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# SURFACE WATER SUPPLY *of the* UNITED STATES

## 1930

## PART 6
## MISSOURI RIVER BASIN

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# SURFACE WATER SUPPLY OF MISSOURI RIVER BASIN, 1930

## AUTHORIZATION AND SCOPE OF WORK

The volume is one of a series of 14 reports presenting results of measurements of streams in the United States during the year ending September 30, 1930.

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, 1895–1931*

| | | | | | |
|---|---|---|---|---|---|
| 1895 | $12,500.00 | 1908–1910 | $100,000.00 | 1926 | $165,000.00 |
| 1896 | 24,500.00 | 1911–1917 | 150,000.00 | 1927 | 151,000.00 |
| 1897–1899 | 50,000.00 | 1918 | 175,000.00 | 1928 | 147,000.00 |
| 1900 | 70,000.00 | 1919 | 148,244.10 | 1929 | 270,500.00 |
| 1901–2 | 100,000.00 | 1920 | 175,000.00 | 1930 | 275,000.00 |
| 1903–1906 | 200,000.00 | 1921–1923 | 180,000.00 | 1931 | 565,000.00 |
| 1907 | 150,000.00 | 1924–25 | 170,000.00 | | |

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

Measurements of stream flow have been made at about 6,070 points in the United States and also at many points in Alaska and the Hawaiian Islands. In July, 1930, 2,430 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 work of a certain class. 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 ending September 30, 1930. 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, 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 supplement the gage heights and discharge measurements in determining the daily flow. The records of stage are obtained either from direct reading 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

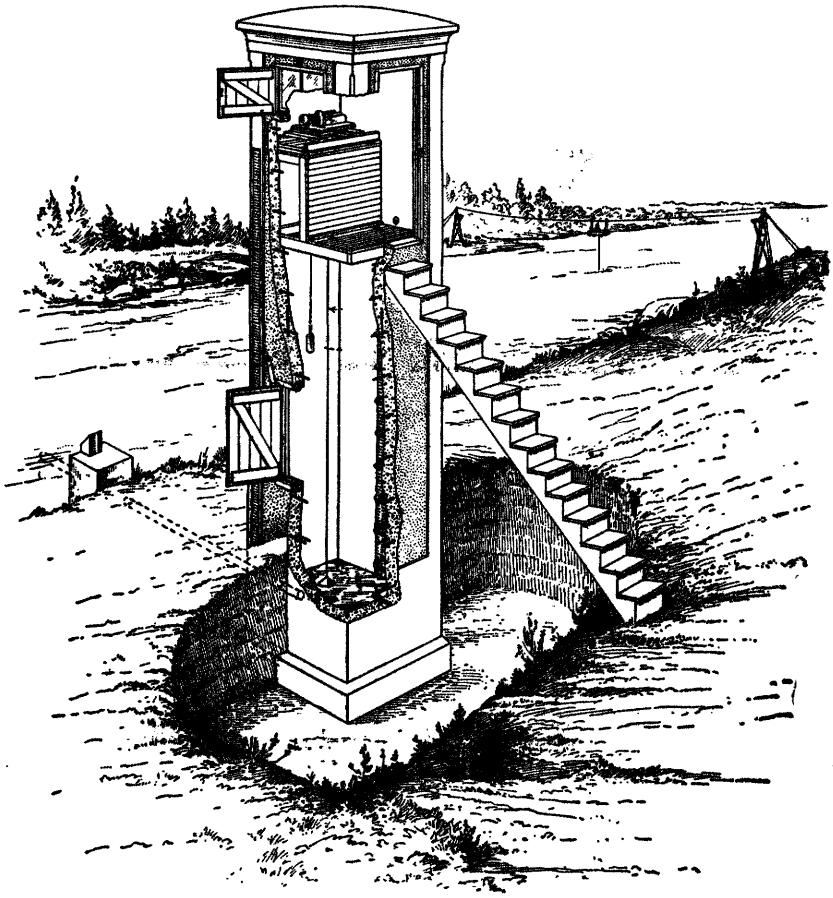

FIGURE 1.—Typical river-measurement station, showing concrete well and house for water-stage recorder and staff gages, cable, and car

outlined in standard textbooks on the measurement of river discharge. A typical gaging station, equipped with water-stage recorder and measuring cable and car, is shown in Figure 1.

From the discharge measurements rating tables are prepared that give the discharge for any stage. The application of the daily gage heights to these rating tables gives the daily discharge from which the monthly and yearly mean discharge are 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 discharge, 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 unless 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 the permanence 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," 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 noncontribut-

ing 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, and 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 records previously published.

Many gaging stations on streams in the irrigated sections of the United States are located 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 investigation of such closely allied subjects as irrigation, water storage, water powers, underground waters, and quality of waters. Most of the results of these investigations have been published in the series of water-supply papers, but some have appeared in the bulletins, professional papers, annual reports, and monographs.

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

Part 1. North Atlantic slope basins (St. John River to York River).
2. South Atlantic slope and eastern Gulf of Mexico basins (James River to the Mississippi).
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., 506 Broadway-Arcade Building.
Trenton, N. J., 710 Trenton Trust Building.
Harrisburg, Pa., 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.
Chattanooga, Tenn., 630 Power Building.
Tuscaloosa, Ala., Post Office Building.
Columbus, Ohio, Engineering Experiment Station, Ohio State University.
Indianapolis, Ind., 319 Federal Building.
Chicago, Ill., 1503 Consumers Building.
Madison, Wis., 337N State Capitol.
St. Paul, Minn., 202 Old State Capitol.
Topeka, Kans., 23 Federal Building.
Rolla, Mo., Rolla Building, School of Mines and Metallurgy.
Fort Smith, Ark., Post Office Building.
Austin, Tex., State Capitol.
Sante Fe, N. Mex., State Capitol.
Tucson, Ariz., 210 Post Office Building.
Denver, Colo., 403 Post Office Building.
Salt Lake City, Utah, 313 Federal Building.
Idaho Falls, Idaho, 228 Federal Building.
Boise, Idaho, Federal Building.
Helena, Mont., 416 Power Block.
Takoma, 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 the Geological Survey's publications may be obtained by applying to the Director of the United States Geological Survey, Washington, D. C.

Stream-flow records have been obtained at about 6,070 points in the United States, and the data obtained have been published in the reports tabulated on page 7.

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

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

| Report | Character of data | Year |
|---|---|---|
| 10th A, pt. 2 | Descriptive information only | |
| 11th A, pt. 2 | Monthly discharge and descriptive information | 1884 to Sept. 1890. |
| 12th A, pt. 2 | do | 1884 to June 30, 1891. |
| 13th A, pt. 3 | Mean discharge in second-feet | 1884 to Dec. 31, 1892. |
| 14th A, pt. 2 | Monthly discharge (long-time records, 1871 to 1893) | 1888 to Dec. 31, 1893. |
| B 131 | Descriptions, measurements, gage heights, and ratings | 1893 and 1894. |
| 16th A, pt. 2 | Descriptive information only | |
| B 140 | Descriptions, measurements, gage heights, ratings, and monthly discharge (also many data covering earlier years). | 1895. |
| W 11 | Gage heights (also gage heights for earlier years) | 1896. |
| 18th A, pt. 4 | Descriptions, measurements, ratings, and monthly discharge (also similar data for some earlier years). | 1895 and 1896. |
| W 15 | Descriptions, measurements, and gage heights, eastern United States, eastern Mississippi River, and Missouri River above junction with Kansas. | 1897. |
| W 16 | Descriptions, measurements, and gage heights, western Mississippi River below junction of Missouri and Platte, and western United States. | 1897. |
| 19th A, pt. 4 | Descriptions, measurements, ratings, and monthly discharge (also some long-time records). | 1897. |
| W 27 | Measurements, ratings, and gage heights, eastern United States, eastern Mississippi River, and Missouri River. | 1898. |
| W 28 | Measurements, ratings, and gage heights, Arkansas River and western United States. | 1898. |
| 20th A, pt. 4 | Monthly discharge (also for many earlier years) | 1898. |
| W 35 to 39 | Descriptions, measurements, gage heights, and ratings | 1899. |
| 21st A, pt. 4 | Monthly discharge | 1899. |
| W 47 to 52 | Descriptions, measurements, gage heights, and ratings | 1900. |
| 22d A, pt. 4 | Monthly discharge | 1900. |
| W 65, 66 | Descriptions, measurements, gage heights, and ratings | 1901. |
| W 75 | Monthly discharge | 1901. |
| W 82 to 85 | Complete data | 1902. |
| W 97 to 100 | do | 1903. |
| W 124 to 135 | do | 1904. |
| W 165 to 178 | do | 1905. |
| W 201 to 214 | do | 1906. |
| W 241 to 252 | do | 1907 and 1908. |
| W 261 to 272 | do | 1909. |
| W 281 to 292 | do | 1910. |
| W 301 to 312 | do | 1911. |
| W 321 to 332 | do | 1912. |
| W 351 to 362 | do | 1913. |
| W 381 to 394 | do | 1914. |
| W 401 to 414 | do | 1915. |
| W 431 to 444 | do | 1916. |
| W 451 to 464 | do | 1917. |
| W 471 to 484 | do | 1918. |
| W 501 to 514 | do | 1919 and 1920. |
| 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. |

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.

*Numbers of water-supply papers containing results of stream measurements, 1899–1930*

[For basins included see p. 5]

| 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 [g] | 47, [h] 48 | 48 | 48, [i] 49 | 49 | 49 | 49, [j] 50 | 50 | 50 | 50 | 51 | 51 | 51 | 51 | 51 |
| 1901 | 65, 75 | 65, 75 | 65, 75 | 65, 75 | [k] 65, 66, 75 | 66, 75 | [k] 65, 66, 75 | 66, 75 | 66, 75 | 66, 75 | 66, 75 | 66, 75 | 66, 75 | 66, 75 |
| 1902 | 82 | [b] 82, 83 | 83 | [l] 82, 83 | [k] 83, 85 | 84 | [k] 83, 84 | 84 | 85 | 85 | 85 | 85 | 85 | 85 |
| 1903 | 97 | [b] 97, 98 | 98 | 97 | [k] 98, 99, [m] 100 | 99 | [k] 98, 99 | 99 | 100 | 100 | 100 | 100 | 100 | 100 |
| 1904 | [n] 124, [o] 125, [p] 126 | [p] 126, 127 | 128 | 129 | [k] 128, 130 | 130, [q] 131 | [k] 128, 131 | 132 | 133 | 133, [r] 134 | 134 | 135 | 135 | 135 |
| 1905 | [n] 165, [o] 166, [p] 167 | [p] 167, 168 | 169 | 170 | 171 | 172 | [k] 169, 173 | 174 | 175, [s] 177 | 176, [r] 177 | 177 | 178 | 178 | [t] 177, 178 |
| 1906 | [n] 201, [o] 202, [p] 203 | [p] 203, 204 | 205 | 206 | 207 | 208 | [k] 205, 209 | 210 | 211, [s] 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 | 610 | 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 |

[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.
[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.
[k] Tributaries of Mississippi from east.
[l] Lake Ontario and tributaries to St. Lawrence River proper.
[m] Hudson Bay only.
[n] New England rivers only.
[o] Hudson River to Delaware River, inclusive.
[p] Susquehanna River to Yadkin River, inclusive.
[q] Platte and Kansas Rivers.
[r] Great Basin in California, except Truckee and Carson River Basins.
[s] Below junction with Gila.
[t] Rogue, Umpqua, and Siletz Rivers only.

The table on page 8 gives, by years and drainage basins, the numbers of the papers on surface-water supply published from 1899 to 1930. 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.

## COOPERATION

The work was carried on under cooperative agreement with the several States as follows: In Montana with the office of the State engineer, J. S. James; in Missouri with the bureau of geology and mines, H. A. Buehler, State geologist; in Wyoming with the office of the State engineer, John A. Whiting; and in Kansas with the water resources division of the State board of agriculture, George S. Knapp, chief engineer.

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## DIVISION OF WORK

The data for the stations in Montana and North Dakota except those on Madison River near Yellowstone, Mont., and Tongue River near Decker, Mont., were collected and prepared for publication under the direction of W. A. Lamb, district engineer, assisted by A. H. Tuttle, C. S. Heidel, G. C. Sanders, Edward Post, E. H. Bekkedahl, H. C. Smith, and Mrs. G. Thompson.

The data for stations in Missouri and for the station on Missouri River near Nebraska City, Nebr., were collected and prepared for

publication under the direction of H. C. Beckman, district engineer, assisted by H. C. Bolon, R. D. Schmickle, C. J. Eyberg, and C. H. Jennings.

The data for stations in Yellowstone National Park and for the station on Madison River near West Yellowstone, Mont., were collected and prepared for publication under the direction of C. G. Paulsen, district engineer, assisted by Berkeley Johnson, F. M. Veatch, W. I. Travis, E. G. Bailey, Miss E. H. Haugse, and Miss Josephine Ruick.

The data for stations in Colorado, Nebraska, (except for the station on Missouri River at Nebraska City), South Dakota, Wyoming, and Iowa, and for the station on Tongue River near Decker, Mont., were collected and prepared for publication under the direction of Robert Follansbee, district engineer, assisted by P. V. Hodges, F. F. LeFever, R. E. Cabell, H. P. Eisenhuth, D. S. Jenkins, F. B. Campbell, L. F. Hanks, Miss Nellie L. Esterly, and Mrs. Elsie L. Yeatman.

The data for stations in Kansas were collected and prepared for publication under the direction of J. B. Spiegel, district engineer, assisted by Charles Wells, W. M. Littlefield, R. V. Smrha, and Mrs. Maude Moon.

The records were reviewed and manuscript assembled by P. R. Speer.

# GAGING-STATION RECORDS

## MISSOURI RIVER PROPER

### RED ROCK RIVER ABOVE RED ROCK RESERVOIR, NEAR MONIDA, MONT.

LOCATION.—Recording gage in NE. ¼ sec. 8, T. 14 S., R. 4 W., at Lyons Bridge, 11 miles northeast of Monida.

RECORDS AVAILABLE.—May to November, 1911; April, 1914, to September, 1915; April to September, 1930.

EXTREMES.—Maximum discharge during year, 750 second-feet Apr. 18 (gage height, 5.30 feet); minimum, 0.4 second-foot July 31 (gage height, 1.04 feet).

1911, 1914–15, 1930: Maximum discharge, 995 second-feet Apr. 21–28, 1914 (gage height, 6.4 feet); minimum, that of July 31, 1930.

REMARKS.—Records good. Some small diversions from tributaries and natural storage in Red Rock Lakes.

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

| Day | Apr. | May | June | July | Aug. | Sept. | Day | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ------ | 385 | 114 | 28 | 0.8 | 26 | 16 | ------ | 193 | 52 | 12 | 36 | 25 |
| 2 | ------ | 345 | 102 | 28 | 2.8 | 31 | 17 | ------ | 177 | 56 | 11 | 38 | 23 |
| 3 | ------ | 345 | 128 | 25 | 2.8 | 38 | 18 | 750 | 155 | 48 | 8.4 | 41 | 23 |
| 4 | ------ | 345 | 128 | 20 | 10 | 38 | 19 | 716 | 134 | 40 | 7.2 | 40 | 25 |
| 5 | ------ | 365 | 121 | 17 | 17 | 38 | 20 | 684 | 148 | 47 | 6.0 | 33 | 25 |
| 6 | ------ | 365 | 114 | 16 | 14 | 43 | 21 | 652 | 141 | 46 | 5.2 | 31 | 26 |
| 7 | ------ | 345 | 108 | 14 | 12 | 40 | 22 | 622 | 121 | 44 | 4.8 | 30 | 32 |
| 8 | ------ | 365 | 102 | 12 | 12 | 46 | 23 | 592 | 128 | 60 | 4.0 | 29 | 35 |
| 9 | ------ | 325 | 89 | 11 | 12 | 49 | 24 | 562 | 162 | 67 | 4.0 | 26 | 34 |
| 10 | ------ | 285 | 83 | 10 | 12 | 48 | 25 | 622 | 162 | 50 | 4.0 | 23 | 31 |
| 11 | ------ | 266 | 83 | 13 | 40 | 41 | 26 | 562 | 148 | 41 | 4.0 | 23 | 32 |
| 12 | ------ | 266 | 72 | 14 | 41 | 40 | 27 | 506 | 141 | 45 | 3.4 | 26 | 34 |
| 13 | ------ | 228 | 46 | 12 | 41 | 40 | 28 | 506 | 134 | 38 | 2.2 | 29 | 31 |
| 14 | ------ | 202 | 39 | 12 | 40 | 34 | 29 | 480 | 121 | 29 | 1.0 | 26 | 31 |
| 15 | ------ | 193 | 33 | 12 | 36 | 31 | 30 | 430 | 128 | 27 | .7 | 23 | 27 |
| | | | | | | | 31 | ------ | 128 | ------ | .5 | 23 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| April 18–30 | 750 | 430 | 591 | 15,200 |
| May | 385 | 121 | 224 | 13,800 |
| June | 128 | 27 | 68.4 | 4,070 |
| July | 28 | .5 | 10.4 | 640 |
| August | 41 | .8 | 24.9 | 1,530 |
| September | 42 | 23 | 33.9 | 2,020 |
| The period | | | | 37,300 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 800 second-feet Apr. 25–27 (gage height, 2.6 feet); minimum, 12 second-feet Dec. 7–10 (gage height, 0.12 foot).

1911–1918, 1925–1930: Maximum discharge, 1,220 second-feet Apr. 28, 1914; minimum, 5 second-feet Jan. 1 to Apr. 10, 1913 (gage height, 0.10 foot).

REMARKS.—Records good. Flood water stored in reservoir and released as required. Small diversions for irrigation on tributaries.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 24 | 314 | 13 | 16 | 16 | 14 | 14 | 414 | 166 | 39 | 182 | 31 |
| 2 | 24 | 296 | 13 | 16 | 16 | 14 | 14 | 353 | 166 | 37 | 179 | 23 |
| 3 | 26 | 296 | 13 | 16 | 16 | 14 | 14 | 314 | 260 | 37 | 81 | 22 |
| 4 | 27 | 314 | 14 | 16 | 16 | 14 | 14 | 243 | 373 | 35 | 17 | 22 |
| 5 | 24 | 296 | 14 | 14 | 16 | 14 | 14 | 314 | 393 | 34 | 13 | 21 |
| 6 | 24 | 296 | 14 | 14 | 16 | 14 | 14 | 334 | 393 | 34 | 17 | 20 |
| 7 | 24 | 111 | 12 | 14 | 16 | 14 | 14 | 334 | 393 | 34 | 18 | 20 |
| 8 | 23 | 20 | 12 | 14 | 16 | 14 | 14 | 334 | 393 | 34 | 20 | 20 |
| 9 | 22 | 20 | 12 | 14 | 16 | 14 | 14 | 334 | 479 | 34 | 20 | 22 |
| 10 | 22 | 18 | 12 | 14 | 16 | 14 | 16 | 334 | 546 | 35 | 20 | 26 |
| 11 | 22 | 18 | 14 | 14 | 14 | 14 | 19 | 314 | 568 | 37 | 20 | 30 |
| 12 | 22 | 17 | 14 | 14 | 14 | 14 | 44 | 277 | 614 | 35 | 21 | 31 |
| 13 | 22 | 16 | 14 | 14 | 14 | 14 | 106 | 277 | 706 | 35 | 23 | 31 |
| 14 | 22 | 16 | 14 | 14 | 14 | 14 | 162 | 260 | 753 | 35 | 26 | 37 |
| 15 | 22 | 15 | 14 | 14 | 14 | 14 | 164 | 260 | 706 | 34 | 27 | 44 |
| 16 | 23 | 14 | 14 | 14 | 14 | 14 | 166 | 243 | 660 | 32 | 29 | 45 |
| 17 | 23 | 14 | 14 | 14 | 14 | 14 | 169 | 243 | 637 | 30 | 35 | 47 |
| 18 | 24 | 14 | 14 | 14 | 14 | 14 | 166 | 227 | 614 | 27 | 37 | 48 |
| 19 | 23 | 14 | 14 | 14 | 14 | 14 | 373 | 196 | 614 | 24 | 41 | 50 |
| 20 | 23 | 14 | 16 | 14 | 14 | 14 | 479 | 182 | 614 | 24 | 44 | 55 |
| 21 | 23 | 14 | 16 | 16 | 14 | 14 | 523 | 169 | 614 | 24 | 47 | 53 |
| 22 | 24 | 14 | 16 | 16 | 14 | 14 | 637 | 164 | 637 | 23 | 47 | 63 |
| 23 | 24 | 14 | 16 | 16 | 14 | 14 | 660 | 162 | 637 | 22 | 45 | 63 |
| 24 | 24 | 14 | 16 | 16 | 14 | 14 | 752 | 164 | 637 | 21 | 47 | 58 |
| 25 | 59 | 14 | 16 | 16 | 14 | 14 | 800 | 162 | 637 | 20 | 44 | 56 |
| 26 | 123 | 14 | 16 | 16 | 14 | 14 | 800 | 159 | 637 | 20 | 42 | 53 |
| 27 | 177 | 14 | 16 | 16 | 14 | 14 | 800 | 159 | 614 | 20 | 41 | 47 |
| 28 | 227 | 14 | 16 | 16 | 14 | 14 | 752 | 159 | 614 | 20 | 39 | 45 |
| 29 | 277 | 14 | 16 | 16 | ------ | 14 | 706 | 164 | 614 | 86 | 41 | 45 |
| 30 | 314 | 14 | 16 | 16 | ------ | 14 | 523 | 172 | 243 | 182 | 41 | 45 |
| 31 | 314 | ------ | 16 | 16 | ------ | 14 | ------ | 169 | ------ | 179 | 39 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 314 | 22 | 66.2 | 4,070 |
| November | 314 | 14 | 75.8 | 4,510 |
| December | 16 | 12 | 14.4 | 885 |
| January | 16 | 14 | 15.0 | 922 |
| February | 16 | 14 | 14.7 | 816 |
| March | 14 | 14 | 14.0 | 861 |
| April | 800 | 14 | 298 | 17,700 |
| May | 414 | 159 | 245 | 15,100 |
| June | 753 | 166 | 531 | 31,600 |
| July | 182 | 20 | 41.4 | 2,550 |
| August | 182 | 17 | 43.3 | 2,660 |
| September | 63 | 20 | 39.1 | 2,330 |
| The year | 800 | 12 | 116 | 84,000 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 702 second-feet Apr. 9, 10 (gage height, 1.84 feet); minimum, 182 second-feet at various times during July, August, September (gage height, 0.60 foot).

1907–1930: 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. Discharge estimated Jan. 9–23 because of ice. 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, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 230 | 423 | 386 | 365 | 287 | 287 | 406 | 448 | 216 | 365 | 182 | 182 |
| 2 | 230 | 423 | 386 | 345 | 287 | 287 | 406 | 406 | 216 | 365 | 182 | 182 |
| 3 | 230 | 423 | 386 | 345 | 325 | 287 | 406 | 386 | 216 | 325 | 189 | 182 |
| 4 | 247 | 446 | 386 | 325 | 287 | 287 | 427 | 386 | 251 | 269 | 182 | 182 |
| 5 | 230 | 470 | 386 | 325 | 269 | 287 | 448 | 386 | 251 | 230 | 202 | 182 |
| 6 | 230 | 518 | 386 | 325 | 269 | 287 | 448 | 386 | 216 | 223 | 196 | 196 |
| 7 | 230 | 518 | 386 | 325 | 287 | 287 | 558 | 386 | 216 | 216 | 182 | 196 |
| 8 | 230 | 518 | 386 | 325 | 287 | 287 | 677 | 365 | 216 | 116 | 182 | 209 |
| 9 | 230 | 518 | 386 | | 287 | 287 | 702 | 406 | 209 | 216 | 182 | 209 |
| 10 | 230 | 518 | 386 | | 287 | 287 | 702 | 406 | 209 | 216 | 182 | 209 |
| 11 | 264 | 518 | 386 | | 287 | 269 | 581 | 406 | 230 | 216 | 189 | 209 |
| 12 | 264 | 518 | 386 | | 287 | 306 | 581 | 365 | 251 | 223 | 216 | 202 |
| 13 | 264 | 518 | 406 | | 287 | 365 | 491 | 325 | 269 | 216 | 202 | 216 |
| 14 | 264 | 518 | 406 | | 306 | 345 | 448 | 325 | 406 | 216 | 202 | 216 |
| 15 | 264 | 518 | 406 | | 306 | 406 | 365 | 306 | 406 | 216 | 189 | 216 |
| 16 | 264 | 518 | 406 | 290 | 306 | 325 | 365 | 287 | 406 | 189 | 189 | 209 |
| 17 | 264 | 491 | 406 | | 287 | 325 | 365 | 287 | 406 | 182 | 189 | 209 |
| 18 | 264 | 470 | 406 | | 306 | 287 | 287 | 287 | 325 | 182 | 189 | 209 |
| 19 | 247 | 406 | 406 | | 325 | 287 | 287 | 251 | 306 | 182 | 196 | 209 |
| 20 | 247 | 406 | 406 | | 325 | 287 | 287 | 251 | 306 | 182 | 196 | 202 |
| 21 | 247 | 365 | 406 | | 325 | 306 | 287 | 216 | 306 | 182 | 189 | 196 |
| 22 | 247 | 365 | 386 | | 325 | 406 | 325 | 216 | 306 | 182 | 189 | 196 |
| 23 | 247 | 365 | 386 | | 325 | 365 | 365 | 216 | 325 | 182 | 189 | 209 |
| 24 | 264 | 365 | 365 | 287 | 325 | 365 | 386 | 216 | 427 | 196 | 189 | 209 |
| 25 | 264 | 365 | 365 | 287 | 306 | 365 | 535 | 216 | 427 | 196 | 189 | 209 |
| 26 | 264 | 406 | 365 | 287 | 287 | 406 | 581 | 189 | 406 | 189 | 189 | 202 |
| 27 | 264 | 406 | 365 | 287 | 287 | 406 | 628 | 182 | 406 | 189 | 189 | 202 |
| 28 | 364 | 406 | 365 | 287 | 287 | 406 | 604 | 182 | 386 | 189 | 182 | 202 |
| 29 | 264 | 386 | 365 | 287 | ------ | 406 | 628 | 216 | 386 | 189 | 182 | 202 |
| 30 | 338 | 386 | 345 | 287 | ------ | 406 | 628 | 216 | 386 | 182 | 182 | 202 |
| 31 | 401 | ------ | 345 | 287 | ------ | 406 | ------ | 216 | ------ | 182 | 182 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 401 | 230 | 258 | 15,900 |
| November | 518 | 365 | 449 | 26,700 |
| December | 406 | 345 | 385 | 23,700 |
| January | 365 | 287 | 301 | 18,500 |
| February | 325 | 269 | 299 | 16,600 |
| March | 406 | 269 | 333 | 20,500 |
| April | 702 | 287 | 473 | 23,100 |
| May | 448 | 182 | 301 | 18,500 |
| June | 427 | 209 | 310 | 18,400 |
| July | 365 | 182 | 216 | 13,300 |
| August | 216 | 182 | 189 | 11,600 |
| September | 216 | 182 | 202 | 12,000 |
| The year | 702 | 182 | 309 | 224,000 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 7,480 second-feet Apr. 10 (gage height, 5.37 feet); minimum, 276 second-feet Aug. 1 (gage height, 1.59 feet).

1910–1916, 1920–1930: Maximum discharge, 19,800 second-feet June 15, 1927 (gage height, 9.85 feet); minimum, 122 second-feet Aug. 23, 1929 (gage height, 1.28 feet).

REMARKS.—Records good except those for periods Nov. 20–25, Dec. 1 to Mar. 9, which are poor. Numerous diversions. Flow partly regulated by operation of two reservoirs.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 915 | 970 | | | | | 1,160 | 3,080 | 3,080 | 894 | 276 | 616 |
| 2 | 915 | 1,020 | | | | | 1,160 | 2,870 | 2,660 | 748 | 369 | 616 |
| 3 | 860 | 1,020 | | | | | 1,220 | 2,870 | 2,660 | 703 | 341 | 616 |
| 4 | 860 | 1,140 | | | | | 1,410 | 2,870 | 2,660 | 616 | 335 | 616 |
| 5 | 860 | 1,140 | | | | 1,000 | 1,440 | 3,080 | 2,560 | 658 | 322 | 658 |
| 6 | 860 | 1,200 | | | | | 1,800 | 3,080 | 2,070 | 616 | 362 | 703 |
| 7 | 860 | 1,200 | | | | | 2,660 | 3,300 | 1,980 | 616 | 302 | 703 |
| 8 | 860 | 1,140 | | | | | 3,520 | 3,080 | 2,160 | 616 | 355 | 796 |
| 9 | 970 | 1,140 | | | | | 5,200 | 2,660 | 2,360 | 616 | 315 | 748 |
| 10 | 1,080 | 1,080 | | | | 1,060 | 7,480 | 2,460 | 2,260 | 541 | 341 | 796 |
| 11 | 1,080 | 1,080 | | | | 1,060 | 5,700 | 2,160 | 2,160 | 796 | 463 | 796 |
| 12 | 1,080 | 1,020 | | | 1,100 | 1,110 | 5,200 | 2,070 | 2,160 | 1,220 | 573 | 796 |
| 13 | 1,080 | 1,080 | | | | 1,280 | 4,450 | 1,890 | 2,070 | 1,220 | 470 | 843 |
| 14 | 970 | 1,080 | | | | 1,220 | 3,750 | 1,640 | 1,890 | 1,110 | 658 | 796 |
| 15 | 970 | 1,140 | | | | 1,160 | 3,750 | 1,640 | 1,560 | 1,110 | 748 | 843 |
| 16 | 970 | 1,140 | 900 | 700 | | 1,160 | 3,080 | 1,640 | 1,480 | 1,000 | 894 | 796 |
| 17 | 970 | 1,140 | | | | 1,110 | 2,360 | 1,560 | 1,410 | 894 | 894 | 796 |
| 18 | 970 | 1,080 | | | | 1,160 | 2,070 | 1,640 | 1,410 | 843 | 894 | 748 |
| 19 | 915 | 1,020 | | | | 1,160 | 1,980 | 1,640 | 1,280 | 703 | 796 | 703 |
| 20 | 915 | 1,020 | | | | 1,160 | 2,070 | 1,480 | 1,220 | 616 | 894 | 703 |
| 21 | 915 | 1,020 | | | | 1,160 | 2,160 | 1,220 | 1,160 | 565 | 843 | 703 |
| 22 | 915 | 970 | | | | 1,160 | 2,160 | 2,260 | 1,000 | 501 | 796 | 703 |
| 23 | 915 | 1,020 | | | | 1,220 | 2,460 | 2,160 | 1,110 | 470 | 748 | 796 |
| 24 | 860 | 1,080 | | | 1,110 | 1,110 | 2,870 | 1,980 | 1,110 | 433 | 748 | 894 |
| 25 | 860 | 1,140 | | | 1,060 | 1,110 | 3,520 | 1,800 | 1,110 | 411 | 796 | 894 |
| 26 | 860 | 1,140 | | | 1,000 | 1,110 | 3,750 | 1,800 | 1,110 | 418 | 748 | 894 |
| 27 | 915 | 1,200 | | | 1,000 | 1,160 | 3,980 | 1.720 | 1,060 | 383 | 703 | 894 |
| 28 | 915 | 1,140 | | | 1,000 | 1,110 | 3,980 | 1,340 | 1,000 | 369 | 703 | 894 |
| 29 | 915 | 1,140 | | | ------- | 1,160 | 3,750 | 1,800 | 1,000 | 355 | 703 | 894 |
| 30 | 970 | 1,140 | | | ------- | 1,160 | 3,300 | 2,460 | 945 | 315 | 658 | 894 |
| 31 | 970 | ------- | | | ------- | 1,160 | ------- | 3,300 | ------- | 302 | 658 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 1,080 | 860 | 934 | 57,400 |
| November | 1,200 | 970 | 1,090 | 64,900 |
| December | ---------- | ---------- | 900 | 55,300 |
| January | ---------- | ---------- | 700 | 43,000 |
| February | 1,110 | 1,000 | 1,090 | 60,500 |
| March | 1,280 | ---------- | 1,110 | 68,200 |
| April | 7,480 | 1,160 | 3,110 | 185,000 |
| May | 3,300 | 1,220 | 2,210 | 136,000 |
| June | 3,080 | 945 | 1,720 | 102,000 |
| July | 1,220 | 302 | 666 | 41,000 |
| August | 894 | 276 | 603 | 37,100 |
| September | 894 | 616 | 772 | 45,900 |
| The year | 7,480 | 276 | 1,240 | 896,000 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 10,000 second-feet Apr. 17 (gage height, 71.47 feet); minimum, 700 second-feet Dec. 25 (gage height, 66.05 feet).

1922–1930: Maximum discharge, 33,300 second-feet June 14, 15, 18, 1927 (gage height, 78.80 feet); minimum, 500 second-feet Sept. 14, 1924 (gage height, 65.40 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, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4,460 | 4,100 | 1,900 | 4,020 | 2,260 | 3,900 | 3,350 | 6,870 | 2,880 | 2,100 | 2,380 | 1,810 |
| 2 | 4,480 | 4,080 | 3,080 | 4,420 | 1,400 | 3,500 | 3,560 | 7,350 | 5,600 | 2,700 | 2,180 | 1,680 |
| 3 | 4,280 | 2,560 | 4,260 | 4,440 | 2,210 | 3,900 | 2,800 | 6,500 | 6,680 | 2,020 | 1,060 | 2,160 |
| 4 | 3,900 | 3,190 | 4,350 | 3,930 | 2,870 | 3,200 | 4,100 | 6,100 | 6,750 | 1,180 | 2,100 | 2,220 |
| 5 | 4,480 | 4,310 | 4,390 | 2,650 | 2,150 | 3,000 | 3,780 | 7,560 | 5,640 | 1,640 | 2,030 | 2,340 |
| 6 | 3,820 | 4,460 | 4,410 | 3,[illegible]20 | 1,220 | 2,440 | 4,040 | 6,980 | 4,580 | 1,780 | 1,780 | 2,720 |
| 7 | 4,200 | 3,790 | 4,460 | 4,370 | 1,760 | 2,500 | 4,960 | 6,940 | 3,460 | 1,910 | 1,930 | 1,640 |
| 8 | 4,380 | 3,820 | 4,460 | 4,370 | 1,510 | 3,100 | 5,340 | 6,720 | 2,090 | 2,400 | 2,280 | 2,560 |
| 9 | 4,460 | 3,480 | 4,460 | 4,370 | 1,850 | 3,700 | 5,190 | 7,320 | 2,600 | 2,830 | 2,600 | 2,600 |
| 10 | 4,270 | 2,460 | 4,480 | 4,350 | 2,460 | 3,820 | 5,150 | 6,840 | 4,040 | 2,820 | 2,230 | 2,500 |
| 11 | 4,460 | 3,820 | 4,460 | 4,350 | 4,120 | 2,640 | 6,530 | 5,470 | 4,480 | 2,180 | 2,520 | 2,220 |
| 12 | 4,400 | 4,440 | 4,480 | 4,370 | 3,150 | 3,230 | 9,120 | 6,080 | 4,220 | 1,670 | 2,140 | 2,250 |
| 13 | 4,000 | 4,320 | 4,460 | 4,350 | 2,600 | 3,660 | 8,400 | 5,940 | 4,360 | 1,360 | 1,780 | 1,920 |
| 14 | 3,980 | 4,210 | 3,930 | 4,330 | 3,470 | 3,860 | 8,820 | 5,340 | 5,030 | 1,360 | 1,620 | 1,100 |
| 15 | 4,380 | 4,260 | 2,350 | 4,320 | 3,060 | 3,320 | 8,150 | 4,770 | 4,260 | 2,180 | 2,500 | 2,210 |
| 16 | 3,670 | 4,480 | 3,430 | 4,260 | 2,550 | 2,050 | 9,280 | 4,040 | 3,500 | 2,580 | 2,200 | 2,530 |
| 17 | 3,650 | 3,880 | 4,390 | 4,220 | 2,420 | 2,360 | 10,000 | 4,080 | 3,130 | 2,280 | 1,340 | 2,410 |
| 18 | 4,180 | 4,200 | 3,810 | 4,160 | 1,900 | 3,480 | 9,920 | 3,230 | 2,460 | 2,880 | 2,180 | 2,280 |
| 19 | 4,100 | 4,460 | 4,440 | 3,820 | 1,930 | 3,580 | 9,060 | 3,540 | 2,260 | 2,500 | 2,570 | 3,120 |
| 20 | 1,600 | 4,480 | 4,440 | 3,610 | 2,500 | 4,020 | 7,720 | 3,280 | 2,100 | 1,980 | 2,180 | 2,980 |
| 21 | 3,130 | 4,460 | 4,360 | 2,700 | 2,440 | 3,940 | 6,990 | 3,140 | 2,500 | 2,300 | 2,500 | 1,920 |
| 22 | 4,380 | 4,390 | 3,640 | 2,440 | 2,290 | 2,800 | 5,780 | 2,960 | 2,270 | 2,460 | 2,610 | 2,320 |
| 23 | 4,380 | 3,640 | 3,920 | 2,540 | 2,070 | 2,080 | 4,820 | 3,320 | 2,980 | 1,840 | 2,320 | 1,800 |
| 24 | 4,400 | 3,420 | 4,200 | 2,420 | 3,700 | 2,740 | 5,120 | 3,040 | 2,640 | 1,860 | 1,920 | 1,580 |
| 25 | 4,400 | 3,580 | 700 | 2,620 | 5,450 | 3,980 | 5,320 | 1,780 | 2,240 | 2,240 | 2,340 | 1,750 |
| 26 | 4,420 | 4,240 | 2,640 | 1,020 | 5,130 | 3,170 | 6,020 | 3,540 | 2,240 | 1,680 | 1,740 | 1,920 |
| 27 | 3,820 | 4,280 | 3,900 | 2,040 | 4,240 | 3,180 | 3,940 | 4,320 | 2,360 | 2,120 | 1,860 | 1,670 |
| 28 | 3,880 | 2,220 | 4,370 | 2,340 | 3,840 | 3,660 | 5,440 | 4,120 | 2,560 | 2,000 | 2,350 | 1,580 |
| 29 | 3,700 | 2,980 | 3,520 | 1,990 | ------- | 3,640 | 3,440 | 4,320 | 2,100 | 2,420 | 2,610 | 1,720 |
| 30 | 3,700 | 3,680 | 2,900 | 2,220 | ------- | 3,190 | 5,040 | 3,320 | 1,800 | 2,770 | 3,070 | 1,800 |
| 31 | 3,920 | ------- | 3,380 | 2,540 | ------- | 3,180 | ------- | 3,040 | ------- | 1,980 | 2,560 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 4,480 | 1,600 | 4,040 | 248,000 |
| November | 4,480 | 2,220 | 3,860 | 230,000 |
| December | 4,480 | 700 | 3,810 | 234,000 |
| January | 4,440 | 1,020 | 3,460 | 213,000 |
| February | 5,450 | 1,220 | 2,730 | 152,000 |
| March | 4,020 | 2,050 | 3,250 | 200,000 |
| April | 10,000 | 2,800 | 6,040 | 359,000 |
| May | 7,560 | 1,780 | 4,900 | 301,000 |
| June | 6,750 | 1,800 | 3,460 | 206,000 |
| July | 2,880 | 1,180 | 2,130 | 131,000 |
| August | 3,070 | 1,060 | 2,180 | 134,000 |
| September | 3,120 | 1,100 | 2,110 | 126,000 |
| The year | 10,000 | 700 | 3,500 | 2,530,000 |

## MISSOURI RIVER AT FORT BENTON, MONT.

LOCATION.—Water-stage recorder in 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, 1930.

EXTREMES.—Maximum discharge during year, 16,900 second-feet Apr. 20 (gage height, 4.80 feet); minimum, 1,580 second-feet Dec. 2 (gage height, —0.20 foot).

1881–1891, 1902–1930: 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 periods Nov. 19–21, Jan. 1 to Mar. 31, which are fair. Numerous diversions from tributaries. Flow partly regulated by storage in reservoirs. Volta power plant records used Dec. 1 to Mar. 31, furnished by Montana Power Co.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5,440 | 4,600 | 4,550 | 4,720 | 4,500 | 3,740 | 6,080 | 10,500 | 5,600 | 3,540 | 3,440 | 2,850 |
| 2 | 4,100 | 4,600 | 4,670 | 4,800 | 3,950 | 3,620 | 8,000 | 8,900 | 5,920 | 3,860 | 2,770 | 2,700 |
| 3 | 5,000 | 4,220 | 4,610 | 4,420 | 4,560 | 3,370 | 8,900 | 11,300 | 7,820 | 4,340 | 3,090 | 3,540 |
| 4 | 5,290 | 4,340 | 4,850 | 5,090 | 4,250 | 4,230 | 11,300 | 12,100 | 10,500 | 3,090 | 3,350 | 4,220 |
| 5 | 5,000 | 4,470 | 4,910 | 4,200 | 4,740 | 4,570 | 11,300 | 14,900 | 12,100 | 3,260 | 3,260 | 4,220 |
| 6 | 4,860 | 4,100 | 5,030 | 3,850 | 5,200 | 5,070 | 12,100 | 13,000 | 12,100 | 3,260 | 2,930 | 3,260 |
| 7 | 4,860 | 4,470 | 5,090 | 4,000 | 5,140 | 4,630 | 4,100 | 12,600 | 9,470 | 3,640 | 3,090 | 3,440 |
| 8 | 5,290 | 4,600 | 3,990 | 4,640 | 4,800 | 4,430 | 11,300 | 8,900 | 7,100 | 3,750 | 3,010 | 3,640 |
| 9 | 5,000 | 4,220 | 3,330 | 4,710 | 3,820 | 3,310 | 9,660 | 11,300 | 8,000 | 3,350 | 3,090 | 3,750 |
| 10 | 5,290 | 4,340 | 2,610 | 4,720 | 3,520 | 3,730 | 9,660 | 12,600 | 5,600 | 2,850 | 3,440 | 3,860 |
| 11 | 5,440 | 3,860 | 3,740 | 4,880 | 3,430 | 5,280 | 10,900 | 12,100 | 4,860 | 2,850 | 2,930 | 3,540 |
| 12 | 5,000 | 4,340 | 4,710 | 4,000 | 3,960 | 4,420 | 11,300 | 12,100 | 6,080 | 3,540 | 2,700 | 3,640 |
| 13 | 4,730 | 4,100 | 4,770 | 5,290 | 4,360 | 4,310 | 16,900 | 11,700 | 5,920 | 3,540 | 2,850 | 3,750 |
| 14 | 4,730 | 4,100 | 5,070 | 5,010 | 4,070 | 4,370 | 13,900 | 12,100 | 4,600 | 3,090 | 3,440 | 3,640 |
| 15 | 5,000 | 4,100 | 4,410 | 5,230 | 3,790 | 4,260 | 15,400 | 12,100 | 7,460 | 3,350 | 3,260 | 3,860 |
| 16 | 5,000 | 4,220 | 4,690 | 4,530 | 3,710 | 4,050 | 16,400 | 11,700 | 7,460 | 3,180 | 3,350 | 3,750 |
| 17 | 5,000 | 4,340 | 4,690 | 4,640 | 4,120 | 4,780 | 15,900 | 11,300 | 7,820 | 3,350 | 3,010 | 3,640 |
| 18 | 5,140 | 3,640 | 4,910 | 4,600 | 4,800 | 4,590 | 13,900 | 10,900 | 8,180 | 3,260 | 3,350 | 3,640 |
| 19 | 5,140 | 3,640 | 5,050 | 4,530 | 4,810 | 4,440 | 14,400 | 10,500 | 5,440 | 3,350 | 2,850 | 3,750 |
| 20 | 4,860 | 3,640 | 4,770 | 5,200 | 5,020 | 4,580 | 16,900 | 9,660 | 4,600 | 3,180 | 3,350 | 3,750 |
| 21 | 5,140 | 3,860 | 5,270 | 4,980 | 4,700 | 4,700 | 14,400 | 8,720 | 4,340 | 3,180 | 3,260 | 3,640 |
| 22 | 5,290 | 4,730 | 5,050 | 4,930 | 3,660 | 4,830 | 14,400 | 7,820 | 4,340 | 3,350 | 3,260 | 3,440 |
| 23 | 4,860 | 5,600 | 5,330 | 4,920 | 3,080 | 6,210 | 13,900 | 7,460 | 3,860 | 3,010 | 3,440 | 3,860 |
| 24 | 5,140 | 5,140 | 5,260 | 4,990 | 3,830 | 5,640 | 12,100 | 6,930 | 3,860 | 3,010 | 3,440 | 3,980 |
| 25 | 5,290 | 5,600 | 5,070 | 4,880 | 4,080 | 4,670 | 13,000 | 5,920 | 3,640 | 3,640 | 3,090 | 3,980 |
| 26 | 5,140 | 5,290 | 5,590 | 4,520 | 4,140 | 4,800 | 12,100 | 5,600 | 3,640 | 3,260 | 3,180 | 4,100 |
| 27 | 4,860 | 5,290 | 5,150 | 4,170 | 3,110 | 4,470 | 13,900 | 5,290 | 4,220 | 3,260 | 3,640 | 3,980 |
| 28 | 4,730 | 5,440 | 4,980 | 4,510 | 3,090 | 4,450 | 13,000 | 4,860 | 4,340 | 3,090 | 3,440 | 3,750 |
| 29 | 5,760 | 5,440 | 4,330 | 5,630 | ------ | 4,170 | 11,700 | 5,000 | 3,540 | 3,540 | 3,540 | 3,540 |
| 30 | 5,600 | 5,600 | 5,210 | 4,610 | ------ | 3,750 | 10,500 | 5,140 | 4,340 | 3,350 | 3,260 | 3,750 |
| 31 | 4,340 | ------ | 5,510 | 4,400 | ------ | 4,900 | ------ | 5,600 | ------ | 3,260 | 3,440 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 5,760 | 4,100 | 5,040 | 310,000 |
| November | 5,600 | 3,640 | 4,530 | 270,000 |
| December | 5,590 | 2,610 | 4,750 | 292,000 |
| January | 5,630 | 3,850 | 4,700 | 289,000 |
| February | 5,200 | 3,080 | 4,150 | 230,000 |
| March | 6,210 | 3,310 | 4,460 | 274,000 |
| April | 16,900 | 4,100 | 12,300 | 732,000 |
| May | 14,900 | 4,860 | 9,630 | 592,000 |
| June | 12,100 | 3,540 | 6,220 | 370,000 |
| July | 4,340 | 2,850 | 3,340 | 205,000 |
| August | 3,640 | 2,700 | 3,210 | 197,000 |
| September | 4,220 | 2,700 | 3,680 | 219,000 |
| The year | 16,900 | 2,610 | 5,500 | 3,980,000 |

### 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. Prior to Apr. 13, 1930, staff and chain gages at Wolf Point, 6 miles upstream were used.

DRAINAGE AREA.—82,400 square miles.

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

EXTREMES.—Maximum discharge during year, 21,300 second-feet Apr. 20; maximum gage height, 17.45 feet Mar. 30 (ice jam); minimum discharge, 1,790 second-feet Dec. 18, 19.

1928–1930: Maximum discharge, 26,900 second-feet June 4–6; maximum gage height, that of Mar. 30, 1930; minimum discharge that of Dec. 18, 19, 1929.

REMARKS.—Records poor prior to December, 1928; fair from December, 1928, to April, 1930, and good thereafter. Numerous diversions from tributaries. Flow partly regulated by storage reservoirs above power plants.

*Daily and monthly discharge, in second-feet, 1928–1930*

| Day | Sept. | Day | Sept. | Day | Sept. |
|---|---|---|---|---|---|
| 1928 | | 1928 | | 1928 | |
| 13 | 6,310 | 19 | 6,310 | 25 | 6,030 |
| 14 | 6,450 | 20 | 6,170 | 26 | 6,030 |
| 15 | 6,450 | 21 | 6,170 | 27 | 6,030 |
| 16 | 6,600 | 22 | 6,170 | 28 | 6,030 |
| 17 | 6,600 | 32 | 6,030 | 29 | 6,170 |
| 18 | 6,450 | 24 | 6,030 | 30 | 6,310 |

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1928–29 | | | | | | | | | | | | |
| 1 | 6,310 | 6,450 | 4,380 | | | | 14,000 | 14,300 | 26,100 | 15,700 | 5,200 | 4,700 |
| 2 | 6,030 | 6,600 | 4,100 | | | | 11,500 | 14,600 | 22,500 | 14,000 | 5,340 | 4,590 |
| 3 | 6,030 | 6,600 | 3,950 | | | 6,140 | 10,600 | 15,700 | 26,500 | 12,100 | 5,200 | 4,700 |
| 4 | 6,030 | 6,450 | 4,500 | | | | 10,300 | 16,100 | 26,500 | 11,200 | 5,200 | 4,590 |
| 5 | 6,030 | 6,310 | 4,000 | | | | 9,250 | 15,700 | 26,900 | 11,500 | 5,070 | 4,700 |
| | | | | 5,600 | 4,590 | | | | | | | |
| 6 | 6,030 | 6,170 | 4,010 | | | | 9,000 | 14,000 | 26,900 | 11,500 | 5,200 | 4,700 |
| 7 | 6,030 | 6,170 | 4,160 | | | | 9,000 | 15,000 | 25,700 | 11,200 | 4,940 | 4,700 |
| 8 | 6,030 | 6,600 | 4,160 | | | 7,320 | 8,250 | 19,000 | 23,300 | 10,600 | 4,940 | 4,820 |
| 9 | 6,030 | 6,600 | | | | | 7,560 | 18,300 | 22,500 | 9,750 | 5,200 | 5,070 |
| 10 | 6,170 | 6,600 | | | | | 7,780 | 17,900 | 22,100 | 9,250 | 5,070 | 5,070 |
| 11 | 6,170 | 6,450 | 4,500 | | | | 7,560 | 17,100 | 24,100 | 8,500 | 5,070 | 5,070 |
| 12 | 6,310 | 6,450 | | | | | 6,750 | 16,400 | 22,500 | 7,780 | 5,200 | 5,070 |
| 13 | 6,310 | 6,450 | | 5,840 | | | 6,370 | 16,100 | 21,700 | 7,140 | 5,340 | 5,070 |
| 14 | 6,310 | 6,600 | | | | | 6,000 | 14,600 | 21,300 | 7,340 | 5,200 | 4,940 |
| 15 | 6,170 | 6,600 | | | | | 6,180 | 15,000 | 20,900 | 7,340 | 5,070 | 4,940 |
| | | | | | 5,150 | | | | | | | |
| 16 | 6,170 | 6,600 | | | | | 6,370 | 14,600 | 20,600 | 7,340 | 5,200 | 4,820 |
| 17 | 6,170 | 6,450 | | | | | 6,370 | 13,600 | 20,200 | 7,140 | 4,940 | 4,820 |
| 18 | 6,170 | 6,450 | 5,500 | 5,380 | | 6,000 | 6,180 | 15,000 | 20,200 | 7,560 | 4,700 | 5,200 |
| 19 | 6,310 | 6,450 | | | | | 6,180 | 15,700 | 20,900 | 7,140 | 4,820 | 5,070 |
| 20 | 6,450 | 5,750 | | | | | 6,560 | 17,500 | 20,600 | 6,940 | 5,070 | 4,940 |
| 21 | 6,450 | 6,750 | | | | | 6,940 | 17,500 | 19,000 | 6,750 | 5,070 | 4,940 |
| 22 | 6,600 | 6,450 | | | | | 7,140 | 17,100 | 21,700 | 6,560 | 4,940 | 4,700 |
| 23 | 6,600 | 6,450 | | 4,530 | | | 7,140 | 16,400 | 22,100 | 6,370 | 4,820 | 4,940 |
| 24 | 6,600 | 6,450 | | | | | 7,560 | 16,100 | 20,900 | 6,370 | 4,700 | 5,340 |
| 25 | 6,600 | 6,450 | | | 5,040 | | 9,000 | 18,300 | 20,600 | 6,560 | 4,700 | 5,340 |
| 26 | 6,600 | 6,450 | 5,800 | | | 13,000 | 11,800 | 20,200 | 20,200 | 6,000 | 4,820 | 5,490 |
| 27 | 6,600 | 6,310 | | | | 10,300 | 12,400 | 21,700 | 19,400 | 5,820 | 4,940 | 5,490 |
| 28 | 6,450 | 6,310 | | 3,900 | | 10,900 | 12,300 | 22,500 | 18,300 | 5,490 | 4,940 | 5,490 |
| 29 | 6,450 | 6,030 | | | -------- | 11,800 | 13,000 | 24,100 | 17,100 | 5,490 | 5,070 | 5,200 |
| 30 | 6,450 | 4,980 | | | -------- | 13,300 | 14,600 | 22,900 | 16,400 | 5,340 | 4,940 | 5,340 |
| 31 | 6,450 | -------- | | | -------- | 12,400 | -------- | 20,900 | -------- | 5,340 | 4,820 | ------ |

*Daily and monthly discharge, in second-feet, of Missouri River near Wolf Point, Mont., 1928–1930*—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 | 4,820 | 13,000 | 17,600 | 8,690 | 6,290 | 4,160 | 3,980 |
| 2 | 5,340 | 5,200 | 4,370 | 5,340 | 4,850 | 4,940 | 13,300 | 16,900 | 8,120 | 6,040 | 4,160 | 3,980 |
| 3 | 5,490 | 5,340 | 4,480 | 5,490 | 5,090 | 4,700 | 14,600 | 16,900 | 8,120 | 5,800 | 4,160 | 3,980 |
| 4 | 5,650 | 5,490 | 4,480 | 5,650 | 5,330 | 4,820 | 15,300 | 15,900 | 8,980 | 5,680 | 3,790 | 4,070 |
| 5 | 5,490 | 5,820 | 4,480 | 5,650 | 5,570 | 5,070 | 14,300 | 14,300 | 9,880 | 5,320 | 3,600 | 4,070 |
| 6 | 5,650 | 5,650 | 4,060 | 5,650 | 5,810 | 5,340 | 15,300 | 14,300 | 10,800 | 5,320 | 3,600 | 3,980 |
| 7 | 6,000 | 5,490 | 3,600 | 5,490 | 6,050 | 5,340 | 16,100 | 14,300 | 9,280 | 5,440 | 3,600 | 4,070 |
| 8 | 5,820 | 5,490 | 3,960 | 6,180 | 5,650 | 5,490 | 16,400 | 16,200 | 9,880 | 5,320 | 3,600 | 3,980 |
| 9 | 5,490 | 5,340 | 3,690 | 6,180 | 4,820 | 5,650 | 16,800 | 18,200 | 12,000 | 5,320 | 3,510 | 3,980 |
| 10 | 5,490 | 5,340 | 3,510 | 6,180 | 4,260 | 6,000 | 18,300 | 18,600 | 14,900 | 5,320 | 3,410 | 3,980 |
| 11 | 5,340 | 5,200 | 3,260 | 5,340 | 5,650 | 7,340 | 16,800 | 16,900 | 15,600 | 4,880 | 3,410 | 3,880 |
| 12 | 5,200 | 5,340 | 3,000 | 5,200 | 7,560 | 9,750 | 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 | 9,550 | 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 | 13,000 | 17,600 | 15,600 | 10,500 | 6,160 | 3,410 | 3,980 |
| 16 | 5,490 | 5,070 | 2,080 | 4,820 | 11,200 | 13,000 | 18,200 | 15,200 | 8,690 | 6,290 | 3,410 | 3,980 |
| 17 | 5,490 | 5,070 | 1,820 | 4,260 | 11,800 | 13,000 | 19,600 | 14,900 | 8,400 | 4,360 | 3,410 | 4,070 |
| 18 | 5,340 | 4,940 | 1,790 | 4,370 | 11,800 | 12,400 | 20,600 | 14,600 | 8,400 | 4,260 | 3,410 | 4,160 |
| 19 | 5,200 | 4,820 | 1,790 | 3,960 | 11,800 | 12,400 | 21,000 | 15,200 | 8,400 | 4,260 | 3,410 | 4,160 |
| 20 | 5,200 | 4,700 | 1,900 | 3,960 | 12,100 | 11,500 | 21,000 | 14,900 | 8,400 | 4,360 | 3,410 | 4,260 |
| 21 | 5,200 | 3,600 | 2,190 | 4,370 | 11,800 | 10,900 | 20,600 | 14,600 | 8,980 | 4,260 | 3,410 | 4,160 |
| 22 | 5,070 | 3,690 | 2,390 | 4,820 | 10,000 | 10,600 | 19,600 | 14,000 | 9,280 | 4,360 | 3,500 | 4,160 |
| 23 | 5,070 | 3,780 | 2,590 | 4,820 | 9,500 | 10,600 | 18,900 | 13,300 | 8,980 | 4,360 | 3,500 | 4,560 |
| 24 | 5,070 | 4,260 | 2,960 | 5,200 | 8,500 | 10,600 | 18,600 | 13,000 | 8,120 | 4,360 | 3,600 | 4,880 |
| 25 | 4,940 | 4,590 | 3,340 | 5,150 | 8,000 | 11,200 | 18,200 | 12,400 | 7,580 | 4,360 | 3,600 | 4,770 |
| 26 | 5,070 | 4,590 | 3,600 | 5,070 | 7,340 | 10.900 | 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 | -------- | 14,300 | 18,200 | 9,580 | 6,290 | 4,260 | 3,880 | 3,880 |
| 31 | 5,340 | -------- | 5,340 | 4,370 | -------- | 11,800 | -------- | 8,980 | -------- | 4,160 | 3,880 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| 1928 | | | | |
| September 13–30 | 6,600 | 6,030 | 6,240 | 223,000 |
| 1928–29 | | | | |
| October | 6,600 | 6,030 | 6,290 | 387,000 |
| November | 6,750 | 4,980 | 6,410 | 381,000 |
| December | ---------- | 3,950 | 5,030 | 309,000 |
| January | ---------- | ---------- | 5,100 | 314,000 |
| February | ---------- | ---------- | 4,920 | 273,000 |
| March | 13,300 | ---------- | 7,390 | 454,000 |
| April | 14,600 | 6,000 | 8,790 | 523,000 |
| May | 24,100 | 11,800 | 17,200 | 1,060,000 |
| June | 26,900 | 16,400 | 21,900 | 1,300,000 |
| July | 15,700 | 5,340 | 8,290 | 510,000 |
| August | 5,340 | 4,700 | 5,020 | 309,000 |
| September | 5,490 | 4,590 | 5,000 | 298,000 |
| The year | 26,900 | ---------- | 8,460 | 6,120,000 |
| 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 | 12,100 | 4,260 | 7,860 | 437,000 |
| March | 14,300 | 4,700 | 9,670 | 595,000 |
| 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 | 7,480 | 5,410,000 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 231,000 second-feet Apr. 4 (gage height, 18.6 feet); minimum discharge occurred during ice period; minimum stage, 1.53 feet Nov. 21.

1928–1930: Maximum discharge, that of Apr. 4, 1930; minimum discharge, 5,650 second-feet Jan. 30, 31, 1929; minimum gage height, 1.53 feet Nov. 21, 1929.

REMARKS.—Records good except those for winter period Nov. 23 to Apr. 4, which are fair. Numerous diversions above station. Several storage reservoirs on tributary streams.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 14,600 | 13,000 | | | | | | 33,300 | 26,400 | 26,400 | 12,200 | 15,400 |
| 2 | 14,600 | 13,000 | | | | | 40,300 | 34,300 | 38,800 | 25,100 | 11,500 | 15,000 |
| 3 | 15,000 | 13,000 | | | | 18,900 | | 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 | | | | | 77,800 | 34,300 | 43,800 | 22,200 | 10,700 | 13,400 |
| | | | 9,260 | 12,200 | 10,800 | | | | | | | |
| 6 | 15,000 | 13,400 | | | | | 31,300 | 33,300 | 41,200 | 21,700 | 10,000 | 13,000 |
| 7 | 15,000 | 13,400 | | | | | 25,700 | 30,400 | 36,500 | 21,200 | 10,000 | 13,000 |
| 8 | 14,600 | 13,400 | | | | 8,110 | 25,700 | 31,300 | 33,300 | 21,700 | 11,100 | 13,000 |
| 9 | 14,200 | 13,400 | | | | | 25,700 | 32,300 | 29,500 | 21,700 | 11,900 | 12,600 |
| 10 | 14,600 | 13,800 | | | | | 26,400 | 36,500 | 27,900 | 21,700 | 11,900 | 11,900 |
| 11 | 14,600 | 13,800 | | | | | 27,100 | 37,600 | 28,700 | 21,200 | 12,200 | 12,200 |
| 12 | 14,200 | 13,800 | | | | | 28,700 | 36,500 | 35,400 | 20,700 | 12,200 | 12,600 |
| 13 | 14,200 | 13,400 | | | | 7,270 | 27,100 | 33,300 | 41,200 | 19,700 | 12,200 | 12,600 |
| 14 | 14,200 | 12,600 | | | | | 27,100 | 31,300 | 41,200 | 20,700 | 12,200 | 14,200 |
| 15 | 14,200 | 13,000 | | | | | 29,500 | 29,500 | 42,500 | 23,300 | 12,600 | 15,800 |
| | | | 8,450 | 11,600 | 25,200 | | | | | | | |
| 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 | | | | 15,300 | 34,300 | 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 | | | | | 37,600 | 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 | | | | | 20,400 | 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 | | | | 32,900 | | 30,400 | 25,700 | 35,400 | 17,500 | 22,200 | 11,100 |
| | | | 8,900 | 9,150 | | | | | | | | |
| 26 | 12,600 | | | | | | 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 | | | | | | 28,700 | 26,400 | 34,300 | 14,600 | 18,800 | 11,100 |
| 29 | 12,600 | 8,060 | | | | 29,100 | 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 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| 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 | ------- | ------- | 22,300 | 1,240,000 |
| March | ------- | ------- | 16,900 | 1,040,000 |
| April | 77,800 | 25,700 | 33,400 | 1,990,000 |
| 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 | 14,200,000 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 81,000 second-feet Apr. 5; maximum stage, 14.0 feet Feb. 27 (ice effect); minimum discharge occurred during ice period; minimum gage height, 2.0 feet Aug. 8, 9.

1928–1930: Maximum discharge, 90,000 second-feet June 19, 1929; maximum gage height, 14.2 feet Mar. 19, 1929 (ice gorge); minimum discharge, 5,180 second-feet Feb. 3, 1929.

REMARKS.—Records good except those for period Nov. 19 to Apr. 4, which are fair. Numerous diversions above station. Several storage reservoirs on tributary streams.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13,300 | 12,500 | 9,500 | 13,500 | 8,790 | 25,500 | 40,200 | 35,000 | 26,200 | 32,200 | 13,300 | 17,900 |
| 2 | 13,300 | 12,500 | | | | | | 37,000 | 30,400 | 28,600 | 12,500 | 16,400 |
| 3 | 14,100 | 12,900 | | | | | | 40,100 | 47,000 | 28,600 | 12,100 | 16,400 |
| 4 | 13,700 | 12,900 | | | | | | 38,000 | 45,800 | 27,000 | 11,500 | 15,400 |
| 5 | 14,500 | 13,300 | | | | | 81,000 | 36,000 | 43,400 | 27,000 | 11,200 | 15,400 |
| 6 | 14,100 | 13,300 | 8,730 | 12,800 | 9,660 | 13,900 | 27,800 | 34,000 | 42,300 | 23,300 | 10,500 | 14,100 |
| 7 | 14,900 | 14,100 | | | | | 26,200 | 34,000 | 39,000 | 24,700 | 10,500 | 14,100 |
| 8 | 14,500 | 13,700 | | | | | 24,700 | 33,100 | 35,000 | 24,000 | 10,200 | 13,700 |
| 9 | 14,500 | 13,700 | | | | | 25,400 | 35,000 | 33,100 | 24,700 | 10,200 | 13,700 |
| 10 | 14,100 | 13,300 | | | | | 24,000 | 36,000 | 31,300 | 23,300 | 10,500 | 13,300 |
| 11 | 14,100 | 13,300 | 8,100 | 9,740 | 9,500 | 10,000 | 26,200 | 35,000 | 31,300 | 24,000 | 11,200 | 12,500 |
| 12 | 13,300 | 12,900 | | | | | 28,600 | 32,200 | 32,200 | 22,600 | 11,800 | 12,900 |
| 13 | 13,300 | 12,900 | | | | | 29,500 | 30,400 | 44,600 | 22,600 | 12,500 | 12,900 |
| 14 | 14,100 | 12,500 | | | | | 27,800 | 27,800 | 50,700 | 21,400 | 12,100 | 13,300 |
| 15 | 14,500 | 12,900 | | | | | 27,800 | 27,000 | 45,800 | 21,400 | 12,900 | 13,700 |
| 16 | 13,700 | 12,500 | 6,890 | 6,850 | 17,400 | 15,900 | 27,800 | 27,000 | 45,800 | 24,000 | 12,500 | 15,900 |
| 17 | 14,100 | 13,300 | | | | | 30,400 | 27,000 | 48,200 | 27,800 | 14,100 | 17,400 |
| 18 | 14,100 | 13,300 | | | | | 30,400 | 26,200 | 42,300 | 32,200 | 22,000 | 16,400 |
| 19 | 14,100 | 9,610 | | | | | 33,100 | 24,700 | 39,000 | 34,000 | 32,200 | 14,500 |
| 20 | 13,700 | | | | | | 34,000 | 24,700 | 29,500 | 29,500 | 31,300 | 13,700 |
| 21 | 13,700 | | 8,370 | 6,880 | 30,100 | 22,300 | 37,000 | 27,000 | 30,400 | 27,000 | 32,200 | 13,300 |
| 22 | 13,300 | | | | | | 35,000 | 27,800 | 40,100 | 24,000 | 27,800 | 13,300 |
| 23 | 13,700 | | | | | | 34,000 | 27,800 | 43,400 | 23,300 | 24,000 | 13,300 |
| 24 | 12,900 | | | | | | 30,400 | 27,000 | 41,200 | 20,800 | 23,300 | 12,500 |
| 25 | 12,900 | | | | | | 31,300 | 27,800 | 40,100 | 20,200 | 23,300 | 12,100 |
| 26 | 12,500 | 9,430 | 11,200 | 8,190 | 28,300 | 20,200 | 27,800 | 27,800 | 38,000 | 17,900 | 23,300 | 12,100 |
| 27 | 12,900 | | | | | | 27,800 | 30,400 | 40,100 | 16,900 | 22,600 | 12,100 |
| 28 | 12,500 | | | | | | 27,800 | 31,300 | 39,000 | 15,900 | 21,400 | 11,800 |
| 29 | 13,300 | | | | | | 30,400 | 28,600 | 42,300 | 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 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| 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 | ---------- | ---------- | 18,000 | 1,110,000 |
| April | 81,000 | 24,000 | 32,700 | 1,950,000 |
| May | 40,100 | 24,700 | 30,700 | 1,890,000 |
| June | 50,700 | 26,200 | 39,000 | 2,320,000 |
| 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 | ---------- | ---------- | 19,600 | 14,200,000 |

## MISSOURI RIVER AT BISMARCK, N. DAK.

LOCATION.—Water-stage recorder in sec. 31, T. 139 N., R. 80 W., at Bismarck city water plant.

DRAINAGE AREA.—187,000 square miles.

RECORDS AVAILABLE.—September, 1904, to December, 1905; October, 1927, to September, 1930.

EXTREMES.—Maximum discharge during year, 78,000 second-feet Apr. 5; maximum gage height, 11.38 feet Mar. 6, during ice period; minimum discharge, 5,670 second-feet, mean for period Jan. 26–31.

1904–5, 1928–1930: Maximum discharge recorded, 201,000 second-feet Mar. 24, 1928; maximum gage height, 17.8 feet Mar. 27, 1929, during ice gorge; minimum discharge, that of Jan. 26–31, 1930.

REMARKS.—Records good except those for period of ice effect, Nov. 21 to Apr. 2, which are fair. Numerous diversions above station. Tributaries partly regulated by storage reservoirs.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 12,200 | 13,500 | 6,970 | 6,710 | 6,450 | 30,600 | 48,700 | 26,900 | 30,400 | 36,600 | 14,900 | 20,600 |
| 2 | 12,200 | 13,500 | 7,250 | | | | 58,100 | 29,500 | 29,500 | 34,400 | 14,400 | 19,500 |
| 3 | 12,600 | 13,100 | 7,840 | | | | 59,800 | 32,300 | 28,600 | 31,300 | 13,500 | 18,400 |
| 4 | 12,600 | 13,100 | 8,800 | | | | 68,700 | 37,800 | 43,700 | 20,500 | 13,500 | 17,500 |
| 5 | 13,100 | 13,500 | 9,490 | | | | 72,400 | 39,000 | 59,800 | 28,600 | 12,600 | 17,400 |
| 6 | 13,500 | 13,100 | 11,400 | 9,150 | 8,830 | 21,800 | 59,800 | 35,500 | 59,800 | 26,900 | 12,200 | 16,900 |
| 7 | 14,000 | 13,100 | 14,900 | | | | 47,200 | 33,300 | 50,200 | 25,400 | 12,200 | 16,400 |
| 8 | 14,000 | 13,100 | 14,400 | | | | 23,700 | 33,300 | 42,900 | 23,200 | 11,800 | 15,900 |
| 9 | 14,400 | 13,500 | 11,800 | | | | 24,600 | 33,300 | 37,800 | 21,900 | 11,000 | 15,400 |
| 10 | 14,900 | 13,500 | 9,140 | | | | 24,600 | 35,500 | 35,500 | 21,300 | 11,000 | 14,900 |
| 11 | 14,900 | 13,500 | 7,840 | 13,500 | 10,700 | 19,900 | 24,600 | 36,600 | 33,300 | 20,700 | 10,600 | 14,400 |
| 12 | 14,400 | 13,500 | 7,540 | | | | 24,600 | 37,800 | 34,400 | 20,700 | 10,600 | 14,400 |
| 13 | 14,400 | 13,500 | 7,840 | | | | 25,400 | 40,300 | 35,500 | 20,700 | 11,800 | 14,400 |
| 14 | 14,400 | 13,500 | 7,840 | | | | 26,100 | 40,300 | 39,800 | 20,700 | 12,200 | 14,000 |
| 15 | 14,400 | 13,500 | 7,540 | | | | 27,700 | 41,600 | 48,700 | 20,700 | 12,200 | 13,500 |
| 16 | 14,000 | 13,500 | 7,540 | 10,100 | 19,100 | 28,100 | 28,600 | 37,800 | 44,300 | 19,500 | 12,600 | 13,500 |
| 17 | 14,000 | 13,500 | 7,250 | | | | 30,400 | 35,500 | 42,900 | 19,000 | 12,600 | 14,000 |
| 18 | 14,000 | 13,100 | 7,250 | | | | 30,400 | 27,700 | 44,300 | 19,000 | 12,600 | 15,900 |
| 19 | 14,000 | 13,100 | 7,540 | | | | 33,300 | 27,700 | 42,900 | 20,700 | 13,100 | 16,900 |
| 20 | 14,000 | 12,600 | 7,540 | | | | 34,400 | 27,700 | 36,600 | 23,900 | 17,200 | 16,900 |
| 21 | 14,000 | 12,600 | 6,970 | 6,260 | 36,200 | 33,800 | 34,400 | 27,700 | 32,300 | 27,700 | 32,800 | 16,400 |
| 22 | 14,400 | 13,500 | 6,440 | | | | 35,500 | 26,900 | 31,300 | 28,600 | 39,000 | 14,900 |
| 23 | 14,400 | 12,600 | 5,950 | | | | 33,300 | 25,400 | 30,300 | 26,100 | 33,300 | 14,000 |
| 24 | 14,000 | 12,200 | 5,950 | | | | 31,300 | 25,400 | 33,300 | 23,200 | 26,100 | 13,100 |
| 25 | 14,000 | 11,800 | 6,190 | | | | 28,600 | 26,100 | 35,500 | 21,300 | 23,900 | 13,100 |
| 26 | 14,000 | 11,400 | 6,440 | 5,670 | 34,400 | 35,700 | 26,900 | 26,100 | 36,600 | 20,100 | 23,200 | 12,600 |
| 27 | 13,500 | 11,000 | 6,970 | | | | 26,900 | 27,700 | 36,600 | 19,000 | 23,200 | 12,200 |
| 28 | 13,500 | 9,850 | 7,840 | | | | 26,100 | 28,500 | 36,600 | 17,900 | 22,500 | 11,800 |
| 29 | 13,500 | 8,150 | 8,470 | | | | 26,100 | 29,500 | 35,500 | 16,900 | 23,200 | 11,800 |
| 30 | 13,500 | 7,540 | 8,310 | | | | 26,100 | 31,300 | 36,600 | 16,400 | 22,500 | 11,400 |
| 31 | 13,500 | ------- | 7,840 | | ------- | | ------- | 31,300 | ------- | 15,400 | 21,900 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 14,900 | 12,200 | 13,800 | 848,000 |
| November | 13,500 | 7,540 | 12,600 | 750,000 |
| December | 14,900 | 5,950 | 8,230 | 506,600 |
| January | ---------- | ---------- | 8,470 | 521,000 |
| February | ---------- | ---------- | 18,200 | 1,010,000 |
| March | ---------- | ---------- | 28,600 | 1,760,000 |
| April | 72,400 | 24,600 | 35,700 | 2,120,000 |
| May | 41,600 | 25,400 | 32,100 | 1,970,000 |
| 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 | ---------- | 21,000 | 15,200,000 |

## MISSOURI RIVER NEAR MOBRIDGE, S. DAK.

LOCATION.—Chain gage in sec. 7, T. 18 N., R. 30 E., 3 miles west of Mobridge and 4 miles below mouth of Grand River.

DRAINAGE AREA.—209,000 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 80,100 second-feet Apr. 6 (gage height, 8.3 feet); minimum occurred during winter.

1928–1930: Maximum discharge, 164,000 second-feet Mar. 29, 1929 (gage height, 11.4 feet).

REMARKS.—Records good except those for Nov. 22 to Mar. 30, which were estimated because of ice.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13,000 | 13,600 | | | | | 33,900 | 27,500 | 24,600 | 32,700 | 15,700 | 20,000 |
| 2 | 12,900 | 13,600 | | | | | 36,900 | 28,100 | 27,000 | 32,600 | 14,900 | 19,200 |
| 3 | 13,000 | 13,400 | | | | 34,100 | 39,600 | 28,500 | 27,100 | 33,000 | 14,400 | 18,700 |
| 4 | 12,900 | 12,900 | | | | | 48,400 | 30,700 | 25,900 | 28,800 | 13,700 | 17,600 |
| 5 | 13,100 | 13,000 | 7,900 | | 10,000 | | 58,700 | 37,500 | 43,200 | 26,900 | 13,100 | 16,900 |
| 6 | 13,100 | 12,900 | | | | | 73,300 | 45,300 | 62,600 | 25,800 | 12,200 | 16,300 |
| 7 | 13,700 | 12,700 | | | | | 66,300 | 40,400 | 61,400 | 25,200 | 12,300 | 15,600 |
| 8 | 14,300 | 12,500 | | 9,000 | | 31,200 | 56,900 | 39,900 | 51,400 | 25,200 | 11,600 | 15,300 |
| 9 | 14,800 | 12,700 | | | | | 33,500 | 39,000 | 42,800 | 24,800 | 11,300 | 15,300 |
| 10 | 15,300 | 13,100 | | | | | 30,100 | 37,800 | 35,500 | 23,300 | 11,000 | 14,900 |
| 11 | 15,400 | 13,500 | | | | | 29,000 | 34,200 | 31,100 | 22,100 | 10,600 | 14,000 |
| 12 | 15,500 | 13,300 | | | | | 29,700 | 35,200 | 30,200 | 21,100 | 9,940 | 13,700 |
| 13 | 15,500 | 13,200 | 6,900 | | | 23,300 | 30,200 | 42,500 | 29,400 | 20,900 | 9,710 | 13,400 |
| 14 | 15,600 | 13,300 | | | | | 30,300 | 53,500 | 31,000 | 20,600 | 9,650 | 13,400 |
| 15 | 15,500 | 13,300 | | | | | 31,800 | 50,400 | 40,200 | 20,600 | 10,300 | 13,300 |
| 16 | 15,100 | 13,400 | | | 11,700 | | 31,800 | 41,600 | 51,600 | 20,200 | 10,800 | 13,100 |
| 17 | 15,000 | 13,400 | | | | | 33,200 | 36,700 | 48,600 | 19,900 | 11,200 | 13,100 |
| 18 | 14,600 | 13,300 | 5,900 | | | 28,500 | 36,400 | 32,600 | 43,600 | 19,500 | 11,600 | 13,300 |
| 19 | 14,200 | 13,000 | | | | | 35,900 | 29,400 | 49,000 | 18,500 | 11,800 | 13,500 |
| 20 | 14,300 | 12,900 | | | | | 35,900 | 28,600 | 51,600 | 18,700 | 12,200 | 14,900 |
| 21 | 14,600 | 12,800 | | | | 40,000 | 37,300 | 26,400 | 43,600 | 19,900 | 12,500 | 15,600 |
| 22 | 14,400 | | | | | 42,000 | 35,900 | 26,600 | 36,400 | 22,800 | 22,600 | 17,200 |
| 23 | 14,100 | 12,100 | 6,400 | | | 45,000 | 36,900 | 25,600 | 35,800 | 25,100 | 40,400 | 16,800 |
| 24 | 14,000 | | | 8,000 | | 50,000 | 34,900 | 24,600 | 34,100 | 26,300 | 43,800 | 15,800 |
| 25 | 14,100 | | | | 17,200 | 45,000 | 33,300 | 23,400 | 34,200 | 24,300 | 33,100 | 14,700 |
| 26 | 14,000 | | | | | 40,000 | 30,600 | 24,300 | 40,600 | 22,000 | 24,800 | 14,400 |
| 27 | 13,900 | | | | | 38,000 | 30,900 | 24,500 | 39,000 | 19,900 | 23,600 | 13,900 |
| 28 | 14,000 | 10,200 | | | | 38,000 | 29,500 | 24,700 | 36,100 | 19,100 | 23,000 | 13,500 |
| 29 | 14,000 | | 7,000 | | | 38,000 | 30,300 | 24,700 | 32,600 | 18,400 | 22,100 | 13,200 |
| 30 | 13,900 | | | | ------- | 37,000 | 30,100 | 24,900 | 31,700 | 17,200 | 21,600 | 13,000 |
| 31 | 13,700 | ------- | | | ------- | 37,400 | ------- | 25,900 | ------- | 16,400 | 20,800 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 15,600 | 12,900 | 14,200 | 873,000 |
| November | 13,600 | ---------- | 12,500 | 744,000 |
| December | ---------- | ---------- | 7,000 | 430,000 |
| January | ---------- | ---------- | 8,480 | 521,000 |
| February | ---------- | ---------- | 12,700 | 705,000 |
| March | ---------- | ---------- | 33,400 | 2,050,000 |
| April | 73,300 | 29,000 | 37,700 | 2,240,000 |
| 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 | 73,300 | ---------- | 21,100 | 15,300,000 |

## MISSOURI RIVER AT PIERRE, S. DAK.

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

DRAINAGE AREA.—242,000 square miles.

RECORDS AVAILABLE.—October, 1929, to September, 1930.

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

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

REMARKS.—Records good except those for Nov. 19 to Mar. 17, which were estimated because of ice.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 22,700 |
| 3 | 14,200 | 14,000 | | | | 37,000 | 37,300 | 31,200 | 27,200 | 34,000 | 14,800 | 21,100 |
| 4 | 14,200 | 13,600 | | | | | 44,400 | 30,600 | 28,200 | 35,200 | 14,000 | 19,800 |
| 5 | 14,200 | 13,400 | | | | | 52,100 | 30,600 | 27,800 | 35,300 | 13,100 | 18,500 |
| 6 | 14,200 | 13,300 | 7,900 | | 11,000 | | 68,000 | 32,200 | 33,400 | 31,100 | 12,800 | 17,900 |
| 7 | 14,200 | 13,200 | | | | | 74,300 | 36,000 | 62,600 | 28,800 | 12,400 | 17,600 |
| 8 | 15,300 | 13,400 | | 7,900 | | 33,700 | 6,900 | 44,200 | 57,700 | 26,400 | 11,900 | 16,700 |
| 9 | 15,300 | 13,300 | | | | | 54,800 | 44,400 | 52,200 | 24,800 | 11,100 | 15,700 |
| 10 | 15,100 | 13,400 | | | | | 35,100 | 43,000 | 47,800 | 24,000 | 10,300 | 15,000 |
| 11 | 15,400 | 13,500 | | | | | 30,300 | 41,700 | 41,800 | 23,400 | 9,680 | 15,100 |
| 12 | 15,600 | 13,700 | | | | | 27,500 | 41,000 | 37,800 | 21,900 | 9,190 | 14,800 |
| 13 | 15,200 | 14,400 | 6,800 | | | 26,300 | 27,300 | 42,500 | 33,300 | 20,400 | 9,020 | 14,400 |
| 14 | 15,300 | 14,500 | | | | | 28,500 | 45,200 | 31,000 | 19,900 | 8,560 | 13,500 |
| 15 | 15,300 | 14,600 | | | | | 29,300 | 47,200 | 30,400 | 19,200 | 8,300 | 13,100 |
| 16 | 15,000 | 14,600 | | | 12,800 | 30,000 | 29,300 | 50,200 | 35,200 | 19,000 | 8,220 | 13,400 |
| 17 | 15,000 | 14,500 | | | | 40,000 | 31,600 | 46,400 | 51,800 | 19,600 | 8,810 | 13,400 |
| 18 | 14,800 | 14,500 | 5,700 | | | 52,800 | 33,800 | 39,900 | 51,800 | 19,400 | 12,400 | 13,200 |
| 19 | 14,800 | | | | | 56,000 | 37,100 | 35,000 | 45,700 | 19,200 | 19,200 | 13,100 |
| 20 | 14,700 | | | | | 51,900 | 37,100 | 32,700 | 45,400 | 18,800 | 19,400 | 12,900 |
| 21 | 14,600 | 12,200 | | | | 46,000 | 36,900 | 31,700 | 50,700 | 18,300 | 15,800 | 13,000 |
| 22 | 14,400 | | | | | 47,800 | 37,000 | 30,700 | 47,900 | 17,600 | 14,800 | 14,000 |
| 23 | 14,200 | | 6,100 | 9,500 | | 50,700 | 36,700 | 30,400 | 44,400 | 18,500 | 15,000 | 15,000 |
| 24 | 14,000 | | | | | 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 | 37,550 | 26,500 | 44,700 | 16,700 |
| 27 | 14,400 | | | | | 41,400 | 34,600 | 25,800 | 39,900 | 25,300 | 39,200 | 15,000 |
| 28 | 14,300 | 10,300 | | | | 40,000 | 32,900 | 26,200 | 40,500 | 23,000 | 30,300 | 14,200 |
| 29 | 14,800 | | 6,500 | | | 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 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 15,600 | 13,800 | 14,700 | 904,000 |
| November | 14,600 | ---------- | 12,900 | 768,000 |
| December | ---------- | ---------- | 6,800 | 418,000 |
| 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 | 22,700 | 12,900 | 15,700 | 934,000 |
| The year | 74,300 | ---------- | 22,300 | 16,200,000 |

## MISSOURI RIVER AT SIOUX CITY, IOWA

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

DRAINAGE AREA.—314,000 square miles.

RECORDS AVAILABLE.—September, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 108,000 second-feet Mar. 6 (gage height, 9.4 feet); minimum (estimated), 6,100 second-feet Nov. 23.

1928–1930: Maximum discharge, 180,000 second-feet June 5, 6, 1929 (gage height, 11.9 feet); minimum, that of Nov. 23, 1929.

REMARKS.—Records fair. Discharge estimated Nov. 20 to Mar. 5 because of ice.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 14,900 | 17,800 | | | 11,500 | 43,100 | 36,200 | 28,400 | 35,900 | 27,300 | 31,200 |
| 2 | 15,700 | 18,500 | | | 11,500 | 42,600 | 33,900 | 27,400 | 37,300 | 25,300 | 26,900 |
| 3 | 15,700 | 18,500 | | | 12,600 | 42,200 | 32,300 | 28,900 | 39,900 | 22,400 | 25,400 |
| 4 | 15,700 | 18,500 | | | 13,100 | 40,600 | 33,300 | 30,400 | 37,600 | 20,900 | 25,400 |
| 5 | 15,400 | 18,500 | | | 17,800 | 35,800 | 33,900 | 32,800 | 33,000 | 21,200 | 25,700 |
| | | | | 11,500 | | | | | | | |
| 6 | 16,600 | 18,500 | | | 42,400 | 35,900 | 35,900 | 35,900 | 32,500 | 20,600 | 24,700 |
| 7 | 17,900 | 18,500 | | | 66,800 | 39,600 | 40,400 | 38,100 | 31,500 | 19,900 | 23,800 |
| 8 | 17,600 | 18,500 | 8,500 | | 50,000 | 59,200 | 38,800 | 35,200 | 33,000 | 18,700 | 25,400 |
| 9 | 16,300 | 18,500 | | | 44,100 | 74,900 | 37,300 | 32,300 | 32,500 | 18,400 | 26,000 |
| 10 | 16,300 | 18,500 | | | 63,600 | 80,100 | 40,400 | 59,600 | 32,000 | 17,800 | 25,900 |
| 11 | 16,100 | 18,500 | | | 65,000 | 67,400 | 52,300 | 63,800 | 31,800 | 17,200 | 24,300 |
| 12 | 15,500 | 18,500 | | | 61,800 | 51,900 | 63,800 | 57,000 | 30,800 | 17,100 | 22,200 |
| 13 | 15,500 | 18,200 | | | 74,300 | 39,600 | 63,800 | 50,000 | 29,900 | 16,600 | 21,600 |
| 14 | 16,100 | 16,800 | | | 83,800 | 36,000 | 66,200 | 48,200 | 28,200 | 15,400 | 21,200 |
| 15 | 16,100 | 15,900 | | | 79,000 | 34,600 | 59,900 | 44,600 | 26,800 | 15,400 | 19,600 |
| | | | | 13,500 | | | | | | | |
| 16 | 16,100 | 15,900 | | | 67,300 | 35,900 | 51,900 | 41,200 | 26,400 | 14,200 | 19,000 |
| 17 | 16,100 | 15,300 | | | 63,600 | 35,700 | 47,800 | 37,200 | 25,700 | 13,700 | 17,900 |
| 18 | 16,100 | 15,300 | | | 69,900 | 34,200 | 46,400 | 33,900 | 23,800 | 13,700 | 17,500 |
| 19 | 17,000 | 15,300 | | | 69,900 | 33,900 | 47,800 | 31,300 | 22,700 | 14,200 | 16,900 |
| 20 | 15,800 | 15,000 | | | 59,800 | 39,600 | 44,600 | 31,800 | 22,400 | 13,700 | 16,600 |
| 21 | 15,600 | 10,000 | | | 59,800 | 46,000 | 40,400 | 46,000 | 21,300 | 18,700 | 16,300 |
| 22 | 16,200 | 7,400 | | | 56,000 | 46,000 | 37,300 | 46,900 | 20,800 | 22,300 | 15,700 |
| 23 | 16,500 | 6,100 | | | 57,300 | 46,400 | 34,600 | 42,100 | 21,000 | 22,600 | 15,400 |
| 24 | 16,800 | 7,500 | 10,600 | | 53,600 | 42,100 | 34,600 | 40,400 | 22,400 | 22,400 | 15,100 |
| 25 | 16,800 | 12,000 | | | 47,500 | 39,300 | 35,200 | 46,400 | 20,600 | 23,000 | 14,800 |
| | | | | 26,000 | | | | | | | |
| 26 | 16,500 | 15,000 | | | 45,300 | 36,600 | 32,800 | 46,400 | 20,900 | 20,900 | 15,400 |
| 27 | 16,800 | 14,000 | | | 55,000 | 37,300 | 32,300 | 44,300 | 20,900 | 18,400 | 15,100 |
| 28 | 16,800 | 12,000 | | | 53,600 | 38,400 | 31,300 | 42,400 | 20,200 | 16,900 | 14,500 |
| 29 | 16,800 | 9,000 | | | 44,300 | 39,600 | 30,400 | 37,600 | 20,900 | 19,900 | 14,500 |
| 30 | 17,300 | 7,000 | | -------- | 44,500 | 39,600 | 29,900 | 35,800 | 23,400 | 30,400 | 15,700 |
| 31 | 17,600 | -------- | | -------- | 44,900 | -------- | 28,600 | -------- | 26,200 | 32,800 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 17,900 | 14,900 | 16,300 | 1,000,000 |
| November | 18,500 | 5,000 | 15,000 | 893,000 |
| December | -------- | -------- | 7,900 | 486,000 |
| January | -------- | -------- | 9,580 | 589,000 |
| February | -------- | -------- | 16,400 | 911,000 |
| March | 83,800 | 11,500 | 51,300 | 3,150,000 |
| April | 80,100 | 33,900 | 43,800 | 2,610,000 |
| May | 66,200 | 28,600 | 41,100 | 2,530,000 |
| June | 63,800 | 27,400 | 40,500 | 2,410,000 |
| July | 39,900 | 20,200 | 27,500 | 1,690,000 |
| August | 32,800 | 13,700 | 19,700 | 1,210,000 |
| September | 31,200 | 14,500 | 20,300 | 1,210,000 |
| The year | 83,800 | -------- | 25,800 | 18,700,000 |

### MISSOURI RIVER AT OMAHA, NEBR.

LOCATION.—Chain gage in sec. 23, T. 15 N., R. 14 E., at Douglas Street toll bridge, at Omaha since Mar. 26, 1930. Prior to that date a gage at Illinois Central Railroad bridge 2 miles upstream was used. Zero of present gage 959.71 feet above mean sea level.

DRAINAGE AREA.—323,000 square miles.

RECORDS AVAILABLE.—September, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 84,400 second-feet Mar. 15 (gage height, 11.9 feet); minimum, 5,720 second-feet Dec. 12 (gage height, 3.3 feet). 1928–1930: Maximum discharge, 198,000 second-feet June 7, 1929 (gage height, 14.28 feet); minimum, that of Dec. 12, 1929.

REMARKS.—Records good except those for period Dec. 17 to Jan. 31, which were estimated because of ice.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 14,800 | 17,800 | 8,370 | | 13,200 | 12,000 | 43,500 | 41,100 | 29,200 | 36,800 | 22,200 | 30,200 |
| 2 | 14,900 | 18,200 | 7,840 | | 13,200 | 12,000 | 42,200 | 37,200 | 27,800 | 37,100 | 24,800 | 31,200 |
| 3 | 15,000 | 18,400 | 7,840 | | 13,700 | 12,000 | 42,800 | 35,100 | 28,800 | 38,200 | 25,000 | 29,400 |
| 4 | 15,400 | 18,700 | 7,590 | | 12,500 | 11,500 | 41,500 | 34,500 | 30,300 | 41,000 | 24,900 | 26,200 |
| 5 | 15,700 | 18,500 | 8,100 | | 12,000 | 20,500 | 39,600 | 32,700 | 30,800 | 40,000 | 24,500 | 24,800 |
| 6 | 15,200 | 18,400 | 6,700 | | 12,000 | 22,100 | 37,000 | 34,500 | 33,600 | 37,200 | 23,400 | 24,600 |
| 7 | 15,200 | 18,400 | 6,700 | | 12,000 | 33,000 | 35,100 | 37,000 | 35,600 | 34,600 | 21,300 | 23,400 |
| 8 | 16,000 | 18,400 | 6,520 | 9,000 | 12,600 | 72,600 | 37,600 | 41,800 | 37,900 | 32,700 | 20,000 | 23,100 |
| 9 | 17,600 | 18,600 | 6,340 | | 12,600 | 57,200 | 50,300 | 40,900 | 40,500 | 32,600 | 19,500 | 24,100 |
| 10 | 18,000 | 18,800 | 6,170 | | 13,200 | 51,800 | 68,600 | 44,800 | 38,500 | 32,400 | 19,400 | 25,200 |
| 11 | 17,600 | 18,700 | 5,860 | | 13,700 | 47,600 | 79,000 | 45,700 | 58,000 | 32,500 | 18,600 | 26,200 |
| 12 | 17,300 | 18,600 | 5,720 | | 13,700 | 76,200 | 69,500 | 53,900 | 61,800 | 31,500 | 18,400 | 24,100 |
| 13 | 16,900 | 18,600 | 5,860 | | 14,900 | 67,000 | 56,900 | 62,500 | 59,400 | 29,500 | 17,400 | 21,900 |
| 14 | 16,400 | 18,000 | 5,860 | | 14,900 | 74,400 | 45,400 | 65,900 | 62,400 | 28,100 | 17,000 | 20,600 |
| 15 | 16,200 | 17,800 | 6,170 | | 13,700 | 84,400 | 40,200 | 68,100 | 54,000 | 24,900 | 16,500 | 21,400 |
| 16 | 16,200 | 16,800 | 6,010 | | 13,700 | 82,400 | 35,700 | 62,200 | 48,400 | 25,600 | 15,800 | 19,400 |
| 17 | 16,200 | 16,400 | | | 13,700 | 74,400 | 34,500 | 56,900 | 46,900 | 24,900 | 15,400 | 19,000 |
| 18 | 16,200 | 17,000 | 9,200 | | 14,300 | 65,200 | 35,700 | 50,000 | 39,400 | 24,200 | 16,600 | 18,200 |
| 19 | 16,200 | 16,300 | | | 15,500 | 68,800 | 35,700 | 47,900 | 36,600 | 23,600 | 15,600 | 17,600 |
| 20 | 16,600 | 16,400 | | | 16,200 | 61,800 | 35,100 | 49,300 | 34,400 | 22,100 | 15,200 | 17,000 |
| 21 | 17,000 | 15,600 | | | 26,400 | 61,800 | 36,300 | 46,800 | 33,300 | 22,200 | 14,700 | 16,400 |
| 22 | 17,700 | 14,100 | | | 38,400 | 57,000 | 45,400 | 40,000 | 35,600 | 22,200 | 14,700 | 16,100 |
| 23 | 17,600 | 7,590 | 8,200 | | 39,700 | 55,600 | 44,800 | 37,400 | 47,600 | 21,500 | 15,600 | 15,400 |
| 24 | 17,400 | 6,290 | | 11,100 | 28,200 | 53,300 | 45,200 | 34,800 | 44,500 | 21,300 | 17,900 | 15,000 |
| 25 | 17,200 | 6,190 | | | 27,300 | 51,800 | 42,300 | 32,700 | 42,800 | 21,600 | 19,600 | 14,900 |
| 26 | 16,900 | 7,090 | | | 26,400 | 52,400 | 41,600 | 31,600 | 44,900 | 21,300 | 22,300 | 15,400 |
| 27 | 16,900 | 8,070 | | | 24,800 | 55,400 | 38,900 | 30,700 | 45,300 | 20,900 | 23,900 | 15,600 |
| 28 | 16,400 | 15,500 | 10,000 | | 20,000 | 55,400 | 39,200 | 29,600 | 43,100 | 19,400 | 22,100 | 15,700 |
| 29 | 16,600 | 14,200 | | | ------- | 55,400 | 40,900 | 29,800 | 42,200 | 20,100 | 19,000 | 15,200 |
| 30 | 16,600 | 7,940 | | | ------- | 49,600 | 41,100 | 29,600 | 40,400 | 19,500 | 18,900 | 15,000 |
| 31 | 17,500 | ------- | | | ------- | 46,100 | ------- | 29,100 | ------- | 19,900 | 22,000 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 18,000 | 14,800 | 16,500 | 1,010,000 |
| November | 18,800 | 6,190 | 15,400 | 916,000 |
| December | ---------- | 5,720 | 7,920 | 487,000 |
| January | ---------- | ---------- | 10,100 | 621,000 |
| February | 39,700 | 12,000 | 17,900 | 994,000 |
| March | 84,400 | 11,500 | 51,600 | 3,170,000 |
| April | 79,000 | 34,500 | 44,000 | 2,620,000 |
| May | 68,100 | 29,100 | 42,400 | 2,610,000 |
| June | 62,400 | 27,800 | 41,800 | 2,490,000 |
| July | 41,000 | 19,400 | 27,700 | 1,700,000 |
| August | 25,000 | 14,700 | 19,400 | 1,190,000 |
| September | 31,200 | 14,900 | 20,700 | 1,230,000 |
| The year | 84,400 | 5,720 | 26,300 | 19,000,000 |

## 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 905.32 feet above mean sea level.

DRAINAGE AREA.—418,000 square miles.

RECORDS AVAILABLE.—August, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 95,200 second-feet May 11 (gage height, 11.63 feet); minimum, 4,500 second-feet Dec. 3 (gage height, 4.30 feet).

1929–30: Maximum discharge, that of May 11, 1930; minimum, that of Dec. 3, 1929.

