	951	[a]700	932	310	335	295	215	210
29	1,620	1,550	1,300	990	-------	[a]800	873	310	335	305	210	200
30	1,620	1,550	1,300	1,030	-------	[a]975	854	285	355	345	205	215
31	1,620	-------	1,400	1,010	-------	[a]1,050	-------	305	-------	355	200	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,750	1,620	1,970	121,000
November	1,620	1,350	1,570	93,400
December	1,550	1,300	1,400	86,100
January	1,370	971	1,090	67,000
February	1,130	834	1,020	56,600
March	1,050	485	862	53,000
April	1,460	795	1,010	60,100
May	1,170	255	585	36,000
June	1,190	335	601	35,800
July	580	260	355	21,800
August	1,050	200	438	26,900
September	265	200	221	13,200
The year	2,750	200	927	671,000

[a] Estimated.

NORTH PLATTE RIVER NEAR MINATARE, NEBR.

LOCATION.—Staff gage on west line of sec. 18, T. 21 N., R. 53 W., 2 miles south of Minatare.

DRAINAGE AREA.—24,700 square miles.

RECORDS AVAILABLE.—October, 1930, to September, 1931. Records May, 1916, to September, 1930, published by State engineer.

EXTREMES.—Maximum discharge during year, 3,650 second-feet Oct. 7 (gage height, 2.12 feet); minimum, 142 second-feet May 27 (gage height, 0.60 foot).

REMARKS.—Records good. Numerous diversions for irrigation. Flow partly regulated by Pathfinder and Guernsey Reservoirs.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,500	2,200	1,700	1,590	1,280	1,320	1,880	1,130	256	344	507	423
2	2,500	2,050	1,700	1,500	1,280	1,280	1,640	1,130	410	370	450	436
3	2,900	2,050	1,850	1,460	1,280	1,260	1,520	933	630	450	450	436
4	3,000	1,900	1,900	1,410	1,320	1,260	1,410	1,130	630	568	450	410
5	3,000	1,850	1,900	1,370	1,320	1,340	1,410	1,130	630	630	450	397
6	3,300	1,850	1,900	1,370	1,370	1,320	1,410	1,340	664	681	476	384
7	3,650	1,850	1,850	1,320	1,410	1,280	1,300	1,190	895	664	538	476
8	3,500	1,850	1,700	1,320	1,410	1,280	1,300	1,070	1,190	630	630	491
9	3,300	2,050	1,700	1,370	1,370	1,230	1,190	952	1,230	568	876	538
10	3,200	2,100	1,550	1,370	1,370	1,300	1,190	933	1,230	568	990	423
11	2,900	2,050	1,450	1,460	1,410	1,340	1,190	914	1,280	507	876	397
12	2,900	2,050	1,500	1,460	1,370	1,280	1,090	783	1,460	507	698	397
13	2,650	1,950	1,550	1,460	1,280	1,320	1,260	800	1,110	476	599	384
14	2,500	1,900	1,500	[a]1,450	1,370	1,170	1,190	895	1,110	423	522	397
15	2,450	1,900	1,420	[a]1,450	1,370	1,190	990	664	800	397	463	300
16	2,250	1,850	1,420	[a]1,500	1,430	1,280	1,210	630	952	397	436	300
17	2,100	1,850	1,420	[a]1,530	1,340	1,320	914	630	766	397	584	344
18	2,100	1,900	1,300	[a]1,560	1,390	1,280	1,110	553	766	397	522	397
19	2,050	1,950	1,300	[a]1,600	1,390	1,280	914	630	507	370	436	397
20	2,200	1,900	1,420	[a]1,620	1,300	1,150	914	599	463	370	357	450
21	2,050	1,850	1,420	[a]1,620	1,230	1,110	914	553	397	423	300	491
22	2,100	1,850	1,500	[a]1,620	1,370	1,110	914	344	410	423	322	463
23	1,900	1,750	1,550	[a]1,610	1,410	1,150	1,130	289	410	423	322	463
24	1,900	1,700	1,700	[a]1,580	1,300	1,110	1,130	322	410	450	311	522
25	1,850	1,700	1,550	[a]1,540	1,340	1,150	1,130	344	423	423	311	553
26	2,050	1,700	1,700	[a]1,470	1,370	[a]900	1,130	188	647	450	267	538
27	2,100	1,850	1,700	[a]1,410	1,370	[a]780	1,030	142	584	476	267	538
28	1,950	1,750	1,550	[a]1,360	1,370	[a]900	933	234	450	507	289	522
29	1,700	1,750	1,500	1,320	-------	[a]950	1,030	234	436	450	289	538
30	2,100	1,750	1,500	1,230	-------	[a]1,050	1,030	278	344	476	289	538
31	2,100	-------	1,550	1,190	-------	[a]1,400	-------	256	-------	476	357	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	3,650	1,700	2,480	152,000
November	2,200	1,700	1,890	112,000
December	1,900	1,300	1,590	97,800
January	1,620	1,190	1,460	89,800
February	1,430	1,230	1,350	75,000
March	1,400	780	1,200	73,800
April	1,880	914	1,180	70,200
May	1,340	142	685	42,100
June	1,460	256	716	42,600
July	681	344	474	29,100
August	990	267	472	29,000
September	553	300	445	26,500
The year	3,650	142	1,160	840,000

[a] Estimated.

NORTH PLATTE RIVER AT BRIDGEPORT, NEBR.

LOCATION.—Water-stage recorder in sec. 28, T. 20 N., R. 50 W., half a mile north of Bridgeport.

DRAINAGE AREA.—25,300 square miles.

RECORDS AVAILABLE.—May, 1902, to November, 1906; June to September, 1915; October, 1930, to September, 1931. Records October, 1915, to September, 1930, published by State engineer.

EXTREMES.—Maximum discharge during year, 4,600 second-feet Oct. 7, 8 (gage height, 6.55 feet); minimum, 396 second-feet July 19 (gage height, 5.20 second-feet).

1902–1906, 1915–1931: Maximum discharge, 23,000 second-feet June 19, 1921.

REMARKS.—Records good. Numerous diversions for irrigation. Flow partly regulated by Pathfinder and Guernsey Reservoirs.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,350	2,800	2,200			1,630	2,600	1,380	504	668	578	552
2	3,700	2,800	2,200		2,000	1,630	2,420	1,600	493	565	552	628
3	3,950	2,800	2,200	1,950		1,600	2,060	1,320	515	528	590	696
4	4,350	2,800	2,200		1,820	1,600	1,790	1,420	654	628	654	696
5	4,350	2,600	2,100		1,690	1,600	1,790	1,500	940	668	615	724
6	4,150	2,600	2,100		1,650	1,540	1,820	1,710	1,040	828	602	696
7	4,600	2,600	1,900		1,670	1,480	1,840	1,760	1,130	780	640	724
8	4,600	2,600	1,700	1,800	1,500	1,440	1,790	1,560	1,150	780	724	766
9	4,150	2,600	1,700		1,420	1,420	1,630	1,440	1,240	696	1,190	780
10	3,900	2,600	1,700		1,500	1,480	1,500	1,360	1,240	668	1,230	752
11	3,700	2,600	1,700		1,630	1,480	1,500	1,360	1,320	640	1,240	654
12	3,700	2,600	2,300		1,650	1,460	1,500	1,360	1,420	628	1,260	640
13	3,700	2,300	2,300	1,900	1,540	1,460	1,500	1,260	1,460	615	1,060	640
14	3,700	2,000	2,300		1,460	1,440	1,520	1,240	1,280	565	908	640
15	3,700	2,000	2,000		1,520	1,440	1,420	1,240	1,130	493	812	668
16	3,350	2,000	1,700		1,580	1,420	1,320	1,170	958	460	724	682
17	3,150	1,900	2,000		1,580	1,400	1,320	1,030	876	427	724	640
18	3,150	1,900	2,000	2,000	1,580	1,400	1,320	940	780	427	738	696
19	3,150	1,750	1,600		1,580	1,380	1,280	940	682	396	738	812
20	3,150	1,900	1,600		1,630	1,380	1,300	940	603	405	682	844
21	3,150	2,350	1,600		1,670	1,360	1,260	1,060	565	449	668	796
22	3,000	2,350	1,600		1,670	1,360	1,240	940	812	471	640	780
23	2,800	2,350	1,700	2,100	1,670	1,440	1,440	796	752	416	654	860
24	2,800	2,350	1,900		1,630	1,340	1,760	710	724	416	578	958
25	2,600	2,350	1,900		1,650	1,340	1,790	628	780	438	552	992
26	2,600	2,350	[a]1,800		1,600	1,190	1,790	528	780	471	578	1,030
27	2,600	2,350	[a]1,800		1,580	1,010	1,790	438	752	482	493	1,030
28	2,800	2,200	[a]1,800	2,050	1,630	1,010	1,360	471	628	493	493	876
29	2,800	2,200	[a]1,800		-------	1,040	1,260	460	528	460	482	876
30	2,800	2,200	[a]1,800		-------	1,040	1,280	482	552	515	482	892
31	2,800	-------	[a]1,800		-------	1,040	-------	449	-------	515	552	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	4,600	2,600	3,430	211,000
November	2,800	1,750	2,360	140,000
December	----------	----------	1,900	117,000
January	----------	----------	1,970	121,000
February	----------	1,420	1,650	91,600
March	1,630	1,010	1,380	84,800
April	2,600	1,240	1,610	95,800
May	1,760	438	1,080	66,400
June	1,460	493	876	52,100
July	828	396	548	33,700
August	1,260	482	724	44,500
September	1,030	552	767	45,600
The year	4,600	396	1,520	1,100,000

[a] Estimated.

NORTH PLATTE RIVER AT OSHKOSH, NEBR.

LOCATION.—Staff gage on west line of sec. 2, T. 16 N., R. 44 W., 1 mile south of Oshkosh.

DRAINAGE AREA.—27,500 square miles.

RECORDS AVAILABLE.—October, 1930, to September, 1931. Records April, 1916, to October, 1917, and March, 1928, to September, 1930, published by State engineer.

EXTREMES.—Maximum discharge during year, 5,200 second-feet Nov. 23 (gage height, 3.20 feet); minimum, 253 second-feet July 21 (gage height, 1.12 feet).

REMARKS.—Records good. Numerous diversions for irrigation. Flow partly regulated by Pathfinder Reservoir.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,400	2,750	2,950		3,090	2,020	[a]1,800	1,480	455	570	435	545
2	3,200	2,750	2,950		3,000	1,880	[a]1,800	1,600	445	580	455	715
3	3,700	2,750	2,950		3,000	1,740	[a]1,850	2,020	445	580	480	760
4	4,400	2,750	2,950		2,650	1,740	[a]1,700	1,740	425	725	405	740
5	4,300	2,900	2,900		2,480	2,020	[a]1,680	1,740	610	725	425	715
6	3,900	2,750	2,850	2,400	2,300	2,020	1,880	1,680	775	580	445	700
7	3,700	2,750	2,800		2,300	2,020	1,740	1,680	785	640	435	700
8	4,100	2,750	2,750		2,160	2,300	1,740	1,820	795	640	445	700
9	3,900	2,750	2,700		2,020	3,000	1,740	1,620	815	700	570	685
10	3,700	2,750	2,700		1,740	2,650	1,600	1,510	1,040	655	945	865
11	3,700	2,600	2,700		1,880	2,020	1,600	1,400	2,040	465	970	570
12	3,900	2,750	2,650		1,880	1,880	1,600	1,400	1,260	405	1,190	580
13	3,550	2,750	2,600	2,300	1,880	1,880	1,600	1,400	1,260	480	1,190	580
14	3,700	2,750	2,550		1,880	1,740	1,600	1,400	1,180	435	925	570
15	3,400	2,750	2,500		1,880	1,740	1,600	1,400	1,100	465	900	670
16	3,400	2,750	2,450		2,150	1,740	1,600	1,170	1,080	405	715	685
17	3,200	2,750	2,450		2,150	1,740	1,600	1,000	865	405	625	775
18	3,050	2,750	2,400	2,400	2,150	1,880	1,350	830	685	360	520	925
19	2,750	2,750	2,400		2,020	1,880	1,480	815	610	335	530	1,020
20	2,750	2,750	2,350		1,880	1,740	1,480	795	465	345	580	970
21	2,750	3,700	2,350		2,150	1,740	1,350	775	360	253	520	1,020
22	2,750	4,800	2,300		2,150	1,600	1,240	945	350	290	490	970
23	2,750	5,200	2,300	2,550	2,150	1,480	1,480	925	350	345	530	900
24	2,750	4,400	2,250		2,150	1,480	2,020	860	350	390	670	1,100
25	2,750	3,700	2,250		2,300	1,740	1,880	795	445	315	595	1,060
26	2,750	3,300	2,200		2,150	1,880	1,740	775	390	300	570	1,020
27	2,750	3,300	2,200		2,020	1,880	1,740	760	445	435	445	970
28	2,750	3,300	2,200		2,020	[a]1,850	1,600	670	445	390	435	925
29	2,750	3,000	2,200	2,700	-------	[a]1,850	1,740	655	490	390	465	925
30	2,750	3,000	2,200		-------	[a]1,850	1,600	555	390	390	455	740
31	2,750	-------	2,200		-------	[a]1,800	-------	505	-------	390	455	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	4,400	2,750	3,290	202,000
November	5,200	2,600	3,090	184,000
December	2,950	2,200	2,520	155,000
January			2,470	152,000
February	3,090	1,740	2,200	122,000
March	3,000	1,480	1,900	117,000
April	2,020	1,240	1,650	98,200
May	2,020	505	1,180	72,600
June	2,040	350	705	42,000
July	725	253	464	28,500
August	1,190	405	607	37,300
September	1,100	545	803	47,800
The year	5,200	253	1,740	1,260,000

[a] Estimated.

NORTH PLATTE RIVER AT LEWELLEN, NEBR.

LOCATION.—Staff gage in sec. 33, T. 16 N., R. 42 W., at highway bridge 1 mile south of Lewellen.
DRAINAGE AREA.—29,400 square miles.
RECORDS AVAILABLE.—July to September, 1931.
EXTREMES.—Maximum discharge during period, 1,120 second-feet Sept. 24, 25 (gage height, 2.57 feet); minimum, 340 second-feet July 19 (gage height, 2.00 feet).
REMARKS.—Records fair. Numerous diversions for irrigation.

Daily and monthly discharge, in second-feet, 1931

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1	350	485	465	11	500	725	500	21	345	410	670
2	355	490	575	12	440	915	500	22	360	395	670
3	370	485	640	13	465	1,040	490	23	370	410	640
4	590	485	620	14	375	700	465	24	365	475	1,120
5	540	455	590	15	350	540	540	25	360	455	1,120
6	475	415	540	16	345	500	510	26	365	455	1,090
7	525	465	560	17	350	455	605	27	370	380	1,040
8	620	370	560	18	355	430	670	28	380	385	1,010
9	655	430	560	19	340	465	805	29	395	380	1,040
10	640	700	590	20	360	465	805	30	400	400	832
								31	440	400	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
July	655	340	424	26,100
August	1,040	370	502	30,900
September	1,120	465	694	41,300
The period				98,300

NORTH PLATTE RIVER NEAR SUTHERLAND, NEBR.

LOCATION.—Staff gage on line between secs. 4 and 5, T. 14 N., R. 33 W., 3½ miles north of Sutherland.
DRAINAGE AREA.—31,300 square miles.
RECORDS AVAILABLE.—July to September, 1931.
EXTREMES.—Maximum discharge during period, 800 second-feet Sept. 29 (gage height, 2.68 feet); no flow July 24–31.
REMARKS.—Records fair. Numerous diversions for irrigation.

Daily and monthly discharge, in second-feet, 1931

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1	5	5	48	11	230	85	290	21	2	165	540
2	220	64	68	12	210	265	245	22	5	490	580
3	96	56	170	13	190	355	290	23	2	320	625
4	200	42	245	14	120	445	310	24	0	230	695
5	310	11	320	15	36	445	270	25	0	130	720
6	515	5	445	16	24	470	265	26	0	96	735
7	330	350	340	17	14	420	300	27	0	96	760
8	235	530	340	18	5	370	300	28	0	96	760
9	235	270	445	19	5	180	320	29	2	60	800
10	300	150	380	20	3	170	430	30	0	80	785
								31	0	52	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
July	515	0	106	6,520
August	530	5	210	12,900
September	800	48	427	25,400
The period				44,800

NORTH PLATTE RIVER AT NORTH PLATTE, NEBR.

LOCATION.—Water-stage recorder in sec. 28, T. 14 N., R. 30 W., half a mile north of North Platte and 4½ miles above mouth of South Platte River.

DRAINAGE AREA.—32,000 square miles.

RECORDS AVAILABLE.—February, 1895, to September, 1915; October, 1930, to September, 1931. Records October, 1915, to September, 1930, published by State engineer.

EXTREMES.—Maximum discharge during year, 6,900 second-feet Apr. 3 (gage height, 4.62 feet); minimum, 75 second-feet July 1 (gage height, 2.14 feet).

1895–1931: Maximum discharge, 27,100 second-feet June 6, 1909; minimum, 20 second-feet Sept. 20, 1904.

REMARKS.—Records good. Numerous diversions for irrigation.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,450	3,100	3,700	1,970	3,920	2,390	1,970	2,660	390	105	95	195
2	3,300	3,100	3,900	2,100	3,730	2,520	3,010	2,520	350	210	105	210
3	4,100	3,300	3,700	2,250	3,720	2,390	6,150	2,100	280	305	160	230
4	5,800	3,100	3,700	2,390	3,550	2,390	4,980	2,100	280	360	230	300
5	5,300	3,000	3,700	2,390	3,380	1,850	2,850	2,530	620	425	180	395
6	5,100	3,300	3,900	2,530	3,370	1,160	2,250	2,390	670	470	180	440
7	4,550	3,300	3,900	2,660	2,850	1,720	2,100	2,100	570	470	235	440
8	4,550	3,300	3,550	2,660	2,850	2,250	1,970	2,100	570	470	335	465
9	4,100	2,850	3,550	2,660	2,850	2,530	2,100	2,390	730	470	345	465
10	4,550	2,850	3,250	2,520	2,530	3,370	2,100	2,100	860	465	305	460
11	5,350	3,100	3,250	2,530	2,660	4,330	2,100	1,970	1,150	465	230	460
12	5,350	3,100	3,100	2,100	2,660	3,920	2,100	1,730	1,340	460	210	460
13	4,550	3,100	3,100	1,970	2,660	2,850	2,100	1,720	1,480	450	305	460
14	4,100	3,100	3,250	1,590	2,520	2,390	2,100	1,590	1,720	365	465	475
15	4,100	3,050	3,000	1,590	2,390	2,250	1,850	1,480	1,340	255	570	520
16	4,100	2,850	2,600	1,980	2,390	2,100	1,980	1,240	1,070	190	620	475
17	4,100	2,750	3,000	1,850	2,530	2,100	1,970	1,150	1,000	160	620	520
18	3,700	2,600	3,250	1,850	2,390	2,100	1,980	1,000	860	130	570	620
19	3,100	2,850	2,850	1,720	2,250	2,390	1,970	1,000	790	125	470	670
20	3,100	1,500	2,400	2,100	2,250	2,530	1,980	930	790	130	380	670
21	3,100	1,400	1,900	2,390	2,250	2,520	1,850	860	670	130	335	790
22	3,300	1,800	2,050	2,850	2,850	2,250	1,720	790	620	110	300	790
23	3,300	3,400	2,100	2,660	3,200	2,100	1,730	730	395	105	285	790
24	3,300	4,050	2,250	2,660	2,850	2,250	2,100	730	350	90	350	925
25	3,100	3,900	2,450	3,010	2,520	2,100	2,390	790	350	85	320	925
26	3,300	3,700	2,600	3,010	2,390	2,100	2,850	730	315	85	270	1,000
27	3,300	4,250	2,750	3,380	2,530	2,100	2,850	620	250	85	240	1,070
28	3,300	4,050	3,000	3,720	2,520	2,250	2,520	460	210	80	225	1,000
29	3,300	3,900	3,000	3,730	-------	2,100	2,530	440	165	75	220	1,000
30	3,000	3,700	2,750	3,920	-------	2,100	2,660	440	130	80	210	1,000
31	3,300	-------	2,750	3,930	-------	1,850	-------	405	-------	85	200	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	5,800	3,000	3,930	242,000
November	4,250	1,400	3,110	185,000
December	3,900	1,900	3,040	187,000
January	3,930	1,590	2,540	156,000
February	3,920	2,250	2,810	156,000
March	4,330	1,160	2,360	145,000
April	6,150	1,720	2,430	145,000
May	2,660	405	1,410	86,700
June	1,720	130	677	40,300
July	470	75	242	14,900
August	620	95	309	19,000
September	1,070	195	607	36,100
The year	5,800	75	1,950	1,410,000

PLATTE RIVER NEAR OVERTON, NEBR.

LOCATION.—Water-stage recorder in sec. 4, T. 8 N., R. 19 W., 4 miles south of Overton.

DRAINAGE AREA.—58,400 square miles.

RECORDS AVAILABLE.—October, 1930, to September, 1931. Records June, 1918, to December, 1923, and April, 1925, to September, 1930, published by State engineer.

EXTREMES.—Maximum discharge during year, 10,600 second-feet Apr. 4 (gage height, 4.85 feet); no flow June 26 to Sept. 30.

REMARKS.—Records fair. Numerous diversions from headwaters.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2,800	3,900	4,800	3,280	5,170	4,410	3,090	2,900	140
2	3,400	3,900	4,100	2,900	4,910	4,410	4,910	2,900	95
3	4,300	3,700	4,500	2,900	4,650	4,410	5,970	2,900	35
4	4,500	3,700	4,800	2,900	4,180	4,170	8,500	2,900	25
5	5,500	3,700	4,800	2,900	4,170	3,940	7,500	2,900	70
6	6,350	3,500	5,300	2,720	4,180	3,490	6,550	2,720	135
7	5,500	3,700	5,000	3,280	3,700	3,490	5,180	2,720	180
8	5,300	3,700	5,000	3,280	3,700	3,490	4,410	3,090	200
9	5,000	3,700	5,000	3,490	4,170	3,490	3,700	2,900	200
10	4,500	3,500	4,800	3,490	3,940	4,410	3,700	2,720	200
11	4,800	3,700	3,700	3,490	3,940	5,980	3,700	2,540	315
12	9,700	3,700	4,300	2,900	3,940	6,550	3,300	2,540	540
13	8,300	3,700	4,100	2,370	3,700	6,550	2,900	2,370	920
14	6,200	3,650	4,100	2,450	3,490	5,700	2,900	2,200	1,090
15	5,600	3,650	3,900	2,540	3,490	4,410	2,540	1,900	1,260
16	5,400	3,800	3,700	2,900	3,700	3,940	2,540	1,620	1,260
17	4,900	3,900	3,500	3,090	3,700	3,940	2,540	1,500	1,260
18	4,700	3,600	3,100	3,280	3,700	3,940	2,370	1,380	630
19	4,500	4,300	3,300	3,490	3,700	3,490	2,370	1,260	470
20	4,300	5,300	3,700	3,280	3,700	3,940	2,370	1,260	330
21	4,100	3,800	3,300	2,900	3,700	4,170	2,540	1,140	185
22	4,100	2,200	3,000	2,720	4,650	4,180	2,370	1,030	40
23	4,300	1,800	2,800	2,900	5,180	4,650	2,370	920	60
24	3,900	1,000	2,500	3,700	5,440	3,940	2,540	820	40
25	3,700	1,300	2,600	4,410	5,440	3,700	2,540	720	15
26	3,900	1,400	3,000	4,410	4,910	4,170	2,720	630	0
27	3,700	1,500	3,000	4,650	4,910	5,700	2,720	540	0
28	3,900	1,500	3,000	4,910	4,650	4,180	3,090	470	0
29	3,900	1,500	3,000	5,170	------	3,540	3,090	400	0
30	3,500	1,500	3,500	5,700	------	2,900	3,090	330	0
31	3,500	------	3,700	5,700	------	2,540	------	230	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	9,700	2,800	4,780	294,000
November	5,300	1,000	3,130	186,000
December	5,300	2,500	3,840	236,000
January	5,700	2,370	3,490	215,000
February	5,440	3,490	4,240	235,000
March	6,550	2,540	4,250	261,000
April	8,500	2,370	3,600	214,000
May	3,090	230	1,760	108,000
June	1,260	0	323	19,200
July	0	0	0	0
August	0	0	0	0
September	0	0	0	0
The year	9,700	0	2,440	1,770,000

NOTE.—No flow during July, August, September.

PLATTE RIVER NEAR DUNCAN, NEBR.

LOCATION.—Staff gage in sec. 12, T. 16 N., R. 2 W., 1½ miles south of Duncan. Zero of gage is 1,478.7 feet above mean sea level.

DRAINAGE AREA.—61,600 square miles.

RECORDS AVAILABLE.—October, 1928, to September, 1931. At point 7 miles downstream June, 1895, to September, 1915.

EXTREMES.—Maximum discharge during year, 11,500 second-feet Apr. 7 (gage height, 4.00 feet); no flow for several days during July, August, September. 1895–1915, 1928–1931: Maximum discharge, 51,100 second-feet June 23, 1905; no flow during part of summers of 1901, 1902, 1904, 1911, 1913, 1914, 1931.

REMARKS.—Records good except those for winter, which were estimated because of ice. Numerous diversions from headwaters. Flow partly regulated by reservoirs in Wyoming.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,360	3,080	1,450	2,650	8,100	3,870	2,210	3,730	250	18	0	1
2	1,480	2,910	1,430	2,530	6,600	4,200	2,440	3,350	202	14	0	1
3	1,970	2,780	2,600	2,910	5,290	3,290	2,560	3,180	144	11	0	1
4	2,040	3,260	3,800	2,900	5,240	3,790	3,910	2,760	76	24	0	1
5	3,590	3,220	4,800	2,900	5,030	3,180	6,790	3,350	219	14	1	1
6	4,790	3,260	5,200		4,330	2,100	7,460	4,130	224	12	1	1
7	4,110	3,040	5,140		4,200	1,850	10,800	3,440	214	10	1	1
8	4,600	2,910	5,340	2,900	4,200	1,850	7,300	2,720	192	10	2	0
9	4,980	3,040	5,950		3,870	1,850	5,840	2,760	134	10	1	0
10	4,500	3,010	6,000		3,700	2,290	5,190	3,680	83	9	2	1
11	4,840	3,010	5,840	2,850	3,520	5,290	4,600	3,680	94	12	3	0
12	4,460	3,040	5,080	2,820	3,220	5,140	4,200	2,460	90	12	3	0
13	3,990	3,330	4,330	2,000	3,590	5,030	3,670	2,020	152	11	3	0
14	8,900	3,370	3,900	1,800	4,240	4,070	3,290	1,750	170	8	3	0
15	9,800	3,440	3,600	1,500	3,440	5,560	2,880	1,500	139	4	3	2
16	7,940	3,830	3,300		3,220	4,500	2,750	1,520	102	8	3	2
17	7,170	3,870	3,100		3,290	4,200	2,720	1,420	148	6	3	1
18	6,360	3,750	2,950	1,200	3,520	3,670	2,720	1,420	310	6	3	2
19	5,400	3,750	2,800		3,560	3,290	2,750	1,160	295	4	3	2
20	4,640	5,670	2,650		3,520	3,260	2,620	1,050	325	3	3	2
21	4,280	7,380	2,600		3,480	3,180	2,650	1,050	1,420	5	2	2
22	4,070	7,540	2,550	1,800	3,370	3,370	2,810	990	846	4	2	2
23	3,890	3,590	2,500		4,070	3,590	2,780	862	523	4	1	2
24	3,560	3,080	2,530	3,000	4,460	3,400	2,980	678	243	2	2	2
25	3,440	2,350	3,040	4,000	4,690	3,670	3,150	678	130	2	1	3
26	3,370	2,000	3,040	5,000	4,790	3,590	3,290	578	83	1	1	90
27	3,370	1,800	2,980	6,000	4,790	2,470	3,440	470	50	1	0	56
28	3,290	1,600	2,800	6,500	4,280	1,020	3,440	362	28	0	0	24
29	3,290	1,600	2,700	7,000	-------	950	3,520	388	20	0	0	14
30	3,080	1,500	2,600	7,300	-------	1,400	3,630	348	18	2	0	14
31	3,290	-------	2,530	7,500	-------	1,820	-------	318	-------	0	1	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	9,800	1,360	4,380	269,000
November	7,540	1,500	3,330	198,000
December	6,000	1,430	3,520	216,000
January	7,500	-------	3,130	192,000
February	8,100	3,220	4,270	237,000
March	5,560	950	3,250	200,000
April	10,800	2,210	3,950	235,000
May	4,130	318	1,860	114,000
June	1,420	18	231	13,700
July	24	0	7.3	449
August	3	0	1.6	92
September	90	0	7.6	452
The year	10,800	0	2,320	1,680,000

PLATTE RIVER NEAR ASHLAND, NEBR.

LOCATION.—Chain gage in sec. 29, T. 13 N., R. 10 E., 3 miles northeast of Ashland. Zero of gage is 1,021.1 feet above mean sea level.

DRAINAGE AREA.—83,800 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 18,300 second-feet Oct. 14 (gage height, 4.60 feet); minimum, 1,270 second-feet July 31 (gage height, 1.36 feet).

1928–1931: Maximum discharge, 39,800 second-feet Feb. 19, 1930 (gage height, 6.05 feet); minimum, that of July 31, 1931.

REMARKS.—Records good except those for period Jan. 6–20, which were based on one discharge measurement and temperature records. Numerous diversions from headwaters. No regulation except on North Platte River.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,650	6,800	4,130	5,780	10,600	8,800	3,430	6,560	2,860	2,050	1,290	2,240
2	3,620	6,750	3,990	6,280	12,500	8,200	7,890	6,750	2,710	2,390	1,490	2,200
3	3,890	6,140	3,300	6,420	10,900	7,630	9,810	7,130	2,600	2,170	1,500	2,090
4	3,920	6,370	5,620	6,700	10,800	7,430	8,580	6,890	2,390	1,910	1,430	2,010
5	4,560	6,420	7,780	6,520	10,500	7,280	8,740	8,250	3,430	1,730	1,520	1,850
6	5,620	6,330	7,990		9,940	7,040	10,300	8,640	3,390	2,170	1,490	1,850
7	8,520	6,470	7,580		9,500	6,140	10,100	9,030	3,390	2,390	1,700	1,980
8	8,300	6,370	8,420	7,090	9,090	4,380	14,300	8,250	3,470	2,550	1,820	2,050
9	7,940	6,420	8,800		8,640	4,300	12,200	7,780	3,680	2,350	2,140	2,070
10	8,360	5,960	9,750		8,580	4,990	10,900	7,780	3,510	2,470	2,480	2,030
11	7,990	5,880	8,520		8,250	5,830	9,750	8,250	3,240	2,140	2,160	1,920
12	8,200	5,660	8,360		7,780	6,280	8,520	8,740	5,250	2,160	1,830	1,830
13	8,250	5,790	8,040	4,230	7,480	8,300	7,780	7,180	4,390	2,050	1,830	1,830
14	16,300	6,240	7,940		7,280	8,090	6,890	6,100	3,510	1,980	1,780	1,890
15	14,100	6,330	8,200		7,990	8,580	6,560	5,530	3,050	1,930	1,600	1,920
16	13,900	8,090	7,680		7,480	7,780	6,010	5,200	3,010	1,960	1,620	1,890
17	12,800	8,300	7,580		7,130	8,360	5,920	5,040	2,830	1,940	1,680	1,890
18	12,400	8,150	5,830	2,210	6,990	8,250	5,830	4,870	2,740	1,910	1,730	2,260
19	11,700	8,740	5,700		7,230	7,830	5,960	4,950	2,740	1,940	1,730	2,620
20	9,440	11,600	5,360		7,630	7,680	6,890	4,380	2,740	1,930	1,830	3,130
21	8,520	14,300	5,300	3,590	7,580	7,780	6,610	4,200	3,800	2,070	1,820	3,380
22	8,040	14,800	5,100	4,090	7,480	7,630	6,470	4,230	5,560	1,830	1,800	2,410
23	7,480	12,200	4,720	4,800	7,280	8,420	6,330	3,960	10,200	1,660	1,620	2,120
24	7,280	8,360	4,870	7,730	7,130	7,430	6,560	4,060	7,600	1,600	1,680	2,300
25	7,130	6,940	4,990	10,000	7,890	7,580	6,850	3,620	9,080	1,560	1,650	2,700
26	6,890	7,280	5,200	10,300	9,090	7,940	6,990	3,070	2,800	1,550	1,830	3,460
27	6,660	5,070	6,000	11,100	9,570	8,150	7,480	2,890	2,710	1,480	1,940	4,740
28	7,040	3,860	6,400	11,000	8,970	7,780	7,330	3,300	2,580	1,420	1,830	3,020
29	6,660	3,400	6,600	13,400	-------	4,560	7,090	3,300	2,370	1,370	1,730	2,320
30	6,660	4,060	6,750	12,800	-------	5,360	6,700	2,770	2,140	1,330	1,660	2,240
31	6,610	-------	6,470	13,800	-------	3,220	-------	2,650	-------	1,270	1,620	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	16,300	3,620	8,140	501,000
November	14,800	3,400	7,300	434,000
December	9,750	3,300	6,550	403,000
January	13,800	-------	6,510	400,000
February	12,500	6,990	8,620	479,000
March	8,800	3,220	7,070	435,000
April	14,300	3,430	7,830	466,000
May	9,030	2,650	5,660	348,000
June	10,200	2,140	3,790	226,000
July	2,550	1,270	1,910	117,000
August	2,480	1,290	1,740	107,000
September	4,740	1,830	2,340	139,000
The year	16,300	1,270	5,600	4,060,000

CANADIAN RIVER AT COWDREY, COLO.

LOCATION.—Chain gage in sec. 6, T. 10 N., R. 79 W., half a mile northeast of Cowdrey and a third of a mile above Government Creek. Zero of gage is 7,870.73 feet above mean sea level.

DRAINAGE AREA.—201 square miles.

RECORDS AVAILABLE.—May, 1904, to October, 1905; May, 1929, to November, 1931 (discontinued).

EXTREMES.—Maximum discharge during year not determined; minimum, 3 second-feet Sept. 12, 13, 15, 16, 18 (gage height, 1.73 feet).

1904–5; 1929–1931: Maximum discharge, 600 second-feet June 10, 1905; minimum, 1 second-foot July 8–10, 1930.

REMARKS.—Records fair. No records for period Nov. 2 to Mar. 31. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.
1	27	26		83	68	38	18	9	11	14
2	27	------		68	59	36	19	10	14	14
3	30	------	30	59	61	35	21	9	16	15
4	47	------		54	71	27	16	5	15	16
5	44	------		54	90	29	14	8	14	13
6	41	------		49	106	26	15	7	17	11
7	41	------		47	118	18	16	7	15	12
8	39	------	100	49	110	13	16	6	15	14
9	38	------		44	113	10	14	5	18	16
10	38	------		41	132	9	11	4	21	19
11	41	------	250	37	138	8	9	4	18	18
12	42	------	350	33	148	8	8	3	19	16
13	37	------	500	32	116	7	6	3	19	17
14	33	------		28	107	6	6	4	17	19
15	32	------	415	26	98	6	6	3	13	22
16	36	------	233	32	83	5	14	3	9	------
17	35	------	130	29	74	4	14	4	11	------
18	32	------	136	35	62	5	16	3	12	------
19	30	------	148	37	49	6	16	7	11	------
20	28	------	114	44	41	6	13	8	14	------
21	27	------	82	49	33	6	10	11	16	------
22	29	------	56	42	27	5	9	10	16	------
23	27	------	39	33	25	5	10	8	16	------
24	26	------	12	30	23	4	11	11	16	------
25	25	------	14	36	20	4	10	35	17	------
26	25	------	24	54	16	6	10	24	18	------
27	23	------	34	59	11	8	7	16	16	------
28	22	------	42	66	26	11	6	13	12	------
29	20	------	43	65	33	16	6	11	14	------
30	23	------	61	70	36	20	7	10	12	------
31	26	------	------	59	------	16	8	------	13	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1930–31				
October	47	20	32.0	1,970
April	------	12	128	7,620
May	83	26	46.6	2,870
June	148	11	69.7	4,150
July	38	4	13.0	799
August	21	6	11.7	719
September	35	3	8.7	518
1931				
October	21	9	15.0	922
November	22	11	15.7	467

ENCAMPMENT RIVER AT ENCAMPMENT, WYO.

LOCATION.—Chain gage in sec. 6, T. 14 N., R. 83 W., at Encampment. Zero of gage is 7,141.53 feet above mean sea level.

DRAINAGE AREA.—219 square miles.

RECORDS AVAILABLE.—May to September, 1900; May, 1911, to August, 1924; May, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 1,080 second-feet May 17 (gage height, 6.30 feet); minimum, 4 second-feet Aug. 27 (gage height, 3.25 feet). 1900, 1911–1924, 1929–1931: Maximum discharge, 4,680 second-feet May 29, 1900; minimum, 3 second-feet July 24, 1919.

REMARKS.—Records good except those for period Nov. 16 to Apr. 8, which were based on two discharge measurements and temperature records. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Apr.	May	June	July	Aug.	Sept.
1	108	54				245	807	83	48	24
2	124	49				223	854	56	28	17
3	114	42			55	278	891	56	22	16
4	104	46				254	942	59	20	13
5	106	54				208	840	51	18	13
6	97	54				254	840	40	19	15
7	100	40			60	254	840	38	20	16
8	112	44				288	774	37	23	16
9	114	40	41		66	284	774	34	19	17
10	124	45		34	59	271	667	24	19	33
11	138	50			70	242	654	15	17	17
12	143	46			69	245	642	12	14	15
13	129	45			93	349	576	28	12	15
14	114	38			112	524	576	24	14	15
15	106	37			108	716	469	27	12	15
16	108				146	934	449	23	35	15
17	90				180	950	401	20	29	15
18	83	35			229	966	321	24	25	15
19	83				281	691	267	23	25	26
20	93				238	474	264	16	21	29
21	86				194	401	238	17	23	33
22	80				166	378	148	20	18	38
23	73	30			136	474	148	15	20	56
24	62				124	679	153	16	17	67
25	44				120	807	124	28	11	67
26	54				118	875	93	18	7	55
27	63				118	840	134	23	4	43
28	62	35			136	588	91	20	11	32
29	46				177	685	97	28	11	24
30	57				226	774	86	26	11	33
31	54					588		43	24	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	143	44	92.6	5,690
November	54		39.5	2,350
December			40	2,460
January			45	2,770
February			35	1,940
March			40	2,460
April	281		121	7,200
May	966	208	508	31,200
June	942	86	505	30,000
July	83	12	30.5	1,880
August	48	4	19.3	1,190
September	67	13	26.8	1,590
The year	966	4	125	90,700

PASS CREEK NEAR SARATOGA, WYO.

LOCATION.—Staff gage in sec. 29, T. 19 N., R. 82 W., 12 miles northeast of Saratoga.

DRAINAGE AREA.—119 square miles.

RECORDS AVAILABLE.—May, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 262 second-feet May 18 (gage height, 4.5 feet); minimum, 3 second-feet Aug. 26–29, Sept. 11 (gage height, 1.77 feet).

1929–1931: Maximum discharge, 450 second-feet May 23, 1929 (gage height, 5.5 feet); minimum, 2.6 second-feet Aug. 1, 1930.

REMARKS.—Records good. No records for period Nov. 16 to Mar. 31. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	10	14	10	40	131	28	14	8
2	13	10	10	77	117	23	13	5
3	14	13	12	73	110	19	10	4
4	22	12	21	151	104	23	8	4
5	29	10	16	81	124	19	7	4
6	26	12	15	67	100	15	8	4
7	16	9	22	76	95	15	9	4
8	13	8	72	80	84	14	8	4
9	13	9	99	56	80	14	7	4
10	13	17	81	43	80	12	7	4
11	12	14	105	40	73	12	7	3
12	17	17	158	42	76	10	6	4
13	16	9	187	58	80	9	5	4
14	14	6	208	77	59	9	4	4
15	14	4	179	106	47	7	5	4
16	10	------	138	137	43	8	5	5
17	16	------	141	134	37	8	6	5
18	14	------	193	210	29	7	5	5
19	13	------	154	98	23	7	5	6
20	12	------	81	64	20	7	4	8
21	11	------	54	56	16	7	4	7
22	11	------	39	47	14	6	4	8
23	10	------	22	47	12	5	4	9
24	10	------	35	70	12	5	4	16
25	9	------	30	120	17	5	4	15
26	10	------	25	133	35	5	3	6
27	10	------	37	135	30	6	3	7
28	8	------	49	196	35	7	3	5
29	7	------	60	222	32	6	3	5
30	8	------	62	109	35	7	4	5
31	10	------	------	104	------	16	8	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	29	7	13.3	818
November 1–15	17	----------	10.9	324
April	208	10	77.2	4,590
May	222	40	95.1	5,850
June	131	12	58.3	3,470
July	28	5	11.0	676
August	14	3	6.0	369
September	16	3	5.9	351

ROCK CREEK NEAR ROCK RIVER, WYO.

LOCATION.—Water-stage recorder in sec. 4, T. 20 N., R. 76 W., 1½ miles southeast of Rock River.

DRAINAGE AREA.—184 square miles.

RECORDS AVAILABLE.—May, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 492 second-feet June 5 (gage height, 3.12 feet); no flow Sept. 2–30.

1928–1931: Maximum discharge, 1,180 second-feet May 29, 30, 1928; minimum, that of Sept. 2–30, 1931.

REMARKS.—Records good except those for winter, which were estimated because of ice. Diversions for irrigation above station. Flow partly regulated by two reservoirs.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4	17					15	42	111	14	14	1
2	5	17					15	65	235	11	13	0
3	14	16					20	53	332	8	11	0
4	81	16					20	45	345	8	10	0
5	57	16					28	51	388	6	10	0
6	33	13					42	42	358	5	12	0
7	17	9					52	31	281	4	12	0
8	14	9					43	21	310	4	10	0
9	13	9					27	23	247	4	10	0
10	12	10					26	22	227	4	10	0
11	14	10					28	21	287	4	9	0
12	17	11					24	17	273	4	8	0
13	15	14					25	13	320	4	7	0
14	14	17					25	9	221	4	7	0
15	14	15			6		23	8	166	3	7	0
16	22	19	7	7		9	21	11	139	3	8	0
17	33						17	24	101	2	8	0
18	22	10					16	84	78	2	8	0
19	23						14	95	51	3	6	0
20	23						14	66	42	4	5	0
21	23						14	45	34	4	3	0
22	22						13	31	28	4	2	0
23	21	8					11	18	22	4	2	0
24	20						10	13	18	4	2	0
25	19						19	18	16	6	1	0
26	19						28	127	15	7	1	0
27	18						46	171	11	7	1	0
28	19	9					51	201	10	9	1	0
29	22				-------		35	211	10	11	1	0
30	17				-------		57	123	12	26	1	0
31	18	-------			-------		-------	76	-------	50	0	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	81	4	21.5	1,320
November	19	----------	11.4	678
December	----------	----------	7	430
January	----------	----------	7	430
February	----------	----------	6	333
March	----------	----------	9	553
April	57	10	26.0	1,550
May	211	8	57.3	3,520
June	388	10	156	9,280
July	50	2	7.5	461
August	14	0	6.5	400
September	1	0	0	0
The year	388	0	26.2	19,000

DEER CREEK AT GLENROCK, WYO.

LOCATION.—Staff gage in sec. 4, T. 33 N., R. 75 W., at Glenrock, a quarter of a mile above mouth.

DRAINAGE AREA.—216 square miles.

RECORDS AVAILABLE.—April, 1916, to September, 1924; May, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 646 second-feet Apr. 18 (gage height, 4.05 feet); minimum, 0.5 second-foot several days during July, August, September.

1916–1924, 1928–1931: Maximum discharge, 4,600 second-feet Apr. 15, 1924; no flow during summers of 1919 and 1922.

REMARKS.—Records good. No records for period Dec. 1 to Feb. 28. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	23	17	33	376	158	0.8	1.0	0.6
2	11	24	19	35	368	166	.8	.8	.6
3	16	23	19	33	408	133	.8	.8	.5
4	18	22	17	34	424	123	.8	1.0	.6
5	23	23	17	38	380	186	.7	.9	.5
6	25	23	17	45	424	186	.8	.9	.5
7	30	23	17	47	368	138	.7	.9	.5
8	23	22	19	69	436	114	.7	.8	.5
9	23	22	35	73	396	99	.6	.8	.5
10	23	22	35	74	353	84	.7	.8	.5
11	23	22	23	123	269	105	.7	.7	.5
12	23	22	20	175	235	84	.7	.6	.5
13	22	21	21	208	208	80	.7	.6	.5
14	22	22	21	346	208	69	.6	.7	.7
15	23	22	20	376	232	62	.6	.7	.9
16	23	22	20	357	238	38	.6	1.2	1.0
17	23	22	22	416	232	33	.5	2.1	1.0
18	23	22	23	548	235	22	.5	1.1	1.0
19	23	22	23	456	205	11	.6	1.3	1.1
20	23		24	309	183	6.5	.6	1.0	.8
21	23		24	214	123	5.0	.6	.7	.5
22	23	16	24	186	123	4.4	.5	.5	.8
23	23		29	123	103	2.7	.5	.6	.8
24	23		27	169	88	1.6	.5	.6	.9
25	23		27	166	67	1.1	.5	.5	1.0
26	21		27	148	65	1.3	.5	.5	1.0
27	23		25	148	126	1.2	.5	.5	1.1
28	23	18	27	208	208	1.1	.5	.7	1.0
29	23		27	232	295	1.0	.6	.7	1.1
30	23		28	279	276	.9	.8	.7	1.1
31	23	------	27	------	197	------	.8	.7	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	30	11	22.0	1,350
November	24	----------	20.3	1,210
March	35	17	23.3	1,430
April	548	33	189	11,200
May	436	65	253	15,600
June	186	.9	7.20	428
July	.8	.5	.64	39.4
August	2.1	.5	.82	50.4
September	1.1	.5	.75	44.6

BOXELDER CREEK NEAR CAREYHURST, WYO.

LOCATION.—Water-stage recorder in sec. 13, T. 33 N., R. 74 W., 2 miles upstream from Careyhurst.

DRAINAGE AREA.—202 square miles.

RECORDS AVAILABLE.—May to October, 1911; April, 1916, to September, 1924; May, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 274 second-feet May 29 (gage height, 3.53 feet); no flow Aug. 10, 11, 13, Sept. 14.

1911, 1916–1924, 1928–1931: Maximum discharge, 2,050 second-feet May 22, 1922; no flow during summers of 1922, 1929, 1931.

REMARKS.—Records fair. No records for period Dec. 1 to Feb. 28. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	11		15	105	160	2	1	1
2	14	11		15	126	148	2	1	1
3	34	11	9	14	158	124	2	1	1
4	16	11		14	206	115	2	1	1
5	17	11		16	226	148	2	1	1
6	17	11		16	201	128	2	1	1
7	16	11	10	16	188	109	3	1	1
8	16	11		31	228	88	4	1	1
9	16	11	14	36	220	64	4	1	1
10	16	11	10	50	201	56	3	0	1
11	15	11	10	74	180	62	2	0	1
12	15	11	10	109	170	56	2	1	1
13	15	11	10	128	158	48	2	0	1
14	13	11	10	162	160	42	2	1	0
15	13	11	11	144	180	36	2	1	1
16	13		13	126	193	27	2	1	1
17	13		15	139	206	14	2	1	1
18	11	10	16	185	206	5	2	1	1
19	12		16	190	193	2	2	1	1
20	12		17	160	160	2	2	1	1
21	12		16	119	132	2	2	1	1
22	12		18	122	111	3	2	1	1
23	12	8	23	100	85	2	2	1	1
24	12		22	107	69	2	1	1	1
25	12		20	102	67	2	1	1	1
26	12		28	92	62	2	1	1	1
27	12		30	83	126	2	1	1	1
28	11	9	30	76	150	2	1	1	1
29	11		30	81	228	2	1	1	1
30	10		28	92	220	2	1	1	1
31	11	-------	20	-------	175	-------	1	1	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	34	10	13.9	855
November	11	----------	10.0	595
March	30	----------	15.9	978
April	190	14	87.1	5,180
May	228	62	164	10,100
June	160	2	48.5	2,890
July	4	1	1.9	117
August	1	0	.9	55
September	1	0	1.0	60

LA PRELE CREEK NEAR DOUGLAS, WYO.

LOCATION.—Water-stage recorder in sec. 6, T. 31 N., R. 73 W., 16 miles southwest of Douglas.

DRAINAGE AREA.—146 square miles.

RECORDS AVAILABLE.—August, 1919, to September, 1931.

EXTREMES.—Maximum discharge during year, 184 second-feet May 7 (gage height, 5.72 feet); minimum, 1.1 second-feet Sept. 12, 13 (gage height, 3.38 feet).

1919–1931: Maximum discharge, 1,220 second-feet May 11, 1920 (gage height, 11.4 feet); minimum, 0.4 second-foot Oct. 2, 1919 (gage height, 3.29 feet).

REMARKS.—Records good. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Feb.	Apr.	May	June	July	Aug.	Sept.
1	5.0	6.7			122	97	1.3		2.3
2	7.5	5.9			121	86	1.3		2.4
3	8.5	5.9		12	135	77	1.2		2.4
4	7.9	5.9			140	66	1.2		2.4
5	6.4	5.9			127	108	1.3		2.4
			6						
6	5.9	5.9			128	79	1.4	2	2.3
7	6.2	5.9			170	66	1.6		2.3
8	7.0	6.2		25	158	56	1.8		2.2
9	7.9	6.2			153	43	1.7		1.4
10	7.9	6.2			147	37	1.7		1.2
11	7.9	6.2		66	130	36	1.4		1.2
12	7.9	6.2		81	128	30	1.2	1.6	1.1
13	7.6	6.2	7	93	126	28	1.2	1.6	1.1
14	7.0	5.9		113	132	20	1.3	1.4	2.2
15	7.0	6.2		101	148	15	1.4	1.8	2.9
16	6.4	9.4	9.4	93	162	11	1.6	3.4	2.0
17	6.7	6.2	7.0	97	155	9.8	1.6	2.6	1.8
18	7.3	6.4	9.4	112	153	7.3	1.9	1.8	2.3
19	7.5		6.4	110	135	6.7	2.0	1.7	2.4
20	7.5		5.9	90	109	5.9	1.9	1.6	2.7
21	8.0	5	5.6	71	91	2.4	1.8	1.6	2.9
22	8.0		5.9	68	78	2.3	1.9	1.7	1.9
23	8.0		7.6	63	66	2.3	1.9	1.8	2.2
24	8.2		7.0	61	56	2.3	1.9	1.9	2.2
25	8.5		6.7	56	41	2.3	1.9	1.3	2.7
26	8.5		6.4	57	31	1.8	1.8	1.4	2.9
27	8.5		5.9	63	88	1.3	1.8	1.3	3.2
28	7.9	6	5.9	71	96	1.2	1.8	1.4	2.4
29	7.0		------	90	147	1.2	11	1.8	2.4
30	6.7		------	116	125	1.3	3.7	1.7	2.4
31	6.7		------	------	112	------	2.2	1.9	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	8.5	5.0	7.39	454
November	9.4	------	5.95	354
December	------	------	[a]6.0	369
January	------	------	[a]6.0	369
February	------	------	[a]6.58	365
March	------	------	[a]8.0	492
April	------	------	61.9	3,680
May	170	31	120	7,380
June	108	1.2	30.1	1,790
July	11	1.2	1.99	122
August	3.4	1.3	1.85	114
September	2.9	1.1	2.21	132
The year	------	------	------	15,600

[a] Estimated.

LA PRELE CREEK NEAR ORPHA, WYO.

LOCATION.—Staff gage in sec. 16, T. 33 N., R. 72 W., 1 mile south of Orpha and three-quarters of a mile above mouth.

DRAINAGE AREA.—227 square miles.

RECORDS AVAILABLE.—April to August, 1916; April to September, 1918; April, 1923, to September, 1924; May, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 206 second-feet Oct. 6 (gage height, 2.87 feet); no flow for several days during May, June, July.

1916, 1918, 1923–24, 1928–1931: Maximum discharge, 437 second-feet May 10, 1918; minimum, that of 1931.

REMARKS.—Records fair. No records for period Dec. 1 to Mar. 14. Diversions for irrigation above station. Flow regulated by La Prele Reservoir, capacity, 20,000 acre-feet.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	78	16	------	10	2	0	1	10	2
2	174	18	------	12	3	0	1	5	2
3	183	19	------	11	4	0	1	4	2
4	195	16	------	12	5	0	1	3	2
5	201	14	------	11	6	4	1	3	2
6	204	12	------	9	6	7	1	2	2
7	166	9.6	------	11	6	5	1	2	2
8	115	12	------	8	6	5	1	2	2
9	112	15	------	8	6	3	1	3	2
10	94	12	------	7	9	5	1	2	2
11	91	9.6	------	6	7	4	0	2	2
12	68	11	------	5	7	3	1	2	2
13	56	13	------	6	7	2	1	2	2
14	54	15	------	5	6	2	1	2	2
15	46	16	6	6	5	2	1	3	2
16	35	16	5	5	4	2	2	3	2
17	33	18	4	4	3	2	3	3	2
18	30	18	4	4	2	1	3	2	2
19	32	15	4	3	1	1	4	2	2
20	27	16	3	3	0	1	2	2	2
21	30	17	2	3	0	2	1	2	2
22	26	15	2	4	0	2	1	2	2
23	27	17	3	5	0	1	1	2	2
24	24	19	4	7	0	1	1	2	2
25	23	21	4	13	0	1	1	2	2
26	23	21	6	12	0	1	1	2	2
27	20	19	4	9	0	1	1	2	2
28	18	18	6	5	0	2	1	2	2
29	15	20	8	3	0	1	1	2	2
30	16	22	10	2	0	1	24	2	2
31	19	------	12	------	0	------	25	2	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	204	15	72.1	4,430
November	22	9.6	16.0	952
March 15–31	------	------	5.1	172
April	13	2	7.0	417
May	9	0	3.1	191
June	7	0	2.1	125
July	25	0	2.8	172
August	10	2	2.6	160
September	2	2	2.0	119

WAGONHOUND CREEK NEAR LA BONTE, WYO.

LOCATION.—Chain gage in sec. 16, T. 31 N., R. 71 W., 3 miles east of La Bonte and half a mile above mouth of creek.

DRAINAGE AREA.—125 square miles.

RECORDS AVAILABLE.—April, 1916, to September, 1924; May, 1929, to June, 1931.

EXTREMES.—Maximum discharge during period, 109 second-feet Oct. 2 (gage height, 4.1 feet); minimum, 0.1 second-foot June 17–19 (gage height, 1.43 feet).

1916–1924, 1929–1931: Maximum discharge, 907 second-feet May 11, 12, 1920; no flow during summers of 1918, 1919, 1922, 1930, 1931.