REMARKS.—Records good except those for period of ice effect, Dec. 21 to Feb. 21, which are poor. Discharge estimated Jan. 1–7.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20,800 | 31,800 | 13,800 | 17,800 | 10,800 | 58,000 | 50,000 | 56,600 | 43,100 | 50,200 | 23,400 | 37,200 |
| 2 | 22,100 | 29,400 | 12,600 | 18,600 | 10,800 | 45,600 | 46,800 | 58,200 | 41,500 | 48,600 | 26,400 | 45,600 |
| 3 | 22,100 | 30,600 | 4,500 | 19,400 | 10,800 | 26,400 | 48,400 | 56,600 | 38,700 | 47,000 | 30,000 | 42,800 |
| 4 | 22,100 | 30,600 | 7,000 | 20,200 | 10,800 | 21,600 | 51,600 | 53,400 | 40,100 | 47,000 | 30,000 | 37,200 |
| 5 | 22,800 | 28,200 | 9,600 | 20,200 | 10,800 | 20,000 | 48,400 | 51,800 | 43,100 | 48,600 | 27,600 | 33,000 |
| 6 | 23,400 | 28,200 | 10,200 | 20,200 | 10,800 | 25,400 | 48,400 | 53,400 | 59,300 | 47,000 | 28,800 | 30,600 |
| 7 | 24,800 | 28,200 | 9,000 | 19,400 | 12,600 | 32,000 | 42,400 | 58,200 | 61,100 | 42,800 | 27,600 | 30,600 |
| 8 | 23,400 | 28,200 | 7,500 | 18,600 | 15,400 | 71,600 | 41,000 | 66,600 | 55,900 | 41,400 | 25,000 | 30,600 |
| 9 | 24,100 | 28,200 | 7,000 | 15,400 | 20,200 | 62,800 | 46,800 | 76,000 | 54,300 | 40,000 | 24,000 | 33,000 |
| 10 | 24,800 | 27,000 | 8,000 | 13,800 | 22,000 | 54,800 | 66,600 | 76,000 | 52,700 | 40,000 | 23,000 | 33,000 |
| 11 | 27,600 | 28,200 | 10,200 | 11,400 | 24,000 | 47,000 | 74,000 | 93,000 | 54,600 | 40,000 | 22,000 | 41,400 |
| 12 | 26,900 | 28,200 | 10,800 | 10,200 | 25,000 | 81,400 | 74,000 | 93,000 | 78,000 | 40,000 | 20,200 | 34,400 |
| 13 | 26,900 | 29,400 | 11,400 | 9,600 | 26,000 | 69,800 | 68,400 | 90,800 | 73,000 | 38,600 | 20,200 | 30,600 |
| 14 | 26,200 | 29,400 | 12,600 | 9,000 | 26,000 | 79,400 | 58,200 | 80,000 | 69,000 | 35,800 | 19,400 | 29,400 |
| 15 | 25,500 | 28,200 | 17,000 | 9,000 | 26,000 | 87,800 | 50,200 | 82,000 | 71,000 | 33,000 | 18,600 | 29,400 |
| 16 | 25,000 | 28,200 | 17,000 | 9,000 | 27,000 | 85,600 | 42,800 | 82,000 | 71,000 | 30,600 | 21,000 | 27,000 |
| 17 | 25,000 | 27,000 | 15,400 | 9,600 | 27,000 | 81,400 | 41,400 | 74,000 | 65,400 | 30,600 | 17,800 | 26,000 |
| 18 | 24,000 | 26,000 | 17,000 | 10,200 | 30,600 | 71,600 | 45,600 | 68,400 | 56,800 | 29,400 | 18,600 | 24,000 |
| 19 | 24,000 | 25,000 | 5,000 | 10,800 | 38,600 | 69,800 | 45,600 | 64,800 | 50,400 | 28,200 | 27,000 | 23,000 |
| 20 | 24,000 | 26,000 | 6,000 | 11,400 | 48,600 | 64,400 | 45,600 | 61,400 | 47,200 | 27,000 | 25,000 | 22,000 |
| 21 | 24,000 | 25,000 | 8,500 | 11,400 | 50,200 | 64,400 | 50,200 | 61,400 | 40,100 | 27,000 | 22,000 | 21,000 |
| 22 | 24,000 | 24,000 | 9,000 | 12,000 | 55,000 | 59,600 | 58,200 | 61,400 | 43,100 | 28,200 | 21,000 | 20,200 |
| 23 | 22,000 | 22,000 | 9,000 | 12,000 | 72,000 | 59,600 | 58,200 | 58,200 | 55,900 | 27,000 | 25,000 | 20,200 |
| 24 | 22,000 | 11,400 | 9,000 | 12,000 | 55,000 | 58,000 | 58,200 | 56,600 | 51,100 | 25,000 | 27,600 | 20,200 |
| 25 | 24,000 | 10,800 | 8,500 | 12,000 | 47,000 | 58,000 | 55,000 | 55,000 | 52,700 | 25,000 | 26,400 | 20,200 |
| 26 | 23,000 | 10,800 | 8,000 | 12,000 | 48,600 | 58,000 | 53,400 | 55,000 | 51,100 | 26,000 | 26,400 | 20,200 |
| 27 | 23,000 | 10,200 | 8,000 | 12,000 | 47,000 | 56,400 | 51,800 | 51,800 | 52,700 | 25,000 | 32,400 | 19,400 |
| 28 | 22,000 | 15,400 | 8,500 | 12,000 | 45,600 | 64,400 | 51,800 | 51,800 | 49,500 | 25,000 | 32,400 | 19,400 |
| 29 | 24,000 | 14,600 | 9,000 | 12,000 | ------- | 61,200 | 56,600 | 50,200 | 47,900 | 25,000 | 28,900 | 20,200 |
| 30 | 24,000 | 12,600 | 11,400 | 11,400 | ------- | 61,200 | 58,200 | 50,200 | 46,300 | 24,000 | 24,500 | 20,200 |
| 31 | 26,000 | ------- | 16,200 | 11,400 | ------- | 58,000 | ------- | 48,600 | ------- | 24,000 | 25,500 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 27,600 | 20,800 | 24,000 | 1,480,000 |
| November | 31,800 | 10,200 | 24,100 | 1,430,000 |
| December | 17,000 | 4,500 | 10,200 | 627,000 |
| January | 20,200 | 9,000 | 13,400 | 824,000 |
| February | 72,000 | 10,800 | 30,500 | 1,690,000 |
| March | 87,800 | 20,000 | 58,600 | 3,600,000 |
| April | 74,000 | 41,000 | 52,900 | 3,150,000 |
| May | 93,000 | 48,600 | 64,400 | 3,960,000 |
| June | 78,000 | 38,700 | 53,900 | 3,210,000 |
| July | 50,200 | 24,000 | 34,400 | 2,120,000 |
| August | 32,400 | 17,800 | 24,800 | 1,520,000 |
| September | 45,600 | 19,400 | 28,100 | 1,670,000 |
| The year | 93,000 | 4,500 | 34,900 | 25,300,000 |

### 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 793.69 feet above mean sea level (adjustment of 1929).

DRAINAGE AREA.—427,000 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 106,000 second-feet May 14, (gage height, 7.7 feet); minimum discharge, 8,800 second-feet Dec. 26, 27; minimum gage height, −2.7 feet Jan. 10.

1928–30: Maximum discharge, 196,000 second-feet June 4, 1929 (gage height, 10.1 feet); minimum discharge, that of Dec. 26, 27, 1929; minimum gage height, that of Jan. 10, 1930.

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

REMARKS.—Records good except those for period of ice effect, Dec. 1 to Feb. 18, which are poor. Gage-height record furnished by United States Weather Bureau.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 18,600 | 41,000 | 18,200 | 18,200 | 12,600 | 51,000 | 48,600 | 57,000 | 41,000 | 55,000 | 22,800 | 27,700 |
| 2 | 19,000 | 37,000 | 17,800 | 19,000 | 12,600 | 67,200 | 46,200 | 58,400 | 42,100 | 45,600 | 22,800 | 26,800 |
| 3 | 20,200 | 33,200 | 14,000 | 21,000 | 12,600 | 58,400 | 46,200 | 57,000 | 41,000 | 42,300 | 22,800 | 42,300 |
| 4 | 21,500 | 31,600 | 13,000 | 21,600 | 12,600 | 30,800 | 46,200 | 54,600 | 39,900 | 42,300 | 25,200 | 44,500 |
| 5 | 22,500 | 29,200 | 12,200 | 21,600 | 12,600 | 24,600 | 47,400 | 51,000 | 65,700 | 46,700 | 28,600 | 40,100 |
| 6 | 23,000 | 28,400 | 12,200 | 23,100 | 12,600 | 21,500 | 48,600 | 49,800 | 61,500 | 45,600 | 29,500 | 35,000 |
| 7 | 23,000 | 27,600 | 11,600 | 21,600 | 13,000 | 25,800 | 47,400 | 59,800 | 58,700 | 46,700 | 28,600 | 31,300 |
| 8 | 23,500 | 27,600 | 11,600 | 18,800 | 13,600 | 30,800 | 44,000 | 68,800 | 67,300 | 44,500 | 27,700 | 32,200 |
| 9 | 24,000 | 27,600 | 11,900 | 12,200 | 16,600 | 65,600 | 41,000 | 65,600 | 56,100 | 41,200 | 27,700 | 31,300 |
| 10 | 27,000 | 27,600 | 13,000 | 10,000 | 23,500 | 61,200 | 44,000 | 73,400 | 53,700 | 40,100 | 26,000 | 34,000 |
| 11 | 28,400 | 28,400 | 13,300 | 9,700 | 27,000 | 59,800 | 65,600 | 71,800 | 56,100 | 40,100 | 25,200 | 40,100 |
| 12 | 30,000 | 28,400 | 14,000 | 9,400 | 28,400 | 59,800 | 81,000 | 95,600 | 52,500 | 40,100 | 23,600 | 39,000 |
| 13 | 30,800 | 30,800 | 14,000 | 9,400 | 28,400 | 84,600 | 81,000 | 102,000 | 76,900 | 39,000 | 23,600 | 40,100 |
| 14 | 28,400 | 30,800 | 14,400 | 9,400 | 29,200 | 75,600 | 68,800 | 106,000 | 76,900 | 39,000 | 22,100 | 38,000 |
| 15 | 27,600 | 31,600 | 15,000 | 10,000 | 28,400 | 77,400 | 59,800 | 95,600 | 80,100 | 37,000 | 20,700 | 35,000 |
| 16 | 26,400 | 30,000 | 15,800 | 10,600 | 28,400 | 86,400 | 52,200 | 90,200 | 81,700 | 35,000 | 20,700 | 34,000 |
| 17 | 25,200 | 29,200 | 15,800 | 11,200 | 29,200 | 86,400 | 46,200 | 88,400 | 73,700 | 32,200 | 21,400 | 30,400 |
| 18 | 24,600 | 29,200 | 15,400 | 11,800 | 30,800 | 82,800 | 45,000 | 81,400 | 65,700 | 30,400 | 21,400 | 28,600 |
| 19 | 24,600 | 27,000 | 14,700 | 12,500 | 37,000 | 75,600 | 47,400 | 78,200 | 60,100 | 29,500 | 21,400 | 26,800 |
| 20 | 25,800 | 25,800 | 14,000 | 13,200 | 54,900 | 70,400 | 49,800 | 71,800 | 53,700 | 23,600 | 23,600 | 25,200 |
| 21 | 33,200 | 25,800 | 13,000 | 13,000 | 59,100 | 73,800 | 49,800 | 70,200 | 52,500 | 27,700 | 33,100 | 23,600 |
| 22 | 27,600 | 24,000 | 12,600 | 13,300 | 56,300 | 67,200 | 51,000 | 68,600 | 47,700 | 28,600 | 27,700 | 22,100 |
| 23 | 25,800 | 25,200 | 11,900 | 13,600 | 53,700 | 58,400 | 54,600 | 68,600 | 43,200 | 27,700 | 23,600 | 21,400 |
| 24 | 25,800 | 23,000 | 10,000 | 13,600 | 73,500 | 58,400 | 64,000 | 61,400 | 56,100 | 26,800 | 21,400 | 20,000 |
| 25 | 25,200 | 21,500 | 9,100 | 13,600 | 57,700 | 58,400 | 59,800 | 56,200 | 57,300 | 26,000 | 23,600 | 19,300 |
| 26 | 24,600 | 16,200 | 8,800 | 13,600 | 48,900 | 55,800 | 58,400 | 52,600 | 60,100 | 25,200 | 26,000 | 20,000 |
| 27 | 24,600 | 15,800 | 8,800 | 13,300 | 50,100 | 53,400 | 57,000 | 49,000 | 51,300 | 24,400 | 24,400 | 19,300 |
| 28 | 24,000 | 16,200 | 9,400 | 13,000 | 48,900 | 55,800 | 53,400 | 47,800 | 51,300 | 25,200 | 25,200 | 18,700 |
| 29 | 26,400 | 16,200 | 10,300 | 13,000 | ------- | 62,600 | 52,200 | 45,600 | 48,900 | 24,400 | 29,500 | 19,300 |
| 30 | 28,400 | 19,400 | 10,600 | 13,000 | ------- | 57,000 | 53,400 | 45,600 | 48,900 | 23,600 | 34,000 | 18,700 |
| 31 | 32,400 | ------- | 11,600 | 13,000 | ------- | 53,400 | ------- | 44,500 | ------- | 23,600 | 29,500 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 33,200 | 18,600 | 25,600 | 1,570,000 |
| November | 41,000 | 15,800 | 26,800 | 1,590,000 |
| December | 18,200 | 8,800 | 12,800 | 787,000 |
| January | 23,100 | 9,400 | 14,200 | 873,000 |
| February | 73,500 | 12,600 | 32,600 | 1,810,000 |
| March | 86,400 | 21,500 | 59,700 | 3,670,000 |
| April | 81,000 | 41,000 | 53,700 | 3,200,000 |
| May | 106,000 | 44,500 | 67,300 | 4,140,000 |
| June | 81,700 | 39,900 | 57,400 | 3,420,000 |
| July | 55,000 | 23,600 | 35,000 | 2,150,000 |
| August | 34,000 | 20,700 | 25,300 | 1,560,000 |
| September | 44,500 | 18,700 | 29,500 | 1,760,000 |
| The year | 106,000 | 8,800 | 36,600 | 26,500,000 |

### MISSOURI RIVER AT KANSAS CITY, MO.

LOCATION.—Chain gage in sec. 31, T. 50 N., R. 33 W., at Chicago, Burlington & Quincy Railroad bridge at Kansas City, 1 mile below Kansas River. Zero of gage 715.79 feet above mean sea level (adjustment of 1929).

DRAINAGE AREA.—492,000 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 149,000 second-feet May 9 (gage height, 16.7 feet); minimum discharge, 9,500 second-feet Dec. 26, 27; minimum gage height, 2.4 feet Jan. 10.

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

Maximum stage known, 38.0 feet June 20, 1844.

REMARKS.—Records good except those for periods of ice effect, Dec. 2–29, Jan. 5 to Feb. 16, which are poor. Gage-height record furnished by United States Weather Bureau.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20,000 | 37,000 | 19,700 | 20,900 | 14,300 | 52,600 | 58,100 | 57,900 | 45,500 | 62,300 | 25,600 | 35,500 |
| 2 | 20,000 | 45,600 | 19,700 | 20,900 | 14,800 | 62,200 | 54,100 | 69,400 | 44,000 | 61,400 | 25,600 | 32,500 |
| 3 | 21,300 | 44,000 | 16,000 | 22,200 | 14,800 | 62,200 | 51,000 | 70,500 | 43,200 | 56,000 | 24,900 | 31,100 |
| 4 | 23,200 | 40,000 | 14,800 | 22,200 | 15,400 | 48,000 | 50,200 | 78,200 | 41,700 | 51,300 | 25,600 | 47,200 |
| 5 | 24,500 | 37,000 | 14,300 | 22,800 | 16,000 | 33,500 | 51,400 | 68,400 | 44,800 | 49,800 | 27,600 | 50,400 |
| 6 | 25,100 | 34,000 | 14,300 | 26,000 | 16,600 | 30,300 | 52,200 | 64,200 | 69,400 | 53,700 | 30,500 | 44,800 |
| 7 | 25,100 | 31,800 | 13,700 | 23,400 | 17,200 | 28,200 | 52,200 | 69,500 | 98,000 | 53,700 | 31,900 | 40,000 |
| 8 | 25,100 | 31,100 | 13,700 | 19,600 | 18,400 | 31,400 | 50,700 | 109,000 | 94,000 | 52,100 | 30,500 | 34,800 |
| 9 | 26,500 | 31,100 | 13,700 | 12,800 | 20,300 | 47,200 | 47,000 | 144,000 | 82,000 | 47,500 | 29,800 | 35,500 |
| 10 | 30,700 | 31,100 | 14,800 | 10,200 | 31,800 | 69,800 | 46,200 | 132,000 | 72,800 | 43,800 | 29,000 | 37,700 |
| 11 | 32,100 | 31,100 | 15,400 | 10,200 | 34,800 | 62,200 | 54,700 | 120,000 | 71,600 | 42,300 | 27,600 | 37,700 |
| 12 | 35,800 | 31,800 | 16,000 | 10,200 | 35,500 | 59,100 | 74,000 | 122,000 | 66,300 | 41,500 | 26,900 | 42,400 |
| 13 | 35,800 | 33,300 | 16,000 | 10,700 | 36,200 | 64,400 | 84,600 | 128,000 | 69,400 | 40,100 | 26,900 | 46,400 |
| 14 | 34,300 | 34,000 | 16,600 | 10,700 | 35,500 | 80,200 | 78,200 | 128,000 | 89,200 | 40,800 | 25,700 | 52,000 |
| 15 | 31,400 | 35,500 | 17,200 | 11,700 | 34,800 | 72,100 | 67,200 | 130,000 | 94,000 | 40,100 | 23,100 | 54,400 |
| 16 | 30,700 | 36,200 | 17,800 | 11,700 | 34,800 | 75,600 | 65,400 | 116,000 | 101,000 | 39,000 | 22,400 | 58,600 |
| 17 | 28,500 | 37,000 | 17,800 | 12,800 | 32,800 | 82,600 | 68,100 | 116,000 | 120,000 | 36,900 | 21,800 | 57,700 |
| 18 | 26,500 | 36,200 | 17,200 | 12,800 | 36,200 | 86,200 | 60,900 | 116,000 | 101,000 | 34,800 | 27,100 | 42,400 |
| 19 | 25,800 | 35,500 | 16,600 | 13,800 | 39,200 | 80,200 | 52,000 | 111,000 | 85,600 | 32,700 | 37,600 | 37,000 |
| 20 | 27,100 | 33,300 | 16,000 | 14,400 | 49,700 | 79,000 | 50,500 | 107,000 | 77,400 | 31,300 | 35,400 | 34,000 |
| 21 | 28,500 | 33,300 | 14,800 | 14,900 | 58,100 | 81,200 | 51,300 | 93,600 | 79,100 | 30,600 | 35,400 | 31,100 |
| 22 | 33,600 | 30,400 | 14,300 | 14,900 | 63,400 | 79,000 | 50,500 | 86,400 | 67,200 | 31,100 | 40,800 | 27,500 |
| 23 | 29,900 | 29,600 | 13,700 | 15,500 | 62,300 | 70,200 | 52,000 | 88,800 | 61,300 | 30,400 | 36,100 | 26,800 |
| 24 | 27,800 | 28,900 | 11,600 | 15,500 | 61,200 | 67,100 | 59,300 | 82,900 | 56,800 | 30,400 | 31,700 | 24,800 |
| 25 | 27,800 | 25,500 | 10,000 | 15,500 | 72,200 | 66,000 | 61,100 | 76,000 | 72,400 | 31,100 | 30,200 | 24,200 |
| 26 | 27,100 | 21,000 | 9,500 | 15,500 | 57,000 | 63,200 | 60,200 | 69,600 | 82,400 | 28,900 | 33,900 | 23,500 |
| 27 | 27,100 | 19,000 | 9,500 | 15,500 | 52,500 | 59,600 | 61,100 | 61,300 | 75,500 | 27,500 | 35,400 | 22,900 |
| 28 | 27,800 | 19,000 | 11,600 | 15,500 | 53,400 | 56,900 | 60,200 | 56,800 | 65,000 | 28,200 | 32,400 | 22,900 |
| 29 | 28,500 | 19,700 | 12,600 | 15,500 | ------- | 60,500 | 59,300 | 53,200 | 67,100 | 27,500 | 30,900 | 21,600 |
| 30 | 30,700 | 21,000 | 16,000 | 15,500 | ------- | 63,200 | 58,400 | 50,900 | 64,100 | 28,200 | 33,200 | 21,600 |
| 31 | 32,300 | ------- | 17,200 | 15,500 | ------- | 61,400 | ------- | 49,300 | ------- | 27,500 | 36,900 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 35,800 | 20,000 | 28,100 | 1,730,000 |
| November | 45,600 | 19,000 | 31,800 | 1,890,000 |
| December | 19,700 | 9,500 | 14,900 | 916,000 |
| January | 26,000 | 10,200 | 15,800 | 972,000 |
| February | 72,200 | 14,300 | 36,800 | 2,040,000 |
| March | 86,200 | 28,200 | 62,400 | 3,840,000 |
| April | 84,600 | 46,200 | 58,100 | 3,460,000 |
| May | 144,000 | 49,300 | 91,200 | 5,610,000 |
| June | 120,000 | 41,700 | 73,400 | 4,370,000 |
| July | 62,300 | 27,500 | 39,800 | 2,450,000 |
| August | 40,800 | 21,800 | 30,100 | 1,850,000 |
| September | 58,600 | 21,600 | 36,600 | 2,180,000 |
| The year | 144,000 | 9,500 | 43,200 | 31,300,000 |

### MISSOURI RIVER AT WAVERLY, MO.

LOCATION.—Chain gage in sec. 14, T. 51 N., R. 24 W., at bridge on State highway 24 at Waverly. Zero of gage 640.49 feet above mean sea level (adjustment of 1929).

DRAINAGE AREA.—494,000 square miles.

RECORDS AVAILABLE.—March, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 146,000 second-feet May 9 (gage height, 20.6 feet); minimum discharge, 8,200 second-feet Dec. 27; minimum gage height, 5.4 feet Jan. 12.

1929–30: Maximum discharge, 263,000 second-feet June 5, 1929 (gage height, 24.9 feet); minimum discharge, that of Dec. 27, 1929; minimum gage height, that of Jan. 12, 1930.

Maximum stage known, 25.9 feet July 22, 1915.

REMARKS.—Records good except those estimated, Dec. 21–26, and those for period of ice effect, Jan. 16 to Feb. 17, which are poor. Gage-height record furnished by Corps of Engineers, United States Army.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20,500 | 36,100 | 19,900 | 17,100 | 15,000 | 55,800 | 62,000 | 58,400 | 45,400 | 61,500 | 26,300 | 38,500 |
| 2 | 20,900 | 44,800 | 20,400 | 20,100 | 15,000 | 54,000 | 57,100 | 76,100 | 44,000 | 62,500 | 26,300 | 35,900 |
| 3 | 20,900 | 48,000 | 18,900 | 21,600 | 15,000 | 65,500 | 53,500 | 74,900 | 44,000 | 54,900 | 25,800 | 33,500 |
| 4 | 21,300 | 44,800 | 14,400 | 21,600 | 15,400 | 57,600 | 51,800 | 74,900 | 43,300 | 51,500 | 25,200 | 34,700 |
| 5 | 22,900 | 40,300 | 14,000 | 22,200 | 15,400 | 42,600 | 51,000 | 71,300 | 43,300 | 48,300 | 25,800 | 46,600 |
| 6 | 24,700 | 36,800 | 15,200 | 25,500 | 15,900 | 30,600 | 51,800 | 64,500 | 63,500 | 48,300 | 26,800 | 46,600 |
| 7 | 25,600 | 35,400 | 16,500 | 33,600 | 16,400 | 27,600 | 52,600 | 62,400 | 87,500 | 51,500 | 29,200 | 43,800 |
| 8 | 25,100 | 33,600 | 14,800 | 21,100 | 17,400 | 26,500 | 51,800 | 83,900 | 95,000 | 50,700 | 30,400 | 39,900 |
| 9 | 26,600 | 32,200 | 15,200 | 13,700 | 22,100 | 30,000 | 49,400 | 141,000 | 86,000 | 49,100 | 29,200 | 35,900 |
| 10 | 30,800 | 32,200 | 15,600 | 10,000 | 31,800 | 59,500 | 46,300 | 145,000 | 73,400 | 45,400 | 29,200 | 35,900 |
| 11 | 35,100 | 32,800 | 16,100 | 8,550 | 34,800 | 66,600 | 46,300 | 134,000 | 72,200 | 42,600 | 28,000 | 37,300 |
| 12 | 33,800 | 32,800 | 16,900 | 8,350 | 36,100 | 60,500 | 62,000 | 120,000 | 68,800 | 42,000 | 26,300 | 39,200 |
| 13 | 36,500 | 33,400 | 16,400 | 9,100 | 36,100 | 58,500 | 80,100 | 130,000 | 65,500 | 41,300 | 26,800 | 41,800 |
| 14 | 36,500 | 34,000 | 17,400 | 11,200 | 35,400 | 73,400 | 80,100 | 128,000 | 83,000 | 42,000 | 26,300 | 47,300 |
| 15 | 33,800 | 34,600 | 18,900 | 10,900 | 34,800 | 73,400 | 70,500 | 132,000 | 95,000 | 41,300 | 25,200 | 52,000 |
| 16 | 30,800 | 34,600 | 22,000 | 11,300 | 34,800 | 72,200 | 66,100 | 126,000 | 98,000 | 40,600 | 24,600 | 53,600 |
| 17 | 29,100 | 35,800 | 21,400 | 12,900 | 34,800 | 83,000 | 66,100 | 116,000 | 120,000 | 38,000 | 24,600 | 59,000 |
| 18 | 28,100 | 35,800 | 20,900 | 13,700 | 36,100 | 92,000 | 67,200 | 116,000 | 112,000 | 36,100 | 25,800 | 49,600 |
| 19 | 27,600 | 35,200 | 20,900 | 14,500 | 37,400 | 90,500 | 57,100 | 114,000 | 92,000 | 34,800 | 32,200 | 39,200 |
| 20 | 28,100 | 33,400 | 20,900 | 15,300 | 42,600 | 80,000 | 51,800 | 109,000 | 81,800 | 34,200 | 37,800 | 35,900 |
| 21 | 30,200 | 31,600 | 12,000 | 15,300 | 58,500 | 77,000 | 51,800 | 95,900 | 80,600 | 32,400 | 36,600 | 33,500 |
| 22 | 32,000 | 30,400 | 11,500 | 15,800 | 63,500 | 80,600 | 51,000 | 86,900 | 73,400 | 32,400 | 37,200 | 29,900 |
| 23 | 33,200 | 29,200 | 10,000 | 15,800 | 64,500 | 80,600 | 50,200 | 82,400 | 62,500 | 32,400 | 39,800 | 28,100 |
| 24 | 30,300 | 26,900 | 9,500 | 15,800 | 62,500 | 66,600 | 54,400 | 79,700 | 58,500 | 31,200 | 35,900 | 26,500 |
| 25 | 28,500 | 24,700 | 9,000 | 15,800 | 73,400 | 67,700 | 62,000 | 72,500 | 63,500 | 30,600 | 32,800 | 25,300 |
| 26 | 28,000 | 22,000 | 8,500 | 15,800 | 66,600 | 66,600 | 62,000 | 69,900 | 80,600 | 30,000 | 32,200 | 24,300 |
| 27 | 28,000 | 22,000 | 8,200 | 15,800 | 54,900 | 64,500 | 62,000 | 63,500 | 79,400 | 29,400 | 35,200 | 24,300 |
| 28 | 27,500 | 18,300 | 9,300 | 15,800 | 54,900 | 58,500 | 62,000 | 57,600 | 68,800 | 27,600 | 35,200 | 23,100 |
| 29 | 29,100 | 19,300 | 10,900 | 15,800 | ------- | 57,600 | 60,000 | 54,900 | 63,500 | 27,000 | 32,800 | 23,100 |
| 30 | 31,400 | 19,300 | 13,300 | 15,800 | ------- | 62,500 | 58,000 | 50,700 | 65,500 | 27,600 | 31,600 | 22,100 |
| 31 | 33,200 | ------- | 14,600 | 15,800 | ------- | 65,500 | ------- | 46,800 | ------- | 27,000 | 34,600 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 36,500 | 20,500 | 28,700 | 1,760,000 |
| November | 48,000 | 18,300 | 32,300 | 1,920,000 |
| December | 22,000 | 8,200 | 15,300 | 941,000 |
| January | 33,600 | 8,350 | 16,000 | 984,000 |
| February | 73,400 | 15,000 | 37,200 | 2,070,000 |
| March | 92,000 | 26,500 | 62,800 | 3,860,000 |
| April | 80,100 | 46,300 | 58,300 | 3,470,000 |
| May | 145,000 | 46,800 | 91,600 | 5,630,000 |
| June | 120,000 | 43,300 | 73,700 | 4,390,000 |
| July | 62,500 | 27,000 | 40,100 | 2,470,000 |
| August | 39,800 | 24,600 | 30,200 | 1,860,000 |
| September | 59,000 | 22,100 | 36,900 | 2,200,000 |
| The year | 145,000 | 8,200 | 43,600 | 31,600,000 |

## MISSOURI RIVER AT BOONVILLE, MO.

LOCATION.—Chain gage in sec. 35, T. 49 N., R. 17 W., at Missouri-Kansas-Texas Railroad bridge at Boonville. Zero of gage 564.95 feet above mean sea level (ajustment of 1929).

DRAINAGE AREA.—508,000 square miles.

RECORDS AVAILABLE.—October, 1925, to September, 1930.

EXTREMES.—Maximum discharge during year, 150,000 second-feet May 11 (gage height, 16.2 feet); minimum, 9,550 second-feet Dec. 24 (gage height, 2.1 feet).

1925–1930: Maximum discharge, 381,000 second-feet Apr. 23, 1927 (gage height, 23.9 feet); minimum, that of Dec. 24, 1929.

Maximum stage known, 32.7 feet June 21, 1844.

REMARKS.—Records good except those for period of ice effect, Jan. 18 to Feb. 15, which are poor. Discharge estimated Feb. 22.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 22,300 | 60,200 | 21,200 | 17,200 | 16,700 | 63,200 | 74,900 | 55,200 | 53,000 | 71,600 | 30,700 | 32,500 |
| 2 | 22,300 | 65,000 | 22,300 | 21,300 | 16,700 | 58,400 | 68,800 | 58,800 | 50,200 | 80,500 | 30,000 | 35,500 |
| 3 | 21,800 | 67,400 | 21,800 | 24,500 | 17,200 | 56,000 | 62,800 | 81,100 | 48,500 | 77,900 | 28,600 | 36,300 |
| 4 | 21,800 | 66,200 | 23,300 | 22,900 | 18,200 | 71,600 | 58,000 | 85,000 | 46,800 | 68,000 | 28,600 | 34,000 |
| 5 | 21,800 | 57,800 | 20,700 | 24,000 | 21,300 | 64,400 | 54,600 | 77,200 | 46,000 | 59,800 | 27,200 | 31,700 |
| 6 | 22,900 | 50,200 | 19,200 | 23,400 | 27,500 | 46,800 | 52,600 | 73,300 | 45,200 | 52,800 | 27,900 | 40,300 |
| 7 | 25,100 | 42,600 | 17,700 | 23,400 | 36,300 | 35,500 | 52,600 | 63,600 | 62,000 | 49,800 | 28,600 | 49,300 |
| 8 | 25,100 | 38,500 | 17,700 | 28,900 | 39,500 | 30,300 | 51,600 | 64,800 | 93,500 | 51,800 | 30,000 | 46,800 |
| 9 | 25,700 | 36,100 | 17,200 | 24,500 | 46,000 | 28,200 | 51,600 | 83,700 | 103,000 | 51,800 | 31,400 | 41,100 |
| 10 | 29,600 | 34,500 | 16,700 | 20,800 | 59,600 | 31,000 | 48,900 | 142,000 | 94,800 | 49,800 | 31,400 | 37,100 |
| 11 | 34,000 | 33,700 | 16,700 | 11,400 | 66,800 | 61,900 | 46,400 | 150,000 | 80,500 | 47,100 | 29,300 | 34,700 |
| 12 | 42,700 | 33,700 | 18,200 | 11,800 | 65,600 | 69,100 | 44,800 | 146,000 | 76,600 | 43,000 | 29,300 | 36,300 |
| 13 | 46,000 | 32,900 | 18,700 | 11,100 | 64,400 | 65,500 | 55,600 | 139,000 | 74,000 | 41,300 | 28,600 | 37,900 |
| 14 | 50,200 | 33,700 | 19,200 | 10,700 | 60,800 | 60,700 | 84,000 | 137,000 | 69,200 | 40,500 | 27,900 | 41,100 |
| 15 | 49,300 | 36,100 | 19,700 | 11,100 | 57,200 | 74,200 | 86,600 | 134,000 | 81,800 | 39,700 | 26,600 | 45,200 |
| 16 | 44,400 | 46,800 | 20,200 | 12,600 | 54,000 | 79,400 | 78,800 | 137,000 | 94,800 | 39,700 | 26,000 | 51,000 |
| 17 | 36,300 | 46,800 | 22,300 | 12,220 | 45,200 | 79,400 | 70,000 | 131,000 | 106,000 | 38,900 | 25,400 | 55,000 |
| 18 | 32,500 | 45,200 | 24,000 | 15,600 | 41,900 | 87,200 | 80,100 | 123,000 | 128,000 | 37,300 | 25,400 | 59,600 |
| 19 | 31,700 | 42,700 | 22,900 | 17,000 | 41,100 | 91,100 | 81,400 | 121,000 | 126,000 | 35,700 | 24,800 | 56,000 |
| 20 | 31,000 | 40,300 | 19,700 | 17,400 | 41,900 | 93,700 | 67,600 | 126,000 | 104,000 | 34,100 | 27,200 | 43,500 |
| 21 | 32,500 | 38,700 | 11,800 | 17,400 | 46,000 | 87,200 | 55,600 | 121,000 | 89,600 | 32,500 | 36,000 | 37,100 |
| 22 | 33,200 | 35,500 | 11,800 | 17,000 | 59,400 | 83,300 | 52,600 | 108,000 | 85,700 | 31,800 | 38,400 | 34,700 |
| 23 | 35,500 | 34,000 | 10,200 | 16,000 | 72,800 | 85,900 | 52,600 | 100,000 | 79,200 | 31,800 | 36,800 | 32,500 |
| 24 | 39,500 | 32,500 | 9,550 | 15,200 | 74,000 | 79,400 | 50,600 | 94,100 | 70,400 | 31,000 | 39,200 | 30,300 |
| 25 | 36,300 | 30,300 | 10,600 | 15,200 | 70,400 | 71,600 | 50,600 | 95,400 | 64,400 | 29,300 | 37,600 | 28,200 |
| 26 | 32,500 | 29,600 | 9,900 | 14,400 | 79,200 | 66,700 | 60,400 | 91,500 | 64,400 | 30,100 | 33,700 | 25,700 |
| 27 | 31,700 | 26,900 | 10,200 | 14,000 | 79,200 | 70,300 | 61,600 | 82,400 | 87,000 | 29,300 | 31,400 | 25,700 |
| 28 | 31,000 | 24,500 | 10,600 | 14,900 | 68,000 | 70,300 | 60,400 | 72,000 | 88,300 | 28,600 | 32,200 | 25,100 |
| 29 | 35,500 | 22,900 | 11,000 | 15,800 | ------- | 65,500 | 58,000 | 64,800 | 77,900 | 27,800 | 34,400 | 24,500 |
| 30 | 44,400 | 21,800 | 11,800 | 16,200 | ------- | 63,100 | 56,800 | 57,600 | 70,400 | 27,100 | 33,700 | 24,000 |
| 31 | 53,000 | ------- | 13,000 | 16,700 | ------- | 63,100 | ------- | 55,200 | ------- | 27,100 | 31,400 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 53,000 | 21,800 | 33,600 | 2,070,000 |
| November | 67,400 | 21,800 | 40,200 | 2,390,000 |
| December | 24,000 | 9,550 | 16,800 | 1,030,000 |
| January | 28,900 | 10,700 | 17,200 | 1,060,000 |
| February | 79,200 | 16,700 | 49,500 | 2,750,000 |
| March | 93,700 | 28,200 | 66,300 | 4,080,000 |
| April | 86,660 | 44,800 | 61,000 | 3,630,000 |
| May | 150,000 | 55,200 | 99,100 | 6,090,000 |
| June | 128,000 | 45,200 | 78,700 | 4,680,000 |
| July | 80,500 | 27,100 | 43,100 | 2,650,000 |
| August | 39,200 | 24,800 | 30,600 | 1,880,000 |
| September | 59,600 | 24,000 | 37,800 | 2,250,000 |
| The year | 150,000 | 9,550 | 47,700 | 34,600,000 |

### MISSOURI RIVER AT ISBELL, MO.

LOCATION.—Inclined staff gage in SW. ¼ sec. 34, T. 45 N., R. 9 W., at Isbell. Zero of gage 510.00 feet above mean sea level.

DRAINAGE AREA.—524,000 square miles.

RECORDS AVAILABLE.—December, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 166,000 second-feet June 19 (gage height, 13.9 feet); minimum, 11,000 second-feet Dec. 25, 26 (gage height, 0.5 foot).

1928–1930: Maximum discharge, 399,000 second-feet June 8, 1929 (gage height, 21.1 feet); minimum, that of Dec. 25, 26, 1929.

REMARKS.—Records good except those for period of ice effect, Jan. 24 to Feb. 2, which are poor.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 22,500 | 60,000 | 24,900 | 16,800 | 21,300 | 71,800 | 69,300 | 61,000 | 59,500 | 69,000 | 28,400 | 33,000 |
| 2 | 21,900 | 65,400 | 24,300 | 37,100 | 26,100 | 67,000 | 69,300 | 61,000 | 57,500 | 75,000 | 28,400 | 33,000 |
| 3 | 21,900 | 65,400 | 23,700 | 39,200 | 30,200 | 66,000 | 65,700 | 71,400 | 54,500 | 80,600 | 27,700 | 35,800 |
| 4 | 22,500 | 67,800 | 23,100 | 33,600 | 34,400 | 64,000 | 60,300 | 96,400 | 52,100 | 73,800 | 27,100 | 35,100 |
| 5 | 22,500 | 64,200 | 24,300 | 31,500 | 48,200 | 73,000 | 57,300 | 93,200 | 51,300 | 65,400 | 27,100 | 35,800 |
| 6 | 23,100 | 59,000 | 22,500 | 30,800 | 49,800 | 62,000 | 56,300 | 86,800 | 50,500 | 59,000 | 27,100 | 34,400 |
| 7 | 24,300 | 51,400 | 20,100 | 30,100 | 72,600 | 52,200 | 54,300 | 77,800 | 49,700 | 53,000 | 26,500 | 45,800 |
| 8 | 24,900 | 46,600 | 18,900 | 31,500 | 70,200 | 45,800 | 54,300 | 67,800 | 75,300 | 51,400 | 27,100 | 53,000 |
| 9 | 26,100 | 41,000 | 18,300 | 34,300 | 80,600 | 41,200 | 54,300 | 67,800 | 108,000 | 54,000 | 28,400 | 50,600 |
| 10 | 29,500 | 39,400 | 17,800 | 32,900 | 114,000 | 39,800 | 53,300 | 96,400 | 110,000 | 52,200 | 29,800 | 42,600 |
| 11 | 35,100 | 37,900 | 17,300 | 23,900 | 114,000 | 49,000 | 51,700 | 149,000 | 94,700 | 49,800 | 29,800 | 37,900 |
| 12 | 37,200 | 37,200 | 17,300 | 17,800 | 121,000 | 73,000 | 48,500 | 147,000 | 80,700 | 47,400 | 29,100 | 37,200 |
| 13 | 45,000 | 37,200 | 17,800 | 20,300 | 111,000 | 71,800 | 47,700 | 147,000 | 76,500 | 44,200 | 31,200 | 40,200 |
| 14 | 49,800 | 36,500 | 18,300 | 27,500 | 102,000 | 67,000 | 65,700 | 147,000 | 74,100 | 42,600 | 29,800 | 43,400 |
| 15 | 52,200 | 37,200 | 20,100 | 29,400 | 90,000 | 70,600 | 87,100 | 149,000 | 77,900 | 42,600 | 29,100 | 51,400 |
| 16 | 50,600 | 41,100 | 20,700 | 26,900 | 71,400 | 83,200 | 83,900 | 147,000 | 97,900 | 42,600 | 28,400 | 57,000 |
| 17 | 45,000 | 47,400 | 21,300 | 23,300 | 60,000 | 79,000 | 74,100 | 145,000 | 110,000 | 41,800 | 27,700 | 60,000 |
| 18 | 36,500 | 47,400 | 23,100 | 18,900 | 53,000 | 83,200 | 71,700 | 138,000 | 146,000 | 41,800 | 27,100 | 62,000 |
| 19 | 33,700 | 44,200 | 25,500 | 18,900 | 49,000 | 83,200 | 82,300 | 132,000 | 166,000 | 41,000 | 27,100 | 64,200 |
| 20 | 33,700 | 42,600 | 24,300 | 17,800 | 48,200 | 90,800 | 76,700 | 134,000 | 142,000 | 37,900 | 27,100 | 61,000 |
| 21 | 33,000 | 41,000 | 20,700 | 17,800 | 49,000 | 92,400 | 64,500 | 136,000 | 112,000 | 35,800 | 29,800 | 45,800 |
| 22 | 32,300 | 39,400 | 15,300 | 17,300 | 53,000 | 83,200 | 57,300 | 123,000 | 94,700 | 35,100 | 37,200 | 41,000 |
| 23 | 35,800 | 37,200 | 13,800 | 18,900 | 77,800 | 81,800 | 55,300 | 112,000 | 85,100 | 33,000 | 38,600 | 37,900 |
| 24 | 38,600 | 35,100 | 12,500 | 19,500 | 79,200 | 81,800 | 55,300 | 103,000 | 75,300 | 33,700 | 38,600 | 33,000 |
| 25 | 40,200 | 33,000 | 11,000 | 20,100 | 73,800 | 76,600 | 54,300 | 102,000 | 66,900 | 33,000 | 41,000 | 32,300 |
| 26 | 37,900 | 31,600 | 11,000 | 20,100 | 75,000 | 71,800 | 57,300 | 102,000 | 65,700 | 32,300 | 39,400 | 30,200 |
| 27 | 35,800 | 29,500 | 11,300 | 18,900 | 82,000 | 70,600 | 64,500 | 93,200 | 69,300 | 31,600 | 35,800 | 28,800 |
| 28 | 33,700 | 28,100 | 11,300 | 18,900 | 75,000 | 73,000 | 64,500 | 83,600 | 91,500 | 30,200 | 34,400 | 27,400 |
| 29 | 36,500 | 26,100 | 13,800 | 18,900 | ------- | 71,800 | 64,500 | 80,600 | 86,700 | 28,800 | 35,800 | 26,700 |
| 30 | 42,600 | 23,700 | 13,800 | 18,900 | ------- | 67,000 | 62,300 | 73,800 | 74,100 | 28,100 | 37,200 | 26,100 |
| 31 | 47,400 | ------- | 14,300 | 18,900 | ------- | 68,200 | ------- | 62,000 | ------- | 27,400 | 35,800 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 52,200 | 21,900 | 34,600 | 2,130,000 |
| November | 67,800 | 23,700 | 43,100 | 2,560,000 |
| December | 25,500 | 11,000 | 18,500 | 1,140,000 |
| January | 39,200 | 16,800 | 24,200 | 1,490,000 |
| February | 121,000 | 21,300 | 69,000 | 3,830,000 |
| March | 92,400 | 39,800 | 70,100 | 4,310,000 |
| April | 87,100 | 47,700 | 62,800 | 3,740,000 |
| May | 149,000 | 61,000 | 106,000 | 6,520,000 |
| June | 166,000 | 49,700 | 85,200 | 5,070,000 |
| July | 80,600 | 27,400 | 45,600 | 2,800,000 |
| August | 41,000 | 26,500 | 31,200 | 1,920,000 |
| September | 64,200 | 26,100 | 41,400 | 2,460,000 |
| The year | 166,000 | 11,000 | 52,400 | 38,000,000 |

## MISSOURI RIVER AT HERMANN, MO.

LOCATION.—Inclined gage in SW. ¼ sec. 25, T. 46 N., R. 5 W., at Hermann. Zero of gage 481.34 feet above mean sea level (adjustment of 1929).

DRAINAGE AREA.—528,000 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 164,000 second-feet June 19 (gage height, 15.0 feet); minimum discharge, 15,000 second-feet Dec. 25–28; minimum gage height, 0.95 foot Dec. 11.

1928–1930: Maximum discharge, 407,000 second-feet June 8, 1929 (gage height, 24.6 feet); minimum discharge, that of Dec. 25–28, 1929; minimum gage height, that of Dec. 11, 1929.

Maximum stage known, 35.7 feet in June, 1844.

REMARKS.—Records good except those for periods of ice effect, Dec. 23–31, Jan. 16 to Feb. 17, which are poor. Discharge estimated Dec. 21, Feb. 22. Gage-height record furnished by United States Weather Bureau.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 25,800 | 61,000 | 23,700 | 19,700 | 22,300 | 89,800 | 70,300 | 65,300 | 63,700 | 71,900 | 29,900 | 35,400 |
| 2 | 25,800 | 70,800 | 23,200 | 41,200 | 24,700 | 80,800 | 73,600 | 63,100 | 59,700 | 69,700 | 29,900 | 34,200 |
| 3 | 25,200 | 80,700 | 23,200 | 43,600 | 33,100 | 73,100 | 71,400 | 67,500 | 56,700 | 77,400 | 29,400 | 36,500 |
| 4 | 24,700 | 81,800 | 25,200 | 37,100 | 44,800 | 69,800 | 65,900 | 86,400 | 54,700 | 76,300 | 28,800 | 35,900 |
| 5 | 24,700 | 78,500 | 27,500 | 34,200 | 54,000 | 77,500 | 61,800 | 97,400 | 52,500 | 68,600 | 28,200 | 36,500 |
| 6 | 25,200 | 68,600 | 24,700 | 33,100 | 66,400 | 73,100 | 57,800 | 91,200 | 51,900 | 60,000 | 28,200 | 35,900 |
| 7 | 25,200 | 60,000 | 25,800 | 32,500 | 86,400 | 58,400 | 54,800 | 85,200 | 51,300 | 55,000 | 27,700 | 41,200 |
| 8 | 26,900 | 50,200 | 23,200 | 32,500 | 79,600 | 51,800 | 55,800 | 74,100 | 59,700 | 50,200 | 27,700 | 55,000 |
| 9 | 28,000 | 45,400 | 20,600 | 32,500 | 90,000 | 48,200 | 54,800 | 69,700 | 92,900 | 50,200 | 28,800 | 52,000 |
| 10 | 30,300 | 44,200 | 19,300 | 32,500 | 110,000 | 47,600 | 54,800 | 81,800 | 108,000 | 50,800 | 30,500 | 49,000 |
| 11 | 35,400 | 40,600 | 18,900 | 33,600 | 120,000 | 47,600 | 53,600 | 140,000 | 100,000 | 49,000 | 31,000 | 43,600 |
| 12 | 39,400 | 39,400 | 18,900 | 41,200 | 121,000 | 72,000 | 51,200 | 150,000 | 89,300 | 47,200 | 30,500 | 39,400 |
| 13 | 45,400 | 38,300 | 18,900 | 47,200 | 116,000 | 79,700 | 52,400 | 150,000 | 82,400 | 45,400 | 29,900 | 41,800 |
| 14 | 52,000 | 38,300 | 21,000 | 56,000 | 109,000 | 75,300 | 52,400 | 146,000 | 79,100 | 44,200 | 31,600 | 43,600 |
| 15 | 58,000 | 38,300 | 21,900 | 50,200 | 96,000 | 70,900 | 80,200 | 150,000 | 78,000 | 43,000 | 31,600 | 48,400 |
| 16 | 60,000 | 39,400 | 21,900 | 47,800 | 75,200 | 83,000 | 86,800 | 152,000 | 90,500 | 42,400 | 30,500 | 57,000 |
| 17 | 50,800 | 46,000 | 22,300 | 39,400 | 68,600 | 84,100 | 81,300 | 150,000 | 106,000 | 42,400 | 29,900 | 60,000 |
| 18 | 46,000 | 48,400 | 23,700 | 28,000 | 63,100 | 83,000 | 72,500 | 144,000 | 130,000 | 43,000 | 29,400 | 63,100 |
| 19 | 44,800 | 46,000 | 26,400 | 25,800 | 56,000 | 87,400 | 80,200 | 136,000 | 164,000 | 41,800 | 28,800 | 66,400 |
| 20 | 41,200 | 44,800 | 26,400 | 24,700 | 51,400 | 93,400 | 83,500 | 134,000 | 150,000 | 41,200 | 28,800 | 64,200 |
| 21 | 35,400 | 43,000 | 23,200 | 24,200 | 50,200 | 93,400 | 72,500 | 139,000 | 122,000 | 39,400 | 28,800 | 51,400 |
| 22 | 35,400 | 40,600 | 21,000 | 23,200 | 66,500 | 89,800 | 61,800 | 132,000 | 102,000 | 38,800 | 33,300 | 46,000 |
| 23 | 35,400 | 38,300 | 18,900 | 22,800 | 82,900 | 85,200 | 56,800 | 118,000 | 91,700 | 38,300 | 39,000 | 41,200 |
| 24 | 37,100 | 35,900 | 16,900 | 22,300 | 90,000 | 85,200 | 56,800 | 107,000 | 82,400 | 37,100 | 38,500 | 38,800 |
| 25 | 40,600 | 34,200 | 15,000 | 21,900 | 85,200 | 80,800 | 55,800 | 100,000 | 76,900 | 35,900 | 38,500 | 35,900 |
| 26 | 40,000 | 32,500 | 15,000 | 21,900 | 81,800 | 74,200 | 54,000 | 100,000 | 70,300 | 35,400 | 40,200 | 34,800 |
| 27 | 36,500 | 32,500 | 15,000 | 21,400 | 92,400 | 70,900 | 61,000 | 96,000 | 68,100 | 34,200 | 37,900 | 32,000 |
| 28 | 34,800 | 30,300 | 15,000 | 21,400 | 97,400 | 74,200 | 66,300 | 87,600 | 83,500 | 33,600 | 34,400 | 32,000 |
| 29 | 34,800 | 28,600 | 16,100 | 21,400 | ------- | 74,200 | 66,300 | 80,700 | 89,300 | 32,000 | 35,000 | 29,700 |
| 30 | 40,000 | 28,000 | 16,100 | 21,400 | ------- | 69,800 | 66,300 | 73,000 | 81,300 | 30,800 | 36,700 | 28,000 |
| 31 | 46,600 | ------- | 17,300 | 21,400 | ------- | 67,600 | ------- | 66,400 | ------- | 29,700 | 36,100 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 60,000 | 24,700 | 37,100 | 2,280,000 |
| November | 81,800 | 28,000 | 46,800 | 2,780,000 |
| December | 27,500 | 15,000 | 20,800 | 1,280,000 |
| January | 56,000 | 19,700 | 31,500 | 1,940,000 |
| February | 121,000 | 22,300 | 76,200 | 4,230,000 |
| March | 93,400 | 47,600 | 74,600 | 4,590,000 |
| April | 86,800 | 51,200 | 64,400 | 3,830,000 |
| May | 152,000 | 63,100 | 108,000 | 6,640,000 |
| June | 164,000 | 51,300 | 86,300 | 5,140,000 |
| July | 77,400 | 29,700 | 46,900 | 2,880,000 |
| August | 40,200 | 27,700 | 31,900 | 1,960,000 |
| September | 66,400 | 28,000 | 43,600 | 2,590,000 |
| The year | 164,000 | 15,000 | 55,400 | 40,100,000 |

## GRASSHOPPER CREEK BASIN

### GRASSHOPPER CREEK NEAR DILLON, MONT.

LOCATION.—Chain gage in NW. ¼ sec. 26, T. 8 S., R. 10 W., 5 miles above Barratts and 14 miles above Dillon.

DRAINAGE AREA.—360 square miles.

RECORDS AVAILABLE.—March, 1921, to September, 1930.

EXTREMES.—Maximum discharge during year, 90 second-feet Apr. 25, 26 (gage height, 5.08 feet); no flow July 5–11, Aug. 3.

1921–1930: Maximum discharge, 557 second-feet June 5, 1925 (gage height, 6.52 feet); no flow July 5–11, Aug. 3, 1930.

REMARKS.—Records fair. Numerous small diversions above gage.

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

| Day | May | June | July | Aug. | Sept. | Day | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 43 | 27 | 3.2 | 7.0 | 9.0 | 16 | ------ | 30 | 14 | 11 | 43 | 18 |
| 2 | 35 | 27 | 3.2 | 3.2 | 8.8 | 17 | ------ | 27 | 13 | 16 | 51 | 19 |
| 3 | 30 | 40 | 2.4 | 0 | 8.5 | 18 | 49 | 26 | 7.0 | 11 | 33 | 19 |
| 4 | 34 | 52 | .8 | .8 | 7.0 | 19 | 53 | 22 | 5.0 | 9.0 | 24 | 19 |
| 5 | 57 | 42 | 0 | 3.2 | 13 | 20 | 51 | 21 | 5.0 | 8.0 | 21 | 18 |
| 6 | 45 | 36 | 0 | 8.0 | 16 | 21 | 46 | 18 | 10 | 5.0 | 19 | 19 |
| 7 | 59 | 27 | 0 | 7.0 | 15 | 22 | 46 | 17 | 8.0 | 5.0 | 15 | 16 |
| 8 | 59 | 21 | 0 | 5.0 | 46 | 23 | 43 | 23 | 9.0 | 8.0 | 13 | 21 |
| 9 | 59 | 21 | 0 | .8 | 22 | 24 | 38 | 23 | 19 | 9.0 | 10 | 39 |
| 10 | 64 | 20 | 0 | 16 | 21 | 25 | 90 | 24 | 23 | 9.0 | 5.5 | 33 |
| 11 | 46 | 17 | 0 | 10 | 21 | 26 | 90 | 24 | 21 | 9.0 | 13 | 29 |
| 12 | 38 | 20 | 6.0 | 11 | 19 | 27 | 75 | 21 | 17 | 8.0 | 11 | 27 |
| 13 | 32 | 18 | 24 | 19 | 21 | 28 | 60 | 19 | 11 | 8.0 | 9.0 | 26 |
| 14 | 28 | 22 | 11 | 27 | 19 | 29 | 73 | 18 | 5.5 | 9.0 | 9.0 | 25 |
| 15 | 28 | 16 | 10 | 35 | 18 | 30 | 70 | 18 | 3.6 | 7.0 | 9.0 | 24 |
| | | | | | | 31 | ------ | 18 | ------ | 7.0 | 9.0 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| April 18–30 | 90 | 38 | 60.3 | 1,550 |
| May | 64 | 17 | 32.5 | 2,000 |
| June | 52 | 3.6 | 19.2 | 1,140 |
| July | 24 | 0 | 6.44 | 396 |
| August | 51 | 0 | 14.4 | 885 |
| September | 46 | 7.0 | 20.5 | 1,220 |
| The period | | | | 7,190 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 409 second-feet Apr. 8 (gage height, 2.55 feet); minimum, 19 second-feet July 30 (gage height, 0.53 foot).

1929–30: 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. Discharge estimated Nov. 22–24, Dec. 21, 23, 27, Jan. 8, Feb. 15, Mar. 3, because of ice. Numerous diversions above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 104 | 80 | 118 | 159 | 51 | 92 | 92 | 235 | 128 | 26 | 28 | 44 |
| 2 | 97 | 104 | 114 | 90 | 52 | 95 | 95 | 277 | 105 | 24 | 31 | 36 |
| 3 | 97 | 111 | 137 | 128 | 54 | 92 | 128 | 320 | 128 | 22 | 34 | 35 |
| 4 | 94 | 100 | 118 | 128 | 85 | 88 | 249 | 349 | 92 | 22 | 32 | 34 |
| 5 | 97 | 107 | 118 | 118 | 63 | 92 | 196 | 277 | 82 | 24 | 41 | 47 |
| 6 | 93 | 118 | 114 | 97 | 72 | 88 | 249 | 222 | 76 | 24 | 37 | 51 |
| 7 | 97 | 104 | 111 | 86 | 83 | 85 | 334 | 196 | 64 | 24 | 26 | 49 |
| 8 | 97 | 100 | 111 | ------- | 128 | 88 | 409 | 171 | 105 | 26 | 24 | 57 |
| 9 | 97 | 114 | 114 | ------- | 137 | 85 | 334 | 148 | 102 | 29 | 22 | 70 |
| 10 | 100 | 111 | 118 | ------- | 128 | 85 | 320 | 137 | 88 | 24 | 24 | 60 |
| 11 | 90 | 107 | 148 | ------- | 116 | 85 | 277 | 137 | 95 | 171 | 37 | 57 |
| 12 | 86 | 118 | 128 | ------- | 98 | 105 | 334 | 128 | 70 | 171 | 44 | 55 |
| 13 | 83 | 137 | 118 | ------- | 91 | 105 | 306 | 128 | 60 | 120 | 43 | 51 |
| 14 | 83 | 118 | 128 | ------- | 116 | 109 | 306 | 105 | 51 | 116 | 46 | 44 |
| 15 | 80 | 118 | 137 | ------- | 249 | 113 | 249 | 102 | 44 | 92 | 222 | 41 |
| 16 | 77 | 107 | 128 | ------- | 208 | 102 | 196 | 116 | 41 | 82 | 109 | 40 |
| 17 | 77 | 114 | 118 | ------- | 113 | 95 | 171 | 109 | 28 | 88 | 137 | 30 |
| 18 | 80 | 111 | 114 | ------- | 109 | 88 | 159 | 105 | 34 | 76 | 128 | 31 |
| 19 | 80 | 107 | 111 | ------- | 105 | 109 | 183 | 92 | 24 | 60 | 128 | 29 |
| 20 | 77 | 104 | 114 | ------- | 98 | 105 | 159 | 120 | 24 | 43 | 102 | 31 |
| 21 | 74 | 100 | 102 | ------- | 95 | 98 | 171 | 277 | 24 | 36 | 88 | 30 |
| 22 | 68 | 100 | 90 | ------- | 92 | 116 | 196 | 171 | 43 | 24 | 76 | 34 |
| 23 | 74 | 100 | 97 | ------- | 95 | 102 | 249 | 116 | 53 | 24 | 67 | 49 |
| 24 | 77 | 100 | 104 | ------- | 82 | 95 | 306 | 102 | 55 | 22 | 62 | 57 |
| 25 | 71 | 118 | 118 | ------- | 85 | 102 | 364 | 82 | 47 | 20 | 60 | 57 |
| 26 | 71 | 118 | 128 | ------- | 95 | 105 | 379 | 137 | 41 | 24 | 60 | 57 |
| 27 | 74 | 118 | 121 | ------- | 92 | 88 | 306 | 171 | 29 | 24 | 55 | 55 |
| 28 | 80 | 118 | 114 | ------- | 98 | 95 | 306 | 183 | 28 | 22 | 53 | 43 |
| 29 | 77 | 128 | 118 | ------- | ------- | 92 | 249 | 137 | 26 | 20 | 53 | 46 |
| 30 | 80 | 118 | 114 | ------- | ------- | 102 | 196 | 235 | 24 | 19 | 44 | 44 |
| 31 | 83 | ------- | 114 | ------- | ------- | 88 | ------- | 171 | ------- | 24 | 44 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 104 | 68 | 84.4 | 5,190 |
| November | 137 | 80 | 110 | 6,550 |
| December | 148 | 90 | 117 | 7,190 |
| January 1–7 | 159 | 86 | 115 | 1,600 |
| February | 249 | 51 | 103 | 5,720 |
| March | 116 | 85 | 96.4 | 5,930 |
| April | 409 | 92 | 249 | 14,800 |
| May | 349 | 82 | 170 | 10,500 |
| June | 128 | 24 | 60.4 | 3,590 |
| July | 171 | 19 | 49.1 | 3,020 |
| August | 222 | 22 | 63.1 | 3,880 |
| September | 70 | 29 | 45.5 | 2,710 |

## BIG HOLE RIVER BASIN

### BIG HOLE RIVER NEAR MELROSE, MONT.

LOCATION.—Chain gage in SE. ¼ sec. 27, T. 3 S., R. 9 W., at highway bridge at Brown's siding on Oregon Short Line Railroad, 6 miles south of Melrose.

RECORDS AVAILABLE.—March, 1924, to September, 1930.

EXTREMES.—Maximum discharge during year, 5,690 second-feet Apr. 9 (gage height, 5.70 feet); minimum, 234 second-feet Nov. 25, Dec. 4 (gage height, 1.22 feet).

1924–1930: Maximum stage, 14.0 feet June 10, 1927 (discharge not determined); minimum discharge, 216 second-feet Mar. 26, 1929 (gage height, 1.12 feet).

REMARKS.—Records good except those for periods of ice effect, Dec. 16–22, and for period Aug. 11–15, when discharge was estimated. Some small diversions above station. Flow partly regulated.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 327 | 342 | 265 | 300 | -------- | 428 | 2,690 | 3,870 | 659 | 428 | 327 |
| 2 | 327 | 342 | 265 | 300 | 314 | 449 | 2,350 | 4,220 | 691 | 374 | 314 |
| 3 | 327 | 342 | 254 | 300 | 300 | 569 | 2,860 | 4,400 | 659 | 357 | 314 |
| 4 | 314 | 357 | 234 | 314 | 374 | 691 | 2,860 | 3,030 | 627 | 374 | 300 |
| 5 | 327 | 357 | 288 | -------- | 314 | 760 | 3,030 | 2,690 | 569 | 374 | 314 |
| 6 | 327 | 357 | 314 | -------- | 327 | 1,380 | 3,030 | 2,350 | 598 | 391 | 314 |
| 7 | 357 | 342 | 300 | -------- | 374 | 2,520 | 2,690 | 2,180 | 569 | 374 | 314 |
| 8 | 357 | 327 | 288 | -------- | 374 | 3,540 | 2,690 | 2,860 | 569 | 374 | 357 |
| 9 | 357 | 342 | 300 | -------- | 327 | 5,690 | 2,350 | 2,860 | 543 | 374 | 391 |
| 10 | 391 | 342 | 314 | -------- | 276 | 5,500 | 2,020 | 2,860 | 543 | 374 | 374 |
| 11 | 374 | 357 | 342 | -------- | 254 | 5,120 | 1,860 | 2,860 | 627 | 398 | 374 |
| 12 | 357 | 342 | 342 | -------- | 288 | 4,400 | 1,780 | 2,690 | 798 | 422 | 374 |
| 13 | 327 | 342 | 327 | -------- | 327 | 3,540 | 1,640 | 2,020 | 835 | 446 | 410 |
| 14 | 327 | 327 | 357 | -------- | 342 | 3,370 | 1,640 | 1,710 | 798 | 470 | 391 |
| 15 | 342 | 327 | 342 | -------- | 357 | 2,690 | 1,570 | 1,500 | 691 | 494 | 391 |
| 16 | 342 | 327 | | -------- | 327 | 1,780 | 1,570 | 1,570 | 627 | -------- | 374 |
| 17 | 327 | 327 | | -------- | 342 | 1,710 | 1,570 | 1,570 | 569 | -------- | 374 |
| 18 | 327 | 327 | | -------- | 357 | 1,380 | 1,860 | 1,380 | 569 | -------- | 357 |
| 19 | 327 | 327 | 300 | -------- | 327 | 1,380 | 1,860 | 1,320 | 517 | -------- | 357 |
| 20 | 327 | 327 | | -------- | 327 | 1,640 | 1,860 | 1,210 | 517 | -------- | 314 |
| 21 | 327 | 327 | | -------- | 357 | 1,860 | 2,350 | 1,210 | 470 | -------- | 342 |
| 22 | 327 | 327 | | -------- | 342 | 2,020 | 2,690 | 1,000 | 449 | -------- | 342 |
| 23 | 327 | 314 | 327 | -------- | 357 | 2,180 | 2,350 | 1,060 | 449 | -------- | 410 |
| 24 | 327 | 314 | 327 | -------- | 342 | 2,860 | 2,180 | 1,000 | 449 | -------- | 449 |
| 25 | 327 | 234 | 327 | -------- | 327 | 3,710 | 2,180 | 1,000 | 449 | 391 | 449 |
| 26 | 342 | 300 | 276 | -------- | 342 | 3,710 | 2,020 | 915 | 449 | 357 | 470 |
| 27 | 327 | 300 | 314 | -------- | 342 | 3,710 | 2,020 | 960 | 428 | 342 | 428 |
| 28 | 327 | 288 | 314 | -------- | 327 | 3,540 | 2,180 | 915 | 410 | 357 | 449 |
| 29 | 327 | 276 | 300 | -------- | 342 | 3,030 | 3,030 | 798 | 410 | 342 | 449 |
| 30 | 342 | 276 | 300 | -------- | 357 | 2,690 | 3,200 | 760 | 410 | 327 | 449 |
| 31 | 342 | -------- | 300 | -------- | 374 | -------- | 3,710 | -------- | 410 | 327 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 391 | 314 | 336 | 20,700 |
| November | 357 | 234 | 325 | 19,300 |
| December | 357 | 234 | 304 | 18,700 |
| March 2–31 | 374 | 254 | 335 | 19,900 |
| April | 5,690 | 428 | 2,590 | 154,000 |
| May | 3,710 | 1,570 | 2,310 | 142,000 |
| June | 4,400 | 760 | 1,960 | 117,000 |
| July | 835 | 410 | 560 | 34,400 |
| September | 470 | 300 | 376 | 22,400 |

## 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 east of Boulder.

RECORDS AVAILABLE.—April, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 778 second-feet Apr. 26, 27 (gage height, 8.60 feet); minimum, 2.6 second-feet Aug. 31 (gage height, 5.62 feet).

1929–30: Maximum discharge, 1,480 second-feet May 25, 1929 (gage height, 9.90 feet); minimum, 2.6 second-feet Aug. 31, 1930 (gage height, 5.62 feet).

REMARKS.—Records fair. Discharge interpolated Oct. 6–10. Numerous diversions above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 22 | 24 | 26 | ------- | 31 | 65 | 682 | 346 | 24 | 5.0 | 3.5 |
| 2 | 52 | 24 | 24 | ------- | 31 | 79 | 636 | 346 | 22 | 6.8 | 5.0 |
| 3 | 52 | 27 | 24 | 35 | 35 | 172 | 636 | 346 | 17 | 5.0 | 3.5 |
| 4 | 52 | 26 | 20 | 33 | 35 | 222 | 636 | 346 | 14 | 5.0 | 6.2 |
| 5 | 41 | 33 | 20 | 33 | 35 | 312 | 636 | 312 | 10 | 10 | 5.0 |
| 6 | 40 | 31 | 20 | 41 | 35 | 222 | 590 | 280 | 8.0 | 8.0 | 5.0 |
| 7 | 38 | 31 | 22 | 41 | 33 | 312 | 502 | 250 | 12 | 8.0 | 5.0 |
| 8 | 36 | 29 | 20 | 41 | 33 | 382 | 481 | 196 | 12 | 8.0 | 7.7 |
| 9 | 34 | 29 | 20 | 43 | 33 | 420 | 460 | 172 | 7.4 | 6.8 | 7.1 |
| 10 | 32 | 31 | 24 | 43 | 33 | 502 | 460 | 172 | 8.0 | 9.2 | 7.1 |
| 11 | 31 | 26 | 31 | 41 | 35 | 502 | 460 | 140 | 41 | 8.0 | 6.2 |
| 12 | 31 | 17 | 39 | 39 | 37 | 524 | 420 | 115 | 38 | 8.0 | 15 |
| 13 | 29 | 20 | 39 | 41 | 37 | 524 | 420 | 111 | 26 | 8.0 | 26 |
| 14 | 30 | 24 | 39 | 41 | 35 | 524 | 420 | 97 | 24 | 8.0 | 18 |
| 15 | 31 | 27 | 35 | 43 | 35 | 546 | 401 | 97 | 20 | 10 | 14 |
| 16 | 29 | 27 | 24 | 39 | 35 | 546 | 382 | 85 | 13 | 10 | 22 |
| 17 | 29 | 26 | 22 | 39 | 33 | 546 | 382 | 65 | 13 | 28 | 22 |
| 18 | 29 | 22 | ------- | 33 | 33 | 590 | 401 | 62 | 12 | 22 | 22 |
| 19 | 29 | 24 | ------- | 31 | 33 | 590 | 401 | 55 | 10 | 22 | 22 |
| 20 | 29 | 8 | ------- | 31 | 37 | 636 | 382 | 45 | 7.4 | 20 | 18 |
| 21 | 27 | 10 | ------- | 31 | 37 | 682 | 420 | 50 | 7.4 | 20 | 22 |
| 22 | 27 | 11 | ------- | 31 | 39 | 682 | 420 | 57 | 5.0 | 11 | 24 |
| 23 | 27 | 12 | ------- | 33 | 39 | 682 | 460 | 60 | 7.4 | 7.1 | 31 |
| 24 | 26 | 14 | ------- | 33 | 37 | 730 | 460 | 65 | 7.4 | 5.6 | 62 |
| 25 | 24 | 16 | ------- | 33 | 39 | 778 | 460 | 65 | 7.4 | 5.0 | 41 |
| 26 | 24 | 18 | ------- | 31 | 41 | 778 | 440 | 50 | 7.4 | 5.0 | 36 |
| 27 | 24 | 19 | ------- | 31 | 39 | 778 | 440 | 43 | 5.6 | 5.0 | 41 |
| 28 | 24 | 24 | ------- | 29 | 41 | 682 | 440 | 31 | 5.0 | 5.0 | 41 |
| 29 | 24 | 24 | ------- | ------- | 43 | 636 | 440 | 31 | 5.0 | 5.0 | 41 |
| 30 | 24 | 31 | ------- | ------- | 43 | 682 | 440 | 24 | 5.0 | 5.0 | 26 |
| 31 | 24 | ------- | ------- | ------- | 41 | ------- | 440 | ------- | 6.2 | 2.6 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 52 | 22 | 31.3 | 1,920 |
| November | 33 | 8 | 22.8 | 1,360 |
| December 1–17 | 39 | 20 | 26.4 | 890 |
| February 3–28 | 43 | 29 | 36.2 | 1,870 |
| March | 43 | 31 | 36.2 | 2,230 |
| April | 778 | 65 | 511 | 30,400 |
| May | 682 | 382 | 473 | 29,100 |
| June | 346 | 24 | 137 | 8,150 |
| July | 41 | 5.0 | 13.1 | 806 |
| August | 28 | 2.6 | 9.42 | 579 |
| September | 62 | 3.5 | 20.2 | 1,200 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 195 second-feet June 8 (gage height, 2.50 feet); minimum, 4.0 second-feet Jan. 16–25.

1926–1930; 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 except those for ice-affected period, Nov. 8 to Jan. 31, which are poor. No diversions.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 18 | 13 | | | 7.0 | 9.0 | [a] 7.0 | 38 | 96 | 76 | 27 | 21 |
| 2 | 18 | 13 | | | 7.0 | 8.0 | 5.4 | 44 | 82 | 78 | 55 | 20 |
| 3 | 18 | 13 | 8.7 | 10.0 | 7.0 | 7.0 | [a] 7.9 | 48 | 74 | 76 | 35 | 20 |
| 4 | 18 | 13 | | | 7.2 | 6.6 | [a] 10 | 50 | 67 | 73 | [a] 33 | 20 |
| 5 | 17 | [a] 13 | | | 7.4 | 6.2 | 13 | 47 | 66 | 72 | [a] 31 | 28 |
| 6 | 17 | [a] 12 | | | 7.6 | 5.8 | [a] 16 | 45 | 76 | 67 | [a] 29 | 21 |
| 7 | 16 | [a] 12 | | | 7.8 | 5.6 | 18 | 42 | 98 | 65 | [a] 28 | 22 |
| 8 | 18 | [a] 11 | 13.2 | 6.0 | 8.0 | 5.4 | [a] 18 | 40 | 145 | 65 | [a] 27 | 30 |
| 9 | 21 | | | | 7.5 | 5.2 | [a] 18 | 37 | 145 | 64 | [a] 26 | 23 |
| 10 | 19 | | | | 7.0 | 5.0 | [a] 17 | 35 | 150 | 62 | 25 | 23 |
| 11 | 17 | 9.5 | | | 6.6 | 5.4 | 17 | 34 | 164 | 74 | 28 | 22 |
| 12 | 17 | | | | 6.2 | 5.8 | [a] 17 | 32 | 145 | 74 | 36 | 22 |
| 13 | 16 | | 14.6 | 5.0 | 5.8 | 6.2 | [a] 18 | 33 | 113 | 64 | 29 | 22 |
| 14 | 16 | | | | 6.6 | 6.6 | [a] 19 | 37 | 97 | 57 | 33 | 22 |
| 15 | 16 | | | | 7.4 | 7.0 | 20 | 40 | 98 | 57 | 40 | 22 |
| 16 | 16 | | | | 8.2 | 7.6 | [a] 19 | 40 | 115 | 55 | 38 | 22 |
| 17 | 16 | | | | 9.0 | 8.3 | 18 | 42 | 128 | 51 | 38 | 22 |
| 18 | 16 | | 9.4 | 4.0 | 13 | 9.0 | 21 | 49 | 119 | 49 | 34 | 22 |
| 19 | 14 | | | | 17 | [a] 9.5 | 18 | 53 | 104 | 45 | 33 | 22 |
| 20 | 14 | 7.5 | | | 21 | [a] 10 | 20 | 64 | 106 | 40 | 33 | 22 |
| 21 | 14 | | | | 20 | [a] 10.5 | 25 | 73 | 90 | 37 | 30 | 16 |
| 22 | 14 | | | | 18 | [a] 11 | 30 | 64 | 88 | 35 | 29 | 17 |
| 23 | 13 | | 8.2 | 4.0 | 16 | [a] 11 | 34 | 58 | 84 | 34 | 28 | 24 |
| 24 | 14 | | | | 14 | 11.5 | 43 | 57 | 79 | 32 | 27 | 19 |
| 25 | 14 | | | | 12 | [a] 12 | 42 | 63 | 73 | 32 | 29 | 19 |
| 26 | 14 | | | | 11 | [a] 13 | 41 | 67 | 72 | 30 | 28 | 19 |
| 27 | 14 | | | | 10 | [a] 13 | 43 | 78 | 76 | 30 | 27 | 19 |
| 28 | 12 | 9.5 | 11.7 | 6.0 | 9.0 | [a] 12 | 38 | 98 | 72 | 30 | 26 | 19 |
| 29 | 13 | | | | ------- | 12 | 38 | 119 | 72 | 28 | 25 | 20 |
| 30 | 14 | | | | ------- | [a] 10.3 | 37 | 132 | 71 | 28 | 25 | 20 |
| 31 | 14 | ------- | | | ------- | [a] 8.7 | ------- | 115 | ------- | 28 | 22 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 21 | 12 | 15.7 | 965 |
| November | ------- | ------- | 9.63 | 573 |
| December | ------- | ------- | 11.0 | 676 |
| January | ------- | ------- | 5.84 | 359 |
| February | ------- | ------- | 10.2 | 566 |
| March | ------- | ------- | 8.52 | 524 |
| April | 43 | 5.4 | 22.9 | 1,360 |
| May | 132 | 32 | 57.2 | 3,520 |
| June | 164 | 66 | 98.8 | 5,880 |
| July | 78 | 28 | 51.9 | 3,190 |
| August | 55 | 22 | 30.8 | 1,890 |
| September | 30 | 16 | 21.3 | 1,270 |
| The year | 164 | ------- | 28.7 | 20,800 |

[a] Estimated.

## 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, 1930.

EXTREMES.—Maximum discharge during year, 99 second-feet Apr. 7 (gage height, 2.22 feet); minimum, 12 second-feet July 31 (gage height, 1.12 feet).

1919–1930: 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 good. Numerous small diversions above and below station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | 48 | 54 | ------ | ------ | ------ | 39 | 14 | 25 |
| 2 | 47 | 54 | ------ | ------ | ------ | 36 | 81 | 25 |
| 3 | 44 | 58 | ------ | ------ | ------ | 38 | 36 | 24 |
| 4 | 41 | 54 | ------ | ------ | ------ | 33 | 27 | 24 |
| 5 | 41 | 60 | ------ | ------ | ------ | 36 | 28 | 26 |
| 6 | 43 | 60 | ------ | ------ | ------ | 35 | 42 | 27 |
| 7 | 43 | 60 | 99 | ------ | ------ | 36 | 26 | 27 |
| 8 | 49 | 60 | ------ | ------ | ------ | 39 | 26 | 36 |
| 9 | 57 | 66 | ------ | ------ | ------ | 38 | 22 | 25 |
| 10 | 59 | 66 | ------ | ------ | ------ | 39 | 26 | 35 |
| 11 | 48 | 60 | ------ | ------ | ------ | 64 | 26 | 27 |
| 12 | 46 | 71 | ------ | ------ | ------ | 81 | 32 | 26 |
| 13 | 46 | 71 | ------ | ------ | ------ | 46 | 26 | 26 |
| 14 | 47 | 66 | ------ | ------ | ------ | 38 | 33 | 26 |
| 15 | 47 | ------ | ------ | ------ | ------ | 37 | 33 | 26 |
| 16 | 47 | ------ | ------ | ------ | ------ | 40 | 33 | 27 |
| 17 | 47 | ------ | ------ | ------ | ------ | 38 | 40 | 28 |
| 18 | 45 | ------ | ------ | ------ | 51 | 38 | 38 | 22 |
| 19 | 45 | ------ | ------ | ------ | ------ | 38 | 43 | 23 |
| 20 | 43 | ------ | ------ | ------ | ------ | 34 | 32 | 24 |
| 21 | 45 | ------ | ------ | ------ | ------ | 30 | 31 | 26 |
| 22 | 49 | ------ | ------ | 40 | ------ | 26 | 29 | 29 |
| 23 | 47 | ------ | ------ | ------ | ------ | 23 | 30 | 32 |
| 24 | 46 | ------ | ------ | ------ | ------ | 20 | 31 | 26 |
| 25 | 46 | ------ | ------ | ------ | ------ | 20 | 30 | 28 |
| 26 | 41 | ------ | ------ | ------ | ------ | 18 | 38 | 30 |
| 27 | 43 | ------ | ------ | ------ | ------ | 18 | 30 | 30 |
| 28 | 45 | ------ | ------ | ------ | ------ | 17 | 28 | 26 |
| 29 | 50 | ------ | ------ | ------ | ------ | 15 | 31 | 28 |
| 30 | 52 | ------ | ------ | ------ | ------ | 13 | 23 | 30 |
| 31 | 56 | ------ | ------ | ------ | ------ | 12 | 24 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 59 | 41 | 46.9 | 2,880 |
| November | 71 | 54 | 61.4 | 1,700 |
| July | 81 | 12 | 33.4 | 2,050 |
| August | 81 | 14 | 31.9 | 1,960 |
| September | 36 | 22 | 27.1 | 1,610 |

## MADISON RIVER BASIN

### MADISON RIVER NEAR WEST YELLOWSTONE, MONT.

LOCATION.—Water-stage recorder one-fourth mile upstream from Riverside ranger station and 1½ miles east of West Yellowstone and west boundary of Yellowstone National Park since June 30, 1930. Prior to that date water-stage recorder 250 feet above old Gallatin trail crossing and 3 miles upstream was used.

DRAINAGE AREA.—419 square miles since June 30 and 410 square miles prior to that date. Records June 30 to Sept. 30 were computed on basis of old drainage area since there was no appreciable inflow between the two sites.

RECORDS AVAILABLE.—June, 1913, to September, 1930.

EXTREMES.—Maximum discharge during year, 992 second-feet May 21; minimum, 337 second-feet July 27–29, Sept. 19–21.

1913–1930: Maximum discharge, 1,950 second-feet June 10, 1917; minimum, 284 second-feet Feb. 2, 1924.

REMARKS.—Records good except those for January, which are fair. Records Nov. 23 to Apr. 7 were obtained from observations on staff gage one-fourth mile downstream from recent site. No diversions or regulations.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 415 | 410 | 370 | 370 | 358 | 342 | 405 | 614 | 840 | 382 | 356 | 344 |
| 2 | 406 | 414 | 370 | 370 | 361 | 342 | 418 | 718 | 700 | 389 | 389 | 344 |
| 3 | 396 | 404 | 370 | 370 | 363 | 350 | 432 | 826 | 600 | 376 | 389 | 344 |
| 4 | 387 | 386 | 370 | 370 | 365 | 354 | 445 | 826 | 541 | 370 | 396 | 344 |
| 5 | 378 | 395 | 370 | 370 | 368 | 357 | 445 | 876 | 524 | 363 | 389 | 376 |
| 6 | 378 | 414 | 370 | 370 | 370 | 361 | 445 | 766 | 506 | 363 | 382 | 410 |
| 7 | 378 | 404 | 370 | | 373 | 365 | 445 | 699 | 532 | 350 | 389 | 400 |
| 8 | 404 | 404 | 370 | | 373 | 365 | 437 | 670 | 586 | 356 | 382 | 389 |
| 9 | 471 | 414 | 442 | | 373 | 365 | 428 | 605 | 605 | 356 | 398 | 376 |
| 10 | 433 | 424 | 460 | | 373 | 365 | 420 | 559 | 568 | 363 | 516 | 389 |
| 11 | 414 | 433 | 442 | | 379 | 369 | 428 | 532 | 524 | 417 | 409 | 370 |
| 12 | 395 | 414 | 433 | | 385 | 373 | 437 | 524 | 497 | 450 | 460 | 356 |
| 13 | 386 | 414 | 460 | | 391 | 377 | 450 | 515 | 462 | 382 | 409 | 363 |
| 14 | 386 | 424 | 433 | | 397 | 381 | 460 | 532 | 445 | 363 | 446 | 350 |
| 15 | 378 | 424 | 429 | | 389 | 381 | 470 | 559 | 428 | 356 | 508 | 350 |
| 16 | 378 | 414 | 406 | | 389 | 373 | 440 | 559 | 420 | 356 | 483 | 344 |
| 17 | 386 | 414 | 406 | | 389 | 365 | 400 | 559 | 412 | 370 | 449 | 344 |
| 18 | 395 | 404 | 406 | | 381 | 369 | 387 | 596 | 412 | 356 | 416 | 344 |
| 19 | 395 | 404 | 406 | 360 | 397 | 373 | 454 | 661 | 403 | 356 | 382 | 337 |
| 20 | 386 | 395 | 380 | | 400 | 373 | 490 | 633 | 428 | 350 | 370 | 337 |
| 21 | 378 | 370 | 353 | | 390 | 373 | 525 | 836 | 446 | 344 | 363 | 337 |
| 22 | 378 | 380 | 353 | | 381 | 373 | 550 | 836 | 454 | 350 | 363 | 344 |
| 23 | 370 | 385 | 362 | | 378 | 381 | 570 | 708 | 471 | 350 | 363 | 370 |
| 24 | 370 | 390 | 370 | | 376 | 389 | 590 | 689 | 462 | 350 | 350 | 376 |
| 25 | 378 | 395 | 370 | | 373 | 389 | 605 | 700 | 462 | 350 | 350 | 382 |
| 26 | 386 | 400 | 370 | | 381 | 389 | 624 | 740 | 428 | 344 | 350 | 382 |
| 27 | 404 | 400 | 370 | | 381 | 389 | 651 | 790 | 403 | 337 | 350 | 363 |
| 28 | 462 | 395 | 370 | | 373 | 389 | 624 | 850 | 395 | 337 | 356 | 356 |
| 29 | 404 | 385 | 370 | | ------- | 389 | 605 | 900 | 387 | 337 | 350 | 350 |
| 30 | 395 | 370 | 370 | | ------- | 394 | 577 | 930 | 385 | 344 | 344 | 350 |
| 31 | 404 | ------- | 370 | | ------- | 400 | ------- | 920 | ------- | 344 | 344 | ------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off | |
|---|---|---|---|---|---|---|
| | | | | | Inches | Acre-feet |
| October | 471 | 370 | 396 | 0.966 | 1.11 | 24,300 |
| November | 433 | 370 | 403 | .983 | 1.10 | 24,000 |
| December | 460 | 353 | 390 | .951 | 1.10 | 24,000 |
| January | ---------- | ---------- | 362 | .883 | 1.02 | 22,300 |
| February | 400 | 358 | 379 | .924 | .96 | 21,000 |
| March | 400 | 342 | 373 | .910 | 1.05 | 22,900 |
| April | 651 | 387 | 489 | 1.19 | 1.33 | 29,100 |
| May | 930 | 515 | 701 | 1.71 | 1.97 | 43,100 |
| June | 840 | 385 | 491 | 1.20 | 1.34 | 29,200 |
| July | 450 | 337 | 362 | .883 | 1.02 | 22,300 |
| August | 516 | 344 | 394 | .961 | 1.11 | 24,200 |
| September | 410 | 337 | 361 | .880 | .98 | 21,500 |
| The year | 930 | 337 | 425 | 1.04 | 14.09 | 308,000 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 2,200 second-feet Oct. 1; maximum gage height, 6.63 feet Feb. 1; minimum discharge, 416 second-feet Feb. 27.

1929–30: Maximum discharge, 3,280 second-feet Sept. 4, 1929; maximum gage height, that of Feb. 1, 1930; minimum discharge, that of Feb. 27, 1930.

REMARKS.—Records fair. Discharge estimated Jan. 31 to Mar. 13 because of ice. 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, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2,200 | 1,470 | 1,410 | 1,410 | 1,610 | 750 | 795 | 795 | 940 | 660 | 795 | 620 |
| 2 | 2,090 | 1,470 | 1,410 | 1,410 | 1,540 | 940 | 840 | 795 | 940 | 620 | 795 | 540 |
| 3 | 1,780 | 1,470 | 1,410 | 1,410 | 1,610 | 940 | 840 | 795 | 940 | 705 | 750 | 540 |
| 4 | 1,700 | 1,470 | 1,410 | 1,410 | 1,300 | 840 | 795 | 840 | 890 | 705 | 705 | 540 |
| 5 | 1,610 | 1,470 | 1,410 | 1,410 | 1,240 | 840 | 795 | 890 | 840 | 750 | 795 | 540 |
| 6 | 1,610 | 1,410 | 1,410 | 1,410 | 1,090 | 840 | 750 | 940 | 795 | 795 | 890 | 540 |
| 7 | 1,610 | 1,470 | 1,410 | 1,410 | 940 | 840 | 795 | 1,090 | 795 | 840 | 940 | 540 |
| 8 | 1,540 | 1,410 | 1,410 | ------- | 795 | 840 | 795 | 940 | 840 | 890 | 990 | 540 |
| 9 | 1,540 | 1,410 | 1,410 | ------- | 795 | 1,140 | 795 | 940 | 840 | 890 | 1,090 | 540 |
| 10 | 1,540 | 1,470 | 1,410 | ------- | 840 | 1,090 | 795 | 890 | 890 | 890 | 1,090 | 540 |
| 11 | 1,470 | 1,470 | 1,410 | ------- | 890 | 1,040 | 750 | 795 | 840 | 890 | 1,040 | 540 |
| 12 | 1,470 | 1,540 | 1,410 | ------- | 990 | 1,040 | 750 | 750 | 1,410 | 705 | 990 | 540 |
| 13 | 1,410 | 1,540 | 1,410 | ------- | 840 | 990 | 795 | 750 | 1,350 | 705 | 990 | 540 |
| 14 | 1,410 | 1,610 | 1,470 | ------- | 705 | 705 | 795 | 750 | 1,350 | 705 | 1,090 | 540 |
| 15 | 1,410 | 1,700 | 1,470 | ------- | 1,240 | 660 | 795 | 705 | 990 | 750 | 1,140 | 540 |
| 16 | 1,410 | 1,700 | 1,470 | ------- | 1,350 | 660 | 795 | 705 | 890 | 795 | 1,090 | 540 |
| 17 | 1,410 | 1,780 | 1,470 | ------- | 1,090 | 660 | 750 | 660 | 890 | 795 | 1,140 | 540 |
| 18 | 1,410 | 1,700 | 1,470 | ------- | 660 | 705 | 750 | 705 | 890 | 795 | 1,090 | 620 |
| 19 | 1,410 | 1,610 | 1,470 | ------- | 580 | 750 | 750 | 750 | 890 | 840 | 1,140 | 660 |
| 20 | 1,410 | 1,540 | 1,470 | ------- | 423 | 750 | 750 | 795 | 840 | 890 | 1,090 | 660 |
| 21 | 1,410 | 1,470 | 1,410 | ------- | 458 | 795 | 705 | 795 | 840 | 840 | 990 | 620 |
| 22 | 1,350 | 1,470 | 1,410 | ------- | 458 | 795 | 750 | 940 | 840 | 840 | 795 | 540 |
| 23 | 1,350 | 1,410 | 1,410 | ------- | 540 | 795 | 750 | 940 | 795 | 795 | 795 | 540 |
| 24 | 1,410 | 1,410 | 1,410 | ------- | 620 | 795 | 750 | 1,140 | 795 | 795 | 795 | 500 |
| 25 | 1,470 | 1,410 | 1,410 | ------- | 750 | 795 | 750 | 1,470 | 795 | 795 | 750 | 479 |
| 26 | 1,470 | 1,410 | 1,410 | ------- | 660 | 840 | 795 | 1,350 | 840 | 750 | 620 | 479 |
| 27 | 1,470 | 1,410 | 1,350 | ------- | 416 | 795 | 795 | 1,240 | 660 | 705 | 620 | 479 |
| 28 | 1,470 | 1,410 | 1,350 | ------- | 705 | 795 | 795 | 1,350 | 660 | 750 | 620 | 500 |
| 29 | 1,470 | 1,410 | 1,410 | ------- | ------- | 840 | 795 | 1,470 | 660 | 795 | 620 | 540 |
| 30 | 1,470 | 1,410 | 1,410 | ------- | ------- | 795 | 795 | 1,540 | 660 | 795 | 540 | 540 |
| 31 | 1,470 | ------- | 1,410 | 1,540 | ------- | 795 | ------- | 1,610 | ------- | 795 | 620 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 2,200 | 1,350 | 1,520 | 93,500 |
| November | 1,780 | 1,410 | 1,500 | 89,300 |
| December | 1,470 | 1,350 | 1,420 | 87,300 |
| February | 1,610 | 416 | 898 | 49,900 |
| March | 1,140 | 660 | 834 | 51,300 |
| April | 840 | 705 | 778 | 46,300 |
| May | 1,610 | 660 | 972 | 59,800 |
| June | 1,410 | 660 | 886 | 52,700 |
| July | 890 | 620 | 783 | 48,100 |
| August | 1,140 | 540 | 884 | 54,400 |
| September | 660 | 479 | 547 | 32,500 |

## GALLATIN RIVER BASIN

### GALLATIN RIVER NEAR GALLATIN GATEWAY, MONT.

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

RECORDS AVAILABLE.—June to September, 1930.

EXTREMES.—Maximum discharge during year, 2,940 second-feet June 8 (gage height, 4.22 feet); minimum, 392 second-feet Sept. 21, 29 (gage height, 1.46 feet).

REMARKS.—Records good. One small diversion above station.

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

| Day | June | July | Aug. | Sept. | Day | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ------- | 1,270 | 633 | 440 | 16 | 2,120 | 947 | 727 | 415 |
| 2 | ------- | 1,270 | 695 | 440 | 17 | 2,340 | 947 | 604 | 440 |
| 3 | 2,010 | 1,270 | 727 | 440 | 18 | 2,230 | 905 | 604 | 440 |
| 4 | 1,790 | 1,220 | 760 | 465 | 19 | 2,010 | 868 | 664 | 415 |
| 5 | 1,680 | 1,130 | 990 | 492 | 20 | 1,790 | 795 | 604 | 415 |
| 6 | 1,900 | 1,080 | 795 | 574 | 21 | 1,900 | 760 | 574 | 392 |
| 7 | 2,340 | 1,080 | 695 | 492 | 22 | 1,900 | 727 | 546 | 415 |
| 8 | 2,940 | 990 | 633 | 518 | 23 | 2,010 | 695 | 546 | 415 |
| 9 | 2,820 | 947 | 604 | 492 | 24 | 2,010 | 727 | 518 | 415 |
| 10 | 2,820 | 1,040 | 604 | 492 | 25 | 1,680 | 760 | 546 | 440 |
| 11 | 2,940 | 1,570 | 727 | 465 | 26 | 1,570 | 760 | 518 | 440 |
| 12 | 2,820 | 1,570 | 760 | 465 | 27 | 1,570 | 695 | 518 | 415 |
| 13 | 2,460 | 1,220 | 633 | 465 | 28 | 1,470 | 664 | 492 | 415 |
| 14 | 2,120 | 1,130 | 664 | 440 | 29 | 1,370 | 633 | 492 | 392 |
| 15 | 2,010 | 990 | 795 | 415 | 30 | 1,220 | 633 | 465 | 415 |
| | | | | | 31 | ------- | 604 | 440 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| June 3–30 | 2,940 | 1,220 | 2,070 | 115,000 |
| July | 1,570 | 604 | 964 | 59,300 |
| August | 990 | 440 | 631 | 38,800 |
| September | 574 | 392 | 446 | 26,500 |
| The period | ---------- | ---------- | ---------- | 240,000 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 2,820 second-feet May 31 (gage height, 5.36 feet); minimum, 245 second-feet July 7–10 (gage height, 2.50 feet).

1928–1930: Maximum discharge, 4,570 second-feet June 17, 1929 (gage height 6.44 feet); minimum, that of July 7–10, 1930.

REMARKS.—Records good except those for ice periods in December, January, February, which are fair. Numerous diversions above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 638 | 790 | 790 | 665 | 665 | 665 | 665 | 1,310 | 1,870 | 370 | 305 | 560 |
| 2 | 638 | 790 | 758 | 665 | 695 | 665 | 725 | 1,410 | 1,750 | 325 | [a] 365 | 560 |
| 3 | 638 | 790 | 725 | 665 | 665 | 665 | 828 | 1,870 | 1,410 | 305 | [a] 425 | 535 |
| 4 | 638 | 790 | 695 | 695 | 665 | 665 | 865 | [a] 1,870 | 1,120 | [a] 295 | 485 | 535 |
| 5 | 638 | 758 | 695 | 665 | 695 | 665 | 790 | 1,870 | 865 | 285 | [a] 498 | 535 |
| 6 | 638 | 725 | 758 | 638 | 695 | 665 | 865 | 1,630 | 790 | 285 | 510 | 560 |
| 7 | 638 | 790 | [a] 742 | 585 | 695 | 665 | 905 | 1,520 | 905 | 245 | 510 | 560 |
| 8 | 665 | 758 | 725 | 560 | 725 | 665 | 945 | 1,410 | 1,410 | [a] 245 | 485 | 610 |
| 9 | 695 | 725 | 725 | 535 | 725 | 610 | 945 | 1,310 | 1,630 | 245 | 460 | 610 |
| 10 | 725 | 790 | 758 | [a] 522 | 725 | 665 | 988 | 1,210 | 1,630 | 245 | 460 | 610 |
| 11 | 725 | 828 | 790 | 510 | 725 | 695 | 905 | 1,120 | 1,750 | 285 | 510 | [a] 610 |
| 12 | 665 | 725 | 790 | 510 | 695 | 790 | 945 | 988 | 1,750 | 725 | 510 | 610 |
| 13 | 665 | 725 | 828 | 460 | 638 | 790 | 988 | 865 | [a] 1,330 | [a] 618 | 510 | 610 |
| 14 | 665 | 725 | 828 | 438 | 638 | 725 | 988 | 828 | 905 | 510 | 510 | 610 |
| 15 | 665 | 725 | 828 | 438 | 665 | 695 | 988 | 758 | 865 | 510 | 560 | 610 |
| 16 | 665 | 758 | 790 | 415 | 725 | 695 | 1,080 | 725 | 790 | 460 | 560 | 610 |
| 17 | 638 | 758 | 725 | 415 | 1,030 | 638 | [a] 992 | 665 | [a] 774 | 460 | [a] 572 | 610 |
| 18 | 695 | 790 | 695 | 438 | 1,410 | 638 | 905 | 665 | 758 | 460 | 585 | 610 |
| 19 | 665 | 758 | 695 | 460 | 1,120 | 695 | 945 | 725 | 665 | 415 | 585 | 560 |
| 20 | 665 | 665 | 695 | 460 | 1,030 | 790 | 945 | 665 | 665 | 415 | 585 | 610 |
| 21 | 665 | 665 | 695 | 460 | 905 | 695 | 945 | 1,210 | 585 | 370 | 585 | [a] 610 |
| 22 | 665 | 665 | [a] 695 | 485 | [a] 848 | 758 | 1,030 | 1,410 | 585 | 325 | 585 | 610 |
| 23 | 665 | 665 | 695 | 485 | 790 | [a] 742 | 1,210 | 945 | 585 | 325 | 560 | 638 |
| 24 | 638 | 665 | 725 | 510 | 790 | 725 | 1,410 | [a] 945 | 610 | 285 | 560 | 665 |
| 25 | 665 | 725 | 725 | 535 | 725 | 695 | 1,630 | [a] 945 | 610 | 325 | 560 | 665 |
| 26 | 665 | 725 | 725 | 535 | 665 | 790 | [a] 1,630 | 945 | 560 | [a] 315 | 585 | [a] 665 |
| 27 | 665 | 725 | 695 | 560 | 665 | 665 | [a] 1,630 | 1,030 | 510 | 305 | 560 | 665 |
| 28 | 725 | 790 | 680 | 585 | 665 | 665 | 1,630 | 1,210 | 485 | 305 | [a] 560 | 665 |
| 29 | 790 | 790 | 665 | 610 | ------- | 638 | 1,410 | 1,750 | 460 | 305 | 560 | 665 |
| 30 | 790 | 790 | 695 | 610 | ------- | 725 | 1,310 | 2,250 | 460 | 285 | 535 | 665 |
| 31 | 790 | ------- | 680 | 638 | ------- | 665 | -------- | 2,820 | -------- | 285 | [a] 548 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 790 | 638 | 677 | 41,600 |
| November | 828 | 665 | 746 | 44,400 |
| December | 828 | 680 | 733 | 45,100 |
| January | 695 | 415 | 540 | 33,200 |
| February | 1,410 | 638 | 774 | 43,000 |
| March | 790 | 610 | 694 | 42,700 |
| April | 1,630 | 665 | 1,070 | 63,700 |
| May | 2,820 | 665 | 1,250 | 76,900 |
| June | 1,870 | 460 | 969 | 57,700 |
| July | 725 | 245 | 359 | 22,100 |
| August | 585 | 305 | 522 | 32,100 |
| September | 665 | 535 | 608 | 36,200 |
| The year | 2,820 | 245 | 744 | 539,000 |

[a] Interpolated.

## PRICKLY PEAR CREEK BASIN

### PRICKLY PEAR CREEK NEAR CLANCY, MONT.

LOCATION.—Staff gage in SW. ¼ sec. 34, T. 9 N., R. 3 W., one-fourth 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, 1930. July, 1908, to June, 1909, at site 1 mile downstream.

EXTREMES.—Maximum discharge during year, 189 second-feet Apr. 22, 24, 26, 27 (gage height, 2.1 feet); minimum, 17 second-feet at various times during August and September (gage height, 0.70 foot).

1910–1916, 1921–1930: Maximum discharge, 492 second-feet June 3, 1927 (gage height, 3.8 feet); minimum, 9.3 second-feet Sept. 9, 1924 (gage height, 0.71 foot).

REMARKS.—Records for periods Oct. 1 to Nov. 30, Mar. 6 to July 16, fair; others good. Several diversions above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 34 | 27 | ------- | 44 | 138 | 85 | 39 | 20 | 20 |
| 2 | 32 | 27 | ------- | 51 | 138 | 85 | 38 | 23 | 18 |
| 3 | 30 | 27 | ------- | 81 | 154 | 99 | 32 | 22 | 17 |
| 4 | 29 | 27 | ------- | 99 | 146 | 92 | 33 | 23 | 17 |
| 5 | 29 | 28 | ------- | 85 | 122 | 68 | 31 | 29 | 17 |
| 6 | 29 | 27 | 39 | 99 | 130 | 70 | 30 | 27 | 17 |
| 7 | 28 | 27 | 35 | 122 | 114 | 70 | 30 | 24 | 32 |
| 8 | 27 | 27 | 32 | 130 | 99 | 72 | 32 | 22 | 19 |
| 9 | 27 | 26 | 30 | 130 | 99 | 73 | 30 | 23 | 22 |
| 10 | 27 | 27 | 31 | 130 | 92 | 64 | 31 | 23 | 22 |
| 11 | 27 | 27 | 36 | 122 | 85 | 53 | 44 | 23 | 27 |
| 12 | 27 | 27 | 43 | 122 | 92 | 49 | 55 | 23 | 22 |
| 13 | 27 | 26 | 34 | 138 | 85 | 47 | 44 | 24 | 22 |
| 14 | 26 | 25 | 34 | 138 | 85 | 47 | 38 | 23 | 22 |
| 15 | 26 | 24 | 32 | 138 | 92 | 47 | 34 | 23 | 21 |
| 16 | 24 | 25 | 30 | 122 | 92 | 46 | 32 | 23 | 19 |
| 17 | 24 | 26 | 35 | 122 | 85 | 47 | 31 | 22 | 19 |
| 18 | 23 | 25 | 36 | 130 | 84 | 47 | 27 | 22 | 19 |
| 19 | 23 | 24 | 50 | 106 | 85 | 45 | 26 | 22 | 19 |
| 20 | 23 | 22 | 42 | 114 | 85 | 46 | 27 | 23 | 18 |
| 21 | 23 | 20 | 44 | 154 | 106 | 44 | 26 | 23 | 20 |
| 22 | 23 | 27 | 54 | 189 | 106 | 47 | 24 | 22 | 19 |
| 23 | 24 | 27 | 41 | 180 | 92 | 53 | 22 | 23 | 32 |
| 24 | 23 | 26 | 42 | 189 | 84 | 54 | 23 | 17 | 28 |
| 25 | 23 | 24 | 44 | 180 | 85 | 49 | 22 | 18 | 28 |
| 26 | 23 | 24 | 45 | 189 | 84 | 45 | 20 | 18 | 26 |
| 27 | 24 | 23 | 38 | 189 | 92 | 43 | 20 | 17 | 26 |
| 28 | 26 | 22 | 42 | 163 | 92 | 41 | 20 | 17 | 26 |
| 29 | 26 | 21 | 46 | 138 | 85 | 39 | 20 | 18 | 24 |
| 30 | 27 | 21 | 46 | 130 | 81 | 39 | 20 | 18 | 23 |
| 31 | 27 | ------- | 57 | ------- | 82 | ------- | 20 | 17 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| 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 | 81 | 99.7 | 6,130 |
| June | 99 | 39 | 56.9 | 3,390 |
| July | 55 | 20 | 29.7 | 1,830 |
| August | 29 | 17 | 21.7 | 1,330 |
| September | 32 | 17 | 21.7 | 1,290 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 158 second-feet May 1 (gage height, 1.76 feet); no flow at various times in October and November.

1915–1930: Maximum discharge, 948 second-feet May 15, 1917 (gage height, 4.87 feet); no flow at various times during 1928–29.

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

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Apr. | May | June | July | Aug. | Sept. | Day | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ------ | 137 | 41 | 1.6 | 0.4 | 0.3 | 16 | 18 | 71 | 11 | 0.9 | 0.4 | 0.4 |
| 2 | ------ | 132 | 39 | 1.3 | .4 | .2 | 17 | 16 | 71 | 10 | .7 | .4 | .4 |
| 3 | ------ | 123 | 40 | 1.1 | .3 | .2 | 18 | 16 | 92 | 12 | .6 | .3 | .4 |
| 4 | ------ | 103 | 34 | .9 | .3 | .3 | 19 | 17 | 68 | 11 | .6 | .4 | .4 |
| 5 | ------ | 96 | 29 | .9 | .4 | .3 | 20 | 20 | 54 | 9.4 | .5 | .3 | .4 |
| 6 | ------ | 79 | 25 | .7 | .3 | .4 | 21 | 23 | 53 | 6.5 | .5 | .3 | 1.4 |
| 7 | ------ | 68 | 22 | .5 | .3 | .8 | 22 | 35 | 51 | 6.2 | .5 | .3 | 1.9 |
| 8 | ------ | 57 | 23 | .4 | .3 | .4 | 23 | 56 | 49 | 7.3 | .4 | .3 | .9 |
| 9 | ------ | 51 | 21 | .3 | .2 | .5 | 24 | 88 | 47 | 6.2 | .4 | .2 | .9 |
| 10 | ------ | 49 | 18 | .3 | .3 | 1.5 | 25 | 128 | 47 | 5.8 | .4 | .2 | .8 |
| 11 | ------ | 53 | 15 | .4 | .3 | 2.2 | 26 | 128 | 49 | 4.7 | .4 | .2 | .8 |
| 12 | 22 | 50 | 13 | 1.3 | .3 | .8 | 27 | 137 | 44 | 4.2 | .3 | .2 | .8 |
| 13 | 16 | 54 | 13 | 1.2 | .3 | .6 | 28 | 123 | 49 | 4.2 | .3 | .2 | .8 |
| 14 | 20 | 58 | 12 | .9 | .4 | .5 | 29 | 118 | 51 | 3.8 | .3 | .2 | .9 |
| 15 | 25 | 61 | 12 | .9 | .6 | .4 | 30 | 128 | 50 | 3.5 | .3 | .2 | .9 |
| | | | | | | | 31 | ------ | 46 | ------ | .3 | .2 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| April 11–30 | 137 | 16 | 58.4 | 2,320 |
| May | 137 | 44 | 66.5 | 4,090 |
| June | 41 | 3.5 | 15.4 | 916 |
| July | 1.6 | .3 | .65 | 40 |
| August | .6 | .2 | .30 | 18 |
| September | 2.2 | .2 | .72 | 43 |

NOTE.—No flow during October and November.

### 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, 1930.

EXTREMES.—Maximum discharge during year, 257 second-feet Apr. 25 (gage height, 2.25 feet); no flow June 29, July 2, July 22 to Sept. 30.

1908–1930: 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 periods of ice effect, Nov. 21–23, Dec. 17–27, Jan. 7–26, which are fair. Diversions for irrigation and city water supply of Helena above station.

*Daily and monthly discharge in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 4.4 | 4.4 | 4.0 | 4.7 | 12 | 12 | 108 | 36 | 0.1 |
| 2 | | 4.0 | 2.6 | 3.5 | 10 | 11 | 16 | 122 | 33 | 0 |
| 3 | | 4.4 | 2.9 | 5.1 | 8.7 | 12 | 20 | 140 | 37 | .1 |
| 4 | 1.5 | 7.3 | 2.9 | 5.5 | 8.7 | 14 | 24 | 127 | 36 | .1 |
| 5 | | 7.3 | 2.9 | 4.4 | 16 | 15 | 24 | 101 | 30 | .3 |
| 6 | | 7.3 | 2.9 | 4.6 | 14 | 14 | 30 | 94 | 22 | .3 |
| 7 | 1.8 | 7.0 | 2.4 | 4.9 | 9.1 | 12 | 41 | 76 | 17 | .3 |
| 8 | 1.8 | 7.0 | 3.1 | 4.3 | 22 | 12 | 53 | 68 | 16 | .4 |
| 9 | 2.1 | 7.3 | 3.9 | 3.7 | 13 | 12 | 58 | 55 | 16 | .4 |
| 10 | 2.4 | 7.0 | 4.7 | 3.5 | 8.2 | 12 | 62 | 47 | 14 | .4 |
| 11 | 2.6 | 6.2 | 4.7 | 3.2 | 9.1 | 12 | 60 | 44 | 14 | .4 |
| 12 | 3.2 | 6.6 | 5.5 | 2.9 | 7.0 | 17 | 66 | 43 | 12 | .4 |
| 13 | 3.5 | 7.3 | 5.5 | 2.9 | 6.2 | 15 | 72 | 43 | 13 | .4 |
| 14 | 3.5 | 7.0 | 6.6 | 2.9 | 6.2 | 12 | 90 | 41 | 13 | .4 |
| 15 | 3.5 | 6.7 | 10 | 2.9 | 6.6 | 12 | 94 | 40 | 11 | .4 |
| 16 | 3.5 | 6.4 | 10 | 2.9 | 16 | 12 | 74 | 40 | 9.1 | .4 |
| 17 | 4.4 | 6.2 | 9.0 | 2.6 | 17 | 7.7 | 68 | 46 | 4.7 | .4 |
| 18 | 5.5 | 6.2 | 8.0 | 2.6 | 17 | 10 | 66 | 50 | 4.4 | .4 |
| 19 | 6.2 | 6.2 | 7.0 | 2.4 | 16 | 18 | 77 | 47 | 5.1 | .4 |
| 20 | 6.2 | 3.5 | 6.0 | 2.1 | 15 | 14 | 83 | 51 | 4.7 | .4 |
| 21 | 6.2 | 3.0 | 5.0 | 2.1 | 12 | 12 | 92 | 64 | 4.4 | .1 |
| 22 | 6.2 | 3.5 | 5.4 | 2.4 | 12 | 13 | 97 | 58 | 4.0 | 0 |
| 23 | 6.2 | 4.5 | 5.8 | 2.4 | 16 | 10 | 122 | 50 | 3.7 | 0 |
| 24 | 5.8 | 5.5 | 6.0 | 2.6 | 16 | 9.6 | 152 | 47 | 2.4 | 0 |
| 25 | 5.1 | 5.1 | 6.2 | 2.9 | 14 | 10 | 215 | 46 | 2.4 | 0 |
| 26 | 4.0 | 4.7 | 4.7 | 3.2 | 14 | 12 | 174 | 43 | 1.8 | 0 |
| 27 | 3.5 | 4.7 | 4.0 | 3.7 | 12 | 11 | 180 | 38 | 1.6 | 0 |
| 28 | 3.7 | 4.7 | 4.0 | 3.7 | 12 | 11 | 155 | 39 | 1.0 | 0 |
| 29 | 4.4 | 4.7 | 4.0 | 3.5 | -------- | 12 | 124 | 39 | 0 | 0 |
| 30 | 4.4 | 4.4 | 3.5 | 3.5 | -------- | 14 | 105 | 39 | .1 | 0 |
| 31 | 4.4 | -------- | 3.7 | 4.0 | -------- | 12 | -------- | 38 | -------- | 0 |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 6.2 | -------- | 3.65 | 224 |
| November | 7.3 | 3.0 | 5.67 | 337 |
| December | 10 | 2.4 | 5.07 | 312 |
| January | 5.5 | 2.1 | 3.38 | 208 |
| February | 22 | 4.7 | 12.1 | 672 |
| March | 18 | 7.7 | 12.3 | 756 |
| April | 215 | 12 | 83.5 | 4,970 |
| May | 140 | 38 | 60.1 | 3,700 |
| June | 37 | 0 | 12.3 | 732 |
| July | .4 | 0 | .21 | 13 |
| The year | 215 | 0 | 16.5 | 11,900 |

NOTE.—No flow during August and September.

## LITTLE PRICKLY PEAR CREEK BASIN

### LITTLE PRICKLY PEAR CREEK NEAR MARYSVILLE, MONT.

LOCATION.—Staff gage in SW. ¼ sec. 18, T. 12 N., R. 6 W., one-fourth mile below mouth of Deadman Creek and 6 miles northwest of Marysville.

DRAINAGE AREA.—69 square miles.

RECORDS AVAILABLE.—May, 1913, to September, 1930. April to May, 1913, at site one-fourth mile upstream. May, 1909, to December, 1911, at site above mouth of Deadman Creek.

EXTREMES.—Maximum discharge during year, 121 second-feet Apr. 25 (gage height, 1.60 feet); minimum, 6.5 second-feet Mar. 1–11, 18–20, 27–30, Sept. 28–30 (gage height, 0.50 foot).

1909–1911, 1913–1930: Maximum discharge, 454 second-feet May 25, 26, 1917 (gage height, 3.8 feet); minimum, 1.2 second-feet Mar. 7–13, 1911.

REMARKS.—Record for period Oct. 1 to Dec. 7, fair; for other periods, good. Some diversions above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13 | 11 | 8.6 | ------- | 7.0 | 83 | 39 | 21 | 14 | 9.0 |
| 2 | 13 | 11 | 8.6 | 6.5 | 8.0 | 80 | 35 | 19 | 14 | 9.0 |
| 3 | 13 | 11 | 8.6 | 6.5 | 11 | 88 | 37 | 19 | 14 | 9.0 |
| 4 | 13 | 11 | 8.6 | 6.5 | 15 | 88 | 37 | 19 | 14 | 9.0 |
| 5 | 13 | 11 | 8.6 | 6.5 | 16 | 83 | 36 | 19 | 14 | 9.0 |
| 6 | 13 | 11 | 8.6 | 6.5 | 18 | 77 | 35 | 19 | 13 | 9.0 |
| 7 | 13 | 11 | 8.6 | 6.5 | 22 | 67 | 34 | 19 | 13 | 10 |
| 8 | 13 | 11 | ------- | 6.5 | 26 | 60 | 33 | 19 | 13 | 10 |
| 9 | 13 | 11 | ------- | 6.5 | 28 | 56 | 33 | 19 | 13 | 10 |
| 10 | 13 | 10 | ------- | 6.5 | 29 | 52 | 32 | 18 | 13 | 10 |
| 11 | 13 | 10 | ------- | 6.5 | 31 | 49 | 33 | 16 | 13 | ------- |
| 12 | 13 | 10 | ------- | 7.5 | 37 | 46 | 33 | 16 | 13 | ------- |
| 13 | 13 | 10 | ------- | 7.5 | 46 | 44 | 33 | 16 | 12 | ------- |
| 14 | 13 | 10 | ------- | 7.5 | 55 | 43 | 33 | 16 | 12 | ------- |
| 15 | 13 | 10 | ------- | 7.5 | 60 | 42 | 33 | 16 | 12 | ------- |
| 16 | 13 | 10 | ------- | 7.5 | 56 | 42 | 32 | 15 | 12 | ------- |
| 17 | 13 | 10 | ------- | 7.5 | 50 | 43 | 32 | 15 | 12 | ------- |
| 18 | 13 | 10 | ------- | 6.5 | 47 | 43 | 32 | 15 | 12 | ------- |
| 19 | 13 | 10 | ------- | 6.5 | 50 | 43 | 30 | 15 | 12 | ------- |
| 20 | 13 | 10 | ------- | 6.5 | 57 | 43 | 29 | 15 | 11 | ------- |
| 21 | 12 | 10 | ------- | 7.0 | 58 | 43 | 29 | 15 | 11 | 8.5 |
| 22 | 12 | 10 | ------- | 7.0 | 67 | 43 | 27 | 15 | 11 | 6.5 |
| 23 | 12 | 10 | ------- | 7.0 | 77 | 42 | 26 | 15 | 11 | 11 |
| 24 | 12 | 10 | ------- | 7.0 | 101 | 40 | 26 | 15 | 11 | 8.5 |
| 25 | 12 | 9.2 | ------- | 7.0 | 121 | 39 | 26 | 15 | 11 | 8.5 |
| 26 | 12 | 9.2 | ------- | 7.0 | 119 | 37 | 24 | 15 | 11 | 8.5 |
| 27 | 12 | 9.2 | ------- | 6.5 | 114 | 33 | 24 | 14 | 11 | 8.5 |
| 28 | 12 | 8.6 | ------- | 6.5 | 107 | 33 | 23 | 14 | 9.0 | 6.5 |
| 29 | 12 | 8.6 | ------- | 6.5 | 96 | 33 | 23 | 14 | 9.0 | 6.5 |
| 30 | 12 | 8.6 | ------- | 6.5 | 86 | 31 | 21 | 14 | 9.0 | 6.5 |
| 31 | 11 | ------- | ------- | 6.5 | ------- | 32 | ------- | 14 | 9.0 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 13 | 11 | 12.6 | 775 |
| November | 11 | 8.6 | 10.1 | 601 |
| December 1–7 | 8.6 | 8.6 | 8.60 | 119 |
| March 2–31 | 7.5 | 6.5 | 6.80 | 405 |
| April | 121 | 7.0 | 53.8 | 3,200 |
| May | 88 | 31 | 50.9 | 3,130 |
| June | 39 | 21 | 30.7 | 1,830 |
| July | 21 | 14 | 16.3 | 1,000 |
| August | 14 | 9.0 | 11.9 | 732 |

## DEARBORN RIVER BASIN

### DEARBORN RIVER NEAR CLEMONS, MONT.

LOCATION.—Wire gage 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, 1930. May, 1908, to December, 1911, at station half a mile above mouth of Falls Creek.

EXTREMES.—Maximum discharge during year, 625 second-feet Apr. 25 (gage height, 2.72 feet); minimum, 18 second-feet Aug. 27–31 (gage height, 0.91 foot).

1921–1923, 1929–30: 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.—Several small diversions above gage. Records good except those for periods Oct. 1–11, Feb. 19 to Mar. 13, and for estimated periods, July 5–16, Aug. 10–14, 16–23.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 47 | 46 | 35 | 52 | 25 | 37 | 68 | 397 | 448 | 58 | 29 | ------ |
| 2 | 47 | 46 | 36 | 50 | 27 | 27 | 55 | 422 | 422 | 58 | 29 | ------ |
| 3 | 47 | 41 | 34 | 49 | 29 | 27 | 76 | 503 | 448 | 58 | 27 | ------ |
| 4 | 46 | 38 | 36 | 49 | 30 | 34 | 106 | 562 | 374 | 58 | 27 | ------ |
| 5 | 46 | 41 | 34 | 46 | 36 | 34 | 116 | 422 | 328 | 56 | 27 | ------ |
| 6 | 60 | 44 | 34 | 29 | 29 | 37 | 155 | 422 | 307 | 54 | 27 | ------ |
| 7 | 59 | 41 | 36 | ------ | 29 | 42 | 199 | 328 | 328 | 52 | 27 | ------ |
| 8 | 59 | 41 | 25 | ------ | 32 | 42 | 307 | 328 | 397 | 50 | 27 | ------ |
| 9 | 57 | 41 | 22 | ------ | 35 | 38 | 350 | 307 | 374 | 48 | 27 | 34 |
| 10 | 56 | 36 | 22 | ------ | 29 | 38 | 350 | 267 | 374 | 46 | 27 | ------ |
| 11 | 55 | 29 | 37 | ------ | 29 | 37 | 350 | 267 | 374 | 44 | 26 | ------ |
| 12 | 55 | 27 | 36 | ------ | 29 | 22 | 374 | 287 | 328 | 42 | 26 | ------ |
| 13 | 53 | 30 | 27 | ------ | 29 | 21 | 397 | 287 | 248 | 40 | 26 | ------ |
| 14 | 52 | 28 | 64 | ------ | 32 | 36 | 448 | 328 | 227 | 38 | 25 | ------ |
| 15 | 52 | 32 | 76 | ------ | 29 | 41 | 374 | 397 | 183 | 36 | 25 | ------ |
| 16 | 46 | 36 | 52 | ------ | 29 | 41 | 350 | 422 | 167 | 35 | 24 | ------ |
| 17 | 41 | 35 | 50 | ------ | 29 | 41 | 374 | 448 | 170 | 34 | 24 | ------ |
| 18 | 45 | 36 | 49 | ------ | 33 | 44 | 328 | 448 | 161 | 32 | 23 | ------ |
| 19 | 49 | 35 | 49 | ------ | 36 | 44 | 328 | 448 | 155 | 32 | 23 | ------ |
| 20 | 49 | 27 | 42 | ------ | 40 | 44 | 328 | 422 | 146 | 32 | 22 | ------ |
| 21 | 49 | 23 | 41 | ------ | 45 | 44 | 350 | 503 | 131 | 32 | 22 | ------ |
| 22 | 49 | 22 | 42 | ------ | 44 | 36 | 397 | 422 | 126 | 29 | 21 | ------ |
| 23 | 49 | 22 | 44 | ------ | 45 | 38 | 476 | 374 | 113 | 27 | 21 | ------ |
| 24 | 49 | 24 | 49 | ------ | 45 | 38 | 562 | 350 | 100 | 27 | 20 | ------ |
| 25 | 49 | 30 | 52 | ------ | 36 | 36 | 625 | 350 | 96 | 29 | 20 | ------ |
| 26 | 49 | 34 | 49 | ------ | 34 | 38 | 594 | 374 | 90 | 29 | 20 | ------ |
| 27 | 49 | 34 | 49 | ------ | 33 | 41 | 594 | 350 | 79 | 29 | 18 | ------ |
| 28 | 46 | 33 | 49 | ------ | 36 | 36 | 532 | 350 | 83 | 29 | 18 | ------ |
| 29 | 46 | 30 | 50 | ------ | ------ | 41 | 476 | 448 | 72 | 29 | 18 | ------ |
| 30 | 46 | 33 | 52 | ------ | ------ | 44 | 422 | 422 | 63 | 29 | 18 | ------ |
| 31 | 48 | ------ | 49 | ------ | ------ | 50 | ------ | 422 | ------ | 29 | 18 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 60 | 41 | 50.0 | 3,070 |
| November | 46 | 22 | 33.8 | 2,010 |
| December | 76 | 22 | 42.6 | 2,620 |
| January 1–6 | 52 | 29 | 45.8 | 546 |
| February | 45 | 25 | 33.4 | 1,850 |
| March | 50 | 21 | 37.7 | 2,320 |
| April | 625 | 55 | 349 | 20,800 |
| May | 562 | 267 | 390 | 24,000 |
| June | 448 | 63 | 230 | 13,700 |
| July | 58 | 27 | 39.4 | 2,420 |
| August | 29 | 18 | 23.6 | 1,450 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 117 second-feet Apr. 9 (gage height, 2.83 feet); minimum, 2.6 second-feet Aug. 26, 27, 30 (gage height, 1.83 feet).

1922–1930: Maximum discharge, 224 second-feet June 21, 1923 (gage height, 3.15 feet); minimum, that of Aug. 26, 27, 30, 1930.

REMARKS.—Records good. Discharge estimated Nov. 9, 11–14; interpolated Mar. 20–24, July 10, 12–19, Aug. 17. A few small diversions above gage.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.2 | 12 | -------- | 7.0 | 54 | 47 | 17 | 8.6 | 6.6 |
| 2 | 6.2 | 7.0 | -------- | 10 | 51 | 46 | 17 | 14 | 6.6 |
| 3 | 6.2 | 14 | -------- | 13 | 63 | 48 | 18 | 10 | 6.6 |
| 4 | 6.2 | 14 | -------- | 21 | 71 | 46 | 18 | 8.6 | 6.6 |
| 5 | 5.5 | 14 | -------- | 26 | 67 | 44 | 15 | 8.6 | 7.0 |
| 6 | 5.5 | 14 | -------- | 31 | 71 | 39 | 15 | 9.0 | 10 |
| 7 | 5.5 | 14 | -------- | 53 | 67 | 37 | 16 | 7.8 | 8.6 |
| 8 | 6.6 | 18 | -------- | 61 | 63 | 37 | 14 | 6.6 | 12 |
| 9 | 7.0 | 14 | -------- | 98 | 63 | 36 | 11 | 6.6 | 9.0 |
| 10 | 6.6 | 9.2 | -------- | 77 | 58 | 38 | 13 | 7.0 | 9.0 |
| 11 | 6.6 | 9.2 | -------- | 61 | 56 | 38 | 15 | 7.0 | 9.0 |
| 12 | 6.2 | 9.0 | -------- | 54 | 54 | 36 | 15 | 5.8 | 9.0 |
| 13 | 6.2 | 8.8 | -------- | 54 | 51 | 37 | 14 | 6.6 | 9.0 |
| 14 | 6.2 | 8.6 | -------- | 86 | 47 | 37 | 13 | 7.8 | 9.0 |
| 15 | 6.2 | 8.4 | -------- | 71 | 43 | 35 | 12 | 9.0 | 9.0 |
| 16 | 6.2 | 5.8 | 6.2 | 47 | 41 | 34 | 11 | 6.6 | 9.0 |
| 17 | 10 | 5.8 | 6.2 | 51 | 38 | 30 | 10 | 6.0 | 8.6 |
| 18 | 6.6 | 6.6 | 6.2 | 51 | 37 | 27 | 9.0 | 5.4 | 8.6 |
| 19 | 6.2 | -------- | 6.2 | 67 | 38 | 26 | 8.0 | 5.8 | 7.4 |
| 20 | 6.2 | -------- | 5.4 | 54 | 38 | 26 | 7.0 | 7.0 | 7.4 |
| 21 | 6.2 | -------- | 4.6 | 51 | 44 | 26 | 7.0 | 7.0 | 7.0 |
| 22 | 6.2 | -------- | 5.0 | 56 | 46 | 25 | 6.6 | 7.8 | 8.2 |
| 23 | 11 | -------- | 5.0 | 50 | 46 | 26 | 6.6 | 4.6 | 12 |
| 24 | 11 | -------- | 4.6 | 50 | 44 | 26 | 8.2 | 3.2 | 7.4 |
| 25 | 11 | -------- | 4.3 | 67 | 38 | 23 | 8.6 | 3.2 | 7.4 |
| 26 | 5.8 | -------- | 3.2 | 67 | 75 | 20 | 12 | 2.6 | 7.4 |
| 27 | 7.4 | -------- | 3.2 | 67 | 48 | 18 | 12 | 2.6 | 6.6 |
| 28 | 7.0 | -------- | 4.0 | 66 | 39 | 16 | 12 | 3.2 | 6.2 |
| 29 | 6.2 | -------- | 4.0 | 65 | 40 | 20 | 8.2 | 3.2 | 5.8 |
| 30 | 6.2 | -------- | 4.0 | 58 | 44 | 19 | 7.0 | 2.6 | 6.2 |
| 31 | 8.4 | -------- | 7.0 | -------- | 39 | -------- | 7.0 | 5.8 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 11 | 5.5 | 6.92 | 425 |
| November 1–18 | 18 | 5.8 | 10.7 | 382 |
| March 16–31 | 7.0 | 3.2 | 4.94 | 157 |
| April | 98 | 7.0 | 53.0 | 3,150 |
| May | 75 | 37 | 50.8 | 3,120 |
| June | 48 | 16 | 32.1 | 1,910 |
| July | 18 | 6.6 | 11.7 | 719 |
| August | 14 | 2.6 | 6.44 | 396 |
| September | 12 | 5.8 | 8.07 | 480 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 1,640 second-feet Apr. 26 (gage height, 4.00 feet); minimum, 49 second-feet Sept. 3, 4 (gage height, 0.97 foot).

1905–1907, 1929–30: Maximum discharge, 4,010 second-feet June 24, 1907 (gage height, 9.00 feet, old datum); minimum, 26 second-feet Sept. 22–28, 1905 (gage height, 1.15 feet).

REMARKS.—Records good except those for Feb. 18 to Mar. 5, Apr. 28 to May 20, June 6 to Sept. 30, which are fair. Several diversions above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 189 | 162 | 140 | ------- | 205 | 313 | 1,210 | 848 | 148 | 68 | 50 |
| 2 | 170 | 151 | 129 | ------- | 189 | 413 | 1,130 | 788 | 132 | 68 | 50 |
| 3 | 159 | 156 | 100 | ------- | 205 | 848 | 1,290 | 788 | 129 | 74 | 49 |
| 4 | 148 | 140 | 91 | ------- | 205 | 572 | 1,290 | 788 | 114 | 74 | 49 |
| 5 | 142 | 124 | 105 | ------- | 162 | 913 | 1,290 | 730 | 112 | 74 | 50 |
| 6 | 137 | 145 | 124 | ------- | 189 | 983 | 1,210 | 648 | 107 | 68 | 54 |
| 7 | 156 | 140 | 135 | ------- | 151 | 1,060 | 1,130 | 572 | 109 | 68 | 54 |
| 8 | 142 | 124 | ------- | ------- | 129 | 1,460 | 1,130 | 524 | 105 | 60 | 64 |
| 9 | 148 | 156 | ------- | ------- | 162 | 1,380 | 1,130 | 501 | 95 | 60 | 64 |
| 10 | 156 | 145 | ------- | ------- | 151 | 1,460 | 1,060 | 501 | 91 | 56 | 68 |
| 11 | 162 | 151 | ------- | ------- | 162 | 1,290 | 983 | 478 | 112 | 56 | 69 |
| 12 | 156 | 129 | ------- | ------- | 173 | 1,290 | 883 | 456 | 189 | 62 | 69 |
| 13 | 151 | 95 | ------- | ------- | 173 | 1,130 | 1,060 | 413 | 165 | 56 | 72 |
| 14 | 145 | 119 | ------- | ------- | 162 | 1,290 | 1,130 | 413 | 148 | 54 | 69 |
| 15 | 145 | 145 | ------- | ------- | 145 | 1,460 | 1,130 | 372 | 117 | 62 | 68 |
| 16 | 145 | 156 | ------- | ------- | 129 | 1,130 | 1,060 | 352 | 109 | 68 | 66 |
| 17 | 140 | 165 | ------- | ------- | 151 | 983 | 1,060 | 333 | 107 | 68 | 64 |
| 18 | 145 | 162 | ------- | 392 | 140 | 913 | 983 | 313 | 102 | 68 | 64 |
| 19 | 140 | 167 | ------- | 478 | 156 | 848 | 913 | 313 | 100 | 64 | 64 |
| 20 | 140 | 173 | ------- | 572 | 140 | 913 | 848 | 313 | 91 | 62 | 64 |
| 21 | 145 | 124 | ------- | 648 | 173 | 913 | 913 | 275 | 87 | 60 | 66 |
| 22 | 145 | 95 | ------- | 456 | 413 | 913 | 913 | 275 | 87 | 60 | 69 |
| 23 | 140 | 60 | ------- | 456 | 392 | 1,060 | 913 | 257 | 87 | 55 | 95 |
| 24 | 140 | 75 | ------- | 392 | 275 | 1,130 | 848 | 239 | 89 | 55 | 109 |
| 25 | 129 | 173 | ------- | 332 | 275 | 1,460 | 788 | 239 | 87 | 60 | 105 |
| 26 | 151 | 162 | ------- | 275 | 257 | 1,640 | 730 | 205 | 85 | 54 | 107 |
| 27 | 162 | 165 | ------- | 257 | 275 | 1,460 | 730 | 189 | 91 | 52 | 102 |
| 28 | 173 | 189 | ------- | 222 | 222 | 1,460 | 730 | 173 | 89 | 52 | 97 |
| 29 | 173 | 205 | ------- | ------- | 275 | 1,380 | 759 | 156 | 79 | 52 | 93 |
| 30 | 239 | 189 | ------- | ------- | 352 | 1,290 | 788 | 156 | 75 | 50 | 89 |
| 31 | 162 | ------- | ------- | ------- | 313 | ------- | 848 | ------- | 69 | 50 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 239 | 129 | 154 | 9,470 |
| November | 205 | 60 | 145 | 8,630 |
| December 1–7 | 140 | 91 | 118 | 1,640 |
| February 18–28 | 648 | 222 | 407 | 8,880 |
| March | 413 | 129 | 209 | 12,900 |
| April | 1,640 | 313 | 1,110 | 66,000 |
| May | 1,290 | 730 | 999 | 61,400 |
| June | 848 | 156 | 420 | 25,000 |
| July | 189 | 69 | 107 | 6,580 |
| August | 74 | 50 | 61.0 | 3,750 |
| September | 109 | 49 | 71.8 | 4,270 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 2,850 second-feet Apr. 7 (gage height, 5.09 feet); minimum not determined.

1902–1908, 1911–1930: 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. Numerous diversions from tributaries. Flow partly regulated by storage in several reservoirs on tributaries.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | | | 1,280 | 2,160 | 1,700 | 818 | 240 | |
| 2 | | | 1,330 | 2,040 | 1,700 | 713 | 230 | |
| 3 | | | 1,380 | 2,100 | 1,860 | 655 | 217 | |
| 4 | | | 1,480 | 2,360 | 2,100 | 636 | 217 | |
| 5 | | | 1,640 | 2,490 | 2,420 | 596 | 214 | |
| 6 | | | 1,760 | 2,420 | 2,490 | 577 | 217 | |
| 7 | | | 1,860 | 2,290 | 2,360 | 552 | 217 | |
| 8 | 197 | | 2,040 | 2,100 | 2,220 | 533 | 206 | |
| 9 | 194 | | 2,360 | 1,920 | 2,160 | 527 | 194 | |
| 10 | 194 | | 2,630 | 1,860 | 2,040 | 509 | 189 | |
| 11 | 194 | | 2,700 | 1,760 | 2,040 | 463 | 174 | |
| 12 | 206 | | 2,630 | 1,700 | 2,040 | 446 | 178 | |
| 13 | 230 | | 2,630 | 1,590 | 2,040 | 446 | 184 | |
| 14 | 271 | | 2,630 | 1,590 | 1,980 | 441 | 186 | |
| 15 | 268 | | 2,700 | 1,540 | 1,920 | 446 | 189 | |
| 16 | 260 | | 2,780 | 1,540 | 1,860 | 419 | 192 | |
| 17 | 257 | | 2,780 | 1,540 | 1,760 | 359 | 194 | 179 |
| 18 | 257 | | 2,560 | 1,480 | 1,640 | 345 | 192 | |
| 19 | 257 | | 2,260 | 1,480 | 1,590 | 340 | 194 | |
| 20 | 257 | | 2,220 | 1,480 | 1,480 | 336 | 192 | |
| 21 | 257 | | 2,160 | 1,590 | 1,430 | 336 | 194 | |
| 22 | 253 | | 2,100 | 1,760 | 1,330 | 399 | 194 | |
| 23 | 250 | 1,380 | 2,040 | 1,860 | 1,240 | 388 | 176 | |
| 24 | 240 | 1,540 | 2,040 | 1,860 | 1,180 | 340 | 159 | |
| 25 | 230 | 1,540 | 2,160 | 1,810 | 1,110 | 294 | 150 | |
| 26 | 224 | 1,480 | 2,220 | 1,760 | 1,060 | 282 | 143 | |
| 27 | 246 | 1,260 | 2,290 | 1,700 | 962 | 278 | 135 | |
| 28 | | 1,040 | 2,290 | 1,640 | 926 | 278 | 126 | |
| 29 | | 1,010 | 2,290 | 1,590 | 908 | 278 | 117 | |
| 30 | | 1,190 | 2,220 | 1,590 | 858 | 246 | 108 | |
| 31 | | 1,280 | | 1,700 | | 243 | 100 | |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October 8–27 | 271 | 194 | 237 | 9,400 |
| March 23–31 | 1,540 | 1,010 | 1,300 | 23,200 |
| April | 2,780 | 1,280 | 2,180 | 130,000 |
| May | 2,490 | 1,480 | 1,820 | 112,000 |
| June | 2,490 | 858 | 1,680 | 100,000 |
| July | 818 | 243 | 436 | 26,800 |
| August | 240 | | 181 | 11,100 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 3,400 second-feet Apr. 28, May 1 (gage height, 3.27 feet); minimum, 104 second-feet Dec. 20, 21.

1921–1930: Maximum discharge, 14,300 second-feet June 1, 1927 (gage height, 9.2 feet); minimum, that of Dec. 20, 21, 1929.

Maximum stage known, 18.00 feet during 1908 flood.

REMARKS.—Records good except those for periods Nov. 19–27, Dec. 8–21, Mar. 3 to July 13, which are fair. Numerous diversions. Flow partly regulated by storage on tributaries.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 198 | 299 | 322 | -------- | 1,120 | 3,400 | 1,990 | 860 | 277 | 160 |
| 2 | 203 | 311 | 316 | -------- | 990 | 3,100 | 1,990 | 818 | 257 | 172 |
| 3 | 208 | 311 | 376 | 334 | 1,040 | 3,100 | 1,990 | 775 | 257 | 164 |
| 4 | 198 | 299 | 294 | 277 | 1,220 | 2,950 | 1,990 | 692 | 246 | 155 |
| 5 | 198 | 288 | 277 | 370 | 1,640 | 3,250 | 2,660 | 651 | 246 | 164 |
| 6 | 186 | 277 | 252 | 345 | 1,870 | 3,250 | 2,660 | 651 | 236 | 194 |
| 7 | 198 | 283 | 226 | 357 | 1,640 | 2,950 | 2,250 | 571 | 226 | 208 |
| 8 | 198 | 294 | 203 | 394 | 1,640 | 3,100 | 2,250 | 571 | 236 | 198 |
| 9 | 203 | 294 | 189 | 460 | 1,870 | 2,950 | 2,250 | 532 | 226 | 208 |
| 10 | 208 | 241 | 168 | 532 | 3,160 | 2,380 | 2,120 | 496 | 217 | 189 |
| 11 | 217 | 221 | 151 | 532 | 2,950 | 2,120 | 2,120 | 496 | 208 | 203 |
| 12 | 267 | 212 | 139 | 460 | 2,660 | 1,870 | 1,990 | 394 | 198 | 226 |
| 13 | 339 | 203 | 132 | 394 | 2,520 | 1,870 | 1,870 | 427 | 190 | 203 |
| 14 | 345 | 221 | 143 | 370 | 2,660 | 1,750 | 1,870 | 394 | 189 | 208 |
| 15 | 333 | 212 | 160 | 288 | 2,660 | 1,750 | 1,750 | 394 | 180 | 217 |
| 16 | 322 | 203 | 147 | 155 | 2,950 | 1,670 | 1,530 | 394 | 189 | 221 |
| 17 | 311 | 208 | 136 | 125 | 2,800 | 1,640 | 1,530 | 388 | 208 | 231 |
| 18 | 299 | 198 | 128 | 122 | 1,520 | 1,640 | 1,220 | 357 | 208 | 221 |
| 19 | 288 | 189 | 122 | 147 | 2,250 | 1,750 | 1,120 | 345 | 212 | 231 |
| 20 | 288 | 180 | 104 | 180 | 2,120 | 1,870 | 1,120 | 316 | 217 | 241 |
| 21 | 299 | 160 | 104 | 217 | 2,380 | 1,870 | 1,080 | 299 | 226 | 257 |
| 22 | 288 | 139 | -------- | 230 | 2,660 | 1,990 | 1,080 | 357 | 236 | 339 |
| 23 | 283 | 160 | -------- | 1,530 | 2,520 | 2,250 | 1,080 | 388 | 246 | 364 |
| 24 | 277 | 160 | -------- | 1,750 | 2,520 | 2,380 | 1,080 | 394 | 221 | 333 |
| 25 | 267 | 160 | -------- | 1,420 | 2,660 | 2,120 | 999 | 376 | 203 | 351 |
| 26 | 267 | 189 | -------- | 1,080 | 3,100 | 1,870 | 945 | 311 | 180 | 370 |
| 27 | 277 | 226 | -------- | 1,040 | 3,250 | 1,750 | 945 | 305 | 172 | 388 |
| 28 | 277 | 272 | -------- | 990 | 3,400 | 1,640 | 902 | 288 | 151 | 394 |
| 29 | 288 | 288 | -------- | 1,080 | 3,250 | 1,530 | 902 | 288 | 136 | 370 |
| 30 | 305 | 311 | -------- | 1,270 | 3,250 | 1,530 | 902 | 288 | 132 | 257 |
| 31 | 311 | -------- | -------- | 1,420 | -------- | 1,750 | -------- | 288 | 143 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 345 | 186 | 263 | 16,200 |
| November | 311 | 139 | 234 | 13,900 |
| December 1–21 | 322 | 104 | 195 | 8,120 |
| March 3–31 | 1,750 | 122 | 616 | 35,400 |
| April | 3,400 | 990 | 2,380 | 142,000 |
| May | 3,400 | 1,530 | 2,230 | 137,000 |
| June | 2,660 | 902 | 1,610 | 95,800 |
| July | 860 | 288 | 455 | 28,000 |
| August | 277 | 132 | 209 | 12,900 |
| September | 394 | 155 | 248 | 14,800 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 487 feet Aug. 12 (gage height, 2.18 feet); minimum, 8 second-feet at various times from October to December.

1907–1926, 1927–1930: Maximum discharge (estimated), 5,000 second-feet June 21, 1916 (gage height, 10.0 feet); minimum, 3 second-feet Apr. 7, 1921.

REMARKS.—Records for periods Oct. 1 to Nov. 6, Apr. 7 to Sept. 30, good; others fair. 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, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 16 | 8 | | | 12 | 14 | 24 | 311 | 261 | 150 | 461 | 109 |
| 2 | 16 | 8 | | | 12 | 14 | 24 | 324 | 265 | 150 | 474 | 100 |
| 3 | 28 | 12 | 8 | | 14 | 14 | 37 | 355 | 289 | 141 | 474 | 91 |
| 4 | 27 | 9 | | | 14 | 16 | 29 | 339 | 280 | 134 | 474 | 51 |
| 5 | 26 | 8 | | | 15 | 16 | 25 | 334 | 306 | 128 | 474 | 37 |
| 6 | 26 | 8 | 11 | | 15 | 14 | 24 | 334 | 306 | 128 | 480 | 34 |
| 7 | 24 | | 9 | | 13 | 15 | 20 | 334 | 334 | 118 | 480 | 31 |
| 8 | 72 | | 8 | | 17 | 14 | 20 | 334 | 387 | 184 | 480 | 32 |
| 9 | 46 | | 8 | | 13 | 16 | 20 | 289 | 375 | 168 | 480 | 30 |
| 10 | 38 | | | | 13 | 14 | 20 | 289 | 355 | 165 | 480 | 30 |
| 11 | 38 | | | | 13 | 16 | 20 | 246 | 387 | 194 | 480 | 29 |
| 12 | 42 | | | | 15 | 16 | 18 | 246 | 350 | 221 | 487 | 26 |
| 13 | 44 | | | | 11 | 15 | 19 | 250 | 297 | 224 | 370 | 26 |
| 14 | 46 | | | | 11 | 15 | 20 | 250 | 242 | 221 | 365 | 24 |
| 15 | 48 | | | | 11 | 14 | 20 | 246 | 235 | 221 | 365 | 23 |
| 16 | 49 | | | 9 | 11 | 14 | 20 | 162 | 250 | 221 | 381 | 22 |
| 17 | 42 | | | | 13 | 19 | 46 | 150 | 250 | 221 | 428 | 26 |
| 18 | 41 | 8 | | | 27 | 18 | 204 | 144 | 228 | 221 | 429 | 34 |
| 19 | 41 | | | | 26 | 15 | 228 | 141 | 221 | 228 | 435 | 32 |
| 20 | 24 | | 8 | | 22 | 14 | 228 | 139 | 217 | 221 | 423 | 30 |
| 21 | 21 | | | | 20 | 19 | 238 | 136 | 214 | 228 | 423 | 26 |
| 22 | 19 | | | | 16 | 21 | 280 | 134 | 207 | 387 | 423 | 45 |
| 23 | 16 | | | | 16 | 18 | 334 | 134 | 194 | 429 | 417 | 55 |
| 24 | 15 | | | | 10 | 18 | 334 | 162 | 187 | 429 | 417 | 32 |
| 25 | 12 | | | | 20 | 19 | 311 | 162 | 174 | 423 | 423 | 25 |
| 26 | 12 | | | | 16 | 18 | 381 | 177 | 168 | 423 | 423 | 22 |
| 27 | 13 | | | | 14 | 18 | 411 | 214 | 168 | 435 | 411 | 22 |
| 28 | 13 | | | | 14 | 22 | 370 | 250 | 194 | 435 | 375 | 20 |
| 29 | 12 | | | | ------ | 25 | 355 | 272 | 156 | 468 | 344 | 20 |
| 30 | 9 | | | | ------ | 28 | 297 | 265 | 153 | 461 | 253 | 22 |
| 31 | 8 | ------ | | | ------ | 34 | ------ | 265 | ------ | 461 | 123 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 72 | 8 | 28.5 | 1,750 |
| November | 12 | 8 | 8.17 | 486 |
| December | 11 | 8 | 8.13 | 500 |
| January | ------ | ------ | 9.0 | 553 |
| February | 27 | 10 | 15.1 | 839 |
| March | 34 | 14 | 17.5 | 1,080 |
| April | 411 | 18 | 146 | 8,690 |
| May | 355 | 134 | 238 | 14,600 |
| June | 387 | 153 | 255 | 15,200 |
| July | 468 | 118 | 266 | 16,400 |
| August | 487 | 123 | 418 | 25,700 |
| September | 109 | 20 | 36.9 | 2,200 |
| The year | 487 | ------ | 121 | 88,000 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 350 second-feet Feb. 5 (gage height, 4.76 feet); minimum, 4 second-feet Aug. 29, Sept. 5–7 (gage height, 2.53 feet).

1912–1926, 1927–1930: Maximum discharge, 2,180 second-feet June 21, 1916 (gage height, 6.5 feet); no flow Sept. 19, 1919, Sept. 1, 2, 1929.

REMARKS.—Records good except those for period of ice effect, Oct. 29 to Mar. 23, which are fair. Several diversions above station. Flow somewhat regulated by operation of head gates upstream. Complete records furnished by Valier-Montana Land & Water Co.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13 | 20 | 12 | 16 | 8 | 18 | 75 | 95 | 100 | 28 | 12 | 7 |
| 2 | 13 | 20 | 12 | 16 | 10 | 10 | 106 | 91 | 95 | 26 | 11 | 7 |
| 3 | 13 | 18 | 15 | 20 | 15 | 10 | 144 | 93 | 178 | 26 | 10 | 5 |
| 4 | 12 | 21 | 18 | 15 | 20 | 10 | 173 | 116 | 187 | 23 | 10 | 5 |
| 5 | 12 | 22 | 20 | 12 | 350 | 12 | 124 | 114 | 139 | 22 | 9 | 4 |
| 6 | 12 | 18 | 20 | 12 | 70 | 12 | 104 | 102 | 116 | 21 | 7 | 4 |
| 7 | 11 | 18 | 18 | 10 | 80 | 15 | 104 | 95 | 110 | 18 | 7 | 4 |
| 8 | 12 | 18 | 18 | 10 | 70 | 18 | 120 | 95 | 108 | 16 | 7 | 7 |
| 9 | 13 | 20 | 15 | 10 | 60 | 18 | 124 | 110 | 100 | 15 | 6 | 7 |
| 10 | 13 | 18 | 15 | 10 | 40 | 18 | 118 | 124 | 91 | 17 | 7 | 9 |
| 11 | 14 | 15 | 12 | 10 | 30 | 18 | 108 | 126 | 83 | 19 | 8 | 12 |
| 12 | 13 | 15 | 12 | 8 | 30 | 18 | 104 | 120 | 75 | 19 | 9 | 13 |
| 13 | 12 | 15 | 10 | 8 | 25 | 16 | 108 | 122 | 72 | 13 | 10 | 12 |
| 14 | 12 | 15 | 10 | 8 | 20 | 16 | 131 | 133 | 67 | 12 | 12 | 10 |
| 15 | 13 | 15 | 10 | 8 | 40 | 18 | 133 | 133 | 64 | 12 | 16 | 9 |
| 16 | 13 | 16 | 10 | 8 | 60 | 20 | 126 | 133 | 60 | 12 | 16 | 8 |
| 17 | 13 | 16 | 9 | 8 | 80 | 22 | 110 | 124 | 55 | 10 | 13 | 8 |
| 18 | 13 | 12 | 9 | 8 | 185 | 24 | 110 | 126 | 51 | 10 | 12 | 8 |
| 19 | 13 | 12 | 9 | 8 | 110 | 26 | 104 | 131 | 47 | 14 | 12 | 11 |
| 20 | 13 | 12 | 9 | 8 | 85 | 29 | 100 | 120 | 47 | 16 | 14 | 10 |
| 21 | 13 | 12 | 9 | 8 | 60 | 50 | 100 | 122 | 50 | 17 | 13 | 8 |
| 22 | 14 | 12 | 9 | 8 | 63 | 75 | 99 | 118 | 50 | 16 | 12 | 8 |
| 23 | 13 | 12 | 9 | 8 | 63 | 90 | 100 | 106 | 46 | 16 | 10 | 17 |
| 24 | 13 | 12 | 9 | 8 | 63 | 108 | 106 | 95 | 42 | 16 | 9 | 18 |
| 25 | 11 | 12 | 9 | 8 | 60 | 80 | 110 | 90 | 41 | 13 | 7 | 16 |
| 26 | 12 | 12 | 9 | 8 | 45 | 72 | 110 | 90 | 36 | 13 | 7 | 12 |
| 27 | 15 | 12 | 9 | 8 | 30 | 67 | 108 | 84 | 32 | 13 | 7 | 13 |
| 28 | 12 | 12 | 9 | 8 | 20 | 69 | 100 | 83 | 37 | 14 | 7 | 13 |
| 29 | 18 | 12 | 9 | 8 | ------- | 131 | 126 | 114 | 33 | 15 | 4 | 13 |
| 30 | 18 | 12 | 9 | 8 | ------- | 46 | 108 | 128 | 31 | 14 | 5 | 13 |
| 31 | 19 | ------- | 9 | 8 | ------- | 59 | ------- | 116 | ------- | 13 | 7 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 19 | 11 | 13.3 | 818 |
| November | 22 | 12 | 15.2 | 904 |
| December | 20 | 9 | 11.7 | 719 |
| January | 20 | 8 | 9.7 | 596 |
| February | 350 | 8 | 64.0 | 3,550 |
| March | 131 | 10 | 38.5 | 2,370 |
| April | 173 | 75 | 113 | 6,720 |
| May | 133 | 83 | 111 | 6,820 |
| June | 187 | 31 | 74.8 | 4,450 |
| July | 28 | 10 | 16.4 | 1,010 |
| August | 16 | 4 | 9.5 | 584 |
| September | 18 | 4 | 9.7 | 577 |
| The year | 350 | 4 | 40.3 | 29,100 |

### 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 one-fourth mile northeast of depot at Fowler.

RECORDS AVAILABLE.—March, 1920, to September, 1930.

EXTREMES.—Maximum discharge during year, 700 second-feet Mar. 22 (gage height, 3.90 feet); minimum, 1.6 second-feet Sept. 8 (gage height, 0.14 foot).

1920–1930: Maximum discharge, 1,220 second-feet Apr. 14, 1920 (gage height, 6.20 feet); no flow at various times.

REMARKS.—Records fair. Practically all flow is regulated and diverted.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.7 | 20 | 9.0 | 26 | 76 | 7.7 | 32 | 20 | 32 | 2.9 |
| 2 | 7.7 | 19 | 7.7 | 22 | 146 | 7.3 | 24 | 26 | 28 | 2.5 |
| 3 | 8.5 | 22 | 8.5 | 22 | 156 | 4.9 | 28 | 28 | 26 | 2.2 |
| 4 | 7.7 | 22 | 8.5 | 19 | 136 | 6.5 | 27 | 27 | 22 | 2.2 |
| 5 | 7.7 | 19 | 9.4 | 38 | 81 | 5.7 | 24 | 26 | 20 | 1.9 |
| 6 | 6.9 | 19 | 9.4 | 25 | 60 | 7.3 | 25 | 23 | 20 | 1.9 |
| 7 | 7.3 | 18 | 7.7 | 22 | 56 | 9 | 25 | 25 | 20 | 1.9 |
| 8 | 7.7 | 21 | 7.7 | 20 | 53 | 6.5 | 13 | 22 | 19 | 1.6 |
| 9 | 9.4 | 20 | 8.5 | 19 | 51 | 9 | 11 | 18 | 15 | 4.1 |
| 10 | 9.4 | 18 | 8.5 | 18 | 41 | 22 | 11 | 14 | 14 | 3.3 |
| 11 | 15 | 11 | 7.7 | 17 | 45 | 30 | 7.7 | 19 | 13 | 4.5 |
| 12 | 15 | 10 | 7.3 | 20 | 36 | 35 | 7.7 | 18 | 13 | 5.3 |
| 13 | 19 | 8.5 | 6.9 | 20 | 39 | 22 | 6.9 | 18 | 14 | 5.7 |
| 14 | 22 | 8.5 | ------- | 29 | 30 | 16 | 6.5 | 25 | 14 | 3.7 |
| 15 | 20 | 9.4 | ------- | 38 | 23 | 15 | 6.1 | 25 | 13 | 2.9 |
| 16 | 21 | 9.8 | ------- | 31 | 22 | 11 | 6.9 | 28 | 13 | 2.5 |
| 17 | 23 | 12 | ------- | 44 | 19 | 8.5 | 6.5 | 26 | 25 | 2.5 |
| 18 | 19 | 13 | ------- | 19 | 15 | 8.1 | 9.4 | 26 | 22 | 2.2 |
| 19 | 19 | 11 | ------- | 17 | 14 | 8.1 | 8.5 | 27 | 22 | 2.4 |
| 20 | 20 | 8.5 | ------- | 26 | 13 | 8.5 | 11 | 29 | 19 | 2.4 |
| 21 | 18 | 8.1 | ------- | 167 | 13 | 5.7 | 11 | 28 | 17 | 2.4 |
| 22 | 18 | 8.1 | ------- | 700 | 11 | 5.7 | 24 | 27 | 12 | 2.5 |
| 23 | 17 | 8.5 | ------- | 504 | 12 | 5.3 | 18 | 31 | 11 | 19 |
| 24 | 17 | 9.4 | ------- | 146 | 10 | 4.9 | 14 | 32 | 11 | 23 |
| 25 | 18 | 9.0 | ------- | 91 | 14 | 5.3 | 13 | | 10 | 12 |
| 26 | 22 | 9.0 | ------- | 71 | 11 | 5.3 | 16 | | 7.7 | 6.9 |
| 27 | 23 | 8.5 | ------- | 66 | 9.4 | 4.9 | 18 | 30 | 4.5 | 6.1 |
| 28 | 26 | 7.7 | ------- | 54 | 7.7 | 5.7 | 35 | | 3.7 | 5.3 |
| 29 | 25 | 8.1 | ------- | 110 | 13 | 5.3 | 66 | | 3.7 | 4.5 |
| 30 | 23 | 9.4 | ------- | 392 | 10 | 4.1 | 32 | | 3.5 | 4.5 |
| 31 | 22 | ------- | ------- | 156 | ------- | 34 | ------- | | 3.3 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 26 | 6.9 | 16.2 | 996 |
| November | 22 | 7.7 | 12.8 | 762 |
| December 1–13 | 9.4 | 6.9 | 8.22 | 212 |
| March | 700 | 17 | 95.1 | 5,850 |
| April | 156 | 7.7 | 40.8 | 2,430 |
| May | 35 | 4.1 | 10.8 | 664 |
| June | 66 | 6.1 | 18.1 | 1,080 |
| July | 32 | 14 | 25.7 | 1,580 |
| August | 32 | 3.3 | 15.2 | 935 |
| September | 23 | 1.6 | 4.83 | 287 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 970 second-feet Feb. 19 (gage height, 340 feet); no flow from Aug. 9 to Sept. 12, Sept. 18–23.

1929–30: Maximum discharge, that of Feb. 19, 1930; no flow at various times each year.

REMARKS.—Records good except those for periods affected by ice, Nov. 19 to Dec. 3, Feb. 5 to Mar. 7, which are fair. Flow regulated by numerous diversions for storage and irrigation.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 35 | 27 | 21 | ------- | 57 | 213 | 226 | 61 | 36 | 9.6 | 0 |
| 2 | 30 | 27 | 24 | ------- | 41 | 192 | 243 | 68 | 32 | 8.0 | 0 |
| 3 | 29 | 26 | 26 | ------- | 79 | 256 | 221 | 85 | 26 | 7.0 | 0 |
| 4 | 24 | 27 | ------- | ------- | 82 | 492 | 213 | 88 | 24 | 5.5 | 0 |
| 5 | 20 | 35 | ------- | 798 | 90 | 700 | 196 | 82 | 23 | 4.0 | 0 |
| 6 | 19 | 42 | ------- | 732 | 112 | 540 | 192 | 74 | 22 | 2.2 | 0 |
| 7 | 19 | 46 | ------- | 376 | 68 | 401 | 201 | 131 | 20 | 1.3 | 0 |
| 8 | 18 | 49 | ------- | 376 | 99 | 328 | 188 | 135 | 20 | .8 | 0 |
| 9 | 20 | 39 | ------- | 570 | 125 | 282 | 192 | 125 | 14 | 0 | 0 |
| 10 | 20 | 36 | ------- | 635 | 96 | 260 | 188 | 112 | 14 | 0 | 0 |
| 11 | 23 | 36 | ------- | 428 | 128 | 251 | 184 | 85 | 15 | 0 | 0 |
| 12 | 25 | 36 | ------- | 247 | 138 | 234 | 304 | 70 | 14 | 0 | 0 |
| 13 | 25 | 36 | ------- | | 176 | 230 | 304 | 61 | 12 | 0 | 4.0 |
| 14 | 23 | 31 | ------- | 200 | 138 | 230 | 247 | 53 | 10 | 0 | 9.6 |
| 15 | 24 | 35 | ------- | | 172 | 230 | 213 | 47 | 9.6 | 0 | 3.0 |
| 16 | 23 | 34 | ------- | 401 | 115 | 226 | 196 | 41 | 6.5 | 0 | 1.3 |
| 17 | 23 | 39 | ------- | 401 | 88 | 226 | 188 | 34 | 19 | 0 | .1 |
| 18 | 25 | 44 | ------- | 454 | 88 | 226 | 176 | 30 | 24 | 0 | 0 |
| 19 | 24 | 41 | ------- | 970 | 79 | 221 | 172 | 27 | 25 | 0 | 0 |
| 20 | 23 | 15 | ------- | 732 | 45 | 205 | 146 | 27 | 23 | 0 | 0 |
| 21 | 23 | 10 | ------- | 492 | 85 | 192 | 131 | 26 | 23 | 0 | 0 |
| 22 | 22 | 12 | ------- | 351 | 115 | 188 | 135 | 24 | 21 | 0 | 0 |
| 23 | 21 | 17 | ------- | 304 | 351 | 176 | 122 | 27 | 19 | 0 | 0 |
| 24 | 20 | 20 | ------- | 247 | 602 | 176 | 105 | 24 | 18 | 0 | .5 |
| 25 | 19 | 19 | ------- | 209 | 454 | 184 | 96 | 23 | 22 | 0 | 2.4 |
| 26 | 19 | 19 | ------- | 128 | 304 | 192 | 85 | 21 | 24 | 0 | 2.4 |
| 27 | 21 | 19 | ------- | 112 | 260 | 209 | 74 | 22 | 24 | 0 | 2.4 |
| 28 | 23 | 18 | ------- | 105 | 226 | 226 | 72 | 41 | 23 | 0 | 2.4 |
| 29 | 25 | 20 | ------- | ------- | 209 | 226 | 68 | 44 | 19 | 0 | 16 |
| 30 | 26 | 20 | ------- | ------- | 230 | 221 | 63 | 36 | 16 | 0 | 14 |
| 31 | 27 | ------- | ------- | ------- | 221 | ------- | 68 | ------- | 13 | 0 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 35 | 18 | 23.2 | 1,430 |
| November | 49 | 10 | 29.2 | 1,740 |
| February 5–28 | 970 | 105 | 403 | 19,200 |
| March | 602 | 41 | 164 | 10,100 |
| April | 700 | 176 | 264 | 15,700 |
| May | 304 | 63 | 168 | 10,300 |
| June | 135 | 21 | 57.5 | 3,420 |
| July | 36 | 6.5 | 19.7 | 1,210 |
| August | 9.6 | 0 | 1.24 | 76 |
| September | 16 | 0 | 1.97 | 116 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 330 second-feet May 31 (gage height, 3.54 feet); minimum, 6.1 second-feet several times in November (gage height, 1.48 feet).

1919–1930: 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, 1929–30*

| Day | Oct. | Nov. | Dec. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.6 | 6.8 | 6.8 | ------- | 65 | 234 | 300 | 40 | 11 | 11 |
| 2 | 7.6 | 7.2 | 6.8 | 49 | 65 | 246 | 272 | 36 | 11 | 11 |
| 3 | 8.1 | 6.8 | 6.5 | 49 | 65 | 286 | 246 | 55 | 11 | 10 |
| 4 | 8.5 | 6.8 | 6.8 | 49 | 65 | 315 | 211 | 42 | 11 | 10 |
| 5 | 9.3 | 6.5 | 6.8 | 49 | 70 | 286 | 182 | 36 | 11 | 10 |
| 6 | 8.9 | 6.5 | 6.8 | 49 | 73 | 272 | 172 | 34 | 11 | 11 |
| 7 | 9.3 | 6.1 | 6.8 | 49 | 75 | 246 | 154 | 30 | 11 | 10 |
| 8 | 9.3 | 6.5 | 6.8 | 49 | 75 | 222 | 146 | 30 | 11 | 10 |
| 9 | 8.9 | 6.8 | 6.8 | 49 | 78 | 201 | 146 | 25 | 11 | 11 |
| 10 | 8.5 | 6.8 | 6.8 | 49 | 78 | 191 | 137 | 30 | 11 | 11 |
| 11 | 8.9 | 6.8 | 6.8 | 49 | 85 | 172 | 137 | 32 | 11 | 11 |
| 12 | 8.5 | 6.8 | 6.8 | 49 | 85 | 154 | 129 | 28 | 11 | 11 |
| 13 | 9.3 | 6.5 | 6.8 | 49 | 85 | 154 | 129 | 28 | 11 | 11 |
| 14 | 8.5 | 6.1 | 6.8 | 49 | 85 | 146 | 114 | 25 | 11 | 10 |
| 15 | 8.9 | 6.1 | 6.5 | 49 | 85 | 146 | 106 | 22 | 13 | 10 |
| 16 | 9.3 | 6.5 | 6.5 | 49 | 85 | 146 | 99 | 20 | 11 | 10 |
| 17 | 8.5 | 6.1 | ------- | 49 | 73 | 146 | 85 | 20 | 13 | 10 |
| 18 | 8.5 | 6.1 | ------- | 49 | 69 | 146 | 78 | 17 | 12 | 9.3 |
| 19 | 8.5 | 6.5 | ------- | 49 | 77 | 146 | 74 | 17 | 12 | 9.3 |
| 20 | 8.1 | 6.1 | ------- | 49 | 85 | 154 | 69 | 16 | 17 | 9.7 |
| 21 | 8.5 | 6.1 | ------- | 49 | 99 | 182 | 65 | 16 | 12 | 9.7 |
| 22 | 8.1 | 6.1 | ------- | 49 | 121 | 201 | 65 | 15 | 12 | 9.7 |
| 23 | 7.6 | 6.5 | ------- | 49 | 163 | 191 | 68 | 15 | 12 | 9.7 |
| 24 | 8.5 | 6.8 | ------- | 49 | 211 | 191 | 66 | 14 | 12 | 8.9 |
| 25 | 8.1 | 6.8 | ------- | 51 | 246 | 154 | 64 | 14 | 12 | 8.9 |
| 26 | 8.5 | 6.8 | ------- | 53 | 286 | 163 | 55 | 13 | 12 | 8.9 |
| 27 | 7.6 | 6.8 | ------- | 55 | 286 | 172 | 51 | 11 | 41 | 8.1 |
| 28 | 8.5 | 6.5 | ------- | 55 | 259 | 182 | 48 | 11 | 16 | 8.1 |
| 29 | 7.6 | 6.8 | ------- | 58 | 259 | 246 | 44 | 11 | 12 | 8.1 |
| 30 | 7.2 | 6.8 | ------- | 65 | 234 | 286 | 44 | 11 | 12 | 8.1 |
| 31 | 6.8 | ------- | ------- | 65 | ------- | 330 | ------- | 11 | 12 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 9.3 | 6.8 | 8.39 | 516 |
| November | 7.2 | 6.1 | 6.55 | 390 |
| December 1–16 | 6.8 | ------- | 6.74 | 214 |
| March 2–31 | 65 | 49 | 51.0 | 3,030 |
| April | 286 | 65 | 128 | 7,320 |
| May | 330 | 146 | 203 | 12,500 |
| June | 300 | 44 | 119 | 7,080 |
| July | 55 | 11 | 23.4 | 1,440 |
| August | 41 | 11 | 12.8 | 787 |
| September | 11 | 8.1 | 9.82 | 584 |

### 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, 1930.

EXTREMES.—Maximum discharge, 4,510 second-feet Feb. 18 (gage height, 5.10 feet); minimum, 204 second-feet July 21 (gage height, 0.52 foot).

1929–30: Maximum discharge, that of Feb. 18, 1930 (gage height, 5.10 feet); minimum, 187 second-feet July 31, Aug. 1, 5, 6, 11, 12, 1929 (gage height, 0.42 foot).

REMARKS.—Records good. Numerous diversions above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 319 | 340 | -------- | 458 | 583 | 838 | 838 | 269 | 246 | 269 |
| 2 | 351 | 340 | -------- | 458 | 686 | 800 | 800 | 269 | 255 | 260 |
| 3 | 361 | 340 | -------- | 458 | 800 | 800 | 800 | 260 | 255 | 250 |
| 4 | 351 | 346 | -------- | 458 | 998 | 724 | 761 | 269 | 255 | 250 |
| 5 | 340 | 346 | -------- | 488 | 1,250 | 838 | 686 | 269 | 246 | 250 |
| 6 | 340 | 346 | 2,420 | 488 | 918 | 838 | 686 | 255 | 236 | 279 |
| 7 | 340 | 340 | 1,620 | 458 | 878 | 918 | 583 | 274 | 246 | 269 |
| 8 | 330 | 340 | 1,340 | 458 | 838 | 838 | 550 | 274 | 255 | 279 |
| 9 | 340 | 340 | 1,160 | 519 | 761 | 918 | 519 | 231 | 255 | 289 |
| 10 | 330 | 340 | 998 | 550 | 724 | 958 | 488 | 519 | 255 | 279 |
| 11 | 330 | 340 | 838 | 761 | 724 | 958 | 428 | 299 | 255 | 519 |
| 12 | 330 | 340 | 918 | 1,160 | 686 | 918 | 400 | 314 | 255 | 400 |
| 13 | 340 | 340 | 761 | 761 | 724 | 878 | 372 | 294 | 246 | 299 |
| 14 | 351 | 340 | 761 | 550 | 724 | 838 | 340 | 255 | 255 | 299 |
| 15 | 330 | 340 | 761 | 550 | 724 | 838 | 324 | 231 | 255 | 299 |
| 16 | 330 | 340 | 1,040 | 519 | 761 | 800 | 314 | 222 | 304 | 309 |
| 17 | 340 | 340 | 2,530 | 519 | 761 | 761 | 309 | 213 | 284 | 299 |
| 18 | 340 | 351 | 4,400 | 519 | 761 | 761 | 299 | 218 | 264 | 299 |
| 19 | 340 | 346 | 3,080 | 488 | 838 | 761 | 284 | 218 | 255 | 299 |
| 20 | 340 | 299 | 2,020 | 488 | 918 | 761 | 284 | 218 | 255 | 299 |
| 21 | 340 | 299 | 1,040 | 519 | 958 | 724 | 279 | 204 | 255 | 309 |
| 22 | 330 | 299 | 761 | 550 | 918 | 724 | 269 | 213 | 209 | 309 |
| 23 | 340 | | 761 | 519 | 1,040 | 724 | 279 | 222 | 324 | 299 |
| 24 | 340 | | 724 | 519 | 1,040 | 724 | 260 | 218 | 255 | 309 |
| 25 | 340 | | 686 | 519 | 1,040 | 724 | 260 | 209 | 255 | 330 |
| 26 | 340 | 300 | 583 | 550 | 998 | 724 | 269 | 209 | 255 | 309 |
| 27 | 319 | | 519 | 519 | 998 | 724 | 279 | 218 | 264 | 299 |
| 28 | 309 | | 519 | 519 | 998 | 724 | 269 | 218 | 255 | 299 |
| 29 | 319 | | -------- | 550 | 918 | 761 | 250 | 227 | 255 | 299 |
| 30 | 340 | | -------- | 583 | 918 | 761 | 260 | 227 | 255 | 309 |
| 31 | 340 | -------- | -------- | 550 | -------- | 838 | -------- | 236 | 255 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 361 | 309 | 336 | 20,700 |
| November | 351 | 299 | 326 | 19,400 |
| February 6–28 | 4,400 | 519 | 1,310 | 59,800 |
| March | 1,160 | 458 | 549 | 33,800 |
| April | 1,250 | 583 | 863 | 51,400 |
| May | 958 | 724 | 803 | 49,400 |
| June | 838 | 250 | 425 | 25,300 |
| July | 519 | 204 | 251 | 15,400 |
| August | 324 | 209 | 257 | 15,800 |
| September | 519 | 250 | 302 | 18,000 |

## 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, 1930.
EXTREMES.—Maximum discharge during year, 34 second-feet May 9 (gage height, 2.05 feet); minimum, 1.8 second-feet Nov. 8–11 (gage height, 1.32 feet).
1909–1911, 1922–1930: Maximum discharge, 545 second-feet July 21, 1923 (gage height, 4.5 feet); minimum, 1.2 second-feet Aug. 26, 1929 (gage height, 1.33 feet).
REMARKS.—Records good. One small ditch diverts above gage.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | 6.6 | 5.9 | 20 | 24 | 17 | 8.0 | -------- | 2.8 |
| 2 | 6.6 | 5.9 | 20 | 24 | 17 | 8.0 | -------- | 2.8 |
| 3 | 7.3 | 5.9 | 20 | 24 | 13 | 8.0 | -------- | 3.2 |
| 4 | 6.6 | 5.9 | 20 | 25 | 14 | 8.0 | -------- | 3.7 |
| 5 | 6.6 | 5.9 | 20 | 25 | 24 | 8.0 | -------- | 3.7 |
| 6 | 6.6 | 5.9 | 22 | 28 | 13 | 8.0 | -------- | 3.7 |
| 7 | 6.6 | 1.8 | 20 | 30 | 13 | 8.0 | -------- | 3.7 |
| 8 | 6.6 | 1.8 | 20 | 32 | 13 | 8.0 | 6.9 | 4.3 |
| 9 | 6.6 | 1.8 | 21 | 34 | 13 | 8.0 | 6.2 | 4.3 |
| 10 | 6.6 | 1.8 | 22 | 33 | 13 | 8.0 | 6.2 | 4.3 |
| 11 | 5.9 | 1.8 | 24 | 32 | 12 | 8.0 | 6.2 | 5.1 |
| 12 | 5.9 | -------- | 24 | 31 | 12 | -------- | 6.2 | 4.0 |
| 13 | 5.9 | -------- | 27 | 30 | 12 | -------- | 6.2 | 3.5 |
| 14 | 5.9 | -------- | 25 | 29 | 12 | -------- | 6.2 | 3.5 |
| 15 | 5.9 | -------- | 20 | 29 | 12 | -------- | 6.2 | 3.5 |
| 16 | 5.9 | -------- | 21 | 29 | 11 | -------- | 6.2 | 3.5 |
| 17 | 5.9 | -------- | 21 | 29 | 11 | -------- | 6.2 | 3.5 |
| 18 | 5.9 | -------- | 21 | 29 | 11 | -------- | 6.2 | 3.5 |
| 19 | 5.9 | -------- | 24 | 28 | 11 | -------- | 4.6 | 3.5 |
| 20 | 5.9 | -------- | 22 | 26 | 11 | -------- | 3.0 | 3.5 |
| 21 | 5.9 | -------- | 25 | 26 | 9.7 | -------- | 2.8 | 3.5 |
| 22 | 5.9 | -------- | 25 | 26 | 9.7 | -------- | 2.8 | 3.5 |
| 23 | 5.9 | -------- | 25 | 25 | 9.7 | -------- | 2.8 | 3.5 |
| 24 | 5.9 | -------- | 24 | 25 | 9.7 | -------- | 2.8 | 3.5 |
| 25 | 5.9 | -------- | 24 | 18 | 9.7 | -------- | 2.8 | 3.5 |
| 26 | 5.9 | -------- | 25 | 18 | 9.7 | -------- | 2.8 | 3.5 |
| 27 | 5.9 | -------- | 25 | 17 | 9.0 | -------- | 2.8 | 3.5 |
| 28 | 5.9 | -------- | 25 | 18 | 8.3 | -------- | 2.8 | 5.1 |
| 29 | 5.9 | -------- | 26 | 13 | 8.3 | -------- | 2.8 | 5.6 |
| 30 | 5.9 | -------- | 25 | 13 | 8.3 | -------- | 2.8 | 6.2 |
| 31 | 5.9 | -------- | -------- | 13 | -------- | -------- | 2.8 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 7.3 | 5.9 | 6.15 | 378 |
| November 1–11 | 5.9 | 1.8 | 4.04 | 88 |
| April | 27 | 20 | 22.8 | 1,360 |
| May | 34 | 13 | 25.3 | 1,560 |
| June | 24 | 8.3 | 11.9 | 708 |
| July 1–11 | 8.0 | 8.0 | 8.0 | 175 |
| August 8–31 | 6.9 | 2.8 | 4.47 | 213 |
| September | 6.2 | 2.8 | 3.83 | 228 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 339 second-feet Apr. 26 (gage height, 3.76 feet); no flow at various times during July and August.

1907–1930: 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.

REMARKS.—Records good except those during April, which are fair. Numerous diversions.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 31 | 34 | ------- | 75 | 221 | 81 | 2.4 | 0 | 6.2 |
| 2 | 32 | 36 | ------- | 90 | 205 | 63 | 1.8 | 0 | 6.2 |
| 3 | 32 | 45 | ------- | 117 | 213 | 86 | 1.5 | 0 | 5.4 |
| 4 | 28 | 45 | ------- | 209 | 234 | 67 | 1.2 | 0 | 5.4 |
| 5 | 30 | 45 | ------- | 257 | 217 | 61 | .9 | 0 | 4.6 |
| 6 | 30 | 40 | ------- | 213 | 205 | 56 | 2.4 | 0 | 3.8 |
| 7 | 32 | 45 | ------- | 213 | 165 | 49 | 1.8 | 0 | 3.8 |
| 8 | 28 | 48 | ------- | 252 | 162 | 45 | 0 | 0 | 3.8 |
| 9 | 26 | 48 | ------- | 275 | 162 | 44 | 0 | 0 | 3.8 |
| 10 | 26 | 48 | ------- | 252 | 149 | 39 | 0 | 0 | 3.8 |
| 11 | 26 | 48 | ------- | 261 | 125 | 33 | 0 | 0 | 3.8 |
| 12 | 26 | 45 | ------- | 261 | 120 | 28 | 8.2 | 0 | 8.2 |
| 13 | 26 | 68 | ------- | 238 | 109 | 28 | 6.2 | 0 | 9.4 |
| 14 | 26 | 88 | ------- | 247 | 112 | 23 | 4.6 | 0 | 9.4 |
| 15 | 26 | 64 | ------- | 252 | 104 | 22 | 3.4 | 12 | 8.2 |
| 16 | 26 | 54 | ------- | 301 | 90 | 18 | 3.0 | 16 | 8.2 |
| 17 | 26 | 53 | ------- | 266 | 86 | 11 | 3.0 | 64 | 7.6 |
| 18 | 32 | 45 | ------- | 261 | 77 | 11 | 3.4 | 32 | 8.2 |
| 19 | 32 | 31 | ------- | 257 | 71 | 6.6 | 2.1 | 37 | 8.8 |
| 20 | 32 | 24 | ------- | 270 | 64 | 5.4 | 1.8 | 23 | 8.2 |
| 21 | 32 | ------- | ------- | 257 | 58 | 5.4 | 1.5 | 35 | 8.8 |
| 22 | 34 | ------- | 95 | 261 | 71 | 9.4 | 1.2 | 26 | 9.4 |
| 23 | 32 | ------- | 79 | 266 | 72 | 8.8 | .6 | 17 | 12 |
| 24 | 34 | ------- | 67 | 301 | 61 | 6.2 | 1.2 | 14 | 12 |
| 25 | 34 | ------- | 79 | 317 | 58 | 6.6 | 1.2 | 12 | 13 |
| 26 | 34 | ------- | 72 | 339 | 49 | 6.2 | .6 | 11 | 12 |
| 27 | 36 | ------- | 66 | 311 | 38 | 5.8 | 0 | 10 | 6.6 |
| 28 | 38 | ------- | 64 | 280 | 31 | 3.8 | 0 | 7.6 | 7.0 |
| 29 | 41 | ------- | 64 | 261 | 45 | 3.0 | 0 | 6.2 | 7.0 |
| 30 | 41 | ------- | 84 | 238 | 56 | 3.4 | 0 | 6.2 | 7.0 |
| 31 | 42 | ------- | 81 | ------- | 67 | ------- | 0 | 7.0 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 42 | 26 | 31.3 | 1,920 |
| November 1–20 | 88 | 24 | 47.7 | 1,890 |
| March 22–31 | 95 | 64 | 75.1 | 1,490 |
| April | 339 | 75 | 247 | 14,700 |
| May | 234 | 31 | 113 | 6,950 |
| June | 86 | 3.0 | 27.9 | 1,660 |
| July | 8.2 | .0 | 1.74 | 107 |
| August | 64 | .0 | 10.8 | 664 |
| September | 13 | 3.8 | 7.39 | 440 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 1,590 second-feet Aug. 22 (gage height, 4.80 feet); no flow several times from June to September.

1928–1930: Maximum discharge, that of Aug. 22, 1930; no flow at various times.

REMARKS.—Records good. Numerous diversions above station.

*Daily and monthly discharge in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.5 | 0.8 | -------- | 261 | 261 | 20 | 0 | 0.9 |
| 2 | .3 | .7 | 222 | 235 | 275 | 6.2 | 0 | .8 |
| 3 | .3 | .5 | 222 | 235 | 275 | 2.7 | 0 | .6 |
| 4 | .5 | .5 | 235 | 222 | 275 | 3.0 | 0 | .4 |
| 5 | .7 | .5 | 222 | 261 | 261 | 3.6 | 0 | .4 |
| 6 | .4 | .7 | 222 | 320 | 261 | .8 | 0 | .4 |
| 7 | .4 | .7 | 289 | 320 | 248 | .6 | 0 | .3 |
| 8 | .2 | .7 | 275 | 355 | 248 | .5 | 0 | .2 |
| 9 | .3 | .7 | 248 | 338 | 235 | .4 | 0 | .2 |
| 10 | .4 | 1.4 | 275 | 355 | 222 | .4 | 0 | .6 |
| 11 | .4 | 1.8 | 261 | 275 | 275 | .4 | 0 | .8 |
| 12 | .4 | 6.5 | 248 | 235 | 275 | .5 | 0 | 5.2 |
| 13 | .5 | 26 | 248 | 261 | 248 | .5 | 0 | 67 |
| 14 | .5 | 29 | 261 | 235 | 248 | .4 | 0 | 70 |
| 15 | .5 | 35 | 261 | 261 | 261 | .4 | 0 | 8.4 |
| 16 | .5 | 39 | 248 | 289 | 222 | .4 | 0 | 9.1 |
| 17 | .4 | 37 | 222 | 275 | 235 | .5 | 0 | 11.0 |
| 18 | .4 | 38 | 210 | 284 | 304 | .4 | 0 | 7.7 |
| 19 | .5 | -------- | 248 | 294 | 374 | .4 | 0 | 2.4 |
| 20 | .5 | -------- | 248 | 304 | 289 | .4 | 9.8 | .7 |
| 21 | .5 | -------- | 261 | 304 | 355 | .2 | 210 | .1 |
| 22 | .5 | -------- | 248 | 235 | 374 | .1 | 1,510 | 0 |
| 23 | .5 | -------- | 248 | 235 | 320 | .2 | 1,210 | 0 |
| 24 | .5 | -------- | 235 | 248 | 355 | .3 | 434 | .1 |
| 25 | .5 | -------- | 222 | 261 | 304 | .2 | 82 | .1 |
| 26 | .5 | -------- | 222 | 275 | 289 | .1 | 40 | 0 |
| 27 | .6 | -------- | 261 | 275 | 222 | 0 | 26 | 0 |
| 28 | .6 | -------- | 261 | 289 | 222 | 0 | 8.4 | 0 |
| 29 | .7 | -------- | 261 | 261 | 161 | 0 | 1.5 | 0 |
| 30 | .7 | -------- | 248 | 248 | 44 | 0 | 1.3 | 0 |
| 31 | .7 | -------- | 248 | -------- | 23 | -------- | 1.0 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 0.7 | 0.2 | 0.48 | 30 |
| November 1–18 | 39 | .5 | 12.2 | 436 |
| March 2–31 | 289 | 210 | 246 | 14,600 |
| April | 355 | 222 | 275 | 16,400 |
| May | 374 | 23 | 257 | 15,800 |
| June | 20 | 0 | 1.45 | 86 |
| August | 1,510 | 0 | 114 | 7,010 |
| September | 70 | 0 | 6.25 | 372 |

NOTE.—No flow during July.

### 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, 1,400 second-feet Aug. 22 (gage height, 3.48 feet); no flow at various times.

1929–30: Maximum discharge, 1,400 second-feet July 19, 1929, Aug. 22, 1930; maximum gage height, 5.60 feet July 19, 1929; no flow at various times.

REMARKS.—Records for discharge below 800 second-feet good; others fair. Numerous diversions.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|
| 1 | ------- | 312 | 495 | 19 | 0 | 0 | 1.4 |
| 2 | 266 | 300 | 460 | 10 | 0 | 0 | .9 |
| 3 | 170 | 312 | 428 | 8.0 | 0 | 0 | .2 |
| 4 | 530 | 300 | 383 | 9.2 | 0 | 0 | .2 |
| 5 | 460 | 289 | 359 | 35 | 0 | 0 | .2 |
| 6 | 495 | 300 | 347 | 26 | 0 | 0 | 0 |
| 7 | 289 | 495 | 323 | 14 | 0 | 0 | 0 |
| 8 | 323 | 600 | 312 | 6.0 | 0 | 0 | 0 |
| 9 | 495 | 565 | 323 | 2.5 | 0 | 0 | 0 |
| 10 | 638 | 530 | 383 | 1.4 | 0 | 0 | 0 |
| 11 | 600 | 530 | 371 | .4 | 715 | 0 | 0 |
| 12 | 565 | 530 | 335 | .3 | 214 | 0 | 10 |
| 13 | 565 | 530 | 312 | .2 | 92 | 0 | 17 |
| 14 | 460 | 965 | 289 | .2 | 19 | 0 | 26 |
| 15 | 460 | 638 | 266 | .1 | 7.0 | 0 | 28 |
| 16 | 460 | 1,200 | 234 | 0 | 3.0 | 0 | 32 |
| 17 | 395 | 715 | 214 | 0 | .4 | 0 | 20 |
| 18 | 383 | 675 | 196 | 0 | .2 | 0 | 14 |
| 19 | 323 | 675 | 163 | 0 | .2 | 0 | 4.0 |
| 20 | 312 | 530 | 134 | 0 | .1 | 0 | 3.0 |
| 21 | 289 | 530 | 121 | 0 | 0 | 0 | 0 |
| 22 | 245 | 530 | 103 | 0 | 0 | 1,400 | 0 |
| 23 | 255 | 495 | 100 | 0 | 0 | 1,250 | 0 |
| 24 | 277 | 530 | 98 | 0 | 0 | 323 | 0 |
| 25 | 312 | 795 | 78 | 0 | 0 | 134 | 0 |
| 26 | 323 | 530 | 61 | 0 | 0 | 78 | 0 |
| 27 | 323 | 495 | 55 | 0 | 0 | 30 | 0 |
| 28 | 312 | 495 | 42 | 0 | 0 | 20 | 0 |
| 29 | 312 | 530 | 35 | 0 | 0 | 17 | 0 |
| 30 | 323 | 530 | 26 | 0 | 0 | 13 | 0 |
| 31 | 323 | ------- | 22 | ------- | 0 | 9.2 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| March 2-31 | 638 | 170 | 383 | 22,800 |
| April | 1,200 | 289 | 549 | 32,700 |
| May | 495 | 22 | 228 | 14,000 |
| June | 35 | 0 | 4.41 | 262 |
| July | 715 | 0 | 33.9 | 2,080 |
| August | 1,400 | 0 | 106 | 6,520 |
| September | 32 | 0 | 5.23 | 311 |

NOTE.—No flow Oct. 1 to Nov. 29.

### CHECKERBOARD CREEK AT DELPINE, MONT.

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

DRAINAGE AREA.—24.3 square miles.

RECORDS AVAILABLE.—March, 1922, to September, 1930. May, 1909, to December, 1911; May, 1913, to December, 1924, at site 2 miles above present station.

EXTREMES.—Maximum discharge during year, 14 second-feet May 9 (gage height, 1.52 feet); minimum, 0.7 second-foot Aug. 8, 22, 23 (gage height, 1.04 feet).

1909–1911, 1913–14, 1922–1930: Maximum discharge, 167 second-feet July 16, 1923 (gage height, 3.1 feet); minimum, 0.7 second-foot Sept. 10, 1924, Aug. 8, 22, 23, 1930.

REMARKS.—Records good Apr. 1 to July 16; others fair. One small diversion above stage.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.0 | 3.5 | 2.3 | 9.1 | 10 | 6.4 | 2.1 | 1.1 | 1.4 |
| 2 | 2.0 | 3.5 | 2.3 | 9.1 | 10 | 6.0 | 2.1 | .9 | 1.4 |
| 3 | 2.0 | 3.5 | 2.3 | 9.1 | 10 | 6.0 | 2.1 | .9 | 1.7 |
| 4 | 2.0 | 3.5 | 2.3 | 8.5 | 10 | 6.0 | 2.1 | .9 | 2.0 |
| 5 | 2.0 | 3.5 | 2.3 | 9.8 | 11 | 4.2 | 2.1 | .9 | 2.0 |
| 6 | 2.0 | 3.5 | 2.3 | 9.8 | 12 | 4.2 | 2.1 | .9 | 2.0 |
| 7 | 2.0 | 3.5 | 2.3 | 9.1 | 12 | 4.2 | 2.1 | .8 | 2.0 |
| 8 | 2.0 | 3.5 | ------- | 9.1 | 13 | 4.2 | 2.1 | .7 | 2.0 |
| 9 | 2.0 | 3.5 | ------- | 11 | 14 | 4.2 | 2.1 | .8 | 2.0 |
| 10 | 1.7 | 3.1 | ------- | 8.8 | 13 | 4.2 | 2.1 | .8 | 2.0 |
| 11 | 1.7 | 3.1 | ------- | 9.1 | 12 | 4.2 | 2.1 | .8 | 2.3 |
| 12 | 1.4 | 2.1 | ------- | 8.5 | 11 | 4.2 | 3.5 | .8 | 2.0 |
| 13 | 1.4 | 2.1 | ------- | 8.5 | 9.8 | 4.2 | 2.1 | .8 | 1.7 |
| 14 | 1.4 | 2.1 | ------- | 8.5 | 8.8 | 4.2 | 2.1 | 1.0 | 1.7 |
| 15 | 1.4 | 2.1 | ------- | 8.5 | 8.8 | 4.2 | 2.1 | .8 | 1.7 |
| 16 | 1.4 | 2.1 | ------- | 8.5 | 6.4 | 4.2 | 2.0 | .8 | 1.7 |
| 17 | 1.4 | 2.1 | ------- | 8.5 | 6.4 | 3.5 | 2.0 | .8 | 1.6 |
| 18 | 1.4 | 2.1 | ------- | 8.5 | 8.8 | 2.4 | 2.0 | .8 | 1.6 |
| 19 | 1.4 | 2.1 | ------- | 9.8 | 8.8 | 2.4 | 2.0 | .8 | 1.6 |
| 20 | 1.4 | 2.1 | ------- | 8.5 | 8.8 | 2.4 | 1.8 | .8 | 1.6 |
| 21 | 1.4 | 2.1 | ------- | 8.5 | 8.8 | 2.4 | 1.8 | .8 | 1.6 |
| 22 | 1.4 | 2.1 | ------- | 8.8 | 8.8 | 2.4 | 1.8 | .7 | 1.6 |
| 23 | 3.3 | 2.1 | ------- | 8.8 | 8.8 | 2.4 | 1.8 | .7 | 1.6 |
| 24 | 3.3 | 2.1 | ------- | 8.8 | 8.8 | 2.4 | 1.7 | 1.4 | 1.6 |
| 25 | 3.3 | 2.1 | ------- | 8.8 | 8.8 | 2.4 | 1.7 | 1.4 | 1.6 |
| 26 | 3.3 | 2.1 | ------- | 8.8 | 8.2 | 2.4 | 1.7 | 1.4 | 1.6 |
| 27 | 3.3 | 2.1 | ------- | 8.8 | 7.6 | 2.1 | 1.7 | 1.4 | 1.6 |
| 28 | 3.3 | 2.1 | ------- | 8.8 | 6.4 | 2.1 | 1.6 | 1.4 | 1.6 |
| 29 | 3.3 | 2.1 | ------- | 8.8 | 6.4 | 2.1 | 1.6 | 1.4 | 1.8 |
| 30 | 3.3 | 2.1 | ------- | 9.4 | 6.4 | 2.1 | 1.3 | 1.4 | 1.8 |
| 31 | 3.3 | ------- | ------- | ------- | 6.4 | ------- | 1.3 | 1.4 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 3.3 | 1.4 | 2.15 | 132 |
| November | 3.5 | 2.1 | 2.59 | 154 |
| December 1-7 | 2.3 | 2.3 | 2.30 | 32 |
| April | 11 | 8.5 | 8.95 | 533 |
| May | 14 | 6.4 | 9.35 | 575 |
| June | 6.4 | 2.1 | 3.61 | 215 |
| July | 3.5 | 1.3 | 1.96 | 121 |
| August | 1.4 | .7 | .98 | 60 |
| September | 2.3 | 1.4 | 1.75 | 104 |

### 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 to September, 1930.

EXTREMES.—Maximum discharge during year, 45 second-feet June 5 (gage height, 1.28 feet); minimum, 0.4 second-foot July 27, 28, Sept. 5, 6 (gage height, 0.23 foot).

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

REMARKS.—Records good. Numerous diversions above station.

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

| Day | June | July | Aug. | Sept. | Day | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ------ | 2.9 | 0.6 | 1.0 | 16 | 18 | 1.1 | 1.1 | 0.8 |
| 2 | ------ | 2.8 | .8 | 1.0 | 17 | 20 | 1.1 | 1.0 | .7 |
| 3 | ------ | 2.4 | .8 | .7 | 18 | 8.8 | 1.1 | .9 | .7 |
| 4 | ------ | 2.4 | .8 | .6 | 19 | 8.0 | 1.1 | .9 | .7 |
| 5 | 42 | 2.1 | .8 | .4 | 20 | 6.9 | .8 | .9 | .8 |
| 6 | 36 | 1.8 | .8 | .4 | 21 | 6.5 | .8 | .9 | 1.0 |
| 7 | 36 | 1.8 | .8 | .6 | 22 | 6.2 | .8 | .9 | 1.2 |
| 8 | 35 | 1.8 | .8 | .7 | 23 | 6.2 | .6 | .9 | 1.2 |
| 9 | 37 | 1.7 | .8 | .8 | 24 | 9.5 | .6 | .9 | 1.4 |
| 10 | 31 | 2.4 | 1.0 | 1.0 | 25 | 8.4 | .6 | .9 | 1.4 |
| 11 | 26 | 1.9 | .9 | 1.2 | 26 | 7.6 | .5 | .9 | 1.4 |
| 12 | 22 | 1.8 | .8 | 1.2 | 27 | 6.9 | .4 | .9 | 1.4 |
| 13 | 20 | 1.8 | .8 | 1.1 | 28 | 5.0 | .4 | .9 | 1.4 |
| 14 | 18 | 1.6 | 1.0 | 1.0 | 29 | 3.5 | .5 | .9 | 1.4 |
| 15 | 18 | 1.4 | 1.3 | .9 | 30 | 3.1 | .5 | 1.0 | 1.4 |
| | | | | | 31 | ------ | .5 | .9 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| June, 5–30 | 42 | 3.1 | 17.1 | 882 |
| July | 2.9 | .4 | 1.35 | 83 |
| August | 1.3 | .6 | .89 | 55 |
| September | 1.4 | .4 | .98 | 58 |
| The period | | | | 1,080 |

### 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, 1930.

EXTREMES.—Maximum discharge, 8.0 second-feet Oct. 2 (gage height, 1.18 feet); no flow for long periods during year.

1907–1911, 1913, 1924–1930: Maximum discharge, 870 second-feet June 1, 1908 (gage height, 4.40 feet); no flow several times during periods of record.