REMARKS.—Records fair. No records for periods Dec. 1 to Feb. 28, July 1 to Sept. 30. Diversion for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	May	June	Day	Oct.	Nov.	Mar.	Apr.	May	June
1	2	15	1	6	26	1	16	5	18	1	69	39	.2
2	2	16	1	7	29	.6	17	5	18	1	63	35	.1
3	80	16	1	7	29	.3	18	6	16	1	69	34	.1
4	19	17	1	9	29	.3	19	7	16	1	62	32	.1
5	15	18	1	20	53	.4	20	7	14	2	52	30	.2
6	9	17	1	31	34	.6	21	7	14	2	46	28	.2
7	4	18	1	32	33	.8	22	7	12	2	32	27	.2
8	3	18	1	39	35	1	23	6	13	3	24	26	.5
9	3	19	1	45	41	2	24	6	14	3	30	26	.8
10	3	21	1	46	73	2	25	5	15	3	30	24	.8
11	3	22	1	49	70	3	26	6	15	3	31	10	.5
12	4	23	1	54	68	2	27	6	16	3	30	7	.4
13	4	23	1	63	50	1	28	8	17	3	37	2	.2
14	3	21	1	80	42	.4	29	9	19	4	31	0.6	.3
15	4	20	1	86	42	.4	30	12	20	5	25	0.8	.2
							31	14	------	5	------	1	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	80	2	8.8	541
November	23	12	17.4	1,040
March	5	1	1.8	111
April	86	.6	40.2	2,390
May	73	0.6	31.5	1,940
June	3	0.1	.69	41

LA BONTE CREEK NEAR LA BONTE, WYO.

LOCATION.—Chain gage in sec. 21, T. 31 N., R. 71 W., 1½ miles above mouth and 3 miles east of La Bonte. Staff gage at same site used prior to Apr. 18, 1930.
DRAINAGE AREA.—302 square miles.
RECORDS AVAILABLE.—April, 1916, to September, 1924; May, 1928, to September, 1931.
EXTREMES.—Maximum discharge during year, 275 second-feet Apr. 8 (gage height, 2.12 feet); no flow for several days in July, September.
1916–1924, 1928–1931: Maximum discharge, 2,750 second-feet May 22, 23, 1923 (gage height, 7.5 feet); no flow during summer of 1917, 1918, 1931.
REMARKS.—Records good. No records for period Dec. 1 to Feb. 28. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.2	13		73	148	94	6.6	1.7	0.2
2	5.8	13		108	156	94	6.4	2.0	.3
3	5.8	14	13	67	173	91	6.4	2.0	.3
4	8.3	14		55	192	85	6.1	2.0	.3
5	115	13		108	208	85	5.2	2.0	.2
6	85	13		136	216	91	5.0	2.5	.1
7	53	13		182	216	80	3.8	2.7	0
8	41	13	12	242	252	74	1.4	2.0	0
9	36	13		178	262	87	.2	2.0	0
10	30	12	12	171	242	135	0	2.0	0
11	28	12	12	173	203	120	0	2.0	0
12	27	12	11	195	187	91	0	1.4	0
13	26	12	12	214	164	80	.1	.9	0
14	26	11	16	233	144	69	.2	1.4	0
15	24	12	15	216	129	58	.2	2.0	0
16	24	17	17	182	127	40	.2	2.5	0
17	22	15	19	198	120	43	.3	3.0	0
18	21	13	22	214	115	33	.3	2.5	0
19	20	13	24	192	108	27	.3	2.5	0
20	18	13	26	164	98	18	.3	2.5	0
21	18		27	133	85	15	.4	1.7	.1
22	18		29	126	69	13	.4	1.7	.2
23	17	10	34	124	64	8.6	.4	1.4	.3
24	16		41	126	60	5.8	.4	1.4	1.2
25	16		39	142	52	6.4	.4	1.4	1.7
26	15		28	140	43	44	.4	.9	1.4
27	14		24	140	67	6.9	.7	.9	1.4
28	13		24	126	64	7.2	.9	.7	1.2
29	14	11	28	122	136	7.5	1.2	.7	.9
30	15		34	126	126	6.9	1.4	.4	.4
31	15		55	-------	113	-------	1.4	.3	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	115	5.2	25.6	1,570
November	17	-------	12.2	726
March	-------	11	21.4	1,320
April	242	55	154	9,160
May	262	43	140	8,610
June	135	5.8	53.9	3,210
July	6.6	0	1.65	101
August	3.0	.3	1.71	105
September	1.7	0	.34	20

HORSESHOE CREEK NEAR GLENDO, WYO.

LOCATION.—Staff gage in sec. 26, T. 29 N., R. 68 W., 4 miles southeast of Glendo.
DRAINAGE AREA.—203 square miles.
RECORDS AVAILABLE.—April, 1916, to September, 1919; April, 1921, to September, 1924; May, 1928, to September, 1931.
EXTREMES.—Maximum discharge during year, 142 second-feet May 5 (gage height, 2.67 feet); minimum probably occurred during winter.
1916–1919, 1921–1924, 1928–1931: Maximum discharge, 1,210 second-feet June 2, 1929 (gage height, 6.8 feet); no flow during summers of 1918 and 1919.
REMARKS.—Records good. No records for period Dec. 1 to Feb. 28. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.1	16		21	76	18	5.3	3.6	2.4
2	3.1	16		24	78	9.2	5.3	3.4	2.4
3	16	16		23	78	6.5	5.0	3.2	2.4
4	22	16		24	80	5.3	5.6	4.0	2.4
5	28	16		46	141	5.6	5.3	4.0	2.4
6	54	16		62	125	6.8	4.8	3.6	2.4
7	58	15		100	119	5.9	4.8	3.2	2.4
8	54	15	2.0	132	115	5.3	4.8	3.2	2.4
9	38	15		105	140	5.9	4.8	3.0	2.4
10	33	14		102	117	5.9	4.6	2.6	2.4
11	30	14		100	112	5.3	5.0	2.4	2.4
12	27	14		102	102	5.3	5.3	2.4	2.4
13	26	14		120	96	5.3	4.4	2.4	2.4
14	25	14		104	92	5.3	4.4	2.4	2.4
15	23	13	2.0	111	89	5.6	4.0	2.4	2.4
16	23	13	2.0	96	79	5.6	4.0	3.0	2.4
17	22	13	2.8	93	64	5.3	3.8	2.8	2.4
18	21	12	3.0	88	62	5.0	4.0	2.4	2.4
19	20	13	3.6	86	40	5.0	4.0	2.4	2.4
20	20	12	5.3	86	36	5.0	4.0	2.4	2.4
21	20	12	7.1	88	38	5.9	3.8	2.4	3.2
22	18	12	10	80	19	6.5	4.0	2.4	3.6
23	18	12	11	81	15	6.5	4.2	2.4	3.6
24	18	12	12	88	15	6.2	4.2	2.4	3.6
25	18	12	12	83	15	5.9	4.0	2.4	3.6
26	18	12	12	70	15	5.9	4.0	2.4	3.6
27	18	12	11	83	12	5.9	4.0	2.4	3.8
28	17	12	11	86	6.5	5.9	4.0	2.4	3.8
29	16	12	12	86	6.5	5.9	4.0	2.4	3.6
30	16	12	13	78	19	5.9	5.6	2.4	2.0
31	16	------	19	------	18	------	30	2.4	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	58	3.1	23.8	1,460
November	16	----------	13.6	809
March	19	----------	5.7	350
April	132	21	81.6	4,860
May	141	6.5	65.2	4,010
June	18	5	6.25	372
July	30	3.8	5.32	327
August	4	2.4	2.75	169
September	3.8	2	2.75	164

COTTONWOOD CREEK AT WENDOVER, WYO.

LOCATION.—Chain gage in sec. 15, T. 27 N., R. 67 W., at Wendover, half a mile above mouth of creek.

DRAINAGE AREA.—159 square miles.

RECORDS AVAILABLE.—April, 1916, to September, 1924; May, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 56 second-feet May 9 (gage height, 2.70 feet); minimum, 1 second-foot Sept. 22, 29, 30.

1916–1924, 1929–1931: Maximum discharge, 840 second-feet June 1, 1929 (gage height, 5.02 feet); minimum, 0.2 second-foot during June, July, August, September, 1919.

Maximum stage known, 10.6 feet Aug. 15, 1927 (discharge, about 5,800 second-feet).

REMARKS.—Records fair. No records for period Dec. 1 to Feb. 28. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	33	12	18	42	2	7	7	4
2	15	33	11	18	40	4	7	6	2
3	15	33	13	18	42	2	7	7	3
4	15	33	12	18	48	4	7	7	5
5	18	33	13	19	50	3	6	6	5
6	50	32	14	21	53	2	6	4	3
7	51	32	14	25	40	3	6	4	3
8	42	33	14	36	46	3	6	3	4
9	42	33	13	36	55	2	5	3	2
10	36	33	13	30	50	4	4	3	4
11	35	33	13	32	36	4	6	4	3
12	35	33	12	34	32	2	7	4	4
13	34	33	13	30	22	4	8	4	2
14	33	33	12	30	17	6	6	4	3
15	33	33	10	29	16	4	4	5	3
16	33	33	13	28	11	4	8	6	3
17	33	33	13	26	10	4	6	5	2
18	33	33	18	21	8	4	7	4	3
19	33	33	14	15	8	6	6	4	3
20	33	33	12	16	8	5	4	3	2
21	34	33	12	16	6	6	4	3	2
22	35	33	13	15	7	4	4	5	1
23	35	33	13	24	6	4	6	6	2
24	35	33	15	24	6	7	4	5	1
25	34	33	16	24	2	7	4	3	2
26	33	33	10	22	5	5	6	2	1
27	33	33	12	26	5	6	6	4	2
28	33	33	12	28	3	6	4	4	2
29	33	33	13	34	2	6	6	2	1
30	33	33	16	38	6	6	6	4	1
31	33	------	15	------	4	------	6	2	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	51	15	32.4	1,990
November	33	32	32.9	1,960
March	18	10	13.1	806
April	38	15	25.0	1,490
May	55	2	22.1	1,360
June	7	2	4.3	256
July	8	4	5.8	357
August	7	2	4.3	264
September	5	1	2.6	155

LARAMIE RIVER NEAR JELM, WYO.

LOCATION.—Water-stage recorder in sec. 15, T. 12 N., R. 77 W., a quarter of a mile north of Colorado-Wyoming line and 4 miles south of old Jelm. Zero of gage is 7,685.32 feet above mean sea level.

DRAINAGE AREA.—297 square miles.

RECORDS AVAILABLE.—June, 1904, to October, 1905; May, 1911, to September, 1931.

EXTREMES.—Maximum discharge during year, 729 second-feet May 18 (gage height, 2.89 feet); minimum, 21 second-feet Sept. 10–13 (gage height, 0.88 foot).

1904–5, 1911–1931: Maximum discharge, 4,200 second-feet June 9, 1923 (gage height, 4.15 feet); minimum, that of Sept. 10–13, 1931.

REMARKS.—Records excellent except those for period Nov. 17 to Mar. 31, which were based on three discharge measurements and temperature records. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	100	55	------	------		68	125	555	163	75	35
2	96	54	------	------		90	153	620	133	64	39
3	92	55	------	------	35	120	186	590	120	55	34
4	108	52	------	------		150	163	585	163	49	29
5	105	54	------	32		222	125	590	115	45	27
6	108	55	------	------		414	108	575	82	48	25
7	100	48	29	------		565	128	620	65	49	24
8	88	47	------	------	40	466	211	620	56	49	24
9	84	47	------	------		285	179	595	48	43	22
10	80	48	------	------		273	144	530	44	40	21
11	76	47	------	------		260	117	630	42	39	21
12	84	49	------	------		237	133	525	42	36	21
13	82	58	------	------	45	220	166	470	45	34	21
14	78	47	------	------		168	302	427	51	31	23
15	73	49	------	------		139	456	386	45	36	22
16	67	42	------	------	36	120	595	382	47	47	25
17	65		------	------		117	545	346	49	45	24
18	78	45	------	------		133	560	302	48	44	23
19	80		------	------	45	139	324	260	52	39	27
20	76		------	------		128	281	226	52	39	31
21	73		------	------		100	237	207	52	39	29
22	70		------	------		98	211	189	49	44	27
23	65	40	------	------	40	82	333	169	48	65	27
24	61		------	------		82	395	147	49	47	70
25	62		------	------		73	500	133	51	36	92
26	64		------	------		62	500	139	49	33	59
27	58		------	------		73	505	196	52	30	51
28	64	42	------	------		63	456	160	52	29	45
29	54		------	------	35	73	451	166	68	29	42
30	58		------	------		105	386	179	62	28	40
31	55		------	------		------	451	------	68	29	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	108	54	77.5	4,770
November	58	----------	46.6	2,770
December	----------	----------	32	1,970
January	----------	----------	30	1,840
February	----------	----------	35	1,940
March	----------	----------	39.5	2,430
April	565	62	171	10,200
May	595	108	304	18,700
June	630	133	384	22,800
July	163	42	66.5	4,090
August	75	28	42.5	2,610
September	92	21	33.3	1,980
The year	630	----------	105	76,100

LARAMIE RIVER NEAR WHEATLAND, WYO.

LOCATION.—Staff gage in sec. 35, T. 25 N., R. 69 W., 10 miles west of Wheatland. Chain gage at same site used prior to Sept. 3, 1931.

DRAINAGE AREA.—2,480 square miles.

RECORDS AVAILABLE.—April to November, 1912; April, 1915, to November, 1916; October, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 43 second-feet Mar. 30 (gage height, 2.22 feet); no flow July 6, 13–29, Sept. 5–14.

1912, 1915–16, 1929–1931: Maximum discharge, 183 second-feet Aug. 22, 1915; no flow during periods in 1916, 1930, 1931.

REMARKS.—Records fair. No records Dec. 1 to Mar. 14. Diversions for irrigation above station. Flow regulated by Wheatland Reservoir, present capacity, 80,000 acre-feet.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5	32	------	23	30	7.2	2.8	2.0	0.3
2	8	33	------	27	29	6.3	2.5	12	.2
3	10	32	------	29	28	4.5	1.9	6.3	.2
4	24	32	------	27	29	5.1	2.0	3.5	.2
5	27	30	------	25	28	6.9	1.8	3.0	0
6	31	30	------	22	25	7.5	1.3	3.0	0
7	30	32	------	26	27	4.0	.6	2.0	0
8	27	32	------	32	25	3.0	0	2.5	0
9	15	32	------	24	25	3.5	.2	2.2	0
10	15	32	------	24	27	4.0	.2	2.0	0
11	15	28	------	27	27	4.8	.2	1.5	0
12	18	25	------	26	27	4.0	.2	.9	0
13	21	27	------	22	24	3.2	0	1.0	0
14	21	30	------	22	18	3.0	0	1.3	0
15	21	30	24	24	16	3.5	0	1.8	.1
16	22	30	24	20	15	3.8	0	3.0	0
17	20	30	25	16	11	2.8	0	2.2	0
18	20	32	30	13	9.6	2.0	0	2.0	0
19	20	35	32	11	9.6	1.8	0	1.8	0
20	21	35	32	9.6	9.6	1.8	0	1.4	.2
21	21	32	34	10	10	2.0	0	.8	.5
22	21	28	35	11	11	1.6	0	.7	.3
23	21	32	38	12	10	1.0	0	.8	.3
24	21	38	30	12	8.2	.8	0	.6	.2
25	21	33	29	13	6.9	1.2	0	.6	.2
26	24	29	34	20	6.3	.9	0	.5	.2
27	31	31	36	25	6.3	.8	0	.5	.2
28	30	35	40	25	6.9	.6	0	.4	.2
29	29	36	40	32	9.2	1.0	0	.4	.2
30	30	37	43	30	8.9	1.8	.2	.4	.3
31	32	------	32	------	6.9	------	1.5	.3	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	32	5	21.7	1,330
November	37	25	31.7	1,890
March 15–31	------	------	32.8	1,100
April	32	9.6	21.3	1,270
May	30	6.3	17.1	1,050
June	7.5	.6	3.15	187
July	2.8	0	.50	30.7
August	12	------	1.98	122
September	.5	0	.13	7.7

LARAMIE RIVER AT FORT LARAMIE, WYO.

LOCATION.—Staff gage in sec. 25, T. 26 N., R. 65 W., at siphon crossing of Fort Laramie Canal 3 miles west of Fort Laramie.
DRAINAGE AREA.—4,580 square miles.
RECORDS AVAILABLE.—April, 1915, to September, 1931.
REMARKS.—Diversions for irrigation above station. During winter water is diverted 4 miles upstream for use of Lingle power plant; discharge is corrected for this diversion. Flow regulated by Wheatland Reservoir, capacity, 80,000 acre-feet. Complete records furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	210	233	200	165	280	200	215	170	25	30	45	30
2	147	233	213	165	190	200	185	170	25	30	63	30
3	145	233	213	165	205	200	200	170	30	20	45	30
4	210	233	213	165	205	200	230	170	25	25	94	30
5	347	233	190	165	225	200	215	176	25	25	84	30
6	450	233	185	165	215	185	195	170	25	25	63	30
7	415	238	185	170	215	175	185	176	25	25	45	30
8	415	238	195	165	210	170	170	170	25	25	45	30
9	385	238	195	190	190	180	170	160	20	20	45	30
10	347	227	195	185	185	175	225	155	25	20	45	30
11	320	233	185	165	200	175	185	155	30	20	30	30
12	320	233	185	165	200	175	175	155	20	20	30	30
13	320	233	185	165	200	180	160	155	20	20	30	30
14	290	233	175	165	185	180	160	155	25	20	30	30
15	290	233	185	165	185	180	155	143	25	20	30	30
16	290	205	190	175	185	180	150	123	30	20	30	30
17	290	233	190	170	185	180	140	115	30	20	45	30
18	240	218	165	165	185	180	130	105	30	15	84	30
19	240	233	150	150	185	180	130	105	30	15	84	30
20	240	233	150	140	190	180	125	84	30	15	73	30
21	240	233	130	170	190	180	125	84	30	15	63	30
22	240	233	120	225	190	180	125	84	30	15	54	30
23	240	185	120	200	190	170	130	63	517	15	54	30
24	240	200	115	185	190	180	140	63	210	15	54	38
25	235	200	115	225	190	180	155	30	130	15	45	45
26	225	185	110	225	190	90	155	30	105	15	45	42
27	225	213	110	190	190	45	165	30	84	15	45	38
28	235	200	110	200	190	175	155	25	84	18	35	39
29	235	213	115	235	------	175	155	25	63	20	35	40
30	235	213	115	255	------	175	165	25	63	20	30	40
31	235	------	115	244	------	220	------	25	------	20	30	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	450	145	274	16,800
November	238	185	223	13,300
December	213	110	162	9,960
January	255	140	183	11,300
February	280	185	198	11,000
March	220	45	175	10,800
April	230	125	166	9,880
May	176	25	112	6,890
June	517	20	61.2	3,640
July	30	15	19.8	1,220
August	94	30	49.3	3,030
September	45	30	32.4	1,930
The year	517	15	138	99,800

RAWHIDE CREEK NEAR LINGLE, WYO.

LOCATION.—Staff gage in sec. 17, T. 25 N., R. 62 W., 1 mile east of Lingle and 2 miles above mouth.

DRAINAGE AREA.—510 square miles.

RECORDS AVAILABLE.—May, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 172 second-feet July 22 (gage height, 4.0 feet); minimum, 6 second-feet Apr. 18 (gage height, 1.91 feet).

1928–1931: Maximum discharge, 340 second-feet June 2, 1929 (gage height, 5.5 feet); minimum, 3 second-feet Apr. 10, 1930 (gage height, 1.80 feet).

REMARKS.—Records fair. No diversions. Low-water flow represents return seepage from Interstate Canal.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	51	33	------	------	23	33	19	30	34	30	36
2	71	37	------	------	32	34	24	28	29	40	37
3	95	38	------	------	33	35	37	24	31	38	36
4	118	36	------	------	32	36	43	22	36	29	36
5	124	35	------	------	30	40	43	20	32	34	36
6	121	33	21	------	31	33	36	22	34	36	43
7	87	32	------	22	29	23	34	23	34	36	40
8	69	29	------	------	26	18	24	34	29	37	35
9	57	28	------	------	25	14	20	36	38	50	33
10	43	26	------	------	28	9	18	38	36	44	33
11	40	26	------	------	28	9	34	16	30	38	36
12	47	31	------	------	26	8	25	31	32	36	34
13	43	33	------	------	26	11	9	30	23	31	38
14	41	33	------	------	21	13	9	21	23	30	35
15	43	32	------	------	22	13	13	15	23	34	36
16	41	31	------	------	25	14	13	14	23	59	36
17	41	31	------	------	25	11	9	10	24	51	19
18	39	31	------	------	23	6	18	10	23	45	22
19	38	30	------	------	20	9	38	10	23	37	19
20	34	30	------	------	20	14	37	9	36	36	22
21	32	26	------	------	20	34	32	9	32	34	28
22	44	25	------	------	20	34	20	8	172	37	19
23	42	26	------	------	27	28	20	12	156	43	22
24	39	28	------	------	25	29	12	22	30	37	19
25	38	31	------	------	22	30	12	22	29	36	28
26	37	31	------	------	19	29	18	23	30	36	19
27	34	31	------	------	17	26	14	29	31	37	20
28	33	31	------	------	15	19	11	30	30	38	20
29	31	31	------	------	18	15	16	34	29	39	20
30	31	31	------	------	23	16	22	35	28	36	20
31	30	------	------	------	29	------	29	------	31	37	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	124	30	52.7	3,240
November	38	25	30.9	1,840
December	------	------	a 25	1,540
January	------	------	a 21	1,290
February	------	------	a 22	1,220
March	33	15	24.5	1,510
April	40	6	21.1	1,260
May	43	9	22.9	1,410
June	38	8	22.2	1,320
July	172	23	38.4	2,360
August	59	29	38.1	2,340
September	43	19	29.2	1,740
The year	------	------	29.1	21,100

a Estimated.

KATZER DRAIN NEAR HENRY, NEBR.

LOCATION.—Staff gage in sec. 12, T. 23 N., R. 60 W., 3 miles southwest of Henry.
RECORDS AVAILABLE.—June, 1928, to September, 1931.
EXTREMES.—Maximum discharge during year, 54 second-feet Sept. 5 (gage height, 1.93 feet); minimum occurred during winter.
1928–1931: Maximum discharge, 1,050 second-feet June 2, 1929 (gage height, 9.9 feet); minimum, 1 second-foot Mar. 10, 11, 13–16, 1929.
REMARKS.—Records fair. No records Dec. 1 to Feb. 28. Records show return flow from area under Fort Laramie Canal. Katzer drain enters North Platte River in Wyoming, 1 mile above Nebraska line.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	11	3	13	7	28	35	29	38
2	20	11	3	18	6	20	33	35	36
3	28	11	4	14	8	23	35	27	31
4	28	11	5	8	8	25	36	25	36
5	19	11	7	8	7	31	38	29	36
6	19	11	6	7	5	20	33	30	45
7	18	12	5	6	6	12	31	29	50
8	14	11	12	6	6	30	30	27	41
9	16	12	18	7	6	28	36	26	40
10	14	11	11	5	6	28	34	24	36
11	15	11	8	6	6	35	26	30	39
12	17	11	4	7	30	34	35	29	39
13	14	11	7	6	18	28	30	23	35
14	19	11	5	6	11	33	29	25	33
15	18	11	4	6	10	30	29	23	22
16	15	12	5	6	10	22	29	30	14
17	12	11	4	5	16	23	30	29	13
18	11	12	5	5	18	23	29	25	11
19	11	13	6	7	16	30	27	23	13
20	12	14	5	6	18	23	30	22	12
21	12	13	4	4	14	24	32	23	11
22	12	14	5	6	11	24	33	26	10
23	11	13	4	14	9	23	25	33	10
24	11	12	4	8	10	26	30	35	16
25	10	12	4	8	10	33	26	32	11
26	11	11	3	8	10	32	30	29	10
27	11	11	2	6	11	29	31	29	10
28	13	13	2	5	11	30	27	29	10
29	11	16	2	5	13	32	26	26	10
30	11	14	6	8	11	34	25	27	8
31	13	------	10	------	13	------	27	31	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	28	10	14.9	916
November	16	11	11.9	708
March	18	----------	5.6	344
April	18	4	7.5	446
May	30	5	11	676
June	35	12	27.1	1,610
July	38	25	30.5	1,880
August	35	22	27.7	1,700
September	50	8	24.2	1,440

HORSE CREEK NEAR YODER, WYO.

LOCATION.—Water-stage recorder in sec. 13, T. 22 N., R. 62 W., 6 miles southeast of Yoder.

DRAINAGE AREA.—1,320 square miles.

RECORDS AVAILABLE.—May, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 268 second-feet Apr. 1 (gage height, 3.36 feet); minimum, 0.1 second-foot July 21–29 (gage height, 0.23 foot).

1928–1931: Maximum discharge, 455 second-feet June 8, 1929 (gage height, 4.59 feet); no flow for several days during July, August, September, 1929.

REMARKS.—Records good except those for periods Nov. 22 to Dec. 6, Dec. 19 to Feb. 4, which were based on two discharge measurements and temperature records. Diversions for irrigation above station. Flow regulated by Hawk Springs Reservoir, capacity, 19,400 acre-feet.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	49				83	155	4.1	1.3	1.0	0.3	0.6
2	27	48			40	83	157	3.6	1.4	.7	.4	.6
3	53	48		36		73	101	2.5	1.6	.2	.4	.5
4	70	48	50			71	89	8.4	1.3	.2	.3	.4
5	64	47			10	71	87	10	1.9	.2	.5	.4
6	64	47			9.2	69	75	11	1.6	.2	.5	.4
7	57	47	56		8.0	88	52	11	1.4	.2	.4	.4
8	52	48	55	34	7.3	92	42	9.6	1.6	.2	.2	.4
9	48	52	56		6.0	80	34	8.8	1.6	.2	.7	.3
10	46	52	57		6.0	79	28	7.3	1.6	.2	1.0	.2
11	45	52	58		6.3	107	16	18	1.9	.1	1.6	.2
12	50	51	58		5.3	70	13	19	1.4	.2	.9	.2
13	48	50	62	33	6.0	65	9.2	17	1.0	.2	.6	.2
14	45	49	62		6.0	83	5.6	17	.8	.1	.4	.2
15	45	48	60		6.3	76	5.3	14	.6	.1	.6	.2
16	48	48	56		6.0	70	4.9	13	.6	.2	.7	.2
17	51	51	56		6.3	65	6.3	4.1	.5	.2	.6	.2
18	52	53	51	38	6.3	60	7.0	3.8	.5	.2	.6	.2
19	53	58			5.3	57	5.6	3.8	.4	.2	.4	.2
20	53	31			5.6	32	4.1	4.3	.4	.2	.4	.2
21	53	32	38		5.6	8.8	3.6	4.6	.4	.1	.4	.2
22	52				12	7.3	3.3	4.6	.4	.1	.3	.2
23	51	35		56	38	6.3	4.1	4.1	.3	.1	.3	.2
24	48				25	6.3	3.0	2.8	.3	.1	.4	.7
25	47				44	6.0	2.8	2.5	.3	.1	.3	.6
26	46				50	3.8	2.5	2.3	.4	.1	.2	.4
27	45				53	9.6	2.0	2.0	.4	.1	.2	.5
28	44	45	30	60	54	59	2.0	2.0	.3	.1	.2	.5
29	44				-------	73	1.9	1.9	.2	.1	.2	.7
30	44				-------	70	2.5	1.8	.6	.2	.2	.7
31	46	-------			-------	80	-------	1.5	-------	.2	.3	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	70	27	49.0	3,010
November	58	----------	45.8	2,730
December	62	----------	46.2	2,840
January	----------	----------	43.4	2,670
February	54	----------	19.6	1,090
March	107	3.8	58.2	3,580
April	157	1.9	30.8	1,830
May	19	1.5	7.11	437
June	1.9	.2	.90	54
July	1.0	.1	.20	12
August	1.6	.2	.47	29
September	.7	.2	.36	22
The year	157	----------	25.3	18,300

HORSE CREEK NEAR LYMAN, NEBR.

LOCATION.—Staff gage in sec. 25, T. 23 N., R. 58 W., 3 miles northeast of Lyman.
DRAINAGE AREA.—1,860 square miles.
RECORDS AVAILABLE.—October, 1930, to September, 1931.
EXTREMES.—Maximum discharge during year, 307 second-feet Oct. 2; minimum, 30 second-feet Mar. 26–28.
REMARKS.—Records fair. Numerous small diversions above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						81	130	146	130	88	92	96
2	a 307					81	190	55	88	103	92	88
3						76	144	75	72	90	98	82
4						70	90	215	66	106	86	77
5			a 130			60	117	190	82	120	89	77
6						50	114	198	150	120	92	86
7		a 100				50	94	163	253	108	92	86
8						60	80	124	284	95	86	80
9						66	75	198	223	104	98	75
10						100	66	186	198	92	93	96
11						88	62	57	223	104	99	74
12						87	52	107	163	111	87	63
13				a 78		76	47	82	253	104	87	63
14						76	47	122	198	104	87	59
15						81	43	81	132	95	82	55
16						82	45	61	132	101	88	55
17						77	45	47	78	95	82	55
18					49	72	42	113	116	95	82	46
19					41	72	42	103	117	89	82	46
20					40	72	34	103	103	99	77	47
21	a 143				44	44	34	79	90	102	78	39
22					40	40	40	103	87	106	78	47
23		a 90			64	40	45	90	87	106	78	47
24					60	40	45	67	81	93	78	61
25					69	40	44	62	84	96	79	56
26					73	30	40	88	101	90	81	56
27					73	30	36	100	95	96	82	47
28					84	30	33	77	98	90	81	47
29						50	33	88	86	89	87	43
30						100	66	72	100	88	81	39
31						107		77		88	90	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
February 18–28	84	40	57.9	1,260
March	107	30	65.4	4,020
April	190	33	65.8	3,920
May	215	47	107	6,580
June	284	66	132	7,860
July	120	88	98.9	6,080
August	99	77	85.9	5,280
September	96	39	62.9	3,740
The period				38,700

a Discharge measurement.

GERING DRAIN NEAR GERING, NEBR.

LOCATION.—Staff gage on line between secs. 5 and 6, T. 21 N., R. 54 W., 2 miles east of Gering.
RECORDS AVAILABLE.—October, 1930, to September, 1931.
EXTREMES.—Maximum discharge during year, 130 second-feet June 15 (gage height, 3.03 feet); minimum, 18 second-feet Mar. 9, Apr. 21 (gage height, 1.60 feet).
REMARKS.—Records fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						31	31	23	71	47	48	32
2						29	30	26	71	48	44	34
3	*41					30	26	24	38	47	48	36
4						28	31	23	40	48	48	34
5			42			27	26	29	75	87	47	32
6		*35				25	26	28	49	62	50	30
7						21	25	24	71	47	53	34
8						26	24	28	108	48	52	31
9						18	26	54	54	59	54	32
10						20	23	29	79	47	54	34
11						20	24	28	63	47	51	29
12						22	26	26	114	49	52	26
13						21	26	72	109	75	51	26
14						22	26	85	59	57	48	33
15				*36		24	25	101	130	50	47	28
16						25	26	74	111	49	51	28
17					44	27	25	49	71	49	52	24
18	*57				42	28	21	92	71	49	52	24
19					41	32	20	83	63	49	52	24
20					40	29	19	76	74	49	52	36
21					42	31	18	49	71	49	55	24
22		*44			40	32	20	29	72	56	51	30
23					36	31	20	22	66	47	49	30
24					37	30	18	33	72	50	49	35
25					36	29	27	24	68	50	47	51
26					35	25	26	24	69	49	41	34
27					34	25	26	79	72	44	34	36
28					33	25	26	27	74	48	37	37
29						28	25	31	68	52	30	36
30						27	27	48	46	52	40	35
31						32		71		46	30	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
February 17–28	44	33	38.3	912
March	32	18	26.5	1,630
April	31	18	24.6	1,460
May	101	22	45.5	2,800
June	130	38	73.3	4,360
July	87	44	51.8	3,190
August	55	30	47.4	2,910
September	51	24	31.8	1,890
The period				19,200

* Discharge measurement.

RED WILLOW CREEK NEAR BRIDGEPORT, NEBR.

LOCATION.—At southwest corner sec. 6, T. 20 N., R. 51 W., 7 miles northwest of Bridgeport.
DRAINAGE AREA.—83 square miles.
RECORDS AVAILABLE.—October, 1930, to September, 1931.
EXTREMES.—Maximum discharge during year, 214 second-feet May 22 (gage height, 2.80 feet); minimum, 1 second-foot several days during summer (gage height, 0.90 foot).
REMARKS.—Records fair. Numerous small diversions upstream.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	------	------	------	------	36	37	37	65	6	1	37
2	------	------	------	------	------	36	44	47	5	8	68	52
3	------	------	------	------	------	36	37	31	50	5	68	37
4	------	a 81	a 76	------	------	36	42	31	11	21	60	40
5	------	------	------	------	------	39	35	34	49	31	90	40
6	------	------	------	------	------	35	35	31	109	21	98	31
7	------	------	------	------	------	35	35	29	49	80	8	37
8	------	------	------	------	------	35	35	26	21	65	8	37
9	------	------	------	------	------	34	31	26	11	65	2	31
10	------	------	------	------	------	34	29	20	11	43	39	47
11	------	------	------	------	------	46	29	20	14	43	18	34
12	------	------	------	a 54	------	35	29	20	13	26	22	47
13	------	------	------	------	------	35	26	20	10	6	22	47
14	------	------	------	------	------	35	26	18	5	6	39	62
15	------	------	------	------	------	35	26	16	8	4	18	47
16	------	------	------	------	------	34	26	15	1	4	21	46
17	------	------	------	------	51	33	26	15	2	1	21	39
18	------	------	------	------	48	33	26	15	2	1	17	68
19	------	a 68	------	------	46	36	26	68	2	2	21	90
20	------	------	------	------	44	36	22	68	2	1	18	83
21	------	------	------	------	49	33	9	197	2	1	22	60
22	------	------	------	------	49	33	22	214	3	2	33	66
23	------	------	------	------	44	33	28	95	3	1	37	44
24	a 50	------	------	------	44	30	31	14	3	105	20	52
25	------	------	------	------	46	36	31	10	2	83	31	74
26	------	------	------	------	46	10	26	8	2	105	23	100
27	------	------	------	------	47	12	23	6	4	89	22	111
28	------	------	------	------	53	14	22	2	2	6	24	80
29	------	------	------	------	------	16	23	1	5	3	24	80
30	------	------	------	------	------	22	23	1	8	66	24	72
31	------	------	------	------	------	37	------	65	------	1	29	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
February 17–28	53	44	47.2	1,120
March	46	10	31.9	1,960
April	44	19	29.0	1,730
May	214	1	38.7	2,380
June	109	1	15.8	940
July	105	1	29.1	1,790
August	98	1	30.6	1,880
September	111	31	56.4	3,360
The period				15,200

a Discharge measurement.

PUMPKIN CREEK NEAR BRIDGEPORT, NEBR.

LOCATION.—Staff gage on line between secs. 12 and 13, T. 19 N., R. 50 W., at highway bridge half a mile above mouth and 4 miles southeast of Bridgeport.
DRAINAGE AREA.—1,080 square miles.
RECORDS AVAILABLE.—October, 1930, to September, 1931.
EXTREMES.—Maximum discharge during year, 83 second-feet Oct. 7; minimum, 1 second-foot May 30, 31, June 1–5, 12, 13, 17, 18.
REMARKS.—Records fair. Discharge represents chiefly return seepage flow.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1				58	52	52	1	23	38	45
2				59	58	55	1	36	28	45
3				56	59	50	1	19	20	45
4				57	59	51	1	14	17	46
5				58	57	51	1	15	13	32
6		a 61		59	57	52	14	15	10	19
7	a 83			62	55	54	14	8	41	19
8		a 36		55	54	54	14	8	34	19
9				55	51	54	18	9	54	26
10				58	51	54	18	9	62	26
11				59	51	53	3	9	34	26
12				63	52	54	1	10	54	26
13				62	52	54	1	10	54	39
14				59	52	54	14	8	43	39
15				59	52	15	14	8	43	39
16			73	59	51	15	2	12	22	40
17			70	59	51	15	1	14	17	39
18			67	58	52	15	1	14	15	42
19			64	57	51	54	4	9	14	45
20			64	55	51	54	4	9	18	42
21			65	55	51	54	4	10	17	42
22			65	54	51	52	14	10	17	42
23			66	51	52	36	13	14	18	35
24			59	51	52	36	6	14	18	38
25		a 40	60	51	52	36	6	28	20	39
26			62	40	52	36	7	28	18	39
27			62	35	52	36	7	28	18	39
28			66	35	52	16	14	30	18	42
29				45	52	15	14	29	15	34
30				45	52	1	22	38	28	34
31				48		1		38	47	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
February 16–28	73	59	64.8	1,670
March	63	35	54.1	3,330
April	59	51	52.9	3,150
May	55	1	39.6	2,430
June	22	1	7.8	464
July	38	8	17.0	1,040
August	62	10	27.9	1,720
September	46	19	36.1	2,150
The period				16,000

a Discharge measurement.

BLUE CREEK NEAR LEWELLEN, NEBR.

LOCATION.—Staff gage on north line of sec. 30, T. 16 N., R. 42 W., 1½ miles west of Lewellen.
DRAINAGE AREA.—267 square miles.
RECORDS AVAILABLE.—October, 1930, to September, 1931.
EXTREMES.—Maximum discharge during year, 200 second-feet Oct. 4; minimum, 1 second-foot several days during summer.
REMARKS.—Records fair. Small diversions upstream.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	100	128	123				176	120	2	13	81	1
2	100	128	123				176	120	1	16	80	2
3	150	128	123				160	120	1	18	70	8
4	200	128	123				150	114	1	37	46	9
5	150	128	123				140	92	2	55	8	10
6	120	128	123			122	130	106	38	60	17	10
7	100	128	123				122	106	31	64	102	11
8	100	128	123				122	104	15	50	32	9
9	100	128	123	[a] 106			122	104	10	83	54	9
10	100	128	123				122	94	16	83	49	9
11	100	128	123				122	98	58	74	23	23
12	100	128	123				122	100	98	77	9	38
13	100	128	123		[a] 122		117	100	65	71	9	42
14	100	128	123				117	98	47	35	7	53
15	100	128	123				117	70	39	8	6	51
16	113	130	123			140	117	64	27	4	3	29
17	113	130	123				120	60	15	4	3	27
18	113	130	123				120	48	16	3	6	21
19	113	130	123				120	51	10	7	6	49
20	113	130	123				116	35	8	42	4	30
21	113	130	123				112	44	6	4	3	22
22	113	130	123				118	46	7	35	3	18
23	113	130	123				122	22	3	42	2	19
24	113	130	123				126	18	2	33	1	56
25	113	130	123				132	2	4	24	1	44
26	113	130	123			160	133	2	2	31	1	54
27	113	130	123				122	1	2	34	1	67
28	113	130	123				118	1	2	25	1	67
29	113	130	123				118	1	2	22	1	67
30	113	130	123				120	1	1	68	1	62
31	113		123					2		68	1	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	200	100	114	7,010
November	130	128	129	7,680
December	123	123	123	7,560
January			[b] 106	6,520
February			[b] 122	6,780
March			[b] 141	8,670
April	176	112	128	7,620
May	120	1	62.7	3,860
June	98	1	17.7	1,050
July	83	3	38.4	2,360
August	102	1	20.4	1,250
September	67	1	30.6	1,820
The year	200	1	85.8	62,200

[a] Discharge measurement. [b] Estimated.

OTTER CREEK NEAR LEMOYNE, NEBR.

LOCATION.—Staff gage in sec. 9, T. 15 N., R. 40 W., 300 feet above mouth and 6 miles northwest of Lemoyne.
DRAINAGE AREA.—12 square miles.
RECORDS AVAILABLE.—April to September, 1931.
EXTREMES.—Maximum discharge during period, 37 second-feet Apr. 5, 6 (gage height, 1.96 feet); minimum, 3 second-feet Aug. 6 (gage height, 1.29 feet).
REMARKS.—Records fair. Small diversions upstream.

Daily and monthly discharge, in second-feet, 1931

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	29	26	6	25	29	21	16	31	17	28	25	18	26
2	29	23	5	23	12	24	17	31	21	25	25	18	26
3	32	22	5	24	11	26	18	30	17	26	25	17	25
4	35	32	5	25	13	29	19	28	16	24	26	17	26
5	37	27	6	26	18	27	20	26	14	22	26	20	29
6	37	23	5	25	3	27	21	23	14	21	25	20	29
7	33	26	5	24	19	27	22	22	14	20	25	23	27
8	33	23	8	26	17	25	23	22	16	21	26	20	28
9	23	27	10	28	19	24	24	31	5	21	25	20	28
10	30	24	14	27	17	26	25	34	6	22	25	22	28
11	31	19	26	26	15	26	26	34	6	22	25	20	28
12	31	21	30	25	16	26	27	30	6	23	24	23	29
13	32	21	28	24	16	26	28	28	5	23	24	20	31
14	33	23	29	24	17	27	29	26	5	23	24	20	22
15	31	21	29	26	17	26	30	26	6	24	19	22	19
							31	-------	6	-------	26	22	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April	37	22	29.9	1,780
May	32	5	17.2	1,060
June	30	5	18.5	1,100
July	28	19	24.9	1,530
August	29	3	18.1	1,110
September	31	19	26.3	1,560
The period	----------	----------	----------	8,140

BIRDWOOD CREEK NEAR HERSHEY, NEBR.

LOCATION.—Staff gage in sec. 2, T. 14 N., R. 33 W., at the mouth, 5 miles northwest of Hershey.
DRAINAGE AREA.—286 square miles.
RECORDS AVAILABLE.—January to September, 1931.
EXTREMES.—Maximum discharge during period, 240 second-feet June 5 (gage height, 2.39 feet); minimum, 112 second-feet July 24 (gage height, 1.95 feet).
REMARKS.—Records fair. Small diversions upstream.

Daily and monthly discharge, in second-feet, 1931

Day	Jan.	Feb.	Apr.	May	June	July	Aug.	Sept.
1			a 228		167	202	151	131
2					168	176	144	131
3					163	151	134	143
4					165	183	126	140
5					240	161	118	132
6					193	148	125	131
7	a 184				159	146	122	129
8					161	151	149	125
9					167	151	148	135
10					170	154	140	132
11					189	148	138	129
12		a 200			178	129	144	128
13					181	126	131	131
14				153	174	126	131	125
15				159	170	124	128	124
16				163	170	137	126	138
17				154	164	120	135	137
18				159	164	119	129	137
19				157	167	137	129	143
20				156	196	137	128	143
21				156	175	129	125	141
22				156	176	112	138	140
23				157	174	129	151	140
24				161	172	112	148	148
25				174	163	118	141	161
26				161	163	115	143	148
27				159	161	118	137	148
28				161	161	117	140	148
29				176	157	118	141	148
30				165	151	117	141	153
31				167		125	134	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 14–31	176	153	161	5,740
June	240	151	172	10,200
July	202	112	137	8,420
August	151	118	136	8,360
September	161	124	138	8,210
The period				40,900

a Discharge measurement.

LINCOLN COUNTY DRAIN AT NORTH PLATTE, NEBR.

LOCATION.—Staff gage on east line of sec. 30, T. 14 N., R. 30 W., 1 mile northwest of North Platte and half a mile above mouth.
RECORDS AVAILABLE.—March to September, 1931.
EXTREMES.—Maximum discharge during period, 137 second-feet June 10 (gage height, 4.00 feet); minimum, 55 second-feet May 12, 13 (gage height, 3.20 feet).
REMARKS.—Records good. Discharge is chiefly return flow from irrigated area.

Daily and monthly discharge, in second-feet, 1931

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1		59	60	103	96	99	113
2		66	60	102	94	103	97
3		74	60	97	92	103	87
4		74	60	98	106	105	91
5		79	59	111	116	104	105
6		75	58	115	106	115	105
7		77	58	116	105	116	101
8		73	58	115	105	122	104
9		69	58	119	104	111	109
10		69	58	137	113	107	109
11		69	56	132	116	107	112
12		68	55	123	117	109	109
13		68	55	127	118	109	109
14		65	59	126	115	105	114
15		65	61	124	117	105	115
16		64	78	124	106	107	114
17		64	76	122	105	105	99
18		64	69	122	110	104	110
19		64	66	124	107	103	104
20		64	73	128	101	95	103
21		64	66	134	106	91	101
22		62	66	132	105	89	97
23		64	66	124	105	91	97
24		67	68	114	99	95	99
25		62	74	104	96	95	105
26		61	78	107	89	93	98
27		64	82	98	87	93	101
28		62	87	99	86	97	98
29		62	91	96	86	97	92
30	70	61	94	97	89	103	89
31	64		104		91	107	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April	79	59	66.6	3,960
May	104	55	68.2	4,190
June	137	96	116	6,900
July	118	86	103	6,330
August	122	89	103	6,330
September	115	87	103	6,130
The period	137	55		33,800

SOUTH PLATTE RIVER NEAR LAKE GEORGE, COLO.

LOCATION.—Water-stage recorder in NW. ¼ sec. 21, T. 13 S., R. 72 W., 1½ miles below Eleven-mile Canyon Reservoir and about 8 miles above Lake George. Zero of gage is 8,423.95 feet above mean sea level.

DRAINAGE AREA.—929 square miles.

RECORDS AVAILABLE.—October, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 357 second-feet Oct. 7 (gage height, 2.73 feet); no flow during part of February.

1929–1931: Maximum discharge, 990 second-feet Aug. 15, 1930 (gage height, 4.8 feet); no flow Jan. 25, 1930, and part of February, 1931.

REMARKS.—Records good except those for winter, which were estimated. Diversions for irrigation above station. Flow regulated by Antero Reservoir, capacity, 33,000 acre-feet.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	292	40	50	24	26	311	35	15
2	303	37	55	47	23	134	33	16
3	314	39	75	62	29	73	33	18
4	327	39	65	58	38	48	32	15
5	325	35	70	41	63	35	28	12
6	341	36	100	41	69	28	28	9
7	349	40	140	39	56	27	36	9
8	330	41	170	31	59	25	43	8
9	317	43	180	22	81	20	44	9
10	311	44	190	23	85	28	70	6
11	325	42	200	24	70	35	66	5
12	333	41	240	20	48	32	43	5
13	327	41	246	17	45	24	32	4
14	322		109	14	42	17	25	4
15	308		80	14	38	24	23	3
16	300	30	63	15	45	35	24	3
17	290		50	14	70	37	33	3
18	282		41	16	66	81	44	3
19	279		32	15	50	77	48	3
20	273		27	20	87	61	46	4
21	170		19	28	90	48	49	4
22	63		16	85	88	39	36	5
23	51	25	16	75	90	28	33	5
24	47		14	58	96	21	30	5
25	41		13	52	116	20	26	5
26	39		12	51	125	17	21	4
27	38		13	67	140	16	17	4
28	38	28	16	90	136	22	15	3
29	37		17	87	162	31	13	1
30	36		20	50	214	45	11	33
31	38		------	30	------	38	11	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	349	36	221	13,600
November	44	----------	33.1	1,970
December	----------	----------	15	922
January	----------	----------	8	492
February	----------	0	5	278
March	----------	----------	35	2,150
April	246	12	78.0	4,640
May	90	14	39.7	2,440
June	214	23	78.2	4,650
July	311	16	47.6	2,930
August	70	11	33.2	2,040
September	33	1	7.4	440
The year	349	0	50.5	36,600

SOUTH PLATTE RIVER AT SOUTH PLATTE, COLO.

LOCATION.—Water-stage recorder in sec. 25, T. 7 S., R. 70 W., at South Platte, 375 feet below mouth of North Fork of South Platte River. Zero of gage is 6,078.43 feet above mean sea level.

DRAINAGE AREA.—2,550 square miles.

RECORDS AVAILABLE.—March, 1902, to September, 1931.

EXTREMES.—Maximum discharge during year, 1,320 second-feet July 1 (gage height, 3.89 feet); minimum occurred during winter.

1902–1931: Maximum discharge, 6,320 second-feet June 7, 1921 (gage height, 8.95 feet); minimum, 21 second-feet Aug. 4, 1902.

REMARKS.—Records good except those for winter, which were based on flow of South Platte at Waterton and diversions at intake. Diversions for irrigation above station. Flow regulated by Cheesman Reservoir, capacity, 79,000 acre-feet.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	404	174						383	906	1,280	750	338
2	369	171						429	871	983	708	280
3	386	174	a 110				140	530	836	962	726	248
4	488	170				a 113		615	829	756	630	238
5	496	166						672	857	560	600	235
6	394	171		a 93	a 111			666	878	520	605	232
7	411	168						655	899	478	433	238
8	414	160					190	620	857	441	408	235
9	418	160						575	756	408	394	213
10	390	163						565	762	383	449	209
11	348	158						525	780	366	492	207
12	404	155						520	774	348	465	228
13	433	163					220	510	720	330	414	209
14	425	154						530	645	338	369	205
15	383	144						600	600	411	376	205
16	358	128					275	696	610	408	404	180
17	358	138					358	750	575	425	470	182
18	317	146					352	850	585	690	383	195
19	293	131					352	714	545	801	352	199
20	290	118					362	672	474	885	317	209
21	288	120					305	645	465	808	305	215
22	285	106					270	635	461	750	565	209
23	240	102					235	857	550	386	605	213
24	193	102					225	1,010	762	478	565	211
25	186	112					242	1,080	756	457	520	207
26	182	104					218	1,070	762	457	330	207
27	174	104					235	1,050	864	470	248	203
28	180	105					262	1,010	1,010	515	240	201
29	171	108					282	969	941	620	235	199
30	170	110					317	934	1,060	666	265	205
31	171							913		672	358	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	496	170	323	19,900
November	174	102	140	8,330
December			120	7,380
January			95	5,840
February			110	6,110
March			115	7,070
April	362		235	14,000
May	1,080	383	718	44,100
June	1,060	461	746	44,400
July	1,280	330	582	35,800
August	750	235	451	27,700
September	338	180	218	13,000
The year	1,280		323	234,000

a Discharge measurement.

SOUTH PLATTE RIVER AT JULESBURG, COLO.

LOCATION.—Water-stage recorder in sec. 33, T. 12 N., R. 44 W., half a mile east of Julesburg and 4 miles above State line.

DRAINAGE AREA.—20,600 square miles.

RECORDS AVAILABLE.—April, 1902, to November, 1906; May, 1908, to September, 1914; October, 1930, to September, 1931. Records October, 1914, to September, 1930, published by State engineer.

EXTREMES.—Maximum discharge during year, 1,880 second-feet Apr. 2; minimum, 14 second-feet Sept. 14.

1902–1931: Maximum discharge, 30,800 second-feet June 16, 1921 (obtained from records of State engineer); no flow Aug. 18–20, 1902.

REMARKS.—Records good. They represent amount passing State line. Numerous diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	157	404	689	468	439	532	1,570	160	46	60	29	28
2	174	400	611	463	427	537	1,880	152	42	60	32	28
3	190	396	623	445	412	553	1,700	123	36	55	23	23
4	281	396	650	445	398	571	1,580	111	39	82	24	21
5	446	403	627	412	391	669	1,530	102	69	75	20	23
6	449	403	656	412	405	778	1,460	96	68	60	23	20
7	428	405	618	423	420	820	1,380	80	59	57	28	18
8	394	407	596	405	428	860	1,170	71	43	48	32	19
9	400	407	608	395	406	902	900	104	53	40	28	20
10	454	399	603	364	406	976	738	79	51	38	25	17
11	501	401	588	350	454	1,050	638	80	59	33	28	15
12	490	399	573	325	437	967	535	72	55	31	28	19
13	461	386	568	310	447	840	492	69	50	30	25	17
14	436	380	554	251	445	768	419	62	45	29	23	14
15	445	387	554	211	441	549	356	57	39	35	24	21
16	461	382	560	255	421	542	335	55	38	30	20	23
17	449	365	552	291	427	524	266	63	37	27	20	24
18	433	372	522	299	411	498	234	51	36	27	23	29
19	414	370	503	281	386	498	191	50	35	24	24	36
20	408	222	472	264	318	509	169	50	41	26	21	27
21	416	152	471	323	355	427	158	46	40	25	23	26
22	420	132	449	390	469	444	154	45	46	25	28	33
23	420	121	474	444	526	409	182	42	38	23	25	37
24	419	216	492	494	554	305	254	34	37	22	25	44
25	440	486	474	490	565	248	305	34	39	24	24	43
26	435	579	430	459	546	202	309	45	43	22	24	41
27	414	651	438	464	537	180	292	43	44	23	24	36
28	407	675	422	477	543	238	227	45	31	25	24	32
29	407	711	442	460	-------	276	194	47	27	24	24	43
30	399	687	468	445	-------	382	176	47	37	23	23	47
31	397	-------	496	453	-------	568	-------	47	-------	22	22	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	501	157	401	24,700
November	711	121	403	24,000
December	689	422	541	33,300
January	494	211	386	23,700
February	565	318	443	24,600
March	1,050	180	568	34,900
April	1,880	154	660	39,300
May	160	34	69.7	4,290
June	69	27	44.1	2,620
July	82	22	36.3	2,230
August	32	20	24.7	1,520
September	47	14	27.5	1,640
The year	1,880	14	300	217,000

SOUTH PLATTE RIVER AT OGALLALA, NEBR.

LOCATION.—Staff gage in sec. 6, T. 13 N., R. 38 W., a quarter of a mile south of Ogallala.
DRAINAGE AREA.—23,500 square miles.
RECORDS AVAILABLE.—January to September, 1931.
EXTREMES.—Maximum discharge during period not known; no flow Aug. 5, Sept. 7–15.
REMARKS.—Records fair. Numerous diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1931

Day	Jan.	Feb.	Apr.	May	June	July	Aug.	Sept.
1			1,900	195	38	10	13	1
2				165	35	12	1	1
3				140	37	8	1	1
4				120	36	35	1	1
5				95	47	35	0	1
6			1,700	105	48	32	1	1
7			1,670	65	47	2	46	0
8	[a] 374		1,620	80	44	2	32	0
9			1,390	85	45	18	31	0
10			1,170	115	46	25	30	0
11			1,000	110	50	22	10	0
12			770	95	46	23	6	0
13		[a] 635	620	85	42	22	5	0
14			475	87	43	17	6	0
15			340	79	39	12	6	0
16			315	81	37	6	6	1
17			325	75	37	4	5	4
18			270	77	37	4	4	4
19			225	61	37	4	4	4
20			200	59	35	3	4	4
21			180	63	37	3	4	2
22			155	71	32	3	4	2
23			170	50	32	3	4	2
24			190	48	25	3	2	4
25			200	47	29	2	2	8
26			225	45	12	1	2	8
27			260	44	10	3	4	8
28			300	45	6	3	4	6
29			235	43	6	3	4	8
30			170	38	6	3	4	5
31				36		2	4	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April		155	789	46,900
May	195	36	80.8	4,970
June	50	6	34.0	2,020
July	35	1	10.5	646
August	46	0	8.1	498
September	8	0	2.5	149
The period				55,200

[a] Discharge measurement.

NORTH FORK OF SOUTH PLATTE RIVER AT SOUTH PLATTE, COLO.

LOCATION.—Water-stage recorder in sec. 25, T. 7 S., R. 70 W., a third of a mile above South Platte. Zero of gage is 6,090.55 feet above mean sea level.

DRAINAGE AREA.—484 square miles.

RECORDS AVAILABLE.—June, 1909, to September, 1910; April, 1913, to September, 1931.

EXTREMES.—Maximum discharge during year, 740 second-feet May 27 (gage height, 3.90 feet); minimum occurred during winter.

1909–10, 1913–1931: Maximum discharge, 1,910 second-feet June 8, 1921 (gage height, 5.9 feet); minimum, 12 second-feet Dec. 18, 1922 (gage height, 1.5 feet).