REMARKS.—Records fair. No diversions. Discharge estimated because of ice Nov. 20–26.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | Day | Oct. | Nov. | Mar. | Apr. | May | June |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.6 | 3.2 | ------ | 2.9 | 1.7 | 0.1 | 16 | 2.3 | 2.9 | ------ | 3.9 | 1.4 | 0.1 |
| 2 | 8.0 | 3.5 | ------ | 3.5 | 1.5 | .1 | 17 | 2.3 | 3.5 | ------ | 3.9 | 1.3 | .2 |
| 3 | 1.5 | 3.5 | ------ | 3.9 | 1.5 | .1 | 18 | 2.3 | 3.2 | ------ | 3.9 | 1.0 | .3 |
| 4 | 1.3 | 3.5 | ------ | 4.3 | 1.3 | .1 | 19 | 2.6 | 2.9 | ------ | 4.7 | 1.0 | .4 |
| 5 | 1.4 | 3.5 | ------ | 4.3 | 1.3 | .2 | 20 | 2.6 | | 3.5 | 5.1 | 1.0 | .3 |
| 6 | 1.2 | 3.2 | ------ | 4.3 | 1.3 | .1 | 21 | 2.6 | | 3.5 | 3.9 | 1.0 | .2 |
| 7 | 1.2 | 3.2 | ------ | 4.3 | 1.3 | .1 | 22 | 2.6 | | 3.2 | 3.2 | 1.0 | .2 |
| 8 | 2.0 | 3.2 | ------ | 4.3 | 1.8 | .1 | 23 | 2.6 | 2.0 | 3.2 | 3.0 | 1.0 | .4 |
| 9 | 2.6 | 3.2 | ------ | 4.3 | 1.8 | .2 | 24 | 2.6 | | 2.6 | 3.0 | 1.1 | .4 |
| 10 | 2.0 | 3.2 | ------ | 4.3 | 1.5 | .2 | 25 | 2.6 | | 3.2 | 2.8 | 1.1 | .3 |
| 11 | 1.8 | 3.2 | ------ | 4.7 | 1.5 | .2 | 26 | 2.6 | | 2.0 | 2.4 | 1.1 | .2 |
| 12 | 2.0 | 3.2 | ------ | 4.7 | 1.2 | .1 | 27 | 2.6 | 3.5 | 2.0 | 2.4 | 1.1 | .1 |
| 13 | 2.6 | 3.5 | ------ | 4.7 | 1.4 | .2 | 28 | 3.2 | 3.5 | 2.0 | 2.0 | 1.2 | 0 |
| 14 | 2.6 | 3.2 | ------ | 4.7 | 1.5 | .2 | 29 | 3.5 | 3.5 | 3.2 | 1.8 | .6 | 0 |
| 15 | 2.3 | 3.2 | ------ | 4.7 | 1.5 | .2 | 30 | 3.2 | 3.5 | 3.2 | 1.4 | .1 | 0 |
| | | | | | | | 31 | 2.9 | ------ | 2.9 | ------ | .1 | ------ |

| Month | Maximum | Minimum | Mean. | Run-off in acre-feet |
|---|---|---|---|---|
| October | 8.0 | 1.2 | 2.52 | 155 |
| November | 3.5 | ---------- | 3.00 | 179 |
| March 20-31 | 3.5 | 2.0 | 2.88 | 69 |
| April | 5.1 | 1.4 | 3.71 | 221 |
| May | 1.8 | .1 | 1.20 | 74 |
| June | .4 | 0 | .18 | 11 |

NOTE.—No flow 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, 1930.

EXTREMES.—Maximum discharge during year, 32 second-feet Mar. 20, 21 (gage height, 2.40 feet); no flow June 1–4, 14–16.

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

REMARKS.—Records fair. Numerous diversions and some storage above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.1 | 8.0 | ------- | 10 | 9.2 | 0 | 1.6 | 2.7 | 5.6 |
| 2 | 6.6 | 8.0 | ------- | 12 | 9.2 | 0 | 2.7 | 2.7 | 4.7 |
| 3 | 4.5 | 8.0 | ------- | 12 | 9.2 | 0 | 1.6 | 5.1 | 4.7 |
| 4 | 4.3 | 8.0 | ------- | 14 | 9.2 | 0 | 1.6 | 4.2 | 4.7 |
| 5 | 4.3 | 8.0 | ------- | 14 | 9.2 | .8 | 1.6 | 3.4 | 4.7 |
| 6 | 4.3 | 6.8 | ------- | 12 | 11 | .8 | 1.6 | 3.5 | 4.9 |
| 7 | 4.3 | 8.0 | ------- | 12 | 13 | .8 | 1.7 | 3.5 | 4.9 |
| 8 | 6.8 | 11 | ------- | 12 | 13 | .5 | 1.7 | 2.8 | 4.9 |
| 9 | 8.0 | 13 | ------- | 12 | 13 | .5 | .8 | 2.8 | 4.9 |
| 10 | 6.8 | 11 | ------- | 12 | 13 | .2 | .8 | 2.8 | 5.8 |
| 11 | 6.3 | 11 | ------- | 12 | 13 | .2 | 1.7 | 2.8 | 5.8 |
| 12 | 6.8 | 9.6 | ------- | 12 | 13 | .2 | 1.7 | 2.8 | 5.8 |
| 13 | 8.0 | 9.6 | ------- | 12 | 6.8 | .2 | 1.7 | 2.8 | 5.8 |
| 14 | 7.3 | 9.6 | ------- | 12 | 6.8 | 0 | 1.8 | 2.8 | 8.3 |
| 15 | 6.8 | 9.6 | ------- | 13 | 6.6 | 0 | 3.0 | 14 | 8.3 |
| 16 | 6.8 | 9.6 | ------- | 14 | 6.6 | 0 | 3.0 | 7.8 | 8.6 |
| 17 | 6.8 | 9.6 | ------- | 14 | 6.3 | 1.3 | 2.3 | 15 | 8.6 |
| 18 | 6.8 | ------- | ------- | 13 | 6.3 | 1.3 | 2.3 | 13 | 6.1 |
| 19 | 7.3 | ------- | ------- | 26 | 6.1 | 2.4 | 3.0 | 15 | 6.1 |
| 20 | 6.8 | ------- | 32 | 20 | 6.1 | 2.4 | 3.1 | 15 | 6.1 |
| 21 | 6.8 | ------- | 32 | 14 | 5.8 | 1.4 | 2.4 | 13 | 5.1 |
| 22 | 6.8 | ------- | 12 | 16 | 5.8 | 1.4 | 2.4 | 11 | 5.1 |
| 23 | 6.8 | ------- | 12 | 16 | 5.6 | 2.4 | 2.4 | 7.8 | 5.1 |
| 24 | 6.8 | ------- | 10 | 12 | 5.6 | 2.4 | 2.4 | 7.8 | 6.1 |
| 25 | 6.8 | ------- | 10 | 12 | 5.4 | 2.5 | 3.1 | 7.8 | 6.1 |
| 26 | 6.8 | ------- | 10 | 13 | 5.2 | 4.0 | 3.1 | 8.0 | 6.3 |
| 27 | 6.8 | ------- | 12 | 13 | 5.1 | 2.5 | 3.2 | 8.0 | 7.5 |
| 28 | 6.8 | ------- | 12 | 13 | 4.9 | 1.5 | 3.2 | 8.0 | 7.5 |
| 29 | 6.8 | ------- | 12 | 13 | 3.1 | 1.5 | 3.2 | 8.0 | 7.5 |
| 30 | 8.0 | ------- | 12 | 13 | 3.0 | 1.5 | 3.2 | 6.8 | 8.9 |
| 31 | 9.6 | ------- | 10 | ------- | 2.8 | ------- | 2.5 | 6.8 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 9.6 | 4.3 | 6.60 | 406 |
| November 1–17 | 13 | 6.8 | 9.32 | 313 |
| March 20–31 | 32 | 10 | 14.7 | 350 |
| April | 26 | 10 | 13.5 | 803 |
| May | 13 | 2.8 | 7.71 | 474 |
| June | 4.0 | 0 | 1.09 | 65 |
| July | 3.2 | .8 | 2.27 | 140 |
| August | 15 | 2.7 | 7.02 | 432 |
| September | 8.9 | 4.7 | 6.15 | 366 |

### 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, 1930. May, 1911, to April, 1918, at station in sec. 23, T. 12 N., R. 25 E., 4 miles downstream.

EXTREMES.—Maximum discharge during year, 115 second-feet Apr. 16 (gage height, 3.03 feet); no flow Aug. 6 to Sept. 2.

1911–1930: 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 Mar. 16 to May 2, which are fair. Several diversions above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 16 | 13 | ------- | 8.9 | 68 | 11 | 1.6 | 0.3 | 0 |
| 2 | 16 | 14 | ------- | 8.9 | 65 | 8.4 | 2.2 | .2 | 0 |
| 3 | 16 | 18 | ------- | 14 | 62 | 6.7 | 1.9 | .1 | 1.6 |
| 4 | 18 | 18 | ------- | 20 | 62 | 11 | 1.3 | .5 | 1.0 |
| 5 | 18 | 18 | ------- | 26 | 62 | 8.4 | 1.3 | .2 | .5 |
| 6 | 16 | 18 | ------- | 48 | 58 | 6.2 | 1.6 | .1 | .3 |
| 7 | 18 | 18 | ------- | 54 | 54 | 6.2 | .4 | 0 | 1.3 |
| 8 | 18 | 28 | ------- | 62 | 51 | 5.7 | .4 | 0 | 2.2 |
| 9 | 18 | 9 | ------- | 76 | 51 | 5.2 | .3 | 0 | 1.6 |
| 10 | 18 | ------- | ------- | 83 | 54 | 2.6 | .4 | 0 | 1.9 |
| 11 | 18 | ------- | ------- | 87 | 48 | 2.2 | .4 | 0 | 1.9 |
| 12 | 16 | ------- | ------- | 83 | 40 | 3.4 | .3 | 0 | 3.0 |
| 13 | 22 | ------- | ------- | 83 | 35 | 5.7 | .4 | 0 | 3.4 |
| 14 | 22 | ------- | ------- | 83 | 32 | 5.2 | .2 | 0 | 6.2 |
| 15 | 16 | ------- | ------- | 94 | 34 | 4.2 | .2 | 0 | 5.2 |
| 16 | 16 | ------- | 12 | 115 | 32 | .6 | .2 | 0 | 4.2 |
| 17 | 18 | ------- | 20 | 108 | 29 | 5.2 | .1 | 0 | 3.0 |
| 18 | 16 | ------- | 28 | 101 | 28 | 4.7 | .2 | 0 | 2.6 |
| 19 | 16 | ------- | 44 | 87 | 27 | 4.2 | .2 | 0 | 2.6 |
| 20 | 16 | ------- | 58 | 76 | 26 | 2.2 | .2 | 0 | 3.0 |
| 21 | 16 | ------- | 54 | 65 | 31 | 2.0 | .2 | 0 | 3.0 |
| 22 | 16 | ------- | 54 | 72 | 37 | 2.6 | 1.6 | 0 | 3.4 |
| 23 | 16 | ------- | 51 | 68 | 44 | 1.2 | .5 | 0 | 4.2 |
| 24 | 16 | ------- | 22 | 72 | 20 | 1.3 | .7 | 0 | 3.0 |
| 25 | 14 | ------- | 7.2 | 72 | 28 | 1.3 | .5 | 0 | 1.9 |
| 26 | 14 | ------- | 7.8 | 72 | 26 | 1.6 | 1.9 | 0 | 2.6 |
| 27 | 14 | ------- | 4.7 | 68 | 22 | 3.0 | 1.6 | 0 | 2.2 |
| 28 | 14 | ------- | 5.7 | 76 | 16 | 4.2 | 1.6 | 0 | 3.0 |
| 29 | 15 | ------- | 6.2 | 76 | 14 | 4.7 | .7 | 0 | 3.0 |
| 30 | 15 | ------- | 7.2 | 76 | 12 | 2.2 | .6 | 0 | .2 |
| 31 | 14 | ------- | 8.9 | ------- | 12 | ------- | .6 | 0 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 22 | 14 | 16.5 | 1,010 |
| November 1–9 | 28 | 9 | 17.1 | 306 |
| March 16–31 | 58 | 6.2 | 24.4 | 774 |
| April | 115 | 8.9 | 67.8 | 4,030 |
| May | 68 | 12 | 38.0 | 2,340 |
| June | 11 | .6 | 4.44 | 264 |
| July | 2.2 | .1 | .78 | 48 |
| August | .5 | 0 | .05 | 3.0 |
| September | 6.2 | 0 | 2.40 | 143 |

### 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, 1930.
EXTREMES.—Maximum discharge during year, 231 second-feet Mar. 4 (gage height, 3.12 feet); no flow at various times after June 17.
1921–1930: Maximum discharge, 3,700 second-feet July 5, 1923 (gage height, 12.94 feet); no flow at various times.
REMARKS.—Records prior to Mar. 2, fair; others good. Numerous diversions.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Nov. | Mar. | Apr. | May | June | July | Sept. |
|---|---|---|---|---|---|---|---|
| 1 | | ------- | 22 | 68 | 5.6 | 0 | 0 |
| 2 | | 120 | 23 | 66 | 3.8 | 0 | 0 |
| 3 | | 214 | 17 | 59 | 5.6 | 0 | 0 |
| 4 | | 231 | 19 | 55 | 6.2 | 0 | 0 |
| 5 | | 150 | 19 | 55 | 5.6 | 0 | 0 |
| 6 | | 197 | 16 | 57 | 4.0 | 0 | 0 |
| 7 | | 214 | 20 | 53 | 2.8 | 0 | 0 |
| 8 | | 181 | 22 | 49 | 2.8 | 0 | 0 |
| 9 | 6 | 120 | 28 | 47 | 2.6 | 0 | 0 |
| 10 | | 93 | 28 | 43 | 2.6 | 0 | 0 |
| 11 | | 150 | 37 | 41 | 2.4 | 197 | 0 |
| 12 | | 165 | 39 | 41 | 2.4 | 13 | 0 |
| 13 | | 41 | 35 | 39 | 1.8 | 3.0 | 53 |
| 14 | | 35 | 22 | 30 | 1.3 | 1.1 | 26 |
| 15 | | 37 | 47 | 28 | 1.1 | .9 | 7.4 |
| 16 | | 39 | 86 | 28 | .9 | .1 | 2.0 |
| 17 | 30 | 39 | 106 | 26 | .3 | 0 | .9 |
| 18 | 23 | 39 | 86 | 20 | 0 | 0 | 0 |
| 19 | 13 | 39 | 80 | 14 | 0 | 0 | 0 |
| 20 | 23 | 39 | 73 | 10 | 0 | 0 | 0 |
| 21 | 20 | 39 | 64 | 10 | 0 | 0 | 0 |
| 22 | 17 | 35 | 64 | 10 | .1 | 0 | 0 |
| 23 | | 28 | 61 | 10 | .2 | 0 | 0 |
| 24 | | 14 | 28 | 10 | 0 | 0 | 0 |
| 25 | | 14 | 106 | 9.0 | .1 | 0 | 0 |
| 26 | 15 | 14 | 135 | 8.0 | 0 | 0 | 0 |
| 27 | | 14 | 93 | 8.0 | 0 | 0 | 0 |
| 28 | | 14 | 75 | 8.0 | 0 | 0 | 0 |
| 29 | | 14 | 75 | 6.2 | 0 | 0 | 0 |
| 30 | | 16 | 78 | 5.6 | 0 | 0 | 0 |
| 31 | ------- | 20 | ------- | 5.6 | ------- | 0 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| November | 30 | 0 | 8.2 | 488 |
| March 2–31 | 231 | 14 | 78.8 | 4,690 |
| April | 135 | 16 | 53.5 | 3,180 |
| May | 68 | 5.6 | 29.7 | 1,830 |
| June | 6.2 | 0 | 1.74 | 104 |
| July | 197 | 0 | 6.94 | 427 |
| September | 53 | 0 | 2.98 | 177 |

NOTE.—No flow during October and August.

### 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 to September, 1930.

EXTREMES.—Maximum discharge, 46 second-feet Apr. 18 (gage height, 14.80 feet); no flow after June 22.

REMARKS.—Records good except those for period May 26 to June 8, which are fair. Numerous diversions.

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

| Day | Apr. | May | June | Day | Apr. | May | June | Day | Apr. | May | June |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 11 | 3.9 | 11 | | 10 | | 21 | 11 | 13 | 0 |
| 2 | | 10 | 2.6 | 12 | | 10 | 0 | 22 | 12 | 13 | 0 |
| 3 | | 11 | 2.3 | 13 | | 10 | 0 | 23 | 12 | 11 | 0 |
| 4 | | 11 | 1.9 | 14 | | 11 | 0 | 24 | 12 | 9.0 | 0 |
| 5 | | 11 | 1.6 | 15 | | 13 | 0 | 25 | 13 | 7.0 | 0 |
| 6 | | 11 | 1.3 | 16 | | 13 | 0 | 26 | 13 | 8.6 | 0 |
| 7 | | 11 | 1.3 | 17 | | 13 | 0 | 27 | 13 | 8.2 | 0 |
| 8 | | 10 | 1.3 | 18 | 37 | 13 | 0 | 28 | 12 | 7.8 | 0 |
| 9 | | 10 | 0 | 19 | 22 | 13 | 0 | 29 | 11 | 7.2 | 0 |
| 10 | | 10 | 0 | 20 | 14 | 13 | 0 | 30 | 11 | 5.9 | 0 |
| | | | | | | | | 31 | | 4.6 | |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| April 18-30 | 37 | 11 | 14.8 | 382 |
| May | 13 | 4.6 | 10.3 | 633 |
| June | 3.9 | 0 | .54 | 32 |
| The period | | | | 1,050 |

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

## MILK RIVER BASIN

### SOUTH FORK OF MILK RIVER NEAR INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in NW. ¼ sec. 29, T. 37 N., R. 9 W., just above Kennedy Coulee and 5 miles south of international boundary.

DRAINAGE AREA.—288 square miles.

RECORDS AVAILABLE.—April, 1905, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,570 second-feet Mar. 28 (gage height, 5.90 feet); minimum, 5.2 second-feet Aug. 27 (gage height, 1.43 feet).

1905–1930: Maximum gage height, 15.4 feet June 6, 1908 (discharge not determined); no flow Aug. 1–8, Aug. 18 to Sept. 2, 1919.

REMARKS.—Records good. Discharge estimated because of ice Feb. 20 to Mar. 25; interpolated Apr. 3–7, July 9–15, because of missing record. No diversions. Station maintained in cooperation with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 17.0 | -------- | 30 | 297 | 336 | 141 | 50 | 17.7 | 8.7 |
| 2 | 19.0 | -------- | 29 | 602 | 249 | 120 | 47.2 | 15.9 | 10.8 |
| 3 | 19.0 | -------- | 31 | 1,020 | 241 | 177 | 43.0 | 15.0 | 10.8 |
| 4 | 18.0 | -------- | 32 | 950 | 469 | 452 | 38.8 | 15.0 | 9.4 |
| 5 | 18.0 | -------- | 34 | 750 | 356 | 319 | 36.0 | 15.0 | 8.0 |
| 6 | 22.4 | -------- | 37 | 610 | 228 | 209 | 33.6 | 13.6 | 8.0 |
| 7 | 27.2 | -------- | 38 | 490 | 194 | 167 | 31.2 | 12.2 | 7.6 |
| 8 | 27.2 | -------- | 48 | 436 | 169 | 146 | 32.4 | 10.8 | 10.8 |
| 9 | 26.0 | -------- | 58 | 399 | 173 | 131 | 31 | 9.4 | 12.2 |
| 10 | 27.2 | -------- | 60 | 310 | 205 | 119 | 29 | 9.4 | 15.0 |
| 11 | 26.0 | -------- | 48 | 254 | 323 | 106 | 27 | 9.4 | 18.6 |
| 12 | 24.8 | -------- | 41 | 241 | 444 | 98 | 26 | 10.1 | 20.4 |
| 13 | 23.6 | -------- | 38 | 236 | 303 | 95 | 24 | 10.1 | 22.2 |
| 14 | 21.2 | -------- | 33 | 241 | 271 | 90 | 22 | 9.4 | 19.5 |
| 15 | 20.0 | -------- | 32 | 236 | 212 | 84 | 20 | 10.1 | 15.9 |
| 16 | 20.0 | -------- | 32 | 198 | 186 | 79 | 18.6 | 12.2 | 14.3 |
| 17 | 21.2 | -------- | 31 | 173 | 188 | 75 | 18.6 | 12.2 | 13.6 |
| 18 | 22.4 | -------- | 31 | 158 | 171 | 70 | 17.7 | 10.8 | 12.9 |
| 19 | 24.8 | -------- | 30 | 150 | 150 | 67 | 36.0 | 10.8 | 12.9 |
| 20 | 28.4 | 420 | 30 | 152 | 137 | 68 | 56 | 12.2 | 13.6 |
| 21 | 28.4 | 200 | 110 | 148 | 154 | 76 | 52 | 11.5 | 13.6 |
| 22 | 29.6 | 148 | 130 | 137 | 177 | 95 | 47.2 | 10.1 | 12.9 |
| 23 | 30.8 | 80 | 140 | 137 | 148 | 90 | 36.0 | 8.7 | 25.2 |
| 24 | 30.8 | 55 | 145 | 144 | 133 | 81 | 32.4 | 7.6 | 34.8 |
| 25 | 30.8 | 45 | 152 | 152 | 124 | 71 | 28.8 | 6.8 | 30.0 |
| 26 | 29.6 | 40 | 246 | 150 | 117 | 64 | 23.1 | 6.0 | 27.6 |
| 27 | 27.2 | 35 | 234 | 154 | 110 | 58 | 21.3 | 6.0 | 23.1 |
| 28 | 27.2 | 31 | 927 | 156 | 108 | 58 | 22.2 | 6.3 | 21.8 |
| 29 | 28.4 | -------- | 1,100 | 246 | 133 | 56 | 21.3 | 7.6 | 18.6 |
| 30 | 30.8 | -------- | 300 | 436 | 160 | 52 | 19.5 | 7.2 | 17.7 |
| 31 | 33.3 | -------- | 186 | -------- | 148 | -------- | 16.8 | 7.6 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 33.3 | 17.0 | 25.2 | 1,550 |
| February 20-28 | 420 | 31.0 | 117 | 2,090 |
| March | 1,100 | 29.0 | 142 | 8,730 |
| April | 1,020 | 137 | 325 | 19,300 |
| May | 469 | 108 | 210 | 12,900 |
| June | 452 | 52 | 117 | 6,960 |
| July | 56 | 16.8 | 30.9 | 1,900 |
| August | 17.7 | 6.0 | 10.6 | 652 |
| September | 34.8 | 7.6 | 16.3 | 970 |

## MILK RIVER AT MILK RIVER, ALBERTA

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

DRAINAGE AREA.—1,104 square miles.

RECORDS AVAILABLE.—July, 1909, to September, 1930. Prior to October, 1920, station maintained by Department of the Interior, Canada.

EXTREMES.—Maximum discharge during year, 2,320 second-feet Mar. 30 (gage height, 5.50 feet); minimum, 17.6 second-feet Nov. 19, 20.

1909–1930: 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 except those for ice period Oct. 30 to Apr. 3, which are fair. Flow increased by water from St. Mary Canal during irrigation season. Station maintained in cooperation with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 201 | 151 | 48.0 | 49.5 | 41.5 | 48 | 626 | 620 | 238 | 603 | 488 | 422 |
| 2 | 177 | 148 | 45.4 | 46.7 | 57 | 48 | 1,070 | 459 | 227 | 592 | 483 | 417 |
| 3 | 170 | 143 | 49.5 | 44.1 | 70 | 154 | 1,740 | 359 | 217 | 575 | 478 | 426 |
| 4 | 170 | 137 | 52 | 38.9 | 87 | 201 | 1,370 | 381 | 264 | 560 | 478 | 430 |
| 5 | 170 | 132 | 52 | 35.0 | 107 | 201 | 1,040 | 660 | 603 | 544 | 483 | 430 |
| 6 | 167 | 126 | 51 | 32.8 | 154 | 174 | 749 | 533 | 464 | 533 | 483 | 430 |
| 7 | 170 | 121 | 49.5 | 32.8 | 180 | 119 | 780 | 372 | 326 | 523 | 478 | 430 |
| 8 | 174 | 119 | 48.0 | 32.8 | 154 | 114 | 737 | 318 | 291 | 518 | 473 | 435 |
| 9 | 180 | 98 | 46.7 | 32.8 | 148 | 126 | 690 | 306 | 361 | 518 | 473 | 435 |
| 10 | 201 | 79 | 45.4 | 32.8 | 143 | 140 | 598 | 364 | 412 | 526 | 469 | 435 |
| 11 | 218 | 63 | 44.1 | 31.7 | 140 | 126 | 498 | 426 | 372 | 533 | 469 | 449 |
| 12 | 201 | 49.5 | 44.5 | 31.7 | 102 | 143 | 422 | 643 | 355 | 528 | 469 | 435 |
| 13 | 170 | 56 | 44.1 | 31.7 | 96 | 102 | 386 | 850 | 350 | 528 | 469 | 394 |
| 14 | 148 | 63 | 44.1 | 31.7 | 91 | 89 | 390 | 586 | 368 | 518 | 473 | 310 |
| 15 | 146 | 70 | 44.1 | 31.7 | 126 | 77 | 386 | 469 | 381 | 513 | 459 | 160 |
| 16 | 164 | 72 | 44.1 | 30.6 | 292 | 81 | 390 | 381 | 386 | 508 | 435 | 104 |
| 17 | 177 | 51 | 42.8 | 30.6 | 701 | 114 | 330 | 314 | 377 | 488 | 426 | 80 |
| 18 | 180 | 35.0 | 41.5 | 30.6 | 1,250 | 129 | 287 | 283 | 377 | 483 | 426 | 66 |
| 19 | 180 | 17.6 | 41.5 | 30.6 | 1,800 | 157 | 272 | 268 | 394 | 528 | 430 | 61 |
| 20 | 180 | 17.6 | 40.2 | 30.6 | 1,620 | 81 | 250 | 227 | 412 | 609 | 430 | 61 |
| 21 | 170 | 19.2 | 40.2 | 30.6 | 1,020 | 140 | 246 | 202 | 454 | 549 | 426 | 59 |
| 22 | 157 | 23.2 | 44.1 | 30.6 | 586 | 185 | 242 | 199 | 528 | 549 | 426 | 56 |
| 23 | 140 | 28.4 | 48.0 | 30.6 | 465 | 300 | 227 | 242 | 597 | 528 | 417 | 68 |
| 24 | 129 | 33.9 | 51.0 | 30.6 | 342 | 535 | 224 | 217 | 620 | 528 | 412 | 80 |
| 25 | 126 | 41.5 | 52 | 30.6 | 259 | 824 | 238 | 195 | 626 | 513 | 408 | 89 |
| 26 | 121 | 48 | 52 | 31.7 | 222 | 761 | 246 | 184 | 620 | 503 | 412 | 84 |
| 27 | 124 | 56 | 51 | 31.7 | 81 | 598 | 246 | 178 | 609 | 493 | 412 | 80 |
| 28 | 140 | 54 | 49.5 | 31.7 | 63 | 649 | 257 | 178 | 649 | 493 | 422 | 77 |
| 29 | 154 | 52 | 51 | 32.8 | ------ | 1,560 | 279 | 202 | 632 | 498 | 422 | 68 |
| 30 | 154 | 51 | 52 | 32.8 | ------ | 2,320 | 286 | 235 | 620 | 493 | 417 | 62 |
| 31 | 154 | ------ | 52 | 32.8 | ------ | 643 | ------ | 253 | ------ | 493 | 417 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 218 | 121 | 165 | 10,100 |
| November | 151 | 17.6 | 71.9 | 4,280 |
| December | 52 | 40.2 | 47.1 | 2,900 |
| January | 49.5 | 30.6 | 33.4 | 2,050 |
| February | 1,800 | 41.5 | 371 | 20,600 |
| March | 2,320 | 48 | 353 | 21,700 |
| April | 1,740 | 224 | 517 | 30,800 |
| May | 850 | 178 | 358 | 22,000 |
| June | 649 | 217 | 438 | 26,100 |
| July | 609 | 483 | 528 | 32,500 |
| August | 488 | 408 | 447 | 27,500 |
| September | 449 | 56 | 238 | 14,200 |
| The year | 2,320 | 17.6 | 297 | 215,000 |

### 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 2,698.92 feet above mean sea level.

DRAINAGE AREA.—2,514 square miles.

RECORDS AVAILABLE.—April, 1913, to September, 1930. From August, 1909, to November, 1912, maintained by Irrigation Branch, Department of the Interior, Canada.

EXTREMES.—Maximum discharge during year, 3,530 second-feet Mar. 31 (gage height, 4.90 feet); minimum, 36 second-feet Feb. 28.

1909–1930: Maximum discharge, 12,000 second-feet May 23, 1927 (gage height, 10.16 feet); no flow Aug. 3–17, 22, 23, 1914.

REMARKS.—Records good except those for ice period Feb. 23 to Mar. 27, which are fair. No diversions. Flow increased by water from St. Mary Canal during irrigation season. Station maintained in cooperation with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 223 | -------- | 135 | 1,170 | 352 | 178 | 443 | 520 | 380 |
| 2 | 223 | -------- | 163 | 633 | 362 | 191 | 463 | 499 | 380 |
| 3 | 212 | -------- | 140 | 627 | 570 | 225 | 483 | 504 | 380 |
| 4 | 193 | -------- | 185 | 1,260 | 570 | 285 | 499 | 499 | 385 |
| 5 | 178 | -------- | 180 | 1,580 | 473 | 244 | 499 | 494 | 395 |
| 6 | 170 | -------- | 170 | 1,250 | 433 | 221 | 504 | 504 | 399 |
| 7 | 166 | -------- | 280 | 915 | 609 | 285 | 520 | 510 | 404 |
| 8 | 163 | -------- | 398 | 730 | 604 | 483 | 531 | 510 | 399 |
| 9 | 163 | -------- | 333 | 718 | 458 | 409 | 531 | 499 | 404 |
| 10 | 163 | -------- | 333 | 756 | 423 | 280 | 536 | 483 | 433 |
| 11 | 166 | -------- | 380 | 711 | 395 | 247 | 531 | 483 | 531 |
| 12 | 178 | -------- | 248 | 656 | 390 | 324 | 488 | 488 | 494 |
| 13 | 188 | -------- | 212 | 564 | 414 | 366 | 504 | 494 | 453 |
| 14 | 190 | -------- | 106 | 504 | 553 | 352 | 504 | 494 | 443 |
| 15 | 190 | -------- | 149 | 494 | 817 | 334 | 504 | 494 | 414 |
| 16 | 170 | -------- | 63 | 478 | 621 | 316 | 494 | 494 | 376 |
| 17 | 146 | -------- | 100 | 478 | 520 | 338 | 494 | 499 | 268 |
| 18 | 144 | -------- | 131 | 473 | 458 | 338 | 494 | 483 | 172 |
| 19 | 154 | -------- | 156 | 404 | 390 | 324 | 488 | 458 | 120 |
| 20 | 168 | -------- | 180 | 357 | 338 | 316 | 520 | 438 | 99 |
| 21 | 176 | -------- | 196 | 329 | 329 | 320 | 536 | 453 | 82 |
| 22 | 176 | -------- | 220 | 311 | 298 | 329 | 621 | 438 | 68 |
| 23 | 173 | 714 | 282 | 311 | 272 | 362 | 638 | 448 | 103 |
| 24 | 173 | 882 | 457 | 316 | 255 | 433 | 604 | 423 | 191 |
| 25 | 170 | 358 | 649 | 320 | 225 | 483 | 598 | 404 | 169 |
| 26 | 163 | 275 | 641 | 320 | 276 | 509 | 564 | 390 | 116 |
| 27 | 151 | 36 | 987 | 320 | 221 | 478 | 558 | 376 | 82 |
| 28 | 140 | 91 | 1,220 | 329 | 184 | 504 | 536 | 371 | 74 |
| 29 | 144 | -------- | 887 | 357 | 152 | 494 | 542 | 371 | 70 |
| 30 | 146 | -------- | 1,360 | 352 | 164 | 453 | 531 | 376 | 64 |
| 31 | 144 | -------- | 2,750 | -------- | 194 | -------- | 520 | 371 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 223 | 140 | 171 | 10,500 |
| February 23–28 | 882 | 36 | 393 | 4,680 |
| March | 2,750 | 63 | 442 | 27,200 |
| April | 1,580 | 311 | 601 | 35,800 |
| May | 817 | 152 | 397 | 24,400 |
| June | 509 | 178 | 347 | 20,600 |
| July | 638 | 443 | 525 | 32,300 |
| August | 520 | 371 | 460 | 28,300 |
| September | 531 | 64 | 278 | 16,500 |

### MILK RIVER ABOVE HAVRE, MONT.

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

RECORDS AVAILABLE.—May, 1928, to September, 1930.

EXTREMES.—Maximum discharge, 2,370 second-feet Apr. 1 (gage height, 5.96 feet); minimum, 23 second-feet Mar. 20 (gage height, 2.22 feet).

1928–1930: Maximum discharge, 2,540 second-feet June 21, 1928; maximum gage height, 5.96 feet Apr. 1; minimum discharge, that of Mar. 20, 1930.

REMARKS.—Records good except those for period of ice effect, Feb. 25 to Mar. 10, and for estimated periods, Oct. 30, 31, May 4–16, June 5–9, July 19–26, which are fair. Flow increased by diversion from St. Mary River during irrigation season.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 225 | -------- | 194 | 2,100 | 295 | 254 | 364 | 459 | 359 |
| 2 | 219 | -------- | 194 | 1,400 | 302 | 257 | 386 | 454 | 364 |
| 3 | 211 | -------- | 140 | 973 | 318 | 254 | 419 | 474 | 368 |
| 4 | 208 | -------- | 90 | 695 | | 310 | 429 | 469 | 381 |
| 5 | 205 | -------- | 42 | 753 | | 290 | 448 | 459 | 372 |
| 6 | 199 | -------- | 84 | 943 | | 270 | 448 | 438 | 372 |
| 7 | 191 | -------- | 175 | 1,000 | | 340 | 448 | 438 | 390 |
| 8 | 186 | -------- | 223 | 921 | | 550 | 443 | 429 | 386 |
| 9 | 194 | -------- | 238 | 740 | | 450 | 448 | 419 | 400 |
| 10 | 189 | -------- | 326 | 708 | 560 | 395 | 501 | 395 | 395 |
| 11 | 181 | -------- | 433 | 658 | | 400 | 555 | 429 | 386 |
| 12 | 181 | -------- | 299 | 635 | | 355 | 555 | 414 | 419 |
| 13 | 181 | -------- | 299 | 641 | | 346 | 544 | 395 | 438 |
| 14 | 183 | -------- | 235 | 635 | | 364 | 528 | 424 | 288 |
| 15 | 191 | -------- | 288 | 623 | | 350 | 528 | 443 | 274 |
| 16 | 194 | -------- | 180 | 555 | | 386 | 522 | 469 | 284 |
| 17 | 194 | -------- | 148 | 506 | 600 | 381 | 512 | 454 | 292 |
| 18 | 189 | -------- | 223 | 480 | 539 | 350 | 506 | 464 | 318 |
| 19 | 178 | -------- | 136 | 474 | 490 | 368 | 490 | 480 | 254 |
| 20 | 173 | -------- | 36 | 443 | 469 | 342 | 540 | 438 | 202 |
| 21 | 166 | -------- | 51 | 381 | 459 | 318 | 550 | 399 | 166 |
| 22 | 189 | -------- | 69 | 342 | 448 | 381 | 620 | 395 | 150 |
| 23 | 183 | -------- | 116 | 330 | 409 | 386 | 630 | 390 | 138 |
| 24 | 194 | -------- | 180 | 322 | 364 | 368 | 600 | 390 | 146 |
| 25 | 199 | 1,070 | 254 | 346 | 318 | 390 | 590 | 381 | 164 |
| 26 | 202 | 561 | 438 | 306 | 288 | 424 | 550 | 372 | 235 |
| 27 | 196 | 314 | 528 | 286 | 281 | 490 | 490 | 359 | 438 |
| 28 | 214 | 180 | 646 | 292 | 277 | 448 | 506 | 355 | 186 |
| 29 | 241 | -------- | 906 | 292 | 251 | 390 | 522 | 342 | 150 |
| 30 | 200 | -------- | 512 | 295 | 270 | 390 | 490 | 342 | 119 |
| 31 | 200 | -------- | 658 | -------- | 257 | -------- | 474 | 336 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 241 | 166 | 195 | 12,000 |
| February 25–28 | 1,070 | 180 | 531 | 4,210 |
| March | 906 | 36 | 269 | 16,500 |
| April | 2,100 | 286 | 636 | 37,800 |
| May | -------- | 251 | 449 | 27,600 |
| June | 550 | 254 | 367 | 21,800 |
| July | 630 | 364 | 504 | 31,000 |
| August | 480 | 336 | 416 | 25,600 |
| September | 438 | 119 | 294 | 17,500 |

### MILK RIVER NEAR VANDALIA, MONT.

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

RECORDS AVAILABLE.—May, 1915, to September, 1920; August, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 6,100 second-feet Apr. 5; maximum gage height, 31.4 feet Feb. 22, 23 (ice present); minimum discharge, 6 second-feet July 5–9 (gage height, 3.6 feet).

1915–1920, 1928–1930: 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 fair Oct. 1 to Dec. 31; others good. 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, 1929–30*

| Day | Oct. | Nov. | Dec. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 208 | 61 | 255 | -------- | 4,460 | 482 | 17 | 30 | 17 | 37 |
| 2 | 193 | 61 | 255 | -------- | 4,730 | 302 | 17 | 30 | 11 | 30 |
| 3 | 193 | 61 | 193 | -------- | 5,140 | 386 | 17 | 30 | 11 | 30 |
| 4 | 1,230 | 61 | 193 | -------- | 5,320 | 442 | 17 | 17 | 11 | 30 |
| 5 | 13 | 61 | 166 | -------- | 5,900 | 368 | 20 | 6.0 | 11 | 30 |
| 6 | 13 | 61 | 139 | -------- | 5,850 | 368 | 23 | 6.0 | 12 | 30 |
| 7 | 13 | 61 | 127 | -------- | 5,360 | 368 | 26 | 6.0 | 12 | 30 |
| 8 | 139 | 61 | 115 | -------- | 4,420 | 368 | 37 | 6.0 | 12 | 30 |
| 9 | 223 | 61 | 105 | -------- | 3,480 | 368 | 37 | 6.0 | 12 | 30 |
| 10 | 208 | 61 | 95 | -------- | 3,080 | 368 | 37 | 8.5 | 12 | 30 |
| 11 | 223 | 61 | 95 | -------- | 3,000 | 210 | 37 | 8.5 | 11 | 30 |
| 12 | 105 | 61 | 95 | -------- | 2,840 | 210 | 37 | 8.5 | 11 | 37 |
| 13 | 34 | 77 | 95 | -------- | 2,680 | 225 | 37 | 26 | 11 | 879 |
| 14 | 34 | 77 | 95 | -------- | 2,400 | 240 | 37 | 30 | 11 | 368 |
| 15 | 1,230 | 77 | 95 | 2,200 | 1,850 | 302 | 37 | 142 | 23 | 225 |
| 16 | 405 | 77 | 77 | 2,080 | 1,760 | 334 | 37 | 210 | 37 | 210 |
| 17 | 22 | 77 | 61 | 2,080 | 1,790 | 368 | 37 | 129 | 23 | 196 |
| 18 | 22 | 77 | 54 | 2,370 | 1,540 | 255 | 37 | 64 | 23 | 196 |
| 19 | 22 | 69 | 46 | 3,000 | 1,350 | 270 | 37 | 52 | 23 | 173 |
| 20 | 22 | 1,750 | 46 | 3,320 | 1,060 | 286 | 37 | 42 | 23 | 139 |
| 21 | 34 | 1,090 | 40 | 2,760 | 1,090 | 176 | 46 | 42 | 57 | 118 |
| 22 | 34 | 405 | 34 | 2,370 | 442 | 157 | 37 | 46 | 46 | 102 |
| 23 | 34 | 350 | 34 | 2,290 | 154 | 334 | 37 | 46 | 46 | 92 |
| 24 | 193 | 350 | 34 | 3,320 | 1,200 | 302 | 37 | 42 | 142 | 80 |
| 25 | 193 | 350 | 34 | 3,240 | 577 | 270 | 37 | 30 | 142 | 81 |
| 26 | 193 | 300 | 34 | 3,080 | 577 | 181 | 37 | 26 | 129 | 154 |
| 27 | 34 | 300 | 34 | 3,000 | 577 | 88 | 30 | 26 | 129 | 113 |
| 28 | 34 | 300 | 34 | 2,520 | 442 | 86 | 30 | 26 | 106 | 96 |
| 29 | 61 | 300 | 34 | 2,480 | 334 | 70 | 30 | 26 | 70 | 100 |
| 30 | 61 | 300 | 34 | 3,740 | 577 | 70 | 30 | 29 | 64 | 100 |
| 31 | 61 | -------- | 34 | 4,240 | -------- | 37 | -------- | 23 | 37 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 1,230 | 13 | 177 | 10,900 |
| November | 1,750 | 61 | 235 | 14,000 |
| December | 255 | 34 | 89.7 | 5,520 |
| March 15–31 | 4,240 | 2,080 | 2,830 | 95,400 |
| April | 5,900 | 154 | 2,470 | 147,000 |
| May | 482 | 37 | 267 | 16,400 |
| June | 46 | 17 | 32.3 | 1,920 |
| July | 210 | 6 | 39.3 | 2,420 |
| August | 142 | 11 | 41.5 | 2,550 |
| September | 879 | 30 | 127 | 7,560 |

## 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., 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, 1930 (irrigation seasons only).

EXTREMES.—Maximum discharge during year, 76 second-feet June 4 (gage height, 1.53 feet); minimum, 12.6 second-feet July 16 (gage height, 0.57 foot).

1921–1930: 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 in cooperation with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|
| 1 | 22.5 | -------- | 37.4 | 46.6 | 17.1 | 14.0 | 17.6 |
| 2 | 22.9 | -------- | 34.2 | 42.6 | 17.1 | 13.5 | 16.6 |
| 3 | 22.9 | -------- | 40.7 | 53.0 | 16.6 | 13.5 | 16.0 |
| 4 | 22.5 | -------- | 52 | 58.0 | 16.6 | 14.0 | 16.0 |
| 5 | 22.9 | -------- | 36.8 | 28.4 | 16.0 | 14.0 | 15.5 |
| 6 | 22.9 | -------- | 33.6 | 25.2 | 15.5 | 14.0 | 16.0 |
| 7 | 23.7 | -------- | 30.3 | 23.9 | 16.6 | 14.5 | 17.6 |
| 8 | 23.7 | -------- | 29.0 | 22.1 | 17.1 | 14.5 | 17.1 |
| 9 | 24.1 | -------- | 32.9 | 21.4 | 16.6 | 14.0 | 16.6 |
| 10 | 26.4 | -------- | 44.0 | 21.4 | 16.6 | 14.5 | 18.6 |
| 11 | 25.9 | -------- | 58 | 20.8 | 15.5 | 15.5 | 19.7 |
| 12 | 25.5 | -------- | 56 | 20.8 | 16.0 | 15.0 | 18.1 |
| 13 | 24.6 | -------- | 46.6 | 20.2 | 15.0 | 15.5 | 17.1 |
| 14 | 25.0 | -------- | 43.3 | 20.2 | 14.5 | 15.5 | 16.6 |
| 15 | 25.0 | -------- | 38.1 | 19.7 | 13.5 | 16.0 | 17.1 |
| 16 | 24.6 | 36.2 | 35.5 | 19.2 | 13.5 | 16.0 | 16.0 |
| 17 | 25.0 | 40.7 | 36.2 | 18.6 | 13.0 | 15.0 | 16.0 |
| 18 | 24.6 | 38.1 | 34.2 | 18.6 | 13.0 | 15.5 | 16.6 |
| 19 | 24.6 | 37.4 | 31.0 | 19.7 | 25.8 | 15.5 | 17.6 |
| 20 | 24.6 | 37.4 | 31.6 | 20.2 | 17.6 | 14.5 | -------- |
| 21 | 24.1 | 34.2 | 32.9 | 20.2 | 14.5 | 14.5 | -------- |
| 22 | 23.7 | 34.2 | 28.4 | 20.8 | 14.0 | 14.5 | -------- |
| 23 | 24.1 | 36.2 | 26.4 | 20.8 | 13.5 | 14.5 | -------- |
| 24 | 23.3 | 36.2 | 25.8 | 20.2 | 13.5 | 14.5 | -------- |
| 25 | 23.3 | 35.5 | 26.4 | 18.6 | 13.0 | 14.5 | -------- |
| 26 | 24.1 | 33.6 | 27.0 | 18.1 | 13.5 | 14.5 | -------- |
| 27 | 25.5 | 34.2 | 27.7 | 18.1 | 14.0 | 15.0 | -------- |
| 28 | 25.9 | 33.6 | 30.3 | 17.6 | 14.0 | 15.5 | -------- |
| 29 | 25.0 | 66 | 44.0 | 17.6 | 14.5 | 15.0 | -------- |
| 30 | 25.5 | 48.5 | 46.6 | 17.6 | 13.5 | 15.0 | -------- |
| 31 | 25.9 | -------- | 49.2 | -------- | 13.5 | 16.6 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 26.4 | 22.5 | 24.3 | 1,490 |
| April 16–30 | 66 | 33.6 | 38.8 | 1,150 |
| May | 58 | 25.8 | 37.0 | 2,280 |
| June | 58 | 17.6 | 24.3 | 1,450 |
| July | 25.8 | 13.0 | 15.3 | 941 |
| August | 16.6 | 13.5 | 14.8 | 910 |
| September 1–19 | 19.7 | 15.5 | 17.0 | 641 |

### NORTH FORK OF MILK RIVER NEAR INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in NE. ¼ sec. 11, T. 1, R. 23 W. fourth meridian, 300 yards above highway bridge at Peters' ranch 2 miles north of international boundary, and 18 miles east of Kimball, Alberta.

DRAINAGE AREA.—101 square miles.

RECORDS AVAILABLE.—January, 1913, to September, 1930. 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, 596 second-feet July 19 (gage height, 3.42 feet); minimum, 11.1 second-feet Mar. 2 (gage height, 2.47 feet).

1909–1930: 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. Discharge affected by ice Feb. 16 to Mar. 28. No diversions. Flow increased by discharge of St. Mary Canal during irrigation season. Station maintained in cooperation with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 142 | -------- | 11.7 | 120 | 51 | 30.4 | 546 | 516 | 432 |
| 2 | 142 | -------- | 11.1 | 138 | 44.1 | 29.6 | 542 | 512 | 432 |
| 3 | 140 | -------- | 13.3 | 275 | 51 | 55 | 539 | 516 | 432 |
| 4 | 140 | -------- | 67 | 196 | 84 | 75 | 539 | 520 | 425 |
| 5 | 140 | -------- | 128 | 128 | 51 | 44.0 | 535 | 520 | 425 |
| 6 | 140 | -------- | 57 | 89 | 44.0 | 34.4 | 539 | 516 | 428 |
| 7 | 140 | -------- | 42.0 | 91 | 40.4 | 157 | 535 | 516 | 428 |
| 8 | 142 | -------- | 39.8 | 85 | 39.2 | 246 | 535 | 512 | 422 |
| 9 | 147 | -------- | 38.7 | 80 | 44.0 | 278 | 535 | 512 | 411 |
| 10 | 156 | -------- | 78 | 69 | 64 | 282 | 539 | 512 | 422 |
| 11 | 147 | -------- | 104 | 61 | 92 | 285 | 535 | 512 | 400 |
| 12 | 108 | -------- | 36.5 | 81 | 97 | 296 | 535 | 512 | 372 |
| 13 | 100 | -------- | 32.9 | 97 | 62 | 327 | 531 | 508 | 218 |
| 14 | 115 | -------- | 31.0 | 73 | 57 | 320 | 531 | 486 | 51 |
| 15 | 140 | -------- | 37.6 | 55 | 45.4 | 320 | 527 | 453 | 27.2 |
| 16 | 147 | 42.0 | 53 | 48.2 | 42.8 | 324 | 520 | 450 | 24.8 |
| 17 | 147 | 508 | 70 | 46.8 | 42.8 | 327 | 523 | 446 | 23.0 |
| 18 | 150 | 415 | 141 | 42.8 | 39.2 | 338 | 523 | 446 | 23.0 |
| 19 | 147 | 160 | 125 | 41.6 | 35.6 | 348 | 565 | 443 | 23.5 |
| 20 | 135 | 48.0 | 212 | 44.0 | 36.8 | 383 | 539 | 443 | 23.0 |
| 21 | 121 | 40.0 | 358 | 40.4 | 38.0 | 432 | 523 | 436 | 21.5 |
| 22 | 102 | 31.0 | 411 | 41.6 | 34.4 | 468 | 520 | 436 | 22.0 |
| 23 | 96 | 27.0 | 542 | 42.8 | 34.4 | 494 | 520 | 436 | 28.0 |
| 24 | 93 | 8.7 | 212 | 44.0 | 32.0 | 505 | 516 | 436 | 24.8 |
| 25 | 91 | 17.1 | 102 | 42.8 | 30.4 | 497 | 520 | 436 | 23.5 |
| 26 | 84 | 14.1 | 69 | 42.8 | 29.6 | 501 | 516 | 432 | 21.5 |
| 27 | 82 | 12.6 | 94 | 45.4 | 29.6 | 523 | 512 | 425 | 20.5 |
| 28 | 91 | 11.4 | 542 | 48.2 | 31.2 | 539 | 516 | 428 | 19.5 |
| 29 | 87 | -------- | 393 | 95 | 46.8 | 539 | 512 | 428 | 19.0 |
| 30 | 80 | -------- | 293 | 81 | 36.8 | 542 | 516 | 425 | 19.0 |
| 31 | 98 | -------- | 166 | -------- | 35.6 | -------- | 516 | 432 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 156 | 80 | 122 | 7,500 |
| February 16–28 | 508 | 11.4 | 103 | 2,660 |
| March | 542 | 11.1 | 146 | 8,980 |
| April | 275 | 40.4 | 79.5 | 4,730 |
| May | 97.0 | 29.6 | 46.5 | 2,860 |
| June | 542 | 29.6 | 318 | 18,900 |
| July | 565 | 512 | 529 | 32,500 |
| August | 520 | 425 | 471 | 29,000 |
| September | 432 | 19 | 189 | 11,200 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 150 second-feet Mar. 24 (gage height, 6.70 feet); minimum, 0.2 second-foot for long periods during August and September.

1928–1930: Maximum discharge, 338 second-feet Mar. 25, 1928 (gage height, 10.96 feet); no flow Mar. 17, 1929.

REMARKS.—Records good above and fair below 10 second-feet. Flow regulated by storage in Cowan Reservoir. Small diversion for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.0 | 4.2 | ------- | 63 | 21 | 11 | 0.7 | 0.4 | 0.3 | 0.2 |
| 2 | .9 | 4.2 | ------- | 42 | 33 | 9.9 | .7 | .4 | .3 | .2 |
| 3 | .9 | 4.2 | ------- | 46 | 38 | 8.2 | .8 | .4 | .3 | .2 |
| 4 | 1.0 | 3.8 | ------- | 33 | 42 | 7.2 | .8 | .4 | .2 | .2 |
| 5 | 1.0 | 3.8 | ------- | 25 | 52 | 6.5 | .6 | .4 | .2 | .2 |
| 6 | 1.0 | 3.8 | ------- | 22 | 42 | 6.3 | .6 | .4 | .2 | .2 |
| 7 | 1.0 | 3.8 | ------- | 22 | 36 | 5.1 | .6 | .4 | .2 | .2 |
| 8 | 1.0 | 3.8 | ------- | 18 | 31 | 4.5 | .6 | .4 | .2 | .2 |
| 9 | 1.2 | 3.8 | ------- | 20 | 30 | 5.2 | .6 | .4 | .2 | .2 |
| 10 | 1.5 | 4.2 | ------- | 24 | 30 | 6.0 | .6 | .4 | .2 | .2 |
| 11 | 1.5 | 4.5 | ------- | 18 | 28 | 10 | .6 | .4 | .2 | .2 |
| 12 | 1.8 | 4.4 | ------- | 4.8 | 27 | 17 | .5 | .3 | .2 | .3 |
| 13 | 1.8 | 4.2 | ------- | 3.8 | 24 | 21 | .5 | .3 | .2 | .2 |
| 14 | 2.0 | 4.4 | ------- | 4.2 | 28 | 21 | .6 | .3 | .2 | .2 |
| 15 | 3.1 | 4.2 | ------- | 4.6 | 28 | 20 | .5 | .3 | .3 | .2 |
| 16 | 3.5 | 4.2 | ------- | 5.6 | 34 | 15 | .6 | .3 | .2 | .2 |
| 17 | 3.5 | 4.4 | ------- | 6.5 | 42 | 14 | .5 | .3 | .2 | .2 |
| 18 | 3.8 | 4.5 | ------- | 7.9 | 38 | 12 | .5 | .3 | .2 | .2 |
| 19 | 3.8 | 4.2 | ------- | 5.8 | 31 | 8.6 | .5 | .3 | .2 | .2 |
| 20 | 3.8 | 4.4 | ------- | 12 | 25 | 6.3 | .5 | .3 | .2 | .2 |
| 21 | 4.2 | 4.0 | ------- | 13 | 21 | 4.0 | .5 | .3 | .2 | .2 |
| 22 | 4.5 | 3.6 | ------- | 14 | 20 | 2.5 | .5 | .3 | .2 | .2 |
| 23 | 4.6 | ------- | ------- | 63 | 16 | 1.6 | .5 | .3 | .2 | .2 |
| 24 | 4.5 | ------- | ------- | 142 | 8.1 | 1.0 | .5 | .3 | .2 | .2 |
| 25 | 4.5 | ------- | ------- | 98 | 6.8 | 1.0 | .4 | .3 | .2 | .2 |
| 26 | 4.5 | ------- | ------- | 76 | 8.6 | .9 | .4 | .3 | .2 | .2 |
| 27 | 4.8 | ------- | 42 | 59 | 10 | .8 | .5 | .3 | .2 | .2 |
| 28 | 4.8 | ------- | 63 | 34 | 12 | .8 | .4 | .3 | .2 | .2 |
| 29 | 4.8 | ------- | ------- | 15 | 15 | .8 | .4 | .3 | .2 | .2 |
| 30 | 4.4 | ------- | ------- | 9.3 | 13 | .8 | .4 | .3 | .2 | .2 |
| 31 | 4.2 | ------- | ------- | 9.1 | ------- | .8 | ------- | .3 | .2 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 4.8 | 0.9 | 2.87 | 176 |
| November 1-22 | 4.5 | 3.6 | 4.12 | 180 |
| March | 142 | 3.8 | 29.7 | 1,830 |
| April | 52 | 6.8 | 26.4 | 1,570 |
| May | 21 | .8 | 7.41 | 456 |
| June | .8 | .4 | .55 | 33 |
| July | .4 | .3 | .34 | 21 |
| August | .3 | .2 | .21 | 13 |
| September | .3 | .2 | .20 | 12 |

### 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 and 30 miles northwest of Havre, Mont.

DRAINAGE AREA.—797 square miles.

RECORDS AVAILABLE.—April, 1917, to September, 1930. April, 1910, to October, 1916, maintained by Irrigation Branch, Department of the Interior, Canada.

EXTREMES.—Maximum discharge during year, 797 second-feet Mar. 12 (gage height, 6.30 feet); no flow at various times.

1917–1930: 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 except those for ice period, Feb. 1 to Mar. 26, which are fair. Several diversions above gage. Station maintained in cooperation with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Feb. | Mar. | Apr. | May | June | July | Day | Feb. | Mar. | Apr. | May | June | July |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 43.4 | 122 | 7.8 | 0.1 | 0 | 16 | 0 | 83 | 62 | 1.5 | 0 | .01 |
| 2 | 0 | 131 | 127 | 6.8 | .02 | 0 | 17 | 0 | 70 | 65 | 1.4 | 0 | .01 |
| 3 | 0 | 62 | 180 | 6.1 | .1 | 0 | 18 | 0 | 57 | 75 | 1.1 | 0 | 0 |
| 4 | 0 | 19.4 | 356 | 6.8 | .1 | 0 | 19 | 1.8 | 21.1 | 49.4 | 1.1 | 0 | 0 |
| 5 | 0 | 28.6 | 491 | 6.4 | .1 | 0 | 20 | 9.5 | 22.2 | 37.2 | .8 | 0 | 0 |
| 6 | 0 | 16.6 | 489 | 5.2 | .1 | 0 | 21 | 220 | 22.2 | 28.0 | 1.0 | 0 | 0 |
| 7 | 0 | 21.1 | 334 | 4.8 | .1 | 0 | 22 | 393 | 23.5 | 22.2 | .8 | 0 | 0 |
| 8 | 0 | 10.8 | 298 | 4.8 | .1 | 0 | 23 | 581 | 62 | 19.4 | .7 | 0 | 0 |
| 9 | 0 | 9.1 | 280 | 4.5 | .02 | 0 | 24 | 392 | 274 | 16.1 | .7 | 0 | 0 |
| 10 | 0 | 9.9 | 230 | 4.5 | .02 | 0 | 25 | 317 | 361 | 16.1 | .5 | 0 | 0 |
| 11 | 0 | 147 | 186 | 3.5 | .01 | 1.2 | 26 | 188 | 327 | 13.6 | .4 | 0 | 0 |
| 12 | 0 | 797 | 127 | 3.0 | 0 | 1.4 | 27 | 82 | 247 | 12.6 | .4 | 0 | 0 |
| 13 | 0 | 469 | 88 | 2.8 | 0 | .3 | 28 | 50 | 178 | 11.2 | .3 | 0 | 0 |
| 14 | 0 | 236 | 69 | 2.5 | 0 | .1 | 29 | ------- | 122 | 10.3 | .1 | 0 | 0 |
| 15 | 0 | 159 | 62 | 2.0 | 0 | .02 | 30 | ------- | 100 | 9.5 | .1 | 0 | 0 |
| | | | | | | | 31 | ------- | 122 | ------- | .1 | ------- | 0 |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| February | 581 | 0 | 80.0 | 4,440 |
| March | 797 | 9.1 | 137 | 8,420 |
| April | 491 | 9.5 | 130 | 7,740 |
| May | 7.8 | .1 | 2.66 | 164 |
| June | .1 | 0 | .026 | 1.5 |
| July | 1.4 | 0 | .098 | 6.0 |
| The year | 797 | 0 | 28.7 | 20,800 |

NOTE.—No flow during months omitted.

### McRAE COULEE AT INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in NW. ¼ sec. 5, T. 1, R. 28 W., in Saskatchewan, Canada, three-fourths mile north of international boundary and one-fourth mile above mouth.

DRAINAGE AREA.—53 square miles.

RECORDS AVAILABLE.—March, 1927, to September, 1930.

EXTREMES.—Maximum discharge during year, 172 second-feet Mar. 26 (gage height, 4.40 feet); no flow at various times.

1927–1930: Maximum discharge, 486 second-feet May 23, 1927 (gage height, 5.74 feet); no flow at various times.

REMARKS.—Records good. Discharge affected by ice Feb. 19 to Mar. 29. Station maintained in cooperation with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

*Daily and monthly discharge, in second-feet, of McRae Coulee at international boundary, 1929–30*

| Day | Feb. | Mar. | Apr. | Day | Feb. | Mar. | Apr. | Day | Feb. | Mar. | Apr. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 20.3 | 11 | 0 | 0 | 0 | 21 | 9.8 | 0 | 0 |
| 2 | 0 | 0 | 44.8 | 12 | 0 | 28.0 | 0 | 22 | 6.6 | 0 | 0 |
| 3 | 0 | 0 | 19.5 | 13 | 0 | 56 | 0 | 23 | 11.5 | 0 | 0 |
| 4 | 0 | 0 | 7.5 | 14 | 0 | 39.2 | 0 | 24 | 7.1 | 53 | 0 |
| 5 | 0 | 0 | 4.0 | 15 | 0 | 18.2 | 0 | 25 | 6.2 | 127 | 0 |
| 6 | 0 | 0 | 2.5 | 16 | 0 | 9.8 | 0 | 26 | 1.8 | 139 | 0 |
| 7 | 0 | 0 | 1.3 | 17 | 0 | 6.0 | 0 | 27 | .3 | 108 | 0 |
| 8 | 0 | 0 | .6 | 18 | 0 | 2.8 | 0 | 28 | .1 | 67 | 0 |
| 9 | 0 | 0 | .2 | 19 | 4.3 | .6 | 0 | 29 | ------ | 73 | 0 |
| 10 | 0 | 0 | .1 | 20 | 8.4 | .3 | 0 | 30 | ------ | 62 | 0 |
| | | | | | | | | 31 | ------ | 32.9 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| February | 11.5 | 0 | 2.00 | 111 |
| March | 139 | 0 | 26.5 | 1,630 |
| April | 44.8 | 0 | 3.36 | 200 |
| The year | 139 | 0 | 2.68 | 1,940 |

NOTE.—No flow during months for which no discharge is shown.

### 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, 1930.

REMARKS.—Records good. Discharge estimated Apr. 4–7. Canal diverts flood water from Lodge Creek in sec. 3, T. 35 N., R. 17 E., and stores it in North Chinook Reservoir for irrigation of lands between Lodge Creek and Battle Creek, north of Chinook, Mont.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Apr. | May | Day | Apr. | May | Day | Apr. | May |
|---|---|---|---|---|---|---|---|---|
| 1 | 2.2 | 7.2 | 11 | 40 | 2.1 | 21 | 27 | 0 |
| 2 | 34 | 6.6 | 12 | 40 | 1.8 | 22 | 22 | 0 |
| 3 | 37 | 5.9 | 13 | 37 | 1.6 | 23 | 16.8 | 0 |
| 4 | | 5.7 | 14 | 36 | 1.5 | 24 | 14.2 | 0 |
| 5 | | 4.9 | 15 | 32 | .8 | 25 | 12.8 | 0 |
| 6 | 43 | 3.5 | 16 | 32 | .6 | 26 | 12.0 | 0 |
| 7 | | 3.3 | 17 | 30 | .6 | 27 | 12.0 | 0 |
| 8 | 43 | 2.9 | 18 | 30 | .4 | 28 | 11.0 | 0 |
| 9 | 43 | 2.8 | 19 | 36 | .3 | 29 | 9.3 | 0 |
| 10 | 42 | 2.5 | 20 | 37 | .1 | 30 | 8.3 | 0 |
| | | | | | | 31 | ------ | 0 |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| April | 43 | 2.2 | 29.0 | 1,730 |
| May | 7.2 | .1 | 1.78 | 109 |
| The year | 43 | 0 | 2.53 | 1,840 |

NOTE.—No flow prior to Apr. 1 and subsequent to May 20.

### BATTLE CREEK AT INTERNATIONAL BOUNDARY

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

DRAINAGE AREA.—726 square miles.

RECORDS AVAILABLE.—April, 1917, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,070 second-feet Apr. 2 (gage height, 5.8 feet); no flow at various times.

1917–1930: Maximum discharge, 3,200 second-feet Apr. 13, 1917 (gage height, 8.50 feet); no flow at various times.

REMARKS.—Record good. Discharge estimated because of ice Oct. 1 to Nov. 6, Feb. 28 to Apr. 5. Numerous diversions above station. Station maintained in cooperation with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0 | -------- | 14.9 | 780 | 69 | 20.2 | 11.3 | 0.4 | 2.0 |
| 2 | .0 | -------- | 9.3 | 796 | 63 | 21.0 | 12.0 | .1 | 1.7 |
| 3 | .0 | -------- | 14.9 | 670 | 58 | 21.0 | 12.0 | .02 | 1.4 |
| 4 | 5.1 | -------- | 18.5 | 526 | 57 | 22.8 | 11.3 | 0 | 1.0 |
| 5 | 8.0 | -------- | 21.9 | 436 | 53 | 21.0 | 10.3 | 0 | .7 |
| 6 | 7.6 | -------- | 32.5 | 472 | 50 | 19.4 | 10.8 | 0 | .5 |
| 7 | 7.3 | -------- | 38.0 | 472 | 47.6 | 16.3 | 10.8 | 0 | .2 |
| 8 | 6.9 | -------- | 41.6 | 576 | 48.8 | 15.6 | 10.8 | 0 | .1 |
| 9 | 6.5 | -------- | 46.4 | 566 | 45.2 | 17.1 | 9.3 | 0 | .02 |
| 10 | 6.2 | -------- | 60 | 530 | 46.4 | 17.8 | 17.1 | 0 | 0 |
| 11 | 6.2 | -------- | 192 | 396 | 45.2 | 16.3 | 39.2 | 0 | .04 |
| 12 | 6.2 | -------- | 432 | 283 | 44.0 | 13.5 | 15.6 | 0 | .02 |
| 13 | 6.5 | -------- | 396 | 189 | 44.0 | 12.0 | 8.8 | 0 | 0 |
| 14 | 5.8 | -------- | 319 | 158 | 45.2 | 10.8 | 7.2 | 0 | 0 |
| 15 | 5.4 | -------- | 192 | 142 | 46.4 | 10.8 | 6.2 | 0 | 0 |
| 16 | 5.8 | -------- | 124 | 132 | 46.4 | 10.8 | 5.9 | 0 | 0 |
| 17 | 5.8 | -------- | 108 | 140 | 40.4 | 9.3 | 5.9 | 0 | 0 |
| 18 | 6.2 | -------- | 75 | 124 | 36.9 | 8.2 | 5.9 | 0 | 0 |
| 19 | 6.9 | -------- | 60 | 108 | 33.6 | 8.2 | 5.0 | 0 | 0 |
| 20 | 7.3 | -------- | 47.6 | 95 | 31.4 | 12.0 | 4.4 | 0 | 0 |
| 21 | 7.6 | -------- | 33.6 | 88 | 28.1 | 15.6 | 4.4 | 0 | 0 |
| 22 | 8.6 | -------- | 21.9 | 78 | 25.3 | 15.6 | 4.7 | 0 | 0 |
| 23 | 11.3 | -------- | 53 | 70 | 25.3 | 14.2 | 4.7 | 0 | 0 |
| 24 | 11.8 | -------- | 90 | 67 | 25.3 | 13.5 | 4.1 | 3.6 | 0 |
| 25 | 13.5 | -------- | 144 | 66 | 23.6 | 12.7 | 3.5 | 6.2 | 0 |
| 26 | 18.6 | -------- | 221 | 63 | 22.8 | 12.0 | 2.9 | 3.2 | 0 |
| 27 | 25.3 | -------- | 250 | 69 | 22.8 | 11.3 | 2.2 | 2.3 | 0 |
| 28 | 27.5 | 14.9 | 227 | 75 | 24.4 | 14.2 | 2.0 | 1.6 | 1.2 |
| 29 | 28.6 | -------- | 468 | 78 | 26.2 | 11.3 | 1.7 | 1.4 | 5.0 |
| 30 | 28.6 | -------- | 715 | 70 | 23.6 | 12.0 | 1.4 | 2.9 | 5.9 |
| 31 | 20.3 | -------- | 751 | -------- | 20.2 | -------- | .7 | 2.6 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 28.6 | 0 | 10.0 | 615 |
| November 1–6 | 13.0 | 6.5 | 9.60 | 114 |
| March | 751 | 9.3 | 168 | 10,300 |
| April | 796 | 63 | 277 | 16,500 |
| May | 69 | 20.2 | 39.3 | 2,420 |
| June | 22.8 | 8.2 | 14.6 | 869 |
| July | 39.2 | .7 | 8.13 | 500 |
| August | 6.2 | 0 | .785 | 48 |
| September | 5.9 | 0 | .659 | 39 |

### 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, 280 second-feet Apr. 2 (gage height, 4.70 feet); no flow at various times.

1927–1930: Maximum discharge, 423 second-feet Apr. 4, 1927 (gage height, 16.69 feet, old datum); no flow at various times.

REMARKS.—Records good. Discharge estimated because of ice Feb. 27 to Mar. 30. No diversions. Station maintained in cooperation with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Feb. | Mar. | Apr. | May | July | Day | Feb. | Mar. | Apr. | May | July |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ------ | 0.1 | 103 | 0.1 | 0 | 16 | ------ | 39.3 | 0.1 | 0 | 0 |
| 2 | ------ | 0 | 162 | .1 | 0 | 17 | ------ | 17.1 | .1 | 0 | 0 |
| 3 | ------ | 0 | 71 | .04 | 0 | 18 | ------ | 10.7 | .1 | 0 | 0 |
| 4 | ------ | 0 | 20.0 | .1 | 0 | 19 | ------ | 5.2 | .1 | 0 | 0 |
| 5 | ------ | 0 | 7.9 | .04 | 0 | 20 | ------ | 3.3 | .1 | 0 | 0 |
| 6 | ------ | 0 | 3.7 | .03 | 0 | 21 | ------ | 7.2 | .1 | 0 | 0 |
| 7 | ------ | 0 | 1.6 | .02 | 0 | 22 | ------ | 27.8 | .04 | 0 | 0 |
| 8 | ------ | 0 | .8 | 0 | 0 | 23 | ------ | 33.5 | .04 | 0 | 0 |
| 9 | ------ | 0.2 | .4 | .01 | 0 | 24 | ------ | 45.2 | .04 | 0 | 0 |
| 10 | ------ | 0.6 | .2 | .02 | 7.0 | 25 | ------ | 93 | .1 | 0 | 0 |
| 11 | ------ | 4.5 | .2 | .01 | 18.2 | 26 | ------ | 137 | .1 | 0 | 0 |
| 12 | ------ | 33.5 | .2 | 0 | 1.4 | 27 | 0.9 | 155 | .1 | 0 | 0 |
| 13 | ------ | 108 | .1 | 0 | .2 | 28 | .3 | 111 | .1 | 0 | 0 |
| 14 | ------ | 91 | .2 | 0 | .1 | 29 | ------ | 155 | .1 | 0 | 0 |
| 15 | ------ | 64 | .1 | 0 | .1 | 30 | ------ | 132 | .1 | 0 | 0 |
| | | | | | | 31 | ------ | 124 | ------- | 0 | 0 |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| March | 155 | 0 | 45.1 | 2,770 |
| April | 162 | .04 | 12.4 | 738 |
| May | 0.1 | 0 | .015 | 0.9 |
| July | 18.2 | 0 | .87 | 53 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 294 second-feet Mar. 29 (gage height, 4.50 feet); no flow at various times.

1927–1930: Maximum discharge, 432 second-feet Apr. 1, 1928 (gage height, 5.48 feet); no flow at various times.

REMARKS.—Records good except those for ice period Feb. 1 to Mar. 29, which are fair. No diversions. Station maintained in cooperation with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Feb. | Mar. | Apr. | May | Day | Feb. | Mar. | Apr. | May |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 10.0 | 92 | 2.1 | 16 | 0 | 14.4 | 3.0 | |
| 2 | 0 | 7.0 | 197 | 1.6 | 17 | 0 | 15.9 | 2.4 | 0 |
| 3 | 0 | 4.0 | 144 | 1.0 | 18 | 0 | 4.6 | 2.0 | 0 |
| 4 | 0 | 2.0 | 105 | .8 | 19 | 0 | 1.5 | 1.5 | 0 |
| 5 | 0 | 1.0 | 29.2 | .7 | 20 | 0 | .7 | 1.1 | 0 |
| 6 | 0 | 0 | 21.1 | .4 | 21 | 0 | 1.5 | .9 | 0 |
| 7 | 0 | 0 | 12.6 | .2 | 22 | 0 | 43.0 | .8 | 0 |
| 8 | 0 | 0 | 8.4 | .2 | 23 | 0 | 47.2 | .8 | 0 |
| 9 | 0 | 1.5 | 5.7 | .1 | 24 | 0 | 52 | .5 | 0 |
| 10 | 0 | 2.8 | 3.7 | .1 | 25 | 0 | 120 | 1.4 | 0 |
| 11 | 0 | 4.6 | 2.0 | .1 | 26 | 15.0 | 206 | 2.0 | 0 |
| 12 | 0 | 60 | 1.5 | .01 | 27 | 20.0 | 147 | 3.7 | 3 |
| 13 | 0 | 173 | 1.4 | .01 | 28 | 13.0 | 173 | 3.2 | 0 |
| 14 | 0 | 100 | 2.5 | .01 | 29 | ------- | 239 | 2.4 | 0 |
| 15 | 0 | 43.0 | 2.7 | 0 | 30 | ------- | 202 | 2.2 | 0 |
| | | | | | 31 | ------- | 109 | ------- | 0 |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| February | 20.0 | 0 | 1.71 | 95 |
| March | 239 | 0 | 57.6 | 3,540 |
| April | 197 | .5 | 21.9 | 1,300 |
| May | 2.1 | 0 | .236 | 15 |

### LYONS COULEE NEAR INTERNATIONAL BOUNDARY

LOCATION.—Chain gage in NE. ¼ sec. 4, T. 37 N., R. 19 E., half a mile south of international boundary and 1 mile east of Norheim, Mont.

DRAINAGE AREA.—47 square miles.

RECORDS AVAILABLE.—March, 1927, to September, 1930.

EXTREMES.—Maximum discharge during year, 437 second-feet Apr. 2 (gage height, 7.20 feet); no flow at various times.

1927–1930: Maximum discharge, 668 second-feet Apr. 3, 1927 (gage height, 7.65 feet); no flow at various times.

REMARKS.—Records fair. Discharge estimated Feb. 1 to Apr. 2 because of ice; interpolated Apr. 3–5. Some small diversions above gage. Station maintained in cooperation with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Feb. | Mar. | Apr. | May | Day | Feb. | Mar. | Apr. | May |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0.9 | 229 | 0.2 | 16 | 0 | 1.0 | 0.3 | 0 |
| 2 | 0 | 0 | 377 | .2 | 17 | 0 | 2.8 | .2 | 0 |
| 3 | 0 | 0 | 331 | .2 | 18 | 0 | .9 | .2 | 0 |
| 4 | 0 | 0 | 135 | .1 | 19 | 0 | 0 | .2 | 0 |
| 5 | 0 | 0 | 39.4 | .1 | 20 | 0 | 0 | .1 | 0 |
| 6 | 0 | 0 | 10.8 | .03 | 21 | 0 | 0 | .1 | 0 |
| 7 | 0 | 0 | 9.8 | 0 | 22 | 1.0 | .5 | .1 | 0 |
| 8 | 0 | 0 | 6.2 | 0 | 23 | 13.8 | 18.5 | 0 | 0 |
| 9 | 0 | 0 | 3.9 | 0 | 24 | 6.5 | 13.6 | 0 | 0 |
| 10 | 0 | 0 | 1.9 | 0 | 25 | 5.7 | 20.4 | .2 | 0 |
| 11 | 0 | 5.3 | 1.4 | 0 | 26 | 5.7 | 37.9 | .1 | 0 |
| 12 | 0 | 43.2 | 1.0 | 0 | 27 | 5.7 | 41.1 | .2 | 0 |
| 13 | 0 | 11.8 | .7 | 0 | 28 | 3.5 | 34.8 | 1.3 | 0 |
| 14 | 0 | 9.7 | .6 | 0 | 29 | ------- | 180 | .7 | 0 |
| 15 | 0 | 5.3 | .6 | 0 | 30 | ------- | 261 | .3 | 0 |
| | | | | | 31 | ------- | 271 | ------- | 0 |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| February | 13.8 | 0 | 1.50 | 83 |
| March | 271 | 0 | 31.0 | 1,910 |
| April | 377 | 0 | 38.4 | 2,280 |
| May | .2 | 0 | .03 | 1.8 |
| The year | 377 | 0 | 5.90 | 4,280 |

NOTE.—No flow during months for which no discharge is shown.

### MATHESON CANAL NEAR CHINOOK, MONT.

LOCATION.—Water-stage recorder in 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, 1930.

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, 1929–30*

| Day | Apr. | May | June | July | Day | Apr. | May | June | July |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 11.2 | 0.05 | 0.8 | 16 | 0 | 3.6 | 2.0 | 1.8 |
| 2 | 0 | 10.2 | .03 | .4 | 17 | 5.4 | 3.9 | 1.4 | .1 |
| 3 | 0 | 9.6 | .2 | .2 | 18 | 8.0 | 4.2 | .4 | .2 |
| 4 | 0 | 7.5 | 1.0 | .03 | 19 | 7.0 | 3.1 | .1 | .2 |
| 5 | 0 | 6.0 | 2.0 | 0 | 20 | 6.0 | 1.7 | .2 | .1 |
| 6 | 0 | 5.0 | 2.3 | 0 | 21 | 7.5 | 1.2 | .5 | .08 |
| 7 | 0 | 4.5 | 1.4 | 0 | 22 | 8.0 | .5 | .7 | 0 |
| 8 | 0 | 4.0 | 1.8 | 0 | 23 | 7.5 | .2 | 1.1 | 0 |
| 9 | 0 | 3.8 | .8 | 0 | 24 | 7.0 | .07 | 1.7 | 0 |
| 10 | 0 | 4.1 | 1.3 | 0 | 25 | 9.6 | .4 | 1.5 | 0 |
| 11 | 0 | 5.6 | 1.3 | 7.0 | 26 | 9.6 | .5 | .2 | 0 |
| 12 | 0 | 6.0 | 1.3 | .2 | 27 | 10.2 | .4 | 1.2 | 0 |
| 13 | 0 | 5.6 | 1.2 | 4.1 | 28 | 10.2 | .2 | 1.2 | 0 |
| 14 | 0 | 5.2 | 2.2 | 3.2 | 29 | 11.2 | .09 | 1.1 | 0 |
| 15 | 0 | 4.1 | 2.2 | 3.7 | 30 | 11.8 | .06 | 1.0 | 0 |
| | | | | | 31 | ------- | .1 | ------- | 0 |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| April | 11.8 | 5.4 | 3.97 | 24 |
| May | 11.2 | .07 | 3.63 | 222 |
| June | 2.3 | .03 | 1.11 | 66 |
| July | 7.0 | 0 | .713 | 44 |
| The year | 11.8 | 0 | .787 | 356 |

NOTE.—No flow during months for which no discharge is shown.

### 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, 1930.

EXTREMES.—Maximum discharge recorded during year, 194 second-feet Mar. 13; no flow at various times.

1927–1930: 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. Discharge affected by ice Mar. 1–31. Station maintained in cooperation with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.2 | 0 | 18.6 | 0.6 | 0.07 | 0.01 | 0.08 | 0.06 |
| 2 | .2 | 0 | 16.3 | .6 | .07 | .02 | .08 | .07 |
| 3 | .3 | 0 | 14.7 | .5 | .08 | .02 | .07 | .06 |
| 4 | .3 | 0 | 14.4 | .5 | .2 | .04 | .05 | .07 |
| 5 | .3 | 0 | 10.4 | .5 | .09 | .03 | .03 | .07 |
| 6 | .3 | 0 | 4.8 | .4 | .06 | .03 | 0 | .07 |
| 7 | .3 | 0 | 3.4 | .3 | .04 | .02 | 0 | .07 |
| 8 | .2 | 1.2 | 2.2 | .3 | .04 | .02 | 0 | .08 |
| 9 | .1 | 2.6 | 1.6 | .5 | .04 | .02 | 0 | .1 |
| 10 | .1 | 7.8 | 1.2 | .5 | .03 | .1 | 0 | .1 |
| 11 | .1 | 14.0 | 1.0 | .4 | .01 | .2 | 0 | .3 |
| 12 | .1 | 128 | .9 | .4 | .01 | .1 | 0 | .3 |
| 13 | .1 | 194 | .8 | .4 | 0 | .09 | 0 | .2 |
| 14 | .1 | 78 | .9 | .3 | 0 | .09 | 0 | .2 |
| 15 | .1 | 41.8 | .9 | .2 | .02 | .07 | 0 | .1 |
| 16 | .1 | 26.2 | .9 | .2 | .03 | .07 | 0 | .1 |
| 17 | .2 | 11.9 | .8 | .2 | .03 | .07 | 0 | .1 |
| 18 | .2 | 8.8 | .7 | .1 | .04 | .09 | 0 | .1 |
| 19 | .2 | 6.6 | .7 | .1 | .05 | .09 | 0 | .1 |
| 20 | .1 | 2.2 | .6 | .1 | .07 | .09 | 0 | .1 |
| 21 | .1 | 1.1 | .6 | .1 | .09 | .1 | 0 | .1 |
| 22 | .1 | 15.6 | .5 | .09 | .09 | .2 | 0 | .1 |
| 23 | .1 | 134 | .5 | .09 | .09 | .2 | .06 | .2 |
| 24 | .1 | 93 | .5 | .09 | .1 | .2 | .07 | .1 |
| 25 | .1 | 87 | .7 | .09 | .1 | .1 | .06 | .1 |
| 26 | .1 | 152 | .9 | .09 | .09 | .2 | .06 | .2 |
| 27 | .2 | 63 | 1.0 | .1 | .07 | .2 | .06 | .2 |
| 28 | .3 | 31.7 | 1.2 | .1 | .05 | .1 | .06 | .1 |
| 29 | .2 | 22.0 | 1.1 | .1 | 0 | .1 | .06 | .08 |
| 30 | .2 | 19.0 | .5 | .1 | 0 | .1 | .03 | .08 |
| 31 | .2 | 19.3 | ------- | .09 | ------- | .08 | .03 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 0.3 | 0.1 | 0.17 | 10 |
| March | 194 | 0 | 37.4 | 2,300 |
| April | 18.6 | .5 | 3.44 | 205 |
| May | .6 | .09 | .26 | 16 |
| June | .2 | 0 | .06 | 3.6 |
| July | .2 | .01 | .09 | 5.5 |
| August | .08 | 0 | .03 | 1.8 |
| September | .3 | .06 | .12 | 7.1 |

### FRENCHMAN RIVER AT INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in SW. ¼ sec. 4, T. 1, R. 10 W. third meridian, in Saskatchewan, just across the international boundary from eastern 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, 1930.

EXTREMES.—Maximum discharge during year, 1,340 second-feet Apr. 6 (gage height, 5.65 feet); minimum, 0.6 second-foot Sept. 20.

1917–1930: 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 ice period Feb. 22 to Apr. 2 and for period Oct. 1–31, which are fair. Numerous diversions in Canada. Station maintained in cooperation with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | [a] 8.8 | ------- | [a] 95 | 836 | 170 | 44.6 | 42.4 | 8.7 | 6.4 |
| 2 | 10.4 | ------- | [a] 84 | 960 | 192 | 44.6 | 36.8 | [a] 7.6 | 5.2 |
| 3 | [a] 10.1 | ------- | 68 | 813 | 199 | 43.5 | 34.9 | 6.4 | 4.1 |
| 4 | 9.8 | ------- | [a] 65 | 1,120 | 202 | 44.6 | 33.9 | [a] 6.0 | 3.0 |
| 5 | [a] 10.6 | ------- | 63 | 1,280 | 196 | 43.5 | 30.1 | 5.7 | 2.4 |
| 6 | [a] 11.4 | ------- | [a] 80 | 1,280 | 170 | 43.5 | 25.8 | 5.2 | 2.2 |
| 7 | 12.3 | ------- | 98 | 1,170 | 151 | 44.6 | 25.0 | 4.4 | 2.2 |
| 8 | 11.7 | ------- | [a] 140 | 960 | 138 | 43.5 | 26.5 | 3.5 | 2.0 |
| 9 | [a] 10.8 | ------- | [a] 180 | 836 | 130 | 41.3 | 27.2 | 2.7 | 1.9 |
| 10 | 9.8 | ------- | 209 | 910 | 115 | 39.0 | 27.2 | 2.5 | 1.6 |
| 11 | [a] 10.1 | ------- | [a] 460 | 1,010 | 108 | 36.8 | 28.2 | 2.8 | 1.6 |
| 12 | 10.4 | ------- | 736 | 1,130 | 100 | 34.9 | 30.1 | 2.7 | 92.0 |
| 13 | [a] 9.9 | ------- | [a] 760 | 1,190 | 92 | 33.9 | 34.9 | 2.4 | 37.9 |
| 14 | [a] 9.3 | ------- | [a] 775 | 1,100 | 79 | 33.9 | 34.9 | 1.7 | 7.6 |
| 15 | 8.7 | ------- | 799 | 845 | 74 | 33.0 | 36.8 | 1.4 | 2.8 |
| 16 | [a] 8.4 | ------- | [a] 810 | 578 | 70 | 32.0 | 36.8 | 1.4 | 1.3 |
| 17 | 8.2 | ------- | 818 | 458 | 68 | 31.0 | 30.1 | 1.4 | 1.2 |
| 18 | [a] 9.0 | ------- | [a] 580 | 387 | 66 | 31.0 | 33.0 | 2.7 | 1.0 |
| 19 | 9.8 | ------- | 339 | 347 | 66 | 30.1 | 39.0 | 6.4 | .8 |
| 20 | [a] 10.4 | ------- | 265 | 323 | 66 | 25.8 | 29.1 | 2.7 | .7 |
| 21 | [a] 11.0 | ------- | [a] 240 | 284 | 65 | 25.0 | 22.9 | 11.6 | .7 |
| 22 | 11.7 | 151 | 209 | 246 | 61 | 23.6 | 20.0 | 21.4 | .7 |
| 23 | [a] 11.0 | [a] 250 | 351 | 216 | 60 | 22.9 | 18.7 | 12.0 | 18.7 |
| 24 | 10.4 | 343 | 371 | 202 | 61 | 23.6 | 18.1 | 7.9 | 35.8 |
| 25 | [a] 10.4 | [a] 400 | 404 | 185 | 61 | 25.8 | 15.6 | 7.2 | 22.2 |
| 26 | 10.4 | 457 | 429 | 176 | 60 | 25.0 | 10.7 | 5.7 | 13.7 |
| 27 | [a] 11.4 | [a] 350 | 569 | 170 | 57 | 23.6 | [a] 9.7 | 6.4 | 11.1 |
| 28 | 12.3 | 253 | 646 | 185 | 54 | 22.9 | 8.7 | 5.2 | 13.7 |
| 29 | [a] 12.6 | ------- | 822 | 170 | 52 | 24.3 | [a] 9.2 | 3.3 | 13.3 |
| 30 | 12.9 | ------- | 682 | 166 | 48.0 | 41.3 | [a] 9.8 | 1.9 | 13.3 |
| 31 | 13.5 | ------- | 708 | ------- | 45.8 | ------- | 10.3 | 6.1 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 13.5 | 8.2 | 10.6 | 652 |
| February 22–28 | 457 | 151 | 315 | 4,370 |
| March | 822 | 63 | 415 | 25,500 |
| April | 1,280 | 166 | 651 | 38,700 |
| May | 202 | 45.8 | 99.3 | 6,110 |
| June | 44.6 | 22.9 | 33.8 | 2,010 |
| July | 42.4 | 8.7 | 25.7 | 1,580 |
| August | 21.4 | 1.4 | 5.39 | 331 |
| September | 92 | .7 | 10.7 | 637 |

[a] Estimated or interpolated.

## FRENCHMAN CANAL NEAR SACO, MONT.

LOCATION.—Water-stage recorder in NE. ¼ sec. 27, T. 33 N., R. 34 E., 1½ miles below headgates and 14 miles northeast of Saco.

RECORDS AVAILABLE.—May, 1929, to September, 1930.

REMARKS.—Records good. Canal diverts water from Frenchman River for irrigation of land in Frenchman Valley.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Apr. | May | June | July | Aug. | Sept. | Day | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 21.2 | 19.4 | 21.2 | 2.8 | 2.4 | 16 | 13.7 | 0 | 24.1 | 22.2 | 0 | 0 |
| 2 | 0 | 21.2 | 19.4 | 22.2 | 2.6 | 2.0 | 17 | 9.0 | 4.2 | 24.1 | 21.2 | 0 | 0 |
| 3 | 0 | 21.2 | 23.2 | 23.2 | 2.3 | 0 | 18 | 4.8 | 8.5 | 24.1 | 20.3 | 0 | 0 |
| 4 | 0 | 21.2 | 26.0 | 23.2 | 3.3 | 0 | 19 | 2.4 | 4.2 | 23.2 | 20.3 | 2.3 | 0 |
| 5 | 0 | 21.2 | 26.0 | 22.2 | 4.6 | 0 | 20 | 1.3 | 10.3 | 22.2 | 20.3 | 3.7 | 0 |
| 6 | 0 | 2.0 | 24.1 | 22.2 | 4.3 | 0 | 21 | .6 | 17.4 | 22.2 | 21.2 | 2.3 | 0 |
| 7 | 0 | 0 | 24.1 | 22.2 | 3.4 | 0 | 22 | 0 | 16.5 | 21.2 | 21.2 | 1.6 | 0 |
| 8 | 0 | 0 | 24.1 | 21.2 | 3.0 | 0 | 23 | 3.7 | 14.6 | 21.2 | 19.4 | 10.4 | 0 |
| 9 | 0 | 0 | 23.2 | 21.2 | 2.4 | 0 | 24 | 7.2 | 17.4 | 21.2 | 19.4 | 4.4 | 0 |
| 10 | 11.8 | 0 | 19.4 | 20.3 | 1.8 | 0 | 25 | 0 | 15.6 | 21.2 | 8.2 | 3.2 | 0 |
| 11 | 20.3 | 0 | 19.4 | 20.3 | 1.8 | 0 | 26 | 4.1 | 18.4 | 20.3 | 4.1 | 3.3 | 0 |
| 12 | 13.5 | 0 | 19.4 | 20.3 | 1.3 | 8.6 | 27 | 22.2 | 22.2 | 22.2 | 16.5 | 2.5 | 0 |
| 13 | 0 | 0 | 24.1 | 21.2 | .6 | 9.1 | 28 | 16.5 | 22.2 | 22.2 | 19.4 | 1.0 | 0 |
| 14 | 0 | 0 | 23.2 | 21.2 | .2 | 0 | 29 | 21.2 | 21.2 | 22.2 | 9.9 | .4 | 0 |
| 15 | 0 | 0 | 24.1 | 22.2 | .1 | 0 | 30 | 21.2 | 20.3 | 22.2 | 5.6 | .4 | 0 |
| | | | | | | | 31 | ------ | 19.4 | ------ | 4.6 | 2.5 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| April | 22.2 | 0 | 5.78 | 344 |
| May | 22.2 | 0 | 11.0 | 676 |
| June | 26.0 | 19.4 | 22.4 | 1,330 |
| July | 23.2 | 4.1 | 18.6 | 1,140 |
| August | 10.4 | 0 | 2.34 | 144 |
| September | 9.1 | 0 | .737 | 44 |
| The year | 26.0 | 0 | 5.09 | 3,680 |

NOTE.—No flow during months for which no discharge is shown.

### ROCK CREEK AT INTERNATIONAL BOUNDARY

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

DRAINAGE AREA.—242 square miles.

RECORDS AVAILABLE.—March, 1927, to September, 1930.

EXTREMES.—Maximum discharge during year, 606 second-feet Apr. 4 (gage height, 7.47 feet); no flow Aug. 28 to Sept. 11.

1927–1930: Maximum discharge, 982 second-feet Apr. 6, 1927 (gage height, 10.51 feet); no flow Mar. 1–17, 1927, June 13–18, 1929, Aug. 28 to Sept. 11, 1930.

REMARKS.—Records fair except those for October, which are poor. Stage-discharge relation affected by ice Mar. 1 to Apr. 3. One small diversion above gage. Station maintained in cooperation with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | [a] 0.20 | 0.9 | 135 | 23.9 | 1.3 | 0.4 | 0.2 | 0 |
| 2 | [a] .30 | .9 | 165 | 18.3 | .8 | .3 | .4 | 0 |
| 3 | .30 | .9 | 581 | 13.8 | .3 | .1 | [a] .3 | 0 |
| 4 | .40 | .9 | 606 | 11.7 | .3 | .4 | [a] .2 | 0 |
| 5 | .40 | .9 | 501 | 10.9 | .5 | .9 | .1 | 0 |
| 6 | .40 | .9 | 407 | 10.8 | 1.0 | 1.6 | .3 | 0 |
| 7 | [a] .20 | .9 | 208 | 10.6 | 1.0 | 1.7 | .3 | 0 |
| 8 | .08 | .9 | 125 | 9.4 | 1.5 | 1.3 | [a] .4 | 0 |
| 9 | [a] .08 | .9 | 100 | 9.3 | 1.0 | 1.1 | [a] .4 | 0 |
| 10 | [a] .08 | .9 | 84 | 8.7 | .5 | 1.0 | [a] .5 | 0 |
| 11 | .08 | 1.0 | 59 | 8.5 | .3 | 1.0 | .6 | 0 |
| 12 | .08 | 20 | [a] 45 | 10.0 | .3 | 1.0 | [a] .6 | 51 |
| 13 | [a] .08 | 100 | 31.4 | 9.1 | .1 | 1.1 | .7 | 133 |
| 14 | [a] .10 | 133 | 27.3 | 8.0 | .1 | 2.7 | [a] .7 | 42.7 |
| 15 | [a] .10 | 57 | 30.0 | 7.2 | .1 | 1.7 | .8 | 9.4 |
| 16 | .10 | 46.4 | 27.3 | 6.8 | .4 | 2.3 | [a] .8 | 7.7 |
| 17 | [a] .20 | 29.1 | 21.7 | 6.1 | 1.0 | [a] 2.1 | .7 | 3.1 |
| 18 | .20 | 21.3 | [a] 20.0 | 5.6 | .9 | [a] 2.0 | .8 | 3.2 |
| 19 | .30 | 10.8 | [a] 19.0 | 4.1 | 1.0 | 1.8 | [a] 1.1 | 3.1 |
| 20 | .40 | 3.9 | [a] 17.0 | 3.5 | 1.0 | [a] 1.5 | [a] 1.4 | 2.8 |
| 21 | .40 | 6.0 | [a] 16.0 | 3.8 | .8 | [a] 1.3 | 1.8 | 3.0 |
| 22 | .50 | 87 | [a] 14.0 | 3.0 | .2 | [a] 1.1 | 2.1 | 2.1 |
| 23 | 1.30 | 261 | [a] 13.0 | 2.8 | .1 | [a] .9 | [a] 1.7 | 3.5 |
| 24 | .90 | 210 | 10.8 | 2.6 | .4 | [a] .7 | [a] 1.3 | 3.3 |
| 25 | 1.90 | 200 | [a] 15.0 | 2.4 | .4 | .5 | [a] 1.0 | 3.2 |
| 26 | 1.10 | 145 | [a] 19.0 | 3.7 | .3 | .4 | [a] .6 | 3.0 |
| 27 | 1.30 | 135 | [a] 23.0 | 3.1 | .3 | [a] .4 | [a] .2 | 3.0 |
| 28 | 1.40 | 108 | [a] 27.0 | [a] 2.0 | .2 | .3 | 0 | 3.0 |
| 29 | [a] 1.40 | 110 | 31.8 | 1.0 | .2 | [a] .3 | 0 | 3.0 |
| 30 | 1.40 | 115 | 26.2 | 1.5 | .1 | .2 | 0 | 3.0 |
| 31 | 1.50 | 145 | ------- | 1.5 | ------- | [a] .2 | 0 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 1.50 | 0.08 | 0.53 | 32 |
| March | 261 | .9 | 63.0 | 3,870 |
| April | 606 | 10.8 | 114 | 6,780 |
| May | 23.9 | 7.0 | 7.22 | 444 |
| June | 1.5 | .1 | .55 | 33 |
| July | 2.7 | .1 | 1.04 | 64 |
| August | 2.1 | 0 | .65 | 40 |
| September | 133 | 0 | 9.54 | 567 |

[a] Estimated or interpolated.

### HORSE CREEK AT INTERNATIONAL BOUNDARY

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

DRAINAGE AREA.—71 square miles.

RECORDS AVAILABLE—March, 1927, to September, 1930; May, 1914, to October, 1926, maintained at same location by Department of the Interior, Canada.

EXTREMES.—Maximum discharge during year, 244 second-feet Apr. 4 (gage height, 7.71 feet); no flow at various times.

1914–1930: Maximum discharge, 1,040 second-feet Mar. 30, 1925 (gage height, 10.85 feet); no flow at various times.