REMARKS.—Records good except those for period Nov. 21 to Apr. 16, which were based on five discharge measurements and temperature records. Minor diversions above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	120	90						168	494	443	153	69
2	128	90						203	522	354	124	78
3	126	91	a 57				70	247	504	343	120	72
4	126	86				a 44		254	494	305	116	69
5	124	81						241	466	254	102	67
6	118	86		a 46	a 42			258	458	234	108	65
7	116	83						278	474	228	116	71
8	116	72					100	276	478	214	118	74
9	112	74						261	394	201	104	69
10	112	76						263	375	197	143	63
11	112	71						250	354	190	143	59
12	124	68						263	337	186	134	58
13	120	74						258	337	166	128	58
14	110	74					110	281	323	158	128	57
15	108	72						334	316	184	132	58
16	106	58						419	346	210	153	49
17	102	64					126	494	340	217	168	55
18	100	76					149	565	313	210	151	59
19	104	58					166	410	298	201	134	63
20	102	46					173	363	276	197	104	64
21	100						132	318	286	192	95	58
22	100						130	295	274	177	86	53
23	95						108	366	267	158	93	57
24	97						102	426	267	156	88	62
25	97						120	526	265	124	84	59
26	100	50					106	610	283	122	78	58
27	91						124	630	293	124	76	55
28	99						128	517	348	118	72	55
29	95						141	482	329	128	65	54
30	90						147	419	363	118	63	54
31	90							430		120	63	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	128	90	108	6,640
November	91	46	66.3	3,950
December			55	3,380
January			45	2,770
February			42	2,330
March			50	3,070
April	173		112	6,660
May	630	168	358	22,000
June	522	265	362	21,500
July	443	118	201	12,400
August	168	63	111	6,820
September	78	49	61.4	3,650
The year	630		132	95,200

a Discharge measurement.

WEST FORK OF CLEAR CREEK NEAR EMPIRE, COLO.

LOCATION.—Water-stage recorder in sec. 27, T. 3 S., R. 74 W., 1 mile east of Empire and 75 feet below Miller Creek. Zero of gage is 8,271.27 feet above mean sea level.

DRAINAGE AREA.—57 square miles.

RECORDS AVAILABLE.—June, 1929, to September, 1931 (discontinued).

EXTREMES.—Maximum discharge during year, 690 second-feet June 7 (gage height, 2.39 feet); minimum, 7.6 second-feet (discharge measurement) Mar. 5.

1929–1931: Maximum discharge, 720 second-feet June 18, 1930 (gage height, 2.26 feet); minimum, that of Mar. 5, 1931.

REMARKS.—Records good except those for period Nov. 26 to Mar. 15, which were based on four discharge measurements and temperature records. Possibly a few diversions for mining purposes.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	19	[a] 17				9	16	202	229	56	28
2	32	18					8	18	283	186	48	28
3	33	18			[a] 10		8	20	353	172	46	26
4	32	16					10	19	353	153	45	25
5	30	16			[a] 8		9	18	346	132	43	24
6	28	17				8	10	20	409	124	43	23
7	28	14		[a] 9			12	24	532	108	41	24
8	26	15					13	25	496	98	42	25
9	26	13					11	22	339	90	39	22
10	25	14					13	22	249	86	37	22
11	24	14					14	20	213	86	36	20
12	23	15					14	23	229	86	36	20
13	23	16					17	30	208	80	35	19
14	24	16				9	17	43	213	77	33	19
15	24	15					17	60	229	76	38	20
16	25	20				10	16	74	303	74	41	19
17	23	17				9	18	112	317	71	40	19
18	25	16				9	22	114	276	68	36	20
19	24	17				9	23	83	249	62	35	24
20	22	15				8	18	68	213	60	34	23
21	22					9	17	58	196	57	32	22
22	22					10	15	55	172	55	32	20
23	21	16				9	14	62	161	52	35	20
24	20					10	14	76	161	51	32	25
25	21					9	14	112	165	48	32	22
26	21					10	14	176	176	48	31	21
27	17					9	15	208	161	48	30	20
28	20	17				10	15	196	202	50	29	19
29	16					9	16	139	176	51	28	19
30	19					9	17	134	196	48	28	18
31	19					8		157		57	27	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	33	16	24.0	1,480
November	20	13	16.2	964
December			13.0	799
January			9.0	553
February			8.0	444
March	10	8	8.8	541
April	23	8	14.3	851
May	208	16	71.1	4,370
June	532	161	259	15,400
July	229	48	86.5	5,320
August	56	27	36.8	2,260
September	28	18	21.9	1,300
The year	532		47.4	34,300

[a] Discharge measurement.

SOUTH ST. VRAIN CREEK NEAR WARD, COLO.

LOCATION.—Water-stage recorder between secs. 35 and 36, T. 2 N., R. 73 W., 2 miles northwest of Ward.

DRAINAGE AREA.—15 square miles.

RECORDS AVAILABLE.—May, 1926, to September, 1927; May, 1929, to September, 1931 (discontinued).

EXTREMES.—Maximum discharge during year, 228 second-feet June 7 (gage height, 2.27 feet); minimum occurred during winter.

1926–27, 1929–1931: Maximum discharge, 313 second-feet June 7, 1926; minimum, 1 second-foot Mar. 20, 1930.

REMARKS.—Records good except those for period Nov. 16 to May 12, which were based on four discharge measurements and temperature records, and periods May 20–22, June 9–18, which were estimated. No diversions above station. Flow regulated by several small lakes.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9	5				[a] 3	98	97	32	12
2	10	5					114	79	26	12
3	10	5				5	121	69	27	10
4	10	5					121	63	54	10
5	10	5					140	58	65	11
6	10	5					142	48	61	11
7	9	4					152	45	61	11
8	9	4	[a] 2			10	134	40	58	11
9	9	4					130	36	51	11
10	9	4					125	36	46	11
11	9	4				15	135	36	49	11
12	9	4				30	130	35	47	11
13	9	4				45	125	35	42	10
14	9	4				67	120	35	46	10
15	8					94	130	34	26	10
16	8				[a] 6	105	137	34	26	10
17	8	3				136	130	33	32	9
18	8			[a] 2		115	125	32	26	9
19	8					82	113	31	24	11
20	7					70	106	30	21	13
21	7					60	101	26	19	12
22	7					45	100	27	18	10
23	6					38	106	26	20	9
24	6					56	121	26	20	10
25	6					73	116	28	18	12
26	6	2				92	126	27	17	9
27	7					96	121	26	16	9
28	6					84	106	28	13	9
29	6					62	100	33	12	9
30	6					56	103	43	12	9
31	5					70		61	12	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	10	5	7.9	486
November	5		3.3	196
December			2.0	123
January			2.0	123
February			2.0	111
March			2.0	123
April			5.0	298
May	136		50.5	3,110
June	152	98	121	7,200
July	97	26	40.5	2,490
August	65	12	32.2	1,980
September	13	9	10.4	619
The year	152		23.3	16,900

[a] Discharge measurement.

LEFTHAND CREEK NEAR BOULDER, COLO.

LOCATION.—Water-stage recorder in sec. 26, T. 2 N., R. 71 W., 9 miles north of Boulder.

DRAINAGE AREA.—48 square miles.

RECORDS AVAILABLE.—May, 1929, to September, 1931 (discontinued).

EXTREMES.—Maximum discharge during year, 396 second-feet Aug. 2 (gage height, 2.94 feet); no flow Nov. 16, 17.

1929–1931: Maximum and minimum, those of 1931.

REMARKS.—Records good except those for winter, which were based on two discharge measurements and temperature records. Small ditch diverts water just above station. Water diverted from South St. Vrain enters Lefthand Creek 2½ miles above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	3				2	58	115	123	40	9
2	12	2				2	67	138	101	28	9
3	14	3				1	71	165	84	25	8
4	12	2		[a] 0.4		1	68	165	74	21	7
5	12	2				2	65	173	60	19	7
6	12	3				2	68	168	46	25	7
7	11	1	[a] 1.8		0.5	5	71	165	44	24	7
8	10	.6				6	76	160	41	21	7
9	9	2				4	70	145	39	16	7
10	8	.5				5	65	133	36	14	6
11	12	.4				6	57	133	38	12	7
12	10	.6				8	49	126	38	11	6
13	12	1				9	46	126	40	10	6
14	13	.5			.6	9	61	135	43	13	5
15	12	.4			.6	8	101	131	47	23	6
16	12	0			.6	8	128	148	50	18	5
17	10	0			.5	8	138	168	53	34	5
18	10	.1			1	9	123	150	55	25	5
19	8				3	10	99	133	61	21	6
20	8				3	12	87	117	60	18	9
21	7				4	8	70	111	50	16	10
22	6				6	9	61	105	46	14	8
23	6				6	6	89	103	41	16	7
24	5				3	6	117	121	38	16	7
25	4	.5			2	7	123	119	36	14	10
26	4				2	7	123	126	38	12	8
27	3				2	9	121	133	35	12	7
28	4				1	14	117	115	35	10	7
29	2				.6	20	111	111	40	9	6
30	2				.4	36	101	119	40	8	6
31	3				.4		105		53	8	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	14	2	8.5	523
November	3	0	.94	56
December			1.0	61
January			1.0	61
February			.5	28
March	6	.4	1.39	85
April	36	1	8.0	476
May	138	46	87.3	5,370
June	173	103	135	8,030
July	123	35	51.1	3,140
August	40	8	17.8	1,090
September	10	5	7.0	417
The year	173	0	26.7	19,300

[a] Discharge measurement.

NORTH BOULDER CREEK NEAR NEDERLAND, COLO.

LOCATION.—Water-stage recorder in sec. 6, T. 1 S., R. 72 W., 2 miles north of Nederland.

DRAINAGE AREA.—25 square miles.

RECORDS AVAILABLE.—June, 1929, to September, 1931 (discontinued).

EXTREMES.—Maximum discharge during year, 319 second-feet May 27 (gage height, 2.64 feet); minimum, 0.3 second-foot during winter.

1929–1931: Maximum discharge, that of May 27, 1931; practically no flow during winter.

REMARKS.—Records good. Diversion for city of Boulder above station. Flow regulated by several lakes at headwaters.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	22			6	66	154	38	11
2	19			9	68	141	44	21
3	14			10	70	134	43	17
4	25			10	74	127	42	18
5	13			10	78	116	38	14
6	8		1	11	112	74	29	14
7	5			17	109	34	28	14
8	5			17	68	34	28	14
9	5			12	58	33	28	14
10	4			11	97	32	26	14
11	4			11	56	32	24	14
12	4		6	12	56	32	25	14
13	6	[a] 0.3	7	18	56	27	26	14
14	2		6	24	52	23	26	11
15	1		4	33	62	23	27	6
16	1		1	43	168	24	27	4
17	1		1	72	127	26	30	2
18	1		4	48	81	28	25	7
19			6	26	164	31	24	7
20			.3	17	207	43	22	20
21			1	19	182	42	21	19
22			.2	26	89	34	21	10
23			.3	38	72	33	22	6
24			.1	54	89	34	20	6
25	.5		.2	60	112	35	26	7
26			1	74	212	35	30	5
27			1	102	243	35	30	10
28			2	186	233	32	20	5
29			3	68	168	31	12	3
30			6	64	159	29	12	3
31				68		30	9	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	25		4.72	290
November			[b] .3	18
December			[b] .3	18
January			[b] .3	18
February			[b] .3	17
March			[b] .3	18
April	7	0.1	2.04	121
May	186	6	37.9	2,330
June	243	52	113	6,720
July	154	23	49.6	3,050
August	44	9	26.5	1,630
September	21	2	10.8	643
The year	243		20.6	14,900

[a] Discharge measurements. [b] Estimated.

THOMPSON RIVER BELOW POWER HOUSE NEAR DRAKE, COLO.

LOCATION.—Water-stage recorder in NW. ¼ sec. 7, T. 5 N., R. 70 W., a quarter of a mile below city of Loveland's hydroelectric plant and 4½ miles east of Drake.

DRAINAGE AREA.—277 square miles.

RECORDS AVAILABLE.—October, 1928, to September, 1931. Comparable record at site 3 miles upstream from September, 1917, to December, 1926.

EXTREMES.—Maximum discharge during year, 812 second-feet June 8 (gage height, 3.98 feet); minimum, 1.4 second-feet Jan. 7 (discharge measurement).

1929–1931: Maximum discharge, 868 second-feet Aug. 14, 1930 (gage height, 4.19 feet); minimum, that of Jan. 7, 1931.

Maximum discharge known, 8,000 second-feet July 31, 1919.

REMARKS.—Records excellent. Gage-height record furnished by city of Loveland.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	85	61	36	13	15	12	22	92	548	496	320	120
2	88	55	34	10	15	14	26	98	576	432	231	124
3	96	57	33	16	12	13	15	117	594	412	184	112
4	96	52	30	10	15	13	14	118	611	374	156	105
5	92	51	27	16	12	13	18	111	656	305	138	96
6	90	59	27	11	15	13	22	123	642	265	138	92
7	86	48	18	13	15	14	34	144	656	246	137	96
8	82	44	32	11	12	13	47	152	692	222	145	98
9	80	46	34	16	12	13	30	138	642	205	134	90
10	78	45	30	16	14	14	32	134	572	197	123	84
11	81	47	30	13	12	13	38	124	562	188	116	82
12	85	54	30	7	14	15	35	118	576	184	106	79
13	81	65	30	12	14	15	49	126	572	180	102	78
14	80	50	26	7	9	15	53	180	541	172	101	74
15	76	51	28	10	12	16	49	290	555	172	106	72
16	76	20	20	11	14	19	42	401	628	214	156	70
17	64	35	21	10	11	20	45	471	618	222	190	69
18	77	45	20	9	13	18	59	502	541	205	145	69
19	73	47	17	7	12	19	77	326	506	182	137	76
20	71	48	14	8	13	20	76	254	488	170	142	79
21	70	44	12	8	13	18	48	214	485	157	135	80
22	56	30	14	9	12	18	50	194	468	142	126	73
23	62	46	6	10	13	19	34	254	454	134	134	72
24	64	50	7	8	14	18	37	308	474	142	130	83
25	63	50	14	11	11	16	44	387	499	150	118	126
26	62	45	13	12	13	15	29	496	618	163	128	100
27	56	42	12	10	14	10	45	562	552	172	130	88
28	62	43	8	13	13	15	51	485	572	176	124	83
29	53	36	11	15	------	13	61	446	524	305	120	79
30	56	30	11	12	------	14	77	394	558	259	112	74
31	57	------	11	12	------	15	------	440	------	236	110	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	96	53	74.1	4,560
November	65	20	46.5	2,770
December	36	6	21.2	1,300
January	16	7	11.2	689
February	15	9	13.0	722
March	20	10	15.3	941
April	77	14	42.0	2,500
May	562	92	264	16,200
June	692	454	566	33,700
July	496	134	228	14,000
August	320	101	141	8,670
September	126	69	87.4	5,200
The year	692	6	126	91,300

CACHE LA POUDRE RIVER ABOVE CHAMBERS LAKE OUTLET, COLO.

LOCATION.—Water-stage recorder in sec. 28, T. 8 N., R. 75 W., 11 miles Southwest of Home and a quarter of a mile above Chambers Lake outlet.

DRAINAGE AREA.—91 square miles.

RECORDS AVAILABLE.—May, 1929, to September, 1931 (discontinued).

EXTREMES.—Maximum discharge during year, 1,520 second-feet June 7 (gage height, 4.85 feet); minimum occurred during winter.

1929–1931: Maximum discharge, 1,720 second-feet June 8, 1929 (gage height, 4.4 feet); minimum occurred during winter.

REMARKS.—Records excellent except those for period Nov. 17 to May 9, which were based on four discharge measurements and temperature records. No diversions above station. Flow increased by diversion from Colorado River Basin.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	51	33							738	262	124	31
2	46	35							769	276	73	30
3	48	28			a 2				846	274	60	24
4	49	28							850	300	49	21
5	45	28						20	805	372	45	20
6	45	26		a 2			5		836	347	47	19
7	41	45							990	546	53	18
8	38	38	10						886	642	49	16
9	36	38							792	574	42	16
10	35	38						27	570	141	36	16
11	36	36						27	666	94	32	15
12	43	33						30	598	86	31	15
13	42	28						45	546	79	26	15
14	39	27						97	578	73	25	15
15	34	26						248	630	73	28	16
16	31	25					12	411	666	81	49	15
17	43					a 3		606	447	78	63	14
18	42							492	320	70	46	14
19	36							238	293	64	53	14
20	36							122	255	60	45	19
21	34							89	274	56	41	16
22	31							109	323	52	38	14
23	31	18	5					272	202	53	54	14
24	29							472	238	56	40	44
25	28							638	238	53	33	39
26	21						15	850	345	55	30	30
27	20							662	276	58	27	26
28	20							387	274	56	24	22
29	20							306	310	104	23	21
30	25							345	284	64	23	20
31	30							610		81	21	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	51	20	35.6	2,190
November	45		25.5	1,520
December			7.4	455
January			2.0	123
February			2.0	111
March			3.0	184
April			10.7	637
May	850		234	14,400
June	990	202	528	31,400
July	642	52	167	10,300
August	124	21	42.9	2,640
September	44	14	20.4	1,210
The year	990		90.0	65,200

a Discharge measurement.

CACHE LA POUDRE RIVER NEAR LOG CABIN, COLO.

LOCATION.—Staff gage in sec. 33, T. 9 N., R. 73 W., half a mile east of Rustic, 6½ miles southwest of Log Cabin, and half a mile below Sevenmile Creek. Zero of gage is 7,092.12 feet above mean sea level.

DRAINAGE AREA.—235 square miles.

RECORDS AVAILABLE.—January, 1909, to December, 1911; May, 1929, to September, 1931 (discontinued).

EXTREMES.—Maximum discharge during year, 1,600 second-feet June 4 (gage height, 3.02 feet); minimum occurred during winter.

1909–1911; 1929–1931: Maximum discharge, 3,110 second-feet June 19, 1909; minimum occurred during winter.

REMARKS.—Records good except those for period Dec. 1 to Apr. 12, which were based on three discharge measurements and temperature records. Diversions for irrigation above station. Flow partly regulated by Chambers Lake.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	82	24						33	1,170	575	309	89
2	85	31						34	1,440	517	198	96
3	101	31					15	40	1,410	491	159	78
4	101	22						47	1,540	434	236	65
5	108	28						37	1,540	530	232	47
6	92	32	17	10	10	8		36	1,020	517	236	44
7	101	27						54	1,400	735	257	43
8	85	29						89	1,380	840	257	44
9	82	30						73	1,380	726	216	43
10	78	28					20	58	938	323	108	37
11	73	27						44	938	247	108	35
12	80	23						52	1,050	240	87	34
13	76	23	15				21	87	1,020	219	74	34
14	73	24					27	182	1,070	201	73	35
15	174	21		9	10	15	28	342	1,320	204	76	35
16	386	17					26	597	1,290	342	253	42
17	337	22					30	771	1,220	347	342	36
18	333	20					42	810	960	347	295	35
19	337	20					64	347	780	342	304	37
20	328	17					67	222	648	295	304	50
21	333	20					35	187	664	286	286	50
22	342	22					33	166	753	147	119	43
23	164	19	12			15	30	323	690	137	135	43
24	114	19					31	605	708	144	119	94
25	58	19			9		31	938	690	147	119	128
26	30	19		12			27	1,110	699	204	94	92
27	27	19					26	1,200	726	216	364	73
28	25	19					22	830	735	213	364	64
29	24	19				10	31	664	656	282	247	55
30	24	19			-------		34	622	656	232	108	52
31	24	-------			-------		-------	914	-------	240	80	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	386	24	138	8,480
November	32	17	23.0	1,370
December	----------	----------	14.1	867
January	----------	----------	10.4	640
February	----------	----------	9.7	539
March	----------	----------	11.8	726
April	67	----------	27.3	1,620
May	1,200	33	371	22,800
June	1,540	648	1,020	60,700
July	840	137	346	21,300
August	364	73	199	12,200
September	128	34	55.1	3,280
The year	1,540	----------	186	135,000

SOUTH FORK OF CACHE LA POUDRE RIVER NEAR EGGERS, COLO.

LOCATION.—Water-stage recorder in sec. 36, T. 8 N., R. 73 W., 8 miles southwest of Eggers and a third of a mile above Little Beaver Creek.

DRAINAGE AREA.—69 square miles.

RECORDS AVAILABLE.—May, 1929, to September, 1931 (discontinued).

EXTREMES.—Maximum discharge during year, 424 second-feet July 30 (gage height, 2.56 feet); minimum, 4.1 second-feet Jan. 6 (discharge measurement). 1929–1931: Maximum and minimum discharges, those of 1931.

REMARKS.—Records good except those for period Nov. 16 to Mar. 15, which were based on four discharge measurements and temperature records. Minor diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	22						237	131	151	36
2	28	21						275	117	107	35
3	28	20		[a] 5			20	257	107	89	31
4	28	20						243	98	78	30
5	25	23						275	85	72	29
6	25	20	[a] 4					253	72	72	29
7	24	24						301	64	68	34
8	23	33					25	264	59	61	37
9	22	28						243	54	54	33
10	22	30						207	52	50	28
11	25	32						243	49	48	27
12	26	36					35	212	44	45	25
13	24	35				[a] 16		198	43	42	25
14	22	35					50	193	44	40	24
15	22	33					85	230	48	68	25
16	20				[a] 7		141	253	105	107	24
17	22						164	212	89	103	22
18	25						174	195	96	74	23
19	23						91	166	103	76	24
20	22						54	136	103	74	25
21	22						40	144	74	66	21
22	21						39	124	39	50	20
23	19						54	114	36	49	20
24	19	15					91	129	37	44	33
25	19						171	154	52	42	27
26	19						227	174	105	40	24
27	18						224	148	94	38	22
28	20						159	151	98	37	21
29	20						126	129	151	36	21
30	22						110	154	174	35	20
31	21						151		184	34	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	28	18	22.7	1,400
November	36		21.2	1,260
December			8.0	492
January			5.0	307
February			5.0	278
March			7.0	430
April			18.0	1,070
May	227		80.0	4,920
June	301	114	200	11,900
July	184	36	84.1	5,170
August	151	34	62.9	3,870
September	37	20	26.5	1,580
The year	301		45.2	32,700

[a] Discharge measurement.

NORTH FORK OF CACHE LA POUDRE RIVER AT LIVERMORE, COLO.

LOCATION.—Chain gage in sec. 32, T. 10 N., R. 70 W., at Livermore. Zero of gage is 5,717.31 feet above mean sea level.

DRAINAGE AREA.—541 square miles.

RECORDS AVAILABLE.—May, 1929, to September, 1931 (discontinued).

EXTREMES.—Maximum discharge during year, 1,440 second-feet July 30 (gage height, 4.80 feet); minimum, 5 second-feet Sept. 5 (gage height, 0.70 foot).

1929–1931: Maximum discharge, 6,800 second-feet May 31, 1930 (gage height, 9.82 feet); minimum, that of Sept. 5, 1931.

Maximum flood known, 20,000 second-feet May 20, 1904 (gage height, 16.2 feet).

REMARKS.—Records good except those for period Nov. 24 to Mar. 7, which were based on two discharge measurements and temperature records. Diversions for irrigation above station. Flow regulated by Halligan Reservoir.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	48	16				8	43	16	13	15	10
2	48	16				9	48	13	12	13	14
3	46	16		a 8		7	52	11	12	10	6
4	23	16			6	6	53	13	12	8	6
5	24	16	a 7			7	54	16	12	7	5
6	23	15				52	58	29	12	8	16
7	23	15				55	40	21	11	7	17
8	23	16			6	57	36	18	10	7	16
9	72	15			7	56	26	15	9	7	16
10	50	16			6	63	10	14	8	8	16
11	35	16			6	62	7	14	9	8	14
12	32	16			7	56	7	14	10	7	13
13	31	15			6	64	6	15	10	7	12
14	30	15			6	64	6	13	9	8	10
15	30	15			7	63	18	13	7	10	9
16	28	16			6	59	24	11	7	9	10
17	26	16			6	79	15	12	7	7	10
18	24	16			7	119	8	10	6	7	10
19	23	15			31	119	6	8	7	7	12
20	24	16			43	119	6	11	6	10	12
21	23	16			38	116	5	15	6	8	11
22	21	15			18	76	6	14	6	7	12
23	21	16			6	53	6	12	6	7	12
24	22				6	46	7	12	6	6	13
25	21				6	43	6	12	6	13	13
26	20				6	41	6	13	6	15	19
27	18	14			6	57	7	14	6	15	15
28	17				6	122	8	14	374	16	15
29	17				6	51	8	15	10	16	15
30	16				7	41	15	13	502	15	13
31	17				7		18		26	15	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	72	16	28.3	1,740
November	16		15.3	910
December			9.0	553
January			8.0	492
February			7.0	389
March	43		9.6	590
April	122	6	59.0	3,510
May	58	5	19.8	1,220
June	29	8	14.0	833
July	502	6	36.9	2,270
August	16	6	9.8	603
September	19	5	12.4	738
The year	502		19.1	13,800

a Discharge measurement.

LODGEPOLE CREEK AT BUSHNELL, NEBR.

LOCATION.—Staff gage in sec. 31, T. 15 N., R. 57 W., at highway bridge at Bushnell.
DRAINAGE AREA.—1,090 square miles.
RECORDS AVAILABLE.—March to September, 1931.
EXTREMES.—Maximum discharge during period, 36 second-feet Apr. 1 (gage height, 2.10 feet); minimum, 5 second-feet several days during July (gage height, 0.68 foot).
REMARKS.—Records fair. Small diversions upstream.

Daily and monthly discharge, in second-feet, 1931

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22	36	21	12	7	6	9
2	22	24	20	12	7	6	9
3	22	19	20	12	7	7	9
4	22	19	25	12	7	7	9
5	22	19	21	11	6	7	9
6	24	17	21	12	7	8	9
7	34	17	21	10	6	8	9
8	35	17	20	10	6	8	9
9	32	16	18	10	6	8	9
10	22	16	18	10	6	8	9
11	23	16	18	10	5	8	9
12	23	16	18	10	5	8	9
13	22	15	18	10	5	9	9
14	21	15	15	9	5	9	9
15	21	14	15	9	8	9	9
16	22	15	15	9	5	9	9
17	21	15	18	9	5	10	9
18	21	16	17	8	6	11	9
19	22	16	17	8	5	11	9
20	20	16	17	8	6	11	9
21	20	17	17	8	6	10	9
22	20	15	17	8	6	10	9
23	20	14	17	8	6	8	10
24	19	18	16	8	6	8	10
25	18	18	16	8	6	8	10
26	15	18	15	8	6	8	9
27	11	18	14	8	6	8	9
28	10	18	14	8	6	8	9
29	12	20	21	8	6	8	9
30	16	21	21	7	6	8	9
31	22	------	12	------	6	8	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March	34	10	21.2	1,300
April	36	14	17.7	1,050
May	25	12	17.8	1,090
June	12	7	9.3	553
July	8	5	6.0	369
August	11	6	8.4	516
September	10	9	9.1	541
The period				5,420

LODGEPOLE CREEK AT SIDNEY, NEBR.

LOCATION.—Staff gage in SE. ¼ SE. ¼ sec. 31, T. 14 N., R. 49 W., half a mile south of Sidney.
DRAINAGE AREA.—2,190 square miles.
RECORDS AVAILABLE.—March to September, 1931.
EXTREMES.—Maximum discharge during year, 10 second-feet Apr. 3 (gage height, 1.92 feet); minimum, 0.2 second-foot June 21–23 (gage height, 0.78 foot).
REMARKS.—Records fair. Small diversions upstream.

Daily and monthly discharge, in second-feet, 1931

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5	4	3	4	2	1	0.6
2	5	5	3	5	2	.6	.6
3	5	10	3	1	2	2	.5
4	5	4	4	1	2	.9	.5
5	6	5	3	.3	2	2	.5
6	3	5	3	2	2	2	.5
7	3	5	3	1	1	2	.5
8	3	4	4	2	2	.3	.5
9	3	4	3	3	2	.3	.5
10	4	4	3	3	2	.3	.6
11	4	2	4	6	2	.4	.7
12	5	4	4	.3	2	.4	1
13	5	4	3	.3	2	2	1
14	5	4	3	.3	2	1	.7
15	5	4	3	2	2	.9	.9
16	5	4	1	.5	1	.3	.9
17	5	4	2	1	2	.6	.5
18	5	4	1	2	1	.6	.5
19	5	4	1	2	4	.7	.7
20	5	4	1	.3	.7	.7	.7
21	5	3	1	.2	.5	.6	.6
22	4	4	1	.2	.4	.6	.5
23	5	3	1	.2	.5	.6	.6
24	4	4	1	.3	.5	.6	2
25	3	4	1	.3	.5	.5	1
26	2	4	1	3	.6	.5	2
27	1	4	1	2	.7	.5	.6
28	1	3	1	2	.6	.5	.6
29	1	.6	1	1	2	.4	.6
30	2	3	1	1	.4	.5	.7
31	3	------	3	------	.5	.6	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March	6	1	3.94	242
April	10	.6	4.02	239
May	4	1	2.19	135
June	6	.2	1.57	93
July	4	.4	1.45	89
August	2	.3	.80	49
September	2	.5	.74	44
The period				891

LODGEPOLE CREEK AT RALTON, NEBR.

LOCATION.—Staff gage in NE. ¼ NW. ¼ sec. 12, T. 12 N., R. 45 W., at Ralton, 2½ miles above Colorado-Nebraska line.
DRAINAGE AREA.—2,800 square miles.
RECORDS AVAILABLE.—March to September, 1931.
EXTREMES.—Maximum discharge during year, 44 second-feet Mar. 23 (gage height, 2.8 feet); no flow Mar. 6.
REMARKS.—Records fair. Small diversions upstream.

Daily and monthly discharge, in second-feet, 1931

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	22	26	3	15	1	17
2	10	22	22	3	15	1	17
3	15	22	22	3	13	1	17
4	17	22	22	3	13	1	17
5	5	27	22	3	20	1	17
6	0	22	27	3	17	1	8
7	13	22	27	32	13	1	5
8	10	20	25	29	1	1	5
9	13	25	25	1	1	1	5
10	34	25	20	1	1	1	5
11	37	22	22	1	1	1	5
12	29	22	20	1	1	1	5
13	27	22	20	1	1	1	1
14	27	22	20	1	1	1	1
15	22	19	20	1	1	1	1
16	25	16	20	1	1	1	1
17	25	16	15	1	1	1	1
18	25	16	1	1	1	1	1
19	25	15	1	1	1	1	5
20	22	15	1	20	1	1	1
21	22	20	1	17	1	1	1
22	22	27	1	13	1	1	1
23	44	28	1	13	1	1	1
24	29	26	1	13	1	1	1
25	29	26	1	13	1	1	1
26	24	25	1	13	1	1	5
27	15	22	1	13	1	1	1
28	13	25	1	13	1	1	1
29	16	24	1	13	1	1	1
30	18	24	1	13	1	1	1
31	20	------	3	------	1	22	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March	44	0	20.7	1,270
April	28	15	22.0	1,310
May	27	1	12.6	775
June	32	1	8.1	482
July	20	1	4.2	258
August	22	1	1.7	105
September	17	1	5.0	298
The period				4,500

MIDDLE LOUP RIVER AT ST. PAUL, NEBR.

LOCATION.—Chain gage in sec. 10, T. 14 N., R. 10 W., at St. Paul. Zero of gage is 1,778.4 feet above mean sea level.

DRAINAGE AREA.—7,320 square miles.

RECORDS AVAILABLE.—May, 1895, to October, 1897; April to October, 1899; April to November, 1903; August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 8,280 second-feet Oct. 12 (gage height, 3.00 feet); minimum, 535 second-feet June 30, Aug. 15 (gage height, 1.69 feet).

1895–1897, 1899, 1903, 1928–1931: Maximum discharge, 16,000 second-feet June 6, 1896; minimum, 230 second-feet Nov. 23, 1929 (gage height, 0.30 foot).

REMARKS.—Records fair. No diversions or regulation.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,030	1,100	1,100			1,860	2,120	1,320	850	550	730	595
2	1,050	1,250	1,150			2,020	1,280	985	850	670	770	580
3	1,440	1,100	1,200		1,760	1,550	1,500	916	916	770	870	670
4	1,640	1,350	1,120			1,730	1,500	1,470	893	985	962	730
5	2,920	1,280	1,050			1,470	1,280	1,800	1,320	1,150	1,050	730
6	2,250	1,100	1,300	1,300	1,410	1,550	1,280	1,440	1,730	1,200	939	610
7	1,610	1,120	1,350		1,520	1,350	1,440	1,080	1,050	893	985	690
8	1,120	1,120	1,440		1,610	1,520	1,280	1,280	1,120	985	939	625
9	985	1,180	1,380		1,580	1,580	1,700	1,050	1,030	939	916	595
10	1,350	1,350	1,220		1,550	1,700	1,280	1,520	893	790	870	595
11	1,120	1,350	1,220		1,580	1,760	1,300	1,030	1,030	790	730	610
12	4,400	1,410			1,520	1,410	1,150	962	1,120	850	640	610
13	6,940	1,410		1,050	1,470	1,670	870	1,050	1,380	850	690	625
14	2,560	1,610	1,240		1,550	1,640	640	1,010	1,150	790	610	625
15	2,050	1,550			1,180	1,520	1,050	1,150	1,030	750	535	655
16	1,640	1,440			1,220	1,350	1,300	985	1,120	670	565	655
17	1,760	1,180			1,350	1,200	1,010	985	850	750	595	790
18	1,520	1,030		1,000	1,410	1,350	962	962	690	690	625	870
19	1,080	1,180			1,580	1,580	1,280	1,010	690	625	670	1,120
20	1,150	3,180			1,500	1,350	1,520	1,200	625	710	690	939
21	1,080	2,630	1,180		1,520	1,470	1,200	1,320	750	610	750	830
22	1,220	916			1,730	1,280	1,200	1,200	790	565	850	893
23	870	850		1,700	1,830	1,220	1,280	1,100	655	670	1,120	962
24	850	1,030			1,890	1,100	1,100	1,280	710	670	830	962
25	1,010	1,150			1,580	1,320	962	985	710	670	770	1,180
26	1,150	1,150			1,890	1,150	893	1,050	640	595	750	985
27	1,320	1,100			1,830	950	870	1,010	625	750	730	1,010
28	1,300	1,050	1,240	2,300	1,890	830	1,250	1,100	550	670	710	850
29	1,440	1,050			-------	1,300	1,120	939	625	690	670	870
30	1,150	1,100			-------	1,220	1,050	939	535	670	640	893
31	1,100	-------			-------	1,830	-------	1,120	-------	790	580	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	6,940	850	1,680	103,000
November	3,180	850	1,310	78,000
December	1,440	1,050	1,220	75,000
January	-------	-------	1,470	90,400
February	1,890	1,180	1,610	89,400
March	2,020	830	1,450	89,200
April	2,120	640	1,220	72,600
May	1,800	916	1,140	70,100
June	1,730	535	898	53,400
July	1,200	550	766	47,100
August	1,120	535	767	47,200
September	1,180	580	778	46,300
The year	3,180	-------	1,190	862,000

LOUP RIVER NEAR GENOA, NEBR.

LOCATION.—Chain gage in sec. 25, T. 17 N., R. 4 W., 2 miles south of Genoa. Zero of gage is 1,542.0 feet above mean sea level.

DRAINAGE AREA.—13,400 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 9,350 second-feet June 21 (gage height, 3.40 feet); minimum, 1,200 second-feet Sept. 11, 12 (gage height, 1.66 feet).

1928–1931: Maximum discharge, 20,000 second-feet Mar. 12, 1929; minimum (estimated), 550 second-feet Dec. 1–5, 1929.

REMARKS.—Records fair. No diversions or regulation.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,240	2,540			4,010	3,700	3,080	2,590	2,000	1,470	1,450	1,530
2	2,320	2,470			3,750	3,530	2,920	2,710	1,850	1,570	1,380	1,560
3	2,540	2,500	2,450	2,300	3,530	3,310	2,830	2,520	1,870	1,840	1,470	1,480
4	2,410	2,560			3,410	3,020	2,840	2,660	1,700	2,430	1,500	1,480
5	3,590	2,540			3,130	3,000	2,520	3,390	2,040	3,520	1,470	1,440
6	4,400	2,610			3,150	2,840	2,840	2,710	2,240	2,130	1,630	1,380
7	2,730	2,590			3,160	2,900	2,790	3,190	2,210	2,100	1,630	1,360
8	3,190	2,560	2,550	2,420	3,190	2,900	2,700	3,250	2,230	2,240	1,590	1,280
9	2,280	2,680			3,330	3,000	3,330	2,630	2,030	2,180	1,660	1,220
10	2,450	2,660			3,190	3,130	2,790	3,730	1,920	1,960	1,620	1,240
11	2,230	2,680		2,520	3,210	3,000	2,620	3,190	2,090	1,860	1,690	1,200
12	2,120	2,780		2,300	3,290	2,980	2,450	2,540	2,240	1,920	1,760	1,200
13	8,920	2,910	2,400	1,800	3,180	3,040	2,360	2,320	2,240	1,810	1,610	1,220
14	4,590	3,030		1,300	3,160	3,020	2,440	2,200	2,360	1,750	1,630	1,260
15	4,930	3,060		1,270	3,210	3,050	2,560	2,340	2,130	1,740	1,530	1,280
16	4,400	3,110			3,020	3,040	2,640	2,430	2,150	1,660	1,450	1,340
17	3,800	3,190			2,990	2,890	2,670	2,380	1,990	1,720	1,480	1,410
18	3,520	2,810	2,300	1,750	2,900	2,770	2,790	2,340	1,820	1,870	1,460	1,760
19	2,890	3,190			3,150	2,680	2,960	2,200	1,800	1,620	1,390	1,860
20	2,500	5,800			3,270	2,770	3,130	2,210	1,820	1,680	1,450	1,800
21	2,320	7,560			3,330	2,740	3,070	2,540	8,100	1,550	1,320	1,660
22	2,120	4,160			3,400	2,590	2,690	2,210	7,130	1,570	1,390	1,670
23	2,200	2,810	2,300	3,100	3,600	2,530	2,600	1,780	2,630	1,580	1,570	1,690
24	2,370	2,860			3,680	2,550	2,530	2,200	2,100	1,570	1,690	1,750
25	2,210	2,430			3,830	2,500	2,640	2,150	1,870	1,570	1,770	1,880
26	2,340	2,250		4,100	3,750	2,460	2,420	1,970	1,820	1,460	1,740	1,750
27	2,270	2,150		4,200	3,780	2,300	2,490	2,200	1,760	1,440	1,600	1,680
28	2,680	2,100		5,500	3,910	2,130	2,490	2,100	1,700	1,410	1,610	1,690
29	2,090	2,000	2,330	8,000	------	2,000	2,500	2,200	1,540	1,370	1,560	1,640
30	2,410	2,350		6,140	------	2,800	2,530	2,120	1,500	1,380	1,580	1,740
31	2,320	------		5,820	------	2,660	------	2,040	------	1,370	1,590	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	8,920	2,090	3,010	185,000
November	7,560	2,000	2,960	176,000
December	------	------	2,390	147,000
January	8,000	------	2,930	180,000
February	4,010	2,900	3,380	188,000
March	3,700	2,000	2,830	174,000
April	3,330	2,360	2,700	161,000
May	3,730	1,780	2,490	153,000
June	8,100	1,500	2,360	140,000
July	3,520	1,370	1,790	110,000
August	1,770	1,320	1,560	95,900
September	1,880	1,200	1,520	90,400
The year	8,920	1,200	2,490	1,800,000

LOUP RIVER AT COLUMBUS, NEBR.

LOCATION.—Staff gage on line between Rs. 1 E. and 1 W., T. 17 N., at Columbus, 5 miles above mouth.

DRAINAGE AREA.—14,200 square miles.

RECORDS AVAILABLE.—January, 1895, to September, 1915; March to September, 1931.

EXTREMES.—Maximum discharge during year, 4,360 second-feet June 22 (gage height, 3.95 feet); minimum, 610 second-feet Mar. 30 (gage height, 2.40 feet).

1895–1915, 1931: Maximum discharge, 25,800 second-feet July 26, 1905 (gage height, 7.95 feet); minimum, that of Mar. 30, 1931.

REMARKS.—Records fair. Discharge estimated Mar. 1–9. No diversions or regulations.

Daily and monthly discharge, in second-feet, 1931

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,800	3,950	2,540	1,970	1,540	1,340	1,750
2	3,600	2,900	2,660	1,860	1,540	1,340	1,340
3	3,400	2,900	2,540	1,750	1,640	1,440	1,440
4	3,100	2,660	2,780	1,750	2,420	1,540	1,540
5	3,000	2,660	2,900	1,970	3,540	1,440	1,540
6	2,900	2,660	3,150	2,190	2,080	1,640	1,440
7	3,100	2,780	3,150	2,660	2,080	1,860	1,340
8	3,200	2,900	3,020	2,660	2,780	1,640	1,340
9	3,280	3,280	3,020	1,970	2,190	1,640	1,160
10	3,150	2,780	3,280	1,970	2,080	1,640	1,440
11	3,020	2,540	3,280	2,080	2,080	1,640	1,340
12	3,150	2,420	2,540	2,190	1,970	1,640	1,340
13	2,900	2,300	2,300	2,190	1,750	1,640	1,250
14	2,900	2,420	2,190	2,190	1,750	1,640	1,250
15	3,020	2,660	2,300	2,190	1,750	1,540	1,340
16	2,900	2,660	2,420	2,190	1,860	1,540	1,440
17	3,020	2,900	2,420	1,970	1,750	1,540	1,440
18	2,780	3,020	2,660	1,750	1,750	1,440	1,750
19	2,780	2,540	2,420	1,750	1,640	1,440	2,190
20	2,660	3,020	2,540	1,750	1,640	1,340	2,190
21	2,780	3,020	2,300	3,950	1,750	1,340	2,080
22	2,540	2,540	2,300	4,360	1,540	1,340	1,640
23	2,780	2,420	2,190	3,680	1,540	1,540	1,640
24	2,420	2,540	2,080	2,660	1,540	1,640	1,640
25	2,660	2,660	2,080	2,080	1,540	1,750	2,080
26	2,300	2,420	1,970	1,750	1,440	1,640	1,750
27	2,190	2,660	1,970	1,750	1,340	1,640	1,640
28	2,300	2,660	1,970	1,750	1,540	1,640	1,750
29	1,000	2,540	2,190	1,640	1,440	1,540	1,640
30	610	2,540	2,300	1,540	1,340	1,540	1,640
31	2,660	------	1,970	------	1,160	1,540	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March	3,800	610	2,770	170,000
April	3,950	2,300	2,730	162,000
May	3,280	1,970	2,500	154,000
June	4,360	1,540	2,210	132,000
July	3,540	1,160	1,810	111,000
August	1,860	1,340	1,550	95,300
September	2,190	1,160	1,580	94,000
The period				918,000

NORTH LOUP RIVER NEAR ST. PAUL, NEBR.

LOCATION.—Chain gage in sec. 22, T. 15 N., R. 10 W., 3 miles north of St. Paul.
DRAINAGE AREA.—4,040 square miles.
RECORDS AVAILABLE.—May, 1895, to October, 1897; April to October, 1899; April to December, 1903; August, 1928, to September, 1931.
EXTREMES.—Maximum discharge during year, 5,880 second-feet Oct. 12 (gage height, 2.96 feet); minimum, 126 second-feet Jan. 15 (gage height, 0.33 foot).

1895–1897, 1899, 1903, 1928–1931: Maximum discharge (estimated), 90,000 second-feet June 6, 1896; minimum, that of Jan. 15, 1931.
REMARKS.—Records fair. No diversions.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	765	894	700	816	1,610	1,320	1,270	829	772	601	520	676
2	778	842	900	894	1,380	1,320	1,190	816	772	676	610	676
3	894	816	1,150	855	1,450	1,290	1,380	778	785	676	592	746
4	950	1,090	1,110	965	1,410	1,150	1,060	855	785	955	632	746
5	950	1,070	935	1,010	1,450	1,320	920	995	955	955	746	772
6	1,610	1,150	950	907	1,210	1,380	1,020	950	1,000	850	746	746
7	1,250	995	1,150	935	1,130	995	1,040	965	925	824	772	698
8	1,090	894	1,040	950	1,450	1,290	1,070	1,070	910	850	772	632
9	1,010	1,010	1,010	894	1,560	1,070	1,320	1,480	837	785	733	592
10	1,010	1,020	1,110	1,020	1,450	980	1,230	1,380	824	746	772	592
11	778	1,040	1,040	950	1,410	980	1,060	1,180	1,000	733	772	574
12	2,520	1,130	950	894	1,360	1,230	1,010	1,040	880	798	709	556
13	1,640	1,040	920	290	1,320	1,320	881	970	970	798	654	583
14	1,380	1,040	[a]920	159	1,500	1,500	894	970	970	746	632	601
15	1,320	1,170	[a]900	126	1,290	1,130	980	925	837	676	610	643
16	1,340	1,270	[a]910	144	1,070	1,070	1,040	880	720	632	583	665
17	1,170	1,110	950	443	1,320	1,060	1,010	865	610	720	601	698
18	950	1,040	894	765	1,230	1,060	965	865	621	654	610	811
19	842	1,320	868	1,190	1,380	1,060	1,020	865	592	643	592	811
20	868	2,300	920	1,110	1,360	1,150	1,230	895	654	632	592	811
21	842	1,150	907	1,380	1,500	1,040	1,150	865	1,050	632	665	785
22	950	855	678	1,360	1,560	1,040	1,010	880	676	654	746	811
23	842	1,130	752	1,480	1,610	1,270	1,090	785	654	665	880	811
24	894	881	855	1,580	1,700	1,060	1,070	798	698	654	1,140	811
25	950	995	1,020	1,610	1,810	1,060	965	746	654	643	940	895
26	950	728	980	1,580	1,450	1,060	965	746	574	652	798	865
27	980	881	894	1,580	1,780	1,090	1,020	759	565	610	676	837
28	950	790	950	1,560	1,670	[a]800	842	759	583	592	643	811
29	1,070	[a]700	894	2,330	------	[a]1,000	829	798	538	610	687	785
30	965	[a]700	894	2,180	------	[a]1,200	803	772	529	592	654	785
31	855	------	778	1,720	------	1,480	------	772	------	574	687	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,520	765	1,080	66,400
November	2,300	700	1,040	61,900
December	1,150	700	933	57,400
January	2,330	126	1,090	67,000
February	1,810	1,070	1,440	80,000
March	1,500	800	1,150	70,700
April	1,380	803	1,040	61,900
May	1,480	746	911	56,000
June	1,050	529	765	45,500
July	955	574	703	43,200
August	1,140	520	702	43,200
September	895	556	728	43,300
The year	2,520	126	962	696,000

[a] Estimated.

ELKHORN RIVER AT O'NEILL, NEBR.

LOCATION.—Staff gage in sec. 31, T. 29 N., R. 11 W., at O'Neill.
DRAINAGE AREA.—651 square miles.
RECORDS AVAILABLE.—March to September, 1931.
EXTREMES.—Maximum discharge during period, 155 second-feet Apr. 1 (gage height, 2.5 feet); minimum, 12 second-feet Aug. 1, Sept. 11–13 (gage height, 1.2 feet).
REMARKS.—Records fair. Discharge estimated Mar. 1–3, 6, 7, 28–31. No diversions.

Daily and monthly discharge, in second-feet, 1931

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	155	57	38	23	12	17
2	80	122	57	34	23	17	17
3	85	138	47	30	23	17	17
4	90	138	47	30	23	17	17
5	119	138	47	34	30	23	14
6	70	122	47	38	26	23	14
7	70	107	47	38	23	23	14
8	68	93	52	38	23	23	14
9	68	93	57	30	23	23	14
10	57	80	93	30	30	23	14
11	68	80	107	30	30	23	12
12	68	57	122	30	23	20	12
13	93	57	138	38	23	20	12
14	107	47	122	34	23	17	14
15	107	57	107	30	20	17	14
16	107	57	80	30	17	17	17
17	93	57	80	30	17	17	17
18	93	57	68	26	17	17	17
19	68	57	68	26	17	17	20
20	80	68	57	30	17	17	20
21	80	57	57	30	17	17	20
22	80	57	57	30	17	17	20
23	80	57	47	30	17	17	20
24	80	57	38	30	17	17	23
25	80	57	38	26	17	17	26
26	80	57	38	26	17	17	26
27	93	57	38	26	17	17	26
28	75	57	38	26	14	17	23
29	70	52	38	23	14	14	23
30	75	52	38	23	14	14	23
31	95	------	38	------	14	14	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March	119	57	82.4	5,070
April	155	47	78.0	4,640
May	138	38	63.4	3,900
June	38	23	30.5	1,810
July	30	14	20.2	1,240
August	23	12	18.1	1,110
September	26	12	17.9	1,070
The period	----------	----------	----------	18,800

ELKHORN RIVER AT NELIGH, NEBR.

LOCATION.—Staff gage in sec. 20, T. 25 N., R. 6 W., at Neligh.
DRAINAGE AREA.—1,740 square miles.
RECORDS AVAILABLE.—March to September, 1931.
EXTREMES.—Maximum discharge during period, 550 second-feet Mar. 14, Apr. 4 (gage height, 3.4 feet); minimum, 16 second-feet July 20, 21, Aug. 7, Sept. 9–14 (gage height, 1.6 feet).
REMARKS.—Records fair. Discharge estimated Mar. 27–31. No diversions.

Daily and monthly discharge, in second-feet, 1931

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	330	180	94	54	22	30
2	------	410	150	94	94	22	54
3	------	455	125	80	80	22	54
4	------	550	150	94	80	22	54
5	290	500	180	94	94	22	42
6	330	455	180	108	94	22	30
7	330	455	180	108	80	16	22
8	330	410	180	108	80	22	22
9	290	370	215	94	108	54	16
10	290	330	290	94	108	66	16
11	290	330	410	94	94	66	16
12	290	290	500	94	80	66	16
13	370	290	500	94	80	54	16
14	550	290	500	94	66	42	16
15	500	250	410	94	54	30	22
16	500	250	330	80	42	42	22
17	500	250	290	80	30	30	22
18	500	250	250	80	22	54	54
19	455	250	215	80	22	42	80
20	370	250	180	80	16	30	80
21	370	290	150	108	16	54	80
22	330	290	125	125	22	66	80
23	290	290	125	125	22	54	66
24	290	290	108	108	42	54	80
25	290	290	108	108	42	54	94
26	290	250	108	94	42	54	94
27	200	250	108	94	42	54	94
28	150	250	108	80	30	42	94
29	175	250	108	66	30	30	80
30	250	250	108	54	22	30	80
31	280	------	108	------	22	30	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March 5–31	550	150	337	18,000
April	550	250	322	19,200
May	500	108	215	13,200
June	125	54	93.3	5,550
July	108	16	55.2	3,390
August	66	16	40.9	2,510
September	94	16	50.9	3,030
The period	------	------	------	64,900

ELKHORN RIVER AT WATERLOO, NEBR.

LOCATION.—Chain gage in sec. 10, T. 15 N., R. 10 E., at Waterloo. Zero of gage is 1,110.1 feet above mean sea level.

DRAINAGE AREA.—6,390 square miles.

RECORDS AVAILABLE.—May, 1911, to July, 1913; August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 2,120 second-feet Nov. 21 (gage height, 3.6 feet); minimum, 118 second-feet Sept. 12 (gage height, 0.78 foot).

1911–1913, 1928–1931: Highest flood occurred in April, 1912 (gage height and discharge not determined); minimum, that of Sept. 12, 1931.

REMARKS.—Records good except those for winter, which were estimated because of ice. No diversions.

Daily and monthly discharge, in second-feet, 1930–31.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	378	498			900	728	698	591	492	314	187	514
2	405	509			1,000	705	780	585	482	318	235	257
3	410	509	460		1,100	705	1,010	566	460	299	198	382
4	401	509			1,160	677	1,220	560	445	295	187	209
5	415	503			1,100	705	1,200	684	537	315	214	174
6	435	509	850	550	1,030	635	1,100	923	566	335	189	169
7	445	492	1,290		986	670	1,060	968	445	364	184	156
8	455	509	1,060		844	705	1,040	852	610	373	217	147
9	455	531	750		780	691	1,070	772	765	369	247	147
10	445	549	758		691	698	959	750	712	347	479	135
11	425	543	758		649	765	887	772	656	351	316	131
12	425	555	712		691	728	804	804	1,920	339	277	124
13	430	526	788	500	758	750	758	836	1,930	326	214	127
14	430	572	765		629	780	712	844	1,020	330	189	129
15	440	572	728		604	780	677	860	656	330	184	133
16	560	591	712	481	670	750	705	923	549	311	174	131
17	742	585	698		720	735	758	950	471	326	176	129
18	1,230	597	498	500	656	796	780	959	420	318	176	192
19	1,060	622	430		635	860	758	896	387	460	179	253
20	968	923	420		656	896	780	804	373	330	176	482
21	720	2,110	410		670	914	705	742	410	284	171	445
22	610	1,500	460		670	887	705	698	977	274	174	360
23	560	1,310	502		698	878	712	635	1,430	260	169	728
24	537	1,140	465		698	844	728	604	1,450	235	195	503
25	520	977	502		677	796	712	578	788	238	192	1,010
26	520	812		620	677	812	677	549	526	229	250	1,540
27	520	735			712	836	656	514	435	217	192	1,500
28	509	526	450		742	780	649	578	378	209	192	572
29	509	465			-------	758	635	616	387	203	176	392
30	487	440			-------	705	629	520	311	203	169	378
31	492	-------			-------	698	-------	509	-------	192	174	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,230	378	546	33,600
November	2,110	440	707	42,100
December	1,290	----------	599	36,800
January	----------	----------	558	34,300
February	1,160	604	779	43,300
March	914	635	763	46,900
April	1,220	629	819	48,700
May	968	509	724	44,500
June	1,930	311	700	41,700
July	460	192	300	18,400
August	479	169	208	12,800
September	1,540	124	385	22,900
The year	----------	----------	588	426,000

TARKIO RIVER BASIN

TARKIO RIVER AT FAIRFAX, MO.

LOCATION.—Chain gage on line between secs. 22 and 27, T. 64 N., R. 40 W., at highway bridge half a mile west of Fairfax.

DRAINAGE AREA.—508 square miles.

RECORDS AVAILABLE.—March, 1922, to September, 1931.

EXTREMES.—Maximum discharge during year, 5,310 second-feet June 15 (gage height, 14.15 feet); minimum, 6 second-feet July 28–31.

1922–1931: Maximum discharge, about 15,000 second-feet July 7, 1929 (gage height, 20.33 feet); minimum, 1 second-foot Dec. 21, 1924 to Jan. 4, 1925.