REMARKS.—Records fair. Stage-discharge relation affected by ice Mar. 1 to Apr. 4. No diversion. Station maintained in cooperation with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|
| 1 | 0 | 79 | 2.0 | 0.2 | 0 | 0 | 0 |
| 2 | 0 | 130 | 2.0 | [a] .2 | 0 | 0 | 0 |
| 3 | 0 | 182 | 2.0 | [a] .2 | 0 | 0 | 0 |
| 4 | 0 | 244 | [a] 1.7 | [a] .3 | 0 | 0 | 0 |
| 5 | 0 | 124 | 1.5 | [a] .3 | 0 | 0 | 0 |
| 6 | 0 | 91 | 1.4 | .4 | 0 | [a] .01 | 0 |
| 7 | 0 | 39.1 | 1.4 | [a] .3 | 0 | [a] .02 | 0 |
| 8 | 0 | 28.6 | [a] 1.4 | .2 | 0 | [a] .03 | 0 |
| 9 | 0 | [a] 21.0 | [a] 1.4 | [a] .1 | [a] .01 | [a] .04 | 0 |
| 10 | 0 | 14.5 | [a] 1.4 | [a] .05 | [a] .02 | [a] .10 | 0 |
| 11 | 8.0 | [a] 12.0 | 1.4 | .03 | .03 | .10 | 0 |
| 12 | 25.0 | [a] 8.0 | [a] 1.4 | [a] .03 | [a] .03 | [a] .10 | 0 |
| 13 | 30.0 | 4.3 | [a] 1.3 | [a] .03 | .03 | .03 | 0 |
| 14 | 31.2 | 4.1 | [a] 1.2 | [a] .03 | [a] .04 | [a] .03 | 0 |
| 15 | 16.5 | 4.3 | [a] 1.0 | .03 | [a] .04 | [a] .03 | 0 |
| 16 | 14.7 | 4.4 | 1.0 | [a] .03 | [a] .05 | .03 | 0 |
| 17 | 15.4 | 3.7 | [a] .9 | [a] .02 | [a] .05 | [a] .1 | 0 |
| 18 | 5.1 | 3.3 | .8 | [a] .01 | [a] .1 | .1 | 0 |
| 19 | 5.0 | 3.0 | [a] .8 | .0 | .2 | [a] .1 | 0 |
| 20 | 5.0 | [a] 2.7 | [a] .8 | [a] .01 | [a] .2 | [a] .04 | 0 |
| 21 | 2.2 | 2.2 | [a] .7 | .02 | .2 | [a] .03 | 0 |
| 22 | 34.6 | 2.1 | .7 | [a] .02 | [a] .1 | .03 | 0 |
| 23 | 149 | [a] 1.8 | [a] .7 | [a] .02 | [a] .1 | 0 | 0 |
| 24 | 90 | 1.6 | [a] .6 | [a] .01 | .1 | 0 | [a] .03 |
| 25 | 85 | 2.1 | .6 | [a] .01 | [a] .04 | 0 | [a] .03 |
| 26 | 55 | 2.1 | [a] .6 | [a] .01 | [a] .03 | 0 | [a] .03 |
| 27 | 56 | [a] 2.4 | [a] .5 | 0 | [a] .02 | 0 | [a] .02 |
| 28 | 58 | 2.6 | [a] .4 | 0 | .02 | 0 | [a] .02 |
| 29 | 78 | 2.1 | [a] .4 | [a] 0 | [a] .01 | 0 | [a] .02 |
| 30 | 64 | 2.1 | [a] .3 | 0 | [a] .01 | 0 | [a] .02 |
| 31 | 69 | -------- | .3 | -------- | 0 | 0 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| March | 149 | 0 | 28.9 | 1,780 |
| April | 244 | 1.6 | 34.1 | 2,030 |
| May | 2.0 | .3 | 1.05 | 65 |
| June | .4 | 0 | .09 | 5.4 |
| July | .2 | 0 | .05 | 3.1 |
| August | .1 | 0 | .03 | 1.8 |
| September | .03 | 0 | .01 | .6 |

[a] Estimated.

NOTE.—No flow during October.

### 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, 1930. March, 1924, to October, 1926, station above East Fork maintained by Department of the Interior, Canada.

EXTREMES.—Maximum discharge during year, 394 second-feet Mar. 23; no flow at various times.

1927–1930: Maximum discharge, 1,850 second-feet Apr. 9, 1927 (gage height, 10.42 feet); no flow at various times.

REMARKS.—Records for ice period Mar. 1 to Apr. 2, fair; other records good. No diversions. Station maintained in cooperation with Dominion Water Power & Hydrometric Bureau, Department of the Interior, Canada.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Mar. | Apr. | May | June | Day | Mar. | Apr. | May | June |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 136 | 1.3 | 0.1 | 16 | 34.3 | 8.4 | 0.3 | 0.1 |
| 2 | 0 | 298 | 1.1 | .1 | 17 | 28.6 | 7.2 | .2 | .1 |
| 3 | 0 | 381 | 1.1 | .1 | 18 | 22.1 | 6.6 | .2 | .1 |
| 4 | .1 | 329 | .7 | .3 | 19 | 8.4 | 5.8 | .2 | .05 |
| 5 | .2 | 212 | .6 | .2 | 20 | 2.9 | 4.5 | .2 | .05 |
| 6 | .2 | 154 | .5 | .2 | 21 | .9 | 3.4 | .2 | .04 |
| 7 | .3 | 156 | .5 | .1 | 22 | 23.1 | 2.2 | .2 | .04 |
| 8 | .3 | 52 | .5 | .1 | 23 | 394 | 1.7 | .1 | .04 |
| 9 | .5 | 41.8 | .5 | .1 | 24 | 334 | 1.4 | .1 | .03 |
| 10 | .6 | 36.0 | .5 | .05 | 25 | 192 | 2.0 | .1 | .03 |
| 11 | 57 | 19.7 | .5 | .05 | 26 | 163 | 2.0 | .1 | .02 |
| 12 | 100 | 14.1 | .4 | .1 | 27 | 150 | 1.6 | .1 | 0 |
| 13 | 123 | 9.4 | .4 | .1 | 28 | 110 | 1.8 | .1 | 0 |
| 14 | 183 | 7.9 | .3 | .1 | 29 | 156 | 1.6 | .1 | 0 |
| 15 | 170 | 7.9 | .3 | .1 | 30 | 201 | 1.3 | .05 | 0 |
| | | | | | 31 | 188 | ------ | .05 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| March | 394 | 0 | 85.3 | 5,240 |
| April | 381 | 1.3 | 63.5 | 3,780 |
| May | 1.3 | .05 | .37 | 23 |
| June | .3 | 0 | .08 | 4.8 |
| The year | 394 | 0 | 12.5 | 9,050 |

NOTE.—No flow during months for which no discharge is shown.

## 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, 1930.

EXTREMES.—Maximum stage during year, 6.70 feet Mar. 12 (discharge not determined); no flow at times during July, August, September.

1929–30: Maximum stage, 10.0 feet June 2, 1929 (discharge not determined); no flow at times during July, August, September, 1930.

REMARKS.—Records fair below 10 second-feet; others poor. Some storage on one tributary and some irrigation above station. Rating curve not sufficiently well defined for determination of discharge above gage height 3.0 feet; mean daily stage above this limit June 6–9, 11, 12, 1929, Mar. 9–15, 1930.

*Daily discharge, in second-feet, 1929–30*

| Day | Apr. | May | June | July | Aug. | Sept. | Day | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1929 | | | | | | | 1929 | | | | | | |
| 1 | ------ | 2.1 | 2.2 | 1.8 | 2.1 | 1.5 | 16 | 2.4 | 1.9 | 6.0 | 1.2 | 1.1 | 1.9 |
| 2 | ------ | 1.8 | 10.0 | 2.0 | 2.1 | 1.7 | 17 | 2.6 | 1.6 | 5.4 | 1.9 | 1.1 | 2.1 |
| 3 | ------ | 1.7 | 6.2 | 1.9 | 2.1 | 1.8 | 18 | 2.1 | 1.5 | 4.4 | 1.7 | 1.5 | 1.7 |
| 4 | ------ | 1.7 | 4.4 | 1.9 | 2.2 | 1.4 | 19 | 1.9 | 1.5 | 3.9 | 1.7 | 1.3 | 1.4 |
| 5 | ------ | 1.7 | 3.3 | 1.9 | 1.9 | 1.6 | 20 | 1.6 | 1.4 | 2.5 | 1.7 | 1.4 | 1.0 |
| 6 | ------ | 1.6 | ------ | 2.0 | 1.8 | 1.7 | 21 | 1.5 | 1.1 | 2.6 | 1.8 | 1.7 | .7 |
| 7 | ------ | 1.6 | ------ | 2.2 | 1.5 | 1.9 | 22 | 1.7 | 1.2 | 3.3 | 1.7 | 1.3 | .3 |
| 8 | ------ | 1.6 | ------ | 2.5 | 1.2 | 1.7 | 23 | 1.7 | 1.0 | 2.6 | 1.9 | 1.3 | .3 |
| 9 | ------ | 1.7 | ------ | 2.3 | 1.0 | 1.8 | 24 | 1.7 | 1.6 | 2.9 | 2.3 | 1.4 | .3 |
| 10 | ------ | 1.6 | 2.8 | 2.2 | .9 | 1.5 | 25 | 1.5 | 1.8 | 2.7 | 1.5 | 1.6 | .3 |
| 11 | ------ | 1.6 | ------ | 2.0 | .9 | 1.3 | 26 | 1.5 | 2.7 | 2.5 | 1.7 | 1.7 | .3 |
| 12 | 3.5 | 1.5 | ------ | 1.9 | 1.0 | 1.5 | 27 | 1.4 | 1.6 | 2.3 | 1.4 | 1.6 | .2 |
| 13 | 3.1 | 1.4 | 14 | 1.5 | 1.6 | 1.7 | 28 | 1.7 | .5 | 2.1 | 1.5 | 1.5 | .2 |
| 14 | 3.0 | 1.6 | 4.6 | .8 | 1.8 | 1.9 | 29 | 1.9 | 6.9 | 2.1 | 1.3 | 1.3 | .2 |
| 15 | 3.0 | 1.5 | 4.4 | 1.1 | 1.5 | 1.8 | 30 | 2.2 | 5.8 | 1.9 | 1.7 | 1.5 | .2 |
| | | | | | | | 31 | ------ | 5.8 | ------ | 1.9 | 1.5 | ------ |

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1929–30 | | | | | | | | | |
| 1 | 0.2 | 0.3 | -------- | 3.0 | 3.2 | 3.8 | -------- | 0 | 0.1 |
| 2 | .1 | .3 | -------- | 3.1 | 3.2 | 2.2 | -------- | 0 | .1 |
| 3 | .2 | .3 | -------- | 3.0 | 3.3 | 7.5 | -------- | 0 | .1 |
| 4 | .2 | .2 | -------- | 2.7 | 4.8 | 6.9 | -------- | 0 | .1 |
| 5 | .2 | .2 | -------- | 2.3 | 4.2 | 6.4 | -------- | 0 | .8 |
| 6 | .2 | .2 | -------- | 2.3 | 16 | 6.4 | -------- | 0 | .8 |
| 7 | .2 | .2 | -------- | 2.3 | 16 | 6.0 | -------- | 0 | .8 |
| 8 | (a) | .2 | -------- | 2.3 | 6.9 | 3.3 | -------- | 0 | .3 |
| 9 | .2 | .2 | -------- | 3.4 | 5.3 | 3.3 | -------- | 0 | .3 |
| 10 | .3 | .2 | -------- | 3.2 | 3.8 | 3.1 | -------- | 0 | .8 |
| 11 | .2 | .2 | -------- | 3.0 | 2.6 | 2.8 | -------- | 0 | .7 |
| 12 | .2 | .2 | -------- | 2.7 | 2.7 | 2.4 | -------- | 0 | .4 |
| 13 | .2 | .2 | -------- | 2.7 | 3.0 | 2.2 | -------- | 0 | .3 |
| 14 | .1 | .2 | -------- | 3.2 | 2.4 | 2.2 | -------- | 0 | .2 |
| 15 | .2 | .2 | -------- | 4.2 | 2.6 | 2.0 | -------- | 0 | .1 |
| 16 | .1 | .2 | 26 | 3.9 | 2.5 | 1.9 | -------- | .1 | 0 |
| 17 | .1 | .2 | 19 | 3.7 | 2.3 | 2.1 | 0.3 | .1 | 0 |
| 18 | .2 | .2 | 16 | 3.9 | 1.1 | 3.0 | .3 | (a) | 0 |
| 19 | .3 | .2 | 16 | 3.4 | .9 | 1.7 | .3 | .1 | 0 |
| 20 | .6 | 0 | 15 | 3.2 | .9 | 1.9 | .3 | .2 | 0 |
| 21 | .3 | -------- | 14 | 3.0 | .8 | 1.5 | .2 | .1 | 0 |
| 22 | .2 | -------- | 11 | 3.2 | .7 | 1.3 | .2 | .2 | (a) |
| 23 | .1 | -------- | 11 | 2.7 | .7 | 1.3 | .2 | .1 | .2 |
| 24 | .2 | -------- | 11 | 3.1 | .8 | 1.2 | .1 | .2 | .1 |
| 25 | .2 | -------- | 8.8 | 4.4 | .4 | 1.1 | .1 | .1 | .2 |
| 26 | .2 | -------- | 7.5 | 5.4 | .4 | 1.1 | 0 | .1 | .2 |
| 27 | .2 | -------- | 5.9 | 5.4 | .4 | 1.1 | .1 | .1 | .2 |
| 28 | .2 | -------- | 4.4 | 4.2 | .6 | 1.0 | .1 | .1 | .2 |
| 29 | .2 | -------- | 3.4 | 3.5 | .4 | -------- | .1 | .1 | .2 |
| 30 | .2 | -------- | 4.4 | 3.9 | .4 | -------- | .1 | .1 | .2 |
| 31 | .2 | -------- | 3.2 | -------- | .4 | -------- | .1 | .2 | ------- |

[a] Discharge less than 0.05 second-foot.

*Monthly discharge, in second-feet, of Redwater Creek at Circle, Mont., 1929–30*

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| 1929 | | | | |
| April 12–30 | 3.5 | 1.4 | 2.11 | 80 |
| May | 6.9 | 1.0 | 2.02 | 124 |
| July | 2.5 | .8 | 1.77 | 109 |
| August | 2.2 | .9 | 1.50 | 92 |
| September | 2.1 | .2 | 1.20 | 71 |
| 1929–30 | | | | |
| October | .6 | 0 | .20 | 12 |
| November 1–20 | .3 | 0 | .20 | 7.9 |
| April | 5.4 | 2.3 | 3.34 | 199 |
| May | 16 | .4 | 3.02 | 186 |
| June 1–28 | 7.5 | 1.0 | 2.88 | 160 |
| July 17–31 | .3 | 0 | .17 | 5.1 |
| August | .2 | 0 | .06 | 3.7 |
| September | .8 | 0 | .25 | 15 |

## 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 7,729.51 feet above mean sea level.

DRAINAGE AREA.—1,010 square miles.

RECORDS AVAILABLE.—October, 1921, to September, 1930.

EXTREMES.—Maximum stage during year, 3.95 feet June 24, 25; minimum, 0.41 foot Dec. 6, 7.

1921–1930: Maximum stage, 6.12 feet June 30, 1927; minimum, 0.36 foot Dec. 17, 1921.

REMARKS.—Records good. Gage read daily June to September; Dec. 5 to May 16 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, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.30 | 0.83 | 0.43 | 0.46 | 0.58 | 0.62 | 0.56 | 1.14 | 2.65 | 3.90 | 3.05 | 2.18 |
| 2 | 1.30 | .80 | .43 | .46 | .58 | .62 | .56 | 1.22 | 2.70 | 3.89 | 3.05 | 2.14 |
| 3 | 1.28 | .81 | .42 | .46 | .58 | .63 | .56 | 1.28 | 2.75 | 3.89 | 3.04 | 2.08 |
| 4 | 1.25 | .80 | .42 | .46 | .58 | .65 | .57 | 1.33 | 2.78 | 3.88 | 3.02 | 2.04 |
| 5 | 1.22 | .78 | .42 | .46 | .59 | .67 | .57 | 1.37 | 2.80 | 3.88 | 2.98 | 2.02 |
| 6 | 1.22 | .76 | .41 | .45 | .60 | .67 | .57 | 1.40 | 2.84 | 3.87 | 2.98 | 2.02 |
| 7 | 1.20 | .75 | .41 | .45 | .61 | .67 | .57 | 1.42 | 2.88 | 3.86 | 2.95 | 2.01 |
| 8 | 1.21 | .73 | .42 | .46 | .62 | .66 | .57 | 1.43 | 2.97 | 3.85 | 2.88 | 1.99 |
| 9 | 1.22 | .72 | .45 | .46 | .63 | .64 | .58 | 1.44 | 3.04 | 3.83 | 2.84 | 1.94 |
| 10 | 1.21 | .71 | .47 | .45 | .63 | .62 | .58 | 1.44 | 3.12 | 3.80 | 2.84 | 1.94 |
| 11 | 1.20 | .70 | .49 | .45 | .63 | .61 | .58 | 1.44 | 3.24 | 3.79 | 2.84 | 1.92 |
| 12 | 1.19 | .68 | .51 | .45 | .62 | .60 | .58 | 1.45 | 3.34 | 3.79 | 2.80 | 1.88 |
| 13 | 1.17 | .66 | .52 | .45 | .62 | .59 | .58 | 1.47 | 3.44 | 3.79 | 2.78 | 1.82 |
| 14 | 1.16 | .65 | .52 | .45 | .63 | .59 | .59 | 1.49 | 3.49 | 3.78 | 2.80 | 1.78 |
| 15 | 1.14 | .62 | .54 | .45 | .63 | .59 | .60 | 1.51 | 3.52 | 3.76 | 2.78 | 1.74 |
| 16 | 1.13 | .60 | .56 | .45 | .63 | .59 | .61 | 1.54 | 3.54 | 3.72 | 2.76 | 1.72 |
| 17 | 1.12 | .59 | .56 | .45 | .63 | .59 | .62 | 1.57 | 3.58 | 3.69 | 2.74 | 1.70 |
| 18 | 1.10 | .58 | .54 | .45 | .63 | .60 | .63 | 1.63 | 3.63 | 3.66 | 2.68 | 1.68 |
| 19 | 1.08 | .56 | .51 | .46 | .64 | .61 | .65 | 1.70 | 3.68 | 3.65 | 2.64 | 1.64 |
| 20 | 1.07 | .56 | .49 | .46 | .64 | .61 | .68 | 1.77 | 3.74 | 3.58 | 2.60 | 1.60 |
| 21 | 1.06 | .53 | .49 | .46 | .64 | .62 | .72 | 1.82 | 3.82 | 3.52 | 2.58 | 1.56 |
| 22 | 1.03 | .51 | .48 | .47 | .64 | .62 | .76 | 1.86 | 3.89 | 3.46 | 2.58 | 1.56 |
| 23 | 1.01 | .50 | .48 | .48 | .64 | .61 | .80 | 1.88 | 3.94 | 3.45 | 2.56 | 1.56 |
| 24 | .98 | .49 | .48 | .49 | .63 | .61 | .84 | 1.88 | 3.95 | 3.42 | 2.52 | 1.50 |
| 25 | .96 | .49 | .48 | .51 | .63 | .60 | .88 | 1.90 | 3.95 | 3.37 | 2.44 | 1.48 |
| 26 | .94 | .48 | .47 | .53 | .63 | .60 | .91 | 1.96 | 3.94 | 3.40 | 2.42 | 1.46 |
| 27 | .92 | .48 | .47 | .54 | .63 | .59 | .94 | 2.01 | 3.94 | 3.29 | 2.41 | 1.44 |
| 28 | .89 | .47 | .47 | .56 | .62 | .59 | .96 | 2.10 | 3.93 | 3.24 | 2.37 | 1.42 |
| 29 | .89 | .46 | .46 | .57 | ------- | .58 | 1.01 | 2.22 | 3.92 | 3.19 | 2.28 | 1.40 |
| 30 | .88 | .44 | .46 | .58 | ------- | .57 | 1.06 | 2.35 | 3.91 | 3.17 | 2.28 | 1.38 |
| 31 | .86 | ------- | .46 | .58 | ------- | .57 | ------- | 2.49 | ------- | 3.08 | 2.20 | ------- |

### YELLOWSTONE RIVER AT YELLOWSTONE LAKE OUTLET, YELLOWSTONE NATIONAL PARK

LOCATION.—Water-stage recorder 550 feet below Fishing Bridge and one-fourth mile below outlet of Yellowstone Lake used for discharge record. Staff gage at Fishing Bridge used for gage-height record. Elevation of zero of gage at recorder site 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, 1930. Gage-height records only prior to October, 1926.

EXTREMES.—Maximum discharge during year, 3,870 second-feet June 23–26 (gage height, 5.2 feet); minimum, 570 second-feet Dec. 7–9 (gage height, 2.00 feet).

Maximum gage height at Fishing Bridge site, 4.36 feet June 23–25; minimum, 0.98 foot Dec. 7, 8.

1922–1930: Maximum discharge, 7,420 second-feet June 29, 30, July 1, 1927 (gage height, 6.3 feet at Fishing Bridge site); minimum, 515 second-feet Jan. 25, 1929 (gage height, 0.74 foot at Fishing Bridge site).

REMARKS.—Discharge records fair below and good above 1,000 second-feet. Gage-height record shows approximate stages in Yellowstone Lake. Gage heights and discharge estimated for days on which no record was obtained. Gage-height record furnished by Yellowstone Park officials. No regulation.

*Daily gage height, in feet, at Fishing Bridge, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.81 | 1.39 | 1.01 | 1.03 | 1.12 | 1.17 | 1.13 | 1.64 | 3.09 | 4.27 | 3.46 | 2.63 |
| 2 | 1.81 | 1.38 | 1.00 | 1.03 | 1.12 | 1.17 | 1.13 | 1.73 | 3.14 | 4.26 | 3.44 | 2.60 |
| 3 | 1.79 | 1.38 | .99 | 1.03 | 1.12 | 1.18 | 1.12 | 1.79 | 3.17 | 4.25 | 3.42 | 2.57 |
| 4 | 1.77 | 1.36 | .99 | 1.03 | 1.13 | 1.20 | 1.13 | 1.85 | 3.25 | 4.23 | 3.40 | 2.53 |
| 5 | 1.75 | 1.34 | .99 | 1.03 | 1.14 | 1.22 | 1.13 | 1.89 | 3.29 | 4.22 | 3.37 | 2.52 |
| 6 | 1.74 | 1.32 | .99 | 1.03 | 1.16 | 1.23 | 1.14 | 1.93 | 3.32 | 4.20 | 3.35 | 2.50 |
| 7 | 1.73 | 1.31 | .98 | 1.03 | 1.17 | 1.22 | 1.14 | 1.95 | 3.34 | 4.19 | 3.32 | 2.48 |
| 8 | 1.73 | 1.30 | .98 | 1.03 | 1.17 | 1.21 | 1.14 | 1.96 | 3.38 | 4.18 | 3.29 | 2.46 |
| 9 | 1.73 | 1.29 | 1.02 | 1.03 | 1.18 | 1.19 | 1.14 | 1.96 | 3.49 | 4.17 | 3.27 | 2.44 |
| 10 | 1.73 | 1.28 | 1.05 | 1.02 | 1.19 | 1.18 | 1.14 | 1.96 | 3.56 | 4.15 | 3.24 | 2.42 |
| 11 | 1.72 | 1.27 | 1.07 | 1.02 | 1.19 | 1.18 | 1.14 | 1.97 | 3.67 | 4.15 | 3.22 | 2.39 |
| 12 | 1.71 | 1.25 | 1.09 | 1.02 | 1.19 | 1.17 | 1.14 | 1.98 | 3.73 | 4.14 | 3.20 | 2.36 |
| 13 | 1.69 | 1.23 | 1.10 | 1.01 | 1.19 | 1.16 | 1.14 | 1.99 | 3.81 | 4.13 | 3.18 | 2.33 |
| 14 | 1.67 | 1.22 | 1.10 | 1.01 | 1.19 | 1.15 | 1.15 | 2.00 | 3.88 | 4.12 | 3.20 | 2.30 |
| 15 | 1.65 | 1.20 | 1.10 | 1.00 | 1.19 | 1.15 | 1.15 | 2.02 | 3.91 | 4.10 | 3.19 | 2.27 |
| 16 | 1.63 | 1.18 | 1.13 | 1.00 | 1.19 | 1.15 | 1.16 | 2.06 | 3.95 | 4.08 | 3.17 | 2.24 |
| 17 | 1.61 | 1.17 | 1.14 | 1.00 | 1.19 | 1.15 | 1.17 | 2.09 | 4.01 | 4.05 | 3.15 | 2.21 |
| 18 | 1.61 | 1.15 | 1.10 | 1.00 | 1.19 | 1.16 | 1.17 | 2.13 | 4.06 | 4.03 | 3.12 | 2.18 |
| 19 | 1.61 | 1.13 | 1.07 | 1.01 | 1.20 | 1.17 | 1.18 | 2.19 | 4.10 | 3.98 | 3.09 | 2.16 |
| 20 | 1.59 | 1.12 | 1.06 | 1.01 | 1.20 | 1.18 | 1.20 | 2.25 | 4.15 | 3.93 | 3.05 | 2.13 |
| 21 | 1.57 | 1.09 | 1.06 | 1.02 | 1.20 | 1.18 | 1.23 | 2.30 | 4.21 | 3.88 | 3.01 | 2.11 |
| 22 | 1.55 | 1.08 | 1.05 | 1.03 | 1.20 | 1.18 | 1.28 | 2.34 | 4.30 | 3.88 | 2.98 | 2.09 |
| 23 | 1.53 | 1.08 | 1.05 | 1.03 | 1.19 | 1.18 | 1.33 | 2.37 | 4.36 | 3.83 | 2.95 | 2.07 |
| 24 | 1.51 | 1.07 | 1.05 | 1.04 | 1.19 | 1.17 | 1.38 | 2.38 | 4.36 | 3.81 | 2.92 | 2.04 |
| 25 | 1.49 | 1.06 | 1.05 | 1.06 | 1.18 | 1.17 | 1.42 | 2.39 | 4.36 | 3.78 | 2.90 | 2.02 |
| 26 | 1.48 | 1.05 | 1.04 | 1.07 | 1.18 | 1.17 | 1.45 | 2.45 | 4.35 | 3.73 | 2.87 | 2.01 |
| 27 | 1.47 | 1.05 | 1.03 | 1.09 | 1.18 | 1.16 | 1.48 | 2.53 | 4.33 | 3.67 | 2.83 | 1.99 |
| 28 | 1.46 | 1.04 | 1.03 | 1.10 | 1.17 | 1.15 | 1.51 | 2.60 | 4.32 | 3.63 | 2.78 | 1.96 |
| 29 | 1.44 | 1.03 | 1.03 | 1.11 | ------ | 1.15 | 1.54 | 2.70 | 4.30 | 3.58 | 2.74 | 1.94 |
| 30 | 1.42 | 1.02 | 1.03 | 1.12 | ------ | 1.14 | 1.58 | 2.81 | 4.28 | 3.53 | 2.70 | 1.92 |
| 31 | 1.41 | ------ | 1.03 | 1.12 | ------ | 1.14 | ------ | 2.94 | ------ | 3.51 | 2.67 | ------ |

*Daily and monthly discharge, in second-feet, of Yellowstone River at Yellowstone Lake outlet, Yellowstone National Park, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 905 | 705 | 585 | 585 | 630 | 648 | 630 | 845 | 2,110 | 3,620 | 2,360 | 1,520 |
| 2 | 905 | 705 | 585 | 585 | 630 | 648 | 630 | 905 | 2,170 | 3,620 | 2,360 | 1,470 |
| 3 | 905 | 705 | 585 | 585 | 630 | 648 | 630 | 938 | 2,230 | 3,620 | 2,300 | 1,470 |
| 4 | 875 | 705 | 585 | 585 | 630 | 648 | 630 | 970 | 2,300 | 3,540 | 2,300 | 1,420 |
| 5 | 875 | 685 | 585 | 585 | 630 | 648 | 630 | 1,000 | 2,360 | 3,540 | 2,230 | 1,420 |
| 6 | 845 | 685 | 585 | 585 | 630 | 648 | 630 | 1,040 | 2,360 | 3,540 | 2,230 | 1,420 |
| 7 | 845 | 685 | 570 | 585 | 630 | 648 | 648 | 1,040 | 2,420 | 3,460 | 2,230 | 1,380 |
| 8 | 845 | 685 | 570 | 585 | 648 | 648 | 648 | 1,080 | 2,490 | 3,460 | 2,170 | 1,380 |
| 9 | 875 | 685 | 585 | 585 | 648 | 648 | 448 | 1,080 | 2,630 | 3,460 | 2,110 | 1,340 |
| 10 | 875 | 665 | 585 | 585 | 648 | 648 | 648 | 1,080 | 2,700 | 3,380 | 2,110 | 1,340 |
| 11 | 845 | 665 | 615 | 585 | 648 | 648 | 648 | 1,080 | 2,920 | 3,380 | 2,110 | 1,340 |
| 12 | 845 | 665 | 615 | 585 | 648 | 630 | 648 | 1,120 | 3,070 | 3,380 | 2,050 | 1,290 |
| 13 | 845 | 648 | 615 | 585 | 648 | 630 | 648 | 1,120 | 3,140 | 3,380 | 2,050 | 1,290 |
| 14 | 845 | 648 | 615 | 585 | 648 | 630 | 648 | 1,120 | 3,220 | 3,380 | 2,050 | 1,240 |
| 15 | 820 | 648 | 615 | 585 | 648 | 630 | 648 | 1,120 | 3,220 | 3,300 | 2,110 | 1,200 |
| 16 | 820 | 630 | 615 | 585 | 648 | 630 | 648 | 1,160 | 3,220 | 3,300 | 2,050 | 1,200 |
| 17 | 795 | 630 | 630 | 585 | 648 | 648 | 665 | 1,200 | 3,300 | 3,220 | 2,050 | 1,200 |
| 18 | 795 | 630 | 615 | 585 | 648 | 648 | 665 | 1,200 | 3,380 | 3,140 | 1,990 | 1,160 |
| 19 | 795 | 630 | 600 | 585 | 648 | 648 | 665 | 1,240 | 3,460 | 3,140 | 1,990 | 1,160 |
| 20 | 772 | 615 | 600 | 585 | 648 | 648 | 665 | 1,290 | 3,540 | 3,070 | 1,940 | 1,120 |
| 21 | 772 | 600 | 600 | 585 | 648 | 648 | 665 | 1,340 | 3,540 | 3,000 | 1,880 | 1,120 |
| 22 | 750 | 600 | 600 | 600 | 648 | 648 | 685 | 1,380 | 3,700 | 2,920 | 1,880 | 1,080 |
| 23 | 750 | 600 | 600 | 600 | 648 | 648 | 705 | 1,380 | 3,780 | 2,840 | 1,820 | 1,080 |
| 24 | 750 | 600 | 600 | 600 | 648 | 648 | 728 | 1,380 | 3,780 | 2,770 | 1,820 | 1,080 |
| 25 | 750 | 600 | 600 | 615 | 648 | 648 | 750 | 1,420 | 3,780 | 2,770 | 1,770 | 1,040 |
| 26 | 728 | 600 | 600 | 615 | 648 | 648 | 772 | 1,420 | 3,780 | 2,700 | 1,720 | 1,040 |
| 27 | 728 | 585 | 585 | 615 | 648 | 630 | 772 | 1,470 | 3,700 | 2,630 | 1,720 | 1,040 |
| 28 | 728 | 585 | 585 | 615 | 648 | 630 | 795 | 1,570 | 3,700 | 2,560 | 1,670 | 1,000 |
| 29 | 728 | 585 | 585 | 615 | ------ | 630 | 820 | 1,670 | 3,700 | 2,490 | 1,620 | 970 |
| 30 | 705 | 585 | 585 | 630 | ------ | 630 | 820 | 1,770 | 3,700 | 2,420 | 1,620 | 970 |
| 31 | 705 | ------ | 585 | 630 | ------ | 630 | ------ | 1,940 | ------ | 2,360 | 1,570 | ------ |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off | |
|---|---|---|---|---|---|---|
| | | | | | Inches | Acre-feet |
| October | 905 | 705 | 807 | 0.799 | 0.92 | 49,600 |
| November | 705 | 585 | 642 | .636 | .71 | 38,200 |
| December | 630 | 570 | 596 | .590 | .68 | 36,600 |
| January | 630 | 585 | 594 | .588 | .68 | 36,500 |
| February | 648 | 630 | 644 | .638 | .66 | 35,800 |
| March | 648 | 630 | 642 | .636 | .73 | 39,500 |
| April | 820 | 630 | 681 | .674 | .75 | 40,500 |
| May | 1,940 | 845 | 1,240 | 1.23 | 1.42 | 76,200 |
| June | 3,780 | 2,110 | 3,110 | 3.08 | 3.44 | 185,000 |
| July | 3,620 | 2,360 | 3,140 | 3.11 | 3.58 | 193,000 |
| August | 2,360 | 1,570 | 2,000 | 1.98 | 2.28 | 123,000 |
| September | 1,520 | 970 | 1,230 | 1.22 | 1.36 | 73,200 |
| The year | 3,780 | 570 | 1,280 | 1.27 | 17.21 | 927,000 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 3,850 second-feet June 23–25 (gage height, 2.75 feet); minimum, 652 second-feet Nov. 12 (gage height, 0.68 foot).

1913–1930: Maximum discharge, 8,550 second-feet June 27, 1918 (gage height, 4.50 feet); minimum, that of Nov. 12, 1929.

REMARKS.—Records excellent except those for Nov. 6, 7, 13–15, July 11–28, which were estimated. No regulation or diversions.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|
| 1 | 932 | 693 | -------- | 2,320 | 3,630 | 2,440 | 1,520 |
| 2 | 924 | 693 | -------- | 2,420 | 3,630 | 2,430 | 1,500 |
| 3 | 916 | 679 | -------- | 2,490 | 3,630 | 2,440 | 1,460 |
| 4 | 907 | 672 | -------- | 2,510 | 3,630 | 2,440 | 1,430 |
| 5 | 890 | 672 | -------- | 2,530 | 3,520 | 2,350 | 1,430 |
| 6 | 890 | 670 | -------- | 2,530 | 3,520 | 2,300 | 1,430 |
| 7 | 890 | 667 | -------- | 2,550 | 3,520 | 2,280 | 1,420 |
| 8 | 890 | 665 | -------- | 2,630 | 3,410 | 2,260 | 1,410 |
| 9 | 916 | 672 | -------- | 2,780 | 3,410 | 2,220 | 1,400 |
| 10 | 907 | 679 | -------- | 2,780 | 3,410 | 2,210 | 1,380 |
| 11 | 898 | 679 | -------- | 2,980 | 3,400 | 2,170 | 1,360 |
| 12 | 874 | 652 | -------- | 3,090 | 3,400 | 2,150 | 1,350 |
| 13 | 858 | 657 | -------- | 3,200 | 3,400 | 2,130 | 1,310 |
| 14 | 850 | 662 | -------- | 3,300 | 3,380 | 2,190 | 1,260 |
| 15 | 834 | 667 | -------- | 3,300 | 3,350 | 2,220 | 1,240 |
| 16 | 826 | 672 | -------- | 3,300 | 3,320 | 2,170 | 1,210 |
| 17 | 818 | -------- | -------- | 3,410 | 3,280 | 2,130 | 1,200 |
| 18 | 795 | -------- | -------- | 3,520 | 3,220 | 2,080 | 1,180 |
| 19 | 788 | -------- | -------- | 3,520 | 3,160 | 2,010 | 1,160 |
| 20 | 780 | -------- | -------- | 3,630 | 3,100 | 1,970 | 1,140 |
| 21 | 758 | -------- | -------- | 3,630 | 3,030 | 1,920 | 1,120 |
| 22 | 758 | -------- | 1,590 | 3,740 | 2,920 | 1,890 | 1,120 |
| 23 | 758 | -------- | 1,620 | 3,850 | 2,870 | 1,890 | 1,120 |
| 24 | 742 | -------- | 1,660 | 3,850 | 2,810 | 1,840 | 1,100 |
| 25 | 742 | -------- | 1,650 | 3,850 | 2,790 | 1,800 | 1,100 |
| 26 | 735 | -------- | 1,660 | 3,740 | 2,760 | 1,770 | 1,060 |
| 27 | 735 | -------- | 1,710 | 3,740 | 2,690 | 1,730 | 1,060 |
| 28 | 707 | -------- | 1,780 | 3,740 | 2,620 | 1,700 | 1,030 |
| 29 | 700 | -------- | 1,870 | 3,740 | 2,540 | 1,660 | 1,010 |
| 30 | 707 | -------- | 2,000 | 3,630 | 2,520 | 1,640 | 993 |
| 31 | 693 | -------- | 2,160 | -------- | 2,480 | 1,580 | -------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off | |
|---|---|---|---|---|---|---|
| | | | | | Inches | Acre-feet |
| October | 932 | 693 | 820 | 0.707 | 0.82 | 50,400 |
| November 1–16 | 693 | 652 | 672 | .579 | .34 | 21,300 |
| May 22–31 | 2,160 | 1,590 | 1,770 | 1.53 | .57 | 35,100 |
| June | 3,850 | 2,320 | 3,210 | 2.77 | 3.09 | 191,000 |
| July | 3,630 | 2,480 | 3,170 | 2.73 | 3.15 | 195,000 |
| August | 2,440 | 1,580 | 2,060 | 1.78 | 2.05 | 127,000 |
| September | 1,520 | 993 | 1,250 | 1.08 | 1.20 | 74,400 |

### YELLOWSTONE RIVER AT CORWIN SPRINGS, MONT.

LOCATION.—Chain gage in NE. 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, 1930.

EXTREMES.—Maximum discharge during year, 11,700 second-feet June 11, 12 (gage height, 6.6 feet); minimum, 725 second-feet Jan. 12–20, Feb. 12–16, Feb. 27 to Mar. 3.

1910–1930: 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 excellent except those for estimated periods, Jan. 12–31, June 8–10, which are fair. Stage-discharge relation affected by ice Dec. 22–24, Jan. 9 to Feb. 1. No diversions. Natural storage in Yellowstone Lake.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,600 | 1,140 | 950 | 895 | 800 | 725 | 950 | 3,190 | 6,840 | 6,350 | 3,350 | 2,190 |
| 2 | 1,400 | 1,140 | 950 | 895 | 800 | 725 | 950 | 4,400 | 7,350 | 6,350 | 3,510 | 2,190 |
| 3 | 1,400 | 1,080 | 950 | 895 | 800 | 725 | 1,010 | 5,880 | 7,090 | 6,590 | 3,510 | 2,060 |
| 4 | 1,400 | 1,080 | 950 | 895 | 800 | 760 | 1,080 | 5,430 | 6,840 | 6,350 | 3,510 | 2,060 |
| 5 | 1,400 | 1,080 | 950 | 895 | 800 | 760 | 1,080 | 5,000 | 6,110 | 6,590 | 3,510 | 1,930 |
| 6 | 1,400 | 1,080 | 950 | 845 | 800 | 760 | 1,140 | 4,790 | 6,840 | 5,430 | 3,510 | 2,320 |
| 7 | 1,310 | 1,080 | 950 | 845 | 760 | 760 | 1,140 | 4,400 | 8,700 | 5,430 | 3,510 | 2,190 |
| 8 | 1,310 | 1,080 | 950 | 845 | 760 | 760 | 1,310 | 3,850 | 9,450 | 5,430 | 3,510 | 2,060 |
| 9 | 1,400 | 1,010 | 895 | 800 | 760 | 760 | 1,500 | 3,350 | 10,200 | 5,430 | 3,510 | 2,060 |
| 10 | 1,500 | 1,010 | 895 | 760 | 725 | 760 | 1,600 | 3,350 | 10,900 | 5,430 | 3,510 | 2,060 |
| 11 | 1,400 | 1,010 | 895 | 760 | 725 | 800 | 1,600 | 3,030 | 11,700 | 5,430 | 3,680 | 1,930 |
| 12 | 1,310 | 950 | 1,010 | | 725 | 800 | 1,700 | 2,880 | 11,700 | 5,430 | 3,680 | 1,810 |
| 13 | 1,310 | 950 | 1,080 | | 725 | 800 | 1,810 | 2,880 | 9,860 | 5,000 | 3,350 | 1,930 |
| 14 | 1,310 | 950 | 1,080 | | 725 | 800 | 2,060 | 3,190 | 7,610 | 4,790 | 3,350 | 1,810 |
| 15 | 1,310 | 1,010 | 1,080 | | 725 | 845 | 1,810 | 3,680 | 8,700 | 4,590 | 3,510 | 1,810 |
| 16 | 1,310 | 1,080 | 1,080 | 725 | 725 | 845 | 1,700 | 3,680 | 8,700 | 4,400 | 3,680 | 1,810 |
| 17 | 1,310 | 1,010 | 1,080 | | 760 | 895 | 1,600 | 3,680 | 9,860 | 4,400 | 3,510 | 1,700 |
| 18 | 1,310 | 1,010 | 950 | | 760 | 895 | 1,500 | 4,400 | 9,860 | 4,210 | 3,350 | 1,700 |
| 19 | 1,310 | 950 | 950 | | 760 | 895 | 1,500 | 5,000 | 8,980 | 4,210 | 3,190 | 1,600 |
| 20 | 1,220 | 895 | 950 | | 760 | 950 | 1,600 | 5,210 | 8,420 | 4,210 | 2,740 | 1,600 |
| 21 | 1,220 | 895 | 950 | | 760 | 950 | 1,930 | 7,880 | 8,700 | 4,210 | 2,740 | 1,600 |
| 22 | 1,140 | 845 | 895 | | 760 | 950 | 2,460 | 7,090 | 8,420 | 4,210 | 2,740 | 1,600 |
| 23 | 1,140 | 845 | 845 | | 760 | 950 | 2,880 | 5,430 | 8,150 | 3,680 | 2,740 | 1,700 |
| 24 | 1,140 | 950 | 895 | | 760 | 950 | 3,680 | 5,210 | 8,150 | 3,680 | 2,600 | 1,700 |
| 25 | 1,140 | 1,010 | 1,010 | | 760 | 895 | 3,350 | 5,880 | 8,150 | 3,510 | 2,460 | 1,600 |
| 26 | 1,140 | 1,010 | 1,010 | 760 | 760 | 895 | 3,190 | 6,590 | 7,350 | 3,350 | 2,460 | 1,600 |
| 27 | 1,140 | 1,010 | 950 | | 725 | 895 | 3,350 | 7,610 | 6,840 | 3,350 | 2,460 | 1,600 |
| 28 | 1,140 | 1,010 | 950 | | 725 | 845 | 3,510 | 8,700 | 6,590 | 3,350 | 2,320 | 1,600 |
| 29 | 1,140 | 1,010 | 950 | | ------- | 845 | 3,030 | 10,500 | 6,590 | 3,350 | 2,320 | 1,600 |
| 30 | 1,140 | 1,010 | 950 | | ------- | 895 | 2,880 | 10,500 | 6,590 | 3,350 | 2,320 | 1,500 |
| 31 | 1,140 | ------- | 950 | | ------- | 895 | ------- | 10,800 | ------- | 3,350 | 2,320 | ------ |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off | |
|---|---|---|---|---|---|---|
| | | | | | Inches | Acre-feet |
| October | 1,600 | 1,140 | 1,290 | 0.491 | 0.57 | 79,300 |
| November | 1,140 | 845 | 1,010 | .384 | .43 | 60,100 |
| December | 1,080 | 845 | 965 | .367 | .42 | 59,300 |
| January | 895 | ---------- | 781 | .297 | .34 | 48,000 |
| February | 800 | 725 | 757 | .288 | .30 | 42,000 |
| March | 950 | 725 | 838 | .319 | .37 | 51,500 |
| April | 3,680 | 950 | 1,960 | .745 | .83 | 117,000 |
| May | 10,800 | 2,880 | 5,400 | 2.05 | 2.36 | 332,000 |
| June | 11,700 | 6,110 | 8,370 | 3.18 | 3.55 | 498,000 |
| July | 6,590 | 3,350 | 4,690 | 1.78 | 2.05 | 288,000 |
| August | 3,680 | 2,320 | 3,110 | 1.18 | 1.36 | 191,000 |
| September | 2,320 | 1,500 | 1,830 | .696 | .78 | 109,000 |
| The year | 11,700 | ---------- | 2,590 | .985 | 13.36 | 1,870,000 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 15,500 second-feet May 31 (gage height, 6.61 feet); minimum, 835 second-feet Jan. 6 (gage height, 0.86 foot). 1897–1905, 1928–1930: Maximum discharge, 26,800 second-feet June 1, 1897; minimum, that of Jan. 6, 1930.

REMARKS.—Records good. Stage-discharge relation affected by ice Jan. 7, 8; Jan. 11 to Feb. 4. Some diversions.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2,060 | 1,670 | 1,480 | 1,360 | | 980 | 1,240 | 3,390 | 11,700 | 7,200 | 3,560 | 2,620 |
| 2 | 1,930 | 1,670 | 1,360 | 1,300 | 1,000 | 880 | 1,240 | 5,050 | 9,450 | 7,200 | 3,560 | 2,620 |
| 3 | 1,930 | 1,670 | 1,300 | 1,190 | | 1,030 | 1,360 | 6,600 | 8,100 | 6,600 | 3,740 | 2,620 |
| 4 | 1,930 | 1,600 | 1,300 | 1,190 | | 1,080 | 1,420 | 5,800 | 7,500 | 6,300 | 3,740 | 2,620 |
| 5 | 1,930 | 1,540 | 1,240 | 1,140 | 1,080 | 1,140 | 1,540 | 5,800 | 6,600 | 6,050 | 4,130 | 2,620 |
| 6 | 1,930 | 1,540 | 1,240 | 835 | 1,140 | 1,140 | 1,540 | 5,300 | 7,200 | 6,050 | 3,930 | 2,770 |
| 7 | 1,800 | 1,600 | 1,360 | 870 | 1,140 | 1,080 | 1,670 | 4,570 | 9,100 | 6,050 | 3,740 | 2,770 |
| 8 | 1,800 | 1,540 | 1,360 | 900 | 1,140 | 1,080 | 2,060 | 4,570 | 10,900 | 5,550 | 3,740 | 2,770 |
| 9 | 1,930 | 1,540 | 1,420 | 930 | 1,080 | 1,030 | 2,060 | 3,930 | 12,900 | 5,800 | 3,560 | 2,620 |
| 10 | 2,060 | 1,600 | 1,300 | 930 | 1,080 | 1,080 | 2,060 | 3,740 | 13,400 | 5,800 | 3,560 | 2,620 |
| 11 | 1,930 | 1,670 | 1,360 | | 1,080 | 1,080 | 2,200 | 3,230 | 14,200 | 6,050 | 4,340 | 2,480 |
| 12 | 1,930 | 1,540 | 1,360 | | 1,080 | 1,140 | 2,200 | 3,070 | 15,000 | 6,050 | 3,930 | 2,480 |
| 13 | 1,930 | 1,480 | 1,480 | | 1,080 | 1,140 | 2,200 | 3,230 | 11,700 | 5,800 | 3,740 | 2,480 |
| 14 | 1,800 | 1,420 | 1,540 | | 1,080 | 1,140 | 2,480 | 3,560 | 9,450 | 5,300 | 3,740 | 2,480 |
| 15 | 1,800 | 1,800 | 1,540 | 910 | 1,140 | 1,140 | 2,620 | 3,740 | 9,450 | 5,050 | 4,130 | 2,480 |
| 16 | 1,800 | 1,670 | 1,420 | | 1,140 | 1,080 | 2,340 | 3,930 | 9,800 | 5,050 | 3,930 | 2,340 |
| 17 | 1,800 | 1,540 | 1,540 | | 1,240 | 1,190 | 2,200 | 4,130 | 10,900 | 4,810 | 3,740 | 2,340 |
| 18 | 1,800 | 1,540 | 1,540 | | 1,300 | 1,240 | 2,200 | 4,570 | 11,700 | 4,810 | 3,740 | 2,200 |
| 19 | 1,670 | 1,480 | 1,360 | | 1,240 | 1,240 | 2,200 | 4,570 | 10,200 | 4,570 | 3,560 | 2,200 |
| 20 | 1,670 | 1,420 | 1,300 | | 1,240 | 1,190 | 2,060 | 5,300 | 8,750 | 4,570 | 3,560 | 2,200 |
| 21 | 1,670 | 1,360 | 1,190 | | 1,240 | 1,300 | 2,200 | 7,200 | 8,400 | 4,340 | 3,560 | 2,200 |
| 22 | 1,670 | 1,360 | 1,140 | | 1,140 | 1,240 | 2,770 | 7,800 | 8,750 | 4,130 | 3,560 | 2,200 |
| 23 | 1,670 | 1,360 | 1,240 | 890 | 1,080 | 1,300 | 3,230 | 5,800 | 8,750 | 4,130 | 3,230 | 2,200 |
| 24 | 1,670 | 1,300 | 1,360 | | 1,140 | 1,300 | 3,740 | 5,800 | 9,450 | 4,130 | 3,070 | 2,200 |
| 25 | 1,670 | 1,300 | 1,300 | | 1,080 | 1,300 | 3,930 | 5,800 | 8,400 | 3,930 | 3,070 | 2,200 |
| 26 | 1,670 | 1,360 | 1,540 | | 1,080 | 1,360 | 4,130 | 6,900 | 8,100 | 4,130 | 3,070 | 2,200 |
| 27 | 1,670 | 1,540 | 1,480 | | 1,080 | 1,240 | 4,570 | 8,100 | 8,100 | 3,930 | 3,070 | 2,200 |
| 28 | 1,670 | 1,420 | 1,360 | 950 | 1,080 | 1,190 | 4,130 | 9,450 | 7,800 | 3,930 | 2,920 | 2,200 |
| 29 | 1,800 | 1,420 | 1,300 | | ------- | 1,300 | 3,740 | 11,700 | 7,500 | 3,560 | 2,770 | 2,060 |
| 30 | 1,800 | 1,540 | 1,300 | | ------- | 1,240 | 3,230 | 14,000 | 7,500 | 3,560 | 2,770 | 2,060 |
| 31 | 1,800 | ------- | 1,300 | | ------- | 1,300 | ------- | 15,500 | ------- | 3,560 | 2,770 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 2,060 | 1,670 | 1,810 | 111,300 |
| November | 1,800 | 1,300 | 1,520 | 90,400 |
| December | 1,540 | 1,140 | 1,360 | 83,600 |
| January | 1,360 | 835 | 964 | 59,300 |
| February | 1,300 | 1,000 | 1,110 | 61,700 |
| March | 1,360 | 880 | 1,170 | 71,900 |
| April | 4,570 | 1,240 | 2,490 | 148,000 |
| May | 15,500 | 3,070 | 6,000 | 369,000 |
| June | 15,000 | 6,600 | 9,690 | 577,000 |
| July | 7,200 | 3,560 | 5,100 | 314,000 |
| August | 4,340 | 2,770 | 3,530 | 217,000 |
| September | 2,770 | 2,060 | 2,400 | 143,000 |
| The year | 15,500 | 835 | 3,100 | 2,250,000 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 26,100 second-feet May 31, June 1 (gage height, 7.80 feet); minimum, 1,600 second-feet Jan. 8 (gage height, 0.01 foot).

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

REMARKS.—Records fair. Discharge interpolated Oct. 1, 2. Numerous diversions above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3,700 | 3,360 | ------- | 2,890 | 6,300 | 21,600 | 10,800 | 4,460 | 4,880 |
| 2 | 3,700 | 3,360 | ------- | 3,040 | 6,300 | 19,400 | 10,400 | 4,670 | 4,880 |
| 3 | 3,700 | 3,360 | ------- | 3,040 | 7,100 | 16,000 | 10,400 | 5,790 | 4,670 |
| 4 | 3,700 | 3,200 | ------- | 3,880 | 9,790 | 14,000 | 10,400 | 7,100 | 4,880 |
| 5 | 3,530 | 3,200 | ------- | 4,880 | 9,790 | 11,800 | 10,400 | 7,100 | 4,880 |
| 6 | 3,530 | 3,200 | ------- | 4,670 | 9,480 | 10,800 | 10,400 | 7,370 | 4,670 |
| 7 | 3,530 | 3,200 | ------- | 4,670 | 9,170 | 11,100 | 10,100 | 7,100 | 4,670 |
| 8 | 3,530 | 3,200 | ------- | 4,880 | 7,940 | 15,600 | 9,480 | 6,560 | 4,880 |
| 9 | 3,530 | 3,200 | ------- | 5,320 | 7,370 | 17,200 | 9,170 | 6,040 | 4,880 |
| 10 | 3,530 | 3,200 | ------- | 5,790 | 6,300 | 18,500 | 9,170 | 6,040 | 4,670 |
| 11 | 3,530 | 3,360 | ------- | 5,320 | 6,040 | 19,800 | 9,790 | 6,040 | 4,670 |
| 12 | 3,530 | 3,360 | ------- | 5,320 | 5,550 | 21,200 | 12,100 | 6,830 | 4,460 |
| 13 | 3,530 | 3,200 | 3,040 | 5,100 | 4,670 | 21,200 | 13,200 | 7,370 | 4,460 |
| 14 | 3,530 | 3,040 | 3,040 | 5,320 | 4,670 | 17,200 | 10,800 | 7,940 | 4,260 |
| 15 | 3,360 | 3,040 | 3,040 | 5,320 | 4,880 | 14,800 | 8,860 | 8,550 | 4,070 |
| 16 | 3,360 | 3,200 | 2,890 | 5,790 | 4,880 | 14,800 | 8,550 | 9,170 | 4,070 |
| 17 | 3,360 | 3,200 | 2,890 | 5,320 | 5,100 | 14,400 | 8,240 | 8,550 | 3,880 |
| 18 | 3,200 | 3,200 | 2,890 | 4,670 | 5,550 | 17,200 | 7,940 | 8,550 | 3,700 |
| 19 | 3,200 | 3,200 | 2,890 | 4,460 | 6,040 | 17,700 | 7,650 | 7,940 | 3,700 |
| 20 | 3,360 | 3,200 | 2,890 | 4,260 | 6,560 | 13,200 | 7,370 | 7,940 | 3,530 |
| 21 | 3,200 | 2,380 | 3,040 | 4,070 | 7,370 | 14,000 | 6,830 | 7,650 | 3,530 |
| 22 | 3,200 | ------- | 3,200 | 4,070 | 11,100 | 14,800 | 6,300 | 7,370 | 3,530 |
| 23 | 3,200 | ------- | 3,360 | 4,670 | 10,100 | 14,800 | 5,790 | 6,830 | 3,530 |
| 24 | 3,040 | ------- | 3,360 | 6,040 | 9,480 | 14,800 | 5,320 | 6,560 | 3,530 |
| 25 | 3,040 | ------- | 3,200 | 7,370 | 8,860 | 14,800 | 5,320 | 6,040 | 3,530 |
| 26 | 3,040 | ------- | 3,040 | 7,650 | 8,860 | 12,900 | 5,100 | 5,790 | 3,530 |
| 27 | 3,040 | ------- | 3,040 | 7,940 | 10,100 | 12,100 | 5,100 | 5,550 | 3,360 |
| 28 | 3,200 | ------- | 2,890 | 8,550 | 12,500 | 11,800 | 5,100 | 5,320 | 3,360 |
| 29 | 3,360 | ------- | 2,750 | 7,940 | 15,200 | 11,800 | 4,880 | 5,320 | 3,360 |
| 30 | 3,360 | ------- | 2,890 | 7,100 | 19,800 | 11,400 | 4,880 | 5,320 | 3,200 |
| 31 | 3,360 | ------- | 3,040 | ------- | 24,800 | ------- | 4,460 | 5,100 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 3,700 | 3,040 | 3,390 | 208,000 |
| November 1–21 | 3,360 | 2,380 | 3,180 | 132,000 |
| March 13–31 | 3,360 | 2,750 | 3,020 | 114,000 |
| April | 8,550 | 2,890 | 5,310 | 316,000 |
| May | 24,800 | 4,670 | 8,760 | 539,000 |
| June | 21,600 | 10,800 | 15,400 | 916,000 |
| July | 13,200 | 4,460 | 8,200 | 504,000 |
| August | 9,170 | 4,460 | 6,710 | 413,000 |
| September | 4,880 | 3,200 | 4,110 | 245,000 |

## 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, 1930.

EXTREMES.—Maximum discharge, 42,000 second-feet June 2 (gage height, 9.08 feet); minimum, 2,160 second-feet Nov. 24.

1922–23, 1928–1930: 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 ice period, Dec. 1 to Feb. 28, which are fair. Numerous diversions from stream and tributaries above gage. Some storage on tributaries.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7,470 | 6,230 | | | | -------- | 5,630 | 14,000 | 35,400 | 19,400 | 6,620 | 10,000 |
| 2 | 7,470 | 5,960 | | | | -------- | 5,630 | 12,600 | 42,000 | 17,700 | 6,360 | 9,600 |
| 3 | 7,470 | 5,960 | | | 4,000 | -------- | 5,410 | 12,100 | 41,300 | 17,100 | 6,110 | 9,220 |
| 4 | 7,130 | 5,960 | | | | -------- | 5,410 | 11,700 | 37,600 | 16,600 | 6,620 | 8,860 |
| 5 | 7,470 | 5,960 | | | | -------- | 5,410 | 14,000 | 29,800 | 16,600 | 7,200 | 8,500 |
| | | | 4,820 | 5,220 | | | | | | | | |
| 6 | 7,130 | 5,960 | | | | -------- | 6,620 | 16,000 | 25,000 | 16,600 | 7,820 | 8,160 |
| 7 | 7,130 | 5,700 | | | 10,800 | -------- | 7,200 | 16,600 | 21,800 | 16,600 | 8,500 | 7,500 |
| 8 | 6,510 | 5,700 | | | | -------- | 7,200 | 17,700 | 19,400 | 16,000 | 8,860 | 7,820 |
| 9 | 6,510 | 5,700 | | | | -------- | 7,500 | 16,000 | 20,600 | 16,000 | 9,220 | 8,500 |
| 10 | 6,510 | 5,700 | | | | -------- | 7,500 | 15,000 | 25,700 | 15,000 | 9,220 | 8,500 |
| 11 | 6,810 | 5,960 | | | | -------- | 8,160 | 14,000 | 28,400 | 15,000 | 9,220 | 7,500 |
| 12 | 6,810 | 5,960 | | | | -------- | 8,860 | 13,100 | 31,200 | 18,300 | 10,000 | 8,500 |
| 13 | 6,810 | 5,740 | 4,500 | | 8,550 | -------- | 9,220 | 12,600 | 34,700 | 20,000 | 12,100 | 7,820 |
| 14 | 6,810 | 5,440 | | | | -------- | 9,220 | 11,700 | 39,100 | 23,000 | 20,600 | 9,220 |
| 15 | 6,510 | 5,190 | | | | 10,800 | 9,600 | 10,000 | 36,900 | 25,700 | 21,800 | 8,160 |
| | | | | 2,750 | | | | | | | | |
| 16 | 6,510 | 4,940 | | | | 9,600 | 9,600 | 9,220 | 31,900 | 23,000 | 25,700 | 7,500 |
| 17 | 6,230 | 4,700 | | | | 10,800 | 10,000 | 8,500 | 28,400 | 19,400 | 29,800 | 7,500 |
| 18 | 6,230 | 4,700 | | | 8,860 | 8,860 | 10,000 | 9,220 | 25,700 | 18,300 | 31,900 | 7,500 |
| 19 | 5,960 | 4,700 | | | | 9,220 | 7,200 | 10,400 | 27,700 | 17,100 | 29,100 | 6,900 |
| 20 | 5,960 | 4,460 | | | | 7,500 | 6,620 | 10,400 | 29,800 | 16,000 | 26,300 | 6,900 |
| | | | 4,260 | | | | | | | | | |
| 21 | 5,960 | 4,230 | | | | 6,620 | 6,110 | 11,200 | 29,100 | 15,000 | 22,400 | 6,620 |
| 22 | 5,960 | 4,000 | | | | 7,200 | 5,870 | 12,600 | 26,300 | 14,500 | 25,700 | 6,900 |
| 23 | 5,700 | 3,330 | | | 8,700 | 6,900 | 5,870 | 14,500 | 26,300 | 13,100 | 23,000 | 6,900 |
| 24 | 5,440 | 2,160 | | | | 7,500 | 5,630 | 18,300 | 27,000 | 12,100 | 21,800 | 6,900 |
| 25 | 5,440 | 2,330 | | | | 7,500 | 6,360 | 16,000 | 27,000 | 11,200 | 14,500 | 7,200 |
| | | | | 2,550 | | | | | | | | |
| 26 | 5,440 | 3,770 | | | | 6,900 | 7,500 | 14,000 | 27,000 | 10,800 | 13,100 | 6,900 |
| 27 | 5,190 | 4,000 | | | 6,260 | 6,360 | 9,600 | 13,500 | 24,300 | 9,600 | 11,700 | 6,900 |
| 28 | 5,190 | 4,000 | 5,100 | | | 6,110 | 14,500 | 14,500 | 20,000 | 9,600 | 11,200 | 6,900 |
| 29 | 5,440 | 4,230 | | | -------- | 5,870 | 15,000 | 15,500 | 20,000 | 9,220 | 10,800 | 6,900 |
| 30 | 5,700 | 4,460 | | | -------- | 5,630 | 15,500 | 18,800 | 19,400 | 8,500 | 10,400 | 6,900 |
| 31 | 5,960 | -------- | | 3,620 | -------- | 5,410 | -------- | 25,700 | -------- | 7,200 | 10,800 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 7,470 | 5,190 | 6,350 | 390,000 |
| November | 6,230 | 2,160 | 4,900 | 292,000 |
| December | -------- | -------- | 4,640 | 285,000 |
| January | -------- | -------- | 3,510 | 216,000 |
| February | -------- | -------- | 7,980 | 443,000 |
| March 15–31 | 10,800 | 5,410 | 7,580 | 256,000 |
| April | 15,500 | 5,410 | 8,130 | 484,000 |
| May | 25,700 | 8,500 | 13,900 | 855,000 |
| June | 42,000 | 19,400 | 28,600 | 1,700,000 |
| July | 25,700 | 7,200 | 15,600 | 959,000 |
| August | 31,900 | 6,110 | 15,100 | 928,000 |
| September | 10,000 | 6,620 | 7,810 | 465,000 |

### 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, 1930; at Glendive, 18 miles upstream, August, 1903, to December, 1910.

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

1903–1930: 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. 7–26, Jan. 6 to Feb. 20, which are fair. Numerous diversions above station. Some storage on tributaries.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 8,300 | 8,300 | 16,800 | 21,900 | 16,000 | 8,300 | 9,520 |
| 8 | 8,400 | 7,780 | 6,060 | 7,180 | 5,560 | 8,900 | 9,520 | 17,600 | 20,200 | 15,200 | 8,900 | 8,900 |
| 9 | 8,400 | 7,180 | 5,810 | 6,060 | 6,600 | 9,520 | 9,520 | 18,400 | 18,400 | 15,200 | 8,300 | 9,520 |
| 10 | 8,400 | 7,180 | 5,080 | 4,400 | 6,600 | 12,200 | 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 | 12,200 | 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 | 14,400 | 12,200 | 15,200 | 29,400 | 18,400 | 10,800 | 12,900 |
| 15 | 8,400 | 7,780 | 2,620 | 1,830 | 7,480 | 15,200 | 12,200 | 13,600 | 33,600 | 20,200 | 18,400 | 11,500 |
| 16 | 8,400 | 6,600 | 1,930 | 1,760 | 7,780 | 18,400 | 12,200 | 12,200 | 30,400 | 21,000 | 21,000 | 9,520 |
| 17 | 7,780 | 6,330 | 1,680 | 1,760 | 9,020 | 16,800 | 12,200 | 11,500 | 27,400 | 21,000 | 23,700 | 8,900 |
| 18 | 7,780 | 6,060 | 1,600 | 1,760 | 10,300 | 16,800 | 12,200 | 10,800 | 23,700 | 20,200 | 27,400 | 8,300 |
| 19 | 7,780 | 5,560 | 1,760 | 1,930 | 17,000 | 15,200 | 11,500 | 11,500 | 22,800 | 17,600 | 29,400 | 8,300 |
| 20 | 7,480 | 5,080 | 2,100 | 1,930 | 22,300 | 13,600 | 12,200 | 12,200 | 25,500 | 15,200 | 26,400 | 8,300 |
| 21 | 7,180 | 4,400 | 2,270 | 1,930 | 23,700 | 13,600 | 10,800 | 13,600 | 26,400 | 15,200 | 23,700 | 7,720 |
| 22 | 7,180 | 4,180 | 2,800 | 2,620 | 25,500 | 13,600 | 10,800 | 13,600 | 25,500 | 14,400 | 21,000 | 7,720 |
| 23 | 7,180 | 3,970 | 3,560 | 2,620 | 23,700 | 12,900 | 9,520 | 13,600 | 23,700 | 13,600 | 19,300 | 7,140 |
| 24 | 7,180 | 3,970 | 4,180 | 2,980 | 22,800 | 12,200 | 8,900 | 15,200 | 23,700 | 12,200 | 18,400 | 7,140 |
| 25 | 6,600 | 3,760 | 5,560 | 3,170 | 20,200 | 11,500 | 10,200 | 16,800 | 23,700 | 12,200 | 16,800 | 7,430 |
| 26 | 6,330 | 4,400 | 6,060 | 3,360 | 20,200 | 13,600 | 10,800 | 16,800 | 23,700 | 11,500 | 15,200 | 7,140 |
| 27 | 6,330 | 4,620 | 7,180 | 3,360 | 17,600 | 14,400 | 12,200 | 14,400 | 23,700 | 10,200 | 14,400 | 7,720 |
| 28 | 6,330 | 5,080 | 10,300 | 3,360 | 16,800 | 12,900 | 13,600 | 14,400 | 21,900 | 9,520 | 12,200 | 7,720 |
| 29 | 6,330 | 6,330 | 11,000 | 3,840 | -------- | 12,200 | 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 | -------- | 10,200 | -------- | 17,600 | -------- | 8,300 | 11,500 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| 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 | 18,400 | 7,430 | 12,700 | 781,000 |
| 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 | 8,360,000 |

## TOWER CREEK AT TOWER FALLS, YELLOWSTONE NATIONAL PARK

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

DRAINAGE AREA.—51 square miles.

RECORDS AVAILABLE.—September, 1922, to September, 1930.

EXTREMES.—Maximum discharge during year (estimated), 250 second-feet June 11; minimum (estimated), 17 second-feet Apr. 5–14 (gage height, 3.60 feet).

1922–1930: 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 good June 17 to Sept. 30; others fair. Gage read daily June 29 to Sept. 13; at other times gage read at less frequent intervals and discharge estimated for days on which no gage-height record was obtained. No diversions or regulation.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 28 | 22 | 23 | 22 | 18 | 19 | 19 | 40 | 156 | 55 | 36 | 29 |
| 2 | 27 | 22 | 23 | 22 | 18 | 19 | 18 | 50 | 140 | 54 | 48 | 28 |
| 3 | 26 | 22 | 23 | 22 | 18 | 19 | 18 | 60 | 130 | 51 | 36 | 27 |
| 4 | 25 | 23 | 23 | 22 | 18 | 19 | 18 | 68 | 118 | 49 | 37 | 28 |
| 5 | 24 | 23 | 23 | 22 | 18 | 19 | 17 | 76 | 101 | 49 | 34 | 28 |
| 6 | 24 | 23 | 22 | 22 | 18 | 19 | 17 | 72 | 110 | 48 | 37 | 30 |
| 7 | 24 | 24 | 22 | 22 | 18 | 19 | 17 | 68 | 125 | 49 | 33 | 30 |
| 8 | 24 | 24 | 22 | 22 | 18 | 19 | 17 | 64 | 140 | 45 | 33 | 40 |
| 9 | 24 | 24 | 22 | 22 | 18 | 19 | 17 | 59 | 162 | 47 | 29 | 38 |
| 10 | 24 | 24 | 22 | 21 | 18 | 19 | 17 | 54 | 216 | 49 | 38 | 30 |
| 11 | 24 | 24 | 22 | 21 | 18 | 19 | 17 | 47 | 250 | 51 | 42 | 27 |
| 12 | 24 | 24 | 22 | 21 | 18 | 19 | 17 | 38 | 210 | 54 | 55 | 27 |
| 13 | 24 | 24 | 22 | 20 | 18 | 19 | 17 | 34 | 170 | 44 | 40 | 27 |
| 14 | 24 | 24 | 22 | 20 | 19 | 19 | 17 | 36 | 117 | 45 | 59 | 27 |
| 15 | 24 | 24 | 22 | 20 | 19 | 19 | 18 | 38 | 95 | 45 | 49 | 26 |
| 16 | 23 | 24 | 22 | 19 | 19 | 19 | 20 | 39 | 98 | 44 | 49 | 26 |
| 17 | 23 | 24 | 22 | 19 | 19 | 19 | 22 | 40 | 101 | 41 | 40 | 25 |
| 18 | 23 | 24 | 22 | 19 | 19 | 19 | 24 | 44 | 98 | 39 | 37 | 25 |
| 19 | 23 | 23 | 22 | 19 | 19 | 19 | 27 | 54 | 95 | 38 | 37 | 24 |
| 20 | 23 | 23 | 22 | 19 | 19 | 19 | 30 | 64 | 88 | 36 | 36 | 24 |
| 21 | 23 | 22 | 22 | 19 | 19 | 19 | 33 | 80 | 88 | 36 | 34 | 24 |
| 22 | 23 | 22 | 22 | 19 | 19 | 19 | 36 | 80 | 101 | 36 | 33 | 24 |
| 23 | 22 | 22 | 22 | 19 | 19 | 19 | 40 | 75 | 90 | 36 | 33 | 24 |
| 24 | 22 | 22 | 22 | 19 | 19 | 19 | 44 | 73 | 84 | 36 | 33 | 24 |
| 25 | 22 | 22 | 22 | 19 | 19 | 19 | 50 | 75 | 79 | 34 | 33 | 24 |
| 26 | 22 | 22 | 22 | 19 | 19 | 19 | 52 | 86 | 72 | 33 | 32 | 24 |
| 27 | 22 | 23 | 22 | 19 | 19 | 19 | 50 | 104 | 67 | 33 | 33 | 24 |
| 28 | 22 | 23 | 22 | 18 | 19 | 19 | 44 | 122 | 64 | 33 | 31 | 24 |
| 29 | 22 | 23 | 22 | 18 | ------ | 19 | 38 | 150 | 60 | 33 | 29 | 24 |
| 30 | 22 | 23 | 22 | 18 | ------ | 19 | 35 | 180 | 59 | 33 | 29 | 24 |
| 31 | 22 | ------ | 22 | 18 | ------ | 19 | ------ | 172 | ------ | 33 | 29 | ------ |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off | |
|---|---|---|---|---|---|---|
| | | | | | Inches | Acre-feet |
| October | 28 | 22 | 23.5 | 0.461 | 0.53 | 1,440 |
| November | 24 | 22 | 23.1 | .453 | .51 | 1,370 |
| December | 23 | 22 | 22.2 | .435 | .50 | 1,360 |
| January | 22 | 18 | 20.0 | .392 | .45 | 1,230 |
| February | 19 | 18 | 18.5 | .363 | .38 | 1,030 |
| March | 19 | 19 | 19.0 | .373 | .43 | 1,170 |
| April | 52 | 17 | 26.9 | .527 | .59 | 1,600 |
| May | 180 | 34 | 72.3 | 1.42 | 1.64 | 4,450 |
| June | 250 | 59 | 116 | 2.27 | 2.53 | 6,900 |
| July | 55 | 33 | 42.2 | .827 | .95 | 2,590 |
| August | 59 | 29 | 37.2 | .729 | .84 | 2,290 |
| September | 40 | 24 | 26.9 | .527 | .59 | 1,600 |
| The year | 250 | 17 | 37.4 | .733 | 9.94 | 27,000 |

### LAMAR RIVER NEAR TOWER FALLS RANGER STATION, YELLOWSTONE NATIONAL PARK

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

DRAINAGE AREA.—640 square miles.

RECORDS AVAILABLE.—September, 1922, to September, 1930.

EXTREMES.—Maximum discharge during year, 6,660 second-feet May 30, 31 (gage height, 6.8 feet); minimum (estimated), 120 second-feet Nov. 21.

1922–1930: 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 excellent except those for estimated periods, Oct. 25, Nov. 3 to Mar. 31, Apr. 1–11, 13, 15–19, 21–29, Sept. 28–30, which are fair to poor. No regulation or diversions.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 183 | 146 | | | | 130 | 190 | 1,040 | 3,950 | 1,360 | 358 | 248 |
| 2 | 181 | 151 | | | | | 220 | 1,640 | 3,040 | 1,360 | 465 | 242 |
| 3 | 181 | 151 | | | | | 260 | 2,270 | 2,510 | 1,320 | 585 | 236 |
| 4 | 183 | 140 | | | | | 320 | 1,890 | 2,100 | 1,220 | 760 | 230 |
| 5 | 178 | 144 | 140 | | | | 400 | 1,940 | 1,890 | 1,140 | 496 | 239 |
| 6 | 171 | 148 | | | 140 | | 460 | 1,640 | 2,160 | 1,090 | 431 | 314 |
| 7 | 171 | 142 | | | | | 500 | 1,450 | 3,040 | 1,030 | 436 | 292 |
| 8 | 169 | 136 | | | | | 500 | 1,270 | 3,950 | 980 | 407 | 282 |
| 9 | 193 | 140 | | | | | 480 | 1,140 | 4,120 | 956 | 367 | 278 |
| 10 | 221 | 150 | | | | | 480 | 988 | 4,290 | 1,010 | 385 | 252 |
| 11 | 221 | 145 | | | | 150 | 500 | 884 | 4,470 | 1,090 | 455 | 255 |
| 12 | 196 | 135 | | | | | 550 | 849 | 4,650 | 1,320 | 620 | 233 |
| 13 | 188 | 150 | 150 | | 150 | | 620 | 891 | 3,330 | 1,100 | 534 | 224 |
| 14 | 181 | 160 | | | | | 733 | 1,020 | 2,390 | 877 | 445 | 218 |
| 15 | 178 | 165 | | | | | 800 | 1,220 | 2,450 | 780 | 573 | 210 |
| 16 | 174 | 165 | | 130 | | | 650 | 1,320 | 2,700 | 746 | 626 | 202 |
| 17 | 171 | 160 | | | | | 450 | 1,360 | 3,110 | 753 | 550 | 196 |
| 18 | 171 | 155 | | | | | 350 | 1,790 | 3,110 | 675 | 455 | 191 |
| 19 | 174 | 140 | | | | | 380 | 1,890 | 2,510 | 632 | 426 | 188 |
| 20 | 169 | 130 | | | | | 417 | 2,000 | 2,220 | 579 | 380 | 186 |
| 21 | 160 | 120 | | | 160 | | 500 | 3,870 | 2,450 | 545 | 346 | 183 |
| 22 | 157 | 128 | | | | | 600 | 2,840 | 2,450 | 507 | 326 | 186 |
| 23 | 146 | 136 | 140 | | | | 720 | 2,100 | 2,220 | 476 | 342 | 212 |
| 24 | 136 | 144 | | | | | 840 | 1,940 | 2,160 | 455 | 314 | 224 |
| 25 | 144 | 152 | | | | | 900 | 2,160 | 1,840 | 470 | 300 | 221 |
| 26 | 151 | 155 | | | | 170 | 950 | 2,640 | 1,690 | 455 | 296 | 227 |
| 27 | 157 | 158 | | | 140 | | 1,000 | 3,110 | 1,740 | 422 | 303 | 224 |
| 28 | 169 | 160 | | | | | 960 | 3,790 | 1,590 | 389 | 285 | 220 |
| 29 | 162 | 152 | 130 | | ------- | | 920 | 4,940 | 1,500 | 372 | 271 | 215 |
| 30 | 149 | 146 | | | ------- | | 877 | 6,240 | 1,360 | 358 | 262 | 210 |
| 31 | 153 | ------- | | | ------- | | ------- | 5,620 | ------- | 350 | 252 | ------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off | |
|---|---|---|---|---|---|---|
| | | | | | Inches | Acre-feet |
| October | 221 | 136 | 172 | 0.269 | 0.31 | 10,600 |
| November | 165 | 120 | 147 | .230 | .26 | 8,750 |
| December | ------- | ------- | 142 | .222 | .26 | 8,730 |
| January | ------- | ------- | 130 | .203 | .23 | 7,990 |
| February | ------- | ------- | 149 | .233 | .24 | 8,280 |
| March | ------- | ------- | 156 | .244 | .28 | 9,590 |
| April | 1,000 | 190 | 584 | .912 | 1.02 | 34,800 |
| May | 6,240 | 849 | 2,190 | 3.42 | 3.94 | 135,000 |
| June | 4,650 | 1,360 | 2,700 | 4.22 | 4.71 | 161,000 |
| July | 1,360 | 350 | 801 | 1.25 | 1.44 | 49,300 |
| August | 760 | 252 | 421 | .658 | .76 | 25,900 |
| September | 314 | 183 | 228 | .356 | .40 | 13,600 |
| The year | 6,240 | 120 | 652 | 1.02 | 13.85 | 474,000 |

### GARDINER RIVER AT MAMMOTH HOTEL, YELLOWSTONE NATIONAL PARK

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

DRAINAGE AREA.—201 square miles.

RECORDS AVAILABLE.—September, 1922, to September, 1930.

EXTREMES.—Maximum discharge during year, 786 second-feet May 30 (gage height, 2.48 feet); minimum, 36 second-feet Nov. 20 (gage height, 0.58 foot).

1922–1930: Maximum discharge, 1,790 second-feet May 28, 1928 (gage height, 3.59 feet); minimum, 31 second-feet Apr. 7, 1928 (gage height, 0.55 foot).

REMARKS.—Records excellent except those for estimated periods, Jan. 8–31, Apr. 29, 30, May 1–23, July 29–31, Aug. 1–5, 7–17, 19, 20, which are fair. No regulation or diversions.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 96 | 84 | 75 | 66 | 75 | 58 | 68 | 350 | 547 | 222 | 105 | 86 |
| 2 | 96 | 88 | 57 | 68 | 73 | 63 | 68 | 400 | 475 | 222 | 120 | 86 |
| 3 | 96 | 82 | 72 | 82 | 68 | 88 | 73 | 470 | 416 | 219 | 140 | 86 |
| 4 | 96 | 79 | 79 | 77 | 68 | 79 | 75 | 520 | 361 | 208 | 160 | 86 |
| 5 | 92 | 84 | 79 | 79 | 66 | 72 | 77 | 550 | 331 | 198 | 140 | 96 |
| 6 | 92 | 88 | 82 | 73 | 68 | 68 | 84 | 500 | 352 | 195 | 126 | 103 |
| 7 | 90 | 82 | 81 | 68 | 70 | 63 | 96 | 460 | 421 | 185 | 110 | 101 |
| 8 | 101 | 77 | 77 | | 72 | 66 | 103 | 420 | 518 | 182 | 115 | 107 |
| 9 | 117 | 81 | 82 | | 66 | 66 | 105 | 380 | 547 | 179 | 125 | 105 |
| 10 | 105 | 92 | 96 | | 66 | 63 | 109 | 340 | 565 | 179 | 135 | 103 |
| 11 | 96 | 82 | 90 | | 66 | 66 | 114 | 290 | 595 | 182 | 105 | 96 |
| 12 | 94 | 62 | 88 | | 65 | 66 | 121 | 260 | 583 | 195 | 115 | 92 |
| 13 | 94 | 72 | 90 | | 70 | 66 | 129 | 240 | 470 | 167 | 100 | 90 |
| 14 | 94 | 82 | 88 | | 70 | 66 | 129 | 250 | 397 | 155 | 120 | 90 |
| 15 | 92 | 92 | 84 | | 68 | 68 | 144 | 270 | 383 | 147 | 150 | 84 |
| 16 | 92 | 88 | 84 | | 72 | 66 | 153 | 280 | 392 | 150 | 130 | 82 |
| 17 | 92 | 88 | 81 | | 72 | 65 | 144 | 280 | 425 | 153 | 120 | 82 |
| 18 | 92 | 82 | 62 | | 73 | 63 | 136 | 320 | 421 | 142 | 112 | 82 |
| 19 | 92 | 73 | 82 | | 73 | 68 | 142 | 380 | 365 | 142 | 107 | 82 |
| 20 | 88 | 46 | 81 | 65 | 72 | 70 | 153 | 360 | 352 | 131 | 102 | 82 |
| 21 | 90 | 62 | 55 | | 70 | 70 | 198 | 550 | 352 | 129 | 99 | 82 |
| 22 | 86 | 65 | 84 | | 70 | 75 | 263 | 525 | 365 | 126 | 99 | 82 |
| 23 | 82 | 75 | 82 | | 70 | 68 | 302 | 380 | 339 | 124 | 96 | 92 |
| 24 | 82 | 82 | 84 | | 63 | 66 | 318 | 327 | 331 | 121 | 96 | 96 |
| 25 | 84 | 86 | 84 | | 65 | 70 | 335 | 348 | 298 | 121 | 94 | 96 |
| 26 | 84 | 86 | 79 | | 65 | 68 | 357 | 392 | 275 | 124 | 94 | 99 |
| 27 | 90 | 86 | 77 | | 65 | 65 | 339 | 430 | 267 | 114 | 94 | 92 |
| 28 | 96 | 82 | 77 | | 60 | 70 | 339 | 496 | 259 | 109 | 92 | 90 |
| 29 | 82 | 81 | 75 | | ------- | 68 | 320 | 595 | 244 | 105 | 90 | 88 |
| 30 | 86 | 81 | 75 | | ------- | 66 | 300 | 681 | 229 | 100 | 88 | 86 |
| 31 | 88 | ------- | 75 | | ------- | 66 | ------- | 681 | ------- | 100 | 86 | ------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off | |
|---|---|---|---|---|---|---|
| | | | | | Inches | Acre-feet |
| October | 117 | 82 | 92.2 | 0.459 | 0.53 | 5,670 |
| November | 92 | 46 | 79.7 | .397 | .44 | 4,740 |
| December | 96 | 55 | 79.3 | .395 | .46 | 4,880 |
| January | 82 | ---------- | 66.9 | .333 | .38 | 4,110 |
| February | 75 | 60 | 68.6 | .341 | .36 | 3,810 |
| March | 88 | 58 | 67.8 | .337 | .39 | 4,170 |
| April | 357 | 68 | 176 | .876 | .98 | 10,500 |
| May | 681 | 240 | 410 | 2.04 | 2.35 | 25,200 |
| June | 595 | 229 | 396 | 1.97 | 2.20 | 23,600 |
| July | 222 | 100 | 156 | .776 | .89 | 9,590 |
| August | 160 | 86 | 112 | .557 | .64 | 6,890 |
| September | 107 | 82 | 90.8 | .452 | .50 | 5,400 |
| The year | 681 | 46 | 150 | .746 | 10.12 | 109,000 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 410 second-feet Apr. 8 (gage height, 2.37 feet); minimum, 12 second-feet Jan. 20 (gage height, 1.76 feet). 1921–1923, 1929–30: Maximum discharge, 1,880 second-feet May 26, 1923; minimum, 5.4 second-feet Aug. 9, 1921 (gage height, 1.06 feet).

REMARKS.—Records good except those for ice periods, Nov. 21–23, Dec. 16 to Jan. 4, Jan. 7 to Feb. 8, Feb. 12, 17–19, Feb. 26 to Mar. 4, which are fair. Numerous diversions above and below station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 43 | 53 | 48 | 47 | 34 | 33 | 88 | 219 | 224 | 23 | 16 | 27 |
| 2 | 40 | 53 | 45 | 47 | 45 | 27 | 123 | 259 | 179 | 24 | 21 | 26 |
| 3 | 43 | 50 | 45 | 50 | 45 | 27 | 237 | 276 | 186 | 23 | 26 | 29 |
| 4 | 47 | 47 | 48 | 57 | 42 | 30 | 381 | 276 | 156 | 21 | 22 | 29 |
| 5 | 43 | 43 | 48 | 57 | 51 | 47 | 263 | 263 | 139 | 20 | 22 | 29 |
| 6 | 43 | 47 | 45 | 57 | 60 | 47 | 295 | 228 | 116 | 19 | 21 | 29 |
| 7 | 40 | 50 | 45 | 53 | 60 | 50 | 381 | 210 | 120 | 19 | 21 | 29 |
| 8 | 43 | 50 | 60 | 47 | 116 | 53 | 410 | 186 | 142 | 19 | 19 | 29 |
| 9 | 51 | 47 | 64 | 40 | 164 | 47 | 352 | 160 | 116 | 19 | 17 | 29 |
| 10 | 53 | 47 | 68 | 36 | 210 | 53 | 299 | 146 | 85 | 39 | 18 | 27 |
| 11 | 57 | 47 | 93 | 31 | 116 | 50 | 272 | 136 | 80 | 53 | 18 | 28 |
| 12 | 53 | 43 | 88 | 29 | 136 | 47 | 259 | 126 | 85 | 28 | 17 | 28 |
| 13 | 57 | 43 | 88 | 26 | 55 | 43 | 224 | 101 | 68 | 27 | 18 | 26 |
| 14 | 53 | 47 | 83 | 24 | 55 | 43 | 250 | 107 | 55 | 26 | 19 | 26 |
| 15 | 57 | 47 | 78 | 22 | 51 | 43 | 254 | 104 | 50 | 23 | 21 | 26 |
| 16 | 57 | 50 | 73 | 20 | 64 | 43 | 246 | 88 | 47 | 22 | 21 | 26 |
| 17 | 53 | 50 | 64 | 19 | 39 | 43 | 198 | 80 | 35 | 21 | 28 | 26 |
| 18 | 57 | 50 | 48 | 16 | 35 | 43 | 190 | 83 | 34 | 21 | 28 | 28 |
| 19 | 62 | 47 | 45 | 14 | 139 | 47 | 183 | 68 | 31 | 21 | 26 | 28 |
| 20 | 57 | 47 | 51 | 12 | 202 | 71 | 186 | 66 | 31 | 18 | 25 | 29 |
| 21 | 57 | 47 | 48 | 14 | 164 | 66 | 186 | 104 | 29 | 18 | 24 | 29 |
| 22 | 53 | 47 | 48 | 15 | 129 | 146 | 202 | 107 | 29 | 18 | 24 | 30 |
| 23 | 51 | 47 | 48 | 16 | 110 | 98 | 254 | 91 | 32 | 17 | 22 | 30 |
| 24 | 50 | 47 | 45 | 19 | 83 | 83 | 295 | 75 | 31 | 16 | 26 | 31 |
| 25 | 53 | 47 | 48 | 22 | 73 | 73 | 381 | 73 | 31 | 18 | 24 | 32 |
| 26 | 53 | 50 | 48 | 24 | 73 | 48 | 381 | 71 | 29 | 21 | 24 | 33 |
| 27 | 57 | 50 | 45 | 26 | 32 | 35 | 336 | 73 | 26 | 17 | 24 | 33 |
| 28 | 53 | 50 | 48 | 28 | 32 | 39 | 304 | 101 | 26 | 17 | 24 | 33 |
| 29 | 51 | 47 | 48 | 31 | ------ | 45 | 268 | 183 | 26 | 16 | 24 | 33 |
| 30 | 53 | 47 | 45 | 30 | ------ | 60 | 246 | 276 | 26 | 16 | 24 | 33 |
| 31 | 53 | ------ | 42 | 32 | ------ | 88 | ------ | 281 | ------ | 16 | 26 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 62 | 40 | 51.4 | 3,160 |
| November | 53 | 43 | 47.9 | 2,850 |
| December | 93 | 42 | 56.1 | 3,450 |
| January | 57 | 12 | 31.0 | 1,910 |
| February | 210 | 32 | 86.2 | 4,790 |
| March | 146 | 27 | 53.8 | 3,310 |
| April | 410 | 88 | 265 | 15,800 |
| May | 281 | 66 | 149 | 9,160 |
| June | 224 | 26 | 75.5 | 4,490 |
| July | 53 | 16 | 21.8 | 1,340 |
| August | 28 | 16 | 22.3 | 1,370 |
| September | 33 | 26 | 29.0 | 1,730 |
| The year | 410 | 12 | 73.6 | 53,400 |

## 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, 1930. At site above mouth of Woodbine Creek from May, 1924, to September, 1927.

EXTREMES.—Maximum discharge during year, 3,120 second-feet June 12 (gage height, 6.50 feet); minimum, 37 second-feet Dec. 12, Feb. 24 (gage height, 2.56 feet Feb. 24).

1929–30: Maximum discharge, that of June 12, 1930; minimum, that of Dec. 12, 1929, Feb. 24, 1930.

REMARKS.—Records to Feb. 13 fair; good thereafter. Stage discharge-relation affected by ice Nov. 2, 3, 13, 14, Nov. 19 to Feb. 10, Feb. 12, 13, Feb. 28 to Mar. 3. Discharge interpolated Oct. 8–11. No diversions or storage.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 105 | 79 | 54 | | | 45 | 69 | 309 | 1,950 | 960 | 350 | 226 |
| 2 | 105 | 79 | 45 | | | 56 | 63 | 396 | 1,060 | 1,170 | 446 | 213 |
| 3 | 98 | 76 | 57 | 58 | 62 | 56 | 62 | 561 | 870 | 1,010 | 501 | 213 |
| 4 | 98 | 65 | 60 | | | 65 | 83 | 561 | 627 | 1,060 | 501 | 213 |
| 5 | 98 | 80 | 65 | | | 52 | 77 | 474 | 594 | 1,010 | 474 | 213 |
| 6 | 98 | 82 | 72 | | | 54 | 87 | 421 | 700 | 1,010 | 446 | 213 |
| 7 | 90 | 83 | 69 | | | 68 | 98 | 373 | 1,290 | 1,170 | 421 | 240 |
| 8 | 92 | 83 | 62 | 47 | 66 | 55 | 128 | 350 | 1,950 | 960 | 396 | 240 |
| 9 | 94 | 82 | 56 | | | 54 | 136 | 309 | 1,950 | 1,010 | 396 | 240 |
| 10 | 96 | 75 | 56 | | | 58 | 144 | 272 | 2,100 | 915 | 396 | 240 |
| 11 | 98 | 77 | 50 | | 60 | 58 | 144 | 240 | 2,410 | 915 | 446 | 240 |
| 12 | 98 | 82 | 37 | | 83 | 55 | 152 | 240 | 2,930 | 960 | 446 | 240 |
| 13 | 98 | 77 | 56 | 40 | 128 | 58 | 170 | 240 | 2,100 | 915 | 396 | 213 |
| 14 | 98 | 70 | 50 | | 76 | 57 | 202 | 256 | 1,170 | 825 | 396 | 213 |
| 15 | 90 | 83 | 50 | | 62 | 55 | 190 | 309 | 1,290 | 700 | 396 | 190 |
| 16 | 90 | 82 | | | 65 | 61 | 170 | 350 | 1,680 | 700 | 446 | 190 |
| 17 | 90 | 80 | | | 62 | 58 | 152 | 373 | 2,100 | 664 | 421 | 190 |
| 18 | 89 | 84 | 43 | 39 | 69 | 72 | 152 | 474 | 2,410 | 627 | 396 | 190 |
| 19 | 86 | 66 | | | 70 | 68 | 152 | 501 | 1,950 | 561 | 373 | 190 |
| 20 | 84 | 66 | | | 68 | 70 | 144 | 561 | 1,680 | 501 | 350 | 190 |
| 21 | 84 | | | | 61 | 68 | 144 | 1,360 | 1,950 | 501 | 350 | 190 |
| 22 | 83 | | | | 46 | 63 | 202 | 780 | 1,950 | 446 | 350 | 190 |
| 23 | 77 | 65 | 65 | 42 | 60 | 61 | 240 | 561 | 1,680 | 446 | 309 | 190 |
| 24 | 77 | | | | 37 | 54 | 330 | 474 | 1,620 | 421 | 290 | 180 |
| 25 | 84 | | | | 61 | 55 | 350 | 531 | 1,170 | 396 | 272 | 180 |
| 26 | 84 | | | | 50 | 63 | 350 | 700 | 1,010 | 446 | 256 | 170 |
| 27 | 89 | | | | 50 | 77 | 373 | 1,230 | 1,360 | 350 | 256 | 180 |
| 28 | 90 | 85 | 57 | 49 | 46 | 62 | 350 | 1,360 | 1,060 | 350 | 240 | 170 |
| 29 | 77 | | | | ------- | 51 | 309 | 1,950 | 915 | 350 | 240 | 170 |
| 30 | 79 | | | | ------- | 58 | 309 | 2,930 | 915 | 350 | 240 | 170 |
| 31 | 76 | ------- | | | ------- | 56 | ------- | 2,410 | ------- | 350 | 240 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 105 | 76 | 90.2 | 5,550 |
| November | ------- | ------- | 76.7 | 4,560 |
| December | 72 | 37 | 55.5 | 3,410 |
| January | ------- | ------- | 45.9 | 2,820 |
| February | 128 | 37 | 64.1 | 3,560 |
| March | 77 | 45 | 59.5 | 3,660 |
| April | 373 | 62 | 184 | 10,900 |
| May | 2,930 | 240 | 705 | 43,300 |
| June | 2,930 | 594 | 1,550 | 92,200 |
| July | 1,170 | 350 | 711 | 43,700 |
| August | 501 | 240 | 369 | 22,700 |
| September | 240 | 170 | 203 | 12,100 |
| The year | 2,930 | 37 | 343 | 248,000 |

### CLARK FORK BELOW CRANDALL CREEK, WYO.

LOCATION.—Water-stage recorder in sec. 1, T. 56 N., R. 106 W., 2 miles below mouth of Crandall Creek.
DRAINAGE AREA.—401 square miles.
RECORDS AVAILABLE.—August, 1929, to September, 1930.
EXTREMES.—Maximum discharge during year, 5,680 second-feet May 30 (gage height, 5.76 feet); minimum occurred during winter.
REMARKS.—Records excellent except those for period Oct. 19 to Apr. 9, which were estimated because of ice. No diversions above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 146 | | | | | | | 683 | 3,460 | 1,570 | 608 | 231 |
| 2 | 141 | | | | | | | 909 | 2,410 | 1,720 | 818 | 202 |
| 3 | 144 | | | | | | 100 | 1,300 | 1,800 | 1,780 | 916 | 188 |
| 4 | 135 | | | | | | | 1,210 | 1,450 | 1,810 | 1,010 | 178 |
| 5 | 128 | 70 | 70 | 70 | 45 | 55 | | 1,230 | 1,270 | 1,820 | 839 | 198 |
| 6 | 126 | | | | | | | 1,080 | 1,400 | 1,820 | 766 | 244 |
| 7 | 110 | | | | | | 200 | 951 | 2,040 | 1,730 | 714 | 223 |
| 8 | 100 | | | | | | | 832 | 2,870 | 1,630 | 659 | 227 |
| 9 | 146 | | | | | | | 728 | 3,130 | 1,610 | 624 | 231 |
| 10 | 156 | | | | | | 451 | 647 | 3,610 | 1,930 | 554 | 253 |
| 11 | 139 | | | | | | 416 | 580 | 4,290 | 1,720 | 647 | 244 |
| 12 | 137 | | | | | | 342 | 543 | 4,510 | 1,990 | 677 | 235 |
| 13 | 131 | | | | | | 371 | 564 | 3,260 | 1,490 | 647 | 235 |
| 14 | 131 | | | | | | 421 | 665 | 2,200 | 1,130 | 641 | 231 |
| 15 | 118 | 60 | 60 | 40 | 45 | 65 | 361 | 786 | 2,050 | 923 | 613 | 227 |
| 16 | 108 | | | | | | 294 | 780 | 2,540 | 812 | 618 | 219 |
| 17 | 103 | | | | | | 280 | 786 | 3,360 | 780 | 580 | 206 |
| 18 | 83 | | | | | | 258 | 930 | 3,580 | 708 | 613 | 191 |
| 19 | 85 | | | | | | 262 | 1,030 | 2,980 | 605 | 608 | 182 |
| 20 | | | | | | | 266 | 1,310 | 2,520 | 591 | 564 | 175 |
| 21 | | | | | | | 391 | 2,370 | 2,680 | 671 | 502 | 166 |
| 22 | | | | | | | 608 | 1,920 | 2,830 | 760 | 451 | 163 |
| 23 | | | | | | | 721 | 1,480 | 2,610 | 702 | 426 | 178 |
| 24 | | | | | | | 728 | 1,280 | 2,170 | 653 | 396 | 182 |
| 25 | 75 | 70 | 70 | 45 | 55 | 65 | 683 | 1,360 | 1,770 | 653 | 371 | 191 |
| 26 | | | | | | | 786 | 1,570 | 1,620 | 602 | 347 | 175 |
| 27 | | | | | | | 902 | 1,970 | 1,670 | 575 | 347 | 169 |
| 28 | | | | | | | 780 | 2,590 | 1,750 | 548 | 304 | 161 |
| 29 | | | | | ------- | | 708 | 3,760 | 1,650 | 532 | 280 | 153 |
| 30 | | | | | ------- | | 659 | 5,120 | 1,530 | 517 | 258 | 151 |
| 31 | | ------- | | | ------- | | ------- | 4,800 | ------- | 559 | 240 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 156 | ---------- | 105 | 6,460 |
| November | ---------- | ---------- | 66.7 | 3,970 |
| December | ---------- | ---------- | 66.8 | 4,110 |
| January | ---------- | ---------- | 51.5 | 3,170 |
| February | ---------- | ---------- | 47.9 | 2,660 |
| March | ---------- | ---------- | 61.8 | 3,800 |
| April | 902 | ---------- | 400 | 23,800 |
| May | 5,120 | 543 | 1,480 | 91,000 |
| June | 4,510 | 1,270 | 2,500 | 149,000 |
| July | 1,990 | 517 | 1,130 | 69,500 |
| August | 1,010 | 240 | 569 | 35,000 |
| September | 253 | 151 | 200 | 11,900 |
| The year | 5,120 | ---------- | 558 | 404,000 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 5,870 second-feet May 31 (gage height, 4.70 feet); minimum, 113 second-feet Mar. 27 (gage height, 0.57 foot).