REMARKS.—Records good except those for periods of ice effect, Nov. 25 to Dec. 6, Dec. 17 to Jan. 28, which are poor.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21	34	26	34	32	22	41	28	41	44	10	1,740
2	21	34	42	26	32	19	41	27	35	14	308	110
3	20	34	42	26	35	19	38	24	32	12	80	39
4	21	34	34	26	35	18	33	23	22	14	20	26
5	20	32	34	34	32	21	30	30	49	18	14	44
6	22	29	34	34	41	24	27	24	1,250	12	8	21
7	34	26	46	34	36	23	24	25	352	11	9	14
8	28	34	44	34	28	33	24	24	80	11	11	12
9	24	34	44	34	22	54	23	32	54	10	9	11
10	22	34	49	34	21	65	24	35	41	9	116	10
11	24	36	46	26	38	60	22	32	43	8	46	10
12	21	36	39	26	30	75	17	33	772	14	21	9
13	25	36	40	20	24	103	15	28	136	58	16	9
14	26	37	40	20	18	103	15	27	49	19	12	14
15	31	37	37	20	16	75	19	23	2,050	13	11	12
16	268	91	34	20	28	47	48	18	185	12	10	12
17	91	60	34	20	22	45	29	19	54	10	11	9
18	51	44	34	20	15	43	27	19	40	9	16	10
19	42	44	26	20	35	36	28	24	32	15	86	9
20	37	330	26	20	33	34	116	21	27	10	31	8
21	36	110	26	20	28	34	70	18	54	8	18	40
22	39	80	26	20	32	33	48	17	41	8	13	28
23	37	55	26	20	48	40	40	15	31	8	12	330
24	39	42	26	26	35	33	50	15	22	7	13	122
25	37	34	34	26	32	30	65	15	18	8	12	2,140
26	34	34	34	34	22	25	54	14	16	8	11	352
27	34	34	34	34	25	36	37	13	13	7	11	86
28	32	26	34	42	24	30	45	24	12	6	10	49
29	31	26	34	48	------	33	33	52	11	6	9	44
30	31	26	34	36	------	45	30	97	10	6	9	32
31	26	------	34	32	------	45	------	70	------	6	9	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	268	20	39.5	0.078	0.09
November	330	26	51.4	.101	.11
December	49	26	35.3	.069	.08
January	48	20	28.6	.056	.06
February	48	15	29.2	.057	.06
March	103	18	42.0	.083	.10
April	116	15	37.1	.073	.08
May	97	13	27.9	.055	.06
June	2,050	10	186	.366	.41
July	58	6	12.9	.025	.03
August	308	8	31.4	.062	.07
September	2,140	8	178	.350	.39
The year	2,140	6	57.9	.114	1.54

NODAWAY RIVER BASIN

NODAWAY RIVER NEAR BURLINGTON JUNCTION, MO.

LOCATION.—Chain gage in sec. 17, T. 65 N., R. 37 W., at bridge on State highway 18, 1½ miles west of Burlington Junction.

DRAINAGE AREA.—1,240 square miles.

RECORDS AVAILABLE.—March, 1922, to September, 1931.

EXTREMES.—Maximum discharge during year, 4,100 second-feet Sept. 25 (gage height, 9.40 feet); minimum, 7 second-feet Sept. 13, 14 (gage height, 2.54 feet).

1922–1931: Maximum discharge, 21,000 second-feet July 6, 1929; maximum gage height, 19.5 feet Sept. 3, 1926; minimum discharge, 6 second-feet June 1, July 26, 1925; minimum gage height, 1.80 feet July 26, 1923.

REMARKS.—Records good except those for period of ice effect, Jan. 1–28, which are poor. Discharge estimated Dec. 1–3.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	18	40	24	36	36	63	31	206	65	13	1,880
2	25	18	39	24	44	26	69	33	132	67	41	440
3	27	22	38	24	46	24	74	23	78	158	206	250
4	23	20	38	24	41	26	78	22	69	79	206	220
5	25	22	40	24	46	24	90	25	80	85	62	138
6	29	22	35	24	49	32	60	27	3,450	54	65	47
7	33	22	33	24	54	42	58	22	2,460	56	39	39
8	32	23	31	24	44	74	58	23	1,730	54	36	26
9	31	22	33	24	42	78	42	27	910	49	46	16
10	20	23	33	24	39	80	35	35	420	41	282	13
11	22	22	33	24	39	86	31	35	282	34	65	11
12	23	20	35	24	36	132	31	38	2,120	41	26	9
13	27	22	38	16	41	158	31	33	850	206	24	7
14	25	23	40	16	22	170	31	31	585	206	16	7
15	50	25	31	16	21	111	31	31	332	138	16	12
16	58	136	29	16	30	111	182	22	385	117	18	13
17	52	100	27	16	34	96	72	23	206	67	16	9
18	55	96	25	16	41	86	35	27	136	39	15	9
19	40	100	35	16	44	66	58	22	115	39	16	8
20	38	193	38	16	41	55	143	23	105	32	76	8
21	35	147	30	16	36	47	206	20	2,280	39	107	22
22	38	127	31	16	32	55	132	17	2,820	28	73	41
23	29	93	31	16	82	55	96	18	1,030	73	76	630
24	27	74	31	16	56	52	84	18	332	39	28	182
25	27	63	29	16	32	45	93	20	206	19	21	4,100
26	23	40	31	16	24	47	86	17	158	21	19	1,240
27	22	35	33	24	30	52	60	14	80	19	16	1,100
28	20	33	27	46	46	47	55	18	88	19	14	250
29	22	35	27	54	------	49	45	25	82	16	15	147
30	23	40	25	54	------	66	40	630	65	15	15	76
31	20	------	27	41	------	69	------	585	------	14	98	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	58	20	30.5	0.025	0.03
November	193	18	54.5	.044	.05
December	40	25	32.7	.026	.03
January	54	16	23.6	.019	.02
February	82	21	40.3	.032	.03
March	170	24	67 6	.055	.06
April	206	31	72.3	.058	.06
May	630	14	62.4	.050	.06
June	3,450	65	726	.585	.65
July	206	14	62.2	.050	.06
August	282	13	57.0	.046	.05
September	4,100	7	365	.294	.33
The year	4,100	7	132	.106	1.43

PLATTE RIVER BASIN (IOWA-MISSOURI)

PLATTE RIVER AT CONCEPTION JUNCTION, MO.

LOCATION.—Chain gage on line between NW. ¼ sec. 14 and SW. ¼ sec. 11, T. 63 N., R. 34 W., at county highway bridge half a mile west of Conception Junction.

DRAINAGE AREA.—492 square miles.

RECORDS AVAILABLE.—July, 1921, to May, 1925; August, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,810 second-feet Sept. 25 (gage height, 10.42 feet); minimum, 0.1 second-foot Sept. 19 (gage height, 4.26 feet).

1921–1925, 1928–1931: Maximum discharge, 12,200 second-feet July 6, 1929 (gage height, 21.70 feet); minimum, that of Sept. 19, 1931.

REMARKS.—Records fair except those for period of ice effect, Dec. 17 to Jan. 31, which are poor. Discharge estimated Feb. 10, Apr. 13, Aug. 16, 24.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.0	3.8	17	4	3.0	6	22	8	4.2	2.1	4.6	3.8
2	2.4	3.8	10	4	3.8	5	24	7	4.6	1.8	10	386
3	2.7	3.8	8	4	4.6	4.6	20	6	5	1.1	2.2	250
4	3.8	3.0	10	4	6	5	22	6	8	1.1	1.8	117
5	3.0	3.8	11	4	7	5	20	5	11	1.3	1.8	79
6	6	4.6	14	4	6	6	17	5	30	.9	1.4	17
7	5	4.6	10	4	5	7	15	3.0	748	1.0	1.3	6
8	5	3.8	10	2	6	6	15	3.0	442	.9	2.4	1.3
9	3.0	3.8	9	2	3.8	9	12	3.8	159	.9	2.7	1.6
10	2.7	3.0	8	2	3.0	8	11	3.8	74	1.3	3.8	1.3
11	2.7	3.8	9	2	2.1	10	9	4.6	38	.9	5	.6
12	2.4	3.0	7	2	2.1	18	7	5	28	2.4	130	.4
13	3.0	3.8	8	2	2.4	53	6	4.6	18	2.6	30	.4
14	3.8	4.6	8	2	2.7	91	4.6	3.0	12	1.5	5	.4
15	4.6	5	7	2	4.2	30	5	2.1	56	9	4.2	.7
16	7	4.6	6	2	6	75	4.6	2.1	30	8	2.6	.4
17	8	5	5	2	5	60	5	1.8	22	6	1.0	.2
18	10	8	5	3	4.6	33	3.8	4.6	20	2.4	1.0	.2
19	8	4.6	5	3	10	30	15	5	15	2.1	1.0	.1
20	7	18	5	3	9	27	24	3.0	15	1.8	.9	.2
21	5	24	5	2	9	18	72	2.1	15	1.8	33	4.6
22	7	20	5	2	6	13	51	2.4	159	3.8	53	5
23	6	10	5	2	7	17	32	2.1	168	2.7	14	130
24	5	9	5	2	6	18	24	2.1	36	2.4	8	83
25	4.6	8	5	2	6	12	26	1.8	22	1.6	1.3	1,810
26	4.6	8	5	2	5	8	20	2.2	10	1.4	2.1	950
27	3.8	6	5	2	4.6	9	17	1.8	8	1.2	1.2	500
28	4.6	9	5	3	5	9	11	1.8	7	1.2	1.0	198
29	3.8	10	4	3	------	10	11	3.8	2.1	.9	.9	45
30	3.8	14	4	3	------	11	10	4.6	1.8	.8	.7	17
31	4.6	------	4	3	------	10	------	5	------	.7	.5	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	10	2.4	4.71	0.0096	0.01
November	24	3.0	7.21	.015	.02
December	17	4.0	7.23	.015	.02
January	4.0	2.0	2.68	.0054	.006
February	10	2.1	5.18	.011	.01
March	91	4.6	20.1	.041	.05
April	72	3.8	17.9	.036	.04
May	8	1.8	3.75	.0076	.009
June	748	1.8	72.3	.147	.16
July	9	.7	2.18	.0044	.005
August	130	.5	10.6	.022	.03
September	1,810	.1	154	.313	.35
The year	1,810	.1	25.4	.052	.71

KANSAS RIVER BASIN

REPUBLICAN RIVER AT BENKELMAN, NEBR.

LOCATION.—Staff gage on line between secs. 17 and 20, T. 1 N., R. 37 W., three-quarters of a mile west of Benkelman and a quarter of a mile above Arikaree River.

DRAINAGE AREA.—2,640 square miles.

RECORDS AVAILABLE.—November, 1894, to August, 1895; May, 1903, to November, 1906; March to September, 1931.

EXTREMES.—Maximum discharge during year, 667 second-feet June 5 (gage height, 2.57 feet); no flow during parts of July, August, September.

1894–95, 1903–1906, 1931: Maximum discharge, that of June 5, 1931; no flow during several months in 1906, 1931.

REMARKS.—Records fair. Small diversions upstream.

Daily and monthly discharge, in second-feet, 1931

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	39	80	34	4	0	4
2	------	65	80	30	4	0	4
3	------	65	80	30	4	0	4
4	------	65	72	30	4	0	4
5	------	65	72	432	4	0	4
6	------	65	58	97	2	0	4
7	------	65	58	88	2	0	4
8	------	65	65	51	2	0	0
9	------	65	72	51	2	400	0
10	------	65	65	45	2	486	0
11	------	65	65	51	2	97	0
12	------	51	65	58	2	88	0
13	------	51	65	58	2	72	0
14	------	45	65	51	0	30	0
15	------	45	65	45	0	26	0
16	------	45	65	45	0	22	0
17	68	34	65	34	0	9	0
18	68	39	58	22	2	9	9
19	68	39	51	22	0	9	9
20	83	51	51	22	0	9	4
21	83	51	51	18	0	9	4
22	83	58	51	18	0	103	4
23	92	58	51	15	0	37	4
24	83	80	45	15	0	28	0
25	76	88	39	15	0	24	0
26	76	94	45	15	0	21	0
27	60	94	39	12	0	14	0
28	a 50	94	39	12	0	9	0
29	a 40	85	39	9	0	9	0
30	a 40	77	39	9	0	6	0
31	a 39	------	39	------	0	6	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March 17–31	92	39	67.3	2,000
April	94	34	62.3	3,710
May	80	39	57.9	3,560
June	432	9	47.8	2,840
July	4	0	1.2	74
August	486	0	49.1	3,020
September	9	0	2.1	129
The period	------	------	------	15,300

a Estimated.

REPUBLICAN RIVER AT MAX, NEBR.

LOCATION.—Staff gage in sec. 32, T. 2 N., R. 36 W., three-quarters of a mile south of Max. Zero of gage is 2,873.6 feet above mean sea level.
DRAINAGE AREA.—6,220 square miles.
RECORDS AVAILABLE.—August, 1928, to September, 1931.
EXTREMES.—Maximum discharge during year, 803 second-feet June 13 (gage height, 2.14 feet); no flow during parts of July, August, September.
1928–1931: Maximum discharge, 1,810 second-feet June 4, 1930 (gage height, 2.90 feet); no flow during parts of summer of 1929, 1930, 1931.
REMARKS.—Records good. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	100	168			200	266	686	196	78	0	0	0
2	100	163			220	290	509	190	70	0	0	0
3	163	163	130	140	250	306	498	186	57	2	0	0
4	238	172			255	322	266	176	29	5	0	0
5	358	172			260	306	290	168	552	4	0	0
6	226	158	160	160	265	172	314	154	306	2	0	0
7	186	158	180	160	266	145	290	163	196	1	0	0
8	186	172	196	170	250	196	274	158	136	0	0	0
9	181	202	214	170	266	208	232	150	114	0	0	0
10	163	181	176	180	266	314	232	150	114	0	446	0
11	340	172	176	181	274	314	226	140	226	0	196	0
12	406	172	172	208	282	306	214	150	176	0	127	0
13	298	181	136	181	282	266	202	158	552	0	91	0
14	250	181	109	150	266	266	220	154	244	0	57	0
15	232	172	109	130	282	258	220	132	196	0	31	0
16	214	181			282	250	202	122	158	0	16	0
17	238	172			298	244	190	145	114	0	11	0
18	202	172	100	100	282	258	190	140	104	0	7	41
19	196	190			232	274	190	136	100	0	3	14
20	190	87			238	298	196	136	100	0	1	8
21	190	33			266	298	172	136	100	0	0	6
22	190	100			358	282	172	140	78	0	74	6
23	202	78	110	120	368	274	190	118	74	0	49	14
24	190				314	250	232	114	78	0	33	17
25	196				322	244	250	91	57	0	15	29
26	190				314	266	274	70	41	0	15	17
27	186	110			290	200	250	57	25	0	3	21
28	181		120		290	120	226	53	10	0	1	16
29	181			180	-------	180	226	57	4	0	0	16
30	172				-------	300	238	109	1	0	0	15
31	181	-------			-------	360	-------	96	-------	0	0	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	406	100	211	13,000
November	202	33	146	8,690
December	214	----------	131	8,060
January	208	----------	147	9,040
February	368	200	276	15,300
March	360	120	259	15,900
April	686	172	262	15,600
May	196	53	134	8,240
June	552	1	136	8,090
July	5	0	.5	31
August	446	0	37.9	2,330
September	41	0	7.3	434
The year	686	0	145	105,000

REPUBLICAN RIVER AT CULBERTSON, NEBR.

LOCATION.—Staff gage in sec. 20, T. 3 N., R. 31 W., three-quarters of a mile south of Culbertson and 2 miles above mouth of Frenchman Creek.
DRAINAGE AREA.—8,790 square miles.
RECORDS AVAILABLE.—March to September, 1931.
EXTREMES.—Maximum discharge during year, 490 second-feet Apr. 2 (gage height, 2.6 feet); no flow July 1–3, July 14 to Aug. 6, Sept. 29–30.
REMARKS.—Records fair. Discharge estimated Mar. 26–31. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1931

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	202	202	47	0	0	4
2	------	490	202	47	0	0	4
3	------	325	202	47	0	0	4
4	------	275	160	47	29	0	15
5	------	226	160	68	15	0	15
6	------	325	160	325	15	0	22
7	------	226	160	226	15	109	22
8	------	275	160	181	15	2	10
9	------	226	124	142	15	378	22
10	------	181	124	109	15	22	22
11	250	226	124	109	15	109	10
12	250	226	124	275	4	109	10
13	250	181	124	181	4	58	10
14	202	181	124	350	0	38	10
15	202	181	124	250	0	22	10
16	202	160	94	202	0	10	10
17	202	160	94	160	0	2	10
18	202	160	94	160	0	10	10
19	202	160	94	94	0	10	81
20	202	160	94	94	0	10	22
21	250	124	94	68	0	10	10
22	250	124	94	68	0	10	10
23	250	160	94	47	0	10	22
24	202	202	94	47	0	10	10
25	160	160	68	47	0	10	10
26	140	202	68	47	0	10	10
27	120	202	47	29	0	10	1
28	130	202	29	4	0	2	1
29	150	202	47	4	0	1	0
30	170	250	47	4	0	1	0
31	190	------	68	------	0	1	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March 11–31	250	120	199	8,290
April	490	124	212	12,600
May	202	29	113	6,950
June	350	4	116	6,900
July	29	0	4.6	283
August	378	0	31.1	1,910
September	81	0	13.2	786
The period	------	------	------	37,700

REPUBLICAN RIVER AT McCOOK, NEBR.

LOCATION.—Staff gage in sec. 32, T. 3 N., R. 29 W., at highway bridge half a mile south of McCook.
DRAINAGE AREA.—9,790 square miles.
RECORDS AVAILABLE.—March to September, 1931.
EXTREMES.—Maximum discharge during year, 800 second-feet June 5 (gage height, 4.8 feet); no flow July 1–3, July 16 to Aug. 6.
REMARKS.—Records fair. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1931

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	375	300	88	0	0	24
2	------	705	258	88	0	0	20
3	------	575	258	88	0	0	20
4	------	450	222	88	190	0	20
5	------	450	222	800	110	0	20
6	------	450	222	510	72	0	20
7	364	450	222	300	88	475	20
8	368	450	222	258	88	44	20
9	372	450	222	190	110	32	20
10	375	395	222	160	88	475	20
11	428	345	222	160	72	236	10
12	486	345	222	258	60	202	10
13	428	345	222	258	46	172	10
14	428	300	222	300	20	146	10
15	428	300	222	258	10	100	20
16	428	300	190	258	0	100	20
17	428	300	222	222	0	100	20
18	428	300	222	190	0	80	20
19	428	300	190	134	0	44	44
20	456	300	190	134	0	44	44
21	456	300	190	134	0	44	32
22	428	300	190	190	0	32	24
23	428	300	190	160	0	32	32
24	375	345	160	110	0	44	32
25	375	345	160	88	0	44	32
26	a 320	395	134	60	0	44	32
27	a 250	395	110	56	0	24	32
28	a 270	345	110	6	0	24	32
29	a 290	300	72	4	0	24	24
30	a 320	300	88	2	0	24	24
31	a 350	------	88	------	0	24	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March 7–31	486	250	388	19,200
April	705	300	374	22,300
May	300	72	193	11,900
June	800	2	185	11,000
July	190	0	30.8	1,890
August	475	0	84.2	5,180
September	44	10	23.6	1,400
The period	------	------	------	72,900

a Estimated.

REPUBLICAN RIVER NEAR BLOOMINGTON, NEBR.

LOCATION.—Chain gage in sec. 8, T. 1 N., R. 15 W., 2 miles south of Bloomington. Zero of gage is 1,822.5 feet above mean sea level.

DRAINAGE AREA.—19,000 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 10,400 second-feet Oct. 14 (gage height, 8.38 feet); minimum, 17 second-feet Sept. 16 (gage height, 0.54 foot). 1929–1931: Maximum discharge, 11,000 second-feet June 5, 1930 (gage height, 8.54 feet); minimum, that of Sept. 16, 1931.

REMARKS.—Records good except those for period of ice effect, Jan. 11–31, which were estimated. Minor diversions for irrigation.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	212	602	785	525	713	841	737	926	451	158	38	82
2	210	590	755	530	779	797	755	906	516	516	40	77
3	248	590	737	530	867	779	919	912	373	191	40	75
4	287	596	731	555	952	785	1,140	912	348	158	34	68
5	2,740	596	725	560	803	803	1,510	1,440	332	373	27	54
6	1,910	585	695	575	761	785	1,300	965	3,940	233	29	53
7	2,290	585	701	585	731	749	1,180	890	2,020	271	31	47
8	1,010	575	701	590	707	719	1,110	768	1,180	194	56	38
9	767	565	701	585	695	749	1,070	824	837	208	726	32
10	607	565	701	596	701	725	1,010	965	774	188	910	29
11	535	575	701		690	719	959	732	685	177	1,780	27
12	2,110	585	713		678	731	926	685	639	177	1,170	23
13	9,540	590	725	580	668	743	919	644	575	161	1,580	19
14	7,860	590	656		656	755	867	590	560	171	877	19
15	3,400	560	651		656	767	828	585	550	148	883	19
16	2,390	565	624		662	761	815	570	738	133	738	17
17	1,940	560	585		668	749	791	550	656	124	474	19
18	1,480	550	570	480	678	731	809	535	628	142	368	18
19	1,250	707	570		668	737	822	526	565	130	274	22
20	1,060	2,470	565		668	749	966	511	506	155	244	208
21	959	3,610	560		668	767	893	497	437	181	248	68
22	874	2,200	550		725	867	828	487	389	102	356	184
23	803	1,520	540	500	737	867	767	487	373	82	398	62
24	767	1,330	535		761	841	809	478	1,050	71	328	68
25	731	1,130	540		779	785	809	478	442	64	205	99
26	684	919	510		809	791	822	460	328	56	145	320
27	662	791	495		822	779	867	433	267	56	164	230
28	651	731	490		848	612	880	433	226	53	133	136
29	634	695	495	630	-------	515	874	702	205	47	102	66
30	618	651	505		-------	550	912	639	174	41	99	121
31	607	-------	515		-------	585	-------	565	-------	40	102	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	9,540	210	1,610	99,000
November	3,610	550	906	53,900
December	785	490	623	38,300
January	-------	-------	555	34,100
February	952	656	734	40,800
March	867	515	746	45,900
April	1,510	737	930	55,300
May	1,440	433	680	41,800
June	3,940	174	692	41,200
July	516	40	155	9,530
August	1,780	27	406	25,000
September	320	17	76.7	4,560
The year	9,540	17	676	489,000

REPUBLICAN RIVER AT BOSTWICK, NEBR.

LOCATION.—Chain gage in sec. 23, T. 1 N., R. 8 W., 1 mile southwest of Bostwick.

DRAINAGE AREA.—20,300 square miles.

RECORDS AVAILABLE.—June, 1904, to September, 1914; April to September, 1931. From June, 1896, to November, 1903, station maintained at Superior.

EXTREMES.—Maximum discharge during year not known as stage was much higher during night of May 5 than recorded; minimum, 34 second-feet Sept. 21 (gage height, 0.42 foot).

1904–1914, 1931: Maximum discharge, 24,500 second-feet July 4, 1905 (gage height, 10.4 feet); minimum, 6 second-feet Aug. 27 to Sept. 7, 1913 (gage height, 0.4 foot).

REMARKS.—Records fair. Minor diversions above station.

Daily and monthly discharge, in second-feet, 1931

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	890	716	328	97	143	16	990	666	751	163	830	37
2	-------	910	682	319	560	118	17	870	682	768	150	890	37
3	-------	930	556	642	124	130	18	850	618	863	136	544	37
4	830	930	618	764	88	74	19	830	618	844	130	496	37
5	950	5,470	556	296	78	84	20	910	634	751	150	496	37
6	1,500	1,840	1,070	259	74	84	21	950	666	716	156	309	34
7	1,340	1,180	3,970	480	74	71	22	950	666	787	156	237	170
8	1,270	1,140	2,410	270	84	63	23	870	602	602	188	283	112
9	1,210	1,010	1,760	283	594	66	24	890	634	863	136	560	118
10	1,150	787	1,220	226	2,640	49	25	930	634	863	124	391	136
11	1,090	1,250	1,140	226	1,620	56	26	910	618	602	106	363	435
12	1,030	883	1,360	206	1,520	44	27	870	587	587	97	226	170
13	990	768	944	206	1,450	44	28	890	618	484	93	197	124
14	950	699	944	197	1,190	44	29	890	556	418	84	206	270
15	970	699	768	170	990	44	30	910	556	360	78	170	197
							31	-------	1,030	-------	71	150	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 4–30	1,500	830	992	53,100
May	5,470	556	960	59,000
June	3,970	360	966	57,500
July	764	71	222	13,600
August	2,640	74	566	34,800
September	435	34	102	6,070
The period				224,000

REPUBLICAN RIVER AT SCANDIA, KANS.

LOCATION.—Chain gage in NE. ¼ sec. 17, T. 3 S., R. 4 W., at Scandia, 4 miles below Dry Creek.

DRAINAGE AREA.—23,000 square miles.

RECORDS AVAILABLE.—August, 1919, to July, 1925; August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 10,800 second-feet May 5 (gage height, 9.58 feet); minimum, 16 second-feet Sept. 16 (gage height, 1.42 feet).

1919–1925, 1928–1931: Maximum discharge, 16,700 second-feet June 12, 1923 (gage height, 11.4 feet); minimum, 2 second-feet Oct. 9, 13, 16, 1923 (gage height, 1.50 feet).

Maximum stage known, 14.2 feet June 30, 1915.

REMARKS.—Records good. Operation of power plant at Superior probably causes slight fluctuations during low flow.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	329	[a] 700	675	590	1,100	[a] 700	720	930	820	274	138	150
2	[a] 317	630	720	590	1,040	[a] 700	675	875	590	240	112	126
3	305	630	770	510	875	720	630	1,040	590	236	510	126
4	284	630	720	470	770	720	550	1,040	470	590	250	110
5	381	630	720	720	875	720	[a] 1,010	9,420	550	630	135	108
6	381	720	[a] 720	820	770	770	1,480	3,570	510	340	79	100
7	3,120	675	720	590	675	770	1,480	1,940	1,720	290	75	87
8	1,720	590	720	435	720	770	770	1,370	2,700	400	70	51
9	1,320	550	720	510	720	770	985	1,830	1,940	270	102	54
10	870	550	720	550	630	675	930	1,150	1,320	282	510	45
11	742	550	770	470	675	720	930	1,040	1,040	243	1,600	46
12	700	550	720	510	720	720	930	1,260	1,150	240	1,040	44
13	828	510	770	470	720	720	930	930	1,040	222	1,600	42
14	6,900	510	720		720	550	930	875	770	212	1,260	41
15	6,540	550	675	400	720	590	875	820	930	208	1,480	42
16	4,190	550	630		720	630	1,040	770	675	194	930	24
17	3,420	550	675		675	675	1,150	720	675	187	875	38
18	1,940	510	630	400	630	720	720	720	720	177	985	36
19	1,940	550	630	590	590	720	770	720	720	171	675	36
20	[a] 1,660	770	770	720	630	675	770	675	720	153	510	35
21	1,370	985	630	820	675	[a] 652	875	630	630	162	435	44
22	1,200	3,870	550	720	675	630	1,040	630	590	168	340	630
23	930	2,980	470	820	720	630	930	675	590	138	290	177
24	930	1,940	435	630	720	590	820	590	510	165	315	159
25	930	1,370	400	720	675	770	820	550	435	129	470	187
26	930	1,260	340	770	630	[a] 795	770	550	770	123	370	204
27	770	1,040	400	720	630	820	875	510	630	115	315	315
28	720	820	370	720	675	770	875	1,830	470	100	222	208
29	630	720	400	720	-------	590	820	2,180	315	83	198	150
30	590	630	400	820	-------	550	1,040	770	290	72	171	262
31	770	-------	435	1,100	-------	720	-------	590	-------	75	194	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	6,900	284	1,540	94,500
November	3,870	510	917	54,600
December	770	340	614	37,700
January	1,100	----------	616	37,900
February	1,100	590	728	40,400
March	820	550	695	42,700
April	1,480	550	905	53,800
May	9,420	510	1,330	81,700
June	2,700	290	829	49,300
July	630	72	222	13,700
August	1,600	70	524	32,200
September	630	24	123	7,290
The year	9,420	24	754	546,000

[a] Interpolated.

REPUBLICAN RIVER AT WAKEFIELD, KANS.

LOCATION.—Chain gage in NE. ¼ sec. 5, T. 10 S., R. 4 E., a quarter of a mile north of Wakefield and 25 miles above confluence with Smoky Hill River.
DRAINAGE AREA.—24,700 square miles.
RECORDS AVAILABLE.—June, 1917, to September, 1931.
EXTREMES.—Maximum discharge during year, 7,430 second-feet May 6 (gage height, 8.60 feet); minimum, 8 second-feet Sept. 19 (gage height, 1.78 feet). 1917–1931: Maximum discharge, 20,100 second-feet June 4, 1923 (gage height, 12.86 feet); minimum, that of Sept. 19, 1931.
REMARKS.—Records good except those for period of shifting control, June 20 to Sept. 30, which are fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	399	795	980	727	795	830	663	868	905	465	171	1,360
2	399	795	868	663	980	868	830	868	727	399	399	662
3	316	727	760	795	1,060	868	905	905	632	378	490	835
4	357	727	905	694	1,060	868	868	868	663	442	357	399
5	336	727	905	795	1,060	868	760	1,800	575	765	197	296
6	378	727	905	727	1,060	905	760	4,880	548	730	490	208
7	420	727	868	632	980	830	795	4,400	548	695	336	142
8	442	632	905	694	905	760	905	3,000	496	570	238	118
9	1,560	694	830	663	905	830	1,260	2,020	727	399	336	104
10	1,670	663	905	795	905	1,160	1,370	1,680	1,910	378	872	80
11	1,780	663	905	868	868	905	1,260	1,800	1,780	378	490	67
12	1,160	663	905	795	868	868	1,160	1,370	1,360	357	230	51
13	1,030	632	868	663	868	868	1,060	1,160	1,160	765	990	54
14	872	663	868	380	868	830	980	1,160	1,080	570	835	51
15	835	663	830	470	830	868	980	1,060	1,160	357	872	54
16	6,500	632	727	446	905	795	980	980	910	316	1,160	42
17	4,260	663	727	360	905	760	980	868	835	276	910	19
18	3,280	604	727	[a] 440	830	830	980	830	800	242	990	17
19	2,740	632	727	521	868	795	980	795	695	242	800	15
20	2,260	1,160	727	521	830	795	1,060	727	662	230	835	15
21	2,020	2,620	604	548	830	795	980	727	695	171	765	77
22	1,800	1,580	604	575	868	795	980	727	662	223	630	111
23	1,580	1,680	663	632	905	795	905	694	630	219	542	18
24	1,370	3,000	632	663	830	795	1,060	663	600	160	420	47
25	1,160	2,740	663	760	795	760	980	632	570	132	420	296
26	1,160	2,140	[a] 695	694	868	830	1,060	604	570	122	357	872
27	980	1,580	727	795	868	[a] 795	1,260	575	490	128	336	835
28	980	1,260	663	694	830	760	1,060	632	465	189	399	465
29	980	1,160	663	795	-------	980	905	575	630	114	399	316
30	868	1,060	663	727	-------	663	905	632	542	84	316	276
31	830	-------	604	795	-------	694	-------	1,800	-------	30	296	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	6,500	316	1,440	88,700
November	3,000	604	1,100	65,500
December	980	604	775	47,600
January	868	360	656	40,300
February	1,060	795	898	49,900
March	1,160	663	831	51,100
April	1,370	663	988	58,800
May	4,880	575	1,300	79,900
June	1,910	465	801	47,700
July	765	30	340	20,900
August	1,160	171	544	33,500
September	1,360	15	263	15,700
The year	6,500	15	828	600,000

[a] Interpolated.

KANSAS RIVER AT OGDEN, KANS.

LOCATION.—Chain gage in SE. ¼ sec. 12, T. 11 S., R. 6 E., three-quarters of a mile south of Ogden and 10 miles below junction of Smoky Hill and Republican Rivers.

DRAINAGE AREA.—45,200 square miles.

RECORDS AVAILABLE.—June, 1917, to September, 1931.

EXTREMES.—Maximum discharge during year, 9,750 second-feet May 7 (gage height, 11.60 feet); minimum, 340 second-feet Sept. 20 (gage height, 4.95 feet).

1917–1931: Maximum discharge, 32,600 second-feet June 10, 1923 (gage height, 18.15 feet); minimum, 103 second-feet Oct. 30, 1922.

REMARKS.—Records good except those for periods of shifting control, Jan. 20 to Apr. 25, July 13 to Sept. 4, which are fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,190	1,860	2,500	1,110	1,280	1,200	1,280	2,880	2,500	1,200	660	2,500
2	1,100	1,760	2,170	1,110	1,280	1,280	1,280	2,740	2,740	1,460	1,020	2,060
3	1,100	1,760	2,060	1,110	1,460	1,280	1,460	2,500	2,740	1,110	945	1,460
4	1,020	1,660	1,960	1,200	1,460	1,380	1,560	2,380	2,170	945	945	1,380
5	1,020	1,560	1,960	1,200	1,560	1,280	1,460	2,500	2,060	1,200	870	945
6	1,020	1,560	1,960	1,280	1,560	1,380	1,560	4,420	1,760	1,380	725	795
7	1,020	1,560	1,860	1,200	1,560	1,380	1,460	8,050	1,560	1,380	870	692
8	1,100	1,460	1,860	1,200	1,560	1,280	1,960	6,060	1,460	1,660	795	360
9	1,190	1,460	1,760	1,110	1,560	1,200	2,620	5,500	1,380	2,500	1,280	600
10	2,380	1,460	1,760	1,110	1,380	1,280	3,010	6,260	1,950	3,150	1,200	572
11	3,740	1,460	1,760	1,200	1,380	1,560	2,620	5,320	2,880	3,600	2,500	470
12	5,280	1,460	1,660	1,280	1,380	1,380	2,500	4,080	3,300	3,600	2,170	520
13	4,210	1,380	1,760	1,200	1,380	1,280	2,380	3,300	2,500	3,150	1,460	495
14	2,730	1,460	1,660	760	1,280	1,380	2,380	2,880	2,170	2,880	2,500	470
15	2,490	1,380	1,660	795	1,280	1,380	2,170	2,620	1,860	2,170	3,010	445
16	4,720	1,380	1,560	725	1,280	1,380	2,170	2,380	1,860	1,760	2,740	400
17	7,050	1,380	1,560	834	1,380	1,280	2,060	2,170	1,660	1,460	2,620	422
18	5,140	1,380	1,560	1,110	1,380	1,280	1,960	2,170	1,460	1,380	2,620	422
19	6,060	1,460	1,560	1,110	1,280	1,280	1,960	1,960	1,460	1,200	3,010	400
20	6,060	1,760	1,460	945	1,280	1,280	2,060	1,860	1,460	1,280	2,280	360
21	4,960	2,740	1,460	945	1,280	1,380	2,060	1,860	1,380	1,200	1,860	520
22	4,420	3,150	1,460	1,020	1,280	1,380	1,960	1,860	1,460	1,020	1,660	495
23	3,600	2,740	1,280	1,020	1,380	1,380	1,960	1,760	1,760	1,020	1,560	495
24	3,150	3,300	1,280	1,110	1,280	1,280	2,060	1,760	1,660	870	1,560	445
25	2,880	4,600	1,110	1,110	1,280	1,280	2,380	1,760	1,460	834	1,380	495
26	2,500	5,320	1,200	1,280	1,280	1,280	3,300	1,660	1,280	795	1,200	495
27	2,380	5,500	1,280	1,200	1,280	1,380	3,440	1,660	1,200	795	1,110	1,020
28	2,280	3,910	1,280	1,280	1,280	1,380	3,150	1,560	1,110	760	1,020	1,020
29	2,060	3,150	1,200	1,200	-------	1,280	2,740	1,660	1,200	725	1,020	725
30	2,030	2,740	1,200	1,280	-------	1,560	2,880	1,560	1,380	692	1,660	600
31	1,960	-------	1,200	1,280	-------	1,280	-------	1,560	-------	660	1,760	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	7,050	1,020	2,960	182,000
November	5,500	1,380	2,260	134,000
December	2,500	1,110	1,610	99,200
January	1,280	725	1,110	68,100
February	1,560	1,280	1,370	76,000
March	1,560	1,200	1,330	81,900
April	3,440	1,280	2,190	131,000
May	8,050	1,560	2,930	180,000
June	3,300	1,110	1,830	109,000
July	3,600	660	1,540	94,900
August	3,010	660	1,610	99,200
September	2,500	360	746	44,400
The year	8,050	360	1,790	1,300,000

KANSAS RIVER AT WAMEGO, KANS.

LOCATION.—Chain gage in SE. ¼ sec. 9, T. 10 S., R. 10 E., at Wamego, 3 miles below Antelope Creek.
DRAINAGE AREA.—54,900 square miles.
RECORDS AVAILABLE.—January, 1919, to September, 1931.
EXTREMES.—Maximum discharge during year, 19,100 second-feet Sept. 1 (gage height, 9.4 feet); minimum, 650 second-feet Sept. 18, 19 (gage height, 1.8 feet).
1919–1931: Maximum discharge, 53,400 second-feet May 8, 1930 (gage height, 16.3 feet); minimum, 330 second-feet in October, 1922.
REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,000	2,830	3,880	1,850	1,360	1,850	1,980	4,290	3,490	1,960	890	15,900
2	1,850	2,650	3,490	1,590	1,360	1,850	1,980	3,880	3,110	1,960	1,180	14,100
3	1,700	2,480	3,110	1,590	1,470	1,850	1,980	3,880	5,130	2,610	1,820	7,360
4	1,700	2,480	2,930	1,590	1,590	1,980	1,980	3,680	4,080	2,780	1,540	3,510
5	1,430	2,480	2,930	1,850	1,590	1,980	2,120	3,880	3,300	2,780	1,410	2,270
6	1,430	2,480	2,760	1,850	2,270	1,850	2,430	4,500	2,930	2,960	1,410	1,680
7	1,700	2,320	2,760	1,850	2,120	2,120	2,120	8,300	2,930	2,440	1,960	1,540
8	1,700	2,320	2,760	1,850	2,120	2,120	2,430	10,400	2,760	2,270	1,820	1,410
9	1,700	2,320	2,760	1,850	1,980	2,120	2,590	8,540	2,590	2,270	5,680	1,180
10	2,000	2,160	2,760	1,850	1,980	1,980	3,680	7,360	2,590	3,140	5,270	1,180
11	3,420	2,160	2,590	1,850	2,120	1,980	3,680	7,360	3,300	4,080	3,320	1,080
12	4,630	2,160	2,590	1,720	2,120	1,850	3,490	6,440	5,780	3,700	4,870	1,080
13	5,900	2,160	2,430	1,850	2,120	1,850	3,300	5,340	4,870	4,080	3,700	980
14	5,050	2,160	2,430	1,720	2,120	1,850	3,110	4,920	4,470	3,700	2,780	800
15	4,630	2,000	2,430	1,720	2,120	2,120	3,110	4,290	3,700	2,960	4,870	800
16	5,470	2,000	2,270	1,590	1,980	2,430	2,930	3,880	3,510	2,960	4,870	800
17	7,220	2,160	2,270	1,470	2,120	2,120	3,490	3,490	3,320	2,310	3,140	720
18	7,000	2,160	2,120	1,590	2,120	2,120	3,110	3,110	3,140	2,110	3,320	550
19	7,000	2,320	2,120	1,470	2,120	2,120	3,110	3,110	2,960	1,960	3,320	650
20	7,220	3,620	2,120	1,590	1,980	2,120	3,300	2,760	2,780	1,680	3,140	650
21	6,780	3,820	2,120	1,590	1,980	2,120	3,110	2,590	2,270	1,540	2,610	800
22	5,470	6,780	1,980	1,590	1,980	2,120	3,300	2,590	1,960	1,540	2,610	890
23	4,630	8,120	1,980	1,470	1,950	1,980	3,880	2,590	2,110	1,680	2,440	890
24	4,630	5,560	1,850	1,470	2,120	1,980	3,490	2,590	2,960	1,380	1,960	890
25	4,220	5,560	1,850	1,470	2,120	1,980	3,300	2,590	3,320	1,410	1,960	2,110
26	3,820	6,220	1,720	1,470	2,120	1,980	3,680	2,590	2,960	1,410	1,960	10,700
27	3,420	6,000	1,720	1,470	1,980	1,980	5,560	2,430	2,960	1,410	1,680	9,080
28	3,420	6,000	1,850	1,470	1,850	2,120	6,000	2,430	2,610	1,410	1,290	4,870
29	3,020	5,340	1,850	1,470	-------	2,120	5,130	3,110	2,270	1,410	1,180	3,320
30	2,830	4,710	1,850	1,360	-------	1,980	4,710	4,920	1,960	1,180	1,290	1,960
31	2,830	-------	1,850	1,470	-------	2,120	-------	6,440	-------	800	1,960	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	7,220	1,430	3,870	238,000
November	8,120	2,000	3,520	209,000
December	3,880	1,720	2,390	147,000
January	1,850	1,360	1,630	100,000
February	2,270	1,360	1,960	109,000
March	2,430	1,850	2,020	124,000
April	6,000	1,980	3,270	195,000
May	10,400	2,430	4,460	274,000
June	5,780	1,960	3,200	191,000
July	4,080	800	2,270	140,000
August	5,680	890	2,620	161,000
September	15,900	650	3,130	186,000
The year	15,900	650	2,870	2,070,000

KANSAS RIVER AT TOPEKA, KANS.

LOCATION.—Chain gage in Topeka, about 1½ miles above Soldier Creek.
DRAINAGE AREA.—56,400 square miles.
RECORDS AVAILABLE.—April to August, 1904; June, 1917, to September, 1931.
EXTREMES.—Maximum discharge during year, 26,700 second-feet Sept. 2 (gage height, 13.7 feet); minimum, 940 second-feet Sept. 19, 20 (gage height, 2.3 feet).

1917–1931: Maximum discharge, 73,700 second-feet June 10, 1923 (gage height, 21.5 feet); minimum, 480 second-feet in January, 1925.

REMARKS.—Records good except those for period of ice effect, Jan. 14–19, and for period of shifting control, Oct. 1 to Dec. 18, which are fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,040	2,500	4,250	1,980	1,980	1,840	1,980	5,270	7,750	1,980	1,040	7,330
2	2,040	2,500	3,710	1,980	1,980	1,840	1,980	4,870	7,960	3,510	1,570	26,700
3	1,750	2,500	3,530	1,980	1,980	1,840	2,120	4,670	5,470	3,140	3,700	15,400
4	1,620	2,340	3,350	1,980	1,980	1,840	2,120	4,470	5,070	2,430	3,140	7,120
5	1,750	2,190	3,010	1,980	2,120	1,840	2,120	4,080	4,270	3,320	1,980	4,670
6	1,750	2,190	3,010	1,980	2,120	1,840	2,120	5,270	3,510	2,960	1,700	2,780
7	1,620	2,040	2,670	2,120	2,270	1,980	2,430	4,670	2,960	3,700	2,960	2,120
8	1,620	2,040	2,670	2,120	2,270	1,980	2,270	8,610	2,600	2,430	2,120	1,700
9	1,750	2,040	2,670	1,980	2,270	1,980	2,430	10,800	2,960	1,980	1,840	1,440
10	1,750	2,040	2,670	1,980	2,120	2,120	2,600	9,050	3,140	2,120	9,710	1,310
11	1,750	2,040	2,500	1,980	1,980	2,120	3,320	8,390	3,510	2,120	7,120	1,160
12	3,530	1,890	2,500	1,980	1,980	1,980	3,700	8,390	5,270	3,890	3,700	1,160
13	4,630	1,890	2,500	1,980	2,120	2,270	3,320	7,330	7,540	4,270	4,670	990
14	5,770	1,890	2,500		2,120	2,600	3,320	6,280	5,270	4,470	4,080	960
15	4,630	1,890	2,500		2,120	2,430	2,960	5,670	4,670	4,080	2,780	990
16	4,200	2,040	2,340	1,800	1,980	2,270	3,140	5,070	4,270	4,670	3,320	960
17	5,770	2,670	2,340		1,980	2,270	2,960	4,470	4,080	3,510	4,270	960
18	7,770	2,190	2,340		1,980	2,430	2,960	4,080	3,700	2,600	3,510	960
19	6,570	2,040	2,340		2,120	2,270	2,960	4,080	3,320	2,120	3,320	940
20	5,970	5,200	2,340	2,120	2,120	2,270	2,960	3,700	2,780	2,120	4,670	940
21	6,770	7,970	2,340	1,700	1,980	2,120	4,270	3,510	2,600	1,570	3,320	1,840
22	6,370	6,770	2,340	1,980	1,980	2,120	4,670	3,510	2,600	1,440	2,600	7,330
23	5,390	7,170	2,120	2,120	1,840	2,120	3,510	3,510	2,120	1,310	2,780	3,140
24	4,820	7,170	2,270	2,270	1,840	2,120	4,080	3,510	2,120	1,980	2,430	1,840
25	4,440	5,010	2,120	2,120	1,980	1,980	3,890	3,510	2,780	1,570	1,980	1,570
26	3,890	5,200	2,120	1,980	2,120	1,980	4,470	3,320	3,510	1,440	1,840	2,270
27	3,530	5,770	2,120	1,840	2,120	1,980	5,070	3,140	3,320	1,440	1,840	14,500
28	3,180	5,970	2,120	1,980	1,840	1,980	5,670	2,960	2,960	1,310	1,310	12,400
29	3,010	5,770	2,120	1,980	-------	1,980	6,490	3,140	2,600	1,090	1,230	5,770
30	2,840	4,820	2,120	2,120	-------	1,980	5,670	3,140	2,270	1,040	1,160	3,710
31	2,670	-------	2,120	1,980	-------	1,980	-------	3,890	-------	990	1,160	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	7,770	1,620	3,720	228,000
November	7,970	1,890	3,590	214,000
December	4,250	2,120	2,570	158,000
January	2,270	1,700	1,970	121,000
February	2,270	1,840	2,050	114,000
March	2,600	1,840	2,080	128,000
April	6,490	1,980	3,390	201,000
May	10,800	2,960	5,040	310,000
June	7,960	2,120	3,900	232,000
July	4,670	990	2,470	152,000
August	9,710	1,040	3,000	184,000
September	26,700	940	4,500	268,000
The year	26,700	940	3,190	2,310,000

KANSAS RIVER AT BONNER SPRINGS, KANS.

LOCATION.—Chain gage in NW. ¼ sec. 32, T. 11 S., R. 23 E., at Bonner Springs, half a mile below Wolf Creek.
DRAINAGE AREA.—59,600 square miles.
RECORDS AVAILABLE.—July, 1917, to September, 1931.
EXTREMES.—Maximum discharge during year, 38,800 second-feet Sept. 2 (gage height 13.18 feet); minimum, 1,420 second-feet Aug. 31.
1917–1931: Maximum discharge, 110,000 second-feet Apr. 21, 1929 (gage height, 22.20 feet); minimum, 650 second-feet during January, 1925.
REMARKS.—Records good except those for periods of shifting control, Nov. 21 to Dec. 3, Jan. 6–25, Aug. 3, which are fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,080	2,690	6,470	2,080	2,470	2,330	2,470	6,150	5,220	2,690	1,610	1,610
2	2,080	2,690	5,470	2,080	2,620	2,330	2,620	5,660	7,280	2,690	1,950	27,600
3	1,950	2,690	4,750	2,080	2,620	2,330	2,620	5,420	7,280	2,230	6,730	31,300
4	1,950	2,690	5,220	2,080	2,330	2,200	2,620	5,180	5,470	2,430	11,000	14,100
5	1,830	2,530	4,300	2,080	2,330	2,200	2,620	4,950	5,220	2,640	11,000	7,860
6	1,830	2,370	4,080	2,080	2,470	2,200	2,620	4,720	4,750	2,160	11,600	5,720
7	1,950	2,530	3,640	2,080	2,620	2,330	2,620	5,420	4,980	2,220	11,600	4,520
8	1,830	2,530	3,430	2,080	2,620	2,470	2,620	5,660	3,860	2,080	5,970	3,640
9	1,720	2,370	3,230	2,080	2,620	2,330	2,620	9,530	3,430	2,040	3,640	3,230
10	1,720	2,370	3,230	2,080	2,470	2,470	2,620	10,800	3,040	1,690	7,000	2,860
11	1,720	2,370	3,230	2,200	2,620	2,470	2,770	8,460	3,860	1,690	12,300	2,530
12	1,830	2,370	3,040	2,200	2,470	2,620	3,100	7,860	6,220	2,040	7,860	2,530
13	1,830	2,220	3,040	2,200	2,470	2,930	3,460	7,860	8,460	1,690	4,980	2,220
14	3,860	2,220	2,860	2,200	2,330	3,650	3,460	6,730	7,860	2,040	4,750	2,220
15	4,980	2,220	2,860	2,200	2,470	3,850	3,280	6,220	5,970	1,860	4,520	2,080
16	9,390	2,220	2,860	1,970	2,470	3,460	3,280	5,470	5,220	1,520	3,430	1,950
17	23,200	2,370	2,690	1,870	2,470	3,100	3,280	4,980	7,570	1,300	3,640	1,830
18	8,460	2,860	2,690	1,970	2,470	2,930	3,460	5,220	4,980	1,860	4,080	1,830
19	7,000	3,040	2,860	2,200	2,330	2,930	3,460	8,460	4,080	2,040	4,080	1,830
20	6,220	3,230	2,690	2,200	2,470	3,100	3,280	6,470	3,640	1,230	5,970	1,720
21	5,720	13,000	2,690	2,080	2,470	2,770	4,270	4,750	3,430	1,040	4,980	1,950
22	6,220	10,300	2,530	2,080	2,470	2,620	6,940	4,750	3,230	1,040	3,640	8,770
23	5,720	8,460	2,530	2,200	2,470	2,620	6,410	4,980	2,860	2,370	3,040	16,300
24	5,220	10,300	2,370	2,330	2,330	2,620	5,420	4,520	2,690	2,220	2,860	6,730
25	4,520	7,280	2,530	2,330	2,330	2,620	4,950	4,080	2,690	2,220	2,370	4,300
26	4,300	5,720	2,370	2,470	2,330	2,330	5,420	3,860	2,860	2,220	2,220	5,470
27	4,080	5,970	2,370	2,470	2,330	2,470	6,410	3,640	3,430	2,080	2,220	7,280
28	3,640	6,220	2,220	2,470	2,330	2,470	6,670	3,430	3,430	2,080	1,950	15,000
29	3,230	6,470	2,220	2,200	-------	2,470	6,670	3,230	3,230	1,950	1,720	10,700
30	3,230	6,470	2,370	2,330	-------	2,470	6,940	4,520	3,040	1,720	1,610	6,220
31	3,040	-------	2,370	2,470	-------	2,620	-------	4,300	-------	1,720	1,420	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	23,200	1,720	4,400	270,000
November	13,000	2,220	4,360	259,000
December	6,470	2,220	3,200	197,000
January	2,470	1,870	2,180	134,000
February	2,620	2,330	2,460	136,000
March	3,850	2,200	2,660	163,000
April	6,940	2,470	3,970	236,000
May	10,800	3,230	5,720	352,000
June	8,460	2,690	4,640	276,000
July	8,160	1,720	3,120	192,000
August	12,300	1,420	5,020	309,000
September	31,300	1,610	6,860	408,000
The year	31,300	1,420	4,050	2,930,000

NORTH FORK OF ARIKAREE RIVER AT COLORADO-NEBRASKA LINE

LOCATION.—Staff gage in sec. 10, T. 1 N., R. 42 W., 100 feet east of Colorado-Nebraska line.
DRAINAGE AREA.—395 square miles.
RECORDS AVAILABLE.—March to September, 1931.
EXTREMES.—Maximum discharge during year, 190 second-feet Apr. 1 (estimated); minimum, 4 second-feet July 30, 31 (gage height, 1.75 feet).
REMARKS.—Records fair. Small diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1931

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	a190	61	11	9	7	11
2	------	92	58	11	8	8	13
3	------	87	53	11	8	7	16
4	------	86	54	13	10	7	14
5	------	97	56	47	9	11	13
6	------	101	49	28	9	10	11
7	------	97	46	19	8	8	9
8	------	99	39	15	7	8	10
9	------	97	41	19	7	41	10
10	------	92	47	19	7	30	8
11	------	91	44	38	7	21	7
12	------	90	39	33	8	19	7
13	------	88	38	31	8	12	8
14	------	87	37	31	7	8	9
15	------	86	34	36	8	8	13
16	------	84	32	42	14	7	13
17	------	86	26	45	13	7	15
18	78	82	27	44	14	7	16
19	78	70	11	31	8	8	19
20	83	68	6	26	a7	7	23
21	81	67	8	19	a7	8	28
22	78	66	8	17	7	8	34
23	75	70	7	12	8	8	37
24	71	71	6	8	8	8	39
25	77	70	6	8	7	11	41
26	a70	68	9	7	8	13	31
27	a50	66	9	7	7	7	28
28	a60	64	9	6	7	7	23
29	a70	67	9	6	7	8	21
30	a70	59	9	6	4	9	23
31	a90	------	8	------	4	11	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March 18-31	90	50	73.6	2,040
April	190	59	84.6	5,030
May	61	6	28.6	1,760
June	47	6	21.6	1,290
July	14	4	8.1	498
August	41	7	10.9	670
September	41	7	18.3	1,090
The period	------	------	------	12,400

a Estimated or interpolated.

FRENCHMAN CREEK NEAR HAMLET, NEBR.

LOCATION.—Staff gage in sec. 19, T. 5 N., R. 34 W., 1 mile east of Hamlet. Zero of gage is 2,798.43 feet above mean sea level.
DRAINAGE AREA.—1,420 square miles.
RECORDS AVAILABLE.—April, 1929, to September, 1931.
EXTREMES.—Maximum discharge during year, 1,080 second-feet Aug. 9 (gage height, 10.0 feet); minimum, 49 second-feet Nov. 21 (gage height, 1.18 feet).
1929–1931: Maximum and minimum discharges, those of 1931.
REMARKS.—Records good. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	73	89	a85	113	127	120	168	102	93	58	64	79
2	80	87	a90	111	120	121	166	103	94	72	74	72
3	85	83	a85	109	113	118	159	100	91	67	77	79
4	90	89	a80	113	116	123	150	98	98	110	73	79
5	91	98	a85	111	120	124	149	96	101	95	75	79
6	95	85	a100	109	124	121	141	98	100	86	73	83
7	100	85	115	115	122	122	140	100	98	89	137	87
8	100	89	114	113	120	120	139	103	96	87	99	76
9	92	85	113	114	119	120	136	103	97	86	927	71
10	88	84	114	114	118	114	129	99	92	75	183	76
11	92	86	117	115	116	119	124	95	100	68	132	72
12	106	92	114	114	118	117	114	92	100	76	123	77
13	101	90	115	a100	118	119	113	94	96	75	119	73
14	104	88	115	a95	115	117	106	98	100	73	110	63
15	99	92	115	a90	117	114	104	95	105	55	99	77
16	95	87	116	a90	117	115	100	92	99	76	92	67
17	97	86	110	a100	117	113	99	94	100	63	95	80
18	95	85	110	117	121	112	99	96	93	73	96	89
19	93	98	110	110	118	111	87	91	94	67	83	79
20	86	70	109	109	114	111	95	87	91	60	83	86
21	92	49	109	113	116	108	89	91	88	73	87	83
22	95	62	115	113	122	106	83	86	88	67	118	75
23	92	68	103	110	127	118	97	80	84	72	92	66
24	89	82	110	114	121	113	99	89	81	75	101	79
25	89		105	116	119	116	100	79	83	70	95	77
26	92		104	117	120	123	105	135	81	70	87	81
27	88		100	114	120	a100	115	133	71	67	75	82
28	90	80	108	118	120	a80	110	103	67	67	82	86
29	88		109	122	------	a90	109	102	64	60	91	86
30	91		103	121	------	a100	108	99	64	75	86	83
31	91		106	124	------	124	------	97	------	59	87	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	106	73	92.2	5,670
November	98	49	83.0	4,940
December	117	80	106	6,520
January	124	90	111	6,820
February	127	113	119	6,610
March	124	80	114	7,010
April	168	83	118	7,020
May	135	79	97.7	6,010
June	105	64	90.3	5,370
July	110	55	73.1	4,490
August	927	64	123	7,560
September	89	63	78.1	4,650
The year	927	49	100	72,700

a Estimated.