1921–1930: 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 except those for periods Nov. 3–9, 24–30, which are estimated. Numerous diversions.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 285 | 237 | ------- | 136 | 850 | 4,590 | 2,800 | 307 | 488 |
| 2 | 280 | 229 | ------- | 158 | 850 | 3,200 | 2,420 | 268 | 455 |
| 3 | 259 | 232 | ------- | 161 | 1,910 | 2,610 | 2,610 | 341 | 455 |
| 4 | 247 | 235 | ------- | 184 | 1,760 | 2,610 | 2,240 | 1,200 | 455 |
| 5 | 244 | 238 | ------- | 179 | 1,620 | 2,800 | 2,420 | 1,260 | 455 |
| 6 | 251 | 241 | ------- | 196 | 1,490 | 3,630 | 2,610 | 1,320 | 488 |
| 7 | 251 | 245 | ------- | 341 | 1,260 | 2,610 | 2,420 | 1,320 | 455 |
| 8 | 251 | 247 | ------- | 455 | 1,040 | 3,630 | 2,070 | 1,040 | 455 |
| 9 | 285 | 249 | 132 | 558 | 945 | 4,340 | 2,420 | 945 | 455 |
| 10 | 289 | 251 | 127 | 635 | 850 | 4,590 | 2,240 | 995 | 455 |
| 11 | 293 | 251 | 136 | 595 | 718 | 5,090 | 2,610 | 1,100 | 455 |
| 12 | 293 | 247 | 140 | 558 | 675 | 5,090 | 3,410 | 1,910 | 455 |
| 13 | 293 | 255 | 134 | 455 | 675 | 4,340 | 2,800 | 1,760 | 455 |
| 14 | 247 | 259 | 136 | 558 | 675 | 3,200 | 2,420 | 1,370 | 395 |
| 15 | 247 | 264 | 129 | 522 | 805 | 2,420 | 2,070 | 1,490 | 395 |
| 16 | 247 | 293 | 134 | 425 | 945 | 2,800 | 1,620 | 1,430 | 341 |
| 17 | 247 | 293 | 129 | 395 | 850 | 3,860 | 1,560 | 1,560 | 331 |
| 18 | 251 | 285 | 120 | 322 | 1,100 | 4,100 | 1,620 | 1,260 | 317 |
| 19 | 244 | 276 | 138 | 341 | 1,200 | 3,630 | 1,370 | 1,150 | 272 |
| 20 | 259 | 276 | 145 | 341 | 1,760 | 3,200 | 1,320 | 1,150 | 215 |
| 21 | 251 | 268 | 136 | 341 | 2,070 | 3,410 | 1,150 | 1,150 | 209 |
| 22 | 237 | 276 | 134 | 558 | 2,800 | 3,410 | 995 | 1,040 | 215 |
| 23 | 237 | 251 | 151 | 995 | 2,070 | 3,000 | 1,040 | 945 | 229 |
| 24 | 233 | | 132 | 995 | 1,910 | 3,000 | 850 | 805 | 237 |
| 25 | 200 | | 138 | 898 | 2,070 | 2,420 | 850 | 675 | 247 |
| 26 | 222 | 220 | 134 | 1,040 | 2,420 | 1,910 | 850 | 760 | 251 |
| 27 | 251 | | 118 | 1,200 | 2,610 | 1,910 | 805 | 760 | 251 |
| 28 | 251 | | 118 | 1,100 | 3,000 | 2,070 | 675 | 760 | 244 |
| 29 | 251 | | 125 | 945 | 4,100 | 2,240 | 635 | 675 | 251 |
| 30 | 251 | | 125 | 945 | 5,350 | 1,910 | 595 | 635 | 259 |
| 31 | 247 | ------- | 129 | ------- | 5,610 | ------- | 522 | 522 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 293 | 200 | 255 | 15,700 |
| November | 293 | ---------- | 248 | 14,800 |
| March 9–31 | 151 | 118 | 132 | 6,020 |
| April | 1,200 | 136 | 551 | 32,800 |
| May | 5,610 | 675 | 1,810 | 111,000 |
| June | 5,090 | 1,910 | 3,250 | 193,000 |
| July | 3,410 | 522 | 1,740 | 107,000 |
| August | 1,910 | 268 | 1,030 | 63,300 |
| September | 488 | 209 | 355 | 21,100 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 4,390 second-feet May 31 (gage height, 6.05 feet); minimum, 159 second-feet Nov. 21 (gage height, 2.07 feet).

1921–1930: Maximum discharge, 10,600 second-feet May 26, 1928 (gage height, 8.25 feet); minimum, 84 second-feet Mar. 9, 1929 (gage height, 1.85 feet).

REMARKS.—Records good. Discharge interpolated Aug. 30 to Sept. 3. Numerous diversions.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 499 | 443 | ------- | 376 | 965 | 4,080 | 1,740 | 430 | 572 |
| 2 | 443 | 443 | ------- | 376 | 965 | 3,070 | 1,850 | 660 | 578 |
| 3 | 443 | 443 | ------- | 376 | 1,240 | 2,430 | 1,960 | 965 | 583 |
| 4 | 443 | 416 | ------- | 459 | 1,630 | 3,070 | 2,070 | 1,010 | 588 |
| 5 | 443 | 416 | ------- | 588 | 1,740 | 1,740 | 2,070 | 1,430 | 490 |
| 6 | 416 | 471 | ------- | 490 | 1,530 | 1,430 | 2,070 | 1,240 | 521 |
| 7 | 416 | 499 | ------- | 554 | 1,430 | 1,740 | 1,960 | 1,100 | 588 |
| 8 | 443 | 499 | ------- | 660 | 1,190 | 2,430 | 1,850 | 1,010 | 588 |
| 9 | 416 | 471 | ------- | 810 | 1,050 | 2,940 | 1,740 | 1,050 | 588 |
| 10 | 416 | 471 | 459 | 810 | 925 | 3,070 | 1,630 | 1,050 | 588 |
| 11 | 443 | 471 | 459 | 772 | 848 | 3,490 | 2,070 | 1,100 | 660 |
| 12 | 443 | 443 | 554 | 772 | 735 | 4,080 | 2,810 | 1,330 | 660 |
| 13 | 443 | 390 | 490 | 660 | 660 | 3,780 | 2,810 | 1,530 | 624 |
| 14 | 416 | 443 | 402 | 698 | 660 | 2,810 | 2,310 | 1,330 | 588 |
| 15 | 416 | 471 | 402 | 810 | 698 | 2,310 | 1,850 | 1,430 | 521 |
| 16 | 416 | 471 | 430 | 698 | 810 | 2,310 | 1,630 | 1,630 | 459 |
| 17 | 416 | 471 | 402 | 624 | 772 | 2,680 | 1,430 | 1,530 | 459 |
| 18 | 416 | 443 | 326 | 588 | 772 | 3,210 | 1,240 | 1,430 | 430 |
| 19 | 390 | 416 | 326 | 554 | 885 | 3,210 | 1,240 | 1,330 | 430 |
| 20 | 416 | 340 | 430 | 554 | 1,010 | 2,680 | 1,240 | 1,240 | 402 |
| 21 | 416 | 159 | 430 | 554 | 1,530 | 2,550 | 1,050 | 1,100 | 402 |
| 22 | 390 | ------- | 430 | 624 | 2,430 | 2,680 | 925 | 1,010 | 430 |
| 23 | 416 | ------- | 459 | 848 | 1,960 | 2,810 | 810 | 925 | 430 |
| 24 | 390 | ------- | 402 | 1,010 | 1,530 | 2,680 | 698 | 885 | 430 |
| 25 | 390 | ------- | 376 | 1,100 | 1,240 | 2,310 | 660 | 772 | 430 |
| 26 | 390 | ------- | 326 | 1,140 | 1,430 | 1,960 | 660 | 735 | 430 |
| 27 | 390 | ------- | 350 | 1,140 | 1,740 | 1,850 | 624 | 698 | 459 |
| 28 | 471 | ------- | 326 | 1,330 | 2,190 | 1,960 | 588 | 735 | 430 |
| 29 | 443 | ------- | 350 | 1,530 | 2,680 | 2,070 | 490 | 554 | 430 |
| 30 | 443 | ------- | 376 | 1,010 | 3,630 | 1,850 | 459 | 560 | 430 |
| 31 | 443 | ------- | 376 | ------- | 4,390 | ------- | 490 | 566 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 499 | 390 | 425 | 26,100 |
| November 1–21 | 499 | 159 | 433 | 18,000 |
| March 9–31 | 554 | 326 | 404 | 17,600 |
| April | 1,530 | 376 | 750 | 44,600 |
| May | 4,390 | 660 | 1,460 | 89,800 |
| June | 4,080 | 1,430 | 2,640 | 157,000 |
| July | 2,810 | 459 | 1,450 | 89,200 |
| August | 1,630 | 430 | 1,040 | 64,000 |
| September | 660 | 402 | 507 | 30,200 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 1,260 second-feet July 12 (gage height, 3.07 feet); minimum occurred during winter.

REMARKS.—Records excellent except those for periods Nov. 18 to Dec. 10, Dec. 17 to Apr. 2, which were estimated because of ice. Minor diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 67 | 59 | | | | | 27 | 70 | 405 | 324 | 192 | 117 |
| 2 | 65 | 57 | | | | | 27 | 113 | 269 | 375 | 199 | 114 |
| 3 | 63 | 67 | | | | | 27 | 152 | 222 | 410 | 192 | 109 |
| 4 | 63 | 65 | | | | | 34 | 131 | 192 | 395 | 269 | 104 |
| 5 | 62 | 57 | | | | | 40 | 134 | 174 | 380 | 215 | 105 |
| | | | 45 | 30 | 25 | 30 | | | | | | |
| 6 | 63 | 57 | | | | | 43 | 112 | 196 | 342 | 201 | 110 |
| 7 | 62 | 66 | | | | | 46 | 98 | 303 | 333 | 186 | 109 |
| 8 | 62 | 72 | | | | | 49 | 87 | 400 | 333 | 172 | 108 |
| 9 | 63 | 63 | | | | | 50 | 80 | 516 | 346 | 182 | 106 |
| 10 | 67 | 59 | | | | | 59 | 75 | 647 | 342 | 259 | 104 |
| 11 | 63 | 64 | 36 | | | | 55 | 69 | 773 | 333 | 235 | 103 |
| 12 | 66 | | 34 | | | | 51 | 66 | 787 | 912 | 410 | 100 |
| 13 | 63 | 55 | 35 | | | | 60 | 71 | 452 | 470 | 338 | 95 |
| 14 | 61 | | 34 | | | | 61 | 84 | 283 | 320 | 269 | 92 |
| 15 | 61 | 71 | 35 | | | | 54 | 95 | 299 | 272 | 295 | 88 |
| | | | | 20 | 25 | 32 | | | | | | |
| 16 | 62 | 63 | 34 | | | | 46 | 86 | 440 | 249 | 283 | 85 |
| 17 | 60 | 60 | | | | | 42 | 78 | 626 | 225 | 272 | 85 |
| 18 | 57 | | | | | | 39 | 96 | 647 | 220 | 265 | 84 |
| 19 | 56 | | | | | | 40 | 108 | 509 | 206 | 238 | 81 |
| 20 | 56 | | | | | | 38 | 137 | 400 | 190 | 206 | 80 |
| 21 | 57 | 45 | 25 | | | | 50 | 390 | 483 | 171 | 184 | 79 |
| 22 | 56 | | | | | | 67 | 208 | 528 | 157 | 171 | 80 |
| 23 | 56 | | | | | | 77 | 160 | 405 | 148 | 162 | 80 |
| 24 | 55 | | | | | | 78 | 151 | 375 | 144 | 152 | 77 |
| 25 | 52 | | | | 30 | | 76 | 162 | 283 | 156 | 144 | 76 |
| | | | | 22 | | 35 | | | | | | |
| 26 | 53 | | | | | | 81 | 180 | 265 | 145 | 140 | 75 |
| 27 | 55 | | | | | | 90 | 220 | 324 | 140 | 139 | 73 |
| 28 | 58 | 50 | 30 | | | | 75 | 324 | 375 | 136 | 134 | 72 |
| 29 | 58 | | | | ------- | | 65 | 483 | 324 | 132 | 128 | 71 |
| 30 | 57 | | | | ------- | | 63 | 703 | 299 | 132 | 121 | 71 |
| 31 | 56 | ------- | | | ------- | | ------- | 619 | ------- | 136 | 117 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 67 | 52 | 59.8 | 3,680 |
| November | 71 | ---------- | 55.2 | 3,280 |
| December | ---------- | ---------- | 34.3 | 2,110 |
| January | ---------- | ---------- | 23.9 | 1,470 |
| February | ---------- | ---------- | 26.4 | 1,470 |
| March | ---------- | ---------- | 32.4 | 1,990 |
| April | 90 | 27 | 53.7 | 3,200 |
| May | 703 | 66 | 179 | 11,000 |
| June | 787 | 174 | 407 | 24,200 |
| July | 912 | 132 | 277 | 17,000 |
| August | 410 | 117 | 209 | 12,900 |
| September | 117 | 71 | 91.1 | 5,420 |
| The year | 912 | ---------- | 121 | 87,700 |

### WIND RIVER AT RIVERTON, WYO.

LOCATION.—Chain gage in sec. 2, T. 1 S., R. 4 E., three-fourths mile east of Riverton. Zero of gage 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, 1930.

EXTREMES.—Maximum discharge during year, 9,000 second-feet Aug. 13 (gage height, 7.4 feet); minimum occurred during winter.

1906–1908, 1911–1927, 1928–1930: Maximum discharge, 12,300 second-feet June 14, 1906; minimum, 170 second-feet Dec. 16, 1926.

REMARKS.—Records good. Diversions for irrigation above station. Slight regulation due to operation of Pilot Butte Canal which diverts water about 30 miles above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 701 | 390 | -------- | 326 | 842 | 5,320 | 1,850 | 1,600 | 1,340 |
| 2 | 701 | 385 | -------- | 322 | 790 | 3,650 | 1,920 | 1,620 | 1,260 |
| 3 | 701 | 380 | -------- | 322 | 948 | 2,860 | 2,120 | 1,830 | 1,210 |
| 4 | 656 | 375 | -------- | 360 | 1,280 | 2,490 | 2,340 | 2,210 | 1,130 |
| 5 | 656 | 318 | -------- | 413 | 1,370 | 2,180 | 2,500 | 2,660 | 1,080 |
| 6 | 656 | 380 | -------- | 446 | 1,480 | 2,000 | 2,620 | 2,740 | 1,070 |
| 7 | 656 | 432 | -------- | 548 | 1,320 | 2,080 | 2,540 | 2,660 | 1,130 |
| 8 | 629 | 413 | -------- | 780 | 1,500 | 2,700 | 2,490 | 2,740 | 1,120 |
| 9 | 629 | 380 | -------- | 904 | 1,460 | 3,360 | 2,630 | 2,810 | 1,130 |
| 10 | 629 | 395 | -------- | 750 | 1,280 | 3,730 | 2,710 | 3,080 | 1,090 |
| 11 | 629 | 355 | -------- | 852 | 1,200 | 4,330 | 2,990 | 3,230 | 1,070 |
| 12 | 604 | 355 | -------- | 842 | 1,050 | 5,360 | 3,540 | 3,750 | 1,000 |
| 13 | 604 | 365 | -------- | 842 | 926 | 5,060 | 4,390 | 6,900 | 959 |
| 14 | 604 | 375 | -------- | 884 | 894 | 4,060 | 3,940 | 6,580 | 915 |
| 15 | 588 | 360 | 540 | 915 | 1,140 | 3,750 | 3,320 | 7,960 | 842 |
| 16 | 588 | 346 | 564 | 750 | 1,500 | 3,800 | 2,860 | 6,050 | 770 |
| 17 | 564 | 336 | 495 | 647 | 1,320 | 4,120 | 2,650 | 4,720 | 750 |
| 18 | 525 | 326 | 375 | 596 | 1,220 | 3,820 | 2,480 | 3,920 | 730 |
| 19 | 510 | 315 | 370 | 572 | 1,180 | 3,400 | 2,580 | 3,360 | 701 |
| 20 | 472 | 304 | 380 | 604 | 1,180 | 3,500 | 3,320 | 2,860 | 701 |
| 21 | 510 | 294 | 380 | 525 | 1,300 | 3,150 | 3,470 | 2,550 | 665 |
| 22 | 458 | 284 | 380 | 740 | 1,870 | 3,160 | 3,160 | 2,320 | 710 |
| 23 | 480 | 268 | 370 | 1,020 | 1,710 | 3,080 | 2,760 | 2,210 | 683 |
| 24 | 480 | 265 | 336 | 1,160 | 1,460 | 2,790 | 2,490 | 2,020 | 730 |
| 25 | 432 | 253 | 315 | 1,220 | 1,490 | 2,490 | 2,260 | 1,900 | 770 |
| 26 | 390 | 247 | 326 | 1,160 | 1,710 | 2,180 | 2,030 | 1,860 | 692 |
| 27 | 370 | 238 | 326 | 1,240 | 2,120 | 2,000 | 1,940 | 1,920 | 647 |
| 28 | 426 | 229 | 315 | 1,250 | 2,540 | 2,120 | 1,850 | 1,860 | 701 |
| 29 | 458 | 223 | 308 | 1,110 | 3,040 | 2,190 | 1,720 | 1,660 | 556 |
| 30 | 406 | 223 | 315 | 948 | 4,410 | 2,080 | 1,650 | 1,540 | 451 |
| 31 | 380 | -------- | 326 | -------- | 6,280 | -------- | 1,610 | 1,500 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 701 | 370 | 551 | 33,900 |
| November | 432 | 223 | 327 | 19,500 |
| March 15–31 | 564 | 308 | 378 | 12,700 |
| April | 1,250 | 322 | 768 | 45,700 |
| May | 6,280 | 790 | 1,670 | 103,000 |
| June | 5,360 | 2,000 | 3,230 | 192,000 |
| July | 4,390 | 1,610 | 2,600 | 160,000 |
| August | 7,960 | 1,500 | 3,050 | 188,000 |
| September | 1,340 | 451 | 887 | 52,800 |

## BIG HORN RIVER AT THERMOPOLIS, WYO.

LOCATION.—Chain gage in sec. 36, T. 43 N., R. 95 W., at Thermopolis. Zero of gage 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, 1930.

EXTREMES.—Maximum discharge during year, 14,500 second-feet Aug. 16 (gage height, 9.41 feet); minimum occurred during winter.

1900–1905, 1910–1930: 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 good except those for periods Dec. 19–24, and Jan. 12 to Feb. 2, which are fair. Practically no diversions between mouth of Wind River and Thermopolis.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,240 | 844 | 532 | 548 | 400 | 802 | 665 | 1,630 | 9,430 | 2,780 | 1,580 | 2,140 |
| 2 | 1,240 | 857 | 524 | 540 | 420 | 736 | 675 | 1,470 | 8,080 | 2,880 | 1,550 | 2,000 |
| 3 | 1,190 | 784 | 532 | 528 | 457 | 665 | 695 | 1,390 | 6,040 | 2,720 | 1,690 | 1,940 |
| 4 | 1,230 | 760 | 484 | 508 | 460 | 640 | 705 | 1,700 | 4,700 | 3,110 | 2,160 | 1,840 |
| 5 | 1,300 | 720 | 448 | 484 | 472 | 700 | 715 | 2,180 | 4,130 | 3,270 | 2,620 | 1,700 |
| 6 | 1,310 | 715 | 460 | 457 | 484 | 715 | 760 | 2,390 | 3,240 | 3,480 | 3,140 | 1,860 |
| 7 | 1,290 | 784 | 496 | 445 | 492 | 715 | 832 | 2,510 | 3,120 | 3,540 | 3,460 | 1,720 |
| 8 | 1,350 | 784 | 540 | 442 | 504 | 730 | 955 | 2,570 | 3,540 | 3,430 | 3,640 | 1,720 |
| 9 | 1,390 | 754 | 615 | 433 | 520 | 754 | 1,100 | 2,870 | 3,990 | 3,380 | 3,810 | 1,690 |
| 10 | 1,420 | 725 | 670 | 418 | 532 | 796 | 1,350 | 2,880 | 5,540 | 3,490 | 2,750 | 1,740 |
| 11 | 1,380 | 705 | 720 | 385 | 520 | 820 | 1,510 | 2,720 | 6,780 | 3,540 | 2,980 | 1,640 |
| 12 | 1,330 | 655 | 760 | 360 | 520 | 857 | 1,510 | 2,270 | 7,650 | 5,730 | 5,750 | 1,600 |
| 13 | 1,330 | 635 | 878 | 330 | 536 | 871 | 1,480 | 2,050 | 8,720 | 7,060 | 10,600 | 1,570 |
| 14 | 1,290 | 548 | 948 | 300 | 524 | 892 | 1,510 | 1,780 | 7,800 | 7,210 | 13,800 | 1,500 |
| 15 | 1,210 | 556 | 906 | 280 | 520 | 878 | 1,620 | 2,040 | 6,230 | 6,650 | 14,100 | 1,450 |
| 16 | 1,110 | 640 | 871 | | 548 | 871 | 1,630 | 2,870 | 5,210 | 4,750 | 14,300 | 1,280 |
| 17 | 1,020 | 754 | 820 | | 568 | 892 | 1,610 | 3,410 | 5,250 | 4,340 | 10,000 | 1,370 |
| 18 | 969 | 772 | 742 | 250 | 600 | 906 | 1,540 | 3,140 | 5,730 | 3,880 | 8,000 | 1,200 |
| 19 | 934 | 838 | | | 660 | 920 | 1,490 | 2,560 | 5,400 | 3,760 | 6,380 | 1,100 |
| 20 | 906 | 802 | | | 748 | 920 | 1,440 | 2,250 | 3,990 | 3,820 | 5,320 | 1,110 |
| 21 | 899 | 445 | 500 | | 778 | 892 | 1,350 | 2,250 | 4,620 | 3,990 | 4,590 | 1,150 |
| 22 | 878 | 442 | | | 802 | 885 | 1,300 | 2,560 | 4,660 | 4,040 | 4,060 | 1,140 |
| 23 | 826 | 433 | | 270 | 832 | 878 | 1,270 | 3,300 | 4,930 | 3,490 | 3,600 | 1,150 |
| 24 | 820 | 500 | | | 838 | 826 | 1,450 | 3,320 | 5,120 | 3,110 | 3,190 | 1,150 |
| 25 | 808 | 516 | 576 | | 808 | 826 | 1,620 | 2,640 | 4,700 | 2,540 | 3,040 | 1,190 |
| 26 | 778 | 556 | 572 | | 820 | 736 | 1,840 | 2,360 | 4,300 | 2,120 | 2,880 | 1,230 |
| 27 | 766 | 600 | 564 | | 838 | 725 | 2,060 | 2,700 | 3,590 | 2,000 | 3,560 | 1,170 |
| 28 | 802 | 640 | 564 | 300 | 820 | 695 | 2,060 | 3,460 | 3,120 | 1,890 | 3,560 | 1,140 |
| 29 | 850 | 640 | 568 | | ------- | 685 | 2,010 | 5,120 | 3,220 | 1,780 | 2,810 | 1,180 |
| 30 | 857 | 590 | 568 | | ------- | 670 | 1,810 | 5,990 | 3,060 | 1,630 | 2,580 | 1,070 |
| 31 | 850 | ------- | 552 | | ------- | 665 | ------- | 7,800 | ------- | 1,620 | 2,320 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 1,420 | 766 | 1,080 | 66,400 |
| November | 857 | 433 | 666 | 39,600 |
| December | 948 | 448 | 610 | 37,500 |
| January | 548 | ---------- | 350 | 21,500 |
| February | 838 | 400 | 608 | 33,800 |
| March | 920 | 640 | 792 | 48,700 |
| April | 2,060 | 665 | 1,350 | 80,300 |
| May | 7,800 | 1,390 | 2,840 | 175,000 |
| June | 9,430 | 3,060 | 5,200 | 309,000 |
| July | 7,210 | 1,620 | 3,580 | 220,000 |
| August | 14,300 | 1,550 | 4,960 | 305,000 |
| September | 2,140 | 1,070 | 1,460 | 86,900 |
| The year | 14,300 | ---------- | 1,970 | 1,420,000 |

### 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 3,610.23 feet above mean sea level.

DRAINAGE AREA.—15,900 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 16,200 second-feet Aug. 17 (gage height, 7.68 feet); minimum occurred during winter.

1928–1930: Maximum discharge, that of Aug. 17, 1930; minimum occurred during winter.

REMARKS.—Records excellent except those for period Nov. 25 to Mar. 18, which were estimated because of ice. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Jan. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,870 | 1,350 | -------- | | 1,180 | 2,820 | 10,300 | 2,820 | 1,350 | 4,540 |
| 2 | 1,870 | 1,440 | -------- | | 1,260 | 1,870 | 12,100 | 2,670 | 1,260 | 2,970 |
| 3 | 1,870 | 1,350 | -------- | 1,230 | 1,260 | 1,650 | 9,550 | 2,390 | 1,260 | 1,870 |
| 4 | 1,870 | 1,350 | -------- | | 1,350 | 1,650 | 7,360 | 2,250 | 1,180 | 1,440 |
| 5 | 1,760 | 1,350 | -------- | | 1,440 | 1,650 | 5,790 | 2,670 | 1,180 | 1,650 |
| 6 | 1,760 | 1,260 | -------- | | 1,550 | 3,980 | 5,150 | 2,250 | 2,120 | 1,440 |
| 7 | 1,870 | 1,440 | -------- | | 1,760 | 4,540 | 4,350 | 3,130 | 2,390 | 1,550 |
| 8 | 1,870 | 1,440 | -------- | 1,300 | 1,760 | 4,160 | 4,160 | 3,130 | 2,390 | 1,870 |
| 9 | 1,870 | 1,440 | -------- | | 1,990 | 3,980 | 5,360 | 3,130 | 2,670 | 2,250 |
| 10 | 1,870 | 1,440 | -------- | | 2,120 | 3,630 | 5,790 | 3,130 | 3,130 | 2,530 |
| 11 | 1,870 | 1,440 | -------- | | 2,820 | 3,460 | 6,670 | 3,130 | 5,360 | 2,820 |
| 12 | 1,760 | 1,350 | -------- | | 2,820 | 3,460 | 8,080 | 3,130 | 10,300 | 2,820 |
| 13 | 1,650 | 1,350 | -------- | 1,570 | 2,820 | 3,290 | 9,050 | 6,230 | 9,300 | 2,390 |
| 14 | 1,650 | 1,440 | -------- | | 2,820 | 3,640 | 9,300 | 8,080 | 13,600 | 2,250 |
| 15 | 1,550 | 1,440 | -------- | | 2,530 | 3,980 | 9,550 | 7,600 | 15,200 | 1,990 |
| 16 | 1,650 | 1,090 | -------- | | 2,670 | 3,630 | 8,080 | 6,010 | 16,000 | 1,760 |
| 17 | 1,550 | 1,090 | -------- | 1,600 | 2,820 | 3,630 | 6,230 | 4,940 | 15,700 | 1,650 |
| 18 | 1,550 | 1,090 | -------- | | 2,970 | 3,980 | 5,360 | 4,350 | 14,700 | 1,600 |
| 19 | 1,650 | 1,010 | -------- | 1,650 | 2,120 | 4,160 | 5,790 | 3,800 | 10,800 | 1,520 |
| 20 | 1,440 | 972 | -------- | 1,550 | 1,990 | 4,160 | 6,010 | 3,630 | 10,600 | 1,360 |
| 21 | 1,440 | 935 | -------- | 1,440 | 1,760 | 4,160 | 6,230 | 3,630 | 8,800 | 1,260 |
| 22 | 1,350 | 900 | -------- | 1,550 | 1,760 | 4,160 | 6,010 | 3,800 | 6,900 | 2,250 |
| 23 | 1,260 | 935 | -------- | 1,650 | 1,760 | 4,160 | 5,150 | 3,800 | 5,790 | 1,760 |
| 24 | 1,350 | 958 | -------- | 1,550 | 1,760 | 3,980 | 5,570 | 3,800 | 5,360 | 1,550 |
| 25 | 1,260 | | -------- | 1,600 | 1,870 | 3,800 | 5,150 | 3,130 | 5,150 | 1,550 |
| 26 | 1,180 | | -------- | 1,650 | 1,990 | 3,630 | 4,540 | 2,250 | 4,940 | 1,650 |
| 27 | 1,180 | 1,000 | -------- | 1,440 | 2,970 | 4,160 | 4,350 | 1,990 | 4,350 | 1,650 |
| 28 | 1,180 | | -------- | 1,260 | 3,800 | 5,360 | 3,290 | 1,870 | 3,980 | 1,650 |
| 29 | 1,260 | | 667 | 1,260 | 3,460 | 6,010 | 3,290 | 1,760 | 3,630 | 1,650 |
| 30 | 1,350 | | -------- | 1,260 | 3,290 | 7,600 | 2,670 | 1,650 | 3,290 | 1,650 |
| 31 | 1,350 | -------- | -------- | 1,180 | -------- | 8,560 | -------- | 1,440 | 5,360 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 1,870 | 1,180 | 1,580 | 97,200 |
| November | 1,440 | 900 | 1,200 | 71,400 |
| December | -------- | -------- | 1,100 | 67,600 |
| January | -------- | -------- | 630 | 38,800 |
| February | -------- | -------- | 1,100 | 61,100 |
| March | 1,650 | 1,180 | 1,430 | 87,900 |
| April | 3,800 | 1,180 | 2,220 | 132,000 |
| May | 8,560 | 1,650 | 3,960 | 243,000 |
| June | 12,100 | 2,670 | 6,340 | 377,000 |
| July | 8,080 | 1,440 | 3,470 | 213,000 |
| August | 16,000 | 1,180 | 6,390 | 393,000 |
| September | 4,540 | 1,260 | 1,960 | 117,000 |
| The year | 16,000 | -------- | 2,620 | 1,900,000 |

## 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 and 2 miles northeast of Hardin.

DRAINAGE AREA.—20,700 square miles.

RECORDS AVAILABLE.—June, 1904, to May, 1925; August, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 26,300 second-feet Aug. 23 (gage height, 8.60 feet); minimum occurred during period Jan. 6–15.

1904–1925, 1928–1930: Maximum discharge, 45,900 second-feet Mar. 11, 1929 (gage height, 11.1 feet); minimum, 516 second-feet July 15–18, 1929 (gage height, 2.28 feet).

REMARKS.—Records good except those for period of ice effect, Nov. 24 to Mar. 13, which are fair. Discharge interpolated Sept. 14–16. Numerous diversions. Some storage on tributary streams.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3,040 | 2,440 | | | | | 2,120 | 4,190 | 17,000 | 6,000 | 2,500 | 4,190 |
| 2 | 2,880 | 2,580 | | | | | 2,040 | 4,190 | 21,800 | 5,670 | 1,960 | 4,190 |
| 3 | 2,880 | 2,440 | | 1,880 | | 2,080 | 1,960 | 3,660 | 21,800 | 5,670 | 1,960 | 4,190 |
| 4 | 3,040 | 2,580 | | | | | 1,960 | 3,410 | 14,500 | 5,670 | 1,880 | 3,920 |
| 5 | 2,880 | 2,730 | 1,740 | | | | 2,120 | 3,410 | 11,400 | 5,670 | 1,960 | 3,660 |
| 6 | 2,880 | 2,580 | | | 1,420 | | 2,120 | 3,920 | 9,070 | 5,670 | 2,300 | 3,410 |
| 7 | 2,880 | 2,580 | | | | | 2,300 | 6,710 | 8,250 | 6,350 | 3,170 | 3,410 |
| 8 | 2,880 | 2,580 | | | | | 2,500 | 6,000 | 7,080 | 6,000 | 3,660 | 3,410 |
| 9 | 2,880 | 2,580 | | | | | 2,500 | 5,670 | 6,710 | 5,670 | 3,920 | 3,410 |
| 10 | 2,880 | 2,580 | | | | 2,950 | 2,710 | 5,350 | 9,070 | 5,350 | 3,660 | 3,410 |
| 11 | 2,880 | 2,730 | | 760 | | | 3,170 | 5,350 | 9,960 | 6,350 | 5,350 | 3,920 |
| 12 | 2,880 | 2,580 | | | | | 3,410 | 4,760 | 12,900 | 6,710 | 6,710 | 4,190 |
| 13 | 2,880 | 2,580 | 4,220 | | | | 3,660 | 4,190 | 14,000 | 10,400 | 14,500 | 3,920 |
| 14 | 2,880 | 2,310 | | | | 3,410 | 3,410 | 3,920 | 16,300 | 10,900 | 15,700 | 3,730 |
| 15 | 2,880 | 2,080 | | | 1,540 | 4,190 | 3,660 | 3,660 | 15,700 | 11,400 | 20,400 | 3,540 |
| 16 | 2,730 | 2,310 | | | | 4,190 | 3,660 | 3,170 | 12,400 | 10,400 | 24,800 | 3,360 |
| 17 | 2,730 | 2,310 | | | | 3,410 | 3,660 | 3,410 | 9,960 | 9,960 | 26,300 | 3,170 |
| 18 | 2,730 | 2,440 | | | | 3,410 | 3,660 | 3,920 | 9,070 | 8,250 | 23,300 | 2,710 |
| 19 | 2,580 | 2,310 | | 850 | | 2,930 | 3,660 | 4,190 | 9,960 | 6,710 | 22,600 | 2,710 |
| 20 | 2,730 | 2,440 | | | | 2,600 | 3,410 | 4,190 | 10,900 | 6,350 | 21,100 | 2,600 |
| 21 | 2,580 | 2,440 | 1,180 | | | 2,500 | 3,170 | 4,190 | 12,900 | 6,350 | 10,400 | 2,500 |
| 22 | 2,580 | 1,880 | | | | 2,400 | 3,050 | 4,190 | 9,960 | 6,000 | 9,510 | 2,300 |
| 23 | 2,440 | 1,880 | | | | 2,500 | 2,820 | 4,470 | 9,960 | 5,670 | 8,250 | 2,300 |
| 24 | 2,440 | 1,980 | | | 3,360 | 2,500 | 2,820 | 4,470 | 9,960 | 5,670 | 5,350 | 2,400 |
| 25 | 2,310 | 1,980 | | | | 2,500 | 3,170 | 5,050 | 10,900 | 5,050 | 6,350 | 2,300 |
| 26 | 2,440 | 2,080 | | 1,070 | | 2,500 | 3,660 | 4,470 | 9,960 | 4,190 | 5,050 | 2,710 |
| 27 | 2,440 | 2,080 | 2,200 | | | 2,400 | 4,760 | 4,190 | 9,960 | 3,920 | 4,470 | 2,710 |
| 28 | 2,440 | 2,190 | | | | 2,300 | 4,760 | 3,920 | 8,650 | 3,660 | 4,470 | 2,710 |
| 29 | 2,440 | 2,190 | | | ------- | 2,040 | 5,050 | 4,190 | 6,710 | 3,170 | 4,760 | 2,710 |
| 30 | 2,440 | 2,190 | | | ------- | 2,120 | 4,470 | 7,080 | 6,000 | 2,930 | 5,350 | 2,710 |
| 31 | 2,730 | ------- | ------- | | ------- | 2,120 | ------- | 9,960 | -------- | 2,500 | 4,760 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 3,040 | 2,310 | 2,720 | 167,000 |
| November | 2,730 | 1,880 | 2,360 | 140,000 |
| December | ---------- | ---------- | 2,520 | 155,000 |
| January | ---------- | ---------- | 1,060 | 65,200 |
| February | ---------- | ---------- | 2,080 | 116,000 |
| March | 4,190 | 2,040 | 2,710 | 167,000 |
| April | 5,050 | 1,960 | 3,180 | 189,000 |
| May | 9,960 | 3,170 | 4,630 | 285,000 |
| June | 21,800 | 6,000 | 11,400 | 678,000 |
| July | 11,400 | 2,500 | 6,270 | 386,000 |
| August | 26,300 | 1,880 | 8,920 | 548,000 |
| September | 4,190 | 2,300 | 3,210 | 191,000 |
| The year | 21,800 | ---------- | 4,270 | 3,090,000 |

### DINWOODY CREEK NEAR BURRIS, WYO.

LOCATION.—Water-stage recorder in sec. 10, T. 5 N., R. 5 W., 6 miles northwest of Burris. Zero of gage 6,195.39 feet above mean sea level.

DRAINAGE AREA.—114 square miles.

RECORDS AVAILABLE.—January to October, 1909; May, 1918, to July, 1930 (discontinued).

EXTREMES.—Maximum discharge during year, 905 second-feet July 14 (gage height, 3.24 feet); minimum, 6 second-feet Nov. 4 (gage height, 0.60 foot). 1918–1930: Maximum discharge, 1,710 second-feet July 25, 1923 (gage height, 3.75 feet); minimum, 6 second-feet Nov. 4, 1929.

REMARKS.—Records good except those for periods Nov. 15–29, Dec. 15 to Feb. 3, which were estimated because of ice. Natural regulation by Dinwoody Lake and other small lakes. Practically no diversion above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 68 | 34 | 21 | -------- | 11 | 17 | 10 | 80 | 506 | 375 |
| 2 | 64 | 34 | 24 | -------- | 11 | 11 | 10 | 70 | 387 | 412 |
| 3 | 69 | 23 | 22 | -------- | 11 | 10 | 10 | 68 | 294 | 506 |
| 4 | 69 | 6 | 19 | -------- | 10 | 19 | 10 | 68 | 236 | 570 |
| 5 | 66 | 6 | 19 | -------- | 10 | 29 | 10 | 80 | 199 | 594 |
| 6 | 60 | 6 | 19 | -------- | 10 | 19 | 11 | 96 | 183 | 627 |
| 7 | 58 | 7 | 17 | -------- | 10 | 10 | 11 | 118 | 158 | 824 |
| 8 | 55 | 7 | 16 | -------- | 10 | 11 | 11 | 115 | 156 | 790 |
| 9 | 53 | 7 | 14 | -------- | 10 | 13 | 11 | 113 | 236 | 784 |
| 10 | 50 | 12 | 13 | -------- | 10 | 15 | 11 | 96 | 326 | 789 |
| 11 | 47 | 23 | 12 | -------- | 10 | 16 | 12 | 85 | 403 | 801 |
| 12 | 47 | 22 | 11 | -------- | 9 | 10 | 13 | 78 | 494 | 858 |
| 13 | 46 | 21 | 10 | -------- | 9 | 10 | 35 | 74 | 572 | 886 |
| 14 | 46 | 21 | 10 | -------- | 10 | 10 | 34 | 69 | 418 | 892 |
| 15 | 44 | 22 | 10 | -------- | 10 | 10 | 34 | 66 | 308 | 744 |
| 16 | 42 | 22 | | -------- | 10 | 11 | 33 | 82 | 262 | 744 |
| 17 | 41 | 22 | | -------- | 10 | 11 | 34 | 98 | 258 | 824 |
| 18 | 40 | 22 | | -------- | 10 | 11 | 35 | 105 | 303 | 801 |
| 19 | 41 | 21 | | -------- | 11 | 11 | 33 | 105 | 392 | 744 |
| 20 | 39 | 21 | | -------- | 13 | 11 | 32 | 102 | 445 | 625 |
| 21 | 37 | 21 | | -------- | 11 | 12 | 31 | 102 | 387 | 475 |
| 22 | 35 | 20 | | -------- | 10 | 13 | 30 | 102 | 270 | 400 |
| 23 | 35 | 20 | 10 | -------- | 10 | 12 | 30 | 124 | 268 | 370 |
| 24 | 31 | 20 | | -------- | 10 | 10 | 33 | 156 | 267 | 330 |
| 25 | 30 | 20 | | -------- | 12 | 10 | 36 | 150 | 266 | 325 |
| 26 | 31 | 20 | | -------- | 16 | 10 | 46 | 138 | 265 | 408 |
| 27 | 33 | 20 | | -------- | 18 | 10 | 60 | 129 | 263 | 418 |
| 28 | 33 | 20 | | -------- | 19 | 9 | 80 | 140 | 262 | 450 |
| 29 | 33 | 20 | | -------- | -------- | 8 | 84 | 178 | 282 | 528 |
| 30 | 35 | 19 | | 12 | -------- | 7 | 84 | 254 | 282 | 530 |
| 31 | 34 | -------- | | -------- | -------- | 8 | -------- | 494 | -------- | 550 |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 69 | 30 | 45.5 | 2,800 |
| November | 34 | 6 | 18.6 | 1,110 |
| December | 24 | ---------- | 12.8 | 787 |
| January | ---------- | ---------- | 12.0 | 738 |
| February | 19 | 9 | 11.1 | 616 |
| March | 29 | 7 | 12.1 | 744 |
| April | 84 | 10 | 30.5 | 1,810 |
| May | 494 | 66 | 120 | 7,380 |
| June | 572 | 156 | 312 | 18,600 |
| July | 892 | 325 | 612 | 37,600 |
| The period | ---------- | ---------- | ---------- | 72,200 |

### 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.—73 square miles.

RECORDS AVAILABLE.—May, 1921, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,000 second-feet Aug. 14 (gage height, 3.16 feet); minimum occurred during winter.

1921–1930: Maximum discharge, 1,100 second-feet June 12, 1921 (gage height, 3.9 feet); minimum, 2 second-feet Feb. 23, 1921.

REMARKS.—Records good. Small ditch diverts water for irrigation above station. Gage-height record furnished by United States Indian Service.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Apr. | May | June | July | Aug. | Sept |
|---|---|---|---|---|---|---|---|---|
| 1 | 18 | 8.0 | 2 | 20 | 154 | 92 | 60 | 65 |
| 2 | 19 | 8.1 | 2 | 22 | 120 | 105 | 81 | 54 |
| 3 | 22 | 6.6 | 2 | 34 | 98 | 120 | 102 | 51 |
| 4 | 22 | 7.5 | 2 | 38 | 87 | 135 | 114 | 48 |
| 5 | 20 | 6.9 | 2 | 38 | 78 | 141 | 112 | 49 |
| 6 | 19 | 5.4 | 2 | 34 | 80 | 139 | 100 | 50 |
| 7 | 19 | 4.8 | 2.4 | 33 | 111 | 135 | 97 | 49 |
| 8 | 19 | 5.2 | 3.4 | 30 | 158 | 149 | 105 | 54 |
| 9 | 19 | 5.0 | 4.4 | 30 | 177 | 139 | 149 | 61 |
| 10 | 20 | 5.2 | 5.6 | 26 | 179 | 160 | 141 | 58 |
| 11 | 20 | 5.0 | 5.6 | 23 | 214 | 148 | 135 | 50 |
| 12 | 19 | 4.8 | 5.6 | 21 | 257 | 186 | 181 | 43 |
| 13 | 18 | 4.4 | 6.0 | 23 | 165 | 234 | 350 | 41 |
| 14 | 16 | 4.4 | 8.1 | 33 | 118 | 167 | 804 | 37 |
| 15 | 13 | 4.6 | 6.6 | 58 | 100 | 135 | 480 | 34 |
| 16 | 12 | 4.8 | 6.0 | 50 | 116 | 116 | 289 | 33 |
| 17 | 11 | ------- | 6.0 | 40 | 152 | 109 | 251 | 32 |
| 18 | 11 | ------- | 5.8 | 41 | 177 | 112 | 207 | 30 |
| 19 | 11 | ------- | 5.8 | 52 | 152 | 165 | 172 | 28 |
| 20 | 9.8 | ------- | 6.2 | 70 | 135 | 174 | 143 | 27 |
| 21 | 9.4 | ------- | 7.2 | 120 | 131 | 127 | 121 | 27 |
| 22 | 9.0 | ------- | 10 | 97 | 125 | 102 | 112 | 26 |
| 23 | 8.4 | ------- | 16 | 75 | 120 | 90 | 100 | 26 |
| 24 | 7.8 | ------- | 25 | 68 | 114 | 81 | 95 | 26 |
| 25 | 8.1 | ------- | 33 | 80 | 95 | 74 | 90 | 25 |
| 26 | 7.8 | ------- | 37 | 102 | 82 | 72 | 87 | 25 |
| 27 | 7.8 | ------- | 34 | 129 | 86 | 68 | 90 | 2 |
| 28 | 7.8 | ------- | 36 | 169 | 100 | 62 | 82 | 22 |
| 29 | 7.9 | ------- | 22 | 214 | 90 | 60 | 80 | 22 |
| 30 | 7.9 | ------- | 20 | 278 | 84 | 60 | 74 | 22 |
| 31 | 8.0 | ------- | ------- | 231 | ------- | 58 | 71 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 22 | 7.8 | 13.8 | 848 |
| November 1–16 | 8.1 | 4.4 | 5.67 | 180 |
| April | 37 | 2.0 | 11.0 | 655 |
| May | 278 | 20 | 73.5 | 4,520 |
| June | 257 | 78 | 128 | 7,620 |
| July | 234 | 58 | 120 | 7,380 |
| August | 804 | 60 | 164 | 10,100 |
| September | 65 | 22 | 38.0 | 2,260 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 276 second-feet May 30 (gage height, 2.37 feet); minimum, about 5 second-feet Apr. 1.

1921–1923, 1925–1930: Maximum discharge, 750 second-feet July 26, 1923; minimum, that of Apr. 1, 1930.

REMARKS.—Records good except those for periods Oct. 27 to Nov. 2, Apr. 1–4, June 15–20, which were estimated. Small diversions above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | 9.0 | 7.8 | 5 | 8.6 | 122 | 31 | 16 | 29 |
| 2 | 9.4 | 7.4 | | 8.6 | 103 | 33 | 19 | 28 |
| 3 | 9.8 | 7.4 | | 9.0 | 92 | 34 | 20 | 27 |
| 4 | 9.4 | 7.4 | | 9.4 | 80 | 33 | 19 | 27 |
| 5 | 9.4 | 8.2 | 7 | 12 | 72 | 32 | 17 | 26 |
| 6 | 9.4 | 8.6 | 6.8 | 12 | 86 | 27 | 18 | 26 |
| 7 | 9.4 | 8.6 | 6.8 | 11 | 109 | 27 | 19 | 25 |
| 8 | 9.4 | 7.4 | 7 | 12 | 139 | 33 | 23 | 28 |
| 9 | 9.4 | 8.2 | 7 | 11 | 133 | 29 | 34 | 27 |
| 10 | 9.4 | 8.2 | 7 | 11 | 120 | 38 | 33 | 26 |
| 11 | 9.4 | 8.6 | 7 | 12 | 168 | 34 | 30 | 25 |
| 12 | 9.4 | 7.4 | 7 | 12 | 178 | 70 | 50 | 23 |
| 13 | 9.4 | 7.4 | 7 | 12 | 94 | 54 | 148 | 22 |
| 14 | 9.4 | -------- | 7 | 11 | 63 | 34 | 217 | 22 |
| 15 | 9.4 | -------- | 7.4 | 16 | 52 | 29 | 144 | 21 |
| 16 | 9.4 | -------- | 7 | 14 | 83 | 27 | 88 | 21 |
| 17 | 9.4 | -------- | 7 | 13 | 126 | 24 | 92 | 21 |
| 18 | 9.4 | -------- | 7 | 12 | 142 | 26 | 75 | 21 |
| 19 | 9.4 | -------- | 7 | 12 | 93 | 48 | 66 | 20 |
| 20 | 9.4 | -------- | 7 | 12 | 78 | 33 | 55 | 18 |
| 21 | 9.4 | -------- | 7 | 11 | 55 | 25 | 47 | 16 |
| 22 | 9.4 | -------- | 7 | 11 | 62 | 23 | 45 | 16 |
| 23 | 6.6 | -------- | 7.4 | 11 | 54 | 23 | 43 | 18 |
| 24 | 6.6 | -------- | 7.4 | 11 | 49 | 21 | 40 | 18 |
| 25 | 6.4 | -------- | 7.8 | 14 | 36 | 20 | 38 | 19 |
| 26 | 6.6 | -------- | 7.8 | 27 | 35 | 18 | 36 | 18 |
| 27 | 7.0 | -------- | 7.8 | 59 | 41 | 18 | 41 | 18 |
| 28 | 7.4 | -------- | 7.4 | 109 | 36 | 17 | 36 | 18 |
| 29 | 7.8 | -------- | 7.8 | 181 | 33 | 17 | 34 | 18 |
| 30 | 7.8 | -------- | 8.2 | 236 | 30 | 18 | 32 | 16 |
| 31 | 7.4 | -------- | -------- | 184 | -------- | 17 | 30 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 9.8 | 6.4 | 8.72 | 536 |
| November 1–13 | 8.6 | 7.4 | 7.89 | 203 |
| April | 8.2 | 5.0 | 6.92 | 412 |
| May | 236 | 8.6 | 35.0 | 2,150 |
| June | 178 | 30 | 85.5 | 5,090 |
| July | 70 | 17 | 29.5 | 1,810 |
| August | 217 | 16 | 51.8 | 3,180 |
| September | 29 | 16 | 21.9 | 1,300 |

### 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 one-fourth mile above mouth.

DRAINAGE AREA.—132 square miles.

RECORDS AVAILABLE.—May, 1918, to September, 1930.

EXTREMES.—Maximum discharge during year, 2,240 second-feet Aug. 15 (gage height, 6.5 feet); minimum occurred during winter.

1918–1930: Maximum discharge, 3,990 second-feet June 16, 1918 (gage height, 4.3 feet, old datum); minimum, 17.8 second-feet Feb. 1, 1919.

REMARKS.—Records excellent except those during winter, which are fair. Flow naturally regulated by Bull Lake. Minor diversion for irrigation above station. Gage-height record furnished by United States Bureau of Reclamation.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Feb. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 207 | 72 | | | | 246 | 1,280 | 682 | 563 | 356 |
| 2 | 196 | 67 | | | | 238 | 933 | 762 | 601 | 326 |
| 3 | 192 | 64 | | | | 258 | 770 | 849 | 817 | 297 |
| 4 | 185 | 59 | | | 33 | 288 | 665 | 977 | 916 | 284 |
| 5 | 219 | 59 | | | | 351 | 560 | 1,180 | 956 | 279 |
| 6 | 178 | | | | | 346 | 460 | 1,190 | 977 | 284 |
| 7 | 174 | | | | 34 | 346 | 460 | 1,160 | 899 | 277 |
| 8 | 168 | | | | 35 | 395 | 539 | 1,110 | 865 | 270 |
| 9 | 164 | | 36 | | 38 | 346 | 725 | 1,160 | 849 | 262 |
| 10 | 160 | | | 33 | 41 | 310 | 959 | 1,180 | 959 | 266 |
| 11 | 151 | | | | 45 | 288 | 1,200 | 1,260 | 986 | 258 |
| 12 | 144 | | | | 57 | 258 | 1,500 | 1,420 | 1,030 | 234 |
| 13 | 138 | | | | 72 | 238 | 1,690 | 1,620 | 1,310 | 219 |
| 14 | 135 | | | | 88 | 250 | 1,410 | 1,700 | 2,020 | 242 |
| 15 | 131 | | | | 96 | 338 | 1,120 | 1,450 | 2,240 | 178 |
| 16 | 125 | | 37 | | 102 | 365 | 924 | 1,200 | 1,950 | 168 |
| 17 | 119 | | | 28 | 105 | 333 | 968 | 1,030 | 1,430 | 157 |
| 18 | 113 | | | | 102 | 306 | 1,140 | 977 | 1,080 | 157 |
| 19 | 105 | | | | 96 | 288 | 1,220 | 1,000 | 933 | 157 |
| 20 | 96 | | | | 93 | 284 | 1,200 | 1,260 | 809 | 154 |
| 21 | 93 | | | | 91 | 351 | 1,240 | 1,320 | 725 | 154 |
| 22 | 88 | | | | 93 | 385 | 1,230 | 1,090 | 682 | 154 |
| 23 | 82 | | 22 | | 116 | 375 | 1,160 | 908 | 634 | 171 |
| 24 | 78 | | | 34 | 154 | 351 | 1,070 | 762 | 582 | 157 |
| 25 | 69 | | | | 215 | 338 | 968 | 594 | 539 | 151 |
| 26 | 72 | | | | 258 | 390 | 817 | 601 | 533 | 147 |
| 27 | 72 | | | | 302 | 476 | 718 | 557 | 533 | 141 |
| 28 | 74 | | | | 297 | 575 | 710 | 545 | 515 | 131 |
| 29 | 74 | | | | 284 | 770 | 778 | 533 | 487 | 128 |
| 30 | 74 | | 22 | | 262 | 1,080 | 778 | 533 | 460 | 122 |
| 31 | 72 | | | | | 1,260 | | 557 | 432 | |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 219 | 69 | 127 | 7,810 |
| November | 72 | | 40 | 2,380 |
| December | 37 | | 29 | 1,780 |
| January | | | 27 | 1,660 |
| February | 34 | | 30 | 1,670 |
| March | | | 32 | 1,970 |
| April | 302 | 33 | 109 | 6,490 |
| May | 1,260 | 238 | 401 | 24,700 |
| June | 1,690 | 460 | 973 | 57,900 |
| July | 1,700 | 533 | 1,010 | 62,100 |
| August | 2,240 | 432 | 914 | 56,200 |
| September | 356 | 122 | 208 | 12,400 |
| The year | | | 327 | 237,000 |

### 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 2½ miles above mouth of North Fork at Fort Washakie.

DRAINAGE AREA.—134 square miles.

RECORDS AVAILABLE.—May, 1921, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,220 second-feet Aug. 14 (gage height, 4.76 feet); minimum occurred during winter.

1921–1930: Maximum discharge, 5,220 second-feet July 9, 1926 (gage height, 7.59 feet); minimum, 14 second-feet Feb. 22, 1921.

REMARKS.—Records excellent except those for periods Oct. 6–11, Apr. 10–13, Sept. 21–26, which were estimated. Water diverted for irrigation above station. Gage-height record furnished by United States Indian Service.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | 79 | 37 | ------- | 94 | 419 | 252 | 137 | 11 |
| 2 | 72 | 38 | ------- | 120 | 264 | 264 | 141 | 108 |
| 3 | 92 | 34 | ------- | 177 | 246 | 294 | 158 | 97 |
| 4 | 95 | 35 | ------- | 160 | 225 | 312 | 173 | 9 |
| 5 | 88 | 39 | ------- | 141 | 197 | 330 | 189 | 9 |
| 6 | 85 | 35 | ------- | 125 | 211 | 312 | 183 | 92 |
| 7 | 82 | 32 | ------- | 120 | 291 | 294 | 179 | 97 |
| 8 | 79 | 26 | ------- | 112 | 416 | 282 | 211 | 102 |
| 9 | 76 | 37 | 97 | 106 | 496 | 282 | 276 | 106 |
| 10 | 71 | 36 | 102 | 112 | 529 | 291 | 396 | 97 |
| 11 | 66 | 32 | 107 | 104 | 655 | 318 | 386 | 88 |
| 12 | 62 | 25 | 112 | 99 | 915 | 655 | 508 | 83 |
| 13 | 61 | 32 | 117 | 115 | 596 | 440 | 596 | 78 |
| 14 | 57 | 42 | 121 | 156 | 390 | 330 | 1,050 | 75 |
| 15 | 54 | 34 | 97 | 220 | 344 | 285 | 705 | 70 |
| 16 | 52 | 27 | 74 | 150 | 393 | 255 | 484 | 66 |
| 17 | 48 | ------- | 61 | 126 | 484 | 276 | 362 | 63 |
| 18 | 47 | ------- | 48 | 132 | 534 | 288 | 294 | 61 |
| 19 | 45 | ------- | 48 | 158 | 448 | 288 | 240 | 57 |
| 20 | 42 | ------- | 52 | 191 | 460 | 273 | 204 | 58 |
| 21 | 39 | ------- | 66 | 297 | 508 | 228 | 179 | 58 |
| 22 | 37 | ------- | 95 | 197 | 484 | 200 | 162 | 58 |
| 23 | 32 | ------- | 130 | 154 | 460 | 181 | 143 | 57 |
| 24 | 26 | ------- | 165 | 146 | 382 | 164 | 135 | 57 |
| 25 | 31 | ------- | 150 | 177 | 303 | 156 | 126 | 56 |
| 26 | 34 | ------- | 162 | 218 | 267 | 150 | 120 | 56 |
| 27 | 32 | ------- | 156 | 288 | 279 | 145 | 128 | 56 |
| 28 | 35 | ------- | 126 | 382 | 294 | 137 | 128 | 53 |
| 29 | 30 | ------- | 108 | 488 | 279 | 139 | 128 | 49 |
| 30 | 39 | ------- | 99 | 655 | 255 | 158 | 121 | 45 |
| 31 | 41 | ------- | ------- | 574 | ------- | 143 | 120 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 95 | 26 | 55.8 | 3,430 |
| November 1–16 | 42 | 25 | 33.8 | 1,070 |
| April 9–30 | 165 | 48 | 104 | 4,540 |
| May | 655 | 94 | 203 | 12,500 |
| June | 915 | 197 | 401 | 23,900 |
| July | 655 | 137 | 262 | 16,100 |
| August | 1,050 | 120 | 270 | 16,600 |
| September | 118 | 45 | 74.9 | 4,460 |

### 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, one-fourth mile above mouth.

DRAINAGE AREA.—138 square miles.

RECORDS AVAILABLE.—May, 1921, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,040 second-feet Aug. 14 (gage height, 3.23 feet); minimum occurred during winter.

1921–1930: Maximum discharge, 2,640 second-feet July 9, 1926 (gage height, 4.85 feet); minimum, 16 second-feet Jan. 9, 1922.

REMARKS.—Records excellent except those for periods Oct. 6–11, Sept. 14, 15, 22–26, which were estimated. Water diverted for irrigation above station. Gage-height record furnished by United States Indian Service.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | 65 | 44 | ------- | 100 | 577 | 211 | 96 | 109 |
| 2 | 62 | 44 | ------- | 107 | 432 | 205 | 96 | 98 |
| 3 | 71 | 46 | ------- | 124 | 372 | 205 | 96 | 98 |
| 4 | 68 | 44 | ------- | 124 | 325 | 219 | 102 | 96 |
| 5 | 66 | 48 | ------- | 145 | 280 | 231 | 113 | 92 |
| 6 | 66 | 42 | ------- | 145 | 259 | 240 | 120 | 88 |
| 7 | 66 | 40 | ------- | 155 | 287 | 237 | 129 | 86 |
| 8 | 66 | 38 | ------- | 158 | 380 | 228 | 150 | 88 |
| 9 | 66 | 50 | ------- | 162 | 515 | 222 | 197 | 90 |
| 10 | 66 | 47 | ------- | 155 | 561 | 228 | 203 | 86 |
| 11 | 66 | 41 | ------- | 145 | 660 | 266 | 231 | 82 |
| 12 | 66 | 40 | ------- | 134 | 818 | 372 | 314 | 80 |
| 13 | 65 | 37 | ------- | 143 | 650 | 376 | 589 | 77 |
| 14 | 64 | ------- | 74 | 181 | 470 | 325 | 938 | 75 |
| 15 | 64 | ------- | 66 | 266 | 368 | 270 | 794 | 74 |
| 16 | 60 | ------- | 57 | 184 | 356 | 231 | 611 | 72 |
| 17 | 56 | ------- | 51 | 152 | 388 | 203 | 480 | 72 |
| 18 | 55 | ------- | 48 | 160 | 436 | 214 | 388 | 70 |
| 19 | 55 | ------- | 47 | 181 | 427 | 219 | 318 | 65 |
| 20 | 53 | ------- | 50 | 231 | 422 | 222 | 266 | 62 |
| 21 | 48 | ------- | 53 | 297 | 440 | 217 | 228 | 61 |
| 22 | 47 | ------- | 70 | 214 | 418 | 205 | 203 | 61 |
| 23 | 41 | ------- | 92 | 184 | 404 | 181 | 181 | 61 |
| 24 | 38 | ------- | 115 | 175 | 376 | 162 | 160 | 60 |
| 25 | 39 | ------- | 111 | 184 | 336 | 150 | 145 | 60 |
| 26 | 39 | ------- | 118 | 214 | 287 | 136 | 143 | 60 |
| 27 | 39 | ------- | 124 | 256 | 256 | 127 | 145 | 60 |
| 28 | 42 | ------- | 115 | 356 | 247 | 111 | 136 | 58 |
| 29 | 41 | ------- | 104 | 540 | 237 | 104 | 127 | 57 |
| 30 | 44 | ------- | 102 | 758 | 222 | 102 | 115 | 53 |
| 31 | 45 | ------- | ------- | 722 | ------- | 98 | 111 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 71 | 38 | 55.8 | 3,430 |
| November 1–13 | 50 | 37 | 43.2 | 1,110 |
| April 14–30 | 124 | 47 | 82.2 | 2,770 |
| May | 758 | 100 | 227 | 14,000 |
| June | 818 | 222 | 407 | 24,200 |
| July | 376 | 98 | 210 | 12,900 |
| August | 938 | 96 | 256 | 15,700 |
| September | 109 | 53 | 75.0 | 4,460 |

### 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 one-fourth mile below Red Creek.

DRAINAGE AREA.—272 square miles.

RECORDS AVAILABLE.—July, 1921, to September, 1922; May, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 480 second-feet Aug. 15 (gage height, 3.90 feet); minimum occurred during winter.

1921–22, 1929–30: Maximum discharge, that of Aug. 14, 1930; minimum, 1.4 second-feet Aug. 17, 1929.

REMARKS.—Records fair. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | 6 | ------- | 7 | 7 | 14 | 58 | 160 | 12 | 63 |
| 2 | 3 | 6 | ------- | 8 | 6 | 27 | 40 | 173 | 10 | 58 |
| 3 | 6 | 8 | ------- | 8 | 8 | 45 | 49 | 173 | 10 | 55 |
| 4 | 7 | 10 | ------- | 10 | 8 | 37 | 93 | 156 | 12 | 54 |
| 5 | 6 | 11 | ------- | 12 | 8 | 40 | 93 | 160 | 19 | 49 |
| 6 | 7 | ------- | ------- | 14 | 8 | 27 | 97 | 149 | 50 | 38 |
| 7 | 7 | ------- | ------- | 14 | 8 | 24 | 100 | 118 | 50 | 41 |
| 8 | 7 | ------- | ------- | 16 | 8 | 30 | 105 | 113 | 53 | 39 |
| 9 | 4 | ------- | ------- | 17 | 12 | 23 | 113 | 108 | 75 | 44 |
| 10 | 5 | ------- | ------- | 8 | 15 | 23 | 97 | 113 | 119 | 45 |
| 11 | 7 | ------- | ------- | 7 | 28 | 32 | 99 | 127 | 158 | 35 |
| 12 | 5 | ------- | ------- | 10 | 24 | 30 | 114 | 145 | 218 | 31 |
| 13 | 6 | ------- | ------- | 14 | 26 | 32 | 118 | 131 | 420 | 29 |
| 14 | 9 | ------- | ------- | 10 | 26 | 34 | 124 | 75 | 460 | 28 |
| 15 | 9 | ------- | ------- | 9 | 22 | 45 | 118 | 44 | 472 | 26 |
| 16 | 7 | ------- | ------- | 13 | 14 | 41 | 124 | 42 | 382 | 25 |
| 17 | 9 | ------- | ------- | 13 | 18 | 41 | 129 | 41 | 303 | 23 |
| 18 | 13 | ------- | ------- | 20 | 11 | 42 | 131 | 39 | 228 | 20 |
| 19 | 13 | ------- | ------- | 24 | 13 | 42 | 131 | 36 | 197 | 18 |
| 20 | 11 | ------- | ------- | 32 | 13 | 47 | 127 | 33 | 173 | 17 |
| 21 | 13 | ------- | ------- | 10 | 18 | 61 | 118 | 37 | 150 | 16 |
| 22 | 13 | ------- | ------- | 14 | 22 | 52 | 122 | 33 | 111 | 14 |
| 23 | 14 | ------- | ------- | 11 | 26 | 48 | 124 | 32 | 93 | 14 |
| 24 | 11 | ------- | ------- | 12 | 20 | 48 | 116 | 30 | 90 | 15 |
| 25 | 10 | ------- | 10 | 9 | 21 | 49 | 121 | 25 | 79 | 16 |
| 26 | 10 | ------- | 10 | 8 | 26 | 53 | 127 | 19 | 76 | 18 |
| 27 | 11 | ------- | 10 | 7 | 24 | 58 | 136 | 20 | 69 | 19 |
| 28 | 8 | ------- | 10 | 8 | 19 | 58 | 136 | 17 | 68 | 19 |
| 29 | 10 | ------- | ------- | 8 | 14 | 61 | 138 | 15 | 64 | 19 |
| 30 | 8 | ------- | ------- | 8 | 14 | 84 | 131 | 16 | 72 | 19 |
| 31 | 10 | ------- | ------- | 7 | ------- | 68 | ------- | 14 | 72 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 14 | 3 | 8.48 | 521 |
| March | 32 | 7 | 11.9 | 732 |
| April | 28 | 6 | 16.2 | 964 |
| May | 84 | 14 | 42.5 | 2,610 |
| June | 138 | 40 | 111 | 6,600 |
| July | 173 | 14 | 77.2 | 4,750 |
| August | 472 | 10 | 141 | 8,670 |
| September | 63 | 14 | 30.2 | 1,800 |

### 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.—113 square miles.
RECORDS AVAILABLE.—April to September, 1930.
EXTREMES.—Maximum gage height during year, 8.65 feet Aug. 15 (discharge not determined); no flow for part of June, July, August.
REMARKS.—Records good below 50 second-feet but uncertain above. Several small diversions for irrigation above station.

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

| Day | Apr. | May | June | July | Aug. | Sept. | Day | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ------ | 1 | 9 | 0 | 0 | 20 | 16 | ------ | 149 | 0 | 2 | 201 | 9 |
| 2 | ------ | 1 | 5 | 0 | 0 | 17 | 17 | 2 | 6 | 0 | 0 | 249 | 9 |
| 3 | ------ | 1 | 2 | 0 | 0 | 15 | 18 | 2 | 4 | 0 | 0 | 179 | 8 |
| 4 | ------ | 1 | 2 | 0 | 0 | 12 | 19 | 2 | 2 | 0 | 0 | 357 | 8 |
| 5 | ------ | 1 | 1 | 0 | 0 | 23 | 20 | 2 | 3 | 0 | 0 | 90 | 8 |
| 6 | ------ | 2 | 1 | 0 | 0 | 14 | 21 | 2 | 36 | 0 | 0 | 74 | 8 |
| 7 | ------ | 2 | 1 | 0 | 0 | 12 | 22 | 1 | 17 | 0 | 0 | 63 | 7 |
| 8 | ------ | 2 | 0 | 0 | 22 | 13 | 23 | 1 | 4 | 0 | 0 | 47 | 7 |
| 9 | ------ | 1 | 1 | 0 | 143 | 32 | 24 | 1 | 3 | 0 | 0 | 46 | 4 |
| 10 | ------ | 1 | 0 | 0 | 64 | 14 | 25 | 2 | 5 | 0 | 0 | 38 | 3 |
| 11 | ------ | 1 | 0 | 12 | 576 | 13 | 26 | 4 | 5 | 0 | 0 | 82 | 3 |
| 12 | ------ | 1 | 0 | 170 | 322 | 12 | 27 | 2 | 2 | 0 | 0 | 53 | 3 |
| 13 | ------ | 1 | 0 | 29 | 268 | 12 | 28 | 2 | 6 | 0 | 0 | 38 | 3 |
| 14 | ------ | 1 | 0 | 8 | 263 | 11 | 29 | 1 | 8 | 0 | 0 | 33 | 3 |
| 15 | ------ | 15 | 0 | 3 | 1,290 | 10 | 30 | 1 | 36 | 0 | 0 | 28 | 3 |
| | | | | | | | 31 | ------ | 20 | ------ | 0 | 22 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| April 17-30 | 4 | 1 | 1.8 | 50 |
| May | 149 | 1 | 10.9 | 670 |
| June | 9 | 0 | .7 | 42 |
| July | 170 | 0 | 7.2 | 443 |
| August | 1,290 | 0 | 147 | 9,040 |
| September | 32 | 3 | 10.5 | 625 |
| The period | | | | 10,900 |

### GREYBULL RIVER AT MEETEETSE, WYO.

LOCATION.—Water-stage recorder in sec. 4, T. 48 N., R. 100 W., at Meeteetse. Zero of gage 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, 1930.

EXTREMES.—Maximum discharge during year, 7,320 second-feet Aug. 14 (gage height, 8.2 feet); minimum, 64 second-feet Jan. 31.

1897, 1903, 1920–1930: Maximum discharge, that of Aug. 14, 1930; minimum, 63 second-feet Mar. 4, 1922.

REMARKS.—Records good except those for periods Nov. 23–30, Apr. 1–11, May 12–17, 26–29, which were estimated. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Jan. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 161 | 114 | -------- | | 184 | 1,110 | 392 | 282 | 466 |
| 2 | 157 | 129 | -------- | | 250 | 698 | 478 | 298 | 454 |
| 3 | 161 | 122 | -------- | 110 | 317 | 514 | 550 | 311 | 408 |
| 4 | 157 | 116 | -------- | | 298 | 454 | 550 | 330 | 378 |
| 5 | 154 | 150 | -------- | | 385 | 415 | 466 | 362 | 355 |
| 6 | 150 | 146 | -------- | | 305 | 430 | 408 | 478 | 342 |
| 7 | 150 | 146 | -------- | | 287 | 826 | 342 | 616 | 324 |
| 8 | 146 | 122 | -------- | | 240 | 1,440 | 808 | 789 | 392 |
| 9 | 154 | 150 | -------- | 130 | 226 | 1,520 | 1,300 | 844 | 442 |
| 10 | 150 | 146 | -------- | | 226 | 2,130 | 1,240 | 1,070 | 355 |
| 11 | 129 | 129 | -------- | | 240 | 2,580 | 1,320 | 1,380 | 305 |
| 12 | 122 | 82 | -------- | 201 | 305 | 2,220 | 1,340 | 1,670 | 276 |
| 13 | 122 | 84 | -------- | 204 | 370 | 1,360 | 1,150 | 3,610 | 256 |
| 14 | 126 | 85 | -------- | 213 | 355 | 957 | 770 | 3,200 | 311 |
| 15 | 116 | 90 | -------- | 172 | 320 | 422 | 698 | 2,650 | 324 |
| 16 | 116 | 125 | -------- | 146 | 280 | 807 | 566 | 2,060 | 305 |
| 17 | 111 | 168 | -------- | 129 | 310 | 1,110 | 478 | 1,480 | 305 |
| 18 | 108 | 157 | -------- | 119 | 324 | 1,130 | 490 | 1,480 | 287 |
| 19 | 105 | 136 | -------- | 116 | 378 | 752 | 957 | 1,320 | 276 |
| 20 | 100 | 84 | -------- | 119 | 682 | 566 | 666 | 1,180 | 266 |
| 21 | 116 | 97 | -------- | 172 | 1,560 | 1,030 | 454 | 1,050 | 266 |
| 22 | 114 | 114 | -------- | 256 | 1,130 | 770 | 415 | 900 | 276 |
| 23 | 100 | | -------- | 305 | 770 | 538 | 385 | 770 | 282 |
| 24 | 92 | | -------- | 305 | 649 | 400 | 362 | 752 | 250 |
| 25 | 105 | | -------- | 261 | 919 | 317 | 330 | 734 | 250 |
| 26 | 116 | 125 | -------- | 271 | 990 | 311 | 311 | 752 | 250 |
| 27 | 114 | | -------- | 292 | 1,060 | 362 | 298 | 649 | 245 |
| 28 | 126 | | -------- | 213 | 1,160 | 408 | 287 | 550 | 222 |
| 29 | 114 | | -------- | 187 | 1,250 | 362 | 282 | 490 | 213 |
| 30 | 119 | | -------- | 187 | 1,670 | 324 | 292 | 430 | 213 |
| 31 | 116 | -------- | 64 | -------- | 1,630 | -------- | 305 | 415 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 161 | 92 | 127 | 7,810 |
| November | 168 | 82 | 123 | 7,320 |
| April | 305 | 110 | 173 | 10,300 |
| May | 1,670 | 184 | 615 | 37,800 |
| June | 2,580 | 311 | 875 | 52,100 |
| July | 1,340 | 282 | 603 | 37,100 |
| August | 3,610 | 282 | 1,060 | 65,200 |
| September | 466 | 213 | 310 | 18,400 |

### 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 to September, 1930.
EXTREMES.—Maximum discharge during period, 2,540 second-feet Aug. 15 (gage height, 4.9 feet); minimum, 26 second-feet May 15 (gage height, 0.66 foot).
REMARKS.—Records good. Numerous diversions for irrigation above station.

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

| Day | Apr. | May | June | July | Aug. | Sept. | Day | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ------ | 50 | 1,080 | 38 | 32 | 492 | 16 | 186 | 57 | 180 | 138 | 2,190 | 235 |
| 2 | ------ | 40 | 780 | 47 | 35 | 463 | 17 | 180 | 30 | 578 | 210 | 1,870 | 225 |
| 3 | ------ | 33 | 427 | 109 | 54 | 434 | 18 | 152 | 28 | 672 | 276 | 1,800 | 210 |
| 4 | ------ | 30 | 362 | 57 | 49 | 391 | 19 | 132 | 34 | 348 | 140 | 1,560 | 205 |
| 5 | ------ | 30 | 230 | 40 | 49 | 362 | 20 | 132 | 27 | 254 | 126 | 1,400 | 200 |
| 6 | ------ | 70 | 176 | 28 | 40 | 334 | 21 | 128 | 70 | 210 | 117 | 1,250 | 186 |
| 7 | ------ | 42 | 254 | 44 | 63 | 326 | 22 | 135 | 355 | 225 | 64 | 1,110 | 169 |
| 8 | ------ | 33 | 802 | 61 | 65 | 312 | 23 | 190 | 135 | 215 | 50 | 953 | 138 |
| 9 | ------ | 30 | 643 | 72 | 105 | 434 | 24 | 276 | 66 | 77 | 42 | 751 | 126 |
| 10 | ------ | 30 | 989 | 29 | 58 | 550 | 25 | 276 | 46 | 57 | 39 | 600 | 128 |
| 11 | ------ | 30 | 1,020 | 107 | 57 | 470 | 26 | 155 | 78 | 38 | 37 | 607 | 122 |
| 12 | ------ | 28 | 1,280 | 781 | 370 | 370 | 27 | 135 | 86 | 34 | 34 | 614 | 124 |
| 13 | ------ | 27 | 672 | 1,200 | 787 | 334 | 28 | 97 | 618 | 35 | 32 | 600 | 117 |
| 14 | 230 | 27 | 220 | 622 | 1,900 | 298 | 29 | 71 | 1,150 | 38 | 31 | 521 | 113 |
| 15 | 210 | 26 | 135 | 230 | 2,390 | 247 | 30 | 64 | 1,200 | 30 | 32 | 500 | 113 |
| | | | | | | | 31 | ------ | 1,240 | ------ | 34 | 485 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| April 14-30 | 276 | 64 | 162 | 5,460 |
| May | 1,240 | 26 | 185 | 11,400 |
| June | 1,280 | 30 | 402 | 23,900 |
| July | 1,200 | 28 | 157 | 9,650 |
| August | 2,390 | 32 | 738 | 45,400 |
| September | 550 | 113 | 274 | 16,300 |
| The year | ------ | ------ | ------ | 112,000 |

### 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 to September, 1930.

EXTREMES.—Maximum discharge during year, 780 second-feet Aug. 16 (gage height, 3.8 feet); minimum, 49 second-feet Apr. 18 (gage height, 1.42 feet). 1910–1912, 1915–1917, 1930: Maximum discharge (estimated), 1,700 second-feet June 8, 1912; minimum, 28 second-feet Oct. 1, 1911.

REMARKS.—Records fair. Diversions for irrigation above station.

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

| Day | Apr. | May | June | July | Aug. | Sept. | Day | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ------ | 64 | 388 | 67 | 144 | 207 | 16 | 62 | 180 | 180 | 207 | 735 | 115 |
| 2 | ------ | 74 | 267 | 102 | 168 | 207 | 17 | 58 | 155 | 207 | 180 | 605 | 111 |
| 3 | ------ | 90 | 236 | 111 | 168 | 207 | 18 | 49 | 139 | 194 | 168 | 605 | 126 |
| 4 | ------ | 92 | 207 | 115 | 168 | 194 | 19 | 55 | 180 | 168 | 207 | 525 | 115 |
| 5 | ------ | 109 | 194 | 102 | 180 | 194 | 20 | 52 | 236 | 128 | 180 | 405 | 117 |
| 6 | ------ | 90 | 194 | 96 | 252 | 180 | 21 | 64 | 425 | 153 | 168 | 386 | 105 |
| 7 | 81 | 98 | 267 | 90 | 267 | 180 | 22 | 81 | 370 | 155 | 168 | 352 | 119 |
| 8 | 79 | 83 | 352 | 100 | 300 | 194 | 23 | 88 | 318 | 137 | 168 | 335 | 105 |
| 9 | 76 | 83 | 284 | 98 | 318 | 180 | 24 | 90 | 267 | 94 | 151 | 335 | 102 |
| 10 | 76 | 87 | 352 | 102 | 445 | 180 | 25 | 76 | 284 | 83 | 151 | 300 | 100 |
| 11 | 79 | 79 | 370 | 335 | 445 | 155 | 26 | 87 | 300 | 60 | 134 | 318 | 87 |
| 12 | 76 | 81 | 370 | 565 | 425 | 150 | 27 | 83 | 335 | 66 | 132 | 300 | 88 |
| 13 | 92 | 111 | 207 | 335 | 735 | 150 | 28 | 74 | 370 | 85 | 126 | 267 | 88 |
| 14 | 83 | 145 | 168 | 284 | 735 | 144 | 29 | 66 | 445 | 79 | 130 | 252 | 78 |
| 15 | 72 | 207 | 300 | 207 | 690 | 137 | 30 | 70 | 485 | 65 | 148 | 252 | 88 |
| | | | | | | | 31 | ------ | 505 | ------ | 168 | 236 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| April 7–30 | 92 | 49 | 73.7 | 3,510 |
| May | 505 | 64 | 209 | 12,900 |
| June | 388 | 60 | 200 | 11,900 |
| July | 565 | 67 | 171 | 10,500 |
| August | 735 | 144 | 376 | 23,100 |
| September | 207 | 78 | 140 | 8,330 |
| The period | | | | 70,200 |

### BENCH CANAL NEAR BURLINGTON, WYO.

LOCATION.—Staff gage in sec. 33, T. 52 N., R. 97 W., at highway bridge 2 miles below head gate and 5 miles southwest of Burlington.

RECORDS AVAILABLE.—April to September, 1930.

EXTREMES.—Maximum discharge during period, 194 second-feet July 18 (gage height, 3.6 feet); no flow during winter.

REMARKS.—Records fair. Complete regulation at head gate. Gage-height record furnished by Bench Canal Co. Canal diverts water from Greybull River in sec. 8, T. 51 N., R. 97 W., for irrigation of 10,000 to 15,000 acres of land near Burlington.

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

| Day | Apr. | May | June | July | Aug. | Sept. | Day | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ------ | 100 | 95 | 127 | 63 | 48 | 16 | ------ | 78 | 154 | 175 | 43 | |
| 2 | ------ | 93 | 105 | 68 | 56 | 50 | 17 | ------ | 68 | 154 | 131 | 43 | |
| 3 | ------ | 115 | 105 | 152 | 53 | 55 | 18 | ------ | 127 | 154 | 175 | 43 | |
| 4 | ------ | 133 | 105 | 143 | 61 | 55 | 19 | ------ | 131 | 154 | 180 | 43 | |
| 5 | ------ | 134 | 107 | 174 | 62 | 55 | 20 | ------ | 127 | 171 | 146 | 37 | |
| 6 | ------ | 115 | 107 | 184 | 175 | 57 | 21 | ------ | 115 | 171 | 142 | 31 | |
| 7 | ------ | 112 | 105 | 58 | 175 | 48 | 22 | ------ | 103 | 160 | 142 | 31 | |
| 8 | ------ | 96 | 100 | 58 | 180 | 48 | 23 | ------ | 106 | 144 | 142 | 31 | 40 |
| 9 | ------ | 96 | 101 | 140 | 148 | 41 | 24 | 33 | 107 | 146 | 142 | 37 | |
| 10 | ------ | 74 | 101 | 149 | 138 | 48 | 25 | 46 | 106 | 162 | 146 | 58 | |
| 11 | ------ | 59 | 103 | 180 | 128 | | 26 | 46 | 105 | 115 | 132 | 58 | |
| 12 | ------ | 53 | 127 | 185 | 128 | | 27 | 56 | 107 | 52 | 132 | 50 | |
| 13 | ------ | 63 | 129 | 176 | 43 | 40 | 28 | 82 | 113 | 166 | 122 | 50 | |
| 14 | ------ | 75 | 138 | 184 | 43 | | 29 | 80 | 126 | 73 | 118 | 50 | |
| 15 | ------ | 87 | 127 | 174 | 43 | | 30 | 100 | 147 | 82 | 42 | 50 | |
| | | | | | | | 31 | ------ | 130 | ------ | 77 | 45 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| April 24-30 | 100 | 33 | 63.3 | 879 |
| May | 147 | 53 | 103 | 6,330 |
| June | 171 | 73 | 124 | 7,380 |
| July | 185 | 42 | 139 | 8,550 |
| August | 180 | 31 | 70.8 | 4,350 |
| September | 57 | ------ | 43.5 | 2,590 |
| The period | ------ | ------ | ------ | 30,100 |

### 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, 1930.

REMARKS.—No diversions between station and Shoshone Dam. Flow completely regulated by storage in Shoshone Reservoir, capacity, 456,000 acre-feet. Discharge estimated Jan. 7 to Apr. 5 because of ice. Complete records furnished by United States Bureau of Reclamation.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 616 | 445 | 357 | 319 | 235 | 245 | 249 | 950 | 5,780 | 3,620 | 1,510 | 1,260 |
| 2 | 606 | 436 | 365 | 315 | 235 | 245 | 242 | 968 | 5,050 | 3,700 | 1,480 | 1,260 |
| 3 | 601 | 418 | 361 | 304 | 235 | 245 | 242 | 1,120 | 4,210 | 3,890 | 1,450 | 1,230 |
| 4 | 591 | 422 | 361 | 304 | 235 | 245 | 249 | 1,230 | 3,490 | 3,970 | 1,440 | 1,200 |
| 5 | 591 | 427 | 361 | 297 | 235 | 245 | 257 | 1,250 | 3,040 | 3,980 | 1,430 | 1,180 |
| 6 | 576 | 422 | 361 | 311 | 245 | 245 | 274 | 1,250 | 2,720 | 3,820 | 1,420 | 1,160 |
| 7 | 576 | 422 | 361 | 297 | 255 | 245 | 294 | 1,180 | 2,760 | 3,630 | 1,390 | 1,130 |
| 8 | 571 | 422 | 344 | 297 | 255 | 245 | 335 | 1,120 | 3,390 | 3,560 | 1,400 | 1,120 |
| 9 | 561 | 413 | 353 | 287 | 255 | 245 | 374 | 1,120 | 4,100 | 3,550 | 1,400 | 1,120 |
| 10 | 561 | 409 | 353 | 287 | 245 | 245 | 407 | 1,120 | 5,200 | 3,520 | 1,370 | 1,240 |
| 11 | 556 | 418 | 361 | 287 | 245 | 245 | 444 | 1,120 | 6,310 | 3,530 | 1,390 | 1,330 |
| 12 | 546 | 422 | 361 | 287 | 245 | 245 | 481 | 1,100 | 7,790 | 4,210 | 1,460 | 1,120 |
| 13 | 532 | 413 | 361 | 287 | 245 | 245 | 513 | 1,090 | 7,310 | 4,280 | 1,520 | 1,050 |
| 14 | 532 | 409 | 361 | 275 | 245 | 245 | 556 | 1,090 | 5,780 | 3,700 | 1,560 | 1,280 |
| 15 | 532 | 409 | 357 | 275 | 245 | 245 | 589 | 1,100 | 4,800 | 3,310 | 1,630 | 1,540 |
| 16 | 527 | 409 | 369 | 275 | 245 | 245 | 600 | 1,090 | 4,730 | 3,010 | 1,680 | 1,420 |
| 17 | 517 | 404 | 369 | 265 | 245 | 245 | 617 | 1,110 | 5,410 | 2,760 | 1,700 | 1,380 |
| 18 | 512 | 404 | 365 | 265 | 255 | 245 | 628 | 1,100 | 6,160 | 2,560 | 1,710 | 1,340 |
| 19 | 507 | 404 | 365 | 265 | 255 | 245 | 656 | 1,100 | 6,160 | 2,560 | 1,710 | 1,300 |
| 20 | 507 | 409 | 361 | 265 | 255 | 255 | 684 | 1,110 | 5,440 | 2,490 | 1,700 | 1,270 |
| 21 | 502 | 400 | 361 | 255 | 255 | 255 | 713 | 1,180 | 5,340 | 2,270 | 1,660 | 1,230 |
| 22 | 497 | 387 | 353 | 255 | 255 | 255 | 741 | 1,300 | 5,530 | 2,070 | 1,630 | 1,200 |
| 23 | 489 | 378 | 340 | 245 | 255 | 255 | 770 | 1,340 | 5,340 | 1,940 | 1,600 | 1,140 |
| 24 | 478 | 365 | 340 | 245 | 255 | 255 | 800 | 1,380 | 4,800 | 1,840 | 1,560 | 1,180 |
| 25 | 469 | 361 | 313 | 245 | 255 | 255 | 823 | 1,430 | 4,180 | 1,790 | 1,520 | 1,140 |
| 26 | 473 | 369 | 328 | 245 | 255 | 255 | 847 | 1,480 | 3,740 | 1,740 | 1,480 | 1,130 |
| 27 | 454 | 369 | 328 | 245 | 255 | 255 | 883 | 1,540 | 3,690 | 1,700 | 1,440 | 1,100 |
| 28 | 450 | 357 | 324 | 245 | 245 | 255 | 907 | 1,660 | 3,890 | 1,660 | 1,410 | 1,060 |
| 29 | 445 | 369 | 317 | 245 | ------- | 255 | 925 | 1,960 | 3,920 | 1,630 | 1,380 | 1,050 |
| 30 | 441 | 365 | 332 | 235 | ------- | 255 | 938 | 3,390 | 3,700 | 1,590 | 1,340 | 1,020 |
| 31 | 436 | ------- | 332 | 235 | ------- | 255 | ------- | 5,410 | ------- | 1,540 | 1,290 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 616 | 436 | 524 | 32,200 |
| November | 445 | 357 | 402 | 23,900 |
| December | 369 | 313 | 351 | 21,600 |
| January | 319 | 235 | 273 | 16,800 |
| February | 255 | 235 | 248 | 13,800 |
| March | 255 | 245 | 249 | 15,300 |
| April | 938 | 242 | 568 | 33,800 |
| May | 5,410 | 950 | 1,430 | 87,900 |
| June | 7,790 | 2,720 | 4,790 | 285,000 |
| July | 4,280 | 1,540 | 2,880 | 177,000 |
| August | 1,710 | 1,290 | 1,510 | 92,800 |
| September | 1,540 | 1,020 | 1,210 | 72,000 |
| The year | 7,790 | 235 | 1,200 | 872,000 |

## 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, 1930.
EXTREMES.—Maximum discharge during year, 6,920 second-feet June 12 (gage height, 5.9 feet); minimum, 163 second-feet May 2 (gage height, 1.3 feet).
1929–30: Maximum and minimum discharges, those of 1930.
REMARKS.—Records good except those for period Jan. 17 to Feb. 28, which were estimated because of ice. Water diverted for irrigation above station. Flow regulated by Shoshone Reservoir.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 763 | 488 | 566 | 474 | | 395 | 355 | 224 | 5,940 | 2,630 | 850 | 983 |
| 2 | 763 | 530 | 602 | 530 | | 438 | 347 | 180 | 4,760 | 2,630 | 850 | 938 |
| 3 | 763 | 530 | 566 | 566 | 454 | 449 | 347 | 178 | 4,090 | 3,030 | 894 | 894 |
| 4 | 722 | 602 | 641 | 602 | | 390 | 347 | 178 | 3,870 | 3,440 | 806 | 894 |
| 5 | 763 | 680 | 641 | 530 | | 410 | 355 | 530 | 3,030 | 3,440 | 850 | 894 |
| 6 | 763 | 680 | 641 | 400 | | 390 | 355 | 602 | 2,170 | 3,030 | 894 | 894 |
| 7 | 763 | 680 | 641 | 566 | | 355 | 382 | 516 | 2,080 | 2,830 | 983 | 894 |
| 8 | 680 | 566 | 602 | 530 | 519 | 377 | 400 | 488 | 2,540 | 2,630 | 1,070 | 894 |
| 9 | 680 | 602 | 602 | 530 | | 390 | 410 | 523 | 3,650 | 2,540 | 938 | 894 |
| 10 | 641 | 680 | 566 | 530 | | 372 | 421 | 509 | 4,310 | 2,540 | 938 | 938 |
| 11 | 680 | 641 | 566 | 566 | | 382 | 410 | 502 | 4,310 | 2,440 | 938 | 1,030 |
| 12 | 680 | 566 | 566 | 530 | | 382 | 502 | 377 | 6,670 | 3,230 | 2,170 | 938 |
| 13 | 680 | 488 | 566 | 530 | 464 | 386 | 602 | 368 | 6,420 | 4,090 | 1,910 | 680 |
| 14 | 641 | 641 | 566 | 488 | | 368 | 641 | 377 | 5,220 | 3,870 | 1,910 | 763 |
| 15 | 641 | 641 | 566 | 516 | | 382 | 680 | 364 | 4,310 | 2,830 | 2,170 | 850 |
| 16 | 641 | 680 | 566 | 481 | | 382 | 481 | 390 | 4,090 | 2,540 | 2,170 | 850 |
| 17 | 641 | 641 | 566 | | | 368 | 382 | 382 | 4,310 | 2,260 | 2,000 | 850 |
| 18 | 641 | 641 | 566 | | | 382 | 395 | 438 | 4,760 | 2,080 | 1,910 | 806 |
| 19 | 641 | 641 | 566 | | | 390 | 502 | 400 | 4,760 | 1,910 | 1,830 | 806 |
| 20 | 530 | 641 | 566 | | 516 | 377 | 566 | 460 | 4,760 | 2,000 | 1,830 | 1,170 |
| 21 | 355 | 641 | 602 | 336 | | 390 | 404 | 454 | 4,310 | 1,830 | 1,750 | 1,170 |
| 22 | 283 | 641 | 602 | | | 382 | 340 | 454 | 4,760 | 1,600 | 1,530 | 1,220 |
| 23 | 277 | 641 | 602 | | | 400 | 305 | 516 | 4,530 | 1,340 | 1,400 | 1,340 |
| 24 | 240 | 602 | 641 | | 449 | 395 | 302 | 566 | 4,530 | 1,220 | 1,400 | 1,170 |
| 25 | 251 | 602 | 602 | | 438 | 355 | 283 | 641 | 4,310 | 1,120 | 1,280 | 1,070 |
| 26 | 229 | 566 | 566 | | 390 | 347 | 287 | 763 | 3,870 | 1,170 | 1,220 | 1,120 |
| 27 | 232 | 566 | 602 | | 382 | 343 | 280 | 850 | 3,230 | 1,170 | 1,120 | 1,170 |
| 28 | 248 | 602 | 566 | 404 | 390 | 355 | 224 | 983 | 3,440 | 983 | 1,030 | 1,120 |
| 29 | 343 | 566 | 566 | | ------- | 410 | 219 | 1,030 | 3,440 | 894 | 983 | 1,030 |
| 30 | 438 | 566 | 566 | | ------- | 390 | 212 | 1,600 | 3,230 | 894 | 838 | 983 |
| 31 | 449 | ------- | 566 | | ------- | 410 | ------- | 3,440 | ------- | 894 | 983 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 763 | 229 | 550 | 33,800 |
| November | 680 | 488 | 608 | 36,200 |
| December | 641 | 566 | 587 | 36,100 |
| January | 602 | ---------- | 446 | 27,400 |
| February | ---------- | 382 | 477 | 26,500 |
| March | 449 | 343 | 385 | 23,700 |
| April | 680 | 212 | 391 | 23,300 |
| May | 3,440 | 178 | 622 | 38,200 |
| June | 6,670 | 2,080 | 4,190 | 249,000 |
| July | 4,090 | 894 | 2,230 | 137,000 |
| August | 2,170 | 806 | 1,340 | 82,400 |
| September | 1,340 | 680 | 975 | 58,000 |
| The year | 6,670 | ---------- | 1,070 | 772,000 |

### LITTLE HORN RIVER NEAR CROW AGENCY, MONT.

LOCATION.—Water-stage recorder 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, 1930. March, 1905, to June, 1906, at Crow Agency about 2 miles below present site. Crow Agency ditch diverts between two locations.

EXTREMES.—Maximum discharge during year, 930 second-feet Mar. 12 (gage height, 6.11 feet); minimum, 58 second-feet Sept. 2, 5 (gage height, 3.97 feet). 1905–6, 1912–1924, 1928–1930: 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, Nov. 19–26, 29, 30, which are estimated. Several diversions above station. Some regulation caused by head-gate operations.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 161 | 241 | ------ | ------ | ------ | 260 | 683 | 503 | 155 | 103 | 65 |
| 2 | 161 | 223 | ------ | ------ | ------ | 268 | 683 | 533 | 127 | 103 | 58 |
| 3 | 161 | 214 | ------ | ------ | ------ | 420 | 683 | 533 | 127 | 103 | 62 |
| 4 | 161 | 205 | ------ | ------ | ------ | 393 | 865 | 533 | 131 | 100 | 62 |
| 5 | 161 | 205 | ------ | ------ | ------ | 476 | 865 | 563 | 131 | 103 | 58 |
| 6 | 161 | 197 | ------ | ------ | ------ | 448 | 865 | 593 | 131 | 102 | 62 |
| 7 | 161 | 189 | ------ | ------ | ------ | 393 | 803 | 593 | 122 | 95 | 67 |
| 8 | 161 | 181 | ------ | ------ | ------ | 393 | 743 | 593 | 126 | 105 | 73 |
| 9 | 169 | 181 | ------ | ------ | 320 | 713 | 683 | 593 | 129 | 102 | 76 |
| 10 | 169 | 223 | ------ | ------ | 476 | 393 | 653 | 593 | 133 | 99 | 76 |
| 11 | 161 | 223 | ------ | ------ | 773 | 393 | 623 | 563 | 129 | 92 | 84 |
| 12 | 169 | 232 | ------ | ------ | 930 | 393 | 563 | 563 | 129 | 89 | 82 |
| 13 | 169 | 232 | ------ | ------ | 803 | 393 | 563 | 563 | 133 | 82 | 84 |
| 14 | 161 | 241 | ------ | ------ | 563 | 368 | 533 | 563 | 127 | 78 | 84 |
| 15 | 177 | 232 | ------ | ------ | 420 | 393 | 533 | 563 | 142 | 84 | 82 |
| 16 | 169 | 223 | ------ | ------ | 368 | 420 | 533 | 533 | 138 | 94 | 82 |
| 17 | 169 | 214 | ------ | ------ | 503 | 368 | 563 | 503 | 131 | 97 | 78 |
| 18 | 169 | 205 | 95 | ------ | 865 | 368 | 533 | 393 | 127 | 97 | 82 |
| 19 | 169 | 165 | ------ | ------ | 803 | 368 | 476 | 343 | 127 | 100 | 76 |
| 20 | 177 | 125 | ------ | ------ | 623 | 368 | 476 | 320 | 131 | 102 | 76 |
| 21 | 177 | 89 | ------ | 870 | 653 | 368 | 476 | 320 | 127 | 89 | 76 |
| 22 | 177 | 107 | ------ | ------ | 743 | 368 | 476 | 276 | 126 | 83 | 91 |
| 23 | 177 | 125 | ------ | ------ | 865 | 393 | 476 | 276 | 126 | 71 | 91 |
| 24 | 177 | 185 | ------ | ------ | 503 | 448 | 476 | 272 | 122 | 77 | 84 |
| 25 | 177 | 205 | ------ | ------ | 803 | 503 | 476 | 272 | 122 | 80 | 94 |
| 26 | 177 | 250 | ------ | ------ | 368 | 683 | 476 | 272 | 115 | 83 | 100 |
| 27 | 193 | 325 | ------ | ------ | 285 | 803 | 503 | 272 | 115 | 84 | 100 |
| 28 | 219 | 335 | ------ | ------ | 320 | 803 | 503 | 272 | 115 | 84 | 110 |
| 29 | 254 | 320 | ------ | ------ | 264 | 623 | 503 | 272 | 112 | 78 | 110 |
| 30 | 245 | 320 | ------ | ------ | 260 | 683 | 503 | 272 | 108 | 76 | 103 |
| 31 | 237 | ------ | ------ | ------ | 260 | ------ | 503 | ------ | 103 | 62 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 254 | 161 | 178 | 10,900 |
| November | 335 | 89 | 214 | 12,700 |
| March 9–31 | 930 | 260 | 555 | 25,300 |
| April | 803 | 260 | 455 | 27,100 |
| May | 865 | 476 | 590 | 36,300 |
| June | 593 | 272 | 444 | 26,400 |
| July | 155 | 103 | 126 | 7,750 |
| August | 105 | 62 | 90.2 | 5,550 |
| September | 110 | 58 | 80.9 | 4,810 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 1,410 second-feet June 2 (gage height, 3.26 feet); minimum, 64 second-feet July 30 (gage height, 0.64 foot). 1928–1930: Maximum discharge, 7,220 second-feet June 2, 1929 (gage height, 8.25 feet); minimum, that of July 30, 1930.