FRENCHMAN CREEK AT CULBERTSON, NEBR.

LOCATION.—Staff gage in sec. 17, T. 3 N., R. 31 W., at Culbertson.
DRAINAGE AREA.—2,800 square miles.
RECORDS AVAILABLE.—March to September, 1931.
EXTREMES.—Maximum discharge during year, 420 second-feet Aug. 10 (gage height, 3.9 feet); minimum, 22 second-feet June 29 to July 3 (gage height, 1.3 feet).
REMARKS.—Records fair. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1931

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	172	142	52	22	47	47
2	------	188	142	52	22	47	47
3	------	204	142	52	22	47	47
4	------	204	142	32	32	47	37
5	------	204	142	63	52	47	47
6	------	220	128	42	68	47	47
7	------	204	128	42	58	297	37
8	------	204	128	52	68	119	37
9	------	180	128	42	80	264	37
10	------	164	128	42	68	420	37
11	142	156	128	32	69	297	27
12	156	142	128	52	47	232	27
13	156	135	114	63	47	172	27
14	156	135	114	86	37	145	27
15	156	114	114	74	27	132	27
16	156	107	114	74	42	119	27
17	156	107	114	74	42	119	27
18	142	86	114	74	42	106	27
19	142	86	114	63	42	93	37
20	156	93	114	52	42	81	37
21	142	93	114	52	47	64	27
22	142	114	114	52	47	52	27
23	142	114	86	42	47	64	37
24	142	121	86	42	47	87	37
25	142	121	74	32	47	75	58
26	[a] 120	128	74	32	47	64	58
27	[a] 100	128	63	32	47	52	58
28	[a] 90	149	52	32	47	52	58
29	[a] 100	135	52	22	47	64	58
30	[a] 125	149	63	22	47	64	47
31	[a] 150	------	63	------	47	64	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March 11-31	156	90	139	5,790
April	220	86	145	8,630
May	142	52	108	6,640
June	86	22	49.2	2,930
July	80	22	46.6	2,870
August	420	47	115	7,070
September	58	27	39.2	2,330
The period				36,300

[a] Estimated.

SAPPA CREEK NEAR OBERLIN, KANS.

LOCATION.—Staff gage in NW. ¼ sec. 6, T. 3 S., R. 29 W., 1½ miles east of Oberlin.
DRAINAGE AREA.—1,050 square miles.
RECORDS AVAILABLE.—March, 1929, to September, 1931.
EXTREMES.—Maximum discharge during year, 1,170 second-feet Aug. 10 (gage height, 14.20 feet); minimum, 0.5 second-foot Aug. 7 (gage height, 0.30 foot).
1929–1931: Maximum discharge, 1,380 second-feet June 19, 1930 (gage height, 15.8 feet); minimum, 0.1 second-foot during 1929 and 1930.
REMARKS.—Records fair. Stage discharge relation affected by ice Dec. 18–21, Jan. 11–23.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2	13	17	15	9	13	13	20	9	4	1	9
2	2	12	16	15	9	11	21	18	9	3	1	8
3	11	12	16	14	8	11	30	18	9	3	1	8
4	11	13	15	14	8	12	36	18	9	4	1	8
5	11	12	15	13	8	13	21	18	8	4	1	7
6	9	12	15	13	8	14	52	17	8	3	1	6
7	7	12	14	12	8	15	64	15	44	3	1	6
8	6	12	14	10	8	21	56	15	22	3	24	5
9	5	11	14	12	8	18	48	16	15	3	804	5
10	5	12	13	8	8	15	40	17	21	3	960	5
11	76	11	13		8	13	34	14	22	2	121	5
12	852	11	13	7	8	11	36	14	22	2	76	4
13	556	11	13		2	11	33	13	22	2	60	4
14	142	11	13		1	10	27	13	22	2	52	3
15	84	11	13		1	10	24	13	22	2	36	3
16	68	11	14	5	1	10	20	13	16	2	30	3
17	52	11	15			10	20	12	15	6	27	3
18	40	11				10	21	11	14	2	21	5
19	33	13		7		10	21	11	12	2	17	4
20	30	76	10		6	18	21	11	10	2	15	3
21	27	30				24	21	11	11	2	14	3
22	24	24	13	10		21	21	11	9	2	13	3
23	21	18	14			17	21	11	8	1	13	3
24	20	15	15	11	11	15	22	10	7	1	13	3
25	18	18	18	13	11	16	22	10	6	1	13	3
26	17	20	21	9	11	17	22	10	5	1	14	3
27	16	21	24	9	11	18	21	10	5	1	13	2
28	15	21	27	15	11	17	21	13	5	1	13	2
29	14	20	11	11	-------	15	21	10	4	1	13	2
30	13	18	11	7	-------	14	20	10	4	1	11	2
31	13	-------	11	7	-------	14	-------	10	-------	1	10	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	852	2	71.0	4,360
November	76	11	16.8	998
December	27	----------	14.5	889
January	15	----------	9.68	595
February	11	1	7.14	397
March	24	10	14.3	881
April	64	13	28.3	1,690
May	20	10	13.3	819
June	44	4	13.2	783
July	6	1	2.26	139
August	960	1	77.1	4,740
September	9	2	4.33	258
The year	960	1	22.9	16,500

BEAVER CREEK AT LUDELL, KANS.

LOCATION.—Staff gage in SW. ¼ sec. 30, T. 2 S., R. 32 W., on Chicago, Burlington & Quincy Railroad bridge at Ludell, 6 miles below mouth of Little Beaver Creek.

DRAINAGE AREA.—1,460 square miles.

RECORDS AVAILABLE.—March, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 88 second-feet June 5 (gage height 5.80 feet); minimum, 0.1 second-foot during several days in September. 1929–1931: Maximum gage height, 15.0 feet Sept. 8, 1929 (discharge not determined); minimum discharge, that of September, 1931.

REMARKS.—Records good except those for period of shifting control, Oct. 1 to Nov. 10, and those for period of ice effect, Dec. 16 to Feb. 5, which are estimated.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	6	10			10	3	14	10	3	1	0.4
2	11	6	10			10	3	14	10	3	1	.4
3	21	7	10		7	10	4	14	10	3	1	.4
4	16	7	10			10	7	13	9	3	1	.4
5	25	7	10			10	18	13	75	3	1	.4
6	18	7	10		8	10	26	13	21	3	1	.4
7	14	7	10		8	10	24	13	10	3	1	.3
8	13	7	10	4	8	10	21	13	10	3	1	.3
9	11	7	10		8	10	18	13	6	3	19	.2
10	11	7	10		8	11	18	13	8	3	11	.2
11	21	7	10		8	12	19	12	8	3	7	.2
12	30	7	10		8	11	17	12	14	2	6	.2
13	30	8	10		8	11	16	11	20	3	5	.2
14	32	8	10		8	11	16	11	16	2	4	.1
15	16	8	10		8	11	15	12	11	2	4	.1
16	13	7			9	11	16	12	9	2	3	.1
17	11	8		3	8	11	16	12	8	2	2	.1
18	11	7	5		8	11	16	11	7	2	1	.1
19	10	7			8	11	16	11	7	2	1	.1
20	8	7			8	14	15	11	6	2	1	.1
21	8	10			8	14	14	11	6	2	1	.1
22	8	8			10	12	14	11	6	2	1	.1
23	8	8	4	4	10	12	14	11	6	2	1	.1
24	8	10			10	12	14	10	5	2	1	.1
25	8	11			10	12	15	10	5	2	1	.1
26	7	10			10	12	16	10	4	2	1	.1
27	7	1	3		10	12	15	11	4	1	1	.1
28	7	4		5	10	12	15	10	4	1	.5	.1
29	7	10			------	10	15	10	4	1	.5	.1
30	7	10	3		------	7	15	10	4	1	.5	.1
31	6	------	3		------	4	------	10	------	1	.5	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	32	6	13.4	821
November	11	1	7.5	444
December	10	----------	6.9	422
January	----------	----------	4.0	246
February	10	----------	8.4	464
March	14	4	10.8	662
April	26	3	15.0	895
May	14	10	11.7	718
June	75	4	10.8	641
July	3	1	2.2	137
August	19	.5	2.61	161
September	.4	.1	.19	11
The year	75	.1	7.77	5,620

PRAIRIE DOG CREEK NEAR WOODRUFF, KANS.

LOCATION.—Chain gage in NW. ¼ sec. 9, T. 1 S., R. 19 W., 3 miles west of Woodruff.

DRAINAGE AREA.—900 square miles.

RECORDS AVAILABLE.—March, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 1,890 second-feet Oct. 12 (gage height, 19.30 feet); minimum, 4 second-feet Aug. 4, 7, 8 (gage height, 1.93 feet).

1929–1931: Maximum discharge, 2,830 second-feet July 25, 1929 (gage height, 25.02 feet); minimum, less than 4 second-feet during period June 1–10, 1930.

REMARKS.—Records good except those for period of missing gage-height records, Nov. 26 to Dec. 6, and for period of shifting control, April to September, which are fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7	18		22	20	16	16	26	21	10	6	24
2	7	18		21	21	17	17	26	21	10	5	22
3	7	18	* 24	21	21	17	21	26	21	11	4	21
4	430	18		21	21	17	22	26	20	10	4	21
5	866	18		23	37	17	21	26	180	11	4	20
6	208	18	25	23	32	16	21	24	26	12	4	20
7	45	17	28	21	16	14	26	24	17	10	4	20
8	24	17	18	21	21	14	24	24	16	10	4	20
9	18	17	21	23	22	15	24	24	16	9	505	18
10	17	18	24	21	20	16	22	24	15	9	1,260	17
11	16	17	24	21	27	17	21	24	15	9	732	17
12	1,720	17	24	22	22	18	21	24	15	9	620	16
13	1,200	17	22	22	18	18	20	22	15	8	166	15
14	410	17	22	22	17	17	18	22	15	8	77	15
15	238	17	22	21	18	16	20	22	32	8	53	15
16	134	18	22	20	17	16	20	22	24	8	43	15
17	67	17	20	21	16	16	21	22	16	8	35	15
18	47	17	21	21	16	16	20	22	15	8	32	15
19	39	140	21	22	16	16	49	22	15	8	30	16
20	30	620	22	22	16	17	116	22	15	8	26	17
21	28	246	24	22	16	18	37	22	14	8	24	57
22	27	128	24	22	17	18	35	22	14	8	104	33
23	24	77	26	22	18	18	32	22	14	8	30	28
24	24	27	26	22	18	18	30	22	14	8	27	33
25	22	24	27	22	17	18	28	22	14	7	116	27
26	21		24	22	17	18	27	22	13	7	57	21
27	21		22	22	16	17	26	22	11	7	35	20
28	21	* 24	24	22	16	17	26	22	11	7	33	18
29	20		22	21	------	16	26	22	11	7	33	17
30	20		22	21	------	15	26	21	10	7	28	17
31	18	------	22	22	------	15	------	20	------	6	27	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,720	7	186	11,500
November	620	17	56.5	3,360
December	28	18	23.2	1,430
January	26	20	22.5	1,380
February	37	16	19.6	1,090
March	18	14	16.6	1,020
April	116	16	27.8	1,650
May	26	20	23.0	1,410
June	180	10	21.9	1,300
July	12	6	8.52	524
August	1,260	4	133	8,190
September	57	15	21.0	1,250
The year	1,720	4	47.1	34,100

* Interpolated.

SMOKY HILL RIVER AT JEROME, KANS.

LOCATION.—Staff gage in NW. ¼ sec. 23, T. 15 S., R. 29 W., half a mile south of Jerome and 5 miles above Plum Creek.

DRAINAGE AREA.—3,900 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 3,450 second-feet Oct. 12 (gage height, 8.80 feet); minimum, about 0.2 second-foot several days in September (gage height, 1.52 feet).

1928–1931: Maximum discharge, 5,500 second-feet June 4, 1930 (gage height 9.9 feet); minimum, that of September, 1931.

REMARKS.—Records fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2	53	36		16	19	32	48	22	11	5	1.0
2	2	25	34		15	22	35	46	22	11	5	1.0
3	2	14	39		14	22	35	43	20	10	3	.8
4	162	13	40		14		32	39	20	9	3	.8
5	640	12	39		15		70	37	20	1,050	2	.8
6	42		37		16		70	35	20	132	3	.5
7	26		34	20	16		67	39	22	63	3	.5
8	20	8	36		16		70	37	20	27	3	.5
9	19		37		14		75	35	20	27	5	.5
10	14		36		14	20	90	28	18	21	7	.4
11	42		34		14		84	28	18	18	30	.4
12	3,450		25		15		75	28	28	15	19	.4
13	353	7	24		16		70	28	28	14	13	.2
14	162		34		14		62	28	313	10	8	.2
15	201		34		15		62	26	244	6	8	.2
16	125		25	15	16	20	60	26	62	6	7	.3
17	100	8			15	20	55	26	50	6	5	.3
18	92		15		14	22	52	26	39	27	5	.3
19	77	92			13	23	50	25	28	28	5	.2
20	64	92			15	25	48	25	28	14	5	.2
21	60	42			16	22	46	25	35	9	3	.4
22	53	39			22	30	46	48	25	7	3	.4
23	53	37		10	20	28	43	46	25	7	3	.3
24	116	36			22	25	62	39	22	6	8	.3
25	116	39	25		20	26	67	28	20	6	3	.9
26	47	37			19	28	60	26	18	6	2	2.0
27	42	39		15	19	26	62	26	16	6	2	.9
28	39	44			19	25	50	25	14	5	2	.9
29	37	36				26	48	25	13	5	1	.8
30	36	36		114		28	48	25	13	5	1	.8
31	53			78		30		25		5	2	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	3,450	2	202	12,400
November	92		26.2	1,560
December	40		28.7	1,760
January	114		21.5	1,320
February	22	13	16.2	900
March	30		22.8	1,400
April	90	32	57.5	3,420
May	48	25	32.0	1,970
June	313	13	41.4	2,470
July	1,050	5	50.7	3,120
August	30	1	5.61	345
September	2	.2	.573	34.1
The year	3,450	.2	42.4	30,700

SMOKY HILL RIVER AT PFEIFER, KANS.

LOCATION.—Chain gage in SW. ¼ sec. 6, T. 15 S., R. 16 W., on highway bridge 1 mile east of Pfeifer.

DRAINAGE AREA.—6,070 square miles.

RECORDS AVAILABLE.—March, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 5,320 second-feet Oct. 13 (gage height, 9.35 feet); minimum, 3 second-feet Sept. 21, 25.

1929–1931: Maximum discharge, 6,750 second-feet May 11, 1929 (gage height, 11.24 feet); minimum not determined.

REMARKS.—Records fair. Period of ice effect Dec. 22 to Jan. 25.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	106	153		51	44	245	141	97	79	27	11
2	42	104	141		48	48	288	139	57	87	27	14
3	52	85	132		41	48	430	134	50	91	30	17
4	58	89	127		44	48	365	139	22	109	51	20
5	2,650	93	113	60	48	48	349	125	85	113	44	20
6	1,870	93	109		44	67	349	780	81	109	41	6
7	1,100	89	116		37	37	349	397	81	104	37	12
8	990	85	109		41	34	288	288	77	141	37	10
9	685	81	109		44	20	245	259	77	132	37	10
10	685	81	109		41	27	217	204	77	273	41	4
11	685	77	104	55	44	37	190	190	81	123	34	4
12	685	73	109		44	20	178	178	77	87	30	5
13	5,320	77	100		41	22	165	178	85	83	20	5
14	2,020	69	95		48	27	134	178	97	55	23	4
15	1,040	69	100		44	30	153	165	830	63	20	5
16	780	73	100		44	37	165	139	430	59	23	6
17	570	69	91		46	37	141	139	310	55	23	4
18	118	65	87		46	34	130	134	190	59	27	4
19	165	69	41		46	34	125	130		55	23	4
20	217	830	34	50	50	59	570	125		59	20	4
21	204	1,160	37		50	97	430	139	140	67	23	3
22	204	499			46	85	273	141		59	20	5
23	178	499			50	65	231	139		55	20	8
24	153	499			50	61	204	134	93	51	23	4
25	141	464		53	50	50	190	130	81	51	23	3
26	153	430	80	61	46	57	190	125	89	44	27	4
27	102	365		57	46	65	178	130	89	44	23	5
28	120	288		61	50	73	141	125	85	44	23	6
29	130	165		69	------	77	153	153	87	37	23	6
30	120	165		65	------	93	141	141	81	34	20	6
31	125	------		61	------	120	------	134	------	34	20	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	5,320	40	690	42,500
November	1,160	65	230	13,700
December	153	34	94.1	5,780
January	69	----------	56.0	3,450
February	51	37	45.7	2,540
March	120	20	51.6	3,180
April	570	125	240	14,300
May	780	125	182	11,200
June	830	22	137	8,150
July	273	34	79.2	4,870
August	51	20	27.7	1,710
September	20	3	7.30	434
The year	5,320	3	154	112,000

SMOKY HILL RIVER AT ELLSWORTH, KANS.

LOCATION.—Chain gage in SE. ¼ sec. 20, T. 15 S., R. 8 W., at Ellsworth, 2 miles below Turkey Creek.

DRAINAGE AREA.—7,580 square miles.

RECORDS AVAILABLE.—April, 1895, to October, 1905; July, 1918, to September, 1925; August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 3,580 second-feet Oct. 8 (gage height, 10.44 feet); minimum, 12 second-feet Sept. 19, 20 (gage height, 1.61 feet).

1895–1905, 1918–1925, 1928–1931: Maximum discharge, 21,000 second-feet July 5, 1895; minimum, 1.6 second-feet Oct. 8, 9, 1922.

A flood stage of 25.0 feet was reached in August, 1927 (discharge, 24,000 second-feet).

REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	214	258	174	96	76	118	376	235	99	44	30
2	69	203	235	136	92	75	270	347	193	99	60	29
3	69	193	224	145	91	76	683	320	164	92	53	29
4	69	193	214	145	90	76	794	303	154	91	50	24
5	540	183	203	110	86	78	832	440	136	127	48	26
6	1,520	183	193	110	85	76	720	270	127	127	47	23
7	2,560	183	183	104	82	78	646	308	127	164	55	25
8	2,390	174	193	102	84	65	575	908	118	174	55	23
9	473	174	183	97	84	82	540	610	110	183	60	22
10	320	174	183	102	82	84	506	506	110	193	57	20
11	295	174	174	104	82	78	407	334	118	174	55	20
12	295	164	164	108	80	73	376	295	110	174	73	18
13	334	164	164	}	79	73	320	270	108	174	80	18
14	334	145	154	} 75	79	75	295	246	110	145	68	17
15	2,500	136	154	}	79	76	258	224	347	127	62	15
16	1,610	154	154	80	76	73	258	203	540	118	60	15
17	1,180	154	145	91	79	73	246	193	720	108	57	15
18	946	136	145	91	76	73	334	174	1,020	102	57	14
19	794	145	145	86	76	72	258	164	540	99	57	12
20	610	376	136	73	76	94	258	164	347	91	52	12
21	506	870	164	105	76	102	2,340	174	308	88	50	16
22	440	610	118	105	79	104	1,560	224	246	84	47	17
23	392	946	118	118	78	118	646	193	224	78	44	15
24	392	646	127	110	76	118	757	183	282	72	45	14
25	376	506	118	104	76	110	683	174	193	68	42	15
26	440	575	118	100	78	118	832	174	164	72	40	13
27	362	646	127	99	75	107	757	164	145	66	38	16
28	308	506	136	102	75	97	610	154	136	57	34	23
29	270	295	118	100	------	96	506	154	118	52	37	23
30	246	282	145	99	------	104	440	174	108	47	32	20
31	235	------	118	100	------	110	------	224	------	44	31	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,560	69	676	41,500
November	946	136	317	18,900
December	258	118	162	9,940
January	174	----------	104	6,400
February	96	75	81.0	4,500
March	118	65	87.4	5,380
April	2,340	118	594	35,400
May	908	154	279	17,200
June	1,020	108	245	14,600
July	193	44	109	6,720
August	80	31	51.3	3,150
September	30	12	19.3	1,150
The year	2,560	12	228	165,000

SMOKY HILL RIVER AT LINDSBORG, KANS.

LOCATION.—Chain gage in NE. ¼ sec. 20, T. 17 S., R. 3 W., at highway bridge at Lindsborg.

DRAINAGE AREA.—8,100 square miles.

RECORDS AVAILABLE.—February, 1930, to September, 1931.

EXTREMES.—Maximum discharge during year, 2,740 second-feet Oct. 9 (gage height, 17.1 feet); minimum, 22 second-feet Sept. 20, 30 (gage height, 3.2 feet).

1930–31: Maximum discharge, 5,390 second-feet June 7, 1930 (gage height, 23.6 feet); minimum, that of Sept. 20, 30, 1931.

Maximum stage known, 31.5 feet in May, 1903.

REMARKS.—Records good except those for October and November, which are fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	115	270	328	122	129	115	129	544	201	157	73	52
2	115	270	316	129	129	115	155	512	248	147	81	46
3	115	270	304	137	129	115	183	465	272	272	81	46
4	115	270	292	137	129	115	328	435	224	224	81	46
5	108	259	270	146	129	115	540	420	201	137	73	46
6	108	259	259	137	129	115	663	805	190	137	73	40
7	1,420	259	248	137	129	115	585	771	179	147	66	40
8	1,800	248	248	137	129	115	555	672	168	137	66	40
9	2,740	237	237	137	122	115	498	672	157	168	66	40
10	908	237	226	137	122	115	498	720	157	190	212	35
11	631	226	215	137	122	115	470	544	157	190	98	35
12	526	226	215	137	122	115	418	465	260	201	73	30
13	512	226	215	137	122	115	379	391	201	190	73	30
14	405	226	204	137	122	115	340	363	168	190	66	30
15	379	215	204	137	122	115	316	337	311	179	66	26
16	2,670	215	204	137	122	115	292	311	512	168	66	26
17	1,300	215	193	137	122	115	270	285	298	157	66	26
18	946	215	193	137	122	115	270	272	377	137	66	26
19	816	204	193	137	122	115	259	260	788	127	81	26
20	712	270	183	137	122	115	316	248	688	117	73	22
21	647	379	183	137	122	115	316	236	435	117	66	30
22	540	405	173	137	122	115	570	260	363	127	66	30
23	498	470	164	137	115	115	2,110	324	311	117	66	35
24	444	1,130	155	129	115	129	998	285	272	117	66	30
25	405	746	146	129	115	129	873	260	248	107	59	30
26	379	431	137	129	115	129	754	248	224	98	59	30
27	353	418	129	129	115	129	839	236	212	98	59	26
28	340	392	122	129	115	129	839	224	201	89	52	26
29	316	366	122	129	------	129	720	212	179	81	52	26
30	281	340	115	122	------	129	624	248	157	81	52	22
31	270	------	115	122	------	129	------	236	------	81	52	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,740	108	675	41,500
November	1,130	204	330	19,600
December	328	115	203	12,500
January	146	122	134	8,240
February	129	115	122	6,800
March	129	115	119	7,290
April	2,110	129	537	31,900
May	805	212	396	24,300
June	788	157	279	16,600
July	272	81	145	8,900
August	212	52	72.5	4,460
September	52	22	33.1	1,970
The year	2,740	22	254	184,000

SMOKY HILL RIVER NEAR MENTOR, KANS.

LOCATION.—Chain gage in SE. ¼ sec. 18, T. 15 S., R. 2 W., 1½ miles east of Mentor and 26 miles above Saline River.

DRAINAGE AREA.—8,210 square miles.

RECORDS AVAILABLE.—December, 1923, to September, 1931.

EXTREMES.—Maximum discharge during period, 2,460 second-feet Oct. 9 (gage height, 17.55 feet); minimum, 37 second-feet Sept. 29 (gage height, 3.06 feet).

1923–1931: Maximum discharge, 7,450 second-feet Aug. 17, 1927 (gage height, 25.8 feet); minimum, 12 second-feet in August, 1926.

REMARKS.—Records fair. No records Nov. 2 to May 21.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Feb.	May	June	July	Aug.	Sept.
1	183	310			236	165	101	65
2	165				256	173	109	65
3	149				276	165	117	62
4	133				266	200	101	62
5	157				236	165	101	58
6	149				218	165	101	58
7	149				209	165	93	58
8	1,020				200	165	90	51
9	2,180			[a] 421	191	165	90	51
10	2,120				182	182	109	51
11	725				182	173	200	48
12	578				218	200	117	48
13	511				236	218	101	48
14	461				200	200	93	48
15	392				227	200	90	44
16	1,880				470	191	90	44
17	2,100		[a] 135		455	173	109	41
18	1,650				286	165	117	41
19	869				560	149	117	41
20	680				812	149	101	41
21	635				530	149	93	44
22	564			276	397	141	93	44
23	511			297	345	141	90	44
24	461			308	308	133	86	44
25	437			297	276	133	86	44
26	414			276	297	125	82	44
27	392			256	256	117	82	41
28	370			246	236	117	76	38
29	340			236	218	117	72	38
30	330			256	182	109	72	38
31	320			256		101	72	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,180	133	678	41,700
June	812	182	299	17,800
July	218	101	158	9,740
August	200	72	98.4	6,050
September	65	38	48.1	2,860

[a] Discharge measurement.

SMOKY HILL RIVER AT SOLOMON, KANS.

LOCATION.—Chain gage in SE. ¼ sec. 19, T. 13 S., R. 1 E., 500 feet below Solomon River and 1 mile south of Solomon.

DRAINAGE AREA.—18,700 square miles.

RECORDS AVAILABLE.—April to July, 1904; October, 1922, to September, 1931.

EXTREMES.—Maximum discharge during year, 4,700 second-feet May 9 (gage height, 13.4 feet); minimum, 158 second-feet Sept. 21 (gage height, 3.3 feet).

1904, 1922–1931: Maximum discharge, 18,400 second-feet Aug. 10, 1928 (gage height, 28.0 feet); minimum, 25 second-feet Oct. 14, 1925.

Maximum stage known, about 35.0 feet during flood of 1903.

REMARKS.—Records good. Gage-height records furnished by United States Weather Bureau.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	470	709	1,070	470	445	395	495	1,430	2,710	563	460	470
2	470	709	955	470	420	395	495	1,230	1,420	563	460	445
3	445	682	844	470	420	370	574	1,130	1,380	563	435	420
4	395	682	817	470	445	395	574	1,040	986	589	435	395
5	395	655	790	470	445	395	628	1,010	862	615	435	370
6	420	628	790	470	445	395	763	1,860	750	723	435	345
7	547	628	763	470	470	420	1,470	2,170	696	1,920	410	320
8	736	628	736	470	470	420	1,430	3,640	669	2,880	410	320
9	1,160	628	709	470	445	395	1,200	4,700	642	3,480	435	295
10	2,500	601	682		445	395	1,100	3,150	615	3,860	1,520	295
11	3,580	601	655		420	370	1,040	1,820	1,100	3,860	1,100	270
12	2,040	601	655	450	395	395	984	1,670	834	2,600	1,190	247
13	1,270	574	655		395	395	955	1,280	723	2,020	2,390	247
14	1,200	574	628		420	420	927	1,100	696	1,330	2,600	295
15	955	574	628		445	395	871	986	669	1,100	1,570	270
16	871	574	655	495	420	420	844	952	642	986	1,520	202
17	1,550	574	628	495	395	395	790	1,020	696	862	1,570	247
18	3,420	574	601	470	395	395	763	1,020	834	862	1,100	224
19	2,040	574	601	445	395	420	736	806	778	834	920	202
20	2,600	655	547	445	420	420	709	806	669	723	778	202
21	1,810	899	495	445	420	445	709	750	615	669	778	158
22	1,550	1,040	495	445	420	395	844	750	1,140	615	890	247
23	2,120	1,160	495	420	420	420	871	778	890	589	806	224
24	1,100	2,260	495	420	420	395	1,230	778	806	589	642	224
25	1,040	3,310	547	420	420	420	2,170	778	723	563	563	202
26	955	3,040	520	395	420	420	1,630	778	669	537	511	202
27	899	2,120	495	395	395	420	1,470	750	834	537	511	247
28	871	1,630	470	420	395	495	1,430	723	834	511	1,060	247
29	817	1,390	470	420	------	495	1,510	723	723	485	1,470	224
30	763	1,200	470	445	------	495	1,550	669	615	460	790	202
31	736	------	470	445	------	495	------	778	------	460	574	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	3,580	395	1,280	78,800
November	3,310	574	1,020	60,400
December	1,070	470	640	39,300
January	495	395	450	27,700
February	470	395	424	23,500
March	495	370	416	25,600
April	2,170	495	1,030	61,000
May	4,700	669	1,330	81,500
June	2,710	615	874	52,000
July	3,860	460	1,190	73,100
August	2,600	410	928	57,100
September	470	158	275	16,400
The year	4,700	158	824	596,000

SALINE RIVER NEAR WILSON, KANS.

LOCATION.—Water-stage recorder in SW. ¼ sec. 11, T. 13 S., R. 11 W., three-quarters of a mile above Hell Creek and 8 miles northwest of Wilson. Chain gage at same site used prior to Apr. 9, 1931.
DRAINAGE AREA.—1,900 square miles.
RECORDS AVAILABLE.—May, 1929, to September, 1931.
EXTREMES.—Maximum discharge during year, 1,930 second-feet Aug. 12 (gage height, 9.31 feet); minimum, 26 second-feet Sept. 23 (gage height, 2.93 feet).
1929–1931: Maximum discharge, 4,140 second-feet Sept. 10, 1930 (gage height, 13.50 feet); minimum, 5 second-feet in January, 1930.
REMARKS.—Records fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	52	158	667	101	95	69	160		200	69	66	80
2	57	149	510	93	97	64	812	300	172	66	68	74
3	70	137	429	104	88	66	841		162	66	66	74
4	67	124	272	108	86	57	510		154	101	68	69
5	557	130	178	97	95	51	364	280	139	235	76	69
6	2,110	135	132	101	102	56	316	455	128	1,090	71	69
7	1,290	128	120	90	99	64	304	429	126	1,630	164	66
8	244	120	111	97	92	61	290	328	124	1,260	263	66
9	211	111	104	101	85	57	279	290	119	609	195	66
10	189	119	97	93	78	66	328	257	111	442	180	68
11	174	117	92	86	81	93	288	233	110	352	682	69
12	166	104	101	97	93	93	248	226	104	288	1,630	64
13	158	95	93	93	106	76	222	215	106	246	754	61
14	151	88	92	93	102	80	202	208	111	272	403	54
15	594	81	119	104	95	76	195	195	147	206	304	49
16	580	74	120	101	92	69	217	186	340	193	244	46
17	524	74	134	93	95	71	377	184	468	172	197	34
18	468	74	128	97	88	62	328	174	252	158	180	35
19	429	74	122	93	81	66		176	193	151	164	34
20	403	754	130	97	74	62		172	160	141	151	35
21	364	1,630	137	104	73	74	389	160	143	135	139	42
22	274	1,550	132	110	81	145		184	137	132	132	39
23	222	1,510	119	101	83	113		195	279	126	119	29
24	195	1,440	108	93	68	99		193	255	120	106	44
25	176	1,360	111	93	74	90		174	304	113	104	42
26	162	1,290	115	92	71	102		156	115	102	102	39
27	152	1,260	104	88	71	99		145	92	101	110	35
28	141	1,220	108	97	81	552	540	130	85	95	108	37
29	126	1,120	104	90	-------	272		841	80	90	97	34
30	134	725	97	83	-------	160		482	74	83	93	32
31	147	-------	101	88	-------	316	-------	255	-------	74	81	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,110	52	342	21,000
November	1,630	74	532	31,600
December	667	92	161	9,890
January	110	83	96.1	5,910
February	106	68	86.6	4,810
March	552	51	109	6,710
April	841	160	390	23,200
May	841	130	262	16,100
June	468	74	166	9,900
July	1,630	66	288	17,700
August	1,630	66	230	14,100
September	80	29	51.8	3,080
The year	2,110	29	227	164,000

SALINE RIVER AT TESCOTT, KANS.

LOCATION.—Chain gage in SE. ¼ sec. 16, T. 12 S., R. 5 W., half a mile south of Tescott and half a mile above Dry Creek.

DRAINAGE AREA.—2,800 square miles.

RECORDS AVAILABLE.—September, 1919, to September, 1931.

EXTREMES.—Maximum discharge during year, 1,110 second-feet Oct. 9 (gage height, 15.47 feet); minimum, 29 second-feet Sept. 15 (gage height, 3.39 feet).

1919–1931: Maximum discharge, 6,150 second-feet July 12, 1928 (gage height, 29.48 feet); minimum, 0.5 second-foot in July, 1926.

REMARKS.—Records good except those for periods of ice effect during January and those for periods of shifting control during February, March, June, August, September, which are fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	90	142	201	117	95	85	185	426	575	80	129	123
2	85	177	201	111	90	76	185	310	293	76	112	111
3	85	170	185	100	90	90	249	376	225	76	107	100
4	80	156	177	105	85	80	356	376	185	76	112	85
5	117	170	185	95	95	80	752	542	170	72	112	80
6	284	163	193	90	105	95	741	456	156	72	112	76
7	455	156	129	105	105	76	446	212	142	170	112	76
8	965	156	142	90	85	80	356	346	135	615	117	76
9	941	129	156	95	80	80	337	466	135	917	123	74
10	585	156	135		85	76	319	376	129	953	436	72
11	302	129	142		85	85	310	319	123	597	366	72
12	233	123	156	75	80	90	301	292	123	446	265	72
13	185	117	142		90	80	310	292	111	337	301	45
14	170	123	129		90	85	283	265	111	283	972	33
15	163	117	149		95	80	265	256	111	256	888	32
16	163	117	135		90	76	265	240	117	274	386	38
17	375	117	149		105	80	248	233	117	240	319	42
18	635	100	142	80	95	76	226	226	170	198	248	46
19	435	117	142		95	80	233	219	356	198	226	42
20	302	117	142		85	80	301	205	241	165	205	42
21	249	329	117		85	80	356	205	177	177	191	48
22	201	435	117		85	85	274	205	142	177	184	48
23	170	329	111		85	85	310	205	117	171	171	56
24	170	338	100	85	90	95	436	212	111	159	165	44
25	177	338	100		85	129	542	212	163	153	153	38
26	177	311	95		85	95	564	219	149	141	153	39
27	170	293	95	95	85	80	586	205	105	129	135	56
28	170	249	100	100	85	76	608	198	105	135	117	46
29	170	233	129	105	------	142	586	191	90	129	117	48
30	177	201	95	100	------	163	487	198	85	107	129	45
31	163	------	100	90	------	163	------	426	------	102	123	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	965	80	279	17,100
November	435	100	194	11,500
December	201	95	138	8,510
January	117	----------	89.0	5,470
February	105	80	89.6	4,980
March	163	76	91.1	5,600
April	752	185	381	22,600
May	542	191	287	17,700
June	575	85	166	9,860
July	953	72	248	15,200
August	972	107	235	14,500
September	123	32	60.2	3,580
The year	972	32	189	137,000

SOUTH FORK OF SOLOMON RIVER AT ALTON, KANS.

LOCATION.—Chain gage in SW. ¼ sec. 12, T. 7 S., R. 15 W., three-quarters of a mile south of Alton.

DRAINAGE AREA.—1,720 miles.

RECORDS AVAILABLE.—August, 1919, to June, 1925; August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 5,600 second-feet July 5 (gage height, 15.52 feet); minimum, 16 second-feet several days in September.

1919–1925, 1928–1931: Maximum discharge, 9,340 second-feet Sept. 19, 1919 (gage height, 19.5 feet); minimum, 0.1 second-foot Sept. 7, 1922. Maximum stage known, 24.5 feet Aug. 1, 1928.

REMARKS.—Records good except those for October, August, September, which are fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36	52	127	127	70	43	82	101	42	31	67	33
2	42	48	114	94	63	43	94	94	50	34	79	31
3	45	42	108	75	60	61	120	94	39	48	67	31
4	48	37	108	70	55	57	148	88	37	50	62	29
5	56	29	101	65	53	53	148	108	34	3,710	60	26
6	61	27	101	59	51	49	141	120	34	1,870	58	25
7	70	27	94	59	49	45	134	120	33	463	82	24
8	89	28	94	59	49	43	134	94	31	372	157	22
9	103	35	88	59	47	45	127	88	30	288	308	
10	89	42	88		47	47	120	82	30	250	372	
11	78	55	88		48	47	114	75	29	231	105	
12	96	66	88	57	49	45	101	73	30	212	105	
13	1,170	66	82		47	45	94	70	33	193	98	20
14	623	63	82		51	43	88	68	42	184	98	
15	379	61	82	55	45	44	88	63	46	175	90	
16	188	82	75	53	45	43	94	63	42	148	98	
17	196	103	75	51	45	43	94	59	34	139	105	
18	188	148	75	49	43	41	101	57	30	130	91	16
19	172	188	75	47	43	41	101	55	27	130	77	16
20	164	379	75	45	42	45	94	55	26	121	67	16
21	125	547	75	43	44	50	101	53	28	231	65	17
22	103	415	75	41	51	55	108		868	148	62	18
23	103	244	74	52	49	59	108		120	105	60	16
24	82	198	71	59	53	63	120		88	98	59	16
25	82	101	68	69	53	65	127		67	98	58	16
26	82	44	64	75	49	59	134	50	54	91	56	18
27	82	53	57	82	47	51	134		47	88	49	18
28	82	64	51	82	45	53	124		42	83	46	16
29	82	94	47	88	------	51	114		39	76	44	16
30	75	120	50	82	------	51	108	45	34	70	43	16
31	57	------	88	75	------	57	------	41	------	66	39	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,170	36	156	9,620
November	547	27	115	6,860
December	127	47	81.9	5,040
January	127	41	64.5	3,970
February	70	42	49.8	2,760
March	65	41	49.6	3,050
April	148	82	113	6,730
May	120	41	69.9	4,300
June	868	26	69.5	4,140
July	3,710	31	320	19,700
August	372	39	91.2	5,610
September	33	16	20.5	1,220
The year	3,710	16	101	73,000

SOLOMON RIVER AT BELOIT, KANS.

LOCATION.—Water-stage recorder in SW. ¼ sec. 9, T. 7 S., R. 7 W., on highway bridge in Beloit, 93 miles above junction with Smoky Hill River.

DRAINAGE AREA.—5,410 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 6,640 second-feet May 6 (gage height, 20.36 feet); minimum, 5 second-feet at times of low flow during which power plant is shut down.

1929–1931: Maximum discharge, 11,900 second-feet June 8, 1929 (gage height, 26.40 feet); minimum, 5 second-feet at times of low flow during which power plant is shut down.

REMARKS.—Records fair. Power plant located about 200 feet upstream regulates low-water flow.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	59	144	218	50	158	-------	109	190	} 150	65	118	89
2	79	124	174	138	163	100	138	179		366	128	101
3	48	134	196	81	148	-------	240	179		184	148	61
4	67	154	179	114	109	95	248	190	143	652	138	81
5	75	154	168	109	143	99	190	581	163	2,680	133	55
6	124	144	133	143	94	74	201	5,790	184	4,110	107	37
7	302	115	158	74	96	100	190	2,540	114	3,640	109	57
8	430	124	168	114	114	106	196	482	742	3,340	254	42
9	338	115	138	109	128	128	190	318	260	1,060	581	49
10	242	115	174	138	89	89	196	236	148	652	1,470	45
11	185	106	138	68	114	109	184	273	128	498	2,340	36
12	144	115	148	104	128	82	184	218	123	408	1,290	34
13	144	115	174	143	96	108	190	174	109	366	670	26
14	786	134	123	174	103	114	163	168	106	338	437	52
15	2,160	97	163	133	92	98	163	174	133	352	306	8
16	1,100	88	163	83	148	138	153	179	87	[a] 300	260	45
17	628	134	133	80	80	118	179	153	86	248	248	17
18	}	88	123	73	128	73	206	174	123	206	325	36
19		97	128	101	123	114	163	148	153	206	534	32
20	}	134	143	96	138	109	190	143	114	212	394	6
21	420	458	84	81	118	123	280	148	96	190	236	38
22		1,890	123	105	109	72	482	138	98	190	206	8
23	}	1,060	133	90	133	128	}	148	184	224	[a] 240	42
24	207	581	158	114	109	123		138	482	174	[a] 250	12
25	196	394	133	103	114	109	} 390	163	158	174	688	49
26	185	266	138	114	109	133	}	123	123	148	[a] 1,580	64
27	174	218	153	105	109	138	312	148	102	163	[a] 652	16
28	164	201	148	109	102	88	}	196	96	138	248	36
29	164	196	143	128	-------	91	250	3,240	62	128	148	42
30	154	218	118	148	-------	128	}	724	73	128	96	20
31	124	-------	148	153	-------	96	-------	240	-------	128	85	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,160	59	348	21,400
November	1,890	88	264	15,700
December	218	84	149	9,170
January	174	50	109	6,690
February	163	80	118	6,540
March	138	72	106	6,510
April	482	109	235	14,000
May	5,790	123	577	35,500
June	742	62	161	9,600
July	4,110	65	699	43,000
August	2,340	85	465	28,600
September	101	6	41.2	2,450
The year	5,790	6	275	199,000

[a] Interpolated.

SOLOMON RIVER AT NILES, KANS.

LOCATION.—Chain gage in NW. ¼ sec. 31, T. 12 S., R. 1 W., three-quarters of a mile west of Niles and 7 miles above mouth.

DRAINAGE AREA.—6,710 square miles.

RECORDS AVAILABLE.—May, 1897, to November, 1903; May, 1919, to September, 1931.

EXTREMES.—Maximum discharge during year, 4,040 second-feet May 8 (gage height, 16.80 feet); minimum, 66 second-feet Sept. 18 (gage height, 2.76 feet). 1897–1903, 1919–1931: Maximum discharge, 10,600 second-feet June 3, 1903; minimum, 1 second-foot Sept. 4, 1926.

REMARKS.—Records good except those for period Aug. 15–27, which are fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	121	169	266	166	140	148	157	293	1,440	91	118	206
2	113	169	253	157	186	125	148	253	406	98	132	166
3	91	158	253	148	166	140	148	229	241	91	132	140
4	78	158	241	157	196	140	157	217	180	105	132	132
5	113	158	266	148	186	148	140	885	158	216	125	125
6	267	148	229	157	176	140	206	2,060	148	932	125	125
7	267	148	241	157	186	157	266	838	148	2,380	118	98
8	180	148	206	125	186	176	217	3,720	121	3,320	118	92
9	169	158	217	140	186	157	241	3,230	121	3,580	350	92
10	378	158	206	157	176	132	229	904	241	3,230	1,790	98
11	392	148	241	166	166	140	229	452	406	1,400	988	86
12	336	139	176	148	176	140	206	322	241	715	1,830	81
13	241	148	206	125	166	148	196	254	204	546	1,940	76
14	216	139	176	157	140	140	196	228	192	443	1,340	76
15	158	139	186	148	111	140	196	216	169	395	961	81
16	192	158	186	157	125	132	196	204	139	365	639	81
17	2,100	139	186	157	125	148	206	180	121	293	427	76
18	1,340	148	217	132	157	132	196	180	113	293	477	67
19	748	139	186	176	157	148	176	169	121	279	365	71
20	519	406	186	186	157	186	196	169	113	279	380	76
21	420	637	186	118	111	140	266	158	91	206	350	81
22	350	420	148	148	140	132	206	148	91	166	564	81
23	294	280	186	206	140	132	217	148	105	176	380	98
24	254	1,750	186	186	148	140	321	148	98	176	350	76
25	254	1,300	186	166	132	140	350	148	98	166	253	71
26	241	734	148	132	148	140	266	139	98	196	241	71
27	228	494	157	166	148	148	253	148	308	176	335	104
28	216	365	118	98	140	157	266	148	180	157	1,370	86
29	204	365	86	104	-------	166	293	130	158	157	796	76
30	204	350	157	157	-------	176	293	148	105	140	427	76
31	216	-------	166	148	-------	166	-------	2,220	-------	125	279	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,100	78	352	21,600
November	1,750	139	332	19,800
December	266	86	195	12,000
January	206	98	151	9,310
February	196	111	156	8,670
March	186	125	147	9,030
April	350	140	221	13,200
May	3,720	130	603	37,100
June	1,440	91	212	12,600
July	3,580	91	674	41,400
August	1,940	118	575	35,400
September	206	67	95.5	5,680
The year	3,720	67	312	226,000

NORTH FORK OF SOLOMON RIVER AT KIRWIN, KANS.

LOCATION.—Chain gage in SW. ¼ sec. 34, T. 4 S., R. 16 W., half a mile south of Kirwin and three-quarters of a mile below Bow Creek.

DRAINAGE AREA.—1,290 square miles.

RECORDS AVAILABLE.—August, 1919, to June, 1925; August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 1,480 second-feet Aug. 24 (gage height, 9.08 feet); minimum, 1 second-foot July 1 (gage height, 1.64 feet).

1919–1925, 1928–1931: Maximum discharge (estimated), 15,500 second-feet Sept. 18, 1919 (gage height, 22.5 feet); minimum, 0.5 second-foot Dec. 5, 1922, and during July, 1929.

REMARKS.—Records fair. Stage-discharge relation affected by ice Jan. 14–22.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	37	48	31	36	27	43	54	28	2	7	20
2	14	39	48	33	40	30	54	50	35	198	12	26
3	25	42	54	36	45	26	50	50	28	24	6	21
4	7	36	49	31	40	32	59	54	28	865	6	19
5	92	36	46	27	43	33	54	54	50	460	6	17
6	237	34	42	25	32	30	54	59	106	510	73	14
7	147	30	38	30	41	26	54	50	33	308	34	21
8	69	36	46	25	33	34	54	50	28	134	184	12
9	13	36	50	34	31	31	54	50	27	83	485	12
10	11	37	48	33	21	34	47	50	20	68	510	18
11	11	44	50	40	29	38	54	41	24	47	171	10
12	9	32	44	31	33	36	44	42	18	48	78	10
13	9	36	36	33	32	35	45	44	24	41	50	6
14	585	35	27		33	36	46	48	20	36	39	5
15	226	23	31		36	30	47	39	47	30	28	4
16	140	54	28		28	28	50	35	73	26	28	4
17	110	47	29		27	28	50	38	38	31	28	5
18	78	99	31	30	29	30	47	38	26	29	25	8
19	94	290	31		28	30	47	40	23	30	24	4
20	73	485	43		31	33	50	35	21	22	25	4
21	78	171	37		28	36	59	36	14	23	24	5
22	68	116	31		27	40	68	34	12	18	54	4
23	68	140	34	35	36	46	64	32	12	20	94	8
24	59	134	38	36	32	36	64	35	8	24	1,140	4
25	64	134	31	35	28	36	64	33	4	18	308	6
26	54	83	37	40	31	37	64	31	3	19	106	4
27	54	59	33	40	30	41	59	30	3	16	54	4
28	50	42	41	34	30	45	54	38	3	8	37	8
29	49	50	44	27	------	43	54	33	3	13	34	6
30	47	41	34	38	------	41	59	29	2	12	33	7
31	41	------	33	36	------	40	------	29	------	21	30	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	585	7	83.6	5,140
November	485	23	82.6	4,920
December	54	27	39.1	2,400
January	40	----------	32.3	1,980
February	45	21	32.5	1,800
March	46	26	34.5	2,120
April	68	43	53.7	3,200
May	59	29	41.3	2,540
June	106	2	25.4	1,510
July	865	2	103	6,320
August	1,140	6	120	7,400
September	26	4	9.87	587
The year	1,140	2	55.1	39,900

BIG BLUE RIVER AT HULL, KANS.

LOCATION.—Water-stage recorder in NW. ¼ sec. 3, T. 2 S., R. 7 E., a quarter of a mile west of Hull and 2 miles above Deer Creek. Chain gage at same site used prior to Mar. 19, 1931.

DRAINAGE AREA.—4,510 square miles.

RECORDS AVAILABLE.—August, 1919, to July, 1925; August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 13,100 second-feet Sept. 25 (gage height, 20.5 feet); minimum, 50 second-feet Oct. 26 (gage height, 2.30 feet).

1919–1925, 1928–1931: Maximum discharge, 14,500 second-feet Oct. 3, 1923 (gage height, 20.8 feet); minimum, 2 second-feet Sept. 8, 14, 1922 (gage height, 1.20 feet).

REMARKS.—Maximum stage known, 31.7 feet in May, 1903. Records fair except those for period of missing records, Oct. 27 to Dec. 27, and those for period of shifting control, July 5 to Sept. 30, which are poor.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	110			318	136	121	152	192	826	[a] 412	70	612
2	100			96	104	136	156	194	546	[a] 479	170	136
3	110		400	110	174	154	188	210	360	546	196	105
4	122			99	260	101	218	202	305	345	210	102
5	110	80		113	260	98	218	212	230		98	145
6	110			127	164	145	240	578	514		102	164
7	124			180	154	180	240	1,350	562	250	98	99
8	113			160	194	94	148	716	807		98	90
9	87			132	248	87	176	578	960		174	99
10	107		300	126	260	88	156	680	678		1,060	108
11	122			192	98	83	224	680	612	150	826	99
12	116			135	88	94	192	578	716	450	435	93
13	104			268	99	118	192	498	1,020	788	226	88
14	110			285	128	107	216	298	883	514	218	56
15	110	100		235	224	78	130	182	770	663	226	69
16	105			235	174	101	158	282	663	375	156	72
17	104			164	214	102	180	240	360	150	104	96
18	104		250	204	248	162	245	258	318	198	150	84
19	99			150	148	168	180	224	268	162	770	74
20	101	3,000		180	174	265	226	292	194	980	612	76
21	84	2,900		172	166	198	420	435	375	734	280	67
22	89	1,500		164	140	202	206	466	1,100	595	230	121
23	98	1,000		305	164	148	206	450	1,390	612		482
24	86		300	298	232	184	200	318	1,390	390		845
25	58	800		128	143	136	224	330	1,480	150		11,600
26	50			262	174	216	450	305	1,020	133	120	3,060
27				154	174	147	546	235	826	94		1,180
28			345	95	142	174	420	1,220	629	160		807
29	60	500	330	136	------	174	305	3,570	450	112		807
30			345	135	------	158	252	3,310	345	69		734
31		------	360	118	------	192	------	1,760	------	64	1,060	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	124	----------	94.6	5,820
November	3,000	----------	493	29,400
December	----------	----------	314	19,300
January	318	95	177	10,900
February	260	88	174	9,690
March	265	78	142	8,750
April	546	130	235	14,000
May	3,570	182	672	41,300
June	1,480	194	687	40,900
July	980	64	349	21,500
August	1,060	70	275	16,900
September	11,600	56	739	44,000
The year	11,600	----------	362	262,000

[a] Interpolated.

BIG BLUE RIVER AT RANDOLPH, KANS.

LOCATION.—Chain gage in SW. ¼ sec. 12, T. 7 S., R. 6 E., at Randolph, half a mile above Fancy Creek.

DRAINAGE AREA.—8,860 square miles.

RECORDS AVAILABLE.—April, 1918, to September, 1931.

EXTREMES.—Maximum discharge during year, 17,300 second-feet Sept. 26 (gage height, 17.87 feet); minimum, 211 second-feet Sept. 21 (gage height, 2.38 feet).

1918–1931: Maximum discharge, 29,900 second-feet May 8, 1930 (gage height 22.79 feet); minimum, 175 second-feet Aug. 9, 1926 (gage height, 2.26 feet).

Maximum stage known, 31.7 feet May 31, 1903.

REMARKS.—Records good except those for period of ice effect, Jan. 13–21, which are fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	385	405	760	535	445	445	465	820	3,150	585	585	9,200
2	425	385	585	425	488	488	488	710	1,720	585	660	5,510
3	385	405	610	445	445	425	510	660	1,240	535	660	2,280
4	368	385	660	488	465	405	510	610	820	1,120	710	1,000
5	368	405	585	465	465	445	510	760	660	1,380	1,240	610
6	488	465	535	445	425	445	560	1,120	710	820	1,180	465
7	368	488	660	425	425	465	488	3,250	1,310	610	610	445
8	385	425	560	445	465	425	585	2,750	1,440	585	465	405
9	385	385	560	445	425	510	488	1,940	2,100	610	445	385
10	385	405	560	488	425	445	488	1,440	2,560	510	760	332
11	368	385	488	488	510	488	585	1,440	2,020	425	2,100	332
12	405	350	488	465	445	535	488	1,380	1,650	445	1,780	332
13	488	368	510		425	488	585	1,310	1,440	760	1,060	350
14	425	368	510	400	405	610	488	1,060	1,720	1,580	1,240	300
15	535	445	488		405	760	510	610	1,510	1,000	880	285
16	465	405	488		445	760	488	710	1,310	1,000	710	260
17	585	425	465		445	660	465	660	1,380	760	610	285
18	760	405	510		445	585	660	710	1,120	510	425	260
19	465	488	465	425	488	560	585	660	1,000	385	425	285
20	465	2,660	465		425	465	610	660	760	445	760	315
21	405	6,350	660		425	510	710	660	660	940	1,000	248
22	488	5,510	560	500	425	585	1,510	820	710	1,120	710	285
23	465	2,460	405	500	535	445	1,000	880	1,380	820	488	332
24	385	1,720	385	445	445	465	760	820	1,940	940	425	880
25	368	1,310	488	465	488	445	710	760	1,780	710	350	6,570
26	368	1,180	488	465	510	465	1,240	710	1,860	488	368	16,900
27	445	1,000	350	510	445	425	2,200	760	1,380	368	368	5,510
28	385	820	465	585	445	510	1,310	710	1,180	350	405	2,460
29	368	710	535	488	------	445	1,240	3,050	940	315	488	1,580
30	385	760	465	425	------	488	1,000	5,720	760	315	385	1,380
31	385	------	350	488	------	465	------	5,720	------	332	510	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	760	368	431	26,500
November	6,350	350	1,080	64,000
December	760	350	519	31,900
January	585	------	457	28,100
February	535	405	451	25,000
March	760	405	505	31,100
April	2,200	465	741	44,100
May	5,720	610	1,420	87,000
June	3,150	660	1,410	83,700
July	1,580	315	689	42,300
August	2,100	350	736	45,200
September	16,900	248	1,990	119,000
The year	16,900	248	867	628,000

LITTLE BLUE RIVER NEAR ENDICOTT, NEBR.

LOCATION.—Water-stage recorder in sec. 5, T. 1 N., R. 3 E., 1½ miles southwest of Endicott.

DRAINAGE AREA.—2,590 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1931. At point several miles upstream May, 1908, to September, 1915.

EXTREMES.—Maximum discharge during year, 2,440 second-feet May 30 (gage height, 6.98 feet); minimum, 16 second-feet from discharge measurement Jan. 14.

1908–1915, 1929–1931: Maximum discharge, 13,700 second-feet June 6–7, 1908; minimum, that of Jan. 14, 1931.

REMARKS.—Records good. No diversions. Diurnal fluctuations caused by operation of power dams above station.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	105	113	148	116	134	130	161	156	310	139	121	107
2	105	113	142	136	136	133	152	148	237	189	166	103
3	103	116	147	133	136	132	156	138	199	193	321	106
4	105	116	142	144	133	134	150	155	173	186	615	106
5	114	116	140	133	133	133	153	1,200	205	197	224	110
6	123	116	139	130	134	136	152	1,050	188	201	179	109
7	119	116	136	138	132	116	155	910	877	189	156	99
8	116	114	144	134	134	142	144	510	1,460	179	152	95
9	121	116	134	132	136	148	163	388	1,330	158	211	94
10	155	116	140	132	130	139	152	330	692	148	179	91
11	140	113	134	127	128	142	142	338	474	136	358	91
12	121	114	133	126	127	139	139	294	408	197	940	91
13	128	120	134	102	130	142	139	249	400	186	584	87
14	116	116	133	a 16	124	133	132	220	380	158	360	86
15	120	114	138	a 70	127	134	138	211	397	139	252	91
16	120	121	133		126	133	136	197	552	124	191	87
17	120	123	128		127	132	134	193	564	128	161	87
18	119	121	136	120	128	130	133	189	402	121	153	86
19	119	161	132		128	128	139	188	338	113	177	84
20	113	552	120		127	133	153	177	284	117	160	86
21	112	664	107	138	123	134	153	173	249	207	158	85
22	109	318	110	147	136	136	153	170	405	276	155	90
23	114	217	121	152	140	138	142	168	257	163	139	91
24	114	264	130	147	130	132	150	161	193	133	127	130
25	116	209	142	152	132	130	165	160	170	130	128	914
26	112	173	139	161	133	130	195	156	161	121	130	439
27	116	155	138	148	133	133	191	153	152	120	133	289
28	114	153	136	140	127	105	170	433	148	110	134	203
29	113	153	132	138	-------	136	160	1,730	140	102	133	166
30	113	148	121	136	-------	133	153	1,480	136	96	119	155
31	114	-------	123	128	-------	152	-------	555	-------	98	116	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	155	103	117	7,190
November	664	113	175	10,400
December	148	107	133	8,180
January	161	16	128	7,870
February	140	123	131	7,280
March	152	105	134	8,240
April	195	132	152	9,040
May	1,730	138	406	25,000
June	1,460	136	396	23,600
July	276	96	153	9,410
August	940	116	230	14,100
September	914	84	149	8,870
The year	1,730	16	192	139,000

a Estimated.

LITTLE BLUE RIVER AT WATERVILLE, KANS.

LOCATION.—Chain gage in SE. ¼ sec. 16, T. 4 S., R. 6 E., half a mile north of Waterville and 1 mile below Corn Creek.

DRAINAGE AREA.—3,390 square miles.

RECORDS AVAILABLE.—June, 1922, to June, 1925; August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 10,100 second-feet Sept. 1 (gage height, 16.70 feet); minimum, 79 second-feet Sept. 20 (gage height, 1.86 feet).

1922–1925, 1928–1931: Maximum discharge, about 13,200 second-feet July 13, 1923 (gage height, 15.4 feet); minimum, 76 second-feet in December, 1924.

REMARKS.—Records good except those for periods during October, November, December, January, March, which are fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	125	156	241	209	190	181	200	286	710	148	148	6,750
2	118	156	230	220	190	172	[a] 215	275	460	156	279	1,980
3	118	148	209	209	190	172	230	252	346	164	200	750
4	111	156	220	275	190	172	220	241	292	305	200	264
5	118	148	220	322	190	172	220	461	254	292	670	164
6	125	156	209		190	172	200	1,800	490	231	332	145
7	125	156	209		190	521	200	1,450	490	254	220	112
8	125	156	200	300	181	375	200	[a] 1,000	1,000	231	200	112
9	125	156	200		181	220	209	648	1,500	210	279	105
10	125	156	200		172	200	252	584	1,360	191	1,040	98
11	125	156	190		172	200	241	521	830	182	1,040	92
12	156	156	200		172	200	[a] 230	491	592	592	490	92
13	156	156	209	250	172	241	[a] 220	431	460	279	916	92
14	140	156	200		172	298	[a] 210	375	460	305	402	85
15	164	156	209		172	[a] 275	200	335	402	200	374	92
16	254	173	209		172	252	220	310	402	164	266	85
17	670	164	200		172	220	375	286	490	156	231	92
18	231	164	200	300	181	200	252	275	430	140	210	85
19	173	191	190		181	200	230	264	360	148	191	85
20	164	3,130	172		181	190	275	252	266	132	200	79
21	164	2,910	181	310	172	200	190	[a] 241	231	132	182	92
22	164	1,450	200	286	209	200	552	230	220	164	182	92
23	156	648	209	264	220	190	348	230	430	242	156	92
24	156	461	220	252	220	190	335	220	266	191	156	105
25	156	403		241	200	181	348	209	220	148	148	6,930
26	156	348		230	181	181	1,310	200	200	132	148	3,420
27	156	310	150	209	181	190	1,000	200	191	125	148	1,220
28	148	286		209	181	172	[a] 800	431	173	125	156	592
29	148	264		200	-------	164	[a] 500	584	156	118	132	360
30	148	241		200	-------	200	310	2,560	156	104	132	264
31	156	-------		190	-------	200	-------	1,450	-------	111	118	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	670	111	166	10,200
November	3,130	148	449	26,700
December	241	----------	193	11,900
January	----------	----------	261	16,000
February	220	172	185	10,300
March	521	164	216	13,300
April	1,310	190	343	20,400
May	2,560	200	551	33,900
June	1,500	156	461	27,400
July	592	104	196	12,000
August	1,040	118	308	18,900
September	6,930	79	818	48,600
The year	6,930	79	345	250,000

[a] Interpolated.

SOLDIER CREEK AT TOPEKA, KANS.

LOCATION.—Chain gage in NW. ¼ sec. 18, T. 11 S., R. 15 E., at State Industrial School, in Topeka.
DRAINAGE AREA.—304 square miles.
RECORDS AVAILABLE.—May, 1929, to September, 1931.
EXTREMES.—Maximum discharge during year, 5,290 second-feet Oct. 16 (gage height, 18.71 feet); no flow July 29.
1929–1931: Maximum and minimum discharges, same as given above.
REMARKS.—Records fair except those before Feb. 20, which are poor.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22	27	127	34	a 37	26	58	97	50	3	200	1,770
2	20	a 26	84	34	37	24	62	92	40	50	1,500	2,780
3	19	26	84	31	a 35	23	58	84	34	79	1,400	160
4	18	25	a 82	a 30	a 33	22	58	74	36	50	236	88
5	18	24	a 80	28	31	21	42	92	33	278	148	66
6	19	24	a 78	36	a 36	27	42	137	33	172	1,210	50
7	20	23	a 76	37	40	25	42	102	31	46	127	50
8	19	23	74	37	36	35	41	84	41	18	62	36
9	19	23	74	36	33	32	42	84	45	13	650	31
10	18	23	70	36	30	40	44	74	24	7	820	23
11	18	23	a 68			26	70	39	88	8	14	236	22
12	a 23	23	62			27	127	33	79	676	8	74	20
13	28	23	a 62	20		31	217	31	74	257	8	50	16
14	32	23	a 62			30	185	26	66	79	66	43	16
15	223	24	62			23	127	28	62	66	36	33	14
16	5,080	a 130	62			31	79	42	54	97	16	26	23
17	516	258	62			42	66	42	54	97	9	27	18
18	308	87	62	25		50	58	58	58	45	7	28	21
19	258	92	62			42	50	54	137	28	7	33	16
20	111	2,270	62	29	31	46	79	84	18	4	383	18
21	55	850	a 62	36	29	54	676	62	18	6	70	2,190
22	55	172	62	40	33	58	236	97	13	26	30	3,100
23	51	a 150	62	42	28	50	185	92	10	16	20	731
24	38	a 128	58	42	41	40	117	70	8	8	18	257
25	27	a 106	58	a 42	36	37	127	58	8	6	14	575
26	a 32	a 84	58	a 43	33	38	299	50	a 6	6	14	790
27	38	62	54	43	28	50	257	44	5	4	14	148
28	38	62	a 54	40	29	58	137	46	5	1	10	107
29	32	127	54	39	------	58	117	45	5	0	8	92
30	32	362	45	38	------	58	107	54	5	4	7	79
31	27	------	44	38	------	58	------	50	------	5	7	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	5,080	18	233	14,300
November	2,270	23	177	10,500
December	127	44	66.6	4,100
January	43	----------	32.6	2,000
February	50	23	33.5	1,860
March	217	21	60.0	3,690
April	676	26	106	6,310
May	137	44	75.6	4,650
June	676	5	60.7	3,610
July	278	0	31.4	1,930
August	1,500	7	242	14,900
September	3,100	14	444	26,400
The year	5,080	0	130	94,200

a Interpolated.

DELAWARE RIVER AT VALLEY FALLS, KANS.

LOCATION.—Chain gage in SW. ¼ sec. 18, T. 8 S., R. 18 E., at Valley Falls, 500 feet below Walnut Creek.

DRAINAGE AREA.—922 square miles.

RECORDS AVAILABLE.—June, 1922, to September, 1931.

EXTREMES.—Maximum discharge during year, 10,800 second-feet Sept. 1 (gage height, 19.99 feet); minimum, 13 second-feet July 31 (gage height, 2.43 feet).

1922–1931: Maximum discharge, 30,000 second-feet June 16, 1925 (gage height, 29.72 feet); minimum, 1.3 second-feet Oct. 28, 1922 (gage height, 1.49 feet).

REMARKS.—Records good except those for period Oct. 17 to Feb. 25, which are fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22	40	125	50	73	51	107	160	66	18	2,600	10,700
2	21	40	111	54	72	49	105	160	57	109	4,660	2,430
3	20	42	109	55	70	47	101	123	49	72	5,300	279
4	20	42	113	64	66	45	101	121	42	354	258	160
5	20	41	113	60	66	46	85	141	51	900	6,930	117
6	20	39	111	54	67	45	73	172	56	172	3,940	93
7	24	37	107	51	72	47	65	143	117	61	244	76
8	25	36	97	52	67	58	66	132	60	38	148	66
9	25	40	91	52	60	66	73	132	41	27	3,730	57
10	24	41	93	54	46	115	66	134	35	23	1,070	49
11	22	42	87	61	52	212	57	125	56	22	260	48
12	25	42	76	58	58	306	57	111	522	172	141	43
13	42	43	73	41	65	454	54	115	119	242	117	40
14	55	44	74	29	52	387	50	101	65	420	84	38
15	3,040	44	72		51	290	51	95	1,130	109	80	70
16	2,010	148	69		58	185	113	85	590	46	70	44
17	160	148	56		73	139	160	76	172	32	64	34
18	130	117	58		70	117	95	76	80	27	65	32
19	109	85	66	30	65	105	73	242	67	25	1,310	29
20	91	2,880	62		65	119	556	97	54	772	320	27
21	84	556	62		64	111	990	78	117	115	1,130	5,650
22	84	227	62		65	97	322	172	95	40	85	4,970
23	80	185	62		66	95	227	121	45	28	69	1,070
24	73	143	61	84	67	89	227	74	37	20	61	2,000
25	79	103	60	95	64	67	322	91	40	18	54	3,920
26	58	74	58	91	57	62	522	61	24	16	52	2,680
27	55	56	57	89	55	65	322	58	22	15	52	393
28	54	48	58	87	53	87	227	58	22	15	52	244
29	49	87	52	84	-------	99	185	84	20	14	44	185
30	46	338	41	80	-------	101	172	93	18	13	40	160
31	41	-------	48	82	-------	113	-------	80	-------	14	50	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	3,040	20	213	13,100
November	2,880	36	194	11,500
December	125	41	76.9	4,730
January	95	----------	54.7	3,370
February	73	46	62.8	3,490
March	454	45	125	7,670
April	990	50	187	11,200
May	242	58	113	6,960
June	1,130	18	129	7,670
July	900	13	127	7,830
August	6,930	40	1,070	65,600
September	10,700	27	1,190	70,800
The year	10,700	13	296	214,000

WAKARUSA RIVER NEAR LAWRENCE, KANS.

LOCATION.—Chain gage in NW. ¼ sec. 24, T. 13 S., R. 19 E., 4 miles southwest of Lawrence and 11 miles above junction with Kansas River.

DRAINAGE AREA.—458 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 1,100 second-feet June 16 (gage height, 10.90 feet); no flow during October, November, July, August, September.

1929–1931: Maximum discharge, about 7,550 second-feet May 12, 1929 (gage height, 27.87 feet); no flow during several summer months in 1930, 1931.

REMARKS.—Records fair. Station not well rated for high water. Period of ice effect Dec. 22 to Jan. 17.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0	3		2	10	76	158	82	3	0	1
2	0	0	35		2	10	76	158	59	5	0	1
3	0	0	20		2	8	76	131	49	17	6	1
4	0	0	14		2	6	69	106	39	98	1	4
5	0	0	18		2	4	55	98	24	642	7	4
6	0	6	16		2	6	49	106	18	212	394	4
7	0	5	12		4	4	40	94	28	80	66	4
8	0	0	12		5	4	32	94	24	27	25	3
9	0	0	11	1	5	7	32	98	18	14	13	6
10	0	0	10		4	11	34	122	17	11	10	1
11	0	0	6		2	22	37	114	28	9	11	0
12	0	0	5		7	31	43	90	382	14	30	1
13	0	0	3		7	96	37	80	167	167	12	0
14	0	0	2		6	167	32	72	86	242	5	0
15	0	0	1		5	122	27	62	106	176	4	0
16	24	0	1		6	86	80	52	561	25	1	0
17	22	0	1		16	58	122	43	370	9	1	0
18	10	0	1	4	13	49	140	58	106	12	3	0
19	4	1	1	4	13	37	114	370	52	7	27	0
20	2	22	1	4	18	30	131	272	37	8	69	0
21	1	172	1	4	16	27	472	122	11	6	18	0
22	0	56		4	16	25	335	212	21	5	7	30
23	1	23		4	16	26	232	272	15	4	3	140
24	0	12		5	16	19	185	167	6	3	2	62
25	0	7		5	17	20	212	122	9	3	2	21
26	0	3	1	4	17	19	445	86	5	2	2	10
27	0	1		4	14	18	500	62	5	0	0	8
28	0	1		4	12	21	252	49	5	1	2	5
29	0	1		4	-------	30	194	58	3	1	1	4
30	0	7		4	-------	34	167	439	2	1	1	3
31	0	-------		4	-------	46	-------	172	-------	0	1	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	24	0	206	127
November	172	0	10.6	629
December	35	----------	5.94	365
January	5	----------	2.42	149
February	18	2	8.82	490
March	167	4	34.0	2,090
April	500	27	143	8,520
May	439	43	134	8,210
June	561	2	77.8	4,630
July	642	0	58.2	3,580
August	394	0	23.4	1,440
September	140	0	10.4	621
The year	642	0	42.6	30,800

STRANGER CREEK NEAR TONGANOXIE, KANS.

LOCATION.—Chain gage in NE. ¼ sec. 13, T. 11 S., R. 21 E., 4 miles east of Tonganoxie and 9 miles above junction with Kansas River.

DRAINAGE AREA.—406 square miles.

RECORDS AVAILABLE.—May, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 2,200 second-feet Aug. 5 (gage height, 20.96 feet); minimum, 3 second-feet July 30 to Aug. 1.

1929–1931: Maximum discharge, 10,600 second-feet June 2, 1929 (gage height, 26.46 feet); minimum, 1 second-foot Sept. 30, 1929, Aug. 6-11, 1930. Maximum stage known, 27.31 feet Apr. 21, 1929 (discharge, 15,300 second-feet).

REMARKS.—Records fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4	7	276	20	34	28	56	115	136	5	3	36
2	4	7	171	19	34	27	56	66	101	12	30	1,320
3	4	7	71	19	33	26	48	89	77	44	569	1,360
4	4	6	89	20	32	24	40	83	61	17	248	157
5	4	7	178	20	30	22	39	77	77	766	1,900	42
6	5	7	178	20	33	24	36	89	348	461	836	34
7	5	8	143	22	36	26	34	89	416	89	284	30
8	5	9	89	27	34	28	32	77	129	26	95	27
9	5	9	71	27	33	34	33	77	71	15	407	21
10	6	9	66	24	30	46	39	77	54	10	389	18
11	6	9	56	24	27	89	44	71	89	7	192	16
12	7	10	51		27	178	42	66	822	6	66	11
13	8	10	46		32	269	38	58	407	380	42	8
14	11	11	42		32	348	33	54	150	77	18	7
15	32	12	36		32	234	32	42	89	26	11	7
16	684	13	34	20	32	143	39	40	332	17	8	6
17	1,200	15	32		36	95	66	38	255	11	6	6
18	558	27	28		42	66	58	822	71	6	6	5
19	40	38	26		38	58	42	1,480	48	5	136	5
20	24	1,010	24		36	48	61	580	36	4	77	5
21	16	558	22		34	46	658	192	27	5	7	115
22	13	213	22	36	36	44	503	372	24	101	11	866
23	13	171	21	30	34	42	199	269	22	21	8	978
24	12	77		34	34	39	157	192	20	9	6	185
25	11	32		33	36	38	171	199	18	5	5	213
26	11	22		44	34	33	276	115	13	5	4	300
27	10	19	20	48	32	30	308	77	11	4	4	248
28	10	17		46	28	38	234	58	8	4	4	38
29	9	26		42	-------	48	164	461	6	4	4	19
30	9	150		36	-------	48	136	481	6	3	4	9
31	8	-------		34	-------	48	-------	185	-------	3	4	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,200	4	88.3	5,430
November	1,010	6	83.9	4,990
December	276	-------	62.3	3,830
January	48	-------	26.6	1,640
February	42	27	33.2	1,850
March	348	22	73.1	4,500
April	658	32	122	7,290
May	1,480	38	216	13,300
June	822	6	131	7,780
July	766	3	69.3	4,260
August	1,900	3	174	10,700
September	1,360	5	203	12,100
The year	1,900	3	107	77,600

GRAND RIVER BASIN

GRAND RIVER NEAR GALLATIN, MO.

LOCATION.—Chain gage in NW. ¼ sec. 16, T. 59 N., R. 27 W., at highway bridge 1,000 feet above Chicago, Rock Island & Pacific Railway bridge and 2 miles northeast of Gallatin. Zero of gage is 712.83 feet above mean sea level.

DRAINAGE AREA.—2,250 square miles.

RECORDS AVAILABLE.—June, 1921, to September, 1931.

EXTREMES.—Maximum discharge during year, 12,800 second-feet Sept. 26 (gage height, 23.95 feet); minimum discharge, 18 second-feet July 31, Aug. 26; minimum gage height, 2.36 feet July 31.

1921–1931: Maximum discharge, 56,800 second-feet June 2, 1929 (gage height, 37.38 feet); minimum, 10 second-feet while river was dammed upstream May 15, 1924 (gage height, 1.55 feet).

Maximum stage known, 39.3 feet in July, 1909.

REMARKS.—Records good except those for periods of ice effect, Dec. 1–3, Dec. 16 to Jan. 2, Jan. 13–24, which are poor.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46	25	91	28	53	46	810	422	350	49	29	2,290
2	38	25	144	28	55	42	870	350	303	49	422	2,850
3	32	24	126	27	52	42	780	280	446	68	398	2,180
4	29	23	81	26	49	36	780	246	374	77	216	470
5	29	24	189	26	45	36	578	226	198	48	135	180
6	26	24	750	32	49	36	422	235	3,690	53	47	144
7	33	24	551	32	48	33	326	198	2,680	46	33	66
8	34	24	268	36	47	29	257	180	1,460	45	29	42
9	30	23	171	29	46	63	216	180	692	60	29	36
10	35	23	126	39	46	70	216	189	497	44	144	30
11	30	24	101	38	58	45	198	198	350	64	996	26
12	26	25	72	30	39	235	171	198	292	62	280	24
13	30	36	75	28	35	932	126	198	246	62	75	24
14	36	29	58	28	36	2,680	98	180	246	153	39	24
15	66	26	48	23	42	1,960	98	153	198	144	29	24
16	551	30	48	23	43	1,030	101	135	374	122	25	22
17	996	32	40	23	39	692	446	112	180	69	22	24
18	374	35	34	23	39	497	810	108	135	98	21	26
19	144	39	34	23	43	398	446	162	112	66	20	24
20	88	50	34	23	42	303	374	721	93	70	257	21
21	53	810	34	23	50	235	6,600	398	96	422	180	663
22	58	374	28	23	46	198	1,270	216	106	207	144	5,410
23	35	198	28	23	45	180	1,340	162	117	126	42	4,790
24	30	112	28	28	48	171	780	144	113	171	27	5,340
25	30	78	28	38	58	144	750	122	119	144	20	6,950
26	30	58	28	45	88	144	1,420	85	135	55	18	12,300
27	30	35	28	46	75	135	1,670	72	101	38	45	6,670
28	27	33	28	46	63	153	932	66	85	36	36	2,180
29	26	39	28	49	------	280	663	135	66	29	33	870
30	25	45	28	53	------	422	497	1,960	54	22	23	578
31	24	------	28	58	------	692	------	840	------	18	605	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	996	24	98.1	0.044	0.05
November	810	23	78.2	.035	.04
December	750	28	108	.048	.06
January	58	23	32.2	.014	.02
February	88	35	49.2	.022	.02
March	2,680	29	386	.172	.20
April	6,600	98	802	.356	.40
May	1,960	66	286	.127	.15
June	3,690	54	464	.206	.23
July	422	18	87.6	.039	.04
August	996	18	143	.064	.07
September	12,300	21	1,810	.804	.90
The year	12,300	18	360	.160	2.18

GRAND RIVER NEAR SUMNER, MO.

LOCATION.—Chain gage in NE. ¼ sec. 29, T. 56 N., R. 21 W., at highway bridge 80 feet below Chicago, Burlington & Quincy Railroad bridge and 2 miles southwest of Sumner. Zero of gage is 630.77 feet above mean sea level.

DRAINAGE AREA.—6,880 square miles.

RECORDS AVAILABLE.—April, 1924, to September, 1931.

EXTREMES.—Maximum discharge during year, 35,600 second-feet Apr. 22 (gage height, 28.0 feet); minimum, 105 second-feet Nov. 4–9.

1924–1931: Maximum discharge, 110,000 second-feet June 4, 1929; maximum gage height, 35.35 feet Nov. 20, 1928; minimum discharge, that of Nov. 4–9, 1930; minimum gage height, 2.80 feet Dec. 2, 1924, Mar. 8, 1931.

Maximum stage known, 36.7 feet July 9, 1909 (discharge, about 150,000 second-feet).

REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	212	111	940	133	168	248	4,660	1,880	6,010	365	183	1,940
2	183	108	640	123	158	209	4,360	1,540	2,720	345	177	7,120
3	155	108	485	120	158	189	3,770	1,320	2,060	325	248	5,770
4	133	105	465	120	162	189	3,560	1,100	2,060	465	445	4,580
5	126	105	545	120	152	183	3,240	940	2,000	445	265	2,180
6	120	105	3,700	145	152	189	2,360	840	9,260	365	325	740
7	155	105	3,430	114	168	195	1,880	690	19,400	345	265	505
8	150	105	2,060	114	162	137	1,430	690	18,000	740	209	365
9	165	105	1,100	137	152	226	1,210	690	11,700	590	248	265
10	150	108	740	130	148	248	1,160	640	4,810	405	305	230
11	133	108	545	137	145	325	1,210	690	2,540	325	345	195
12	126	111	425	133	165	445	1,100	740	6,940	305	1,430	183
13	123	111	345	114	150	1,380	940	740	9,900	285	790	160
14	117	108	305	130	150	4,810	790	640	6,780	325	405	150
15	120	108	248	126	140	7,280	640	590	3,360	365	285	145
16	120	108	209	117	150	5,210	740	545	1,940	590	223	150
17	445	150	186	118	160	3,040	4,580	505	1,320	445	195	202
18	1,380	140	171	135	177	2,240	5,130	465	990	365	183	160
19	740	114	145	118	183	1,760	3,240	1,040	790	325	171	145
20	405	325	145	128	198	1,480	2,720	5,450	640	990	265	265
21	248	1,040	111	128	198	1,260	25,300	3,630	890	590	485	155
22	195	940	135	128	198	1,040	35,600	2,000	3,360	640	365	6,260
23	165	840	117	125	206	890	26,900	1,430	3,040	1,320	405	10,900
24	126	485	117	138	206	840	11,700	1,040	2,000	690	285	16,000
25	126	345	140	148	206	740	6,010	840	1,160	465	223	18,000
26	123	195	137	158	220	690	6,010	690	990	405	248	24,200
27	123	126	123	158	220	690	8,000	590	690	305	325	26,100
28	123	120	137	148	230	840	5,690	485	545	265	223	16,900
29	120	140	123	142	-------	1,260	3,360	2,360	465	230	202	6,690
30	120	248	140	135	-------	2,300	2,420	2,540	405	202	183	2,480
31	111	-------	133	158	-------	3,430	-------	9,260	-------	195	465	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,380	111	221	0.032	0.04
November	1,040	105	231	.034	.04
December	3,700	111	588	.085	.10
January	158	114	132	.019	.02
February	230	140	174	.025	.03
March	7,280	137	1,420	.206	.24
April	35,600	640	5,990	.871	.97
May	9,260	465	1,500	.218	.25
June	19,400	405	4,230	.615	.69
July	1,320	195	452	.066	.08
August	1,430	171	335	.049	.06
September	26,100	145	5,100	.741	.83
The year	35,600	105	1,690	.246	3.35

THOMPSON RIVER AT TRENTON, MO.

LOCATION.—Chain gage in SE. ¼ sec. 20, T. 61 N., R. 24 W., 1 mile south of Trenton. Chain gage at site 2 miles upstream was used prior to Oct. 1, 1930.

DRAINAGE AREA.—1,680 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 5,100 second-feet Sept. 25 (gage height, 10.94 feet); minimum, 15 second-feet Nov. 6, 7 (gage height, 3.42 feet).

1928–1931: Maximum discharge, 26,700 second-feet Nov. 18, 1928 (gage height, 22.31 feet); minimum discharge, that of Nov. 6, 7, 1930; minimum gage height, 2.70 feet Oct. 7, 8, 1929.

Maximum stage known, 30.7 feet July 6, 1909.

REMARKS.—Records good except those for periods of ice effect, Nov. 26–28, Dec. 2, 16–23, 25–30, Jan. 9, 13–23, which are poor.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	49	17	80	39	26	25	811	227	312	71	47	2,600
2	39	18	75	41	26	23	635	190	216	80	47	710
3	32	18	44	41	26	21	311	153	380	138	54	258
4	26	18	39	41	25	18	660	124	246	124	52	116
5	25	17	518	47	23	20	449	109	201	80	80	131
6	23	15	380	55	25	17	334	97	2,770	145	67	91
7	39	15	182	49	25	23	242	86	3,890	913	49	63
8	37	18	91	34	26	39	190	86	2,510	291	71	44
9	30	18	67	30	25	109	145	86	1,280	153	63	41
10	26	17	52	32	26	160	153	91	587	97	49	37
11	21	17	44	32	25	63	109	116	380	80	334	32
12	20	18	34	23	26	312	71	116	403	86	102	30
13	21	18	34	21	26	660	52	80	357	116	67	28
14	44	18	32	21	25	964	44	67	283	635	59	26
15	32	18	28	21	25	610	80	59	235	266	49	138
16	357	18	21	21	28	426	660	52	182	153	41	63
17	124	23	21	30	25	380	1,390	49	153	97	41	39
18	49	20	21	30	28	291	518	63	138	75	41	39
19	34	18	21	30	28	220	426	710	102	80	91	49
20	30	63	21	30	26	168	1,760	275	91	102	124	37
21	25	63	21	30	25	124	4,280	153	250	227	190	1,170
22	30	47	21	30	23	97	1,390	102	2,000	660	109	2,600
23	34	37	21	30	39	80	610	80	1,390	242	86	3,400
24	32	32	26	30	32	67	495	71	811	131	59	3,110
25	30	28	30	28	30	63	587	63	518	86	52	5,100
26	28	21	30	21	28	52	1,560	52	291	63	59	4,490
27	25	21	30	26	26	59	760	47	197	52	55	3,690
28	21	30	30	25	26	131	472	41	153	49	47	964
29	18	55	30	23	-------	197	357	220	124	41	41	564
30	17	97	30	25	-------	403	283	2,600	97	41	41	334
31	17	-------	32	25	-------	811	-------	587	-------	39	1,620	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	357	17	43.1	0.026	0.03
November	97	15	27.8	.017	.02
December	518	21	67.9	.040	.05
January	55	21	31.0	.018	.02
February	39	23	26.6	.016	.02
March	964	17	214	.127	.15
April	4,280	44	678	.404	.45
May	2,600	41	221	.132	.15
June	3,890	91	685	.408	.46
July	913	39	175	.104	.12
August	1,620	41	125	.074	.09
September	5,100	26	1,000	.595	.66
The year	5,100	15	273	.162	2.22

WELDON RIVER AT MILL GROVE, MO.

LOCATION.—Chain gage in SE. ¼ SE. ¼ sec. 28, T. 64 N., R. 24 W., at county highway bridge in Mill Grove.

DRAINAGE AREA.—494 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year ending Sept. 30, 1931, 3,320 second-feet Sept. 26 (gage height, 13.94 feet); minimum, 1.6 second-feet Oct. 4–6, Sept. 14; minimum gage height, 1.16 feet Sept. 14.

1929–1931: Maximum discharge, 14,000 second-feet June 2, 1929 (gage height, 20.6 feet); minimum discharge, 1.6 second-feet Sept. 21–24, Oct. 4–6, 1930, Sept. 14, 1931; minimum gage height, that of Sept. 14, 1931.

REMARKS.—Records good except those for periods of ice effect, Dec. 1–3, 20–26, 1929, Jan. 6 to Feb. 10, Nov. 26–29, Dec. 2–3, 1930, which are poor.

Daily and monthly discharge, in second-feet, 1929–1931

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1929							1929						
1	-------	275	2,080	16	32	7	16	292	87	24	3,270	11	11
2	-------	188	11,500	13	24	7	17	210	62	32	428	11	9
3	360	152	5,840	17	20	7	18	195	55	37	210	11	8
4	292	118	1,580	17	17	7	19	2,000	49	30	99	10	580
5	258	112	482	16	16	6	20	7,530	43	26	87	11	326
6	195	118	309	700	292	5	21	5,310	40	25	75	10	76
7	173	125	210	1,470	226	5	22	5,400	36	62	62	10	36
8	152	99	226	226	58	6	23	1,250	35	42	47	12	25
9	180	87	166	195	31	275	24	1,050	38	36	41	16	23
10	840	70	132	118	25	159	25	4,700	37	29	38	14	19
11	1,050	93	99	1,640	22	53	26	2,120	38	19	35	12	17
12	540	118	76	5,510	20	17	27	520	44	24	23	10	16
13	292	93	67	377	17	16	28	1,220	51	16	17	10	13
14	309	125	60	173	14	14	29	1,280	43	20	17	8	11
15	501	112	49	1,930	12	13	30	394	46	15	45	7	11
							31	-------	69	-------	75	7	------

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1929–30												
1	10	660	26	30	11	142	92	65	36	51	3.5	6
2	10	195	26	40	11	103	86	69	36	36	2.9	6
3	10	125	26	38	18	98	81	63	35	22	2.9	4.1
4	9	93	30	33	18	103	76	57	33	16	2.9	3.5
5	13	75	30	29	26	103	71	51	170	15	2.6	3.8
6	14	67	30	26	44	103	70	184	128	14	2.3	3.8
7	13	58	33	26	87	98	66	1,220	76	10	2.3	3.8
8	11	51	38	18	180	98	62	580	58	9	45	3.8
9	10	48	40	18	464	86	60	199	42	9	20	3.5
10	173	118	40	11	720	81	56	309	32	10	10	3.2
11	173	145	48	11	700	81	52	343	29	8	10	3.2
12	258	125	66	11	1,330	76	50	214	29	6	8	2.9
13	82	1,310	75	11	600	76	49	128	27	6	4.1	2.9
14	43	1,440	72	11	292	70	47	86	26	7	3.8	11
15	32	501	64	11	163	67	229	76	229	6	3.8	14
16	28	226	61	11	156	70	309	61	229	6	4.7	6
17	24	159	61	11	184	81	229	59	122	6	6	3.8
18	23	132	61	11	244	244	142	81	53	4.4	6	2.6
19	22	112	46	11	292	326	98	122	34	3.8	8	2.3
20	740	99	26	11	244	244	71	109	28	3.8	8	1.9
21	180	82	18	11	214	163	69	86	28	3.8	6	1.7
22	106	61	18	11	214	122	69	66	28	4.4	3.8	1.6
23	99	58	18	11	199	98	67	1,280	26	4.7	3.8	1.6
24	76	55	18	11	163	98	62	520	22	5	3.5	1.8
25	33	42	18	11	229	259	58	156	27	4.4	3.5	2.0
26	25	41	18	11	1,200	*229	56	103	27	3.8	3.5	1.9
27	30	54	19	11	292	170	55	71	50	3.2	3.5	1.8
28	840	62	18	11	184	128	52	63	29	3.2	3.2	1.9
29	2,540	56	20	11	-------	115	54	55	23	3.2	3.8	1.9
30	942	33	21	11	-------	103	61	44	128	2.9	3.8	1.9
31	1,050	-------	24	11	-------	98	-------	38	-------	2.9	5	-------

Daily and monthly discharge, in second-feet, of Weldon River at Mill Grove, Mo., 1929–1931—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1930–31												
1	1.9	2.3	10	2.6	4.1	5	115	36	37	7	3.2	86
2	1.8	2.3	5	2.0	3.8	4.7	115	30	36	12	5	76
3	1.7	2.3	5	2.3	3.5	4.4	177	26	30	28	10	26
4	1.6	2.6	6	2.6	3.5	5	103	22	24	17	6	16
5	1.6	3.5	22	2.9	3.5	5	68	21	142	11	3.8	12
6	1.6	3.5	28	2.9	3.5	5	46	20	446	81	2.9	8
7	4.4	3.5	10	2.9	3.8	5	36	19	292	42	2.6	4.7
8	6	3.5	11	3.5	4.1	6	30	19	122	26	2.6	4.1
9	4.1	4.1	10	3.8	4.1	7	27	19	55	17	53	3.2
10	4.4	4.1	8	4.1	3.8	7	25	20	36	14	103	2.3
11	2.9	3.5	6	3.5	3.5	15	22	26	25	12	39	1.8
12	2.0	3.8	4.4	3.2	3.5	44	17	23	35	12	19	1.8
13	2.0	4.1	4.4	3.2	3.8	53	13	21	36	67	10	1.8
14	5	4.7	4.1	3.2	4.1	92	11	17	44	81	7	10
15	10	6	3.8	2.9	4.4	98	28	15	23	40	5	10
16	13	6	3.5	2.9	4.7	48	229	14	16	22	3.8	4.7
17	8	6	3.2	2.9	4.4	39	156	12	12	16	2.9	3.5
18	4.7	6	3.2	3.2	4.4	33	76	16	12	12	3.8	2.9
19	2.9	6	2.6	2.9	4.4	28	275	53	12	10	45	4.7
20	1.9	10	2.6	2.0	4.7	25	740	33	12	18	17	2.6
21	1.7	13	2.6	2.3	4.4	22	1,560	22	44	142	53	229
22	1.7	12	2.6	2.3	4.4	16	259	17	377	62	16	640
23	1.8	5	2.6	2.3	5	14	109	14	92	26	9	1,530
24	1.6	4.4	3.2	2.9	6	14	81	14	36	15	6	820
25	1.6	4.1	3.5	3.8	6	14	67	12	23	10	4.7	1,200
26	2.0	2.0	3.5	4.1	4.7	14	292	11	17	8	4.4	3,270
27	2.0	2.0	2.6	5	5	14	122	10	14	5	3.5	520
28	1.9	2.0	2.6	6	6	18	76	17	12	4.4	2.9	148
29	1.9	2.0	2.6	4.4	------	21	56	41	10	4.1	2.0	82
30	1.9	10	2.6	4.4	------	49	44	259	7	3.2	2.0	68
31	2.0	------	2.6	4.1	------	98	------	86	------	3.2	2.6	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
1929					
April 3–30	7,530	152	1,380	2.79	2.90
May	275	35	85.7	.173	.20
June	11,500	15	777	1.57	1.75
July	5,510	13	548	1.11	1.28
August	292	7	32.1	.065	.07
September	580	5	59.3	.120	.13
1929–30					
October	2,540	9	246	.498	.57
November	1,440	33	209	.423	.47
December	75	18	35.8	.072	.08
January	40	11	16.1	.033	.04
February	1,330	11	303	.613	.64
March	326	67	127	.257	.30
April	309	47	86.6	.175	.20
May	1,280	38	212	.429	.49
June	229	22	61.3	.124	.14
July	51	2.9	9.37	.019	.02
August	45	2.3	6.46	.013	.01
September	14	1.6	3.67	.0074	.008
The year	2,540	1.6	108	2.19	2.97
1930–31					
October	13	1.6	3.28	.0066	.008
November	13	2.0	4.81	.0097	.01
December	28	2.6	5.93	.012	.01
January	6	2.0	3.26	.0066	.008
February	6	3.5	4.32	.0087	.009
March	98	4.4	26.6	.054	.06
April	1,560	11	166	.336	.37
May	259	10	31.1	.063	.07
June	446	7	69.3	.140	.16
July	142	3.2	26.7	.054	.06
August	103	2.0	14.5	.029	.03
September	3,270	1.8	293	.593	.66
The year	3,270	1.6	53.6	.109	1.46

MEDICINE CREEK NEAR GALT, MO.

LOCATION.—Chain gage in NW. ¼ sec. 34, T. 62 N., R. 22 W., at Quincy, Omaha & Kansas City Railroad bridge 1 mile above West Medicine Creek and 1½ miles east of Galt.

DRAINAGE AREA.—225 square miles.

RECORDS AVAILABLE.—July, 1921, to September, 1931.

EXTREMES.—Maximum discharge during year, 3,910 second-feet Apr. 20 (gage height, 9.17 feet); minimum, 1.6 second-feet Feb. 25 (gage height, 2.65 feet).

1921–1931: Maximum discharge, 6,600 second-feet Apr. 20, 1929 (gage height, 15.60 feet); minimum, less than 1 second-foot Aug. 22, 29, 1922.

REMARKS.—Records fair except those for periods of ice effect, Nov. 23 to Dec. 3, Dec. 16 to Jan. 31, Mar. 8–10, and those for period of unreliable gage readings, July 1 to Sept. 30, which are poor.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.1	[a] 3.1	4.0	2.2	4.2	3.6	105	48	91	7	3.6	24
2	2.9	3.3	4.0	2.2	3.6	3.1	204	37	67	10	2.0	56
3	3.5	3.1	4.0	2.2	3.5	2.6	283	36	53	13	2.2	36
4	2.9	3.3	2.6	2.2	3.1	2.7	233	35	46	[a] 14	[a] 2.0	17
5	2.4	2.7	7	2.2	3.6	2.4	104	29	79	14	[a] 2.0	14
6	4.6	2.9	16	2.2	4.8	2.1	93	26	890	12	[a] 2.0	8
7	7	2.9	12	2.2	5	1.8	52	24	195	11	2.0	6
8	4.0	3.1	14	2.2	3.8	6	45	24	102	11	2.2	6
9	3.6	3.3	18	2.2	3.3	13	41	26	58	6	2.2	6
10	3.8	2.7	15	2.2	3.1	13	38	27	52	4.8	4.0	4.8
11	4.2	2.4	14	2.2	2.9	14	36	29	36	7	11	4.4
12	4.0	2.2	13	2.2	3.6	20	26	26	141	4.4	32	4.0
13	3.5	2.1	9	2.2	2.4	39	23	24	273	[a] 15	10	[a] 3.5
14	3.8	2.6	7	2.2	2.4	116	20	23	224	[a] 12	9	[a] 3.0
15	3.6	2.7	7	2.2	4.6	167	18	22	132	[a] 9	8	15
16	4.0	3.6	6	2.2	6	86	233	22	104	[a] 6	2.6	9
17	3.5	2.4	4.0	2.2	5	43	243	21	51	12	2.2	6
18	2.9	2.7	4.0	2.2	3.8	37	167	19	26	6	2.7	5
19	3.8	2.9	2.2	2.2	2.7	36	186	195	22	6	3.3	3.3
20	3.6	6	2.2	2.2	2.6	32	3,910	46	18	19	6	3.6
21	3.5	4.8	2.2	2.2	2.4	30	1,880	67	101	7	7	33
22	3.3	4.4	2.2	2.2	4.2	16	481	61	36	33	4.0	76
23	3.6	4.0	2.2	4.0	3.8	15	176	42	24	23	6	158
24	3.6	4.0	2.2	4.0	4.0	14	167	23	19	15	5	1,590
25	3.6	4.0	2.2	4.0	2.4	13	158	17	19	8	4.8	426
26	2.7	4.0	2.2	4.0	1.6	13	389	15	18	7	8	502
27	3.1	4.0	2.2	4.0	2.1	12	243	14	15	5	4.8	107
28	3.8	4.0	2.2	2.2	4.6	31	176	13	16	[a] 5	2.9	48
29	3.6	4.0	2.2	2.2	------	36	97	35	11	[a] 5	2.6	36
30	3.1	4.0	2.2	2.2	------	116	58	1,680	10	[a] 5	3.3	30
31	2.9	------	2.2	2.2	------	107	------	413	------	5	4.8	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	7	2.4	3.60	0.016	0.02
November	6	2.1	3.37	.015	.02
December	18	2.2	6.10	.027	.03
January	4.0	2.2	2.49	.011	.01
February	6	1.6	3.54	.016	.02
March	167	1.8	33.7	.150	.17
April	3,910	18	330	1.47	1.64
May	1,680	13	101	.449	.52
June	890	10	97.6	.434	.48
July	33	4.4	10.2	.045	.05
August	32	2.0	5.30	.024	.03
September	1,590	3.0	108	.480	.54
The year	3,910	1.6	58.3	.259	3.53

[a] Estimated.

MEDICINE CREEK NEAR STURGES, MO.

LOCATION.—Chain gage on line between sec. 35, T. 59 N., R. 23 W., and sec. 2, T. 58 N., R. 23 W., 3 miles east of Sturges.

DRAINAGE AREA.—368 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year ending Sept. 30, 1931, 5,700 second-feet June 6 (gage height, 10.36 feet); minimum discharge, 2.5 second-feet Jan. 9–20; minimum gage height, 3.08 feet Sept. 14.

1929–1931: Maximum discharge, 10,400 second-feet Apr. 21, 1929 (gage height, 15.74 feet); minimum discharge and gage height, those of 1931.

REMARKS.—Records fair except those for periods of ice effect, Nov. 22 to Dec. 10, Dec. 17–31, 1929, Jan. 1 to Feb. 10, Nov. 26 to Dec. 2, Dec. 14–25, 28–31, 1930, Jan. 1–23, 1931, which are poor.

Daily and monthly discharge, in second-feet, 1929–1931

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1929							1929						
1	-------	190	2,410	42	44	11	16	233	218	57	3,700	21	24
2	-------	122	5,620	43	62	11	17	136	106	56	2,410	19	18
3	-------	101	5,280	34	44	10	18	113	88	52	408	18	18
4	233	90	2,200	29	44	10	19	1,000	70	93	174	16	19
5	190	81	550	28	30	10	20	6,700	66	87	110	16	1,670
6	154	81	262	575	28	10	21	9,950	60	52	84	15	500
7	130	91	200	1,920	40	10	22	3,900	55	59	75	14	129
8	111	80	294	262	215	10	23	1,550	49	86	66	15	80
9	104	67	150	310	65	13	24	468	48	71	60	16	55
10	386	58	120	100	42	810	25	1,850	42	66	52	16	44
11	654	386	97	1,080	34	114	26	1,730	46	53	51	18	38
12	491	800	79	2,130	30	65	27	447	54	52	45	15	32
13	263	295	75	1,250	24	46	28	514	48	63	40	12	28
14	165	607	66	310	24	38	29	1,790	42	46	39	13	26
15	204	654	63	1,790	22	30	30	491	45	40	48	12	26
							31	-------	329	-------	66	12	------

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1929–30												
1	22	1,670	28	50	38	154	126	800	46	140	5	5
2	20	1,200	28	50	38	115	108	950	42	72	5	5
3	20	312	28	50	50	85	104	218	40	52	5	4
4	28	204	28	50	50	98	94	122	38	30	5	4
5	32	154	28	50	74	94	91	91	40	22	5	4
6	28	130	28	50	88	104	80	165	94	15	5	4
7	24	108	28	38	104	101	80	218	142	12	5	4
8	22	98	38	38	142	94	77	204	72	10	5	5
9	24	88	50	38	218	91	74	134	53	9	6	4
10	1,000	85	62	38	514	88	72	101	42	8	37	4
11	950	115	126	38	1,000	82	64	950	38	7	17	4
12	2,270	134	138	38	1,550	77	64	312	40	7	9	4
13	702	130	154	38	1,430	74	64	190	36	7	8	4
14	329	2,340	138	38	584	64	64	111	36	7	7	5
15	154	1,430	120	28	248	62	69	91	44	7	7	12
16	101	654	111	28	178	62	1,000	82	575	7	8	7
17	80	312	104	28	312	64	654	74	174	7	17	5
18	67	218	88	18	295	130	263	750	70	7	8	5
19	62	178	74	18	329	1,050	165	654	51	7	7	5
20	72	142	62	18	346	447	134	190	39	6	7	4
21	800	134	38	18	312	218	134	130	36	6	10	4
22	312	38	28	18	263	154	115	98	44	7	7	4
23	115	38	18	18	218	126	104	750	44	7	7	4
24	82	62	18	28	178	118	98	865	32	6	6	4
25	69	74	18	28	218	654	85	310	44	6	5	4
26	64	74	18	28	900	850	85	94	97	7	5	4
27	55	74	18	28	386	491	82	72	38	6	5	5
28	52	74	18	28	190	295	82	62	32	6	4	4
29	1,850	50	18	38	---------	218	82	57	32	6	5	4
30	3,600	28	28	38	---------	178	108	55	408	5	5	4
31	2,720	---------	50	38	---------	154	-------	51	-------	6	6	------

Daily and monthly discharge, in second-feet, of Medicine Creek near Sturges, Mo., 1929–1931—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1930-31												
1	3	3.5	5	5	4	4.5	332	113	328	20	8	34
2	3.5	4	5	5	4	5	314	99	175	21	11	97
3	3.5	4	8	5	4	6	332	81	146	18	9	130
4	3	4.5	9	5	4.5	4.5	476	71	121	25	8	68
5	3.5	4.5	37	5	3.5	4.5	282	59	670	20	6	43
6	3.8	4.5	109	5	6	8	153	55	3,420	15	7	18
7	9	4.5	61	5	8	9	95	52	610	15	7	11
8	17	4	40	5	5	5	79	52	284	15	7	9
9	8	4	68	2.5	4.5	29	57	49	165	15	18	8
10	6	4.5	29	2.5	3.0	21	76	55	132	15	21	7
11	5	4.5	31	2.5	4.5	19	68	62	99	15	21	7
12	5	4.5	26	2.5	4.5	37	44	62	885	14	23	7
13	4.5	5	21	2.5	7	153	31	59	1,820	21	46	6
14	5	4	10	2.5	4	282	17	49	272	18	25	5
15	6	5	10	2.5	3.5	282	19	43	155	17	17	7
16	17	7	10	2.5	4	228	72	35	103	18	8	23
17	19	6	10	2.5	7	125	820	33	78	25	8	6
18	7	4.5	10	2.5	6	79	254	28	65	18	7	5
19	6	4.5	10	2.5	4.5	72	153	580	43	14	7	5
20	5	10	10	2.5	4	64	1,820	260	38	20	17	5
21	4.5	9	5	5	4	50	3,540	128	1,300	49	22	25
22	5	9	5	5	4	44	2,480	95	217	23	29	344
23	6	6	5	10	5	24	470	71	85	71	12	284
24	5	6	5	7	7	19	260	52	65	33	10	1,640
25	4.5	6	5	8	5	21	238	43	49	23	10	2,290
26	4.5	5	9	6	5	21	820	33	41	18	11	820
27	4.5	5	10	6	4.5	21	610	33	28	13	10	760
28	4	5	5	4.5	4	111	284	28	28	11	9	196
29	4	5	5	4	-------	116	175	155	23	9	8	92
30	4	5	5	4	-------	202	136	1,380	21	9	8	49
31	3.5	-------	5	5	-------	350	-------	1,020	-------	8	16	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
1929					
April 4–30	9,950	104	1,260	3.42	3.43
May	800	42	164	.446	.51
June	5,620	40	613	1.67	1.86
July	3,700	28	559	1.52	1.75
August	215	12	32.1	.087	.10
September	1,670	10	130	.353	.39
1929-30					
October	3,600	20	507	1.38	1.59
November	2,340	28	345	.938	1.05
December	154	18	55.8	.152	.18
January	50	18	33.9	.092	.11
February	1,550	38	366	.995	1.04
March	1,050	62	213	.579	.67
April	1,000	64	147	.399	.45
May	950	51	289	.785	.90
June	575	32	84.0	.228	.25
July	140	5	16.4	.045	.05
August	37	4	7.84	.021	.02
September	12	4	4.63	.013	.01
The year	3,600	4	171	.465	6.32
1930-31					
October	19	3	6.11	.017	.02
November	10	3.5	5.27	.014	.02
December	109	5	18.8	.051	.06
January	10	2.5	4.34	.012	.01
February	8	3	4.79	.013	.01
March	350	4.5	78.0	.212	.24
April	3,540	17	484	1.32	1.47
May	1,380	28	159	.432	.50
June	3,420	21	382	1.04	1.16
July	71	8	20.2	.055	.06
August	46	6	13.7	.037	.04
September	2,290	5	233	.633	.71
The year	3,540	2.5	117	.318	4.30

LOCUST CREEK NEAR MILAN, MO.

LOCATION.—Chain gage in SW. ¼ sec. 8, T. 62 N., R. 20 W., at bridge on State highway 6, 3½ miles southwest of Milan.

DRAINAGE AREA.—225 square miles.

RECORDS AVAILABLE.—July, 1921, to September, 1931.

EXTREMES.—Maximum discharge during year, 2,650 second-feet June 6 (gage height, 15.97 feet); minimum discharge, 0.2 second-foot Oct. 2–6; minimum gage height, 1.90 feet Oct. 5.

1921–1931: Maximum discharge, 3,880 second-feet Nov. 18, 1928 (gage height, 20.07 feet); minimum, 0.1 second-foot Aug. 8, 1930.

REMARKS.—Records fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	1.0	55	2.4	1.5	3.0	236	58	540	10	1.8	49
2	.2	1.6	26	2.4	2.1	2.8	206	61	154	10	1.8	28
3	.2	1.8	15	2.8	2.5	2.6	344	46	102	14	1.7	26
4	.2	2.0	13	2.4	2.5	2.6	304	44	81	17	1.6	8
5	.2	2.4	170	2.8	2.3	2.4	146	39	116	16	1.4	12
6	.2	2.2	138	4.2	2.5	2.8	78	36	2,590	9	1.4	6
7	6	2.4	58	2.8	3.2	3.0	58	34	1,160	8	1.2	2.0
8	2.2	2.2	39	2.6	3.0	3.4	49	34	188	7	1.4	2.0
9	2.0	2.4	25	2.6	2.5	3.6	42	34	116	6	1.8	1.4
10	1.2	2.2	21	2.4	2.3	11	46	36	88	6	2.6	1.4
11	.7	2.4	17	2.8	2.1	34	49	39	67	4.6	20	1.0
12	.8	2.6	13	1.6	2.1	78	42	34	304	5	12	.7
13	1.0	2.8	12	1.4	2.3	154	28	34	256	7	6	.7
14	1.0	3	10	1.4	2.3	246	22	32	102	10	3	.5
15	1.2	3	9	1.8	2.5	146	23	28	78	10	2.6	1.2
16	2.4	8	7	1.6	2.3	95	268	28	46	13	2.0	5
17	3.8	3.4	6	1.6	2.3	67	400	24	36	10	1.8	2.2
18	3.0	3.8	6	2.4	2.5	61	130	26	32	28	1.6	1.0
19	2.0	3.4	5	2.4	2.5	58	116	226	28	18	1.6	1.0
20	1.4	67	4.2	1.8	2.5	42	1,350	162	138	67	2.6	.8
21	1.0	39	4.2	2.4	2.5	32	2,060	81	292	39	7	64
22	1.0	23	3.4	2.0	2.3	26	2,260	44	84	11	3	130
23	1.4	15	3.8	1.6	3.2	23	372	34	49	9	2	146
24	1.2	10	3.4	2.0	5	21	162	32	32	5	1.6	1,110
25	1.0	8	3.4	2.6	4.6	21	216	26	24	3.4	3.4	856
26	1.0	3.8	3.4	3.0	3.0	20	476	24	19	3.0	2.8	834
27	.9	4.6	2.4	3.8	3.4	20	316	23	16	2.4	2.2	400
28	1.0	3.8	2.8	3.4	3.0	28	130	36	16	1.8	1.6	58
29	1.0	4.2	2.6	3.8	-------	39	109	116	13	2.2	1.4	34
30	.9	46	2.6	2.9	-------	138	78	1,500	12	1.8	1	23
31	1.0	-------	2.6	2.5	-------	197	-------	1,480	-------	1.6	1	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	6	0.2	1.34	0.0060	0.007
November	67	1.0	9.23	.041	.05
December	170	2.4	22.1	.098	.11
January	4.2	1.4	2.46	.011	.01
February	5	1.5	2.67	.012	.01
March	246	2.4	51.1	.227	.26
April	2,260	22	337	1.50	1.67
May	1,500	23	144	.640	.74
June	2,590	12	226	1.00	1.12
July	67	1.6	11.5	.051	.06
August	20	1.0	3.13	.014	.02
September	1,110	.5	127	.564	.63
The year	2,590	.2	77.6	.345	4.69

LOCUST CREEK NEAR LINNEUS, MO.

LOCATION.—Chain gage in NE. ¼ sec. 34, T. 59 N., R. 21 W., at county highway bridge 3 miles northwest of Linneus.

DRAINAGE AREA.—550 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 8,800 second-feet Apr. 20 (gage height, 15.86 feet); minimum discharge, 3.6 second-feet Oct. 2; minimum gage height, 2.56 feet Sept. 13, 16.

1929–1931: Maximum discharge, 14,100 second-feet Apr. 21, 1929 (gage height, 20.89 feet); minimum discharge, that of Oct. 2, 1930; minimum gage height, that of Sept. 13, 16, 1931.