REMARKS.—Records good except those for period Nov. 1–16, which were estimated. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 291 | | -------- | 329 | 1,050 | 1,350 | 189 | 82 | 100 |
| 2 | 288 | | -------- | 349 | 1,030 | 1,370 | 173 | 85 | 90 |
| 3 | 284 | | -------- | 353 | 1,080 | 1,100 | 181 | 75 | 92 |
| 4 | 280 | | -------- | 377 | 1,280 | 948 | 160 | 73 | 100 |
| 5 | 313 | | -------- | 365 | 1,350 | 767 | 151 | 82 | 96 |
| 6 | 280 | | -------- | 357 | 1,320 | 774 | 137 | 90 | 100 |
| 7 | 284 | | -------- | 353 | 1,270 | 753 | 146 | 83 | 96 |
| 8 | 291 | | -------- | 369 | 1,210 | 718 | 126 | 73 | 88 |
| 9 | 274 | 280 | -------- | 426 | 1,110 | 955 | 113 | 77 | 88 |
| 10 | 302 | | -------- | 455 | 1,020 | 1,080 | 98 | 81 | 92 |
| 11 | 329 | | -------- | 491 | 888 | 932 | 94 | 85 | 88 |
| 12 | 325 | | -------- | 496 | 858 | 895 | 103 | 107 | 76 |
| 13 | 313 | | -------- | 518 | 830 | 925 | 137 | 115 | 76 |
| 14 | 291 | | -------- | 547 | 802 | 753 | 137 | 122 | 85 |
| 15 | 274 | | -------- | 535 | 788 | 577 | 137 | 124 | 76 |
| 16 | 288 | | 535 | 513 | 746 | 547 | 124 | 142 | 76 |
| 17 | 270 | 270 | 486 | 513 | 680 | 496 | 142 | 142 | 80 |
| 18 | 249 | 263 | 496 | 480 | 686 | 440 | 126 | 139 | 75 |
| 19 | 249 | 256 | 480 | 455 | 732 | 390 | 107 | 135 | 76 |
| 20 | 238 | 238 | 349 | 435 | 802 | 349 | 100 | 139 | 68 |
| 21 | 232 | 235 | 377 | 455 | 851 | 329 | 107 | 124 | 68 |
| 22 | 242 | 223 | 373 | 460 | 781 | 357 | 109 | 124 | 68 |
| 23 | 238 | 217 | 412 | 547 | 686 | 394 | 96 | 120 | 72 |
| 24 | 249 | 220 | 390 | 673 | 699 | 416 | 88 | 120 | 73 |
| 25 | 256 | 229 | 298 | 823 | 666 | 353 | 98 | 120 | 78 |
| 26 | 263 | 220 | 288 | 970 | 686 | 298 | 109 | 100 | 82 |
| 27 | 274 | 214 | 266 | 1,000 | 732 | 260 | 92 | 90 | 85 |
| 28 | 284 | 226 | 284 | 1,150 | 739 | 249 | 85 | 87 | 88 |
| 29 | 288 | 229 | 302 | 1,070 | 888 | 220 | 82 | 88 | 92 |
| 30 | 294 | 223 | 321 | 985 | 1,080 | 189 | 67 | 94 | 88 |
| 31 | 284 | -------- | 341 | -------- | 1,300 | -------- | 70 | 101 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 329 | 222 | 278 | 17,100 |
| November | -------- | 214 | 258 | 15,400 |
| March 16–31 | 535 | 266 | 375 | 11,900 |
| April | 1,150 | 329 | 562 | 33,400 |
| May | 1,350 | 666 | 924 | 56,800 |
| June | 1,370 | 189 | 639 | 38,000 |
| July | 189 | 67 | 119 | 7,320 |
| August | 142 | 73 | 104 | 6,400 |
| September | 100 | 68 | 83.7 | 4,980 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 4,230 second-feet Feb. 22; maximum gage height, 5.72 feet Feb. 20; minimum discharge (estimated), 3 second-feet Aug. 1–18.

1929–30: Maximum discharge, 5,910 second-feet June 5, 1929; maximum gage height, that of Feb. 20, 1930; minimum discharge, that of Aug. 1–18, 1930.

REMARKS.—Records good. Discharge estimated July 12–19, 22–30, Aug. 1–18, 20–22, Aug. 24 to Sept. 8, Sept. 10, 11, 16–24; interpolated Oct. 1–5, Nov. 5, 6, Apr. 4–8. Water diverted for irrigation at diversion dam 50 miles upstream, by irrigation district canal 20 feet above gage, and by minor ranch canals.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 305 | 360 | -------- | 995 | 349 | 1,070 | 1,560 | 113 | | |
| 2 | 305 | 360 | -------- | 590 | 316 | 995 | 1,070 | 135 | | |
| 3 | 305 | 305 | -------- | 360 | 316 | 920 | 995 | 229 | | |
| 4 | 305 | 305 | -------- | 360 | 320 | 1,070 | 995 | 229 | | |
| 5 | 305 | 305 | -------- | 360 | 324 | 995 | 995 | 195 | | 5 |
| 6 | 305 | 305 | -------- | 360 | 327 | 1,230 | 882 | 135 | | |
| 7 | 305 | 305 | -------- | 590 | 330 | 1,390 | 702 | 91 | | |
| 8 | 305 | 305 | -------- | 590 | 334 | 1,390 | 650 | 64 | | |
| 9 | 305 | 305 | -------- | 715 | 338 | 1,230 | 626 | 56 | | 91 |
| 10 | 305 | 305 | -------- | 995 | 360 | 1,310 | 554 | 35 | 3 | 5 |
| 11 | 305 | 305 | -------- | 995 | 590 | 1,070 | 507 | 6 | | 5 |
| 12 | 305 | 305 | -------- | 850 | 472 | 995 | 780 | | | 11 |
| 13 | 305 | 360 | -------- | 715 | 472 | 892 | 702 | | | 15 |
| 14 | 305 | 360 | -------- | 715 | 518 | 808 | 626 | | | 30 |
| 15 | 360 | 360 | -------- | 689 | 542 | 808 | 530 | | | 48 |
| 16 | 360 | 305 | -------- | 638 | 484 | 780 | 518 | 5 | | |
| 17 | 360 | 305 | -------- | 614 | 461 | 702 | 542 | | | |
| 18 | 360 | 305 | -------- | 614 | 554 | 650 | 496 | | | |
| 19 | 360 | 305 | -------- | 566 | 530 | 650 | 371 | | 554 | |
| 20 | 360 | 305 | -------- | 542 | 484 | 602 | 305 | 438 | | 5 |
| 21 | 360 | 305 | 3,010 | 542 | 415 | 578 | 267 | 118 | 5 | |
| 22 | 360 | 305 | 4,230 | 472 | 438 | 554 | 210 | | | |
| 23 | 305 | -------- | 2,160 | 426 | 484 | 530 | 210 | | 91 | |
| 24 | 305 | -------- | 1,310 | 472 | 530 | 626 | 210 | | | |
| 25 | 305 | -------- | 1,310 | 496 | 578 | 602 | 195 | | | 86 |
| 26 | 305 | -------- | 1,310 | 542 | 566 | 614 | 210 | 5 | | 102 |
| 27 | 305 | -------- | 1,150 | 518 | 590 | 590 | 210 | | 5 | 113 |
| 28 | 305 | -------- | 1,820 | 496 | 850 | 542 | 210 | | | 113 |
| 29 | 305 | -------- | -------- | 472 | 995 | 566 | 180 | | | 124 |
| 30 | 360 | -------- | -------- | 404 | 1,310 | 542 | 135 | | | 102 |
| 31 | 360 | -------- | -------- | 382 | -------- | 518 | -------- | | | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 360 | 305 | 323 | 19,900 |
| November 1–22 | 360 | 305 | 318 | 13,900 |
| February 21–28 | 4,230 | 1,150 | 2,040 | 32,400 |
| March | 995 | 360 | 583 | 35,800 |
| April | 1,310 | 316 | 506 | 30,100 |
| May | 1,390 | 518 | 833 | 51,200 |
| June | 1,560 | 135 | 548 | 32,600 |
| July | 438 | -------- | 62.4 | 3,840 |
| August | 554 | -------- | 24.3 | 1,490 |
| September | 124 | -------- | 30.8 | 1,830 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 430 second-feet June 1 (gage height, 3.28 feet); minimum, 9.7 second-feet Sept. 22 (gage height, 0.65 foot).

REMARKS.—Records good except those for periods Apr. 1–5, June 16–21, Sept. 18–21, 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, 1929–30*

| Day | Sept. | Oct. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | | 20 | | 127 | 402 | 62 | 62 | 15 |
| 2 | | 20 | | 139 | 268 | 58 | 60 | 15 |
| 3 | | 25 | 20 | 169 | 173 | 57 | 59 | 14 |
| 4 | | 27 | | 184 | 151 | 57 | 50 | 15 |
| 5 | | 21 | | 201 | 144 | 57 | 35 | 16 |
| 6 | | 24 | 20 | 188 | 136 | 58 | 35 | 17 |
| 7 | | 29 | 30 | 175 | 141 | 52 | 34 | 16 |
| 8 | | 41 | 45 | 155 | 197 | 52 | 32 | 16 |
| 9 | | 78 | 58 | 134 | 281 | 48 | 34 | 15 |
| 10 | | 100 | 70 | 124 | 239 | 47 | 37 | 15 |
| 11 | | 90 | 64 | 107 | 234 | 76 | 45 | 14 |
| 12 | | 67 | 71 | 106 | 276 | 119 | 58 | 13 |
| 13 | | 35 | 77 | 108 | 254 | 106 | 48 | 13 |
| 14 | | 38 | 95 | 112 | 166 | 82 | 45 | 13 |
| 15 | | 37 | 88 | 115 | 166 | 73 | 48 | 12 |
| 16 | | 37 | 68 | 107 | 166 | 67 | 47 | 12 |
| 17 | 19 | 38 | 53 | 101 | 167 | 62 | 47 | 11 |
| 18 | 19 | 37 | 39 | 101 | 168 | 58 | 58 | 11 |
| 19 | 19 | 36 | 37 | 94 | 169 | 58 | 39 | 11 |
| 20 | 20 | | 37 | 87 | 170 | 55 | 33 | 11 |
| 21 | 20 | | 53 | 108 | 171 | 55 | 21 | 10 |
| 22 | 20 | | 68 | 116 | 177 | 54 | 19 | 10 |
| 23 | 21 | | 90 | 144 | 188 | 51 | 16 | 11 |
| 24 | 21 | | 95 | 139 | 171 | 50 | 16 | 11 |
| 25 | 22 | | 132 | 134 | 121 | 50 | 17 | 11 |
| 26 | 24 | | 134 | 121 | 87 | 50 | 14 | 12 |
| 27 | 24 | | 124 | 143 | 83 | 53 | 15 | 13 |
| 28 | 23 | | 132 | 211 | 77 | 55 | 15 | 16 |
| 29 | 22 | | 123 | 274 | 71 | 50 | 15 | 23 |
| 30 | 21 | | 119 | 381 | 66 | 59 | 14 | 29 |
| 31 | | | | 390 | | 64 | 13 | |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| 1929 | | | | |
| September 17–30 | | | 21.1 | 586 |
| 1929–30 | | | | |
| October 1–19 | 100 | 20 | 42.2 | 1,590 |
| April | 134 | | 67.4 | 4,010 |
| May | 390 | 87 | 155 | 9,530 |
| June | 402 | 66 | 176 | 10,500 |
| July | 119 | 47 | 61.1 | 3,760 |
| August | 62 | 13 | 34.9 | 2,150 |
| September | 29 | 10 | 14.0 | 833 |

## POWDER RIVER AT ARVADA, WYO.

LOCATION.—Chain gage in sec. 16, T. 54 N., R. 77 W., at Arvada, one-fourth mile above Wildhorse Creek. Zero of gage 3,623.8 feet above mean sea level.

DRAINAGE AREA.—6,050 square miles.

RECORDS AVAILABLE.—May, 1919, to September, 1930. From July, 1915, to April, 1919, just above mouth of Clear Creek and 16 miles downstream.

EXTREMES.—Maximum discharge during year, 6,150 second-feet Feb. 16 (gage height, 5.29 feet); minimum, 6 second-feet July 11 (gage height, 0.14 foot).

1919–1930: Maximum discharge, 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.

REMARKS.—Records good. Diversions from tributaries upstream.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 180 | 300 | ------- | 400 | 310 | 530 | 828 | 46 | 56 | 107 |
| 2 | 140 | 280 | ------- | 145 | 270 | 703 | 530 | 42 | 99 | 102 |
| 3 | 152 | 280 | ------- | 140 | 270 | 648 | 470 | 36 | 69 | 96 |
| 4 | 180 | 280 | ------- | 145 | 280 | 593 | 500 | 28 | 62 | 95 |
| 5 | 240 | 270 | ------- | 150 | 310 | 626 | 400 | 25 | 48 | 92 |
| 6 | 170 | 220 | ------- | 160 | 330 | 703 | 320 | 21 | 88 | 97 |
| 7 | 152 | 290 | ------- | 160 | 360 | 852 | 240 | 16 | 61 | 91 |
| 8 | 150 | 390 | ------- | 480 | 340 | 1,190 | 170 | 15 | 39 | 648 |
| 9 | 142 | 340 | ------- | 2,080 | 370 | 1,010 | 210 | 11 | 27 | 360 |
| 10 | 140 | 320 | ------- | 1,190 | 460 | 747 | 460 | 9 | 36 | 145 |
| 11 | 145 | 280 | ------- | 1,230 | 550 | 571 | 320 | 9 | 828 | 96 |
| 12 | 145 | 138 | ------- | 1,030 | 571 | 571 | 190 | 8 | 571 | 86 |
| 13 | 142 | 104 | ------- | 828 | 540 | 593 | 190 | 1,300 | 4,460 | 79 |
| 14 | 145 | 220 | ------- | 936 | 540 | 550 | 170 | 1,760 | 2,510 | 71 |
| 15 | 150 | 220 | ------- | 1,020 | 530 | 550 | 152 | 780 | 1,870 | 67 |
| 16 | 150 | 130 | 6,140 | 960 | 582 | 571 | 142 | 340 | 1,320 | 64 |
| 17 | 150 | 380 | 6,000 | 840 | 571 | 490 | 135 | 150 | 604 | 62 |
| 18 | 150 | ------- | 5,710 | 747 | 604 | 450 | 128 | 115 | 480 | 60 |
| 19 | 150 | ------- | 5,730 | 540 | 480 | 659 | 122 | 100 | 670 | 56 |
| 20 | 145 | ------- | 5,220 | 410 | 460 | 520 | 118 | 86 | 330 | 53 |
| 21 | 142 | ------- | 4,760 | 320 | 440 | 520 | 110 | 70 | 240 | 48 |
| 22 | 145 | ------- | 4,810 | 290 | 440 | 480 | 103 | 61 | 145 | 47 |
| 23 | 150 | ------- | 3,780 | 390 | 420 | 370 | 106 | 51 | 115 | 45 |
| 24 | 170 | ------- | 3,070 | 310 | 500 | 450 | 103 | 54 | 96 | 46 |
| 25 | 160 | ------- | 1,760 | 430 | 560 | 450 | 103 | 52 | 520 | 53 |
| 26 | 160 | ------- | 1,820 | 410 | 758 | 450 | 95 | 41 | 200 | 53 |
| 27 | 158 | ------- | 1,410 | 330 | 936 | 320 | 100 | 42 | 130 | 58 |
| 28 | 170 | ------- | 747 | 310 | 1,210 | 747 | 91 | 36 | 104 | 60 |
| 29 | 180 | ------- | ------- | 290 | 1,050 | 692 | 75 | 25 | 99 | 64 |
| 30 | 220 | ------- | ------- | 310 | 828 | 340 | 61 | 20 | 95 | 64 |
| 31 | 230 | ------- | ------- | 290 | ------- | 230 | ------- | 19 | 122 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 240 | 140 | 161 | 9,900 |
| November 1–17 | 380 | 104 | 261 | 8,800 |
| February 16–28 | 6,140 | 747 | 3,920 | 101,000 |
| March | 2,080 | 140 | 557 | 34,200 |
| April | 1,210 | 270 | 529 | 31,500 |
| May | 1,190 | 230 | 586 | 36,000 |
| June | 828 | 61 | 225 | 13,400 |
| July | 1,760 | 8 | 173 | 10,600 |
| August | 4,460 | 27 | 519 | 31,900 |
| September | 648 | 45 | 102 | 6,070 |

## POWDER RIVER AT MOORHEAD, MONT.

LOCATION.—Staff gage in sec. 5, T. 9 S., R. 48 E., at Moorhead.

RECORDS AVAILABLE.—May, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 4,040 second-feet July 14 (gage height, 5.86 feet); minimum, 1.0 second-foot July 9,10 (gage height, 2.40 feet).

1929–30: Maximum discharge, 8,610 second-feet June 3, 1929 (gage height, 7.90 feet); minimum, that of July 9,10, 1930.

REMARKS.—Records for July to August good; others fair. Some diversion for irrigation above station.

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 417 | 327 | ------- | 568 | 417 | 1,080 | 610 | 24 | 35 | 227 |
| 2 | 409 | 327 | ------- | 370 | 426 | 1,000 | 838 | 16 | 35 | 198 |
| 3 | 355 | 327 | ------- | 180 | 444 | 1,000 | 865 | 13 | 470 | 171 |
| 4 | 417 | 340 | ------- | 204 | 453 | 1,000 | 610 | 9.0 | 108 | 164 |
| 5 | 402 | 313 | ------- | 227 | 506 | 1,000 | 506 | 4.2 | 98 | 150 |
| 6 | 371 | 327 | ------- | 273 | 488 | 1,080 | 453 | 4.2 | 72 | 150 |
| 7 | 402 | 340 | ------- | 216 | 506 | 1,150 | 402 | 3.4 | 68 | 171 |
| 8 | 340 | 273 | ------- | 262 | 527 | 1,300 | 273 | 3.4 | 98 | 1,000 |
| 9 | 327 | 327 | ------- | 386 | 568 | 1,150 | 273 | 1.0 | 58 | 527 |
| 10 | 320 | 355 | ------- | 1,000 | 589 | 1,000 | 249 | 1.0 | 49 | 506 |
| 11 | 313 | 371 | ------- | 935 | 704 | 865 | 417 | 2.6 | 40 | 244 |
| 12 | 300 | 340 | ------- | 935 | 704 | 811 | 249 | 16 | 730 | 189 |
| 13 | 293 | 340 | ------- | 757 | 682 | 757 | 189 | 65 | 2,420 | 207 |
| 14 | 313 | 340 | ------- | 1,080 | 682 | 706 | 176 | 4,040 | 1,900 | 136 |
| 15 | 313 | 340 | ------- | 1,150 | 646 | 706 | 160 | 1,440 | 1,660 | 119 |
| 16 | 306 | 371 | ------- | 1,290 | 682 | 706 | 145 | 935 | 1,590 | 108 |
| 17 | 300 | 300 | ------- | 1,000 | 706 | 568 | 130 | 568 | 1,300 | 108 |
| 18 | 300 | 262 | ------- | 865 | 658 | 548 | 115 | 386 | 1,150 | 108 |
| 19 | 286 | 548 | ------- | 865 | 634 | 558 | 100 | 273 | 1,300 | 92 |
| 20 | 286 | 273 | ------- | 730 | 568 | 558 | 85 | 227 | 865 | 90 |
| 21 | 273 | 250 | ------- | 589 | 506 | 548 | 70 | 207 | 600 | 90 |
| 22 | 262 | 227 | ------- | 634 | 488 | 488 | 58 | 171 | 453 | 80 |
| 23 | 262 | 206 | ------- | 658 | 488 | 470 | 72 | 153 | 355 | 77 |
| 24 | 262 | 1,370 | ------- | 658 | 506 | 568 | 72 | 130 | 273 | 77 |
| 25 | 262 | 1,660 | 1,220 | 417 | 568 | 558 | 64 | 124 | 227 | 77 |
| 26 | 262 | 1,220 | 865 | 568 | 730 | 453 | 47 | 108 | 527 | 82 |
| 27 | 293 | 1,150 | 670 | 453 | 1,300 | 386 | 44 | 77 | 327 | 103 |
| 28 | 300 | 865 | 488 | 435 | 1,370 | 98 | 47 | 63 | 239 | 114 |
| 29 | 300 | 682 | ------- | 417 | 1,370 | 757 | 47 | 51 | 216 | 125 |
| 30 | 320 | 355 | ------- | 417 | 1,220 | 527 | 30 | 40 | 207 | 171 |
| 31 | 320 | ------- | ------- | 426 | ------- | 506 | ------- | 35 | 198 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 417 | 262 | 319 | 19,600 |
| November | 1,660 | 206 | 491 | 29,200 |
| February 25-28 | 1,220 | 488 | 811 | 6,430 |
| March | 1,290 | 180 | 612 | 37,600 |
| April | 1,370 | 417 | 671 | 39,900 |
| May | 1,300 | 98 | 739 | 45,400 |
| June | 865 | 30 | 247 | 14,700 |
| July | 4,040 | 1 | 296 | 18,200 |
| August | 2,420 | 35 | 570 | 35,000 |
| September | 1,000 | 77 | 189 | 11,200 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 9,600 second-feet Feb. 20 (gage height, 7.2 feet); minimum, 35 second-feet Sept. 28 (gage height, 2.32 feet).

1928–1930: Maximum discharge, 14,700 second-feet Mar. 12, 1929 (gage height, 8.9 feet); minimum, 12 second-feet Sept. 5, 1929 (gage height, 2.04 feet).

REMARKS.—Records fair. Some diversion for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 506 | 1,150 | ------- | [a] 3,200 | 596 | 1,350 | 3,270 | [a] 98 | [a] 117 | 142 |
| 2 | 426 | 1,150 | ------- | 3,730 | 515 | 1,250 | 2,500 | [a] 71 | 103 | [a] 130 |
| 3 | 412 | [a] 706 | ------- | 2,830 | 498 | 1,350 | 1,660 | 45 | 94 | 118 |
| 4 | 356 | 262 | ------- | 2,830 | 482 | 1,150 | 1,970 | 100 | 84 | 106 |
| 5 | 356 | 273 | ------- | 3,270 | 474 | 975 | 1,150 | 45 | [a] 80 | 115 |
| 6 | 356 | 319 | ------- | 1,970 | 482 | 1,150 | 825 | 76 | 76 | 109 |
| 7 | 300 | 344 | ------- | 1,450 | 490 | 1,550 | 762 | 76 | [a] 81 | 139 |
| 8 | 241 | 319 | ------- | 1,350 | 533 | 1,150 | 700 | 78 | [a] 86 | 118 |
| 9 | 294 | 319 | ------- | 762 | 617 | 1,150 | 560 | 68 | 91 | 81 |
| 10 | 241 | 370 | ------- | [a] 956 | 627 | 1,450 | 442 | 68 | 81 | [a] 225 |
| 11 | 262 | 370 | ------- | 1,150 | 638 | [a] 1,010 | [a] 284 | 58 | 78 | [a] 365 |
| 12 | 196 | 363 | ------- | 1,250 | [a] 658 | 578 | 125 | 74 | [a] 310 | 606 |
| 13 | 188 | 384 | ------- | [a] 1,450 | 700 | 825 | 294 | 81 | 542 | 273 |
| 14 | 164 | 370 | ------- | 1,660 | 700 | 700 | 405 | 88 | 344 | 180 |
| 15 | 156 | 172 | ------- | 1,550 | 648 | 700 | 267 | 52 | 3,270 | 267 |
| 16 | 135 | 149 | ------- | 1,150 | 700 | 578 | 184 | 2,280 | 3,050 | [a] 1,450 |
| 17 | 188 | 172 | ------- | 1,660 | [a] 680 | 515 | 226 | [a] 1,670 | 2,830 | 2,610 |
| 18 | 172 | ------- | 5,770 | [a] 1,400 | 648 | [a] 515 | 210 | 1,060 | 2,180 | 66 |
| 19 | 172 | ------- | 8,700 | 1,150 | 638 | 515 | 168 | [a] 860 | 762 | 56 |
| 20 | 172 | ------- | 9,600 | 975 | 648 | 498 | 184 | [a] 660 | [a] 969 | 56 |
| 21 | 156 | ------- | 8,100 | 1,063 | 638 | 533 | 160 | 466 | 1,150 | 54 |
| 22 | 156 | ------- | 7,500 | [a] 982 | 606 | 569 | 131 | 350 | 825 | 54 |
| 23 | 188 | ------- | 5,230 | 900 | 578 | 606 | 145 | 306 | 1,760 | 48 |
| 24 | 196 | ------- | 3,730 | 975 | 533 | [a] 544 | 1,450 | 283 | 434 | 52 |
| 25 | 205 | ------- | 3,730 | 900 | 442 | 482 | 1,450 | [a] 256 | [a] 340 | 52 |
| 26 | 172 | ------- | 3,270 | 975 | [a] 492 | 648 | 325 | 228 | 251 | 50 |
| 27 | [a] 184 | ------- | 2,180 | 700 | 542 | 648 | 241 | 196 | [a] 346 | 46 |
| 28 | 196 | ------- | [a] 2,680 | [a] 762 | 738 | 515 | 168 | 196 | 442 | 35 |
| 29 | 156 | ------- | ------- | 825 | 1,450 | 434 | 125 | [a] 174 | 356 | 37 |
| 30 | 241 | ------- | ------- | 648 | 1,550 | 377 | 125 | [a] 152 | 223 | 40 |
| 31 | 2,180 | ------- | ------- | 596 | ------- | 648 | ------- | 131 | 214 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 2,180 | 135 | 301 | 18,500 |
| November 1–17 | 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 | 3,270 | 76 | 696 | 42,800 |
| September | 2,610 | 35 | 256 | 15,200 |

[a] Interpolated.

## 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, 1930.
EXTREMES.—Maximum discharge during year, 1,370 second-feet Aug. 11 (gage height, 5.78 feet); minimum, 39 second-feet July 10 (gage height, 0.56 foot). 1911–12, 1929–30: Maximum discharge, 1,610 second-feet June 2, 1929 (gage height, 6.42 feet); minimum, that of July 10, 1930.
REMARKS.—Records good. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 84 | 100 | ------- | 94 | 447 | 260 | 54 | 46 | 84 |
| 2 | 82 | 96 | ------- | 100 | 450 | 264 | 54 | 45 | 80 |
| 3 | 93 | 106 | ------- | 106 | 423 | 249 | 54 | 45 | 79 |
| 4 | 101 | 93 | ------- | 103 | 402 | 230 | 54 | 43 | 79 |
| 5 | 96 | 119 | ------- | 105 | 533 | 222 | 54 | 43 | 83 |
| 6 | 96 | 112 | ------- | 116 | 457 | 207 | 54 | 46 | 88 |
| 7 | 95 | 104 | ------- | 125 | 480 | 187 | 53 | 125 | 82 |
| 8 | 93 | 96 | ------- | 138 | 405 | 187 | 50 | 74 | 79 |
| 9 | 93 | 92 | ------- | 153 | 378 | 179 | 44 | 199 | 82 |
| 10 | 95 | 104 | ------- | 164 | 341 | 162 | 41 | 118 | 79 |
| 11 | 100 | 112 | ------- | 193 | 327 | 149 | 46 | 586 | 77 |
| 12 | 100 | 103 | ------- | 197 | 292 | 143 | 275 | 264 | 76 |
| 13 | 100 | 103 | ------- | 199 | 292 | 128 | 222 | 305 | 74 |
| 14 | 100 | 103 | ------- | 232 | 294 | 128 | 143 | 197 | 74 |
| 15 | 100 | 96 | ------- | 262 | 301 | 120 | 105 | 166 | 73 |
| 16 | 96 | ------- | ------- | 234 | 312 | 111 | 92 | 143 | 69 |
| 17 | 93 | ------- | ------- | 230 | 308 | 97 | 89 | 177 | 67 |
| 18 | 90 | ------- | ------- | 230 | 308 | 95 | 83 | 155 | 64 |
| 19 | 90 | ------- | ------- | 211 | 294 | 89 | 74 | 126 | 62 |
| 20 | 90 | ------- | ------- | 222 | 294 | 84 | 98 | 108 | 64 |
| 21 | 100 | ------- | ------- | 251 | 316 | 89 | 69 | 94 | 60 |
| 22 | 100 | ------- | ------- | 283 | 334 | 90 | 69 | 89 | 56 |
| 23 | 98 | ------- | 86 | 367 | 290 | 84 | 67 | 86 | 56 |
| 24 | 100 | ------- | 88 | 437 | 264 | 74 | 65 | 90 | 54 |
| 25 | 100 | ------- | 86 | 501 | 255 | 69 | 62 | 90 | 80 |
| 26 | 100 | ------- | 90 | 686 | 243 | 74 | 58 | 88 | 74 |
| 27 | 100 | ------- | 89 | 602 | 236 | 67 | 56 | 89 | 72 |
| 28 | 100 | ------- | 88 | 580 | 228 | 64 | 54 | 90 | 69 |
| 29 | 100 | ------- | 92 | 477 | 216 | 60 | 54 | 94 | 69 |
| 30 | 100 | ------- | 94 | 480 | 228 | 58 | 59 | 90 | 69 |
| 31 | 101 | ------- | 98 | ------- | 255 | ------- | 53 | 90 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 101 | 82 | 96.3 | 5,920 |
| November 1–15 | 119 | 92 | 103 | 3,060 |
| March 23–31 | 98 | 86 | 90.1 | 1,610 |
| April | 686 | 94 | 269 | 16,000 |
| May | 533 | 216 | 329 | 20,200 |
| June | 264 | 58 | 134 | 7,970 |
| July | 275 | 41 | 77.6 | 4,770 |
| August | 586 | 43 | 129 | 7,930 |
| September | 88 | 54 | 72.5 | 4,310 |

## 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, 1930.
EXTREMES.—Maximum discharge during year, 625 second-feet Aug. 11 (gage height, 3.17 feet); minimum, 12 second-feet July 10, 11, Sept. 22, 23.
1929–30: Maximum discharge, 754 second-feet May 25, 1929 (gage height, 3.57 feet); minimum, 12 second-feet Aug. 24, 1929, July 10, 11, Sept. 22, 23, 1930.
REMARKS.—Records good except those for periods Nov. 21–26, Mar. 1–5, which were estimated. Small diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 18 | 22 | | 37 | 137 | 76 | 20 | 17 | 21 |
| 2 | 19 | 21 | | 37 | 128 | 85 | 20 | 16 | 21 |
| 3 | 20 | 23 | 35 | 38 | 117 | 72 | 20 | 15 | 21 |
| 4 | 24 | 27 | | 40 | 107 | 69 | 20 | 15 | 23 |
| 5 | 27 | 32 | | 40 | 112 | 66 | 20 | 14 | 25 |
| 6 | 27 | 29 | 35 | 43 | 121 | 62 | 20 | 18 | 26 |
| 7 | 26 | 34 | 35 | 47 | 110 | 58 | 18 | 20 | 26 |
| 8 | 24 | 36 | 35 | 55 | 114 | 58 | 16 | 29 | 25 |
| 9 | 26 | 32 | 37 | 62 | 119 | 52 | 14 | 42 | 25 |
| 10 | 29 | 34 | 35 | 65 | 115 | 46 | 12 | 37 | 26 |
| 11 | 31 | 35 | 34 | 74 | 115 | 47 | 12 | 128 | 25 |
| 12 | 31 | 32 | 35 | 66 | 108 | 44 | 128 | 99 | 24 |
| 13 | 29 | 30 | 39 | 71 | 112 | 44 | 72 | 53 | 24 |
| 14 | 29 | 38 | 35 | 85 | 99 | 48 | 35 | 42 | 24 |
| 15 | 29 | 36 | 38 | 92 | 108 | 44 | 31 | 41 | 19 |
| 16 | 26 | 55 | 37 | 88 | 96 | 36 | 24 | 36 | 15 |
| 17 | 24 | 74 | 38 | 80 | 99 | 26 | 22 | 39 | 16 |
| 18 | 24 | 67 | 37 | 75 | 96 | 26 | 21 | 38 | 14 |
| 19 | 24 | 78 | 38 | 82 | 90 | 25 | 26 | 35 | 14 |
| 20 | 23 | 55 | 35 | 76 | 91 | 30 | 23 | 31 | 14 |
| 21 | 24 | | 38 | 91 | 96 | 38 | 18 | 30 | 14 |
| 22 | 24 | 38 | 39 | 107 | 91 | 31 | 20 | 30 | 12 |
| 23 | 24 | | 39 | 137 | 90 | 25 | 18 | 29 | 12 |
| 24 | 25 | 43 | 40 | 166 | 80 | 23 | 18 | 31 | 13 |
| 25 | 25 | 40 | 42 | 209 | 74 | 22 | 18 | 35 | 20 |
| 26 | 23 | 40 | 37 | 209 | 71 | 22 | 18 | 30 | 20 |
| 27 | 21 | 50 | 40 | 166 | 65 | 19 | 18 | 27 | 18 |
| 28 | 21 | 38 | 32 | 156 | 62 | 18 | 19 | 26 | 19 |
| 29 | 23 | 60 | 32 | 146 | 62 | 18 | 18 | 24 | 15 |
| 30 | 21 | 50 | 39 | 146 | 60 | 16 | 18 | 22 | 15 |
| 31 | 21 | ------- | 37 | ------- | 62 | ------- | 18 | 22 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 31 | 18 | 24.6 | 1,510 |
| November | 78 | 21 | 40.8 | 2,430 |
| March | 42 | 32 | 36.5 | 2,240 |
| April | 209 | 37 | 92.9 | 5,530 |
| May | 137 | 60 | 97.0 | 5,960 |
| June | 85 | 16 | 41.5 | 2,470 |
| July | 128 | 12 | 25.0 | 1,540 |
| August | 128 | 14 | 34.5 | 2,120 |
| September | 26 | 12 | 19.5 | 1,160 |

## 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, 1930.
EXTREMES.—Maximum discharge during year, 156 second-feet Apr. 24 (gage height, 2.04 feet); no flow Aug. 3, 4.
1911, 1929–30: Maximum discharge, 617 second-feet May 26, 1929 (gage height, 2.77 feet); minimum, that of Aug. 3, 4, 1930.
REMARKS.—Records good. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 29 | 31 | ------- | 32 | 48 | 42 | 3.4 | 1.1 | 19 |
| 2 | 29 | 32 | ------- | 33 | 46 | 39 | 3.4 | .5 | 19 |
| 3 | 29 | 32 | ------- | 34 | 45 | 39 | 3.4 | 0 | 18 |
| 4 | 30 | ------- | ------- | 30 | 50 | 40 | 3.2 | 0 | 19 |
| 5 | 30 | ------- | ------- | 33 | 52 | 38 | 3.0 | 1.6 | 20 |
| 6 | 29 | ------- | ------- | 30 | 60 | 36 | 2.7 | 2.8 | 20 |
| 7 | 31 | ------- | ------- | 30 | 65 | 33 | 2.6 | 1.1 | 19 |
| 8 | 32 | ------- | ------- | 30 | 55 | 29 | 2.5 | .9 | 18 |
| 9 | 29 | ------- | ------- | 30 | 42 | 27 | 2.4 | 81 | 18 |
| 10 | 30 | ------- | ------- | 30 | 45 | 25 | 2.4 | 60 | 18 |
| 11 | 30 | ------- | ------- | 30 | 42 | 22 | 2.3 | 32 | 20 |
| 12 | 29 | ------- | ------- | 37 | 41 | 19 | 6.8 | 13 | 16 |
| 13 | 26 | ------- | ------- | 50 | 40 | 18 | 23 | 24 | 16 |
| 14 | 26 | ------- | ------- | 72 | 39 | 14 | 14 | 33 | 15 |
| 15 | 27 | ------- | ------- | 61 | 41 | 13 | 11 | 33 | 14 |
| 16 | 25 | ------- | ------- | 58 | 48 | 12 | 8.8 | 36 | 15 |
| 17 | 27 | ------- | ------- | 70 | 43 | 11 | 8.0 | 36 | 16 |
| 18 | 25 | ------- | ------- | 60 | 41 | 10 | 8.4 | 36 | 15 |
| 19 | 26 | ------- | ------- | 62 | 43 | 10 | 8.4 | 31 | 15 |
| 20 | 26 | ------- | ------- | 41 | 50 | 9.6 | 4.4 | 30 | 13 |
| 21 | 26 | ------- | ------- | 45 | 49 | 9.2 | 3.5 | 25 | 12 |
| 22 | 26 | ------- | ------- | 41 | 55 | 8.8 | 3.5 | 23 | 11 |
| 23 | 26 | ------- | 49 | 96 | 48 | 11 | 3.4 | 23 | 10 |
| 24 | 27 | ------- | 50 | 114 | 44 | 13 | 3.4 | 16 | 11 |
| 25 | 27 | ------- | 33 | 88 | 43 | 8.8 | 2.4 | 22 | 14 |
| 26 | 28 | ------- | 37 | 88 | 41 | 5.6 | 1.5 | 22 | 15 |
| 27 | 29 | ------- | 55 | 74 | 43 | 3.4 | 1.2 | 21 | 15 |
| 28 | 29 | ------- | 50 | 68 | 41 | 3.4 | 1.0 | 18 | 15 |
| 29 | 30 | ------- | 34 | 58 | 48 | 3.5 | .9 | 18 | 14 |
| 30 | 32 | ------- | 32 | 52 | 45 | 3.4 | .6 | 19 | 14 |
| 31 | 32 | ------- | 30 | ------- | 44 | ------- | 1.0 | 19 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 32 | 25 | 28.3 | 1,740 |
| March 28–31 | 55 | ------- | 41.1 | 734 |
| April | 114 | 30 | 52.6 | 3,130 |
| May | 65 | 39 | 46.4 | 2,850 |
| June | 42 | 3.4 | 18.6 | 1,110 |
| July | 23 | .6 | 4.73 | 291 |
| August | 81 | 0 | 21.9 | 1,350 |
| September | 20 | 10 | 15.8 | 940 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 578 second-feet Mar. 19 (gage height, 2.65 feet); minimum, 0.2 second-foot July 7, 9, 10 (gage height, 0.82 foot).

1929–30: Maximum discharge, 2,640 second-feet June 2, 1929 (gage height, 5.36 feet); minimum, that of July 7, 9, 10, 1930.

REMARKS.—Records good except those for periods Nov. 18–30, May 29 to June 15, which were estimated. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 28 | 26 | -------- | 24 | 52 | 25 | 1.0 | 2.5 | 11 |
| 2 | 28 | 26 | -------- | 34 | 38 | 25 | .8 | 1.0 | 11 |
| 3 | 29 | 27 | -------- | 36 | 24 | 26 | .7 | .7 | 10 |
| 4 | 29 | 27 | -------- | 36 | 21 | 25 | .6 | .4 | 10 |
| 5 | 28 | 34 | -------- | 41 | 47 | 23 | .3 | .4 | 10 |
| 6 | 27 | 29 | -------- | 41 | 73 | 21 | .4 | .9 | 14 |
| 7 | 24 | 27 | -------- | 58 | 62 | 19 | .2 | 1.0 | 16 |
| 8 | 26 | 28 | -------- | 100 | 58 | 17 | .4 | 2.1 | 16 |
| 9 | 28 | 34 | -------- | 139 | 41 | 15 | .2 | 4.3 | 16 |
| 10 | 26 | 37 | -------- | 119 | 38 | 13 | .2 | 4.0 | 17 |
| 11 | 29 | 33 | -------- | 130 | 36 | 12 | 8.6 | 11 | 16 |
| 12 | 28 | 32 | -------- | 125 | 32 | 9 | 9.1 | 9.6 | 15 |
| 13 | 29 | 46 | -------- | 114 | 38 | 8 | 9.6 | 22 | 14 |
| 14 | 29 | 41 | 220 | 122 | 35 | 6 | 22 | 38 | 13 |
| 15 | 27 | 41 | 128 | 119 | 50 | 5 | 6.9 | 30 | 13 |
| 16 | 28 | 44 | 174 | 87 | 58 | 4.3 | 4.0 | 45 | 11 |
| 17 | 27 | 39 | 280 | 64 | 56 | 4.7 | 2.1 | 49 | 11 |
| 18 | 28 | | 95 | 47 | 36 | 3.6 | 1.4 | 67 | 9.1 |
| 19 | 25 | | 250 | 40 | 38 | 2.8 | 1.7 | 52 | 5.2 |
| 20 | 26 | | 100 | 38 | 38 | 1.7 | 2.5 | 24 | 2.5 |
| 21 | 26 | | 50 | 32 | 45 | 2.8 | 3.2 | 14 | 2.8 |
| 22 | 27 | | 41 | 32 | 50 | 4.7 | 1.0 | 12 | 7.4 |
| 23 | 23 | | 36 | 32 | 52 | 2.8 | .8 | 8 | 9.6 |
| 24 | 21 | 28 | 23 | 30 | 38 | 3.2 | .6 | 8 | 6.9 |
| 25 | 21 | | 36 | 64 | 35 | 3.6 | .7 | 8.6 | 10 |
| 26 | 24 | | 30 | 130 | 29 | 5.8 | .8 | 9.6 | 13 |
| 27 | 24 | | 34 | 80 | 26 | 1.7 | .7 | 8.6 | 14 |
| 28 | 23 | | 28 | 56 | 30 | 1.0 | 1.0 | 12 | 14 |
| 29 | 27 | | 38 | 43 | 29 | 1.0 | 2.1 | 14 | 15 |
| 30 | 26 | | 34 | 47 | 28 | .9 | 1.7 | 14 | 13 |
| 31 | 27 | -------- | 25 | -------- | 27 | -------- | 2.1 | 13 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 29 | 21 | 26.4 | 1,620 |
| November | 46 | 26 | 31.2 | 1,860 |
| March 14–31 | 280 | 23 | 90.1 | 3,220 |
| April | 139 | 24 | 68.7 | 4,090 |
| May | 73 | 21 | 40.6 | 2,500 |
| June | 26 | .9 | 9.79 | 583 |
| July | 22 | .2 | 2.82 | 173 |
| August | 67 | .4 | 15.7 | 965 |
| September | 17 | 2.5 | 11.6 | 690 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 2,160 second-feet Feb. 23; maximum gage height, 12.1 feet Feb. 21; no flow Aug. 31 to Sept. 30.

1911–1925, 1928–1930: Maximum discharge, 4,550 second-feet Apr. 6, 1912 (gage height, 15.3 feet); no flow at various times.

REMARKS.—Records good except those for periods of ice effect, Nov. 19–25, Feb. 14–22, which are fair. Some small diversions. Small storage in coulees.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 30 | 7.0 | -------- | 102 | 7.0 | 21 | 822 | 7.8 | 0.3 |
| 2 | 19 | 6.4 | -------- | 101 | 8.6 | 19 | 1,110 | 5.7 | .3 |
| 3 | 24 | 12 | -------- | 67 | 9.4 | 13 | 1,250 | 3.8 | .3 |
| 4 | 618 | 7.0 | -------- | 55 | 7.0 | 12 | 850 | 1.3 | .2 |
| 5 | 424 | 6.4 | -------- | 43 | 7.8 | 8.6 | 186 | 4.5 | .3 |
| 6 | 144 | 2.6 | -------- | 38 | 10 | 26 | 80 | 1.3 | .3 |
| 7 | 58 | 2.0 | -------- | 32 | 21 | 40 | 53 | .7 | .3 |
| 8 | 36 | 2.6 | -------- | 29 | 23 | 77 | 35 | .7 | .3 |
| 9 | 20 | 3.2 | -------- | 34 | 21 | 38 | 25 | .6 | .3 |
| 10 | 54 | 3.2 | -------- | 48 | 18 | 27 | 18 | .6 | 2.6 |
| 11 | 134 | 2.6 | -------- | 52 | 17 | 20 | 14 | .6 | 8.6 |
| 12 | 78 | 3.2 | -------- | 76 | 13 | 17 | 14 | .6 | 7.8 |
| 13 | 42 | 1.3 | -------- | 84 | 11 | 13 | 7.8 | 2.0 | 10 |
| 14 | 23 | 1.3 | 154 | 248 | 10 | 10 | 6.4 | 2.6 | 3.8 |
| 15 | 13 | 2.6 | 144 | 175 | 8.6 | 6.4 | 4.5 | 27 | .4 |
| 16 | 9.4 | 3.8 | 175 | 96 | 7.8 | 5.1 | 3.2 | 36 | .6 |
| 17 | 5.7 | 8.6 | 209 | 93 | 6.4 | 4.5 | 2.0 | 20 | .7 |
| 18 | 4.5 | 2.6 | 305 | 108 | 6.4 | 3.2 | 1.3 | 11 | .6 |
| 19 | .7 | 2.0 | 618 | 77 | 4.5 | 3.8 | .7 | 12 | .5 |
| 20 | .7 | 1.3 | 1,310 | 48 | 5.1 | 3.2 | 1.3 | 7.8 | .4 |
| 21 | .5 | .7 | 1,740 | 37 | 5.7 | 3.2 | 2.6 | 5.7 | .4 |
| 22 | .4 | .6 | 1,770 | 33 | 5.7 | 2.0 | 1.3 | 4.5 | .5 |
| 23 | .5 | .7 | 1,830 | 29 | 3.8 | 2.0 | 1.3 | 3.2 | .5 |
| 24 | .5 | 1.3 | 794 | 33 | 3.8 | 2.0 | 2.6 | 2.0 | .2 |
| 25 | .5 | 2.0 | 276 | 37 | 4.5 | .7 | 2.6 | .7 | .2 |
| 26 | .5 | 2.6 | 262 | 31 | 9.4 | .7 | 2.0 | .6 | .3 |
| 27 | .5 | 3.8 | 164 | 33 | 15 | .7 | 4.5 | .5 | .3 |
| 28 | .5 | 3.2 | 134 | 24 | 17 | .7 | 17 | .4 | .2 |
| 29 | .5 | 2.0 | -------- | 20 | 10 | .6 | 20 | .4 | .1 |
| 30 | .6 | 2.0 | -------- | 15 | 20 | .6 | 13 | .5 | .1 |
| 31 | .6 | -------- | -------- | 14 | -------- | .5 | -------- | .3 | 0 |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 618 | 0.4 | 56.2 | 3,460 |
| November | 12 | .6 | 3.35 | 199 |
| February 14–28 | 1,830 | 134 | 659 | 19,600 |
| March | 248 | 14 | 61.8 | 3,800 |
| April | 23 | 3.8 | 10.6 | 631 |
| May | 77 | .5 | 10.3 | 633 |
| June | 1,250 | .7 | 152 | 9,040 |
| July | 36 | .3 | 5.33 | 328 |
| August | 10 | 0 | 1.34 | 82 |

NOTE.—No flow during October.

### 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, 1930.

EXTREMES.—Maximum discharge during year, 3,560 second-feet Sept. 13; maximum gage height, 8.08 feet Feb. 24; minimum, 10 second-feet Aug. 11–15 (gage height, 1.60 feet).

1903–1908, 1921–1924, 1928–1930: 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 good. Small diversions for irrigation from tributaries on headwaters.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 82 | 60 | ------- | 305 | 166 | 346 | 674 | 25 | 90 |
| 2 | 72 | 68 | ------- | 288 | 160 | 391 | 610 | 22 | 68 |
| 3 | 218 | 58 | ------- | 251 | 98 | 1,950 | 466 | 18 | 62 |
| 4 | 234 | 73 | ------- | 203 | 98 | 2,760 | 416 | 18 | 58 |
| 5 | 188 | 54 | ------- | 234 | 98 | 3,320 | 368 | 16 | 52 |
| 6 | 166 | 42 | ------- | 218 | 111 | 2,440 | 305 | 56 | 44 |
| 7 | 140 | 56 | ------- | 188 | 124 | 2,040 | 234 | 39 | 44 |
| 8 | 113 | 56 | ------- | 174 | 124 | 1,760 | 174 | 16 | 82 |
| 9 | 104 | 68 | 1,660 | 174 | 115 | 1,300 | 147 | 14 | 115 |
| 10 | 466 | 56 | 2,040 | 158 | 111 | 1,570 | 122 | 12 | 174 |
| 11 | 580 | 47 | 1,660 | 147 | 104 | 1,390 | 109 | 10 | 391 |
| 12 | 100 | 36 | 1,660 | 142 | 234 | 1,480 | 100 | 10 | 708 |
| 13 | 466 | 42 | 1,760 | 137 | 268 | 1,570 | 88 | 10 | 3,560 |
| 14 | 326 | 50 | 1,570 | 152 | 346 | 1,950 | 84 | 10 | 2,040 |
| 15 | 251 | 62 | 1,660 | 147 | 326 | 1,570 | 73 | 10 | 326 |
| 16 | 218 | 72 | 1,660 | 493 | 346 | 550 | 60 | 13 | 218 |
| 17 | 234 | 42 | 1,300 | 268 | 326 | 466 | 57 | 16 | 166 |
| 18 | 188 | 39 | 1,220 | 203 | 188 | 346 | 66 | 368 | 134 |
| 19 | 218 | 42 | 1,050 | 188 | 166 | 305 | 57 | 416 | 115 |
| 20 | 218 | ------- | 1,050 | 163 | 158 | 286 | 48 | 305 | 98 |
| 21 | 174 | ------- | 814 | 150 | 137 | 368 | 44 | 286 | 72 |
| 22 | 158 | ------- | 890 | 134 | 122 | 346 | 38 | 218 | 62 |
| 23 | 134 | ------- | 852 | 134 | 109 | 1,390 | 32 | 188 | 56 |
| 24 | 120 | ------- | 890 | 98 | 88 | 610 | 29 | 188 | 50 |
| 25 | 109 | ------- | 778 | 90 | 92 | 1,660 | 28 | 171 | 46 |
| 26 | 113 | ------- | 493 | 90 | 75 | 1,860 | 28 | 150 | 42 |
| 27 | 82 | ------- | 368 | 90 | 63 | 1,390 | 28 | 73 | 39 |
| 28 | 56 | ------- | 391 | 90 | 60 | 1,480 | 25 | 58 | 36 |
| 29 | 78 | ------- | 440 | 90 | 51 | 1,300 | 25 | 39 | 33 |
| 30 | 73 | ------- | 391 | 90 | 51 | 1,130 | 25 | 33 | 32 |
| 31 | 60 | ------- | 305 | ------- | 51 | ------- | 25 | 75 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 580 | 60 | 185 | 11,400 |
| November 1–19 | 73 | 36 | 53.8 | 2,030 |
| March 9–31 | 2,040 | 305 | 1,080 | 49,300 |
| April | 493 | 90 | 176 | 10,500 |
| May | 346 | 51 | 147 | 9,040 |
| June | 3,320 | 286 | 1,310 | 78,000 |
| July | 674 | 25 | 148 | 9,100 |
| August | 416 | 10 | 93.0 | 5,720 |
| September | 3,560 | 32 | 300 | 17,900 |

## 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, 1930.
EXTREMES.—Maximum discharge during year, 3,070 second-feet Feb. 21 (gage height, 23.2 feet); minimum, 5.6 second-feet Oct. 1.
1928–1930: Maximum discharge, that of Feb. 21, 1930; minimum, 1.2 second-feet Aug. 27, 1929.
REMARKS.—Records fair for periods Oct. 1 to Nov. 9, Feb. 21 to Mar. 15, June 13 to Sept. 30; other records good. Discharge interpolated Feb. 22–24.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.6 | 13 | ------- | 620 | 255 | 78 | 29 | 56 | 8.4 | 34 |
| 2 | 5.9 | 13 | ------- | 620 | 255 | 69 | 26 | 51 | 13 | 35 |
| 3 | 5.9 | 13 | ------- | 535 | 285 | 69 | 26 | 36 | 14 | 36 |
| 4 | 6.2 | 12 | ------- | 440 | 275 | 69 | 25 | 35 | 15 | 39 |
| 5 | 7.7 | 11 | ------- | 385 | 295 | 87 | 87 | 33 | 15 | 42 |
| 6 | 11 | 10 | ------- | 375 | 285 | 165 | 105 | 25 | 15 | 39 |
| 7 | 12 | 9.6 | ------- | 345 | 285 | 105 | 165 | 24 | 17 | 36 |
| 8 | 12 | 8.8 | ------- | 305 | 265 | 78 | 185 | 24 | 17 | 42 |
| 9 | 11 | 8.0 | ------- | 305 | 255 | 78 | 165 | 23 | 17 | 47 |
| 10 | 15 | ------- | ------- | 315 | 195 | 69 | 165 | 21 | 18 | 47 |
| 11 | 12 | ------- | ------- | 325 | 185 | 69 | 265 | 20 | 19 | 51 |
| 12 | 11 | ------- | ------- | 785 | 165 | 92 | 145 | 18 | 19 | 60 |
| 13 | 11 | ------- | ------- | 1,120 | 165 | 96 | 1,870 | 18 | 20 | 74 |
| 14 | 12 | ------- | ------- | 1,200 | 175 | 120 | 1,020 | 16 | 21 | 69 |
| 15 | 12 | ------- | ------- | 1,440 | 185 | 125 | 462 | 12 | 21 | 64 |
| 16 | 11 | ------- | ------- | 2,740 | 205 | 135 | 305 | 16 | 23 | 64 |
| 17 | 8.4 | ------- | ------- | 2,690 | 205 | 145 | 275 | 13 | 21 | 64 |
| 18 | 8.4 | ------- | ------- | 2,350 | 255 | 135 | 125 | 9.6 | 20 | 60 |
| 19 | 9.2 | ------- | ------- | 1,460 | 335 | 105 | 105 | 7.4 | 21 | 56 |
| 20 | 10 | ------- | ------- | 1,420 | 305 | 78 | 82 | 9.6 | 21 | 56 |
| 21 | 7.7 | ------- | 3,070 | 1,460 | 265 | 74 | 78 | 8.0 | 23 | 48 |
| 22 | 7.7 | ------- | 2,700 | 1,330 | 205 | 60 | 135 | 7.4 | 24 | 56 |
| 23 | 8.4 | ------- | 2,350 | 1,510 | 135 | 56 | 396 | 6.2 | 26 | 64 |
| 24 | 9.2 | ------- | 2,000 | 1,960 | 115 | 44 | 215 | 13 | 26 | 74 |
| 25 | 11 | ------- | 1,670 | 1,590 | 105 | 43 | 315 | 12 | 26 | 87 |
| 26 | 9.2 | ------- | 1,840 | 1,170 | 92 | 41 | 265 | 8 | 26 | 87 |
| 27 | 10 | ------- | 653 | 815 | 87 | 36 | 155 | 12 | 27 | 87 |
| 28 | 9.2 | ------- | 635 | 548 | 87 | 35 | 110 | 10 | 27 | 87 |
| 29 | 9.2 | ------- | ------- | 429 | 87 | 33 | 87 | 8.8 | 28 | 87 |
| 30 | 12 | ------- | ------- | 345 | 78 | 30 | 82 | 8.8 | 28 | 87 |
| 31 | 20 | ------- | ------- | 355 | ------- | 29 | ------- | 7.4 | 33 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 20 | 5.6 | 10.0 | 615 |
| November 1-9 | 13 | 8.0 | 10.9 | 195 |
| February | 3,070 | 635 | 1,860 | 29,500 |
| March | 2,740 | 305 | 1,010 | 62,100 |
| April | 335 | 78 | 203 | 12,100 |
| May | 165 | 29 | 79.0 | 4,860 |
| June | 1,870 | 25 | 249 | 14,800 |
| July | 56 | 6.2 | 18.4 | 1,130 |
| August | 33 | 8.4 | 20.9 | 1,290 |
| September | 87 | 34 | 59.3 | 3,530 |

## 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 mile west of Sunny.

DRAINAGE AREA.—3,320 square miles.

RECORDS AVAILABLE.—April to September, 1924; March, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 3,300 second-feet Mar. 24; maximum gage height, 20.36 feet Mar. 18, 1930; minimum discharge, 2 second-feet Aug. 17, 18 (gage height, 3.98 feet).

1924, 1928–1930: Maximum discharge, that of Mar. 24, 1930; no flow Aug. 20, 1929.

REMARKS.—Records fair. No diversions.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | 16 | ------- | 578 | 133 | 55 | 209 | 17 | 7 |
| 2 | 4 | 14 | ------- | 578 | 129 | 55 | 198 | 17 | 7 |
| 3 | 5 | 16 | ------- | 578 | 129 | 55 | 177 | 17 | 7 |
| 4 | 7 | 16 | ------- | 662 | 137 | 54 | 157 | 16 | 8 |
| 5 | 7 | 14 | ------- | 750 | 133 | 52 | 126 | 16 | 7 |
| 6 | 5 | 14 | ------- | 890 | 137 | 52 | 111 | 15 | 8 |
| 7 | 4 | 14 | ------- | 750 | 147 | 52 | 98 | 15 | 10 |
| 8 | 3 | 12 | ------- | 662 | 147 | 55 | 94 | 14 | 11 |
| 9 | 5 | 14 | ------- | 578 | 147 | 81 | 81 | 13 | 12 |
| 10 | 9 | 18 | ------- | 458 | 147 | 84 | 78 | 12 | 12 |
| 11 | 12 | 18 | ------- | 384 | 147 | 94 | 52 | 10 | 15 |
| 12 | 9 | 16 | ------- | 351 | 177 | 2,540 | 45 | 9 | 16 |
| 13 | 8 | 16 | ------- | 321 | 177 | 1,200 | 41 | 7 | 17 |
| 14 | 7 | 14 | ------- | 293 | 188 | 2,600 | 37 | 7 | 18 |
| 15 | 7 | 14 | ------- | 293 | 198 | 1,250 | 33 | 4 | 19 |
| 16 | 6 | 14 | ------- | 336 | 177 | 478 | 31 | 3 | 19 |
| 17 | 6 | 16 | ------- | 662 | 147 | 336 | 30 | 2 | 16 |
| 18 | 6 | 16 | ------- | 742 | 137 | 243 | 26 | 2 | 19 |
| 19 | 5 | 14 | ------- | 990 | 129 | 209 | 26 | 6 | 12 |
| 20 | 5 | 14 | ------- | 402 | 118 | 177 | 35 | 7 | 11 |
| 21 | 8 | ------- | 2,480 | 351 | 111 | 157 | 31 | 14 | 10 |
| 22 | 8 | ------- | 2,410 | 321 | 100 | 137 | 28 | 13 | 10 |
| 23 | 9 | ------- | 2,290 | 293 | 90 | 122 | 25 | 13 | 10 |
| 24 | 10 | ------- | 3,240 | 267 | 90 | 578 | 22 | 10 | 10 |
| 25 | 10 | ------- | 1,990 | 198 | 90 | 458 | 20 | 8 | 9 |
| 26 | 10 | ------- | 1,690 | 209 | 84 | 420 | 19 | 7 | 9 |
| 27 | 10 | ------- | 1,360 | 209 | 81 | 402 | 19 | 6 | 8 |
| 28 | 9 | ------- | 1,200 | 188 | 78 | 368 | 19 | 5 | 8 |
| 29 | 10 | ------- | 1,090 | 167 | 76 | 351 | 18 | 7 | 7 |
| 30 | 14 | ------- | 750 | 137 | 67 | 293 | 18 | 7 | 7 |
| 31 | 14 | ------- | 662 | ------- | 62 | ------- | 17 | 7 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| November | 14 | 3 | 7.61 | 468 |
| December 1–20 | 18 | 12 | 15.0 | 595 |
| March 21–31 | 3,240 | 662 | 1,740 | 38,000 |
| April | 990 | 137 | 453 | 27,000 |
| May | 198 | 62 | 126 | 7,750 |
| June | 2,540 | 52 | 434 | 25,800 |
| July | 209 | 17 | 62.0 | 3,810 |
| August | 17 | 2 | 9.87 | 607 |
| September | 19 | 7 | 11.3 | 672 |

## 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 Dog Tooth 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, 1930.

EXTREMES.—Maximum discharge during year, 3,220 second-feet Mar. 18; maximum gage height, 12.7 feet Feb. 20; no flow Aug. 11–19 (gage height, 2.19 to 2.20 feet).

1903–1908, 1911–1918, 1921–22, 1923–24, 1928–1930: Maximum discharge, 6,520 second-feet Mar. 18, 1929; maximum gage height, that of Feb. 20, 1930; no flow during periods in 1904–1908, 1913, 1929, 1930.

REMARKS.—Records good except those for periods of ice effect, Feb. 21–25, Mar. 16–20, which are fair. No diversions.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.7 | 10 | | | 262 | 62 | 23 | 121 | 0.8 | 0.2 |
| 2 | 3.5 | 11.1 | | | 247 | 70 | 21 | 102 | .7 | .3 |
| 3 | 2.7 | 12.3 | | | 262 | 65 | 20 | 169 | .4 | .3 |
| 4 | 1.9 | 28 | | | 247 | 59 | 18 | 82 | .3 | .4 |
| 5 | 1.5 | 17.5 | | | 219 | 56 | 17 | 56 | .2 | .5 |
| 6 | 1.3 | 17.5 | | | 219 | 146 | 15 | 45 | .4 | .6 |
| 7 | 1.3 | 12.3 | | | 219 | 193 | 14 | 35 | .3 | .5 |
| 8 | 6.5 | 10 | | | 193 | 219 | 13 | 27 | .2 | .7 |
| 9 | 3.5 | 8.8 | | | 193 | 233 | 12 | 23 | .1 | .6 |
| 10 | 53 | 7.7 | | | 169 | 125 | 11 | 20 | .1 | .5 |
| 11 | 256 | 7.7 | | | 169 | 91 | 10 | 15 | 0 | 25 |
| 12 | 108 | 7.7 | | | 181 | 398 | 21 | 13 | 0 | 27 |
| 13 | 30 | 7.7 | | | 146 | 530 | 14 | 10 | 0 | 29 |
| 14 | 21 | 8.8 | | | 181 | 247 | 12 | 6.8 | 0 | 9.2 |
| 15 | 12 | 11.1 | | | 219 | 169 | 13 | 14 | 0 | 6.0 |
| 16 | 6.5 | 6.5 | | 2,060 | 310 | 125 | 12 | 12 | 0 | 2.5 |
| 17 | 5.9 | | | 2,620 | 949 | 105 | 219 | 10 | 0 | 2.3 |
| 18 | 4.7 | | | 3,220 | 453 | 91 | 121 | 8.4 | 0 | 1.8 |
| 19 | 3.5 | | | 2,330 | 310 | 73 | 105 | 6.8 | 0 | 1.1 |
| 20 | 3.5 | | | 1,490 | 277 | 62 | 98 | 6.0 | .2 | .9 |
| 21 | 3.5 | | 1,560 | 1,350 | 247 | 56 | 219 | 4.6 | .7 | .8 |
| 22 | 3.1 | | 1,280 | 1,350 | 169 | 45 | 572 | 3.2 | .7 | .6 |
| 23 | 3.1 | | 770 | 1,220 | 125 | 45 | 105 | 2.5 | .6 | .5 |
| 24 | 3.5 | | 887 | 949 | 109 | 40 | 88 | 2.0 | .6 | .6 |
| 25 | 3.1 | | 136 | 716 | 95 | 38 | 73 | 1.5 | .6 | .6 |
| 26 | 3.5 | | | 617 | 88 | 35 | 59 | 1.5 | .7 | .5 |
| 27 | 4.1 | | | 491 | 82 | 33 | 48 | 1.2 | .8 | .5 |
| 28 | 5.3 | | | 434 | 76 | 31 | 40 | 1.1 | .6 | .5 |
| 29 | 5.9 | | | 398 | 70 | 29 | 33 | 1.1 | .5 | .5 |
| 30 | 6.5 | | | 328 | 67 | 27 | 125 | .9 | .3 | .7 |
| 31 | 8.8 | | | 434 | | 25 | | .9 | .2 | |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 256 | 1.3 | 18.8 | 1,160 |
| November 1–16 | 28 | 6.5 | 11.5 | 365 |
| February 21–25 | 1,560 | 136 | 927 | 9,190 |
| March 16–31 | 3,220 | 328 | 1,250 | 39,700 |
| April | 949 | 67 | 218 | 13,000 |
| May | 530 | 25 | 114 | 7,010 |
| June | 572 | 10 | 71.7 | 4,270 |
| July | 169 | .9 | 25.9 | 1,590 |
| August | .8 | 0 | .32 | 20 |
| September | 29 | .2 | 3.84 | 228 |

## 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, 1930. From September, 1911, to March, 1918, at site a few miles upstream.

EXTREMES.—Maximum discharge during year, 2,260 second-feet May 8 (gage height, 6.8 feet); minimum, 1 second-foot for several days in August.

1911–1918, 1928–1930: Maximum discharge, 7,130 second-feet June 17, 19, 1915; no flow Sept. 13, 1929.

REMARKS.—Records fair except those for periods Nov. 22–30, Mar. 1–23, which were estimated because of ice. No diversions or regulation.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 106 | 50 | | 241 | 167 | 56 | 211 | 6 | 52 |
| 2 | 101 | 47 | | 231 | 148 | 51 | 165 | 5 | 48 |
| 3 | 100 | 46 | 100 | 217 | 130 | 70 | 120 | 5 | 44 |
| 4 | 102 | 55 | | 209 | 132 | 132 | 101 | 4 | 36 |
| 5 | 87 | 63 | | 197 | 130 | 105 | 93 | 6 | 34 |
| 6 | 106 | 67 | | 185 | 154 | 77 | 79 | 6 | 38 |
| 7 | 102 | 77 | | 180 | 205 | 73 | 69 | 5 | 43 |
| 8 | 94 | 79 | 200 | 172 | 1,700 | 69 | 58 | 5 | 38 |
| 9 | 92 | 78 | | 162 | 1,010 | 64 | 55 | 4 | 32 |
| 10 | 98 | 62 | | 154 | 1,020 | 62 | 47 | 4 | 30 |
| 11 | 106 | 50 | | 148 | 950 | 63 | 38 | 2 | 25 |
| 12 | 116 | 67 | | 137 | 760 | 72 | 34 | 2 | 24 |
| 13 | 114 | 33 | 400 | 137 | 458 | 71 | 33 | 2 | 23 |
| 14 | 103 | 40 | | 140 | 760 | 63 | 38 | 1 | 23 |
| 15 | 88 | 46 | | 143 | 490 | 60 | 25 | 1 | 19 |
| 16 | 79 | 44 | | 448 | 480 | 55 | 24 | 1 | 18 |
| 17 | 73 | 42 | | 696 | 905 | 44 | 23 | 1 | 17 |
| 18 | 69 | 40 | 600 | 1,390 | 810 | 40 | 21 | 1 | 16 |
| 19 | 64 | 38 | | 660 | 490 | 38 | 20 | 2 | 15 |
| 20 | 60 | 34 | | 600 | 291 | 38 | 18 | 15 | 13 |
| 21 | 58 | 32 | 1,200 | 970 | 181 | 37 | 17 | 23 | 13 |
| 22 | 62 | | 1,600 | 790 | 151 | 35 | 14 | 45 | 11 |
| 23 | 60 | | 1,500 | 494 | 148 | 34 | 12 | 243 | 10 |
| 24 | 56 | | 1,450 | 303 | 145 | 37 | 11 | 652 | 9 |
| 25 | 54 | | 810 | 221 | 138 | 580 | 10 | 497 | 8 |
| 26 | 52 | 30 | 604 | 195 | 130 | 1,170 | 10 | 157 | 6 |
| 27 | 50 | | 424 | 193 | 109 | 660 | 9 | 106 | 6 |
| 28 | 48 | | 333 | 193 | 100 | 560 | 9 | 79 | 10 |
| 29 | 46 | | 300 | 193 | 87 | 390 | 8 | 63 | 10 |
| 30 | 44 | | 276 | 193 | 80 | 288 | 8 | 59 | 13 |
| 31 | 47 | ------- | 258 | ------- | 66 | ------- | 7 | 56 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 116 | 44 | 78.6 | 4,830 |
| November | 79 | ------- | 45.3 | 2,700 |
| March | 1,600 | ------- | 492 | 30,300 |
| April | 1,390 | 137 | 340 | 20,200 |
| May | 1,700 | 66 | 404 | 24,800 |
| June | 1,170 | 34 | 170 | 10,100 |
| July | 211 | 7 | 44.7 | 2,750 |
| August | 652 | 1 | 66.4 | 4,080 |
| September | 52 | 6 | 22.8 | 1,360 |

## MOREAU RIVER BASIN

### MOREAU RIVER AT PROMISE, S. DAK.

LOCATION.—Chain gage in sec. 17, T. 16 N., R. 29 E., three-fourths mile north of Promise and half a mile below Virgin Creek.

DRAINAGE AREA.—5,220 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 5,180 second-feet June 24 (gage height, 9.06 feet); no flow during parts of July, August, September.

1928–1930: Maximum discharge, 13,400 second-feet Sept. 17, 1928 (gage height, 14.6 feet); no flow during parts of August, September, October, 1929, and July, August, September, 1930.

REMARKS.—Records fair. No diversions or regulation.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 29 | ------- | 175 | 60 | 18 | 183 | 0 | 0 |
| 2 | 0 | 29 | ------- | 140 | 33 | 16 | 108 | 0 | 0 |
| 3 | 198 | 29 | ------- | 114 | 26 | 14 | 76 | 0 | 0 |
| 4 | 168 | 27 | ------- | 103 | 22 | 12 | 61 | 0 | 0 |
| 5 | 112 | 26 | ------- | 92 | 22 | 12 | 50 | 0 | 0 |
| 6 | 95 | 28 | ------- | 86 | 40 | 10 | 37 | 0 | 0 |
| 7 | 65 | 27 | ------- | 74 | 41 | 9 | 24 | 0 | 0 |
| 8 | 431 | 26 | ------- | 70 | 43 | 9 | 22 | 0 | 0 |
| 9 | 905 | 27 | ------- | 64 | 1,330 | 8 | 15 | 0 | 0 |
| 10 | 572 | 29 | ------- | 59 | 728 | 7 | 11 | 0 | 8 |
| 11 | 398 | 32 | ------- | 69 | 500 | 7 | 7 | 0 | 7 |
| 12 | 235 | 37 | ------- | 65 | 950 | 10 | 6 | 0 | 5 |
| 13 | 152 | 38 | ------- | 60 | 832 | 13 | 4 | 0 | 4 |
| 14 | 109 | 29 | ------- | 61 | 416 | 16 | 4 | 0 | 3 |
| 15 | 85 | 28 | ------- | 60 | 820 | 13 | 2 | 0 | 2 |
| 16 | 70 | 26 | ------- | 80 | 792 | 11 | 2 | 0 | 0 |
| 17 | 67 | 27 | ------- | 104 | 700 | 10 | 2 | 0 | 0 |
| 18 | 60 | 29 | ------- | 748 | 462 | 97 | 2 | 0 | 0 |
| 19 | 47 | 29 | ------- | 1,410 | 312 | 76 | 2 | 0 | 0 |
| 20 | 41 | 27 | 699 | 864 | 229 | 53 | 2 | 0 | 0 |
| 21 | 40 | 24 | 770 | 595 | 157 | 39 | 2 | 6 | 0 |
| 22 | 37 | 24 | 1,000 | 369 | 118 | 31 | 2 | 27 | 0 |
| 23 | 34 | 24 | 920 | 226 | 92 | 1,290 | 2 | 10 | 0 |
| 24 | 32 | 23 | 830 | 134 | 71 | 4,890 | 1 | 18 | 0 |
| 25 | 31 | 24 | 700 | 115 | 59 | 1,930 | 0 | 8 | 0 |
| 26 | 29 | 22 | 630 | 92 | 47 | 1,460 | 0 | 2 | 0 |
| 27 | 28 | 24 | 530 | 68 | 37 | 972 | 0 | 4 | 0 |
| 28 | 29 | 24 | 480 | 49 | 32 | 625 | 0 | 11 | 0 |
| 29 | 29 | 24 | 440 | 50 | 29 | 394 | 0 | 4 | 0 |
| 30 | 28 | 22 | 425 | 45 | 25 | 254 | 0 | 2 | 0 |
| 31 | 28 | ------- | 413 | ------- | 22 | ------- | 0 | 1 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 905 | 0 | 134 | 8,240 |
| November | 38 | 22 | 27.1 | 1,610 |
| March 20–31 | 1,000 | 413 | 653 | 15,500 |
| April | 1,410 | 45 | 208 | 12,400 |
| May | 1,330 | 22 | 292 | 18,000 |
| June | 4,890 | 7 | 410 | 24,400 |
| July | 183 | 0 | 20.2 | 1,240 |
| August | 27 | 0 | 3.0 | 184 |
| September | 8 | 0 | .97 | 58 |

## 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 3,416.2 feet above sea level.

DRAINAGE AREA.—6,050 square miles.

RECORDS AVAILABLE.—June, 1903, to November, 1906; April, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 3,560 second-feet Aug. 18 (gage height, 5.0 feet); minimum, 1 second-foot for several days in July and August.

1903–1906, 1928–1930: Maximum discharge, 10,500 second-feet June 3, 1929 (gage height, 7.86 feet); no flow Jan. 5, 1929.

Maximum stage known, 12.0 feet about May 1, 1922.

REMARKS.—Records good except those for periods Nov. 21 to Feb. 20, Mar. 1–10, which were estimated because of ice. Minor diversions above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 158 | 29 | | | 30 | 67 | 62 | 1,450 | 10 | 42 | 80 |
| 2 | 102 | 29 | | | 30 | 71 | 50 | 950 | 8 | 18 | 54 |
| 3 | 87 | 25 | | 25 | 30 | 67 | 43 | 681 | 7 | 7 | 43 |
| 4 | 67 | 21 | | | 40 | 71 | 48 | 330 | 7 | 4 | 37 |
| 5 | 56 | 28 | | | 50 | 71 | 43 | 134 | 8 | 3 | 33 |
| 6 | 50 | 25 | | | 60 | 76 | 114 | 91 | 6 | 2 | 31 |
| 7 | 39 | 19 | | | 70 | 69 | 528 | 91 | 5 | 1 | 28 |
| 8 | 38 | 16 | | 50 | 80 | 60 | 411 | 87 | 5 | 3 | 27 |
| 9 | 36 | 15 | | | 100 | 76 | 262 | 2,550 | 5 | 2 | 1,190 |
| 10 | 33 | 16 | | | 120 | 76 | 189 | 510 | 5 | 23 | 790 |
| 11 | 29 | 23 | | | 158 | 78 | 158 | 627 | 4 | 8 | 645 |
| 12 | 28 | 21 | | | 217 | 73 | 110 | 110 | 3 | 98 | 196 |
| 13 | 28 | 15 | 10 | 40 | 231 | 84 | 87 | 49 | 25 | 129 | 84 |
| 14 | 29 | 16 | | | 270 | 110 | 78 | 32 | 95 | 375 | 58 |
| 15 | 35 | 20 | | | 279 | 98 | 67 | 27 | 28 | 610 | 49 |
| 16 | 32 | 26 | | | 217 | 87 | 60 | 20 | 16 | 2,700 | 43 |
| 17 | 32 | 20 | | | 196 | 73 | 56 | 16 | 6 | 1,670 | 33 |
| 18 | 31 | 15 | | 350 | 134 | 69 | 91 | 14 | 4 | 2,870 | 30 |
| 19 | 30 | 18 | | | 106 | 60 | 71 | 12 | 4 | 1,780 | 27 |
| 20 | 29 | 10 | | 2,300 | 123 | 60 | 60 | 12 | 3 | 510 | 23 |
| 21 | 30 | | | 1,490 | 87 | 56 | 50 | 10 | 2 | 91 | 22 |
| 22 | 29 | | | 1,230 | 87 | 43 | 41 | 31 | 2 | 33 | 22 |
| 23 | 28 | 8 | | 990 | 91 | 35 | 38 | 44 | 2 | 454 | 24 |
| 24 | 29 | | | 609 | 80 | 33 | 36 | 29 | 1 | 2,340 | 20 |
| 25 | 29 | | | 348 | 91 | 39 | 31 | 25 | 1 | 411 | 28 |
| 26 | 26 | | | 348 | 52 | 37 | 31 | 21 | 1 | 76 | 41 |
| 27 | 26 | | | 71 | 60 | 41 | 29 | 18 | 1 | 46 | 44 |
| 28 | 29 | 10 | | 33 | 58 | 42 | 26 | 15 | 1 | 1,480 | 231 |
| 29 | 33 | | | | 54 | 55 | 25 | 12 | 1 | 2,270 | 95 |
| 30 | 32 | | | | 76 | 54 | 46 | 12 | 4 | 681 | 62 |
| 31 | 31 | | | | 73 | | 42 | | 6 | 203 | |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 158 | 26 | 41.6 | 2,560 |
| November | 29 | | 16.6 | 988 |
| December | | | 12 | 738 |
| January | | | 10 | 615 |
| February | 2,300 | | 336 | 18,700 |
| March | 279 | 30 | 108 | 6,640 |
| April | 110 | 33 | 64.4 | 3,830 |
| May | 528 | 25 | 96.2 | 5,920 |
| June | 2,550 | 10 | 267 | 15,900 |
| July | 95 | 1 | 8.9 | 547 |
| August | 2,870 | 1 | 611 | 37,600 |
| September | 1,190 | 20 | 136 | 8,090 |
| The year | 2,870 | | 141 | 102,000 |

## 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 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, 1930.

EXTREMES.—Maximum discharge during year, 4,820 second-feet Feb. 21 (gage height, about 5.5 feet); minimum, 16 second-feet July 14.

1914–15, 1928–1930: Maximum discharge, 34,200 second-feet June 13, 1915 (gage height, 12.5 feet); minimum, that of July 14, 1930.

REMARKS.—Records good except those for periods Nov. 24–30, Feb. 19 to Mar. 11, Mar. 21–28, which were estimated because of ice, and for periods July 20–25, Aug. 24 to Sept. 7, which were estimated because of error in gage heights. Minor diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 439 | 439 | -------- | 1,500 | 360 | 475 | 299 | 90 | 65 | 1,440 |
| 2 | 457 | 457 | -------- | 1,400 | 360 | 445 | 287 | 100 | 49 | 1,230 |
| 3 | 421 | 469 | -------- | 1,200 | 336 | 415 | 360 | 93 | 40 | 975 |
| 4 | 1,000 | 415 | -------- | 1,000 | 336 | 415 | 475 | 65 | 30 | 795 |
| 5 | 371 | 371 | -------- | 1,100 | 336 | 445 | 609 | 47 | 23 | 650 |
| 6 | 360 | 371 | -------- | 1,100 | 360 | 4,060 | 508 | 48 | 21 | 550 |
| 7 | 336 | 371 | -------- | 1,200 | 388 | 902 | 508 | 49 | 33 | 470 |
| 8 | 322 | 360 | -------- | 1,180 | 388 | 764 | 540 | 45 | 32 | 445 |
| 9 | 346 | 331 | -------- | 1,000 | 360 | 764 | 950 | 45 | 30 | 360 |
| 10 | 341 | 308 | -------- | 900 | 388 | 724 | 2,860 | 40 | 28 | 336 |
| 11 | 322 | 299 | -------- | 800 | 388 | 683 | 1,920 | 35 | 23 | 283 |
| 12 | 299 | 291 | -------- | 724 | 415 | 808 | 1,060 | 25 | 26 | 295 |
| 13 | 274 | 326 | -------- | 808 | 415 | 902 | 683 | 20 | 21 | 308 |
| 14 | 266 | 322 | -------- | 808 | 1,920 | 1,000 | 609 | 16 | 20 | 291 |
| 15 | 262 | 308 | -------- | 808 | 1,300 | 902 | 508 | 17 | 42 | 299 |
| 16 | 262 | 312 | -------- | 764 | 2,270 | 853 | 283 | 20 | 2,270 | 291 |
| 17 | 254 | 308 | -------- | 724 | 3,690 | 724 | 239 | 18 | 1,060 | 274 |
| 18 | 243 | 312 | -------- | 724 | 1,370 | 764 | 235 | 21 | 1,850 | 258 |
| 19 | 231 | 312 | 1,000 | 609 | 574 | 853 | 159 | 23 | 1,710 | 239 |
| 20 | 235 | 304 | 2,500 | 475 | 540 | 808 | 141 | 25 | 1,850 | 208 |
| 21 | 239 | 299 | 4,500 | 470 | 508 | 764 | 93 | 30 | 1,640 | 189 |
| 22 | 235 | 291 | 4,100 | 450 | 475 | 724 | 76 | 35 | 1,640 | 163 |
| 23 | 247 | 278 | 3,700 | 440 | 415 | 683 | 67 | 40 | 1,500 | 151 |
| 24 | 258 | | 3,100 | 430 | 388 | 609 | 93 | 100 | 1,060 | 148 |
| 25 | 239 | | 2,500 | 420 | 360 | 540 | 113 | 200 | 910 | 185 |
| 26 | 243 | 280 | 2,200 | 400 | 360 | 475 | 223 | 283 | 890 | 239 |
| 27 | 561 | | 1,900 | 390 | 415 | 415 | 270 | 182 | 823 | 270 |
| 28 | 624 | | 1,600 | 380 | 445 | 360 | 212 | 126 | 1,180 | 258 |
| 29 | 668 | | -------- | 360 | 475 | 291 | 170 | 109 | 1,100 | 223 |
| 30 | 501 | | -------- | 360 | 475 | 250 | 126 | 97 | 1,060 | 201 |
| 31 | 451 | -------- | -------- | 336 | -------- | 275 | -------- | 84 | 1,260 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 1,000 | 231 | 365 | 22,400 |
| November | 469 | -------- | 327 | 19,500 |
| February 19–28 | 4,500 | 1,600 | 2,710 | 53,800 |
| March | 1,500 | 336 | 750 | 46,100 |
| April | 3,690 | 336 | 694 | 41,300 |
| May | 4,060 | 250 | 745 | 45,800 |
| June | 2,860 | 67 | 489 | 29,100 |
| July | 283 | 16 | 68.6 | 4,220 |
| August | 2,270 | 20 | 719 | 44,200 |
| September | 1,440 | 148 | 401 | 23,900 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 6,260 second-feet Feb. 24 (gage height, 5.95 feet); minimum occurred during winter.

1928–1930: Maximum discharge, 49,600 second-feet June 3, 6, 1929 (gage height, 10.12 feet).

Maximum floods known, 18.1 feet in May, 1920 and 1927.

REMARKS.—Records good except those for periods Nov. 19 to Feb. 20, Mar. 2–17, which were estimated because of ice. Minor diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Ja . | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,000 | 812 | ------- | | 2,510 | 652 | 1,260 | 480 | 652 | 274 | 2,120 |
| 2 | 1,000 | 791 | ------- | | 2,400 | 616 | 916 | 504 | 607 | 278 | 1,700 |
| 3 | 1,060 | 600 | ------- | | 2,400 | 607 | 760 | 480 | 504 | 274 | 1,400 |
| 4 | 1,190 | 550 | ------- | | 2,300 | 572 | 670 | 869 | 442 | 260 | 1,170 |
| 5 | 1,170 | 525 | ------- | 350 | 2,300 | 546 | 803 | 1,640 | 435 | 255 | 988 |
| 6 | 3,140 | 500 | ------- | | 2,200 | 495 | 1,590 | 1,580 | 398 | 377 | 858 |
| 7 | 1,430 | 475 | ------- | | 2,100 | 458 | 2,400 | 1,450 | 342 | 255 | 825 |
| 8 | 1,120 | 475 | ------- | | 2,100 | 520 | 1,430 | 1,320 | 384 | 269 | 700 |
| 9 | 1,100 | 475 | ------- | | 2,100 | 546 | 976 | 1,130 | 406 | 274 | 661 |
| 10 | 1,120 | 471 | ------- | | 2,000 | 538 | 940 | 1,150 | 348 | 326 | 654 |
| 11 | 1,140 | 462 | ------- | | 2,600 | 512 | 964 | 4,230 | 303 | 303 | 661 |
| 12 | 1,630 | 452 | ------- | | 2,700 | 538 | 1,660 | 3,480 | 274 | 342 | 652 |
| 13 | 532 | 444 | ------- | 275 | 2,600 | 616 | 4,040 | 2,480 | 251 | 337 | 634 |
| 14 | 505 | 439 | ------- | | 2,300 | 690 | 2,770 | 2,380 | 251 | 320 | 781 |
| 15 | 526 | 439 | ------- | | 1,900 | 847 | 2,460 | 2,190 | 1,120 | 309 | 892 |
| 16 | 500 | 431 | ------- | | 2,000 | 2,210 | 2,100 | 1,790 | 1,010 | 320 | 720 |
| 17 | 581 | 444 | ------- | 800 | 1,950 | 3,090 | 1,860 | 1,420 | 781 | 3,480 | 634 |
| 18 | 603 | 444 | ------- | | 1,910 | 3,170 | 1,560 | 1,170 | 625 | 3,700 | 580 |
| 19 | 581 | | ------- | | 1,730 | 1,990 | 1,430 | 988 | 554 | 4,230 | 520 |
| 20 | 581 | 250 | ------- | ------- | 1,710 | 1,960 | 1,330 | 880 | 546 | 3,420 | 504 |
| 21 | 575 | | ------- | 3,680 | 1,460 | 1,310 | 1,150 | 730 | 529 | 3,030 | 488 |
| 22 | 521 | | ------- | 3,280 | 1,350 | 1,070 | 1,100 | 690 | 435 | 2,990 | 472 |
| 23 | 500 | | ------- | 3,240 | 1,260 | 928 | 1,010 | 670 | 572 | 2,250 | 442 |
| 24 | 480 | | ------- | 6,100 | 1,200 | 836 | 869 | 1,000 | 589 | 1,810 | 428 |
| 25 | 452 | 350 | ------- | 5,820 | 1,060 | 750 | 792 | 1,040 | 563 | 1,530 | 413 |
| 26 | 439 | | ------- | 5,840 | 986 | 720 | 730 | 1,500 | 595 | 1,290 | 488 |
| 27 | 448 | | ------- | 4,560 | 865 | 680 | 625 | 2,380 | 458 | 2,300 | 520 |
| 28 | 444 | | 227 | 2,940 | 835 | 661 | 538 | 1,730 | 391 | 1,820 | 869 |
| 29 | 481 | 250 | ------- | ------- | 763 | 652 | 580 | 1,200 | 337 | 1,540 | 589 |
| 30 | 476 | | ------- | ------- | 756 | 1,110 | 546 | 880 | 292 | 1,380 | 520 |
| 31 | 912 | ------- | ------- | ------- | 683 | ------- | 472 | ------- | 274 | 1,700 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 3,140 | 439 | 846 | 52,000 |
| November | 812 | ------- | 424 | 25,200 |
| December | ------- | ------- | 325 | 20,000 |
| January | ------- | ------- | 200 | 12,300 |
| February | 6,100 | ------- | 1,580 | 87,800 |
| March | 2,700 | 683 | 1,780 | 109,000 |
| April | 3,170 | 458 | 996 | 59,300 |
| May | 4,040 | 472 | 1,300 | 80,000 |
| June | 4,230 | 480 | 1,450 | 86,300 |
| July | 1,120 | 251 | 492 | 30,300 |
| August | 4,230 | 255 | 1,330 | 81,800 |
| September | 2,120 | 413 | 763 | 45,400 |
| The year | 6,100 | ------- | 952 | 689,000 |

## 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 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, 1930.

EXTREMES.—Maximum discharge during year, 3,570 second-feet Feb. 20 (gage height, 8.37 feet); no flow Aug. 5–12.

1905–6, 1929–30: Maximum discharge, that of Feb. 20, 1930; no flow during parts of August, 1906 and 1930.

REMARKS.—Records good except those for periods Nov. 4–30, Feb. 16 to Mar. 9, which are fair. Diversions for irrigation above station.

*Daily and monthly discharge in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 59 | 27 | ------- | | 43 | 80 | 189 | 7 | 3 | 19 |
| 2 | 52 | 27 | ------- | | 43 | 53 | 273 | 7 | 2 | 18 |
| 3 | 50 | 27 | ------- | 30 | 41 | 33 | 280 | 7 | 1 | 19 |
| 4 | 41 | 27 | ------- | | 41 | 29 | 132 | 7 | 1 | 18 |
| 5 | 33 | 27 | ------- | | 49 | 26 | 55 | 7 | 0 | 18 |
| 6 | 28 | | ------- | 50 | 43 | 58 | 31 | 6 | 0 | 18 |
| 7 | 26 | | ------- | 60 | 47 | 55 | 22 | 6 | 0 | 18 |
| 8 | 24 | 18 | ------- | 60 | 47 | 149 | 370 | 6 | 0 | 19 |
| 9 | 23 | | ------- | 70 | 58 | 78 | 1,230 | 5 | 0 | 20 |
| 10 | 23 | | ------- | 87 | 58 | 60 | 586 | 5 | 0 | 20 |
| 11 | 22 | | ------- | 90 | 55 | 49 | 331 | 5 | 0 | 18 |
| 12 | 21 | | ------- | 94 | 53 | 33 | 117 | 5 | 0 | 18 |
| 13 | 21 | 18 | ------- | 137 | 80 | 26 | 68 | 4 | 5 | 18 |
| 14 | 21 | | ------- | 234 | 110 | 24 | 45 | 4 | 5 | 18 |
| 15 | 21 | | ------- | 173 | 97 | 23 | 39 | 4 | 940 | 18 |
| 16 | 21 | | | 155 | 66 | 22 | 23 | 3 | 1,480 | 18 |
| 17 | 22 | | 400 | 140 | 60 | 23 | 18 | 3 | 995 | 18 |
| 18 | 22 | 18 | | 170 | 47 | 22 | 23 | 3 | 402 | 18 |
| 19 | 22 | | | 164 | 39 | 19 | 15 | 3 | 66 | 23 |
| 20 | 21 | | 2,000 | 104 | 3[illegible] | 18 | 13 | 2 | 39 | 20 |
| 21 | 20 | | 800 | 107 | 35 | 19 | 11 | 2 | 27 | 22 |
| 22 | 21 | | 400 | 78 | 33 | 19 | 68 | 2 | 26 | 23 |
| 23 | 22 | 8 | 250 | 62 | 29 | 17 | 41 | 2 | 512 | 23 |
| 24 | 22 | | 150 | 50 | 26 | 14 | 33 | 2 | 290 | 23 |
| 25 | 22 | | 100 | 31 | 29 | 14 | 31 | 2 | 51 | 37 |
| 26 | 22 | | 50 | 32 | 29 | 14 | 23 | 1 | 39 | 39 |
| 27 | 22 | | 40 | 35 | 31 | 17 | 15 | 1 | 35 | 132 |
| 28 | 24 | 8 | 30 | 40 | 39 | 14 | 14 | 1 | 805 | 120 |
| 29 | 25 | | ------- | 45 | 43 | 14 | 13 | 85 | 87 | 55 |
| 30 | 26 | | ------- | 51 | 39 | 14 | 11 | 13 | 37 | 37 |
| 31 | 29 | ------- | ------- | 47 | ------- | 13 | ------- | 4 | 23 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 59 | 20 | 26.7 | 1,640 |
| November | 27 | ---------- | 16.2 | 964 |
| February 16–28 | 2,000 | 30 | 417 | 10,800 |
| March | 234 | ---------- | 81.2 | 4,990 |
| April | 110 | 26 | 48.2 | 2,870 |
| May | 149 | 13 | 33.8 | 2,080 |
| June | 1,230 | 11 | 137 | 8,150 |
| July | 85 | 1 | 6.90 | 424 |
| August | 1,480 | 0 | 189 | 11,600 |
| September | 132 | 18 | 29.5 | 1,760 |

## 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, 1930.

EXTREMES.—Maximum discharge during year (creek and flume), 194 second-feet Apr. 9, 10; minimum, 35 second-feet Sept. 18–21.

1929–30: Maximum discharge (creek and flume), 794 second-feet June 3, 1929; minimum, that of Sept. 18–21, 1930.

REMARKS.—Records of creek and flume good except those for ice-affected period, Dec. 1 to Mar. 16, and for period June 18–30, which are fair. Flow of creek regulated by power flume which diverts water three-fourths mile above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7 | 1 | | | | | 20 | 31 | 10 | 1 | 1 | 1 |
| 2 | 5 | 1 | | | | | 28 | 29 | 12 | 1 | 1 | 1 |
| 3 | 5 | 1 | | | | | 36 | 25 | 11 | 1 | 1 | 1 |
| 4 | 6 | 1 | | | | | 45 | 34 | 3 | 1 | 1 | 1 |
| 5 | 3 | 1 | | | | | 49 | 29 | 3 | 1 | 1 | 1 |
| 6 | 1 | 1 | | | | | 56 | 40 | 1 | 2 | 1 | 1 |
| 7 | 2 | 1 | | | | | 90 | 36 | 1 | 1 | 1 | |
| 8 | 2 | 1 | | | | | 107 | 31 | 2 | 1 | 1 | 1 |
| 9 | 2 | 1 | | | | 28 | 115 | 32 | 18 | 1 | 1 | 1 |
| 10 | 2 | 1 | | | | | 102 | 38 | 11 | 1 | 1 | 1 |
| 11 | 2 | 1 | | | 55 | | 71 | 33 | 18 | 1 | 1 | 1 |
| 12 | 2 | 1 | | | | | 81 | 31 | 2 | 1 | 1 | 1 |
| 13 | 2 | 1 | | | | | 71 | 40 | 1 | 2 | 1 | 1 |
| 14 | 2 | 1 | | | | | 79 | 40 | 2 | 1 | 1 | 1 |
| 15 | 2 | 1 | | | | | 94 | 39 | 2 | 1 | 1 | 1 |
| 16 | 2 | 1 | 60 | 60 | | | 79 | 38 | 3 | 1 | 10 | 1 |
| 17 | 1 | 1 | | | | 31 | 58 | 41 | 1 | 1 | 5 | 1 |
| 18 | 1 | 1 | | | | 31 | 53 | 39 | 1 | 1 | 2 | 1 |
| 19 | 1 | 1 | | | | 27 | 53 | 31 | 1 | 1 | 1 | 1 |
| 20 | 1 | 1 | | | | 27 | 40 | 29 | 1 | 1 | 1 | 1 |
| 21 | 1 | 1 | | | | 27 | 35 | 26 | 1 | 1 | 1 | 1 |
| 22 | 1 | 1 | | | | 27 | 35 | 25 | 1 | 1 | 1 | 1 |
| 23 | 1 | 1 | | | | 20 | 35 | 18 | 1 | 1 | 1 | 1 |
| 24 | 1 | 1 | | | | 16 | 35 | 16 | 1 | 1 | 1 | 1 |
| 25 | 1 | 1 | | | 30 | 15 | 35 | 14 | 1 | 1 | 1 | 1 |
| 26 | 1 | 1 | | | | 14 | 61 | 12 | 1 | 1 | 1 | 1 |
| 27 | 1 | 1 | | | | 13 | 41 | 9 | 1 | 1 | 1 | 2 |
| 28 | 1 | 1 | | | | 12 | 36 | 8 | 1 | 1 | 1 | 2 |
| 29 | 1 | 1 | | | ------- | 12 | 38 | 10 | 1 | 1 | 1 | 1 |
| 30 | 1 | 1 | | | ------- | 12 | 35 | 11 | 1 | 1 | 1 | 1 |
| 31 | 1 | ------- | | | ------- | 12 | ------- | 10 | ------- | 1 | 1 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 7 | 1 | 2.0 | 123 |
| November | 1 | 1 | 1.0 | 60 |
| December | ---------- | ---------- | 60 | 3,690 |
| January | ---------- | ---------- | 60 | 3,690 |
| February | ---------- | ---------- | 48.7 | 2,700 |
| March | ---------- | 12 | 24.0 | 1,480 |
| April | 115 | 20 | 57.1 | 3,400 |
| May | 41 | 8 | 27.3 | 1,680 |
| June | 18 | 1 | 3.8 | 226 |
| July | 2 | 1 | 1.1 | 68 |
| August | 10 | 1 | 1.5 | 92 |
| September | 2 | 1 | 1.1 | 65 |
| The year | 115 | 1 | 23.8 | 17,300 |

*Daily and monthly combined discharge, in second-feet, of Rapid Creek and Dakota Power & Light Co.'s flume near Pactola, S. Dak., 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 84 | 68 | | | | | 59 | 110 | 93 | 61 | 41 | 42 |
| 2 | 82 | 65 | | | | | 86 | 108 | 91 | 58 | 37 | 39 |
| 3 | 80 | 57 | | | | | 116 | 105 | 89 | 50 | 39 | 39 |
| 4 | 80 | 46 | | | | | 125 | 110 | 79 | 49 | 39 | 41 |
| 5 | 76 | 44 | | | | | 128 | 109 | 82 | 51 | 41 | 44 |
| 6 | 70 | 44 | | | | | 140 | 119 | 80 | 72 | 43 | 44 |
| 7 | 68 | 42 | | | | | 174 | 115 | 75 | 64 | 44 | 43 |
| 8 | 68 | 39 | | | | | 185 | 110 | 83 | 49 | 44 | 42 |
| 9 | 68 | 47 | | | | 63 | 193 | 112 | 99 | 50 | 43 | 42 |
| 10 | 70 | 59 | | | | | 179 | 117 | 87 | 47 | 39 | 42 |
| 11 | 69 | 59 | | | 55 | | 150 | 112 | 94 | 45 | 43 | 41 |
| 12 | 71 | 59 | | | | | 161 | 110 | 72 | 49 | 57 | 37 |
| 13 | 68 | 61 | | | | | 150 | 121 | 74 | 54 | 44 | 36 |
| 14 | 65 | | | | | | 158 | 119 | 67 | 53 | 43 | 36 |
| 15 | 63 | | | | | | 171 | 118 | 67 | 47 | 42 | 41 |
| 16 | 62 | | 60 | 60 | | | 158 | 116 | 68 | 44 | 74 | 46 |
| 17 | 61 | | | | | 82 | 135 | 121 | 66 | 43 | 72 | 36 |
| 18 | 61 | | | | | 80 | 132 | 120 | | 39 | 62 | 35 |
| 19 | 62 | | | | | 75 | 136 | 110 | 66 | 39 | 58 | 35 |
| 20 | 61 | | | | | 76 | 117 | 108 | | 40 | 49 | 35 |
| 21 | 62 | | | | | 76 | 114 | 104 | | 39 | 47 | 35 |
| 22 | 64 | 61 | | | | 74 | 114 | 104 | | 42 | 47 | 36 |
| 23 | 63 | | | | | 63 | 114 | 97 | 61 | 43 | 47 | 36 |
| 24 | 62 | | | | | 58 | 118 | 94 | | 41 | 49 | 36 |
| 25 | 61 | | | | 55 | 55 | 114 | 92 | | 42 | 45 | 36 |
| 26 | 63 | | | | | 52 | 142 | 90 | | 39 | 44 | 36 |
| 27 | 67 | | | | | 50 | 120 | 88 | | 35 | 40 | 63 |
| 28 | 69 | | | | | 48 | 116 | 89 | 56 | 38 | 53 | 56 |
| 29 | 71 | | | | ------ | 47 | 119 | 90 | | 37 | 47 | 51 |
| 30 | 67 | | | | ------ | 46 | 111 | 92 | | 49 | 41 | 49 |
| 31 | 67 | ------ | | | ------ | 45 | ------ | 89 | ------ | 43 | 41 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 84 | 61 | 67.9 | 4,170 |
| November | 68 | 39 | 57.6 | 3,430 |
| December | ------ | ------ | 60 | 3,690 |
| January | ------ | ------ | 60 | 3,690 |
| February | ------ | ------ | 55 | 3,050 |
| March | 82 | 45 | 62.4 | 3,840 |
| April | 193 | 59 | 134 | 7,970 |
| May | 121 | 88 | 106 | 6,520 |
| June | 99 | ------ | 71.6 | 4,260 |
| July | 72 | 35 | 46.8 | 2,880 |
| August | 74 | 37 | 46.9 | 2,880 |
| September | 63 | 35 | 41.0 | 2,440 |
| The year | 193 | ------ | 67.5 | 48,800 |

### RAPID CREEK AT CRESTON, S. DAK.

LOCATION.—Staff gage in sec. 33, T. 1 S., R. 12 E., half a mile west of Creston.
DRAINAGE AREA.—710 square miles.
RECORDS AVAILABLE.—April, 1929, to September, 1930.
EXTREMES.—Maximum discharge during year, 563 second-feet Mar. 4; no flow July 7–17, July 23 to Aug. 15.