REMARKS.—Records good except those for periods of ice effect, Dec. 19 to Jan. 26, which are poor. Discharge estimated Feb. 3, 14, 15, May 25, 26, July 9.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.0	5	263	7	22	16	860	200	1,200	31	6	276
2	3.6	5	212	7	20	16	712	168	379	30	7	224
3	3.8	4.9	113	7	20	14	748	149	379	168	6	90
4	4.0	5	50	7	20	13	785	131	237	113	6	62
5	4.0	5	1,890	7	19	12	410	122	379	38	6	33
6	4.6	6	1,340	7	20	9	237	109	7,750	31	7	25
7	16	5	212	7	23	11	189	102	4,570	29	7	15
8	16	5	178	7	23	20	149	102	1,340	23	7	12
9	12	6	122	7	21	27	168	102	473	21	10	10
10	10	6	100	7	20	58	200	505	349	19	26	9
11	7	6	84	7	17	79	149	113	276	19	52	7
12	7	5	65	7	16	473	122	113	1,340	20	26	4.9
13	6	5	54	7	15	822	113	108	2,030	22	19	3.8
14	6	4.6	48	7	15	748	106	95	860	17	16	4.3
15	6	6	34	7	16	676	108	84	505	16	13	8
16	10	74	29	7	16	319	2,530	76	189	13	11	3.8
17	11	31	28	7	22	237	980	77	131	10	11	6
18	11	19	29	7	20	200	640	178	99	11	12	10
19	9	16	25	7	19	149	1,400	2,030	92	27	14	7
20	8	640	25	7	19	140	7,940	1,150	572	113	23	6
21	8	319	25	7	17	122	6,140	224	1,510	85	16	149
22	8	189	17	7	17	95	3,350	224	410	47	12	860
23	8	35	11	7	20	82	1,820	140	200	21	12	1,340
24	7	19	11	11	17	73	1,110	122	122	18	12	505
25	7	19	11	17	16	76	940	106	89	13	13	3,260
26	6	31	11	17	15	45	1,020	90	60	9	44	1,110
27	6	8	11	22	15	85	822	73	56	9	27	940
28	6	5	11	23	15	178	441	71	45	7	14	237
29	6	20	11	25	-------	290	349	822	35	6	11	95
30	5	572	11	25	-------	676	263	3,520	33	7	10	45
31	4.9	-------	11	23	-------	822	-------	3,440	-------	6	15	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	16	3.6	7.45	0.014	0.02
November	640	4.6	69.2	.126	.14
December	1,890	11	163	.296	.34
January	25	7	10.5	.019	.02
February	23	15	18.4	.033	.03
March	822	9	212	.385	.44
April	7,940	106	1,160	2.11	2.35
May	3,520	71	469	.853	.98
June	7,750	33	857	1.56	1.74
July	168	6	32.2	.059	.07
August	52	6	15.2	.028	.03
September	3,260	3.8	312	.567	.63
The year	7,940	3.6	276	.502	6.79

YELLOW CREEK NEAR ROTHVILLE, MO.

LOCATION.—Chain gage on line between NW. ¼ sec. 31, T. 56 N., R. 19 W., and NE. ¼ sec. 36, T. 56 N., R. 20 W., at county highway bridge 2½ miles southwest of Rothville.

DRAINAGE AREA.—442 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 5,450 second-feet Apr. 23 (gage height, 20.60 feet); minimum, 0.8 second-foot Nov. 6, 7; minimum gage height, 2.05 feet Sept. 19.

1929–1931: Maximum discharge, 6,450 second-feet Apr. 22, 1929 (gage height, 21.04 feet); minimum discharge, that of Nov. 6, 7, 1930; minimum gage height, that of Sept. 19, 1931.

REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.5	1.0	27	4.6	8	17	1,038	145	582	22	3.6	7
2	1.4	1.0	22	4.4	9	18	858	126	690	21	2.8	12
3	1.1	.9	62	3.6	9	16	621	90	470	15	3.3	4.4
4	1.1	1.0	102	3.6	9	14	459	79	194	16	2.8	11
5	1.0	1.0	108	3.6	9	12	376	69	132	84	2.2	5
6	.9	.8	145	3.8	9	11	331	54	690	56	2.2	4.8
7	3.2	.8	810	4.0	10	11	201	49	2,000	30	2.4	3.2
8	6	.9	634	4.0	10	12	132	43	2,630	20	2.4	3.0
9	6	.9	358	5	11	12	108	47	3,040	15	331	5
10	14	.9	152	4.4	17	12	126	52	2,270	12	62	4.0
11	8	3.0	84	4.0	17	14	138	59	1,060	10	9	3.4
12	4.4	1.8	64	4.0	16	59	201	64	582	9	4.6	2.9
13	3.1	2.7	49	4.2	13	415	152	62	1,560	10	3.0	2.4
14	2.9	2.2	37	6	11	634	102	62	2,390	8	2.4	3.6
15	2.5	2.2	30	3.7	11	647	74	52	2,030	9	2.2	1.8
16	2.8	3.2	26	3.5	9	556	59	43	922	8	2.0	1.8
17	1.7	4.0	24	4.2	11	385	49	35	272	9	1.6	1.4
18	1.6	3.8	17	4.0	11	296	506	30	138	10	1.5	1.6
19	1.8	3.4	12	8	9	138	608	459	96	9	9	1.5
20	1.6	3.0	13	6	12	114	385	1,380	74	145	1.9	1.6
21	1.4	3.4	11	6	15	102	1,920	858	62	30	2.1	2.4
22	1.4	3.6	8	7	14	84	2,770	470	49	37	1.8	4.6
23	1.4	14	8	8	15	74	5,450	331	426	54	1.6	9
24	1.3	24	7	7	14	59	2,690	240	304	33	1.3	415
25	1.3	56	6	7	14	52	1,440	569	108	16	1.2	543
26	1.6	27	5	6	17	43	735	120	64	10	1.1	890
27	1.4	22	4.8	4.8	20	45	890	90	45	7	1.0	608
28	1.0	13	4.4	4.4	20	90	530	62	37	5	1.0	232
29	.9	8	4.8	4.8	-------	248	349	194	30	4.2	1.3	126
30	.9	33	4.8	4.8	-------	556	194	1,000	26	3.9	1.0	59
31	.9	-------	4.8	6	-------	842	-------	735	-------	3.8	1.9	----

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	14	0.9	2.58	0.0058	0.007
November	56	.8	8.08	.018	.02
December	810	4.4	91.8	.208	.24
January	8	3.5	4.98	.011	.01
February	20	8	12.5	.028	.03
March	842	11	180	.407	.47
April	5,450	49	783	1.77	1.98
May	1,380	30	247	.559	.64
June	3,040	26	766	1.73	1.93
July	145	3.8	23.3	.053	.06
August	331	1.0	15.1	.034	.04
September	890	1.4	99.0	.224	.25
The year	5,450	.8	185	.419	5.68

CHARITON RIVER BASIN

CHARITON RIVER NEAR KEYTESVILLE, MO.

LOCATION.—Chain gage in SE. ¼ sec. 25, T. 54 N., R. 18 W., 4½ miles northeast of Keytesville.

DRAINAGE AREA.—1,950 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 9,690 second-feet. June 8 (gage height, 20.02 feet); minimum discharge, 11 second-feet Nov. 10, 13; minimum gage height, 1.76 feet Oct. 5, Nov. 3.

1929–1931: Maximum discharge, 18,700 second-feet Apr. 25, 1929 (gage height, 21.66 feet); minimum discharge, that of Nov. 10, 13, 1930; minimum gage height, that of Oct. 5, Nov. 3, 1930.

Maximum stage known, 22.54 feet Nov. 18, 1928.

REMARKS.—Records fair. Discharge estimated May 27.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	14	96	29	45	50	1,700	818	5,080	220	71	66
2	24	14	83	22	46	46	1,770	636	4,540	183	65	100
3	25	13	104	28	50	46	1,830	512	3,090	165	70	512
4	24	14	120	30	50	45	2,010	444	1,170	466	59	290
5	24	17	75	26	51	42	2,370	378	766	488	54	378
6	26	14	282	22	51	45	1,770	334	5,540	240	56	201
7	44	14	910	25	55	48	1,240	290	8,760	165	49	174
8	58	14	882	25	58	52	970	270	9,500	138	41	147
9	69	14	504	21	62	32	798	260	7,840	118	49	120
10	51	11	303	25	58	96	686	260	5,610	138	104	94
11	35	12	252	36	38	59	742	270	4,200	129	68	76
12	31	12	185	20	54	138	686	260	3,090	129	59	68
13	30	11	138	34	52	528	553	260	3,500	129	94	61
14	30	12	104	28	51	1,030	412	250	2,730	129	88	57
15	30	12	90	27	44	1,610	262	220	1,490	116	79	59
16	34	12	49	27	45	1,700	282	192	1,250	99	64	60
17	25	24	30	31	55	1,300	282	174	1,140	109	58	58
18	37	30	39	37	53	910	1,390	156	766	147	55	50
19	32	16	83	38	60	770	1,180	896	636	129	156	41
20	29	16	71	32	56	686	1,270	2,600	444	240	73	39
21	25	15	46	23	49	604	6,040	1,600	378	192	66	37
22	22	16	33	30	54	480	7,020	948	466	270	55	55
23	21	14	47	39	54	368	6,800	766	896	138	54	68
24	22	324	27	31	47	324	6,280	444	1,060	100	51	1,780
25	19	147	41	53	46	282	4,780	4,100	948	89	51	2,370
26	18	78	36	39	54	303	3,270	2,320	766	78	45	3,320
27	18	24	29	34	48	252	2,460	800	584	72	39	2,190
28	18	23	21	32	48	324	1,940	334	444	67	43	2,460
29	18	44	34	32	------	528	1,370	250	334	65	36	1,660
30	18	96	24	45	------	714	1,060	2,320	270	64	36	1,560
31	16	------	19	43	------	1,090	------	4,250	------	59	41	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	69	16	29.0	0.015	0.02
November	324	11	35.9	.018	.02
December	910	19	153	.078	.09
January	53	20	31.1	.016	.02
February	62	38	51.2	.026	.03
March	1,700	32	468	.240	.28
April	7,020	262	2,110	1.08	1.20
May	4,250	156	891	.457	.53
June	9,500	270	2,580	1.32	1.47
July	488	59	157	.081	.09
August	156	36	62.2	.032	.04
September	3,320	37	605	.310	.35
The year	9,500	11	594	.305	4.14

LAMINE RIVER BASIN

LAMINE RIVER AT CLIFTON CITY, MO.

LOCATION.—Chain gage in NW. ¼ sec. 16, T. 46 N., R. 19 W., at highway bridge 300 feet above Missouri-Kansas-Texas Railroad bridge and three-quarters of a mile east of Clifton City. Zero of gage is 622.60 feet above mean sea level.

DRAINAGE AREA.—598 square miles.

RECORDS AVAILABLE.—June, 1922, to September, 1931.

EXTREMES.—Maximum discharge during year, 8,500 second-feet Sept. 25 (gage height, 19.10 feet); minimum, 1.6 second-feet Oct. 5, 6 (gage height, 1.30 feet).

1922–1931: Maximum discharge, 33,000 second-feet May 19, 1929 (gage height, 29.0 feet); minimum, 0.9 second-foot Sept. 5, 1930 (gage height, 1.22 feet).

Maximum stage known, 35.3 feet Sept. 18, 1905.

REMARKS.—Records good except those for periods of ice effect, Dec. 20 to Jan. 10, Jan. 13–28, which are fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.0	6	198	12	11	74	337	115	198	20	2.2	880
2	2.0	5	179	9	11	62	257	110	142	18	2.6	5,140
3	1.8	4.0	118	9	10	55	212	97	113	17	2.6	2,700
4	1.8	4.6	82	9	10	44	173	76	99	16	2.2	337
5	1.6	4.0	62	9	10	41	137	66	108	16	3.4	137
6	1.6	3.6	62	9	10	39	118	62	147	16	3.8	95
7	99	4.6	55	9	405	36	101	58	113	12	3.4	66
8	137	5	51	9	227	47	88	70	78	12	3.4	47
9	82	6	55	12	132	58	84	86	70	14	10	36
10	41	6	51	12	86	62	93	95	55	12	26	31
11	25	6	44	13	66	74	97	108	82	11	30	113
12	17	8	36	14	51	320	88	320	5,720	10	84	510
13	12	9	31	12	104	1,400	72	242	2,600	8	43	137
14	10	9	27	9	157	1,280	60	157	475	7	26	78
15	15	9	26	9	137	545	56	118	2,700	7	17	44
16	58	13	22	9	118	320	53	90	720	7	14	25
17	51	15	20	12	272	304	49	70	320	7	10	16
18	27	13	19	12	257	168	80	475	212	6	16	14
19	19	12	19	12	198	127	49	5,840	150	6	127	16
20	20	14	17	12	157	104	60	6,460	120	10	104	13
21	19	20	17	12	118	104	125	960	93	6	22	11
22	16	25	14	12	95	142	257	4,040	76	24	17	70
23	14	16	14	12	108	162	160	3,690	68	8	11	1,680
24	12	41	14	12	184	152	127	650	49	7	212	6,700
25	10	27	14	12	179	122	125	1,520	43	7	11	7,120
26	9	20	14	12	137	104	198	545	37	6	10	371
27	9	16	14	12	108	720	354	320	30	6	8	184
28	9	14	14	12	86	2,780	227	212	28	3.8	6	142
29	9	19	14	11	------	1,080	165	320	24	3.4	16	99
30	8	108	14	11	------	580	137	337	22	3.0	11	82
31	7	------	14	11	------	440	------	304	------	2.6	12	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	137	1.6	24.1	0.040	0.05
November	108	3.6	15.4	.026	.03
December	198	14	42.9	.072	.08
January	14	9	11.0	.018	.02
February	405	10	123	.206	.21
March	2,780	36	372	.622	.72
April	354	49	138	.231	.26
May	6,460	58	891	1.49	1.72
June	5,720	22	490	.819	.91
July	24	2.6	9.96	.017	.02
August	212	2.2	28.0	.047	.05
September	7,120	11	896	1.50	1.67
The year	7,120	1.6	253	.423	5.74

OSAGE (MARAIS DES CYGNES) RIVER BASIN

OSAGE RIVER NEAR QUENEMO, KANS.

LOCATION.—Chain gage in NW. ¼ sec. 7, T. 17 S., R. 18 E., 2½ miles below Dragoon Creek and 3 miles east of Quenemo.

DRAINAGE AREA.—1,030 square miles.

RECORDS AVAILABLE.—June, 1922, to September, 1931.

EXTREMES.—Maximum discharge during year, 1,860 second-feet May 31 (gage height, 11.41 feet); no flow Sept. 16–20.

1922–1931: Maximum discharge, 32,600 second-feet Nov. 17, 1928 (gage height, 38.38 feet); no flow in July and August, 1926, Sept. 16–20, 1931.

REMARKS.—Records good except those for periods of ice effect Jan. 4–30 and Feb. 18–21, 1929, and April, May, June, 1931, which are fair. Records for the year ending Sept. 30, 1929, supersede those published in Water-Supply Paper 686, owing to revision of high-water records Nov. 17, 18, 1928, and May 13, 1929.

Daily and monthly discharge, in second-feet, 1928–29 and 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1928-29												
1	7	9	847	247	211	975	6,600	396	4,680	109	44	15
2	6	3	556	247	184	556	2,750	1,670	4,500	116	36	12
3	7	22	416	247	184	476	1,040	1,060	5,040	109	32	11
4	6	28	320	229	193	436	436	516	5,360	94	30	9
5	7	22	283	175	193	556	396	476	1,270	94	28	8
6	7	20	265	190	211	377	358	396	975	80	27	11
7	8	17	247	210	193	416	301	358	784	73	25	13
8	7	14	229	220	175	396	211	320	2,140	80	23	15
9	6	13	247	850	175	339	247	283	889	536	132	11
10	5	15	247	5,600	157	283	2,100	265	516	1,270	396	10
11	5	15	229	4,600	157	247	3,050	847	496	5,310	436	11
12	6	13	229	1,600	140	679	1,180	1,200	416	7,730	265	12
13	7	11	679	1,300	157	1,820	596	15,200	358	3,820	124	13
14	8	15	5,040	1,000	157	1,250	436	8,120	283	721	80	13
15	8	13	2,100	700	157	637	1,110	2,600	211	377	64	12
16	9	7,050	1,380	450	175	416	616	953	184	229	47	11
17	12	29,500	5,750	340	166	358	456	679	157	193	37	10
18	80	18,600	3,960	640	155	320	358	931	140	157	34	8
19	94	12,500	1,270	1,150	160	283	358	2,170	157	132	29	12
20	11	6,450	910	600	170	247	5,800	910	358	116	22	17
21	9	1,020	536	300	200	229	11,100	556	377	102	20	15
22	9	616	476	265	283	229	6,600	496	436	77	21	12
23	9	476	436	250	247	211	1,760	476	596	73	20	10
24	8	396	396	240	247	193	868	516	1,080	66	19	8
25	9	339	396	250	1,640	193	1,150	396	396	64	17	8
26	9	301	377	260	6,100	211	805	301	265	56	17	10
27	8	301	358	270	3,360	193	616	320	229	52	20	10
28	8	320	339	280	1,580	157	416	283	175	48	17	9
29	8	358	320	290	-------	140	377	283	140	44	16	8
30	7	700	283	300	-------	140	320	721	116	47	15	9
31	8	-------	265	283	-------	2,460	-------	4,680	-------	43	15	-------

Daily and monthly discharge, in second-feet, of Osage River near Quenemo, Kans., 1928–29 and 1930–31—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1930-31												
1	1	1	14	2	3	8	216	216	320	2	1	0.4
2	1	2	19	2	2	10	141	168	168	11	1	.4
3	.4	1	15	2	2	8	100	150	93	100	.4	.3
4	1	1	17	2	2	5	60	108	66	93	1	.3
5	1	2	16	2	2	5	51	132	50	45	1	.3
6	1	2	25	2	2	7	55	187	679	141	1	.4
7	1	1	40	2	2	8	58	187	556	93	1	.4
8	1	2	22	2	2	8	52	141	159	64	1	.4
9	1	2	16	2	3	9	40	122	122	33	1	.3
10	1	2	12	2	4	10	47	108	93	13	1	.3
11	1	2	14	2	4	10	47	100	436	6	1	.2
12	1	2	12	2	4	20	45	83	1,640	2	5	.2
13	1	2	11	2	4	69	36	67	536	13	4	.1
14	1	2	10	2	2	49	32	52	216	56	2	.1
15	1	1	8	2	2	178	26	47	263	29	2	.1
16	1	2	6	2	5	122	29	41	358	23	1	0
17	1	2	4	2	4	93	68	34	282	16	1	0
18	1	2	5	3	8	63	132	35	132	14	1	0
19	1	2	4	3	11	44	116	436	93	10	1	0
20	1	18	2	2	10	35	100	596	64	8	.4	0
21	1	66	2	2	10	35	784	263	41	16	.4	1
22	1	82	2	2	10	29	516	339	35	14	.4	1
23	1	49	2	3	12	34	301	826	25	10	.4	1
24	1	34	2	2	14	29	225	456	14	8	.4	1
25	1	17	2	2	12	21	187	196	13	4	1	1
26	1	15	2	3	10	21	476	122	9	2	.4	1
27	1	12	1	2	11	27	436	93	5	1	.4	3
28	1	9	1	2	10	50	339	60	4	1	.4	6
29	1	8	1	2	------	72	206	86	4	1	.4	4
30	1	9	1	2	------	76	159	1,300	3	1	.4	3
31	1	------	2	3	------	122	------	1,300	------	1	.4	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1928-29				
October	94	5	12.8	787
November	29,500	3	2,640	157,000
December	5,750	229	948	58,300
January	5,600	175	761	46,800
February	6,100	140	612	34,000
March	2,460	140	498	30,600
April	11,100	211	1,750	104,000
May	15,200	265	1,560	96,000
June	5,360	116	1,090	64,900
July	7,730	43	711	43,700
August	436	15	68	4,180
September	17	8	11.1	660
The year	29,500	3	886	641,000
1930-31				
October	1	.4	.98	60
November	82	1	11.7	698
December	40	1	9.35	575
January	3	2	2.16	133
February	14	2	5.96	331
March	178	5	41.2	2,530
April	784	26	169	10,100
May	1,300	34	260	16,000
June	1,640	3	216	12,900
July	141	1	26.8	1,640
August	5	.4	1.06	65
September	6	0	.87	52
The year	1,640	0	62.1	45,100

OSAGE RIVER NEAR OTTAWA, KANS.

LOCATION.—Water-stage recorder in NW. ¼ sec. 6, T. 17 S., R. 20 W., 1½ miles southeast of Ottawa and three-quarters of a mile below Skunk Creek. Zero of gage is 852.6 feet above mean sea level.

DRAINAGE AREA.—1,250 square miles.

RECORDS AVAILABLE.—October, 1918, to September, 1931; August, 1902, to October, 1905, at Main Street Bridge, at Ottawa.

EXTREMES.—Maximum discharge during year, 1,690 second-feet June 12 (gage height, 7.41 feet); no flow several days in October, November, December, January.

1902–1905, 1918–1931: Maximum discharge, 58,400 second-feet Nov. 17, 1928 (gage height, 38.65 feet, present gage); no flow in 1920, 1930, 1931.

REMARKS.—Records fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	1	6	0	4	20	231	202	502	8	2	1
2	0	1	8	1	3	17	219	221	243	107	2	1
3	0	1	13	1	3	17	183	198	139	88	2	1
4	*0	2	10	1	4	14	150	139	90	207	6	1
5	*1	1	19	2	3	15	111	128	65	75	52	1
6	*1	1	19	2	3	16	90	146	179	58	8	1
7	1	1	26	2	5	21	76	233	473	122	4	1
8	1	1	21	3	5	20	61	181	374	74	3	1
9	1	1	16	3	5	18	60	161	214	38	4	1
10	1	1	12	4	6	20	55	146	115	25	3	1
11	1	1	11	4	9	29	61	130	159	18	2	1
12	1	1	10	4	10	40	60	111	1,550	16	2	1
13	1	1	8	3	12	100	52	92	918	12	2	1
14	1	1	8	3	10	158	42	79	328	10	1	1
15	1	2	7	2	8	165	35	69	918	7	1	1
16	1	1	7	2	16	191	40	57	488	6	1	1
17	1	0	6	3	20	152	50	48	532	15	1	1
18	1	0	5	8	18	107	198	61	488	13	2	1
19	1	1	4	5	23	74	137	146	130	8	2	1
20	1	30	4	4	22	62	165	918	97	8	1	1
21	1	37	3	4	23	50	592	488	65	6	1	10
22	1	42	3	5	26	42	782	532	46	6	1	31
23	0	82	2	4	24	44	458	952	32	6	1	6
24	0	43	2	4	26	38	302	716	25	6	1	2
25	0	21	1	4	27	37	270	328	20	6	1	*1
26	0	10	1	4	27	38	317	219	15	6	1	*1
27	0	6	1	4	23	42	547		14	5	1	1
28	1	4	1	6	22	37	444	170	10	3	1	1
29	1	6	1	4	-------	61	317		8	2	1	1
30	1	8	0	4	-------	90	221		8	2	1	2
31	1	-------	1	4	-------	107	-------	320	-------	2	1	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1	0	0.7	44
November	82	0	10.3	611
December	26	0	7.6	468
January	8	0	3.4	206
February	27	3	13.8	768
March	191	14	59.4	3,650
April	782	35	211	12,500
May	952	48	248	15,300
June	1,550	8	275	16,400
July	207	2	31.1	1,910
August	52	1	3.6	222
September	31	1	2.5	151
The year	1,550	0	72.1	52,200

* Interpolated.

OSAGE RIVER AT TRADING POST, KANS.

LOCATION.—Chain gage in SE. ¼ sec. 5, T. 21 S., R. 25 E., at Trading Post, 1 mile above mouth of Big Sugar Creek.

DRAINAGE AREA.—2,800 square miles.

RECORDS AVAILABLE.—August, 1921, to December, 1923; October, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 7,260 second-feet May 20 (gage height, 13.25 feet); no flow several days in November and September.

1921–1923, 1928–1931: Maximum discharge, 120,000 second-feet Nov. 18, 1928 (gage height, 34.45 feet); no flow several days in November, 1930, September, 1931.

REMARKS.—Records good except those for periods of shifting control during October, November, June to September, which are fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7	1	133	22	30	118	806	728	2,000	17	888	1
2	6	1	77	20	29	104	1,060	614	1,480	22	212	1
3	7	1	82	20	29	101	1,060	690	614	106	64	1
4	6	1	72	19	25	85	806	652	410	216	44	1
5	5	1	120	19	23	80	577	506	275	150	50	0
6	4	1	264	18	23	72	472	399	347	202	47	1
7	12	1	190	18	25	80	399	376	1,100	160	194	0
8	10	1	198	19	25	75	342	472	1,480	126	66	0
9	8	1	264	20	23	80	302	506	652	133	41	0
10	7	0	207	19	25	85	270	410	614	82	26	0
11	7	0	160	19	23	194	254	382	410	80	17	0
12	6	0	136	19	23	319	243	330	540	52	11	0
13	6	0	118	18	28	577	238	302	3,200	40	8	0
14	6	0	104	19	29	767	225	238	2,900	32	7	0
15	10	0	95	18	29	728	207	225	1,190	27	4	0
16	22	1	77	16	33	540	190	194	2,580	26	2	0
17	30	1	56	18	88	441	171	179	2,780	21	3	0
18	12	1	56	19	190	364	160	160	1,280	17	2	0
19	9	3	47	19	187	291	225	3,320	652	15	3	0
20	7	26	46	19	230	234	353	7,040	342	10	3	0
21	6	58	40	21	259	190	393	4,880	225	18	3	0
22	3	34	33	23	216	171	1,150	2,840	179	34	2	0
23	4	62	33	24	202	150	2,000	4,220	106	32	2	0
24	3	109	27	24	212	136	1,190	2,840	82	26	2	0
25	2	115	32	28	179	112	888	2,000	64	26	2	21
26	2	143	28	28	157	118	845	1,190	47	22	2	46
27	1	88	27	32	133	136	1,100	806	46	11	2	33
28	1	52	27	34	126	194	1,380	614	36	11	2	24
29	1	50	26	34	-------	264	1,190	441	31	11	1	15
30	1	136	23	34	-------	359	888	506	18	8	1	10
31	1	-------	24	32	-------	577	-------	1,060	-------	9	1	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	30	1	6.84	420
November	143	0	29.6	1,760
December	264	23	91.0	5,600
January	34	16	22.3	1,370
February	259	23	92.9	5,160
March	767	72	250	15,400
April	2,000	160	646	38,400
May	7,040	160	1,260	77,600
June	3,200	18	856	50,900
July	216	8	56.2	3,460
August	888	1	55.2	3,400
September	46	0	5.13	305
The year	7,040	0	282	204,000

OSAGE RIVER AT OSCEOLA, MO.

LOCATION.—Water-stage recorder in NE. ¼ NE. ¼ sec. 17, T. 38 N., R. 25 W., 1 mile northeast of Osceola. Zero of gage is 682.9 feet above mean sea level.

DRAINAGE AREA.—8,220 square miles.

RECORDS AVAILABLE.—November, 1930, to September, 1931; July, 1921, to September, 1928, at site 1 mile upstream.

EXTREMES.—Maximum discharge during period, 27,700 second-feet May 21 (gage height, 17.35 feet); minimum, 10 second-feet many short periods during June and July (gage height, 1.50 feet).

1921–1928, 1930–31: Maximum discharge, 70,900 second-feet Apr. 11, 1927 (gage height, 30.4 feet, old datum); minimum, that of 1931.

REMARKS.—Records good. Discharge estimated Sept. 18–22. Flow regulated by hydroelectric plant of West Missouri Power Co.

Daily and monthly discharge, in second-feet, 1930–31

Day	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	4,430	183	284	2,080	5,460	3,550	2,760	197	181	605
2	------	4,220	402	355	1,900	5,400	3,400	3,120	229	454	673
3	------	3,340	430	327	1,720	5,170	3,550	3,220	183	910	1,380
4	------	2,430	368	343	1,680	4,380	3,100	2,340	278	511	576
5	------	2,030	396	342	1,290	3,610	2,650	1,820	534	946	573
6	------	2,220	381	332	1,300	2,950	2,200	1,600	1,230	5,810	522
7	------	2,630	394	773	1,190	2,500	1,960	1,360	845	13,700	370
8	------	2,770	408	405	1,350	2,120	1,840	1,720	651	17,600	355
9	------	2,490	399	504	1,460	1,920	1,780	2,090	562	19,400	325
10	------	2,170	447	991	1,270	1,960	1,840	2,000	279	7,860	342
11	------	1,920	397	583	2,170	1,900	1,960	1,690	318	4,160	251
12	------	1,710	556	933	2,980	1,960	1,720	1,600	408	2,570	270
13	------	1,590	387	702	3,200	1,960	1,720	1,230	255	2,100	276
14	------	1,340	407	890	3,100	1,840	1,550	2,990	105	1,710	246
15	------	1,380	458	865	2,900	1,720	1,240	4,710	265	1,250	228
16	------	1,270	415	1,080	2,650	1,600	1,150	3,480	132	1,270	251
17	------	903	427	1,730	2,350	1,540	896	3,930	137	874	210
18	------	1,010	456	2,380	1,960	1,190	865	4,230	169	873	200
19	------	828	393	2,930	1,760	1,380	6,100	3,010	116	903	200
20	------	808	504	2,880	1,720	1,330	20,600	1,870	253	1,330	200
21	------	693	483	2,510	1,430	1,840	26,300	1,190	389	971	210
22	------	597	380	2,440	1,290	2,200	20,200	782	942	1,120	250
23	------	660	384	2,930	1,700	3,100	17,700	538	1,110	667	548
24	------	648	644	4,150	1,210	3,700	13,700	488	541	782	1,490
25	------	584	317	3,840	1,220	3,550	10,200	409	402	424	470
26	------	617	441	3,190	1,250	3,550	7,170	372	361	607	351
27	------	569	432	2,650	1,840	3,870	5,120	246	960	480	382
28	442	518	431	2,300	5,100	4,890	3,760	323	552	1,190	220
29	712	584	348	------	7,440	4,550	2,960	258	379	800	215
30	1,900	581	424	------	7,240	3,870	2,600	179	273	868	205
31	------	580	453	------	6,160	------	2,790	------	204	480	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
December	4,430	518	1,550	0.189	0.22
January	644	183	418	.051	.06
February	4,150	284	1,560	.190	.20
March	7,440	1,190	2,450	.298	.34
April	5,460	1,190	2,900	.353	.39
May	26,300	865	5,680	.691	.80
June	4,710	179	1,850	.225	.25
July	1,230	105	428	.052	.06
August	19,400	181	2,990	.364	.42
September	1,490	200	413	.050	.06

OSAGE RIVER AT WARSAW, MO.

LOCATION.—Staff gage in NE. ¼ SW. ¼ sec. 17, T. 40 N., R. 22 W., at Warsaw. Zero of gage is 631.54 feet above mean sea level.

DRAINAGE AREA.—11,500 square miles.

RECORDS AVAILABLE.—October, 1925, to April, 1931 (discontinued).

EXTREMES.—Maximum discharge during period, 11,300 second-feet Mar. 29 (gage height, 7.6 feet); minimum, 150 second-feet Oct. 6 (gage height, 1.5 feet).

1925–1931: Maximum discharge, 89,700 second-feet May 19, 1929 (gage height, 34.8 feet); minimum, 42 second-feet Aug. 18, 1930 (gage height, 1.10 feet).

Maximum stage known, 44.4 feet in June, 1844 (discharge, about 135,000 second-feet).

REMARKS.—Records fair. Gage-height record furnished by United States Weather Bureau.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
1	235	465	5,860	720	625	3,330	8,060
2	190	340	6,940	720	625	2,950	7,160
3	190	400	5,640	465	465	2,760	6,940
4	190	340	4,780	465	465	2,380	6,080
5	190	235	3,730	720	465	2,200	5,220
6	150	340	4,780	465	540	1,500	4,360
7	285	235	5,000	465	720	2,760	3,730
8	1,190	235	3,940	540	1,500	2,950	3,140
9	1,500	235	4,150	540	1,500	2,020	2,760
10	940	235	3,530	540	940	2,380	2,760
11	825	235	3,140	540	940	3,140	2,570
12	465	235	2,760	625	1,500	6,080	2,200
13	540	235	2,380	625	940	6,500	2,760
14	400	235	2,200	625	1,500	6,080	2,760
15	285	235	1,840	540	1,500	5,220	2,570
16	400	235	1,660	625	1,840	4,360	2,380
17	285	625	1,660	625	3,330	3,730	2,200
18	340	625	1,660	625	4,780	3,330	2,200
19	465	400	940	625	4,780	2,760	1,500
20	400	340	1,190	625	4,780	2,380	2,020
21	400	1,340	1,060	625	4,360	2,380	2,380
22	285	1,840	1,060	720	3,940	1,840	2,760
23	285	1,840	940	720	5,220	2,200	3,530
24	285	1,660	825	625	6,500	2,570	4,360
25	825	1,340	825	625	6,720	1,840	4,780
26	940	1,060	825	825	5,640	1,660	4,780
27	1,060	720	720	465	4,780	2,020	5,220
28	825	720	720	625	3,940	7,380	6,290
29	720	540	720	625	-------	11,300	6,720
30	720	2,570	625	625	-------	10,800	6,080
31	1,060	-------	720	465	-------	9,670	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,500	150	544	0.047	0.05
November	2,570	235	670	.058	.06
December	6,940	625	2,480	.216	.25
January	825	465	602	.052	.06
February	6,720	465	2,670	.232	.24
March	11,300	1,500	3,950	.343	.40
April	8,060	1,500	4,010	.349	.39

OSAGE RIVER NEAR BAGNELL, MO.

LOCATION.—Water-stage recorder in N. ½ SE. ¼ sec. 21, T. 40 N., R. 15 W., 1½ miles above Bagnell. Staff gage at same site used prior to Oct. 15, 1930. Zero of gage is 549.75 feet above mean sea level.

DRAINAGE AREA.—14,000 square miles.

RECORDS AVAILABLE.—May, 1925, to September, 1931.

EXTREMES.—Maximum discharge during year, 18,300 second-feet Sept. 17 (gage height, 11.66 feet); minimum, 245 second-feet Aug. 24 (gage height, 2.64 feet).

1925–1931: Maximum discharge, 106,000 second-feet Apr. 17, 1927, May 21, 1929; maximum gage height, 36.61 feet Apr. 17, 1927; minimum discharge, that of Aug. 24, 1931.

Maximum stage known, 43.1 feet in June, 1844 (discharge, about 150,000 second-fcet).

REMARKS.—Records good. Flow after Feb. 18 regulated by hydroelectric plant of Union Electric Light & Power Co. Discharge Sept. 18–30 computed from records of this plant.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,200	1,360	4,770	1,010	805	360	342	620	736	864	358	3,300
2	880	1,250	8,320	1,010	842	360	360	620	345	555	320	4,480
3	770	1,060	9,100	1,060	770	325	378	595	459	461	354	8,460
4	580	965	7,800	1,010	805	308	378	595	475	340	363	8,410
5	550	880	6,500	922	770	308	378	620	512	325	359	7,380
6	500	842	5,250	770	770	325	378	620	523	347	2,370	2,020
7	702	842	4,770	805	1,300	325	378	620	509	480	3,290	1,700
8	965	770	5,010	965	1,300	325	378	620	564	833	1,320	6,800
9	1,740	735	5,010	880	1,820	325	378	595	808	585	3,460	6,280
10	2,370	770	5,010	880	2,080	325	395	570	595	748	2,450	6,180
11	2,270	770	4,770	922	1,900	360	395	620	629	791	2,100	2,990
12	1,900	770	4,290	922	1,480	360	395	869	733	742	334	1,560
13	1,600	770	3,810	922	1,600	360	395	1,160	635	533	559	882
14	1,360	770	3,350	1,060	2,270	360	395	973	370	410	448	2,020
15	1,060	735	3,120	965	2,270	360	435	595	441	465	561	5,220
16	1,060	702	2,580	1,010	2,680	342	455	645	439	443	336	2,000
17	922	670	2,370	1,010	3,460	342	520	570	687	450	323	8,870
18	805	610	2,270	1,150	5,100	342	475	570	595	404	1,850	8,000
19	805	610	2,080	1,200	5,020	342	415	1,380	385	403	335	2,000
20	735	922	1,820	965	342	360	475	806	486	399	324	600
21	702	1,010	1,600	1,060	290	360	570	633	646	411	343	2,600
22	880	805	1,480	965	325	395	570	641	620	410	316	1,200
23	965	1,900	1,360	1,010	342	378	595	657	364	421	318	1,600
24	965	2,470	1,360	1,060	342	360	545	730	460	421	319	330
25	842	2,470	1,250	1,060	360	360	455	636	360	395	318	550
26	842	1,990	1,200	1,010	360	360	415	824	379	353	315	335
27	965	1,740	1,100	880	360	498	520	593	360	375	3,720	550
28	1,670	1,480	1,150	1,010	360	520	595	548	357	654	3,730	325
29	1,820	1,300	1,150	965	-------	378	595	803	405	420	2,470	800
30	1,480	2,270	1,060	842	-------	360	595	845	567	392	977	1,600
31	1,420	-------	1,060	842	-------	342	-------	778	-------	436	3,240	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	2,370	500	1,140	0.081	0.09
November	2,470	610	1,140	.081	.09
December	9,100	1,060	3,410	.244	.28
January	1,200	770	972	.069	.08
February	5,100	290	1,430	.102	.11
March	520	308	359	.026	.03
April	595	342	452	.032	.04
May	1,380	548	708	.051	.06
June	808	345	515	.037	.04
July	864	325	492	.035	.04
August	3,730	315	1,220	.087	.10
September	8,870	325	3,300	.236	.26
The year	9,100	290	1,260	.090	1.22

OSAGE RIVER NEAR ST. THOMAS, MO.

LOCATION.—Water-stage recorder in SE. ¼ SW. ¼ sec. 35, T. 42 N., R. 12 W., half a mile below Sugar Creek and 2½ miles south of St. Thomas. Zero of gage is 528.0 feet above mean sea level.

DRAINAGE AREA.—14,500 square miles.

RECORDS AVAILABLE.—August to September, 1931.

EXTREMES.—Maximum discharge during period, 11,500 second-feet Sept. 18 (gage height, 8.11 feet); minimum, 420 second-feet Aug. 27 (gage height, 1.30 feet). Maximum stage known, about 39.7 feet in June, 1844.

REMARKS.—Records good. Flow regulated by hydroelectric plant of Union Electric Light & Power Co.

Daily and monthly discharge, in second-feet, 1931

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1		3,190	11		5,310	21	578	1,000
2		4,240	12		3,400	22	514	2,220
3		6,210	13		2,140	23	480	2,310
4		8,700	14		1,370	24	465	2,190
5		7,940	15		3,650	25	438	978
6		5,880	16		4,150	26	432	776
7		2,510	17	439	4,630	27	420	671
8		3,130	18	504	8,490	28	3,030	558
9		6,520	19	1,710	5,840	29	3,900	499
10		6,000	20	925	2,170	30	2,730	775
						31	1,610	

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
August 17-31	3,900	420	1,210	0.083	0.05
September	8,700	499	3,580	.247	.28

POTTAWATOMIE CREEK AT LANE, KANS.

LOCATION.—Chain gage in NW. ¼ sec. 34, T. 18 S., R. 21 E., at Lane, 16 miles above mouth.

DRAINAGE AREA.—513 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 2,550 second-feet May 20 (gage height, 12.28 feet); no flow several days in September.

1929–1931: Maximum discharge, 7,520 second-feet Apr. 22, 1929 (gage height, 22.40 feet); no flow several days during July, 1930, and September, 1931. Maximum stage known, 33 feet in November, 1929.

REMARKS.—Records good except those for periods of shifting control during November, December, 1930, January, April, 1931, which are fair.

Daily and monthly discharge, in second-feet, 1929–1931

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1929							1929						
1	-------	250	538	29	4	3	16	-------	610	190	80	14	3
2	-------	1,260	3,240	24	4	2	17	-------	222	115	70	7	3
3	-------	1,680	6,510	18	3	2	18	466	3,710	93	61	5	3
4	-------	466	1,910	14	3	2	19	646	6,030	95	50	4	3
5	-------	322	826	11	2	2	20	3,010	1,760	126	21	4	3
6	-------	304	376	7	3	2	21	7,270	682	118	16	3	3
7	-------	268	682	13	4	3	22	6,510	412	91	14	3	3
8	-------	243	3,170	16	6	17	23	1,420	304	115	14	3	3
9	-------	204	1,040	29	5	10	24	934	250	91	13	2	3
10	-------	177	376	76	167	6	25	2,970	204	76	10	3	3
11	-------	340	250	1,640	208	5	26	970	201	61	8	2	3
12	-------	6,200	1,910	2,250	174	4	27	502	574	53	7	2	3
13	-------	7,470	1,260	574	148	4	28	412	502	46	7	2	3
14	-------	2,630	358	148	115	4	29	322	412	40	7	3	3
15	-------	1,260	250	102	55	3	30	268	190	37	6	3	3
							31	-------	340	-------	5	3	------

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1929–30												
1	2	184	15		4	24	7	1,830	13	14	0.3	0.1
2	2	164	12		8		14	1,110	13	10	.3	.1
3	2	134	8		13		40	610	13	26	.2	.2
4	3	80	7				28	430	10	7	.2	.1
5	3	46	9				17	340	53	6	.2	.2
6	3	30	12				14	304	43	3	.2	1
7	2	22	13				13	322	34	1	.2	.3
8	2	17	12		200		10	1,300	25	.1	.2	.3
9	4	10	12				7	1,680	16	0	.2	.3
10	7	16	12				7	1,720	7	0	.2	.3
11	20	14	11				7	790	5	0	.2	.3
12	32	11	9				7	201	7	0	.2	.3
13	16	14	9		151	25	7	142	95	0	.2	.3
14	8	18	9		102		7	142	84	0	.2	1
15	11	53	9		68		7	142	538	0	.2	1
16	9	268	9	4	63		7	142	718	0	.2	78
17	9	232	9		57		9	142	236	.1	.2	100
18	9	204			48		33	140	110	.3	.2	41
19	9	161			41		45	72	84	.3	.2	20
20	9	108			30		32	25	358	.3	.3	12
21	9	55			23		20	18	177	.3	1	9
22	9	29			13		13	18	105	.3	.2	6
23	9	13			12		5	18	59	.3	.2	4
24	9	14		5	12		3	18	35	.3	.2	2
25	9	29			10	24	18	18	38	.3	.2	2
26	9	50			6	28	76	17	95	.3	.2	2
27	9	110			4	33	232	16	250	.3	.2	1
28	9	112			33	17	502	16	82	.3	.2	1
29	22	50			-------	10	682	14	80	.3	.2	1
30	137	20			-------	7	1,380	13	61	.3	.2	1
31	226	-------			-------	7	-------	9	-------	.3	.1	------

Daily and monthly discharge, in second-feet, of Pottawatomie Creek at Lane, Kans., 1929–1931—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1930–31												
1	1	0.5	11	4	10	24	646	174	68	3	1	0.3
2	1	.5	82	4	10	22	448	340	52	5	.4	.3
3	1	.5	59	5	9	19	240	268	41	48	.2	.2
4	1	.4	35	4	8	20	167	131	35	87	1	.2
5	1	.4	32	4	9	17	126	120	59	37	1	.1
6	1	.4	34	4	9	18	105	137	646	15	1	.1
7	2	.3	140	5	8	19	89	167	682	12	1	0
8	1	.3	72	5	7	20	74	158	358	7	1	0
9	1	.3	48	5	7	19	66	120	134	6	1	0
10	1	.3	41	4	6	19	66	100	74	4	2	0
11	1	.2	33	4	7	21	64	80	151	3	1	0
12	1	.2	32	4	6	38	59	70	1,800	4	1	0
13	1	.2	41	3	5	123	55	55	826	3	1	0
14	2	.2	32	3	5	198	53	53	268	2	1	0
15	2	.2	19	3	6	142	45	46	574	2	1	0
16	2	.1	13	4	11	87	37	43	2,020	2	1	0
17	2	.1	9	5	45	57	32	40	466	2	1	0
18	1	.1	7	5	115	35	33	52	208	1	1	0
19	1	.1	7	5	120	28	38	[a]2,140	128	1	.5	0
20	1	.4	6	5	105	26	43	[a]2,000	68	1	1	0
21	.9	.3	6	9	70	26	226	538	45	1	1	0
22	.9	.4	6	13	48	26	898	934	32	1	.5	.2
23	.8	.5	6	16	41	28	322	1,040	29	1	.5	.2
24	.8	.8	5	18	41	30	215	502	18	1	.5	.2
25	.8	9	5	18	38	26	184	286	13	1	.5	.2
26	.7	13	5	18	33	29	243	194	12	1	.5	.1
27	.7	13	4	16	29	29	448	140	8	1	.5	.1
28	.7	9	4	13	28	35	340	91	7	.5	.4	.1
29	.6	10	4	13	------	177	218	84	6	1	.4	.1
30	.6	11	4	13	------	243	164	80	4	1	.4	.1
31	.6	------	4	12	------	268	------	95	------	.5	.4	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1929				
April 18–30	7,270	268	1,980	51,000
May	7,470	177	1,270	78,300
June	6,510	37	801	47,700
July	2,250	5	172	10,600
August	208	2	31.1	1,910
September	17	2	3.80	226
The period	------	------	------	190,000
1929–30				
October	226	2	20.0	1,230
November	268	10	75.6	4,500
December	15	------	7.97	490
January	------	------	4.00	246
February	------	4	89.2	4,950
March	33	7	23.4	1,440
April	1,380	3	108	6,440
May	1,830	9	379	23,300
June	718	5	115	6,830
July	26	0	2.30	142
August	1	.1	.232	14
September	100	.1	9.53	567
The year	1,830	0	69.3	50,100
1930–31				
October	2	0.6	1.07	66
November	13	.1	2.42	144
December	140	4	26.0	1,600
January	18	3	7.87	484
February	120	5	29.9	1,660
March	268	17	60.3	3,710
April	898	32	191	11,400
May	2,140	40	332	20,400
June	2,020	4	294	17,500
July	87	.5	8.23	506
August	2	.2	.797	49
September	.3	0	.083	5
The year	2,140	0	79.4	57,500

[a] Estimated.

BIG BULL CREEK AT PAOLA, KANS.

LOCATION.—Chain gage in NW. ¼ sec. 17, T. 17 S., R. 23 E., in Paola, 8 miles above mouth.
DRAINAGE AREA.—223 square miles.
RECORDS AVAILABLE.—April, 1929, to September, 1931.
EXTREMES.—Maximum discharge during year, 2,880 second-feet May 19 (gage height 14.32 feet); no flow at times during every month except March.
1929–1931: Maximum stage, 28.12 feet June 23, 1929 (discharge not determined); no flow at various times during each year.
Maximum stage known, 32.03 feet Nov. 17, 1928.
REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1929–31

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1929							1929						
1	-------	301	979	69	2	0	16	-------	228	32	94	1	7
2	-------	886	4,790	69	2	0	17	-------	131	25	47	1	1
3	-------	228	2,610	53	2	0	18	-------	1,220	22	23	1	.5
4	-------	262	454	38	2	.5	19	120	370	74	20	1	.5
5	-------	179	195	22	2	.5	20	1,330	160	673	14	1	1
6	-------	142	154	65	2	1	21	*1,200	126	346	13	.5	1
7	-------	115	107	1,760	2	1	22	1,060	99	3,780	12	.5	.5
8	-------	83	97	346	2	301	23	370	81	6,580	8	.5	.5
9	-------	72	104	397	3	397	24	784	72	784	8	.5	.5
10	-------	62	81	1,450	7	244	25	673	70	322	8	0	.5
11	-------	730	76	1,860	11	72	26	173	87	154	7	0	.5
12	-------		934	730	7	16	27	148	69	117	6	0	0
13	-------	1,000	92	454	4	8	28	134	62	102	4	0	0
14	-------		62	322	2	21	29	112	50	87	3	0	0
15	-------		42	164	1	25	30	140	50	69	2	0	0
							31	-------	424	-------	2	0	-------

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1929-30												
1	0	179	2		5	62	17	58	2	1	0	0
2	0	149	2		5	*38	21	52	1	.5	0	0
3	0	7	4	4	20	14	24	45	1	.5	0	0
4	0	3	4				18	35	1	.5	0	0
5	0	2	7		200		13	31	64	0	0	0
6	0	2	8			14	12	33	72	0	0	0
7	0	3	6				10	643	32	0	0	0
8	0	1	6		300		8	151	12	0	0	0
9	1	3	12	3	301		8	52	6	0	0	0
10	1,860	5	15		140		6	55	2	0	0	0
11	517	3	12		140		5	126	4	0	0	0
12	280	2	17		107		4	81	3	0	0	0
13	64	2	15		94	13	3	85	2	0	0	0
14	42	2	12		90		2	55	1	0	0	0
15	38	4	10	2	99		3	33	112	0	0	0
16	13	33	8		83	13	5	28	24	0	0	2
17	1	67	11		74	9	6	29	3	0	0	2
18	.5	24			55	23	4	28	2	0	574	1
19	4	23			52	25	3	25	26	0	262	.5
20	38	18			44	24	5	25	10	0	26	.5
21	5	12	6	3	49	21	6	17	5	0	1	.5
22	1	11			57	17	4	11	4	0	1	.5
23	4	8			49	31	5	8	2	0	.5	.5
24	3	11			33	25	3	8	22	0	0	0
25	1	11			42	33	4	5	5	0	0	0
26	1	9			44	31	6	5	13	0	0	1
27	2	8			36	21	9	4	2	0	0	1
28	322	4	5	6	38	22	10	4	1	0	0	.5
29	346	4			-------	20	8	3	1	0	0	0
30	244	3			-------	15	44	2	1	0	0	0
31	484	-------			-------	12	-------	2	-------	0	0	-------

* Interpolated.

Daily and monthly discharge, in second-feet, of Big Bull Creek at Paola, Kans., 1929–1931—Continued

Day	Dec.	Feb.	Mar.	Apr.	May	June	July	Aug.
1930–31								
1	0	0	1	157	7	55	0	1
2	0	0	1	142	1	39	0	0
3	0	0	.5	60	.5	12	0	0
4	0	0	1	17	.5	4	0	0
5	1	0	1	3	0	2	0	6
6	1	0	1	1	0	1	0	2
7	2	0	2	.5	0	1	0	1
8	2	0	2	.5	0	5	.5	.5
9	1	0	1	a .5	0	4	.5	.5
10	1	0	2	a .5	35	4	.5	0
11	1	0	41	a .5	32	7	.5	0
12	1	0	152	a 1	1	179	0	0
13	.5	0	195	a 1	2	62	0	0
14	.5	.5	211	a 2	2	14	0	0
15	0	.5	160	a 1	2	5	0	0
16	0	4	41	a .5	2	25	0	0
17	0	47	2	a .5	1	6	0	0
18	0	20	1	a .5	164	2	0	0
19	0	2	.5	a 0	1,930	2	0	0
20	0	1	.5	a 0	134	2	0	1
21	0	1	1	a 0	140	1	0	.5
22	0	20	.5	0	673	1	4	.5
23	0	12	.5	.5	104	.5	2	0
24	0	12	.5	2	70	0	1	0
25	0	12	.5	20	60	0	1	0
26	0	6	.5	57	52	0	.5	0
27	0	4	1	39	39	0	0	0
28	0	2	38	16	24	0	0	0
29	0	------	117	4	28	0	0	0
30	0	------	151	4	151	0	0	0
31	0	------	195	------	112	------	0	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1929				
April 19–30	1,330	112	520	12,400
May	1,220	50	334	20,500
June	6,580	22	798	47,500
July	1,860	2	260	16,000
August	11	0	1.87	115
September	397	0	36.7	2,180
The period				98,700
1929–30				
October	1,860	0	138	8,470
November	179	1	20.4	1,220
December	17	2	7.35	452
January			3.52	216
February	301	5	98.5	5,470
March	62	9	20.0	1,230
April	44	2	9.20	547
May	643	2	56.1	3,450
June	112	1	14.5	865
July	1	0	.081	5
August	574	0	27.9	1,710
September	2	0	.333	20
The year	1,860	0	32.7	23,700
1930–31				
December	2	0	.355	22
February	47	0	5.14	286
March	211	.5	42.6	2,620
April	157	0	17.7	1,050
May	1,930	0	122	7,470
June	179	0	14.4	860
July	4	0	.339	21
August	6	0	.419	26
The period	1,930	0	17.1	12,400

a Interpolated.

NOTE.—No flow during October, November, 1930, January, September, 1931.

BIG SUGAR CREEK AT FARLINVILLE, KANS.

LOCATION.—Chain gage in NW. ¼ sec. 11, T. 21 S., R. 23 E., at Farlinville, 14 miles above mouth.

DRAINAGE AREA.—192 square miles.

RECORDS AVAILABLE.—February, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 1,680 second-feet May 19 (gage height, 15.29 feet); no flow Aug. 23 to Sept. 30.

1929–1931: Maximum discharge, 7,490 second-feet May 18, 1929 (gage height, 24.14 feet); no flow during parts of August and September, 1930 and 1931.

Maximum stage known, 31.9 feet in November, 1928.

REMARKS.—Records good.

Daily discharge, in second-feet, 1929–1931

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1929								
1		86	540	87	80	10	1	0.3
2		68	199	374	460	10	1	.3
3		61	157	199	650	8	.3	.3
4		63	122	143	414	7	.1	.3
5		69	101	115	122	5	0	1
6		77	86	143	108	6	0	3
7		69	68	143	414	6	.2	3
8		63	300	101	270	6	1	3
9		54	374	87	143	7	5	3
10		47	580	79	94	9	5	2
11		36	388	69	73	14	4	2
12		46	241	5,180	108	25	3	2
13		241	157	1,120	199	28	3	1
14		129	150	590	94	23	2	1
15		129	143	345	58	12	2	1
16		150	213	345	40	8	2	1
17		115	164	227	28	7	2	1
18		94	185	5,180	23	6	1	1
19		86	213	490	25	6	1	1
20		76	1,960	449	122	5	1	.4
21	25	68	540	300	164	4	1	.3
22	25	61	285	185	87	4	1	.2
23	25	59	213	164	47	2	1	.3
24	25	54	680	136	44	3	1	.4
25	49	199	670	115	34	3	1	1
26	414	157	241	122	30	2	1	1
27	150	94	185	108	23	2	1	1
28	108	72	143	94	18	2	1	1
29		69	122	94	16	2	1	1
30		64	129	86	12	2	1	1
31		480		94		2	1	

Daily discharge, in second-feet, of Big Sugar Creek at Farlinville, Kans., 1929–1931—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1929-30												
1	2	115	83	5		19	7	360	6	3	0.1	0
2	1	213	83	5	4	17	7	164	5	2	0	0
3	2	122	80	5		16	7	115	4	2	0	0
4	2	79	77	4		14	7	101	4	2	0	0
5	2	51	73	4		14	7	115	6	1	0	0
6	2	49	72	3	200	14	7	94	6	1	0	0
7	2	45	69			14	7	80	9	1	0	0
8	2	43	64	3		14	6	67	7	1	0	0
9	2	40	61		330	14	6	62	6	1	0	0
10	3	36	59		199	13	6	920	6	1	0	.1
11	3	33	52		157	12	6	1,360	65	1	0	.2
12	3	31	50		143	11	6	460	77	1	0	.2
13	3	25	48		129	10	6	227	56	1	0	.1
14	3	21	48		101	8	6	185	69	1	0	0
15	3	19	44		87	8	6	143	94	1	0	414
16	2	21	42	1	76	8	6	122	227	.4	0	122
17	2	42	39		73	8	7	115	80	.4	0	10
18	2	115	36		69	8	7	108	40	.4	0	5
19	2	122	34		60	9	7	101	24	.4	0	2
20	2	129	30		54	11	7	87	15	.3	0	2
21	2	122	25		47	10	6	74	9	.3	0	1
22	2	115	22		42	9	6	56	7	.2	0	1
23	2	108	19		40	9	5	42	6	.2	0	1
24	2	108	16		34	9	5	31	6	.2	0	1
25	2	101	14		30	8	5	28	5	.2	0	1
26	2	101	12	2	28	8	5	23	12	.2	0	1
27	2	94	10		25	7	7	18	11	.1	0	1
28	4	94	9		22	7	9	15	6	.1	0	.4
29	5	94	6		------	7	65	13	5	.1	0	.4
30	14	86	6		------	7	570	9	4	.1	0	.4
31	52	------	6		------	7	------	8	------	.1	0	------

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
1930-31											
1	0.3	1	7	2	3	9	241	101	59	2	5
2	.3	1	108	2	3	8	150	84	38	2	1
3	.3	1	16	2	3	8	122	63	32	2	1
4	.3	1	14	1	3	7	87	48	25	1	1
5	.3	1	21	1	2	7	70	44	20	1	1
6	.3	1	87	1	2	7	64	39	640	1	6
7	1	1	63	1	2	7	59	39	136	1	3
8	1	1	47	1	2	8	45	37	83	1	1
9	1	1	40	1	2	11	39	35	49	1	.3
10	1	1	23	1	2	16	50	36	30	1	.2
11	1	1	19	2	2	84	45	36	69	1	.2
12	1	1	14	2	2	129	37	31	770	1	.2
13	1	1	11	2	2	136	32	26	171	1	.2
14	1	1	8	2	2	108	29	21	101	1	.2
15	1	1	7	2	2	63	24	20	560	1	.1
16	1	1	7	2	5	37	24	17	360	1	.1
17	1	1	7	3	84	23	24	14	122	1	.1
18	1	1	7	3	108	17	32	270	79	.4	.1
19	2	2	6	5	65	14	31	1,360	50	.4	.2
20	2	2	6	6	45	12	32	374	26	1	.1
21	2	1	5	8	33	11	101	115	17	1	.1
22	1	2		10	28	14	122	345	11	1	.1
23	1	2		6	23	22	87	241	8	1	0
24	1	2	5	5	22	16	57	199	6	1	0
25	1	2		5	20	12	64	115	5	1	0
26	1	2		5	18	9	143	94	4	1	0
27	1	1		5	14	27	129	74	3	1	0
28	1	1		4	11	150	87	53	2	.4	0
29	1	1	3	4	------	185	66	48	2	.3	0
30	1	2		4	------	136	61	108	2	.3	0
31	1	------		3	------	345	------	101	------	.4	0

Monthly discharge, in second-feet, of Big Sugar Creek at Farlinville, Kans., 1929–1931

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1929				
February 21–28	414	25	103	1,630
March	480	36	101	6,220
April	1,960	68	318	18,900
May	5,180	69	547	33,600
June	650	12	133	7,930
July	28	2	7.61	468
August	5	0	1.47	90
September	3	.2	1.16	69
The period				68,900
1929–30				
October	52	1	4.32	266
November	213	19	79.1	4,710
December	83	6	41.6	2,560
January	5		2.26	139
February	330		98.5	5,470
March	19	7	10.6	655
April	570	5	27.1	1,610
May	1,360	8	171	10,500
June	227	4	29.2	1,740
July	3	.1	.765	47
August	.1	0	.003	.2
September	414	0	18.8	1,120
The year	1,360	0	39.8	28,800
1930–31				
October	2	.3	.961	59
November	2	1	1.27	75
December	108		18.1	1,110
January	10	1	3.26	200
February	108	2	18.2	1,010
March	345	7	52.8	3,250
April	241	24	71.8	4,270
May	1,360	14	135	8,310
June	770	2	116	6,900
July	2	.3	.974	60
August	6	0	.684	42
The year	1,360	0	34.9	25,300

NOTE.—No flow during September, 1931.

LITTLE OSAGE RIVER AT STOTESBURY, MO.

LOCATION.—Chain gage in NE. ¼ sec. 21, T. 37 N., R. 33 W., at county highway bridge half a mile north of Stotesbury.

DRAINAGE AREA.—427 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year; 2,080 second-feet June 15 (gage height, 16.36 feet); no flow many days during July, August, September.

1929–1931: Maximum discharge, 13,600 second-feet May 13, 1929; no flow many days during summers of 1930 and 1931.

Maximum stage known, 30.7 feet Oct 4, 1927 (discharge, about 21,000 second-feet).

REMARKS.—Records fair. Discharge estimated Nov. 15–20.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	2.0	117	3.5	11	28	474	309	97	4.8	0	0.1
2	.6	1.2	28	3.2	11	24	378	183	74	4.8	0	0
3	.9	1.2	17	3.5	10	24	255	149	50	4.8	0	0
4	.1	2.0	43	3.5	9	23	192	101	34	4.0	0	0
5	.1	1.2	29	3.2	9	21	149	74	27	3.3	0	0
6	.1	1.2	27	2.8	8	20	117	60	25	3.7	0	0
7	1.2	.9	32	2.8	9	19	97	54	19	2.6	14	0
8	1.2	.9	50	4.2	117	21	82	50	109	2.0	6	0
9	1.7	.5	60	4.4	57	23	71	46	50	1.7	3.5	0
10	3.3	.5	36	4.0	42	85	68	42	28	1.5	157	0
11	3.2	.4	29	5	28	157	68	34	25	.7	30	0
12	3.0	.4	25	6	22	174	64	30	338	.7	14	0
13	2.6	.5	23	6	22	183	54	26	725	.1	8	0
14	2.3	.3	21	5	43	201	39	24	109	.1	5	0
15	2.3	.2	18	5	37	149	32	21	1,180	.1	3.8	0
16	3.0	.2	16	4.4	32	78	30	18	920	0	2.8	0
17	1.7	.2	11	4.8	133	60	29	15	109	.1	2.5	0
18	1.5	.2	13	5	165	42	28	14	74	0	1.9	0
19	1.5	.2	12	6	141	34	32	228	43	0	2.3	0
20	1.2	.2	11	6	109	31	32	1,400	32	0	1.7	0
21	2.0	64	10	7	82	30	64	594	25	0	1.2	0
22	7	17	9	8	68	27	210	291	21	0	.9	0
23	3.7	8	8	7	74	32	141	636	17	.1	.6	0
24	3.7	4.0	7	17	82	39	109	328	14	0	.3	0
25	4.4	1.7	6	17	57	36	89	228	13	0	.3	0
26	4.0	.7	6	16	43	30	165	165	11	0	.3	0
27	4.8	.3	6	14	35	33	273	117	9	0	.3	0
28	4.8	.1	5	13	31	165	201	89	7	0	.2	0
29	3.7	.3	4.8	11	------	338	183	68	7	0	.2	0
30	2.6	.4	5	11	------	291	109	183	6	0	.1	0
31	2.0	------	4.8	11	------	328	------	133	------	0	.1	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	7	0.1	2.41	0.0056	0.006
November	64	.1	3.70	.0087	.01
December	117	4.8	22.2	.052	.06
January	17	2.8	7.11	.017	.02
February	165	8	53.1	.124	.13
March	338	19	88.6	.207	.24
April	474	28	128	.300	.33
May	1,400	14	184	.431	.50
June	1,180	6	140	.328	.37
July	4.8	0	1.13	.0026	.003
August	157	0	8.29	.019	.02
September	.1	0	0	0	0
The year	1,400	0	53.1	.124	1.69

MARMATON RIVER NEAR FORT SCOTT, KANS.

LOCATION.—Chain gage in NW. ¼ sec. 21, T. 25 S., R. 25 E., 2 miles northeast of Fort Scott and 2½ miles west of Kansas-Missouri State line.

DRAINAGE AREA.—411 square miles.

RECORDS AVAILABLE.—August, 1921, to June, 1925; April, 1929, to September, 1931.

EXTREMES.—Maximum discharge during year, 808 second-feet Mar. 28 (gage height, 9.90 feet); minimum, 1 second-foot several days during October, November, June, July, August, September.

1921–1925, 1929–1931: Maximum discharge, 22,100 second-feet May 12, 1929 (gage height, 37.04 feet); minimum, 1 second-foot several days in 1922, 1923, 1930, 1931. Maximum stage known, 42.34 feet in 1915.

REMARKS.—Records good except those for period December to February, which are fair.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1	11	374	15	28	55	497	424	106	1	1	1
2	1	9	33	15	24	53	344	293	86	1	1	1
3	2	5	134	11	22	49	282	194	62	1	1	1
4	1	5	96	10	21	43	227	150	45	1	1	1
5	1	5	96	14	21	41	183	128	37	1	1	1
6	2	5	293	14	19	43	161	117	31	1	1	1
7	1	3	205	17	26	45	150	112	17	1	1	1
8	1	3	205	18	96	49	134	86	18	1	1	1
9	1	2	106	27	71	51	117	81	16	1	1	1
10	1	2	96	31	55	71	128	76	15	1	1	1
11	1	1	[a] 101	31	45	227	161	71	22	1	1	1
12	1	1	106	32	38	227	128	59	32	1	1	1
13	1	1	86	34	38	194	101	50	183	1	1	1
14	2	1	81	[a] 32	55	150	86	49	101	1	1	[a] 1
15	2	1	71	31	59	112	76	43	63	[a] 1	1	[a] 1
16	2	1	53	29	86	91	71	37	38	[a] 1	1	[a] 1
17	2	2	44	31	194	76	71	33	32	1	1	1
18	1	1	39	32	205	63	76	31	21	1	1	1
19	1	3	39	40	161	57	76	[b] 580	18	1	1	1
20	1	5	37	71	122	53	81	[b] 464	13	1	1	1
21	1	194	33	71	101	53	374	304	12	1	1	1
22	16	117	30	66	106	59	354	271	9	1	1	3
23	21	86	28	54	96	76	227	293	6	1	1	1
24	26	44	26	52	96	63	183	183	3	1	1	10
25	[a] 49	36	21	48	96	55	183	122	1	1	1	7
26	49	29	21	44	71	[a] 84	712	86	1	1	1	3
27	37	[a] 26	17	40	71	112	444	216	1	1	1	2
28	28	22	17	38	58	808	271	56	1	1	1	1
29	22	25	17	36	-------	497	216	35	1	1	1	1
30	17	464	16	31	-------	486	194	216	1	[a] 1	1	1
31	13	-------	16	[a] 30	-------	580	-------	194	-------	1	1	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	49	1	9.84	605
November	464	1	37.0	2,200
December	374	16	82.0	5,040
January	71	10	33.7	2,070
February	205	19	74.3	4,130
March	808	41	149	9,170
April	712	71	210	12,500
May	580	31	163	10,000
June	183	1	33.1	1,970
July	1	1	1.00	61
August	1	1	1.00	61
September	10	1	1.67	99
The year	808	1	66.2	47,900

[a] Interpolated. [b] Estimated.

SAC RIVER NEAR STOCKTON, MO.

LOCATION.—Chain gage in W. ½ sec. 11, T. 34 N., R. 26 W., at bridge on State highway 54, 2½ miles east of Stockton.

DRAINAGE AREA.—1,160 square miles.

RECORDS AVAILABLE.—July, 1921, to September, 1931.

EXTREMES.—Maximum discharge during year, 24,300 second-feet Aug. 7 (gage height, 22.40 feet); minimum, 77 second-feet Oct. 4–6 (gage height, 2.38 feet).

1921–1931: Maximum discharge, 34,800 second-feet Apr. 1, 1927 (gage height, 24.95 feet); minimum, 25 second-feet Sept. 10, 1925 (gage height, 1.62 feet).

Maximum stage known, 29.3 feet in July, 1909.

REMARKS.—Records good. Discharge estimated Mar. 4, June 10, July 9.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	83	150	1,400	224	150	910	1,070	910	710	130	105	370
2	80	136	1,290	210	146	808	962	808	710	122	96	910
3	80	132	858	210	141	758	858	710	663	118	663	408
4	77	128	858	210	141	688	758	663	554	114	663	353
5	77	124	1,180	196	141	618	663	618	490	1,020	618	336
6	77	122	1,400	182	141	618	663	618	469	575	11,100	320
7	122	120	1,120	170	146	618	618	532	448	370	22,100	303
8	157	116	910	170	155	618	575	408	408	224	14,200	254
9	143	112	808	170	239	575	575	448	408	175	5,650	254
10	122	112	710	182	239	710	575	663	398	157	2,380	224
11	103	112	663	170	286	808	575	618	389	157	2,140	210
12	100	112	663	196	286	758	618	554	370	134	1,740	210
13	93	109	618	196	320	663	575	532	336	114	1,510	196
14	90	109	532	196	389	618	532	511	303	107	1,020	182
15	101	109	469	146	511	575	511	428	303	103	858	182
16	126	105	448	146	618	532	490	408	428	103	808	182
17	100	105	428	182	1,290	490	469	389	370	103	758	170
18	96	105	428	170	1,340	490	448	370	303	103	710	170
19	96	105	408	170	1,070	469	428	10,800	286	103	910	152
20	93	150	353	170	962	448	408	9,840	254	134	962	143
21	90	157	336	170	618	448	428	3,720	239	1,020	858	134
22	196	170	320	170	1,560	469	758	3,360	196	389	663	130
23	428	239	303	170	2,200	490	710	2,860	182	270	575	130
24	389	224	286	170	1,910	428	663	2,140	170	210	532	511
25	303	182	286	170	1,620	389	808	1,680	170	663	490	210
26	254	170	286	170	1,290	370	910	1,510	152	575	469	157
27	239	170	286	170	1,120	618	962	1,230	143	408	428	170
28	196	139	286	157	1,020	2,260	1,180	575	126	210	962	130
29	182	182	254	155	-------	1,620	1,070	962	122	157	618	118
30	170	1,340	254	155	-------	1,400	962	962	122	134	532	114
31	157	-------	254	155	-------	1,230	-------	910	-------	114	408	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	428	77	149	0.128	0.15
November	1,340	105	178	.153	.17
December	1,400	254	603	.520	.60
January	224	146	177	.153	.18
February	2,200	141	716	.617	.64
March	2,260	370	726	.626	.72
April	1,180	408	694	.598	.67
May	10,800	370	1,640	1.41	1.63
June	710	122	341	.294	.33
July	1,020	103	268	.231	.27
August	22,100	96	2,440	2.10	2.42
September	910	114	244	.210	.23
The year	22,100	77	684	.590	8.01

LITTLE SAC RIVER NEAR SPRINGFIELD, MO.

LOCATION.—Staff gage in SW. ¼ sec. 26, T. 30 N., R. 22 W., half a mile above South Dry Sac Creek and 6 miles northwest of Springfield. Zero of gage is about 1,162 feet above mean sea level.

DRAINAGE AREA.—40 square miles.

RECORDS AVAILABLE.—May, 1927, to June, 1931 (discontinued).

EXTREMES.—Maximum discharge during period, 142 second-feet Feb. 22 (gage height, 2.96 feet); minimum, 0.2 second-foot Oct. 29, 30, Dec. 1–7.

1927–1931: Maximum discharge, 7,000 second-feet June 28, 1928 (gage height, 12.30 feet); minimum, 0.1 second-foot several days during 1929 and 1930.

REMARKS.—Records fair. Flow regulated by storage in McDaniel Lake.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.3	5	0.2	2.2	1.5	27	25	25	20
2	1.3	4.8	.2	2.2	1.5	22	22	25	17
3	1.3	2.2	.2	2.4	1.5	18	20	20	16
4	1.3	2.2	.2	3.1	1.5	17	17	17	16
5	.8	2.2	.2	2.9	2.9	8	15	27	12
6	.3	2.0	.2	1.5	2.4	19	14	14	11
7	.5	2.2	.2	3.8	2.2	25	13	14	10
8	2.6	2.2	7	1.7	12	27	12	27	9
9	2.6	2.6	11	2.4	19	32	44	22	12
10	2.6	2.6	11	2.6	16	20	50	20	12
11	2.6	2.9	9	5	14	25	40	23	------
12	2.2	2.9	7	3.6	12	22	34	20	------
13	2.6	3.1	5	4.1	23	21	33	17	------
14	2.6	3.1	21	2.4	30	19	25	16	------
15	2.6	3.3	12	2.4	21	16	22	14	------
16	2.2	3.8	.5	2.9	35	14	20	14	------
17	2.2	3.8	2.6	4.1	54	13	20	12	------
18	2.2	4.1	3.3	3.6	44	12	19	10	------
19	2.0	4.1	3.6	2.9	34	16	16	71	------
20	2.0	4.4	3.6	2.2	28	20	21	51	------
21	2.0	4.1	3.1	2.4	20	7	17	54	------
22	2.2	4.4	3.1	2.6	142	12	17	85	------
23	3.1	2.2	3.1	2.9	92	12	20	78	------
24	2.2	2.2	3.1	2.6	67	11	19	65	------
25	2.2	3.8	2.9	3.1	53	11	55	65	------
26	1.5	4.4	2.6	2.9	43	33	82	48	------
27	1.7	4.8	2.6	2.6	37	26	58	39	------
28	1.7	4.8	3.8	2.2	27	53	44	35	------
29	.2	5	3.6	1.7	-------	46	37	28	------
30	.2	.4	2.4	1.5	-------	34	34	35	------
31	6	-------	2.9	1.5	-------	30	-------	27	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	6	0.2	1.96	0.049	0.06
November	5	.4	3.32	.083	.09
December	21	.2	4.23	.106	.12
January	5	1.5	2.71	.068	.08
February	142	1.5	29.9	.748	.78
March	53	7	21.5	.538	.62
April	82	12	28.2	.705	.79
May	85	10	32.8	.820	.95
June 1–10	20	9	13.5	.338	.13

SOUTH GRAND RIVER NEAR BROWNINGTON, MO.

LOCATION.—Chain gage in NW. ¼ sec. 17, T. 40 N., R. 25 W., 500 feet below Deepwater Creek and 1 mile north of Brownington. Zero of gage is about 686.5 feet above mean sea level.

DRAINAGE AREA.—1,660 square miles.

RECORDS AVAILABLE.—June, 1921, to September, 1931.

EXTREMES.—Maximum discharge during year, 2,820 second-feet May 21; minimum, 0.5 second-foot Nov. 7, 15 (gage height, 0.96 foot).

1921–1931: Maximum discharge, 40,000 second-feet Nov. 19, 1928 (gage height, 39.9 feet); minimum, 0.5 second-foot several days during September, 1925, August, November, 1930.

REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.0	0.8	176	6	8	97	675	246	480	2.2	1.0	6
2	2.4	.7	220	7	8	83	725	233	458	2.8	5	775
3	2.4	.6	197	7	7	67	575	197	260	1.9	17	525
4	2.2	.8	112	7	7	59	395	176	186	1.5	8	138
5	1.8	.8	138	7	7	44	290	147	129	1.5	9	63
6	1.4	.7	166	6	7	48	220	129	97	1.0	1,280	34
7	275	.5	129	6	550	60	176	104	395	.9	2,480	22
8	83	.9	220	8	220	58	147	112	725	.8	1,120	15
9	58	.9	166	8	83	52	129	104	416	.8	340	9
10	27	.8	112	8	43	176	138	104	357	1.8	1,020	8
11	29	.8	90	10	37	306	129	104	416	1.7	975	9
12	28	.9	68	12	29	675	120	112	260	1.6	246	7
13	16	.7	63	13	71	1,120	97	104	340	1.2	156	5
14	12	.8	53	11	97	1,120	90	97	340	1.0	104	4.4
15	11	.5	38	8	77	825	83	97	376	.8	55	3.4
16	37	90	29	8	208	502	83	97	502	.8	32	2.4
17	129	32	29	8	322	306	97	83	220	.6	19	1.8
18	246	9	20	11	233	208	77	71	166	.6	14	1.2
19	166	6	19	11	186	156	166	220	71	.7	14	1.0
20	51	575	19	8	246	112	112	2,430	46	.9	1,020	.9
21	32	233	16	7	186	104	138	2,820	34	.9	925	.8
22	22	147	14	8	357	112	600	2,160	22	2.4	340	.7
23	17	147	15	9	322	112	550	2,760	14	2.4	112	19
24	8	90	15	8	322	112	340	2,650	11	1.9	48	2,760
25	8	58	12	8	322	90	275	1,500	8	1.6	30	2,040
26	7	39	11	8	208	77	376	675	6	5	20	458
27	6	26	8	9	166	112	725	395	5	4.6	13	60
28	5	20	10	9	129	600	675	275	4.4	2.4	24	50
29	4.8	16	8	9	-------	600	340	208	1.4	2.4	18	44
30	3.6	322	8	9	-------	625	306	197	1.4	1.6	10	37
31	.9	-------	8	8	-------	625	-------	502	-------	1.1	6	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	275	0.9	41.9	0.025	0.03
November	575	.5	60.7	.037	.04
December	220	8	70.6	.043	.05
January	13	6	8.45	.0051	.006
February	550	7	159	.096	.10
March	1,120	44	298	.180	.21
April	725	77	295	.178	.20
May	2,820	71	616	.371	.43
June	725	1.4	212	.128	.14
July	5	.6	1.66	.001	.001
August	2,480	1.0	337	.203	.23
September	2,760	.7	237	.143	.16
The year	2,820	.5	195	.117	1.60

NIANGUA RIVER NEAR DECATURVILLE, MO.

LOCATION.—Water-stage recorder in SE. ¼ sec. 18, T. 37 N., R. 17 W., 8 miles west of Decaturville. Zero of gage is 665.9 feet above mean sea level.

DRAINAGE AREA.—About 627 square miles.

RECORDS AVAILABLE.—April, 1930, to September, 1931.

EXTREMES.—Maximum discharge during year, 8,070 second-feet Aug. 7 (gage height, 12.60 feet); minimum, 16 second-feet Oct. 5, 6 (gage height, 1.86 feet).

1930–31: Maximum discharge, that of Aug. 7, 1931; minimum, that of Oct. 5, 6, 1930.

REMARKS.—Records good. Flow regulated by hydroelectric plant of Missouri Electric Power Co.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	86	190	537	204	140	496	880	541	541	183	176	256
2	25	205	665	137	205	505	759	492	485	136	120	1,410
3	22	190	537	196	191	440	654	405	449	234	227	2,270
4	18	190	443	144	199	390	592	453	419	183	172	1,060
5	18	205	422	196	119	390	463	437	444	253	464	728
6	18	190	353	205	189	393	487	387	413	247	4,510	463
7	22	160	361	217	195	360	435	366	282	197	6,450	531
8	24	188	438	199	101	268	441	411	254	184	1,820	302
9	160	265	406	207	169	414	393	402	267	180	975	297
10	205	195	368	183	249	427	368	302	259	182	731	314
11	190	225	362	98	196	610	409	466	264	198	568	296
12	190	249	330	225	271	882	375	462	255	143	469	360
13	190	231	307	104	321	852	458	446	276	104	409	304
14	175	169	340	95	278	734	442	420	249	184	394	508
15	175	168	253	190	294	533	415	383	262	166	254	310
16	175	128	409	334	565	536	394	386	279	155	251	288
17	190	168	102	260	530	473	369	269	281	78	366	291
18	175	152	363	104	703	415	376	229	272	173	418	215
19	175	196	267	293	833	387	357	3,220	259	118	851	228
20	154	153	242	139	675	398	355	4,800	275	220	2,210	181
21	175	222	167	213	575	336	399	2,390	146	182	1,610	224
22	190	190	238	214	491	319	361	1,590	228	227	971	216
23	190	194	211	212	820	400	417	1,570	205	247	556	271
24	252	170	252	199	1,800	424	390	1,480	194	199	539	255
25	285	168	133	103	1,280	422	402	1,370	[a] 214	177	443	338
26	268	194	239	196	949	449	370	1,100	[a] 233	149	315	659
27	252	247	215	210	754	538	590	918	[a] 258	203	296	411
28	236	169	141	211	646	1,340	784	772	[a] 139	219	340	280
29	236	204	232	207	-------	1,900	702	669	[a] 237	186	413	238
30	220	121	208	136	-------	1,480	605	614	225	196	358	231
31	205	-------	210	203	-------	1,080	-------	493	-------	183	430	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	285	18	158	0.252	0.29
November	265	121	190	.303	.34
December	665	102	315	.502	.58
January	334	95	188	.300	.35
February	1,800	101	491	.783	.82
March	1,900	268	600	.957	1.10
April	880	355	481	.766	.85
May	4,800	229	911	1.45	1.67
June	541	139	285	.455	.51
July	253	78	183	.292	.34
August	6,450	120	907	1.45	1.67
September	2,270	181	458	.730	.81
The year	6,450	18	431	.687	9.33

[a] Computed from power plant records.

BENNETT SPRING AT BRICE, MO.

LOCATION.—Staff gage in sec. 1, T. 34 N., R. 18 W., at Brice.
RECORDS AVAILABLE.—October, 1928, to September, 1931.
EXTREMES.—Maximum discharge during year, 938 second-feet Sept. 2 (gage height, 1.79 feet); minimum, 86 second-feet Nov. 19, 23, 24, Dec. 31, Jan. 1–3, 9, 10, 16.

1929–1931: Maximum gage height, 4.35 feet May 6, 1929 (discharge not determined); minimum discharge, that of Nov. 19, 23, 24, Dec. 31, 1930, Jan. 1–3, 9, 10, 16, 1931.

Maximum stage known, about 7 feet during June, 1928.
REMARKS.—Records fair. Discharge during high stages includes surface water from valley above spring.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
1	101	90	130	86	92	143	192	143	156	111	121	121
2	101	94	116	86	92	133	172	140	152	108	121	938
3	98	94	108	86	92	133	164	133	140	108	124	320
4	98	94	104	88	92	130	149	130	136	108	133	242
5	94	94	104	88	92	124	143	127	136	114	188	202
6	94	88	118	88	92	124	136	124	130	121	335	168
7	104	88	114	88	96	127	136	121	130	114	248	156
8	98	88	108	88	101	127	136	121	130	111	202	146
9	98	88	106	86	108	127	133	133	121	108	212	140
10	98	88	104	86	108	127	127	133	124	108	156	130
11	98	88	104	90	106	160	130	130	121	106	146	124
12	98	88	104	90	106	168	127	127	121	106	140	121
13	94	88	101	90	111	164	127	121	121	106	133	121
14	92	88	101	90	111	146	124	121	118	106	127	118
15	92	88	98	88	111	136	124	118	127	106	124	116
16	96	88	98	88	127	133	124	118	127	106	121	114
17	92	88	96	88	176	130	121	116	127	106	118	111
18	92	88	96	88	168	127	124	116	127	116	212	111
19	92	86	96	88	152	127	121	184	127	111	202	111
20	92	90	94	90	146	124	121	499	121	111	184	111
21	92	90	94	90	127	124	130	335	124	124	152	108
22	92	90	94	90	140	130	143	274	124	127	146	108
23	106	86	92	90	222	133	136	328	124	108	133	106
24	106	86	92	90	207	133	133	274	124	118	127	114
25	104	94	90	90	188	130	133	242	136	127	127	116
26	98	94	90	90	156	124	164	299	127	133	124	111
27	98	94	90	90	152	143	180	248	124	136	116	108
28	98	90	88	92	149	280	164	217	111	124	116	108
29	94	90	88	92	-------	267	160	188	111	124	124	106
30	94	124	88	92	-------	237	149	172	111	124	124	104
31	90	-------	86	92	-------	212	-------	164	-------	121	116	-------

Month	Maximum	Minimum	Mean	Month	Maximum	Minimum	Mean
October	106	90	96.6	May	499	116	184
November	124	86	90.8	June	156	111	127
December	130	86	99.7	July	136	106	115
January	92	86	89.0	August	335	116	153
February	222	92	129	September	938	104	160
March	280	124	149				
April	192	121	141	The year	938	86	128

GASCONADE RIVER BASIN

GASCONADE RIVER NEAR HAZLEGREEN, MO.

LOCATION.—Chain gage in SE. ¼ SE. ¼ sec. 15, T. 35 N., R. 14 W., at bridge on State highway 66, 1 mile below Osage Fork and 1½ miles west of Hazlegreen.
DRAINAGE AREA.—1,250 square miles.
RECORDS AVAILABLE.—April, 1929, to September, 1931.
EXTREMES.—Maximum discharge during year, 4,100 second-feet Aug. 18 (gage height, 6.96 feet); minimum, 72 second-feet July 19 (gage height, 1.50 feet).
1929–1931: Maximum discharge, 19,000 second-feet May 7, 1929 (gage height, 16.21 feet); minimum, 45 second-feet Aug. 9, 1930 (gage height, 1.34 feet).
Maximum stage known, 31.8 feet in January, 1916.
REMARKS.—Records good. Discharge estimated Oct. 19, Mar. 11, July 31.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	117	234	920	228	218	985	1,520	1,310	530	117	94	352
2	110	208	1,730	223	213	860	1,310	1,120	500	110	97	1,660
3	104	199	1,180	218	208	770	1,120	985	440	110	110	1,180
4	97	189	860	218	208	710	920	800	380	104	162	650
5	94	180	800	213	199	680	860	680	380	180	180	500
6	92	162	860	208	208	650	770	680	352	154	2,170	410
7	130	162	1,730	208	213	620	680	650	325	130	3,010	352
8	138	154	1,380	208	218	1,520	620	560	308	123	1,660	303
9	138	154	1,120	204	223	2,740	590	1,380	292	123	920	281
10	146	146	860	204	2,650	2,830	680	1,520	281	117	710	244
11	218	142	710	208	1,870	2,320	800	1,310	276	110	560	228
12	199	138	650	213	1,380	1,800	985	1,120	270	104	470	208
13	180	138	560	213	1,380	1,520	920	920	260	92	410	440
14	170	134	500	228	1,380	1,180	800	800	244	87	352	410
15	158	130	440	260	2,090	985	770	710	244	82	308	352
16	146	138	410	254	1,660	920	740	620	260	77	281	292
17	138	154	380	239	1,940	800	710	560	620	77	270	260
18	134	218	352	234	2,250	740	680	530	560	74	2,920	228
19	152	314	325	234	1,870	680	920	1,380	410	72	2,650	199
20	170	325	325	228	1,520	650	985	1,310	325	100	2,010	180
21	162	325	314	228	1,240	620	1,050	860	281	97	1,590	162
22	166	1,050	303	234	1,120	920	1,120	1,310	249	97	985	150
23	265	650	292	228	2,250	1,520	1,050	1,180	218	92	740	138
24	249	530	281	218	3,110	1,310	985	985	199	410	590	154
25	270	440	270	213	2,170	1,120	985	1,180	189	620	500	199
26	530	380	260	208	1,660	1,050	1,520	1,180	166	325	440	239
27	410	352	254	204	1,380	1,240	3,600	1,050	154	228	380	199
28	352	352	249	199	1,180	2,330	2,740	920	146	170	380	170
29	303	410	249	208	-------	3,400	1,940	740	134	146	410	162
30	281	860	239	218	-------	2,740	1,520	650	123	123	380	154
31	260	-------	234	218	-------	1,800	-------	590	-------	108	380	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	530	92	196	0.157	0.18
November	1,050	130	299	.239	.27
December	1,730	234	614	.491	.57
January	260	199	220	.176	.20
February	3,110	199	1,290	1.03	1.07
March	3,400	620	1,360	1.09	1.26
April	3,600	590	1,130	.904	1.01
May	1,520	530	955	.764	.88
June	620	123	304	.243	.27
July	620	72	147	.118	.14
August	3,010	94	843	.674	.78
September	1,660	138	349	.279	.31
The year	3,600	72	637	.510	6.94

GASCONADE RIVER NEAR WAYNESVILLE, MO.

LOCATION.—Chain gage in SE. ¼ sec. 3, T. 36 N., R. 12 W., at bridge on State highway 17, 4 miles north of Waynesville. Zero of gage is 739.34 feet above mean sea level.

DRAINAGE AREA.—1,680 square miles.

RECORDS AVAILABLE.—June, 1921, to September, 1931.

EXTREMES.—Maximum discharge during year, 5,380 second-feet May 20 (gage height, 7.25 feet); minimum, 159 second-feet July 18, 19 (gage height, 2.22 feet).

1921–1931: Maximum discharge, 27,300 second-feet June 10, 1928 (gage height, 18.20 feet); minimum, 77 second-feet Sept. 27, 1922.

Maximum stage known, 24.3 feet Aug. 22, 1915 (revised).

REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	230	360	1,140	338	311	1,560	2,390	2,030	942	264	196	455
2	200	338	1,480	338	315	1,300	1,930	1,650	868	226	182	718
3	204	315	1,840	338	315	1,140	1,650	1,480	760	222	196	3,040
4	200	299	1,480	315	315	1,020	1,480	1,300	695	193	196	1,220
5	193	283	1,300	338	307	980	1,300	1,140	630	245	226	830
6	186	271	1,220	315	303	905	1,220	1,140	600	248	299	695
7	230	260	1,560	315	295	868	1,060	1,140	570	248	2,520	570
8	230	256	2,030	315	295	905	980	1,140	540	237	2,520	455
9	230	248	1,650	307	338	2,910	905	1,840	482	215	1,560	430
10	252	252	1,390	307	760	3,170	905	2,520	455	211	1,060	360
11	256	241	1,220	283	2,780	3,040	942	2,390	455	179	830	315
12	283	226	1,020	338	2,030	2,650	1,220	2,030	430	172	662	267
13	295	226	942	338	1,650	2,260	1,390	1,650	430	182	510	245
14	283	218	795	311	1,650	2,140	1,300	1,480	405	186	455	237
15	264	218	760	299	2,030	1,480	1,140	1,300	455	172	405	405
16	260	233	662	360	2,260	1,300	1,140	1,140	382	172	455	360
17	245	237	630	360	2,260	1,220	1,060	1,020	405	165	338	338
18	222	211	570	360	2,520	1,140	1,140	942	760	159	338	303
19	230	233	540	382	2,780	1,020	1,140	2,140	662	162	1,930	279
20	230	382	482	382	2,260	1,140	1,220	4,280	570	168	2,780	260
21	248	455	482	338	2,030	905	1,300	2,140	540	176	1,740	241
22	267	630	455	360	1,650	905	1,300	2,140	510	207	1,480	207
23	279	1,140	430	360	2,650	1,300	1,560	2,390	482	196	1,140	245
24	315	868	405	315	3,720	1,840	1,650	2,030	315	237	795	256
25	360	795	405	338	3,580	1,650	1,650	1,840	307	275	695	215
26	382	662	382	315	2,650	1,560	1,650	1,930	307	695	600	215
27	570	570	382	315	2,030	1,390	3,040	1,650	291	482	510	299
28	510	482	338	315	1,740	2,780	4,700	1,480	283	405	430	256
29	455	570	338	307	-------	3,300	3,720	1,390	279	260	430	230
30	430	662	360	307	-------	4,000	2,520	1,140	267	245	338	211
31	382	-------	360	315	-------	3,040	-------	980	-------	207	430	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	570	186	288	0.171	0.20
November	1,140	211	405	.241	.27
December	2,030	338	873	.520	.60
January	382	283	330	.196	.23
February	3,720	295	1,640	.976	1.02
March	4,000	868	1,770	1.05	1.21
April	4,700	905	1,620	.964	1.08
May	4,280	942	1,710	1.02	1.18
June	942	267	503	.299	.33
July	695	159	239	.142	.16
August	2,780	182	847	.504	.58
September	3,040	207	472	.281	.31
The year	4,700	159	886	.527	7.17

GASCONADE RIVER AT JEROME, MO.

LOCATION.—Staff gage in S. ½ sec. 13, T. 37 N., R. 10 W., at Jerome, half a mile below Little Piney Creek. Zero of gage is 658.12 feet above mean sea level.

DRAINAGE AREA.—2,840 square miles.

RECORDS AVAILABLE.—January, 1923, to September, 1931. From April, 1903, to July, 1906, at Arlington, Mo.

EXTREMES.—Maximum discharge during year, 7,500 second-feet May 20 (gage height, 6.80 feet); minimum, 475 second-feet July 18, 19 (gage height, 1.60 feet).

1903–1906, 1923–1931: Maximum discharge, 51,800 second-feet June 10, 1928 (gage height, 23.25 feet); minimum, 300 second-feet June 15, 1905.

Maximum stage known, about 31 feet Jan. 5, 1897.

REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	578	785	2,540	740	695	2,540	3,980	3,700	1,700	623	526	785
2	560	740	2,660	740	695	2,300	3,300	3,170	1,580	614	509	1,140
3	543	740	3,040	740	695	2,060	2,910	2,660	1,470	587	587	2,180
4	534	695	2,660	740	695	1,940	2,660	2,420	1,360	569	596	2,910
5	518	650	2,300	740	695	1,700	2,300	2,180	1,300	740	632	1,700
6	534	650	2,420	740	650	1,580	2,060	2,060	1,200	641	650	1,300
7	650	632	3,430	740	650	1,700	1,940	1,940	1,200	596	695	1,140
8	641	614	3,300	740	695	3,840	1,700	2,180	1,140	596	3,840	980
9	695	605	3,170	695	695	3,980	1,700	3,040	1,080	578	2,540	880
10	740	587	2,540	695	2,910	5,100	1,700	3,840	1,140	569	1,820	785
11	695	569	2,180	740	2,910	4,960	1,820	3,840	1,030	552	1,360	740
12	695	560	1,940	740	3,430	4,540	1,940	3,560	1,030	543	1,200	695
13	695	560	1,700	740	2,910	4,120	2,180	3,170	980	534	1,030	641
14	695	560	1,580	740	2,910	3,430	2,180	2,780	930	526	880	632
15	650	560	1,470	740	3,560	2,910	2,060	2,420	1,360	509	830	785
16	650	650	1,300	740	3,840	2,540	1,940	2,180	1,250	500	740	785
17	632	623	1,200	785	3,700	2,300	1,940	2,060	1,140	492	740	695
18	623	930	1,140	785	4,120	2,060	1,820	1,820	1,030	484	695	650
19	632	830	1,080	785	4,260	1,940	2,420	4,540	1,250	475	1,200	623
20	623	1,080	1,030	785	3,840	1,820	2,180	7,300	1,140	560	2,300	596
21	596	6,020	980	785	3,300	1,700	2,420	4,540	1,030	650	2,910	552
22	641	2,660	930	740	2,910	1,700	2,540	4,120	930	596	2,300	534
23	695	2,300	930	740	3,430	2,780	2,780	4,260	880	543	1,700	650
24	695	2,060	880	740	4,820	3,170	2,910	3,700	830	552	1,470	552
25	930	1,700	880	740	5,250	3,170	2,660	3,300	785	605	1,250	543
26	930	1,470	830	740	4,400	2,780	3,300	2,910	740	785	1,200	552
27	980	1,250	830	695	3,560	2,660	5,700	2,910	695	930	980	543
28	1,030	1,140	830	695	3,040	3,700	6,360	2,660	695	785	880	614
29	980	1,140	785	695	-------	4,820	5,700	2,420	650	650	785	587
30	880	1,700	785	695	-------	5,550	4,400	2,180	641	605	830	543
31	830	-------	785	695	-------	4,820	-------	1,940	-------	560	830	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,030	518	702	0.247	0.28
November	6,020	560	1,170	.412	.46
December	3,430	785	1,680	.592	.68
January	785	695	737	.260	.30
February	5,250	650	2,690	.947	.99
March	5,550	1,580	3,040	1.07	1.23
April	6,360	1,700	2,780	.979	1.09
May	7,300	1,820	3,090	1.09	1.26
June	1,700	641	1,070	.377	.42
July	930	475	598	.211	.24
August	3,840	509	1,240	.437	.50
September	2,910	534	877	.309	.34
The year	7,300	475	1,630	.574	7.79

GASCONADE RIVER NEAR RICH FOUNTAIN, MO.

LOCATION.—Chain gage in SE. ¼ sec. 16, T. 42 N., R. 8 W., at bridge on Belle-Rich Fountain road just above Swan Creek and 4 miles east of Rich Fountain. Zero of gage is 554.24 feet above mean sea level.

DRAINAGE AREA.—3,180 square miles.

RECORDS AVAILABLE.—Ocotober, 1921, to September, 1931.

EXTREMES.—Maximum discharge during year, 11,900 second-feet May 20 (gage height, 9.60 feet); minimum, 500 second-feet July 18, 19 (gage height, 1.12 feet).

1922–1931: Maximum discharge, 51,000 second-feet June 11, 1928 (gage height, 22.83 feet); minimum, 410 second-feet Sept. 29, 30, 1922.

REMARKS.—Records good except those for estimated periods, Oct. 3–6, 8, 9, Nov. 3–6, 8–10, Dec. 3.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	640	820	2,720	860	675	2,960	4,600	4,470	2,060	710	605	820
2	640	820	3,440	820	675	2,600	3,950	3,820	1,870	675	605	1,100
3	625	790	3,380	820	745	2,270	3,440	3,200	1,780	675	640	1,260
4	610	760	3,320	820	745	2,060	2,960	2,840	1,690	675	640	2,600
5	600	730	3,440	820	745	1,870	2,600	2,600	1,520	900	710	2,720
6	590	684	2,720	780	745	1,780	2,380	2,380	1,430	745	710	1,780
7	677	675	3,440	710	1,020	1,780	2,160	2,270	3,200	675	980	1,520
8	700	666	3,560	745	860	1,870	1,960	2,160	1,870	675	820	1,260
9	690	657	3,440	780	820	4,210	1,780	2,720	1,260	640	3,440	1,100
0	675	649	2,960	745	860	4,210	2,270	3,560	1,870	640	2,840	980
11	710	640	2,720	745	940	5,380	2,160	4,340	1,870	640	1,780	900
12	745	640	2,380	780	2,720	5,520	2,060	4,600	1,260	605	1,520	860
13	675	605	2,060	780	3,690	4,990	2,160	4,080	1,600	605	1,260	780
14	710	605	1,870	780	3,560	4,340	2,490	3,440	1,180	605	1,100	745
15	710	605	1,690	780	4,340	3,560	2,380	3,080	1,180	570	980	710
16	710	675	1,520	820	3,560	3,080	2,270	2,720	1,690	535	940	675
17	675	640	1,430	780	4,340	2,600	2,060	2,380	1,430	535	860	860
18	640	675	1,340	780	4,210	2,270	2,060	2,160	1,260	500	820	780
19	640	1,020	1,260	820	4,600	2,060	2,060	11,500	1,180	500	780	745
20	675	1,020	1,260	820	4,340	1,960	2,380	10,600	1,430	710	1,600	710
21	640	1,430	1,180	820	3,820	1,870	2,490	7,670	1,180	640	2,720	640
22	640	5,380	1,100	820	6,100	1,960	3,080	5,250	1,020	745	2,960	820
23	675	2,720	1,100	820	5,380	1,960	2,840	5,660	1,020	640	2,380	1,020
24	710	2,380	1,020	820	4,860	2,960	3,080	4,860	980	605	1,870	900
25	780	2,060	980	780	5,250	3,200	3,080	7,830	900	605	1,520	710
26	900	1,690	980	780	5,250	3,080	3,440	4,210	860	675	1,340	640
27	1,020	1,520	940	780	4,340	3,560	5,250	3,690	820	980	1,260	640
28	980	1,340	900	745	3,560	4,730	6,250	3,320	820	1,020	1,180	605
29	1,020	1,520	900	745	------	4,470	6,710	2,960	745	820	980	710
30	1,020	3,320	900	710	------	5,380	5,520	2,720	710	745	900	675
31	900	------	860	675	------	5,660	------	2,270	------	675	860	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,020	590	730	0.230	0.27
November	5,380	605	1,260	.396	.44
December	3,560	860	1,960	.616	.71
January	860	675	783	.246	.28
February	6,100	675	2,960	.931	.97
March	5,660	1,780	3,230	1.02	1.18
April	6,710	1,780	3,060	.962	1.07
May	11,500	2,160	4,170	1.31	1.51
June	3,200	710	1,390	.437	.49
July	1,020	500	676	.213	.25
August	3,440	605	1,340	.421	.49
September	2,720	605	1,010	.318	.35
The year	11,500	500	1,870	.588	8.01

PINEY CREEK NEAR BIG PINEY, MO.

LOCATION.—Chain gage in NE. ¼ sec. 8, T. 34 N., R. 10 W., at Ross highway bridge, 3 miles east of Big Piney.

DRAINAGE AREA.—560 square miles.

RECORDS AVAILABLE.—October, 1921, to September, 1931.

EXTREMES.—Maximum discharge during year, 5,100 second-feet Nov. 21 (gage height, 7.93 feet); minimum, 118 second-feet Sept. 22 (gage height, 1.80 feet.)

1922–1931: Maximum discharge, 15,200 second-feet June 9, 1928 (gage height, 16.30 feet); minimum, 76 second-feet July 30, 31, 1926 (gage height, 1.60 feet).

REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	156	208	324	234	199	512	690	750	286	153	166	150
2	146	202	1,020	218	199	435	660	660	268	153	136	600
3	146	178	750	218	180	410	600	570	251	148	136	387
4	146	172	660	218	175	364	630	512	251	138	150	268
5	140	186	630	218	180	364	460	486	251	133	166	234
6	150	186	1,800	212	180	364	410	720	234	129	172	196
7	196	180	1,320	192	186	512	387	690	234	133	251	172
8	234	180	950	212	218	3,800	364	690	234	133	202	161
9	305	175	750	199	3,000	1,800	387	950	218	131	166	150
10	268	175	630	199	1,800	1,400	410	890	212	129	156	150
11	234	175	600	212	1,090	1,240	460	750	218	129	150	140
12	218	169	512	205	810	950	460	690	212	129	146	140
13	202	169	460	205	750	810	410	630	205	124	131	140
14	196	169	410	234	1,720	720	486	435	234	124	131	131
15	178	175	387	234	950	630	460	486	305	129	126	131
16	189	218	364	218	950	541	410	435	286	133	126	131
17	196	750	324	218	1,240	486	410	410	286	146	146	122
18	218	410	324	218	1,240	435	460	435	251	136	161	122
19	202	324	305	218	950	435	486	435	218	156	156	146
20	189	2,600	305	218	810	435	460	410	212	161	208	126
21	189	5,100	286	212	690	435	486	364	199	161	234	122
22	218	1,480	286	212	690	1,400	750	460	192	136	202	118
23	234	950	268	205	1,020	1,560	690	435	186	131	161	126
24	410	690	268	199	950	1,160	1,090	410	180	131	161	140
25	387	570	268	199	810	880	660	410	175	131	166	183
26	324	460	251	199	660	750	1,020	387	169	126	156	166
27	305	387	251	205	630	810	2,330	512	164	126	150	146
28	268	364	251	199	570	1,020	1,400	387	164	131	156	136
29	251	364	234	199	-------	1,090	1,020	344	158	136	150	136
30	234	410	234	199	-------	880	810	324	158	136	196	126
31	215	-------	234	199	-------	750	-------	305	-------	150	156	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	410	140	224	0.400	0.46
November	5,100	169	593	1.06	1.18
December	1,800	234	505	.902	1.04
January	234	192	211	.377	.43
February	3,000	175	816	1.46	1.52
March	3,800	364	883	1.58	1.82
April	2,330	364	659	1.18	1.32
May	950	305	528	.943	1.09
June	305	158	220	.393	.44
July	161	124	137	.245	.28
August	251	126	164	.293	.34
September	600	118	173	.309	.34
The year	5,100	118	423	.755	10.26

LITTLE PINEY CREEK AT NEWBURG, MO.

LOCATION.—Chain gage in SE. ¼ sec. 22, T. 37 N., R. 9 W., at highway bridge at Newburg. Zero of gage is 696.99 feet above mean sea level.

DRAINAGE AREA.—200 square miles.

RECORDS AVAILABLE.—October, 1928, to September, 1931.

EXTREMES.—Maximum discharge during year, 1,110 second-feet May 19 (gage height, 3.14 feet); minimum discharge, 37 second-feet Sept. 28–30; minimum gage height, 0.94 foot several days during August, September.

1929–1931: Maximum discharge, 8,860 second-feet May 6, 1929 (gage height, 7.22 feet); minimum discharge and gage height, those of August, September, 1931.

Maximum stage known, 13.7 feet Aug. 20, 1915.

REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1930–31

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	59	57	172	57	51	96	140	158	115	57	46	42
2	59	57	115	59	51	88	118	137	106	57	50	87
3	59	59	110	59	51	85	113	110	102	57	115	48
4	57	59	98	59	51	82	104	106	102	57	59	45
5	57	59	115	59	51	78	92	102	94	98	59	45
6	57	59	188	59	51	75	88	110	90	62	57	42
7	90	59	144	57	54	88	85	106	106	59	55	42
8	73	59	115	57	60	104	82	102	87	57	52	40
9	65	59	102	59	56	113	78	480	80	55	50	39
10	65	62	98	59	56	154	234	332	144	55	65	40
11	62	62	94	65	56	200	154	256	90	52	55	40
12	62	65	87	65	56	184	118	256	94	52	50	42
13	62	65	83	63	192	154	108	212	83	52	48	42
14	59	65	80	54	124	134	104	188	76	52	48	42
15	59	65	76	69	100	113	96	158	76	52	46	39
16	62	67	73	58	108	104	92	132	83	52	45	39
17	62	70	70	58	208	96	96	132	76	57	45	39
18	62	67	70	58	154	92	92	115	73	57	45	39
19	62	67	70	58	124	88	92	635	70	57	45	39
20	62	510	67	58	108	85	104	510	67	73	45	39
21	59	144	65	56	96	85	420	285	67	94	45	39
22	65	106	65	56	118	104	261	820	65	62	42	39
23	65	98	65	54	291	100	208	420	62	57	40	52
24	59	90	62	54	208	96	184	295	62	59	40	43
25	59	83	65	54	162	88	184	332	62	57	43	42
26	57	83	65	54	129	85	420	266	59	52	43	39
27	59	83	62	54	118	140	305	212	59	52	42	39
28	59	83	62	54	104	360	247	172	57	50	43	37
29	59	83	62	54	------	234	204	144	59	50	42	37
30	59	204	59	54	------	184	176	137	57	48	40	37
31	59	------	59	51	------	154	------	126	------	48	42	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	90	57	61.7	0.308	0.36
November	510	57	91.6	.458	.51
December	188	59	87.7	.438	.50
January	69	51	57.6	.288	.33
February	291	51	107	.535	.56
March	360	75	124	.620	.71
April	420	78	160	.800	.89
May	820	102	243	1.22	1.41
June	144	57	80.8	.404	.45
July	98	48	58.0	.290	.33
August	115	40	49.7	.248	.29
September	87	37	42.5	.212	.24
The year	820	37	96.9	.484	6.58

MISCELLANEOUS DISCHARGE MEASUREMENTS

In addition to the records of stream flow obtained at gaging stations and reported in the preceding pages, measurements of flow were made at a number of other points, as shown by the following table:

Miscellaneous discharge measurements in Missouri River drainage basin during the year ending September 30, 1931

Date	Stream	Tributary to—	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
Oct. 8	Firehole River	Madison River	Approximately 100 yards north of Old Faithful Lodge, Yellowstone National Park, Wyo.		97.9
8	do	do	200 yards northeast of Sapphire Pool, approximately 2½ miles northwest of Old Faithful Inn, Yellowstone National Park, Wyo.		197
8	Iron Creek	Firehole River	100 yards above Green Springs, approximately 1½ miles northwest of Old Faithful Inn, Yellowstone National Park, Wyo.		34.5
8	Little Firehole River	Iron Creek	200 yards above mouth, 2 miles northwest of Old Faithful Inn, Yellowstone National Park, Wyo.		38.5
Feb. 16	Elk Creek	Belle Fourche River	Sec. 6, T. 3 N., R. 14 E., S. Dak.		14.4
Mar. 19	do	do	do		13.6
Aug. 15	Bazille Creek	Missouri River	Sec. 27, T. 30 N., R. 5 W., near Bazille Mills, Nebr.		8.4
29	do	do	do		8.9
Sept. 11	do	do	Sec. 22, T. 32 N., R. 5 W., near Niobrara, Nebr.		6.3
Aug. 22	Little Papillion Creek	do	Sec. 26, T. 15 N., R. 12 E., near Omaha, Nebr.		a 3.0
Sept. 3	do	do	do		4.1
Apr. 14	Sweetwater River	North Platte River	Sec. 17, T. 29 N., R. 86 W., near Alcova, Wyo.	6.00	181
Sept. 9	Silver Creek	Platte River	Sec. 33, T. 16 N., R. 3 W., near Silver Creek, Nebr.		.3
Aug. 18	Middle Loup River	Loup River	Sec. 5, T. 21 N., R. 24 W., near Dunning, Nebr.		327
Sept. 1	do	do	do		375
12	do	do	do		328
Aug. 18	do	do	Sec. 11, T. 19 N., R. 19 W., near Sargent, Nebr.		708
Sept. 1	do	do	do		772
12	do	do	do		654
Aug. 19	Mud Creek	South Loup River	Sec. 16, T. 16 N., R. 19 W., near Berwyn, Nebr.		a 1.8
Sept. 2	do	do	do		1.7
Aug. 19	do	do	Sec. 32, T. 15 N., R. 17 W., near Mason City, Nebr.		13.0
Sept. 2	do	do	do		5.0
Aug. 19	do	do	Sec. 24, T. 15 N., R. 17 W., near Hazard, Nebr.		10.4
Sept. 2	do	do	do		14.8
13	do	do	do		8.8
Aug. 19	Clear Creek	Mud Creek	Sec. 26, T. 14 N., R. 16 W., near Litchfield, Nebr.		a .6
Sept. 2	do	do	do		a .3
Aug. 17	North Loup River	Loup River	Sec. 26, T. 21 N., R. 18 W., near Taylor, Nebr.		363
31	do	do	do		410
Sept. 12	do	do	do		366
Aug. 17	Calamus River	North Loup River	Sec. 22, T. 23 N., R. 18 W., near Harrop, Nebr.		172
31	do	do	do		198
Sept. 12	do	do	do		183
Aug. 15	Beaver Creek	Loup River	Sec. 22, T. 20 N., R. 6 W., near Albion, Nebr.		36.0
29	do	do	do		30.0
Sept. 11	do	do	do		27.4

a Estimated.

Miscellaneous discharge measurements in Missouri River drainage basin during the year ending September 30, 1931—Continued

Date	Stream	Tributary to—	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
Aug. 24	Upper Clear Creek	Platte River	Sec. 36, T. 13 N., R. 9 E., near Ashland, Nebr.		3.9
Sept. 5	Oak Creek	Salt Creek	Sec. 27, T. 13 N., R. 5 E., near Valparaiso, Nebr.		.5
Aug. 24	do	do	Sec. 22, T. 10 N., R. 6 E., near Lincoln, Nebr.		5.0
4	Arikaree River	Republican River	Sec. 27, T. 1 N., R. 41 W., near Haigler, Nebr.	0.40	24.7
5	do	do	do		3.4
May 27	Kansas River	Missouri River	At Lecompton, Kans.	3.8	3,230
Aug. 26	Little Blue River	do	Sec. 6, T. 2 N., R. 2 W., at Hebron, Nebr.		117
Sept. 8	do	do	do		104
Aug. 25	Blue River	do	Sec. 21, T. 11 N., R. 5 E., at Seward, Nebr.		a 1.5
Sept. 5	do	do	do		59.6
Aug. 25	do	do	Sec. 21, T. 4 N., R. 6 E., near Beatrice, Nebr.		147
Oct. 6	Chariton River	Missouri River	Elmer, Mo.	2.32	13
Dec. 8	do	do	do	4.70	537
Jan. 17	do	do	do	2.50	23
Apr. 18	Hahatonka Spring	Niangua River	Hahatonka, Mo.		74
May 22	do	do	do		291
Feb. 26	Little Gravois Creek	Osage River	Bagnell, Mo.		28
Sept. 16	Rolufs Spring	Little Piney Creek	Sec. 25, T. 37 N., R. 10 W., 1½ miles southwest of Arlington, Mo.		.24
Apr. 1	Gollahon Spring	Little Beaver Creek	SW. ¼ sec. 17, T. 37 N., R. 8 W., 4 miles southwest of Rolla, Mo.		.27

a Estimated.

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