1929–30: Maximum discharge, 2,740 second-feet June 2, 1929 (gage height, 8.6 feet); minimum, that of July 7–17, July 23 to Aug. 15, 1930.

REMARKS.—Records good. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Jan. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 88 | 128 | -------- | 400 | 111 | 178 | 50 | 1 | 0 | 12 |
| 2 | 86 | 126 | -------- | 400 | 118 | 165 | 50 | 1 | 0 | 9 |
| 3 | 88 | 126 | -------- | 450 | 116 | 152 | 33 | 1 | 0 | 9 |
| 4 | 89 | 130 | -------- | 514 | 144 | 129 | 38 | 1 | 0 | 9 |
| 5 | 104 | 135 | -------- | 362 | 204 | 129 | 37 | 1 | 0 | 8 |
| 6 | 119 | 135 | -------- | 288 | 175 | 338 | 35 | 1 | 0 | 7 |
| 7 | 128 | 135 | -------- | 219 | 170 | 266 | 33 | 0 | 0 | 14 |
| 8 | 142 | 130 | -------- | 167 | 188 | 154 | 50 | 0 | 0 | 15 |
| 9 | 137 | 130 | -------- | 154 | 199 | 154 | 157 | 0 | 0 | 16 |
| 10 | 135 | 130 | -------- | 167 | 212 | 154 | 86 | 0 | 0 | 18 |
| 11 | 128 | 130 | -------- | 165 | 217 | 154 | 72 | 0 | 0 | 19 |
| 12 | 121 | 130 | -------- | 162 | 196 | 157 | 59 | 0 | 0 | 20 |
| 13 | 121 | 128 | -------- | 173 | 193 | 152 | 46 | 0 | 0 | 12 |
| 14 | 123 | 126 | -------- | 188 | 240 | 154 | 34 | 0 | 0 | 12 |
| 15 | 113 | 126 | -------- | 193 | 222 | 147 | 33 | 0 | 0 | 12 |
| 16 | 104 | 126 | -------- | 206 | 233 | 140 | 30 | 0 | 11 | 21 |
| 17 | 104 | 132 | -------- | 212 | 302 | 137 | 26 | 0 | 42 | 16 |
| 18 | 108 | 135 | 67 | 209 | 236 | 137 | 23 | 3 | 42 | 15 |
| 19 | 117 | 132 | -------- | 193 | 225 | 135 | 20 | 2 | 59 | 14 |
| 20 | 117 | 135 | -------- | 183 | 144 | 133 | 20 | 2 | 42 | 12 |
| 21 | 113 | 132 | -------- | 173 | 122 | 131 | | 1 | 24 | 12 |
| 22 | 110 | 139 | -------- | 162 | 126 | 112 | | 1 | 20 | 11 |
| 23 | 110 | 132 | -------- | 149 | 122 | 93 | 12 | 0 | 21 | 11 |
| 24 | 113 | | -------- | 160 | 124 | 89 | | 0 | 24 | 12 |
| 25 | 110 | | -------- | 140 | 129 | 88 | | 0 | 23 | 13 |
| 26 | 110 | 125 | -------- | 112 | 133 | 85 | | 0 | 22 | 24 |
| 27 | 112 | | -------- | 116 | 131 | 80 | | 0 | 24 | 39 |
| 28 | 113 | | -------- | 111 | 137 | 76 | 5 | 0 | 24 | 40 |
| 29 | 121 | | -------- | 112 | 162 | 75 | | 0 | 22 | 40 |
| 30 | 126 | | -------- | 116 | 157 | 72 | | 0 | 21 | 39 |
| 31 | 130 | -------- | -------- | 112 | -------- | 50 | -------- | 0 | 16 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 142 | 86 | 114 | 7,010 |
| November | 139 | -------- | 129 | 7,680 |
| March | 514 | 111 | 209 | 12,900 |
| April | 440 | 111 | 180 | 10,700 |
| May | 338 | 50 | 136 | 8,360 |
| June | 157 | -------- | 33.9 | 2,020 |
| July | 3 | 0 | .48 | 30 |
| August | 59 | 0 | 14.1 | 867 |
| September | 40 | 7 | 17.0 | 1,010 |

### 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 4,133.44 feet above mean sea level.

DRAINAGE AREA.—1,380 square miles.

RECORDS AVAILABLE.—September, 1923, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,140 second-feet Feb. 19 (gage height, 5.06 feet); minimum, 0.3 second-foot Sept. 13.

1923–1930: Maximum discharge, 12,500 second-feet Apr. 7, 1924 (gage height, 12.6 feet, no flow several days in September and October, 1928.

REMARKS.—Records good except those for periods of missing gage heights, Nov. 21–30, Mar. 1–11, which are fair. Small diversion by railroad pump just above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.0 | 3.4 | -------- | 180 | 18 | 10 | 137 | 4.6 | 1.6 | 5.2 |
| 2 | 6.2 | 3.0 | -------- | 150 | 19 | 9.7 | 111 | 4.4 | 1.6 | 4.2 |
| 3 | 6.2 | 2.4 | -------- | 130 | 18 | 9.7 | 32 | 4.2 | 1.6 | 2.6 |
| 4 | 5.8 | 2.2 | -------- | 130 | 18 | 9.7 | 13 | 4.0 | 1.6 | 2.2 |
| 5 | 5.6 | 2.2 | -------- | 130 | 17 | 10 | 9.4 | 3.8 | 1.6 | 1.8 |
| 6 | 5.0 | 1.8 | -------- | 135 | 15 | 59 | 7.9 | 3.6 | 1.6 | 1.4 |
| 7 | 5.0 | 2.2 | -------- | 135 | 13 | 95 | 6.4 | 3.2 | 1.4 | 1.0 |
| 8 | 4.6 | 1.8 | -------- | 130 | 12 | 32 | 5.8 | 2.8 | 1.4 | .8 |
| 9 | 4.6 | 1.8 | -------- | 125 | 12 | 18 | 494 | 2.4 | 1.4 | .7 |
| 10 | 4.4 | 1.8 | -------- | 130 | 12 | 14 | 162 | 2.0 | 1.4 | .6 |
| 11 | 4.0 | 1.8 | -------- | 180 | 12 | 11 | 48 | 2.0 | 1.2 | .4 |
| 12 | 3.8 | 1.4 | -------- | 293 | 12 | 11 | 15 | 7.6 | 12 | .4 |
| 13 | 3.8 | 1.4 | -------- | 302 | 12 | 10 | 11 | 5.6 | 10 | .3 |
| 14 | 3.8 | 1.8 | -------- | 274 | 12 | 9.4 | 9.7 | 4.4 | 32 | .6 |
| 15 | 3.8 | 2.4 | -------- | 226 | 11 | 8.5 | 8.8 | 4.0 | 12 | .6 |
| 16 | 3.8 | 3.0 | -------- | 235 | 11 | 7.6 | 8.2 | 4.0 | 8.8 | .6 |
| 17 | 3.8 | 2.6 | -------- | 221 | 11 | 7.0 | 8.2 | 3.4 | 6.8 | .6 |
| 18 | 3.8 | 2.4 | 200 | 170 | 11 | 7.0 | 7.6 | 2.8 | 6.2 | .5 |
| 19 | 3.8 | 2.2 | 500 | 159 | 10 | 7.0 | 7.0 | 2.6 | 5.4 | .4 |
| 20 | 3.4 | 2.2 | 755 | 103 | 10 | 6.6 | 6.8 | 2.4 | 4.8 | .4 |
| 21 | 3.4 | | 761 | 92 | 10 | 6.6 | 6.4 | 2.2 | 3.8 | .4 |
| 22 | 3.2 | | 569 | 97 | 10 | 6.6 | 6.2 | 2.2 | 3.4 | .6 |
| 23 | 3.0 | | 439 | 100 | 10 | 6.4 | 6.0 | 2.0 | 3.2 | .6 |
| 24 | 3.0 | | 419 | 70 | 12 | 6.2 | 5.8 | 2.0 | 2.8 | .5 |
| 25 | 3.0 | | 413 | 53 | 11 | 6.0 | 5.6 | 2.0 | 2.2 | .8 |
| 26 | 3.0 | 1.5 | 358 | 48 | 11 | 5.8 | 5.4 | 2.0 | 1.4 | 1.0 |
| 27 | 3.0 | | 230 | 36 | 11 | 5.8 | 5.4 | 1.8 | 1.0 | 1.0 |
| 28 | 3.0 | | 205 | 30 | 11 | 5.8 | 5.2 | 1.8 | .8 | .9 |
| 29 | 3.4 | | -------- | 28 | 10 | 5.4 | 5.2 | 1.6 | .6 | .8 |
| 30 | 3.8 | | -------- | 24 | 10 | 5.2 | 5.0 | 1.6 | 13 | .8 |
| 31 | 3.4 | -------- | -------- | 27 | -------- | 5.0 | -------- | 1.6 | 7 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 7.0 | 3.0 | 4.11 | 253 |
| November | 3.4 | 1.4 | 1.96 | 117 |
| February 18–28 | 761 | 200 | 413 | 9,010 |
| March | 302 | 24 | 134 | 8,240 |
| April | 19 | 10 | 12.4 | 738 |
| May | 95 | 5.0 | 13.5 | 830 |
| June | 494 | 5.0 | 38.8 | 2,310 |
| July | 7.6 | 1.6 | 3.05 | 188 |
| August | 32 | .6 | 4.95 | 304 |
| September | 5.2 | .3 | 1.09 | 65 |

### 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 3,742.05 feet above mean sea level.

DRAINAGE AREA.—2,800 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 4,720 second-feet June 11 (gage height, 8.67 feet); minimum, 1 second-foot for several days in July, August, September.

1929–30: Maximum discharge, 6,230 second-feet May 31, 1929 (gage height, 8.9 feet); minimum, that of 1930.

REMARKS.—Records good. No diversions above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 80 | 40 | -------- | 214 | 92 | 63 | 179 | 18 | 1 | 3 |
| 2 | 39 | 44 | -------- | 204 | 83 | 65 | 395 | 7 | 2 | 4 |
| 3 | 40 | 47 | -------- | 179 | 87 | 62 | 295 | 4 | 2 | 3 |
| 4 | 80 | 58 | -------- | 145 | 103 | 75 | 193 | 2 | 1 | 3 |
| 5 | 84 | 59 | -------- | 150 | 132 | 79 | 122 | 9 | 4 | 3 |
| 6 | 74 | 40 | -------- | 150 | 144 | 65 | 32 | 3 | 2 | 2 |
| 7 | 67 | 34 | -------- | 153 | 159 | 193 | 36 | 4 | 1 | 3 |
| 8 | 59 | 33 | -------- | 153 | 190 | 162 | 49 | 1 | 4 | 3 |
| 9 | 56 | 32 | -------- | 144 | 210 | 120 | 58 | 4 | 6 | 3 |
| 10 | 52 | 32 | -------- | 176 | 204 | 87 | 775 | 7 | 3 | 3 |
| 11 | 50 | 30 | -------- | 462 | 179 | 79 | 2,540 | 2 | 1 | 3 |
| 12 | 47 | 32 | -------- | 530 | 159 | 77 | 267 | 7 | 1 | 1 |
| 13 | 44 | 32 | -------- | 485 | 115 | 73 | 138 | 38 | 2 | 3 |
| 14 | 44 | 33 | -------- | 375 | 103 | 69 | 101 | 14 | 2 | 3 |
| 15 | 42 | 34 | -------- | 395 | 92 | 63 | 19 | 19 | 2 | 3 |
| 16 | 40 | | -------- | 485 | 89 | 63 | 58 | 4 | 10 | 3 |
| 17 | 36 | | -------- | 485 | 87 | 58 | 32 | 12 | 5 | 3 |
| 18 | 34 | 32 | -------- | 263 | 89 | 58 | 39 | 8 | 33 | 4 |
| 19 | 32 | | 200 | 176 | 85 | 58 | 53 | 7 | 19 | 3 |
| 20 | 32 | | 750 | 156 | 89 | 58 | 39 | 4 | 7 | 2 |
| 21 | 32 | | 1,000 | 150 | 73 | 47 | 41 | 7 | 6 | 2 |
| 22 | 38 | | 950 | 144 | 67 | 41 | 20 | 4 | 6 | 2 |
| 23 | 39 | 28 | 830 | 147 | 65 | 38 | 39 | 2 | 7 | 2 |
| 24 | 34 | | 750 | 162 | 63 | 38 | 36 | 4 | 3 | 4 |
| 25 | 34 | | 598 | 138 | 63 | 36 | 44 | 3 | 4 | 7 |
| 26 | 34 | | 485 | 130 | 63 | 36 | 44 | 1 | 6 | 7 |
| 27 | 38 | | 243 | 105 | 69 | 38 | 33 | 2 | 6 | 6 |
| 28 | 38 | 30 | 232 | 108 | 67 | 33 | 26 | 1 | 6 | 7 |
| 29 | 38 | | -------- | 108 | 63 | 32 | 17 | 1 | 6 | 8 |
| 30 | 36 | | -------- | 108 | 65 | 32 | 7 | 2 | 6 | 15 |
| 31 | 38 | -------- | -------- | 105 | -------- | 30 | -------- | 2 | 3 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 84 | 32 | 46.2 | 2,840 |
| November | 59 | -------- | 34.3 | 2,040 |
| February 19–28 | 1,000 | 200 | 604 | 12,000 |
| March | 530 | 105 | 222 | 13,600 |
| April | 210 | 63 | 105 | 6,250 |
| May | 193 | 30 | 65.4 | 4,020 |
| June | 2,540 | 7 | 191 | 11,400 |
| July | 38 | 1 | 6.6 | 406 |
| August | 33 | 1 | 5.4 | 332 |
| September | 15 | 1 | 3.9 | 232 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 2,060 second-feet June 9; minimum, 19 second-feet Aug. 11.

1912–1930: 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. Complete records furnished by United States Bureau of Reclamation.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 463 | 198 | 197 | 104 | 419 | 350 | 416 | 400 | 319 | 173 | 44 | 86 |
| 2 | 439 | 316 | 197 | 86 | 417 | 350 | 438 | 383 | 1,110 | 142 | 38 | 86 |
| 3 | 439 | 240 | 197 | 76 | 552 | 375 | 434 | 350 | 609 | 91 | 29 | 86 |
| 4 | 580 | 236 | 200 | 86 | 567 | 400 | 430 | 338 | 687 | 73 | 29 | 86 |
| 5 | 401 | 219 | 200 | 139 | 567 | 375 | 430 | 336 | 401 | 73 | 29 | 74 |
| 6 | 369 | 216 | 371 | 282 | 724 | 298 | 430 | 341 | 401 | 72 | 79 | 64 |
| 7 | 295 | 213 | 200 | 212 | 439 | 180 | 438 | 347 | 281 | 72 | 55 | 73 |
| 8 | 307 | 209 | 200 | 212 | 226 | 180 | 460 | 158 | 228 | 44 | 37 | 73 |
| 9 | 307 | 213 | 200 | 212 | 149 | 180 | 470 | 158 | 2,060 | 36 | 33 | 87 |
| 10 | 269 | 227 | 200 | 212 | 121 | 378 | 488 | 158 | 976 | 21 | 20 | 86 |
| 11 | 256 | 227 | 198 | 212 | 155 | 298 | 495 | 158 | 339 | 21 | 19 | 86 |
| 12 | 309 | 227 | 201 | 212 | 49 | 398 | 493 | 158 | 1,120 | 566 | 20 | 86 |
| 13 | 213 | 217 | 201 | 212 | 39 | 445 | 510 | 158 | 610 | 451 | 21 | 118 |
| 14 | 117 | 210 | 201 | 213 | 39 | 433 | 510 | 158 | 467 | 173 | 21 | 121 |
| 15 | 117 | 220 | 201 | 212 | 39 | 588 | 510 | 158 | 269 | 109 | 21 | 121 |
| 16 | 117 | 224 | 614 | 212 | 39 | 517 | 553 | 158 | 288 | 109 | 50 | 116 |
| 17 | 188 | 205 | 427 | 210 | 39 | 510 | 545 | 255 | 250 | 109 | 74 | 107 |
| 18 | 188 | 265 | 281 | 210 | 166 | 530 | 490 | 252 | 206 | 77 | 73 | 117 |
| 19 | 188 | 222 | 189 | 210 | 416 | 530 | 470 | 252 | 207 | 74 | 73 | 121 |
| 20 | 188 | 135 | 188 | 235 | 717 | 487 | 480 | 252 | 207 | 268 | 73 | 131 |
| 21 | 198 | 127 | 192 | 250 | 1,160 | 487 | 460 | 252 | 192 | 100 | 80 | 117 |
| 22 | 198 | 128 | 180 | 250 | 1,160 | 483 | 436 | 252 | 150 | 108 | 80 | 45 |
| 23 | 198 | 133 | 255 | 251 | 857 | 487 | 410 | 270 | 184 | 108 | 80 | 118 |
| 24 | 198 | 137 | 241 | 251 | 671 | 483 | 403 | 238 | 190 | 108 | 90 | 123 |
| 25 | 198 | 138 | 215 | 251 | 671 | 483 | 410 | 117 | 174 | 70 | 94 | 120 |
| 26 | 198 | 138 | 243 | 251 | 570 | 483 | 427 | 117 | 174 | 59 | 112 | 120 |
| 27 | 198 | 176 | 243 | 251 | 450 | 475 | 427 | 74 | 174 | 59 | 93 | 104 |
| 28 | 198 | 201 | 243 | 252 | 425 | 463 | 431 | 74 | 162 | 58 | 77 | 107 |
| 29 | 198 | 198 | 225 | 253 | ------ | 475 | 417 | 74 | 162 | 58 | 85 | 123 |
| 30 | 198 | 200 | 170 | 253 | ------ | 347 | 420 | 73 | 162 | 40 | 86 | 139 |
| 31 | 199 | ------ | 82 | 253 | ------ | 353 | ------ | 73 | ------ | 40 | 86 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 580 | 117 | 256 | 15,700 |
| November | 316 | 127 | 200 | 11,900 |
| December | 614 | 82 | 231 | 14,200 |
| January | 282 | 76 | 210 | 12,900 |
| February | 1,160 | 39 | 423 | 23,500 |
| March | 588 | 180 | 414 | 25,500 |
| April | 553 | 403 | 458 | 27,300 |
| May | 400 | 73 | 211 | 13,000 |
| June | 2,060 | 150 | 425 | 25,300 |
| July | 566 | 21 | 115 | 7,070 |
| August | 112 | 19 | 58.1 | 3,570 |
| September | 139 | 45 | 101 | 6,010 |
| The year | 2,060 | 19 | 257 | 186,000 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 5,480 second-feet June 25 (gage height, 5.26 feet); minimum occurred during winter.

1928–1930: Maximum discharge, 33,500 second-feet June 3, 1929 (gage height, 11.3 feet); minimum 42 second-feet Nov. 26, 1928.

Maximum flood known, 21.8 feet in May, 1927.

REMARKS.—Records good except those for periods Nov. 21–30, Feb. 20 to Mar. 8, which are fair. Diversions for irrigation above station. Flow partly regulated by Belle Fourche Reservoir.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 311 | 171 | -------- | 800 | 105 | 299 | 281 | 347 | 221 | 260 |
| 2 | 325 | 164 | -------- | 800 | 102 | 217 | 299 | 329 | 230 | 270 |
| 3 | 341 | 174 | -------- | 700 | 100 | 174 | 602 | 323 | 225 | 275 |
| 4 | 714 | 168 | -------- | 700 | 100 | 157 | 275 | 305 | 217 | 255 |
| 5 | 1,900 | 154 | -------- | 600 | 95 | 154 | 528 | 255 | 250 | 250 |
| 6 | 1,040 | 144 | -------- | 600 | 100 | 189 | 954 | 377 | 293 | 250 |
| 7 | 804 | 140 | -------- | 700 | 100 | 174 | 698 | 365 | 305 | 250 |
| 8 | 558 | 160 | -------- | 800 | 100 | 168 | 650 | 299 | 383 | 245 |
| 9 | 287 | 185 | -------- | 909 | 100 | 147 | 1,000 | 235 | 377 | 353 |
| 10 | 200 | 150 | -------- | 1,600 | 100 | 500 | 3,010 | 201 | 409 | 347 |
| 11 | 168 | 126 | -------- | 1,810 | 98 | 514 | 1,760 | 182 | 389 | 323 |
| 12 | 147 | 123 | -------- | 1,760 | 164 | 674 | 1,230 | 197 | 383 | 281 |
| 13 | 138 | 120 | -------- | 1,420 | 213 | 690 | 1,270 | 1,030 | 383 | 270 |
| 14 | 141 | 140 | -------- | 981 | 240 | 754 | 1,120 | 1,230 | 370 | 255 |
| 15 | 377 | 164 | -------- | 1,140 | 225 | 706 | 796 | 602 | 317 | 265 |
| 16 | 402 | 150 | -------- | 1,050 | 305 | 690 | 666 | 507 | 465 | 275 |
| 17 | 395 | 135 | -------- | 770 | 270 | 674 | 580 | 507 | 395 | 260 |
| 18 | 389 | 108 | -------- | 602 | 287 | 658 | 465 | 493 | 1,070 | 255 |
| 19 | 383 | 62 | -------- | 550 | 275 | 465 | 389 | 437 | 722 | 265 |
| 20 | 225 | 60 | 1,000 | 542 | 200 | 437 | 377 | 423 | 650 | 270 |
| 21 | 150 | | 1,500 | 409 | 141 | 371 | 293 | 377 | 521 | 255 |
| 22 | 141 | | 5,000 | 365 | 126 | 329 | 265 | 550 | 458 | 265 |
| 23 | 132 | | 3,800 | 311 | 108 | 293 | 299 | 588 | 458 | 275 |
| 24 | 141 | | 2,400 | 260 | 98 | 265 | 1,070 | 430 | 437 | 395 |
| 25 | 141 | | 1,300 | 225 | 98 | 265 | 4,010 | 430 | 389 | 423 |
| | | 65 | | | | | | | | |
| 26 | 138 | | 1,100 | 189 | 108 | 275 | 1,150 | 341 | 365 | 287 |
| 27 | 129 | | 1,000 | 174 | 102 | 335 | 674 | 281 | 299 | 270 |
| 28 | 129 | | 900 | 160 | 123 | 317 | 479 | 240 | 270 | 281 |
| 29 | 150 | | -------- | 138 | 1,170 | 287 | 437 | 240 | 250 | 293 |
| 30 | 157 | | -------- | 129 | 451 | 270 | 402 | 230 | 240 | 255 |
| 31 | 164 | -------- | -------- | 126 | -------- | 281 | -------- | 255 | 240 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 1,900 | 129 | 349 | 21,500 |
| November | 185 | -------- | 115 | 6,840 |
| February 20–28 | 5,000 | 900 | 2,000 | 35,700 |
| March | 1,810 | 126 | 688 | 42,300 |
| April | 1,170 | 95 | 193 | 11,500 |
| May | 754 | 147 | 378 | 23,200 |
| June | 4,010 | 275 | 868 | 51,600 |
| July | 1,230 | 182 | 407 | 25,000 |
| August | 1,070 | 217 | 386 | 23,700 |
| September | 423 | 245 | 282 | 16,800 |

### REDWATER CREEK NEAR BEULAH, WYO.

LOCATION.—Staff gage in sec. 29, T. 7 N., R. 60 W., 1½ miles downstream from Beulah.

DRAINAGE AREA.—459 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 162 second-feet June 9 (gage height, 5.3 feet); minimum, 39 second-feet Aug. 5–10 (gage height, 4.74 feet). 1929–30: Maximum discharge, 515 second-feet May 26, 27, 1929 (gage height, 6.2 feet); no flow Aug. 13–15, 1929.

REMARKS.—Records good except those for period Dec. 1 to Jan. 21, which were estimated. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 64 | 70 | | 58 | 58 | 58 | 73 | 70 | 53 | 43 | 43 |
| 2 | 61 | 70 | | 58 | 58 | 58 | 73 | 67 | 53 | 41 | 43 |
| 3 | 62 | 70 | | 58 | 58 | 58 | 73 | 67 | 50 | 41 | 44 |
| 4 | 70 | 70 | | 58 | 58 | 58 | 66 | 67 | 53 | 41 | 45 |
| 5 | 66 | 70 | | 66 | 58 | 58 | 60 | 67 | 53 | 39 | 45 |
| 6 | 61 | 70 | | 91 | 58 | 58 | 70 | 67 | 53 | 39 | 45 |
| 7 | 61 | 70 | | 72 | 58 | 58 | 73 | 67 | 49 | 39 | 45 |
| 8 | 61 | 70 | | 58 | 58 | 58 | 73 | 67 | 45 | 39 | 53 |
| 9 | 61 | 70 | | 58 | 73 | 58 | 67 | 119 | 45 | 39 | 53 |
| 10 | 64 | 70 | | 58 | 66 | 62 | 67 | 73 | 45 | 39 | 53 |
| 11 | 67 | 70 | 58 | 58 | 58 | 64 | 67 | 73 | 44 | 43 | 53 |
| 12 | 67 | 70 | | 58 | 58 | 64 | 67 | 73 | 45 | 43 | 53 |
| 13 | 67 | 70 | | 58 | 58 | 64 | 67 | 73 | 48 | 43 | 53 |
| 14 | 67 | 70 | | 58 | 58 | 64 | 67 | 66 | 48 | 43 | 53 |
| 15 | 67 | 70 | | 58 | 58 | 64 | 67 | 58 | 45 | 43 | 53 |
| 16 | 70 | 70 | | 58 | 66 | 64 | 67 | 58 | 43 | 43 | 53 |
| 17 | 70 | 70 | | 58 | 58 | 62 | 67 | 58 | 43 | 43 | 53 |
| 18 | 70 | 70 | | 73 | 58 | 66 | 67 | 58 | 42 | 43 | 53 |
| 19 | 70 | 70 | | 91 | 58 | 68 | 67 | 58 | 41 | 43 | 53 |
| 20 | 70 | 70 | | 73 | 58 | 70 | 67 | 58 | 43 | 43 | 53 |
| 21 | 70 | 70 | | 82 | 58 | 67 | 64 | 58 | 44 | 43 | 53 |
| 22 | 70 | 70 | 58 | 58 | 58 | 67 | 61 | 58 | 45 | 43 | 53 |
| 23 | 70 | 70 | 58 | 58 | 58 | 67 | 61 | 62 | 45 | 43 | 53 |
| 24 | 70 | 70 | 58 | 58 | 58 | 67 | 61 | 61 | 45 | 43 | 53 |
| 25 | 70 | 70 | 58 | 58 | 58 | 73 | 61 | 61 | 45 | 43 | 53 |
| 26 | 67 | 67 | 58 | 58 | 58 | 73 | 57 | 61 | 45 | 43 | 53 |
| 27 | 70 | 67 | 58 | 58 | 58 | 73 | 53 | 57 | 45 | 43 | 53 |
| 28 | 70 | 67 | 58 | 58 | 58 | 73 | 53 | 53 | 45 | 43 | 53 |
| 29 | 70 | 67 | 58 | -------- | 60 | 73 | 53 | 53 | 45 | 43 | 53 |
| 30 | 70 | 67 | 58 | -------- | 60 | 73 | 53 | 53 | 45 | 43 | 53 |
| 31 | 70 | -------- | 58 | -------- | 58 | -------- | 53 | -------- | 45 | 43 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 70 | 61 | 67.2 | 4,130 |
| November | 70 | 67 | 69.5 | 4,140 |
| December | -------- | -------- | 60.0 | 3,690 |
| January | -------- | -------- | 58.0 | 3,570 |
| February | 91 | 58 | 63.1 | 3,500 |
| March | 73 | 58 | 59.1 | 3,630 |
| April | 73 | 58 | 64.7 | 3,850 |
| May | 73 | 53 | 64.4 | 3,960 |
| June | 119 | 53 | 64.7 | 3,850 |
| July | 53 | 41 | 46.3 | 2,850 |
| August | 43 | 39 | 42.0 | 2,580 |
| September | 53 | 43 | 51.0 | 3,030 |
| The year | 119 | -------- | 59.1 | 42,800 |

## 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 1,427.83 feet above mean sea level.

DRAINAGE AREA.—3,170 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 10,200 second-feet Aug. 19 (gage height, 20.2 feet); no flow during several months.

1928–1930: Maximum discharge, 11,100 second-feet Apr. 25, 1929 (gage height, 21.18 feet); no flow for several months each year.

Highest floods known, 30.89 feet in 1905 and in April, 1927, (discharge, estimated, about 35,000 second-feet).

REMARKS.—Records good except those for period Feb. 1 to Mar. 9, which were estimated because of ice. No diversions.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | | | 37 | 220 | 0 | 22 |
| 2 | 0 | 0 | | | 29 | 88 | 0 | 22 |
| 3 | 0 | 0 | | | 24 | 60 | 0 | 17 |
| 4 | 0 | 0 | | | 21 | 31 | 0 | 15 |
| 5 | 190 | 1 | 10 | 300 | 21 | 28 | 0 | 13 |
| 6 | 69 | 8 | | | 12 | 14 | 0 | 7 |
| 7 | 27 | 1 | | | 6 | 10 | 0 | 1,180 |
| 8 | 11 | 0 | | | 5 | 4 | 0 | 202 |
| 9 | 5 | 0 | | | 4 | 2 | 0 | 190 |
| 10 | 0 | 0 | | 3,840 | 5 | 1 | 0 | 78 |
| 11 | 5 | 0 | | 6,100 | 4 | 1,340 | 0 | 50 |
| 12 | 128 | 0 | | 6,690 | 4 | 1,540 | 0 | 34 |
| 13 | 36 | 7 | 20 | 4,120 | 3 | 805 | 0 | 23 |
| 14 | 17 | 2 | | 1,950 | 2 | 910 | 0 | 20 |
| 15 | 5 | 1 | | 1,420 | 21 | 630 | 0 | 18 |
| 16 | 0 | 0 | | 1,050 | 20 | 394 | 0 | 15 |
| 17 | 0 | 0 | | 630 | 526 | 212 | 0 | 10 |
| 18 | 0 | 0 | 40 | 394 | 220 | 141 | 4,440 | 6 |
| 19 | 0 | 0 | | 271 | 1,190 | 112 | 8,640 | 6 |
| 20 | 0 | 0 | | 326 | 464 | 71 | 5,740 | 5 |
| 21 | 0 | 0 | 100 | 197 | 204 | 51 | 1,420 | 4 |
| 22 | 0 | 0 | 100 | 197 | 134 | 33 | 570 | 4 |
| 23 | 0 | 0 | 150 | 212 | 91 | 26 | 316 | 2 |
| 24 | 0 | 0 | 212 | 169 | 66 | 14 | 220 | 1 |
| 25 | 0 | 0 | 464 | 122 | 54 | 9 | 208 | 1 |
| 26 | 0 | 0 | 400 | 92 | 58 | 6 | 114 | 0 |
| 27 | 0 | 0 | 300 | 82 | 68 | 4 | 67 | 0 |
| 28 | 0 | 0 | 300 | 63 | 43 | 1 | 51 | 0 |
| 29 | 0 | 0 | ------- | 52 | 34 | 0 | 37 | 0 |
| 30 | 0 | 0 | ------- | 47 | 45 | 0 | 36 | 0 |
| 31 | 0 | ------- | ------- | 42 | ------- | 0 | 25 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 190 | 0 | 15.9 | 978 |
| November | 8 | 0 | .7 | 42 |
| February | 464 | ---------- | 86.6 | 4,810 |
| March | 6,690 | 42 | 992 | 61,000 |
| April | 1,190 | 2 | 114 | 6,780 |
| May | 1,540 | 0 | 218 | 13,400 |
| August | 8,640 | 0 | 706 | 43,400 |
| September | 1,180 | 0 | 64.8 | 3,860 |
| The year | 8,640 | 0 | 185 | 134,000 |

NOTE.—No flow during months for which no discharge is shown.

## WHITE RIVER BASIN

### 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, 1930.
EXTREMES.—Maximum discharge during year, 5,560 second-feet Aug. 16 (gage height, 8.6 feet); minimum occurred during winter.

1904–1906, 1911–1918, 1928–1930: Maximum discharge, 16,500 second-feet Mar. 8, 1905 (gage height, 14 feet); no flow July 13–15, 19–29, Sept. 26 to Oct. 4, 1914.

REMARKS.—Records fair. No diversions or regulation.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 46 | 451 | | | | | 120 | 170 | 104 | 53 | 28 | 97 |
| 2 | 35 | 316 | | | | | 117 | 134 | 95 | 46 | 22 | 113 |
| 3 | 43 | 259 | | | | | 115 | 108 | 102 | 41 | 18 | 79 |
| 4 | 48 | 212 | | | | | 115 | 108 | 102 | 40 | 15 | 57 |
| 5 | 125 | 132 | | | | 700 | 111 | 134 | 87 | 38 | 14 | 34 |
| 6 | 55 | 106 | 40 | 18 | 40 | | 111 | 1,070 | 79 | 52 | 134 | 45 |
| 7 | 43 | 108 | | | | | 113 | 762 | 79 | 162 | 91 | 45 |
| 8 | 37 | 52 | | | | | 115 | 364 | 83 | 122 | 50 | 37 |
| 9 | 34 | 87 | | | | 1,080 | 111 | 262 | 192 | 75 | 178 | 30 |
| 10 | 26 | 89 | | | | 732 | 125 | 250 | 1,690 | 57 | 220 | 25 |
| 11 | 132 | 71 | | | | 624 | 137 | 2,050 | 714 | 50 | 77 | 24 |
| 12 | 122 | 65 | | | | 576 | 127 | 4,390 | 265 | 283 | 50 | 20 |
| 13 | 83 | 64 | | | 35 | 576 | 108 | 1,970 | 195 | 71 | 32 | 15 |
| 14 | 57 | 29 | | | | 460 | 528 | 1,380 | 170 | 108 | 23 | 14 |
| 15 | 48 | 83 | 25 | 10 | | 391 | 1,170 | 859 | 132 | 64 | 21 | 14 |
| 16 | 41 | 129 | | | | 280 | 2,460 | 750 | 127 | 46 | 4,560 | 13 |
| 17 | 38 | 125 | | | 250 | 223 | 1,980 | 328 | 108 | 38 | 1,180 | 13 |
| 18 | 35 | 139 | | | | 178 | 660 | 256 | 97 | 26 | 340 | 12 |
| 19 | 26 | 95 | | | | 152 | 500 | 212 | 93 | 33 | 189 | 12 |
| 20 | 28 | 50 | | | 1,500 | 155 | 313 | 192 | 91 | 612 | 127 | 14 |
| 21 | 24 | 25 | | | 1,400 | 147 | 217 | 259 | 89 | 415 | 104 | 12 |
| 22 | 22 | 20 | | | 1,250 | 152 | 173 | 235 | 83 | 170 | 75 | 10 |
| 23 | 20 | 25 | | | 1,200 | 149 | 147 | 206 | 77 | 100 | 50 | 10 |
| 24 | 17 | 30 | | | 1,100 | 147 | 132 | 178 | 73 | 115 | 37 | 11 |
| 25 | 22 | 40 | | | 1,100 | 129 | 125 | 139 | 117 | 79 | 38 | 656 |
| 26 | 16 | | 30 | 12 | 1,100 | 129 | 129 | 134 | 368 | 55 | 28 | 510 |
| 27 | 15 | | | | 1,000 | 129 | 157 | 120 | 120 | 43 | 22 | 217 |
| 28 | 104 | 40 | | | 900 | 134 | 129 | 115 | 77 | 38 | 18 | 83 |
| 29 | 1,110 | | | | ------- | 127 | 147 | 115 | 71 | 38 | 25 | 46 |
| 30 | 570 | | | | ------- | 127 | 178 | 106 | 64 | 34 | 142 | 35 |
| 31 | 395 | ------- | | | ------- | 127 | ------- | 108 | ------- | 35 | 68 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 1,110 | 15 | 110 | 6,760 |
| November | 451 | 20 | 100 | 5,950 |
| December | ---------- | ---------- | 31.6 | 1,940 |
| January | ---------- | ---------- | 13.3 | 818 |
| February | ---------- | ---------- | 433 | 24,000 |
| March | 1,080 | 127 | 404 | 24,800 |
| April | 2,460 | 108 | 356 | 21,200 |
| May | 4,390 | 106 | 563 | 34,600 |
| June | 1,690 | 64 | 191 | 11,400 |
| July | 612 | 26 | 101 | 6,210 |
| August | 4,560 | 14 | 257 | 15,800 |
| September | 656 | 10 | 76.8 | 4,570 |
| The year | 4,560 | ---------- | 219 | 158,000 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 9,860 second-feet May 13 (gage height, 6.62 feet); minimum, 27 second-feet Aug. 12 (gage height, 1.28 feet).

1928–1930: Maximum discharge, that of May 13, 1930; minimum, that of Aug. 12, 1930.

REMARKS.—Records fair. No diversions or regulation.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 86 | 256 | | | | 2,500 | 271 | 1,010 | 357 | 136 | 126 | 146 |
| 2 | 535 | 1,660 | | | | 2,400 | 261 | 782 | 318 | 123 | 123 | 139 |
| 3 | 477 | 1,170 | | | | 2,400 | 252 | 674 | 381 | 369 | 126 | 136 |
| 4 | 860 | 911 | | | | 2,300 | 252 | 607 | 966 | 185 | 62 | 117 |
| 5 | 754 | 1,000 | | | | 2,300 | 242 | 574 | 357 | 162 | 60 | 123 |
| 6 | 334 | 1,170 | 140 | 75 | 150 | 2,200 | 225 | 2,740 | 1,030 | 142 | 54 | 108 |
| 7 | 225 | 1,070 | | | | 2,100 | 208 | 674 | 632 | 136 | 43 | 922 |
| 8 | 217 | 754 | | | | 2,100 | 208 | 470 | 345 | 123 | 39 | 345 |
| 9 | 328 | 535 | | | | 2,100 | 208 | 444 | 217 | 123 | 36 | 261 |
| 10 | 301 | 520 | | | | 2,000 | 208 | 405 | 177 | 105 | 36 | 200 |
| 11 | 290 | 438 | | | | 2,600 | 208 | 418 | 170 | 89 | 40 | 323 |
| 12 | 290 | 363 | | | | 2,700 | 208 | 5,080 | 155 | 105 | 27 | 155 |
| 13 | 252 | 318 | | | 140 | 2,600 | 234 | 9,860 | 129 | 117 | 41 | 196 |
| 14 | 412 | 276 | | | | 2,300 | 252 | 6,920 | 129 | 69 | 31 | 132 |
| 15 | 880 | 276 | | | | 1,890 | 312 | 4,380 | 1,890 | 117 | 31 | 108 |
| 16 | 657 | 247 | 110 | 35 | | 1,500 | 345 | 3,460 | 623 | 111 | 108 | 94 |
| 17 | 499 | 229 | | | | 1,000 | 900 | 2,580 | 431 | 99 | 280 | 96 |
| 18 | 381 | 229 | | | 600 | 1,010 | 5,940 | 2,240 | 369 | 83 | 6,980 | 96 |
| 19 | 323 | 229 | | | | 944 | 4,490 | 1,890 | 280 | 69 | 3,560 | 94 |
| 20 | 266 | 86 | | | | 830 | 2,240 | 1,650 | 261 | 155 | 3,080 | 96 |
| 21 | 247 | 89 | | | 1,500 | 648 | 1,750 | 1,450 | 256 | 136 | 2,260 | 81 |
| 22 | 247 | 99 | | | 2,000 | 513 | 1,160 | 1,080 | 256 | 114 | 1,200 | 73 |
| 23 | 213 | 111 | | | 3,000 | 444 | 1,130 | 700 | 229 | 102 | 682 | 67 |
| 24 | 204 | 123 | | | 4,000 | 450 | 1,110 | 607 | 247 | 86 | 375 | 67 |
| 25 | 196 | 136 | | | 3,700 | 363 | 966 | 484 | 247 | 108 | 252 | 78 |
| 26 | 189 | 149 | 120 | 45 | 3,600 | 381 | 922 | 535 | 271 | 499 | 225 | 86 |
| 27 | 181 | 162 | | | 3,000 | 369 | 800 | 464 | 234 | 369 | 196 | 89 |
| 28 | 159 | 142 | | | 2,500 | 312 | 657 | 513 | 200 | 306 | 323 | 83 |
| 29 | 221 | 130 | | | ------- | 301 | 558 | 574 | 177 | 200 | 155 | 2,240 |
| 30 | 238 | 120 | | | ------- | 280 | 657 | 484 | 149 | 149 | 149 | 1,440 |
| 31 | 247 | ------- | | | ------- | 280 | ------- | 399 | ------- | 123 | 217 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 880 | 86 | 345 | 21,200 |
| November | 1,660 | 86 | 433 | 25,800 |
| December | ---------- | ---------- | 123 | 7,560 |
| January | ---------- | ---------- | 51.5 | 3,170 |
| February | ---------- | ---------- | 1,020 | 56,600 |
| March | 2,700 | 280 | 1,420 | 87,300 |
| April | 5,940 | 208 | 906 | 53,900 |
| May | 9,860 | 399 | 1,750 | 108,000 |
| June | 1,890 | 129 | 383 | 22,800 |
| July | 499 | 69 | 155 | 9,530 |
| August | 6,980 | 27 | 675 | 41,500 |
| September | 2,240 | 67 | 273 | 16,200 |
| The year | 9,860 | ---------- | 626 | 454,000 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 1,300 second-feet May 11 (gage height, 5.16 feet); minimum occurred during winter.

1929–30: Maximum discharge, that of May 11, 1930.

REMARKS.—Records good except those during winter, which were estimated because of ice. No regulation.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 95 | 106 | | | | 200 | 174 | 235 | 139 | 77 | 55 | 77 |
| 2 | 97 | 97 | | | | 210 | 179 | 235 | 132 | 69 | 54 | 79 |
| 3 | 108 | 110 | | | | 220 | 188 | 216 | 207 | 68 | 54 | 74 |
| 4 | 121 | 123 | | | | 240 | 172 | 226 | 177 | 70 | 52 | 74 |
| 5 | 117 | 112 | | | | 250 | 169 | 229 | 156 | 68 | 52 | 79 |
| 6 | 116 | 110 | 80 | 60 | 125 | 270 | 164 | 275 | 137 | 74 | 53 | 77 |
| 7 | 114 | 110 | | | | 290 | 166 | 238 | 125 | 75 | 56 | 79 |
| 8 | 108 | 108 | | | | 310 | 164 | 226 | 121 | 70 | 74 | 88 |
| 9 | 117 | 110 | | | | 330 | 166 | 244 | 114 | 66 | 68 | 83 |
| 10 | 114 | 108 | | | | 302 | 179 | 258 | 119 | 83 | 62 | 77 |
| 11 | 112 | 110 | | | | 302 | 174 | 1,000 | 119 | 108 | 59 | 74 |
| 12 | 108 | 101 | | | | 342 | 177 | 758 | 121 | 79 | 58 | 74 |
| 13 | 103 | 92 | | | 110 | 302 | 166 | 436 | 123 | 70 | 59 | 72 |
| 14 | 103 | 90 | | | | 290 | 179 | 382 | 121 | 72 | 60 | 70 |
| 15 | 99 | 108 | | | | 272 | 188 | 355 | 125 | 70 | 61 | 74 |
| 16 | 108 | 112 | 75 | 35 | | 265 | 210 | 373 | 119 | 63 | 108 | 74 |
| 17 | 108 | 110 | | | | 265 | 298 | 391 | 121 | 60 | 97 | 69 |
| 18 | 114 | 103 | | | | 226 | 251 | 364 | 117 | 60 | 88 | 69 |
| 19 | 110 | 77 | | | 125 | 207 | 248 | 317 | 114 | 59 | 83 | 69 |
| 20 | 106 | 77 | | | | 219 | 251 | 261 | 112 | 90 | 88 | 69 |
| 21 | 108 | 75 | | | | 207 | 244 | 244 | 106 | 90 | 81 | 68 |
| 22 | 101 | 70 | | | | 193 | 261 | 226 | 99 | 68 | 79 | 66 |
| 23 | 95 | 70 | | | 146 | 177 | 251 | 213 | 103 | 65 | 75 | 68 |
| 24 | 95 | 75 | | | 244 | 196 | 232 | 210 | 90 | 64 | 79 | 69 |
| 25 | 88 | 75 | | | 275 | 202 | 229 | 207 | 92 | 64 | 81 | 81 |
| 26 | 90 | | 80 | 50 | 248 | 190 | 235 | 196 | 90 | 63 | 72 | 99 |
| 27 | 86 | | | | 226 | 185 | 219 | 185 | 81 | 60 | 75 | 90 |
| 28 | 92 | 80 | | | 200 | 185 | 207 | 185 | 75 | 61 | 97 | 81 |
| 29 | 114 | | | | ------- | 179 | 199 | 159 | 74 | 58 | 86 | 79 |
| 30 | 97 | | | | ------- | 182 | 219 | 151 | 72 | 59 | 79 | 83 |
| 31 | 106 | ------- | | | ------- | 177 | ------- | 144 | ------- | 58 | 77 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 121 | 88 | 105 | 6,460 |
| November | 123 | 70 | 94.6 | 5,630 |
| December | ---------- | ---------- | 78.4 | 4,820 |
| January | ---------- | ---------- | 48.4 | 2,980 |
| February | 275 | ---------- | 143 | 7,940 |
| March | 342 | 177 | 238 | 14,600 |
| April | 298 | 164 | 205 | 12,200 |
| May | 1,000 | 144 | 295 | 18,100 |
| June | 207 | 72 | 117 | 6,960 |
| July | 108 | 58 | 69.7 | 4,290 |
| August | 108 | 52 | 71.7 | 4,410 |
| September | 99 | 66 | 76.2 | 4,530 |
| The year | 1,000 | ---------- | 128 | 92,900 |

## NIOBRARA RIVER BASIN

### 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, 1930.
EXTREMES.—Maximum discharge during year, 869 second-feet May 11 (gage height, 1.04 feet); minimum, 76 second-feet Aug. 2 (gage height, 0.28 foot).
1928–1930: Maximum discharge, 1,230 second-feet June 2, 1929 (gage height, 1.8 feet); minimum, 61 second-feet July 25, 1929.
REMARKS.—Records fair. No diversions or regulation.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 153 | 167 | | | | | | 304 | 167 | 121 | 82 | 131 |
| 2 | 153 | 163 | | | | | | 324 | 170 | 118 | 78 | 121 |
| 3 | 163 | 160 | | | | | | 262 | 186 | 116 | 80 | 121 |
| 4 | 160 | 163 | | | | | | 286 | 206 | 114 | 80 | 156 |
| 5 | 150 | 156 | | | | | | 304 | 219 | 114 | 90 | 163 |
| 6 | 143 | 158 | 120 | 150 | 150 | 180 | 160 | 384 | 202 | 153 | 90 | 174 |
| 7 | 139 | 160 | | | | | | 298 | 224 | 124 | 150 | 198 |
| 8 | 139 | 163 | | | | | | 256 | 228 | 107 | 206 | 170 |
| 9 | 139 | 155 | | | | | | 391 | 224 | 107 | 160 | 178 |
| 10 | 150 | 147 | | | | | | 444 | 224 | 98 | 128 | 182 |
| 11 | 146 | 139 | | | | | 202 | 859 | 219 | 96 | 121 | 163 |
| 12 | 143 | 131 | | | | | 219 | 544 | 219 | 86 | 128 | 136 |
| 13 | 150 | | | | | | 228 | 354 | 194 | 116 | 131 | 143 |
| 14 | 156 | | | | | | 233 | 310 | 156 | 109 | 109 | 126 |
| 15 | 153 | | 110 | 110 | 230 | 235 | 233 | 262 | 160 | 105 | 134 | 136 |
| 16 | 163 | 150 | | | | | 733 | 233 | 156 | 92 | 150 | 128 |
| 17 | 160 | | | | | | 572 | 233 | 156 | 90 | 150 | 131 |
| 18 | 170 | | | | | | 304 | 298 | 143 | 90 | 126 | 126 |
| 19 | 170 | | | | | | 298 | 247 | 153 | 107 | 114 | 116 |
| 20 | 167 | | | | | | 247 | 242 | 156 | 262 | 107 | 118 |
| 21 | 156 | | | | | | 219 | 242 | 143 | 202 | 109 | 121 |
| 22 | 153 | | | | | | 194 | 233 | 139 | 121 | 111 | 121 |
| 23 | 182 | | | | | | 194 | 210 | 143 | 107 | 118 | 126 |
| 24 | 190 | | | | | | 202 | 178 | 136 | 98 | 114 | 118 |
| 25 | 198 | 150 | 120 | 110 | 370 | 200 | 262 | 170 | 124 | 92 | 114 | 136 |
| 26 | 198 | | | | | | 274 | 174 | 128 | 90 | 153 | 186 |
| 27 | 198 | | | | | | 242 | 210 | 126 | 88 | 178 | 190 |
| 28 | 202 | | | | | | 316 | 170 | 118 | 84 | 233 | 219 |
| 29 | 228 | | | | ------- | | 346 | 210 | 121 | 90 | 219 | 182 |
| 30 | 174 | | | | ------- | | 316 | 178 | 124 | 92 | 167 | 170 |
| 31 | 153 | ------- | | | ------- | | ------- | 146 | ------- | 94 | 139 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 228 | 139 | 164 | 10,100 |
| November | 167 | ---------- | 152 | 9,040 |
| December | ---------- | ---------- | 117 | 7,190 |
| January | ---------- | ---------- | 123 | 7,560 |
| February | ---------- | ---------- | 241 | 13,400 |
| March | ---------- | ---------- | 205 | 12,600 |
| April | 733 | ---------- | 248 | 14,800 |
| May | 859 | 146 | 289 | 17,800 |
| June | 228 | 118 | 169 | 10,100 |
| July | 262 | 84 | 112 | 6,890 |
| August | 233 | 78 | 131 | 8,060 |
| September | 219 | 116 | 150 | 8,930 |
| The year | 859 | ---------- | 175 | 126,000 |

## 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, 1930. 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 River near Gordon and near Spencer. No diversions or regulation.

*Monthly discharge, in second-feet, 1929–30*

| Month | Mean | Run-off in acre-feet | Month | Mean | Run-off in acre-feet |
|---|---|---|---|---|---|
| October | 830 | 51,000 | May | 1,460 | 89,800 |
| November | 842 | 50,100 | June | 1,130 | 67,200 |
| December | 627 | 38,600 | July | 679 | 41,800 |
| January | 674 | 41,400 | August | 766 | 47,100 |
| February | 1,210 | 67,200 | September | 805 | 47,900 |
| March | 942 | 57,900 | | | |
| April | 1,120 | 66,600 | The year | 922 | 667,000 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 15,200 second-feet Sept. 6; minimum, 20 second-feet leakage through gates at times.

1927–1930: Maximum discharge occurred during 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, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,000 | 2,040 | 427 | 1,130 | 1,150 | 921 | 1,510 | 2,730 | 1,390 | 982 | 678 | 1,140 |
| 2 | 1,020 | 1,940 | 587 | 1,350 | 911 | 531 | 1,520 | 2,540 | 1,510 | 770 | 700 | 1,140 |
| 3 | 1,290 | 1,700 | 493 | 1,310 | 1,180 | 370 | 1,500 | 2,240 | 1,940 | 918 | 648 | 955 |
| 4 | 1,520 | 1,890 | 558 | 1,280 | 1,250 | 585 | 1,370 | 2,470 | 1,760 | 704 | 688 | 926 |
| 5 | 1,740 | 1,530 | 503 | 927 | 1,260 | 1,030 | 1,360 | 1,960 | 3,520 | 690 | 765 | 907 |
| 6 | 1,020 | 1,540 | 739 | 1,140 | 1,500 | 3,190 | 1,250 | 2,200 | 2,280 | 742 | 787 | 2,710 |
| 7 | 1,460 | 1,490 | 1,180 | 1,030 | 1,680 | 2,500 | 1,540 | 1,530 | 1,550 | 1,120 | 854 | 3,850 |
| 8 | 1,020 | 1,630 | 1,110 | 909 | 1,870 | 1,850 | 1,370 | 1,870 | 1,480 | 1,060 | 824 | 986 |
| 9 | 1,180 | 1,480 | 1,550 | 585 | 1,940 | 2,450 | 1,160 | 1,830 | 1,500 | 858 | 940 | 991 |
| 10 | 1,070 | 1,790 | 1,320 | 530 | 1,770 | 2,490 | 1,290 | 1,930 | 1,460 | 792 | 1,040 | 989 |
| 11 | 1,360 | 1,770 | 1,380 | 360 | 1,860 | 2,000 | 1,100 | 1,360 | 1,550 | 749 | 973 | 953 |
| 12 | 1,060 | 1,670 | 1,350 | 382 | 1,760 | 1,860 | 1,440 | 4,500 | 1,970 | 695 | 968 | 950 |
| 13 | 1,010 | 1,570 | 1,450 | 474 | 1,690 | 1,760 | 1,580 | 5,240 | 1,500 | 692 | 959 | 1,070 |
| 14 | 1,320 | 1,390 | 1,460 | 659 | 1,640 | 1,850 | 1,900 | 4,640 | 1,550 | 916 | 768 | 888 |
| 15 | 1,000 | 1,560 | 1,450 | 730 | 1,580 | 1,840 | 2,070 | 3,670 | 1,440 | 780 | 795 | 1,100 |
| 16 | 1,180 | 1,390 | 1,720 | 808 | 2,010 | 1,570 | 2,130 | 3,170 | 1,320 | 726 | 1,160 | 924 |
| 17 | 977 | 1,460 | 1,120 | 798 | 2,240 | 1,770 | 2,360 | 2,570 | 1,170 | 689 | 2,200 | 882 |
| 18 | 1,200 | 1,650 | 1,070 | 828 | 2,420 | 1,670 | 3,110 | 3,070 | 1,170 | 723 | 1,480 | 886 |
| 19 | 1,110 | 1,310 | 455 | 755 | 2,320 | 1,640 | 3,020 | 2,710 | 1,220 | 818 | 1,050 | 897 |
| 20 | 1,010 | 1,010 | 274 | 1,170 | 2,850 | 1,630 | 3,900 | 2,390 | 1,300 | 693 | 972 | 969 |
| 21 | 1,270 | 711 | 229 | 954 | 4,100 | 1,580 | 2,970 | 2,270 | 1,210 | 997 | 966 | 887 |
| 22 | 1,340 | 349 | 174 | 943 | 3,500 | 1,600 | 2,260 | 2,240 | 1,110 | 934 | 977 | 935 |
| 23 | 1,250 | 371 | 239 | 925 | 3,760 | 1,640 | 2,170 | 1,770 | 1,390 | 944 | 1,010 | 842 |
| 24 | 1,200 | 407 | 274 | 971 | 3,560 | 1,820 | 1,920 | 1,780 | 1,120 | 853 | 1,030 | 800 |
| 25 | 1,290 | 588 | 381 | 1,010 | 2,270 | 1,550 | 1,870 | 1,700 | 1,990 | 756 | 1,100 | 944 |
| 26 | 1,350 | 736 | 592 | 776 | 2,050 | 1,580 | 2,280 | 1,390 | 1,520 | 775 | 996 | 1,100 |
| 27 | 1,120 | 3,060 | 1,100 | 1,110 | 1,640 | 1,470 | 2,860 | 1,310 | 1,150 | 672 | 938 | 1,140 |
| 28 | 1,460 | 2,630 | 1,060 | 798 | 1,540 | 1,500 | 2,300 | 1,500 | 1,100 | 758 | 877 | 1,000 |
| 29 | 1,650 | 1,380 | 1,010 | 944 | ------ | 1,480 | 2,410 | 1,610 | 830 | 848 | 988 | 1,000 |
| 30 | 1,870 | 840 | 1,390 | 975 | ------ | 1,420 | 2,640 | 1,420 | 1,040 | 770 | 1,220 | 900 |
| 31 | 1,900 | ------ | 1,360 | 1,010 | ------ | 1,750 | ------ | 1,480 | ------ | 842 | 934 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 1,900 | 977 | 1,270 | 78,100 |
| November | 3,060 | 349 | 1,430 | 85,100 |
| December | 1,720 | 174 | 903 | 55,500 |
| January | 1,350 | 360 | 889 | 54,700 |
| February | 4,100 | 911 | 2,050 | 114,000 |
| March | 3,190 | 370 | 1,640 | 101,000 |
| April | 3,900 | 1,100 | 2,010 | 120,000 |
| May | 5,240 | 1,310 | 2,360 | 145,000 |
| June | 3,520 | 830 | 1,500 | 89,300 |
| July | 1,120 | 672 | 815 | 50,100 |
| August | 2,200 | 648 | 977 | 60,100 |
| September | 3,850 | 800 | 1,120 | 66,600 |
| The year | 5,240 | 174 | 1,410 | 1,020,000 |

## 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, 1930.
EXTREMES.—Maximum discharge during year, 580 second-feet Mar. 11 (gage height, 11.8 feet); minimum, 0.4 second-foot Dec. 21–27, Aug. 4, 16–24.
1928–1930: 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, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.2 | 1.2 | 1.6 | 0.8 | 0.8 | 96 | 416 | 86 | 28 | 14 | 1.0 | 1.0 |
| 2 | 2.0 | 1.0 | 1.6 | .8 | .8 | 37 | 304 | 86 | 27 | 13 | 1.0 | 1.0 |
| 3 | 2.0 | 1.0 | 1.4 | .8 | 1.0 | 42 | 304 | 86 | 26 | 13 | 1.0 | 1.0 |
| 4 | 1.8 | 1.0 | 1.4 | .8 | 1.0 | 40 | 262 | 86 | 25 | 13 | 1.0 | 1.0 |
| 5 | 1.8 | 1.2 | 1.4 | .8 | 1.0 | 44 | 262 | 75 | 24 | 12 | 1.0 | 1.0 |
| 6 | 2.0 | 1.2 | 1.2 | 1.0 | 1.0 | 36 | 248 | 75 | 22 | 10 | 1.0 | 1.0 |
| 7 | 2.0 | 1.4 | 1.2 | 1.0 | 1.2 | 31 | 234 | 70 | 20 | 9.2 | 1.0 | 1.0 |
| 8 | 2.0 | 1.4 | 1.2 | 1.0 | 1.2 | 80 | 208 | 75 | 18 | 9.1 | 1.0 | 1.0 |
| 9 | 2.0 | 1.4 | 1.2 | 1.0 | 1.2 | 130 | 184 | 80 | 17 | 8.4 | 1.2 | 1.0 |
| 10 | 2.0 | 1.4 | 1.2 | 1.0 | 1.4 | 290 | 172 | 86 | 16 | 7.6 | .8 | 1.0 |
| 11 | 2.4 | 1.6 | 1.0 | .8 | 1.2 | 565 | 172 | 86 | 16 | 7.2 | .8 | 1.0 |
| 12 | 2.6 | 1.6 | .8 | .8 | 1.2 | 535 | 172 | 91 | 16 | 6.9 | .8 | 1.0 |
| 13 | 2.6 | 1.8 | .8 | .8 | 1.2 | 430 | 130 | 118 | 15 | 6.2 | .6 | 1.0 |
| 14 | 2.6 | 2.0 | .8 | .8 | 1.4 | 346 | 86 | 113 | 15 | 5.5 | .4 | 1.0 |
| 15 | 2.4 | 2.0 | .8 | .8 | 1.2 | 374 | 56 | 108 | 15 | 5.0 | .6 | 1.0 |
| 16 | 2.6 | 2.0 | .6 | .8 | 1.6 | 430 | 56 | 102 | 15 | 4.5 | .4 | 1.0 |
| 17 | 2.4 | 2.0 | .6 | .8 | 2.0 | 416 | 60 | 80 | 15 | 4.2 | .4 | 1.0 |
| 18 | 2.2 | 2.0 | .6 | .8 | 4.5 | 388 | 75 | 80 | 15 | 4.0 | .4 | 1.0 |
| 19 | 2.2 | 1.8 | .6 | .8 | 24 | 276 | 91 | 75 | 15 | 3.8 | .4 | 1.0 |
| 20 | 2.2 | 1.8 | .6 | 1.0 | 402 | 262 | 118 | 68 | 15 | 3.6 | .4 | 1.0 |
| 21 | 2.2 | 1.8 | .4 | .8 | 490 | 221 | 124 | 58 | 15 | 3.4 | .4 | 1.0 |
| 22 | 2.0 | 1.8 | .4 | .8 | 490 | 196 | 113 | 58 | 15 | 3.4 | .4 | 1.0 |
| 23 | 2.0 | 1.8 | .4 | .8 | 460 | 208 | 108 | 52 | 16 | 2.8 | .4 | 1.0 |
| 24 | 2.0 | 1.8 | .4 | .8 | 550 | 221 | 108 | 50 | 16 | 2.2 | .4 | .8 |
| 25 | 2.0 | 1.8 | .4 | .8 | 304 | 304 | 102 | 48 | 16 | 1.8 | .6 | .8 |
| 26 | 1.6 | 1.8 | .4 | .8 | 136 | 290 | 102 | 46 | 16 | 1.4 | .6 | .8 |
| 27 | 1.2 | 1.8 | .4 | .8 | 118 | 208 | 91 | 40 | 16 | 1.2 | .6 | .8 |
| 28 | 1.2 | 1.8 | .6 | .8 | 118 | 346 | 86 | 38 | 16 | 1.0 | .6 | .8 |
| 29 | 1.2 | 1.8 | .6 | .8 | ------- | 445 | 80 | 36 | 15 | 1.0 | .8 | .8 |
| 30 | 1.2 | 1.8 | .8 | 1.0 | ------- | 445 | 80 | 32 | 15 | 1.0 | .8 | .8 |
| 31 | 1.2 | ------- | .8 | 1.0 | ------- | 445 | ------- | 30 | ------- | 1.0 | .8 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 2.6 | 1.2 | 1.99 | 122 |
| November | 2.0 | 1.0 | 1.63 | 97 |
| December | 1.6 | .4 | .85 | 52 |
| January | 1.0 | .8 | .85 | 52 |
| February | 550 | .8 | 111 | 6,160 |
| March | 565 | 31 | 264 | 16,200 |
| April | 416 | 56 | 153 | 9,100 |
| May | 118 | 30 | 71.4 | 4,390 |
| June | 28 | 15 | 17.7 | 1,050 |
| July | 14 | 1.0 | 5.82 | 358 |
| August | 1.2 | .4 | .70 | 43 |
| September | 1.0 | .8 | .95 | 57 |
| The year | 565 | .4 | 52.2 | 37,700 |

### JAMES RIVER AT HURON, S. DAK.

LOCATION.—Staff gage in sec. 6, T. 110 N., R. 61 W., at Huron. Zero of gage 1,228.70 feet above mean sea level.
DRAINAGE AREA.—11,500 square miles.
RECORDS AVAILABLE.—August, 1928, to September, 1930.
EXTREMES.—Maximum discharge during year, 560 second-feet May 13 (gage height, 5.12 feet); no flow during part of February.
1928–1930: Maximum discharge, 2,110 second-feet Mar 20, 1929 (gage height, 12.0 feet); no flow during February, 1930.
REMARKS.—Records fair except those for December, which were estimated because of ice. Minor diversions for city water supplies above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Mar. | Apr | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 12 | 38 | | 40 | 329 | 463 | 263 | 194 | 11 | 27 |
| 2 | 10 | 38 | | 45 | 306 | 425 | 307 | 187 | 10 | 28 |
| 3 | 9 | 38 | | 50 | 329 | 402 | 281 | 120 | 10 | 27 |
| 4 | 8 | 42 | | 50 | 329 | 412 | 250 | 67 | 16 | 25 |
| 5 | 8 | 42 | 20 | 50 | 352 | 448 | 284 | 92 | 17 | 26 |
| 6 | 8 | 42 | | 60 | 324 | 416 | 243 | 86 | 17 | 26 |
| 7 | 8 | 40 | | 70 | 324 | 451 | 221 | 77 | 18 | 26 |
| 8 | 8 | 35 | | 70 | 301 | 435 | 194 | 72 | 19 | 25 |
| 9 | 8 | 35 | | 70 | 301 | 442 | 194 | 66 | 22 | 24 |
| 10 | 8 | 32 | | 76 | 336 | 458 | 192 | 62 | 23 | 22 |
| 11 | 10 | 34 | | 76 | 320 | 482 | 158 | 52 | 19 | 17 |
| 12 | 16 | 40 | | 135 | 297 | 515 | 144 | 45 | 16 | 16 |
| 13 | 13 | 44 | 15 | 195 | 343 | 552 | 176 | 48 | 15 | 18 |
| 14 | 13 | 38 | | 191 | 343 | 515 | 144 | 41 | 18 | 18 |
| 15 | 13 | 36 | | 211 | 366 | 496 | 121 | 38 | 22 | 18 |
| 16 | 12 | 35 | | 251 | 363 | 513 | 105 | 34 | 22 | 18 |
| 17 | 9 | 38 | | 219 | 363 | 472 | 93 | 32 | 22 | 17 |
| 18 | 10 | 34 | | 297 | 386 | 472 | 88 | 33 | 30 | 15 |
| 19 | 12 | 33 | | 343 | 386 | 501 | 81 | 32 | 75 | 13 |
| 20 | 12 | 32 | | 506 | 409 | 494 | 86 | 33 | 146 | 13 |
| 21 | 12 | 32 | | 501 | 409 | 487 | 91 | 32 | 144 | 10 |
| 22 | 15 | 29 | | 501 | 386 | 484 | 87 | 28 | 28 | 8 |
| 23 | 27 | 29 | | 538 | 386 | 446 | 83 | 21 | 28 | 8 |
| 24 | 19 | 32 | 12 | 489 | 386 | 444 | 72 | 19 | 28 | 7 |
| 25 | 15 | 29 | | 407 | 398 | 370 | 70 | 16 | 34 | 7 |
| 26 | 12 | 29 | | 379 | 421 | 379 | 68 | 16 | 33 | 8 |
| 27 | 14 | 29 | | 221 | 398 | 398 | 62 | 16 | 24 | 7 |
| 28 | 14 | 29 | | 232 | 392 | 354 | 56 | 16 | 30 | 6 |
| 29 | 14 | 29 | | 333 | 409 | 340 | 46 | 15 | 28 | 6 |
| 30 | 20 | 29 | | 310 | 463 | 304 | 49 | 14 | 25 | 6 |
| 31 | 38 | ------- | | 333 | ------- | 292 | ------- | 13 | 24 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 38 | 8 | 13.1 | 806 |
| November | 44 | 29 | 34.7 | 2,060 |
| December | ------- | ------- | 15.1 | 928 |
| March | 538 | 40 | 234 | 14,400 |
| April | 463 | 301 | 362 | 21,500 |
| May | 552 | 292 | 441 | 27,100 |
| June | 307 | 46 | 144 | 8,570 |
| July | 194 | 13 | 52.2 | 3,210 |
| August | 146 | 10 | 31.4 | 1,930 |
| September | 28 | 6 | 16.4 | 976 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 856 second-feet May 12 (gage height, 5.63 feet); minimum occurred during winter.

1928–1930: Maximum discharge, 2,970 second-feet Mar. 31, 1929 (gage height, 11.92 feet); minimum occurred during winter.

REMARKS.—Records good except those for estimated periods, which are fair. Operation of water-power plant 20 miles upstream may affect flow slightly.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 16 | 42 | [a] 60 | 444 | 488 | 334 | [a] 365 | 34 | 41 |
| 2 | 17 | 38 | [a] 60 | 400 | 488 | 366 | [a] 393 | 48 | 48 |
| 3 | 20 | 39 | [a] 60 | 412 | 490 | 372 | [a] 370 | 29 | 47 |
| 4 | 21 | 38 | [a] 60 | 406 | 476 | 356 | [a] 320 | 33 | 50 |
| 5 | 26 | 31 | [a] 60 | 402 | 512 | 362 | [a] 280 | 30 | 48 |
| 6 | 26 | 26 | [a] 70 | 410 | 537 | 360 | [a] 250 | 21 | 42 |
| 7 | 22 | 26 | [a] 70 | 402 | 537 | 370 | [a] 210 | [a] 20 | 34 |
| 8 | 24 | 27 | 80 | 376 | 534 | 364 | [a] 180 | [a] 20 | 51 |
| 9 | 23 | 30 | 77 | 376 | 539 | 354 | [a] 158 | [a] 20 | 56 |
| 10 | 24 | 39 | 78 | 384 | 586 | 346 | [a] 140 | 20 | 49 |
| 11 | 23 | 38 | 99 | 417 | 695 | 328 | [a] 120 | 18 | 46 |
| 12 | 22 | 48 | 110 | 400 | 832 | 310 | [a] 100 | 18 | 43 |
| 13 | 24 | 55 | 92 | 392 | 840 | [a] 308 | [a] 88 | 16 | 43 |
| 14 | 23 | 46 | 98 | 404 | 769 | 306 | [a] 72 | 18 | 44 |
| 15 | 24 | 44 | 98 | 410 | 671 | [a] 287 | 70 | 14 | 41 |
| 16 | 23 | 41 | 128 | 429 | 683 | [a] 258 | 71 | 13 | 41 |
| 17 | 23 | 40 | 182 | 457 | 681 | [a] 220 | 70 | 14 | 40 |
| 18 | 22 | 41 | 226 | 486 | 657 | 196 | 71 | 24 | 38 |
| 19 | 24 | 35 | 256 | 471 | 676 | 198 | 52 | 104 | 36 |
| 20 | 23 | 35 | 294 | 465 | 666 | 206 | 57 | 90 | 39 |
| 21 | 24 | | 310 | 480 | [a] 650 | 193 | 57 | 147 | 29 |
| 22 | 24 | | 314 | 482 | [a] 640 | 179 | 55 | 362 | 31 |
| 23 | 22 | | [a] 400 | 480 | [a] 590 | [a] 182 | 51 | 425 | 32 |
| 24 | 26 | | [a] 580 | 480 | [a] 586 | [a] 178 | 50 | 476 | 31 |
| 25 | 27 | [a] 35 | [a] 560 | 476 | [a] 530 | [a] 168 | 41 | 310 | 31 |
| 26 | 26 | | [a] 550 | 476 | [a] 536 | [a] 162 | 39 | 264 | 38 |
| 27 | 30 | | [a] 550 | 469 | [a] 532 | [a] 154 | 54 | 308 | [a] 37 |
| 28 | 33 | | [a] 540 | 459 | 480 | [a] 147 | 53 | [a] 162 | 36 |
| 29 | 34 | | 530 | 459 | 454 | [a] 140 | 35 | [a] 150 | 34 |
| 30 | 37 | | 493 | 499 | 410 | [a] 260 | 31 | 90 | 33 |
| 31 | 48 | ------- | 469 | ------- | 380 | ------- | 32 | 70 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 48 | 16 | 25.2 | 1,550 |
| November | 55 | 26 | 37.0 | 2,200 |
| March | 580 | 60 | 244 | 15,000 |
| April | 486 | 376 | 437 | 26,000 |
| May | 840 | 380 | 585 | 36,000 |
| June | 372 | 140 | 265 | 15,800 |
| July | 393 | 31 | 127 | 7,810 |
| August | 476 | 13 | 105 | 6,460 |
| September | 56 | 31 | 40.3 | 2,400 |

[a] Estimated.

## 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, 1930.
EXTREMES.—Maximum discharge during year, 1,700 second-feet Feb. 25 (gage height, 7.12 feet); minimum, 2 second-feet Aug. 6 (gage height, 0.4 foot).
1928–1930: Maximum discharge, 5,200 second-feet Mar. 15, 1929 (gage height, 14.04 feet); minimum, that of Aug. 6, 1930.
REMARKS.—Records good except those for periods Nov. 18–30, Feb. 1–19, Mar. 1–11, which were estimated because of ice. No diversions or regulation.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 64 | 60 | | | 87 | 84 | 42 | 14 | 6 | 8 |
| 2 | 55 | 67 | | | 85 | 76 | 41 | 13 | 7 | 6 |
| 3 | 51 | 69 | 30 | 850 | 82 | 93 | 40 | 12 | 6 | 6 |
| 4 | 50 | 67 | | | 78 | 88 | 44 | 14 | 4 | 4 |
| 5 | 46 | 69 | | | 75 | 88 | 46 | 14 | 3 | 7 |
| 6 | 43 | 65 | | | 72 | 82 | 42 | 13 | 2 | 8 |
| 7 | 41 | 59 | | | 72 | 78 | 41 | 12 | 3 | 10 |
| 8 | 41 | 57 | 45 | 700 | 70 | 78 | 45 | 12 | 4 | 27 |
| 9 | 47 | 51 | | | 70 | 90 | 44 | 12 | 3 | 34 |
| 10 | 52 | 57 | | | 67 | 96 | 42 | 10 | 3 | 34 |
| 11 | 54 | 58 | | 550 | 69 | 169 | 39 | 10 | 3 | 36 |
| 12 | 57 | 55 | | 532 | 71 | 188 | 37 | 8 | 3 | 41 |
| 13 | 52 | 71 | 75 | 415 | 70 | 221 | 35 | 8 | 3 | 44 |
| 14 | 52 | 67 | | 370 | 71 | 231 | 32 | 8 | 3 | 38 |
| 15 | 51 | 61 | | 314 | 73 | 222 | 31 | 8 | 3 | 32 |
| 16 | 49 | 50 | 300 | 221 | 75 | 207 | 28 | 8 | 3 | 22 |
| 17 | 47 | 47 | 500 | 202 | 75 | 193 | 27 | 8 | 3 | 17 |
| 18 | 45 | 45 | 800 | 194 | 77 | 173 | 26 | 9 | 3 | 16 |
| 19 | 43 | 40 | 1,000 | 158 | 89 | 165 | 25 | 9 | 6 | 16 |
| 20 | 41 | 40 | 1,210 | 135 | 94 | 140 | 24 | 8 | 8 | 14 |
| 21 | 41 | | 1,310 | 123 | 90 | 122 | 22 | 8 | 8 | 14 |
| 22 | 41 | | 1,490 | 114 | 85 | 107 | 22 | 7 | 7 | 12 |
| 23 | 41 | 30 | 1,550 | 105 | 83 | 98 | 22 | 6 | 6 | 14 |
| 24 | 41 | | 1,670 | 110 | 76 | 89 | 21 | 6 | 6 | 20 |
| 25 | 39 | | 1,690 | 122 | 71 | 79 | 21 | 6 | 6 | 20 |
| 26 | 40 | | 1,610 | 112 | 72 | 71 | 20 | 5 | 5 | 17 |
| 27 | 39 | | 1,510 | 110 | 70 | 69 | 19 | 5 | 5 | 16 |
| 28 | 48 | 35 | 817 | 99 | 73 | 63 | 19 | 5 | 5 | 14 |
| 29 | 53 | | -------- | 82 | 76 | 57 | 17 | 5 | 4 | 12 |
| 30 | 53 | | -------- | 89 | 82 | 49 | 15 | 4 | 4 | 13 |
| 31 | 58 | -------- | -------- | 88 | -------- | 45 | -------- | 4 | 5 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 64 | 39 | 47.6 | 2,930 |
| November | 71 | ---------- | 49.3 | 2,930 |
| February | 1,690 | ---------- | 579 | 32,200 |
| March | ---------- | 82 | 387 | 23,800 |
| April | 94 | 67 | 76.7 | 4,560 |
| May | 231 | 45 | 116 | 7,130 |
| June | 46 | 15 | 31.0 | 1,840 |
| July | 14 | 4 | 8.74 | 537 |
| August | 8 | 2 | 4.52 | 278 |
| September | 44 | 4 | 19.1 | 1,140 |

## 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, 1930.
EXTREMES.—Maximum discharge during year, 3,740 second-feet June 6 (gage height, 9.92 feet); minimum occurred during winter.
1928–1930: Maximum discharge, 14,000 second-feet Mar. 15, 1929 (gage height, 18.63 feet); minimum occurred during winter.
REMARKS.—Records good except those during winter, which were estimated because of ice. No diversions.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 436 | 310 | | | | 1,090 | 379 | 387 | 460 | 347 | 99 | 80 |
| 2 | 408 | 337 | | | | 1,020 | 365 | 387 | 417 | 319 | 97 | 78 |
| 3 | 365 | 365 | | | 100 | 1,260 | 365 | 376 | 535 | 291 | 97 | 78 |
| 4 | 351 | 408 | | | | 1,400 | 365 | 376 | 885 | 277 | 97 | 76 |
| 5 | 310 | 495 | 160 | 100 | | 1,180 | 351 | 371 | 2,800 | 264 | 97 | 78 |
| 6 | 310 | 480 | | | | 1,130 | 348 | 376 | 3,660 | 264 | 94 | 78 |
| 7 | 296 | 436 | | | | 985 | 357 | 413 | 3,160 | 237 | 90 | 76 |
| 8 | 296 | 422 | | | 100 | 757 | 329 | 552 | 2,150 | 224 | 88 | 142 |
| 9 | 256 | 379 | | | | 725 | 318 | 779 | 1,600 | 214 | 88 | 140 |
| 10 | 246 | 422 | | | | 663 | 324 | 1,720 | 1,240 | 202 | 87 | 114 |
| 11 | 256 | 379 | | | | 663 | 318 | 2,740 | 1,040 | 194 | 86 | 333 |
| 12 | 296 | 351 | | | | 632 | 313 | 3,220 | 885 | 187 | 84 | 460 |
| 13 | 337 | 379 | | | 200 | 632 | 315 | 2,980 | 780 | 170 | 83 | 460 |
| 14 | 324 | 351 | | | | 601 | 332 | 2,520 | 685 | 165 | 83 | 375 |
| 15 | 324 | 337 | 130 | 60 | | 601 | 313 | 2,100 | 625 | 161 | 83 | 291 |
| 16 | 337 | 365 | | | 400 | 632 | 307 | 1,850 | 535 | 153 | 83 | 222 |
| 17 | 324 | 351 | | | 600 | 663 | 337 | 1,620 | 535 | 149 | 86 | 185 |
| 18 | 324 | 324 | | | 1,000 | 694 | 379 | 1,440 | 490 | 140 | 103 | 151 |
| 19 | 296 | 296 | | | 1,500 | 663 | 362 | 1,310 | 475 | 135 | 99 | 126 |
| 20 | 283 | 283 | | | 2,000 | 632 | 431 | 1,220 | 460 | 133 | 94 | 123 |
| 21 | 283 | 172 | | | 2,640 | 570 | 442 | 1,120 | 431 | 133 | 97 | 123 |
| 22 | 256 | | | | 2,150 | 525 | 477 | 1,040 | 417 | 128 | 83 | 119 |
| 23 | 256 | | | | 2,360 | 525 | 480 | 920 | 403 | 126 | 76 | 123 |
| 24 | 256 | | | | 2,000 | 495 | 480 | 815 | 431 | 114 | 83 | 123 |
| 25 | 246 | | | | 1,670 | 480 | 460 | 745 | 850 | 110 | 75 | 119 |
| 26 | 248 | 175 | 125 | 75 | 1,440 | 466 | 436 | 685 | 1,280 | 110 | 78 | 133 |
| 27 | 238 | | | | 1,130 | 436 | 422 | 655 | 850 | 105 | 81 | 137 |
| 28 | 233 | | | | 885 | 408 | 405 | 595 | 595 | 105 | 72 | 170 |
| 29 | 240 | | | | ------- | 408 | 399 | 565 | 492 | 101 | 76 | 142 |
| 30 | 251 | | | | ------- | 393 | 390 | 505 | 389 | 101 | 76 | 140 |
| 31 | 283 | ------- | | | ------- | 379 | ------- | 490 | ------- | 103 | 80 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 436 | 233 | 296 | 18,200 |
| November | 495 | ---------- | 307 | 18,300 |
| December | ---------- | ---------- | 138 | 8,480 |
| January | ---------- | ---------- | 78.2 | 4,810 |
| February | 2,640 | ---------- | 778 | 43,200 |
| March | 1,400 | 379 | 700 | 43,000 |
| April | 480 | 313 | 377 | 22,400 |
| May | 3,220 | 371 | 1,120 | 68,900 |
| June | 3,660 | 389 | 985 | 58,600 |
| July | 347 | 101 | 176 | 10,800 |
| August | 103 | 72 | 86.9 | 5,340 |
| September | 460 | 76 | 166 | 9,880 |
| The year | 3,660 | ---------- | 431 | 312,000 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 2,990 second-feet June 13 (gage height, 11.02 feet); minimum occurred during winter.

1918–1924, 1928–1930: 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 during winter, which were estimated because of ice. No diversions.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 61 | 211 | | | | 582 | 126 | 208 | 344 | 325 | 59 | 20 |
| 2 | 66 | 170 | | | | 555 | 122 | 207 | 317 | 298 | 57 | 24 |
| 3 | 71 | 144 | | | | 535 | 120 | 203 | 308 | 276 | 52 | 27 |
| 4 | 71 | 135 | | | | 510 | 117 | 199 | 1,440 | 254 | 50 | 24 |
| 5 | 69 | 147 | 50 | 30 | 29 | 483 | 114 | 197 | 2,310 | 242 | 50 | 20 |
| 6 | 68 | 163 | | | | 454 | 111 | 201 | 1,450 | 222 | 45 | 20 |
| 7 | 67 | 180 | | | | 426 | 108 | 214 | 1,490 | 190 | 44 | 21 |
| 8 | 69 | 195 | | | | 404 | 105 | 210 | 1,890 | 184 | 40 | 20 |
| 9 | 74 | 192 | | | | 378 | 103 | 1,240 | 2,300 | 174 | 41 | 25 |
| 10 | 76 | 182 | | | | 363 | 100 | 1,320 | 2,440 | 170 | 37 | 30 |
| 11 | 118 | 179 | | | 35 | 335 | 98 | 1,340 | 2,150 | 161 | 38 | 34 |
| 12 | 127 | 179 | | | 45 | 310 | 95 | 1,650 | 1,670 | 152 | 38 | 34 |
| 13 | 95 | 175 | | | 50 | 285 | 92 | 1,830 | 2,330 | 141 | 34 | 30 |
| 14 | 85 | 171 | | | 75 | 265 | 91 | 1,720 | 2,520 | 128 | 31 | 27 |
| 15 | 87 | 164 | 40 | 15 | 125 | 250 | 95 | 1,460 | 1,570 | 118 | 46 | 20 |
| 16 | 94 | 161 | | | 150 | 229 | 95 | 1,520 | 1,140 | 116 | 47 | 20 |
| 17 | 96 | 154 | | | 200 | 205 | 246 | 1,470 | 980 | 108 | 40 | 22 |
| 18 | 96 | 149 | | | 350 | 194 | 290 | 1,340 | 866 | 104 | 38 | 21 |
| 19 | 98 | 147 | | | 550 | 190 | 222 | 1,230 | 743 | 99 | 34 | 19 |
| 20 | 95 | 144 | | | 757 | 182 | 180 | 1,100 | 662 | 94 | 31 | 18 |
| 21 | 101 | 138 | | | 859 | 175 | 191 | 980 | 602 | 276 | 28 | 34 |
| 22 | 104 | 124 | | | 890 | 168 | 214 | 920 | 568 | 152 | 26 | 36 |
| 23 | 101 | 130 | | | 781 | 163 | 230 | 845 | 488 | 93 | 24 | 34 |
| 24 | 95 | 138 | | | 838 | 161 | 262 | 767 | 462 | 88 | 21 | 32 |
| 25 | 90 | 141 | | | 949 | 159 | 288 | 698 | 505 | 81 | 21 | 27 |
| 26 | 89 | 128 | 45 | 25 | 856 | 156 | 264 | 632 | 518 | 76 | 25 | 96 |
| 27 | 90 | 120 | | | 736 | 151 | 240 | 562 | 532 | 75 | 30 | 44 |
| 28 | 90 | | | | 634 | 144 | 212 | 502 | 460 | 69 | 28 | 40 |
| 29 | 92 | 80 | | | ------ | 141 | 212 | 450 | 398 | 65 | 23 | 34 |
| 30 | 95 | | | | ------ | 138 | 212 | 407 | 355 | 63 | 21 | 87 |
| 31 | 144 | ------ | | | ------ | 132 | ------ | 377 | ------ | 61 | 20 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 144 | 61 | 89.5 | 5,500 |
| November | 211 | ------ | 150 | 8,930 |
| December | ------ | ------ | 45 | 2,770 |
| January | ------ | ------ | 23.4 | 1,440 |
| February | 949 | ------ | 328 | 18,200 |
| March | 582 | 132 | 285 | 17,500 |
| April | 290 | 91 | 165 | 9,820 |
| May | 1,830 | 197 | 839 | 51,600 |
| June | 2,520 | 308 | 1,130 | 67,200 |
| July | 325 | 61 | 150 | 9,220 |
| August | 59 | 20 | 32.9 | 2,020 |
| September | 96 | 18 | 29.7 | 1,770 |
| The year | 2,520 | ------ | 271 | 196,000 |

## PLATTE RIVER BASIN

### GRIZZLY CREEK NEAR WALDEN, COLO.

LOCATION.—Water-stage recorder in sec. 29, T. 8 N., R. 80 W., 10 miles south of Walden and half a mile above Little Grizzly Creek.

DRAINAGE AREA.—234 square miles.

RECORDS AVAILABLE.—May, 1904, to October, 1905; May to September, 1923; October, 1926, to September, 1930.

EXTREMES.—Maximum discharge during year, 664 second-feet Apr. 11 (gage height, 4.32 feet); minimum occurred during winter.

1904–5, 1923, 1928–1930: Maximum discharge, 1,340 second-feet June 10, 1923 (gage height, 4.8 feet); minimum, 1 second-foot Aug. 24–28, 1905.

REMARKS.—Records good except those for periods of missing gage heights, Oct. 1–5, 28–31, Apr. 1–9, which are fair. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | 40 | ------- | 80 | 322 | 355 | 25 | 39 | 31 |
| 2 | 43 | 27 | 82 | 341 | 303 | 22 | 37 | 32 |
| 3 | 29 | ------- | 90 | 353 | 225 | 19 | 35 | 33 |
| 4 | 45 | ------- | 100 | 305 | 177 | 19 | 44 | 31 |
| 5 | 52 | ------- | 130 | 255 | 172 | 19 | 66 | 31 |
| 6 | 38 | ------- | 162 | 221 | 153 | 19 | 48 | 34 |
| 7 | 35 | ------- | 270 | 175 | 140 | 17 | 42 | 34 |
| 8 | 38 | ------- | 540 | 159 | 157 | 17 | 40 | 38 |
| 9 | 44 | ------- | 470 | 150 | 172 | 17 | 56 | 37 |
| 10 | 49 | ------- | 512 | 133 | 191 | 17 | 52 | 34 |
| 11 | 54 | ------- | 596 | 111 | 181 | 34 | 42 | 30 |
| 12 | 54 | ------- | 585 | 95 | 168 | 37 | 43 | 29 |
| 13 | 45 | ------- | 517 | 92 | 162 | 39 | 50 | 31 |
| 14 | 39 | ------- | 523 | 96 | 151 | 41 | 133 | 32 |
| 15 | 38 | ------- | 499 | 112 | 136 | 41 | 211 | 31 |
| 16 | 38 | ------- | 430 | 120 | 116 | 29 | 114 | 30 |
| 17 | 35 | ------- | 259 | 127 | 93 | 26 | 84 | 30 |
| 18 | 35 | ------- | 227 | 130 | 88 | 24 | 71 | 26 |
| 19 | 36 | ------- | 223 | 119 | 98 | 22 | 64 | 19 |
| 20 | 33 | ------- | 207 | 110 | 96 | 21 | 54 | 19 |
| 21 | 31 | ------- | 300 | 125 | 88 | 24 | 48 | 17 |
| 22 | 31 | ------- | 398 | 162 | 108 | 47 | 44 | 17 |
| 23 | 31 | ------- | 463 | 211 | 140 | 49 | 40 | 21 |
| 24 | 26 | ------- | 504 | 151 | 89 | 40 | 35 | 26 |
| 25 | 25 | ------- | 542 | 127 | 63 | 47 | 31 | 32 |
| 26 | 25 | ------- | 563 | 130 | 49 | 38 | 32 | 40 |
| 27 | 28 | ------- | 523 | 140 | 43 | 31 | 36 | 38 |
| 28 | 28 | ------- | 520 | 189 | 39 | 28 | 40 | 32 |
| 29 | 28 | ------- | 398 | 240 | 37 | 31 | 38 | 29 |
| 30 | 27 | ------- | 346 | 271 | 31 | 55 | 38 | 29 |
| 31 | 27 | ------- | ------- | 305 | ------- | 55 | 34 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 54 | 25 | 36.4 | 2,240 |
| April | 596 | 80 | 369 | 22,000 |
| May | 353 | 92 | 180 | 11,100 |
| June | 355 | 31 | 134 | 7,970 |
| July | 55 | 17 | 30.6 | 1,880 |
| August | 211 | 31 | 56.2 | 3,460 |
| September | 40 | 17 | 29.8 | 1,770 |

### NORTH PLATTE RIVER NEAR WALDEN, COLO.

LOCATION.—Water-stage recorder in sec. 5, T. 8 N., R. 80 W., 8 miles southwest of Walden.

DRAINAGE AREA.—446 square miles.

RECORDS AVAILABLE.—May, 1904, to October, 1905; October, 1923, to September, 1930.

EXTREMES.—Maximum discharge during year (estimated), 1,770 second-feet Apr. 12; minimum occurred during winter.

1904–5, 1923–1930: Maximum discharge, 1,930 second-feet June 1, 1928 (gage height, 5.33 feet); minimum, 15 second-feet Sept. 13–18, 1905.

REMARKS.—Records good except those for periods of missing gage heights, Apr. 1–24, Aug. 25 to Sept. 22, which are fair. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|
| 1 | 130 | 160 | 608 | 860 | 111 | 175 | 90 |
| 2 | 130 | 170 | 608 | 710 | 101 | 154 | 84 |
| 3 | 128 | 190 | 670 | 570 | 92 | 157 | 84 |
| 4 | 152 | 250 | 670 | 435 | 86 | 209 | 90 |
| 5 | 154 | 410 | 532 | 414 | 82 | 233 | 95 |
| 6 | 117 | 600 | 494 | 392 | 76 | 212 | 100 |
| 7 | 109 | 970 | 407 | 446 | 78 | 221 | 102 |
| 8 | 130 | 1,500 | 381 | 608 | 78 | 186 | 105 |
| 9 | 161 | 850 | 378 | 692 | 78 | 183 | 105 |
| 10 | 183 | 1,100 | 291 | 760 | 76 | 181 | 98 |
| 11 | 183 | 1,750 | 246 | 785 | 80 | 178 | 88 |
| 12 | 161 | 1,770 | 218 | 735 | 117 | 178 | 85 |
| 13 | 152 | 1,500 | 189 | 760 | 150 | 192 | 88 |
| 14 | 141 | 810 | 175 | 785 | 227 | 367 | 78 |
| 15 | 122 | 610 | 183 | 649 | 170 | 670 | 57 |
| 16 | 115 | 589 | 206 | 608 | 126 | 461 | 60 |
| 17 | 108 | 590 | 227 | 608 | 120 | 308 | 62 |
| 18 | 101 | 600 | 249 | 628 | 124 | 265 | 65 |
| 19 | 102 | 600 | 236 | 628 | 128 | 243 | 60 |
| 20 | 91 | 660 | 215 | 589 | 128 | 215 | 52 |
| 21 | 94 | 790 | 221 | 608 | 134 | 197 | 50 |
| 22 | 92 | 930 | 360 | 628 | 230 | 181 | 52 |
| 23 | 94 | 1,040 | 435 | 715 | 218 | 140 | 55 |
| 24 | 92 | 1,100 | 312 | 532 | 186 | 97 | 90 |
| 25 | 88 | 1,110 | 252 | 356 | 175 | 98 | 115 |
| 26 | 91 | 1,110 | 275 | 262 | 159 | 110 | 124 |
| 27 | 91 | 935 | 389 | 197 | 141 | 135 | 120 |
| 28 | 91 | 860 | 589 | 166 | 137 | 150 | 108 |
| 29 | 100 | 760 | 738 | 134 | 152 | 145 | 108 |
| 30 | 110 | 628 | 710 | 119 | 209 | 120 | 108 |
| 31 | 120 | -------- | 810 | -------- | 203 | 97 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 183 | 88 | 120 | 7,380 |
| April | 1,770 | 160 | 831 | 49,400 |
| May | 810 | 175 | 396 | 24,300 |
| June | 860 | 119 | 546 | 32,500 |
| July | 230 | 76 | 135 | 8,300 |
| August | 670 | 97 | 208 | 12,800 |
| September | 124 | 50 | 85.9 | 5,110 |

## 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, 1930.

EXTREMES.—Maximum discharge during year (estimated), 3,900 second-feet Apr. 11; minimum occurred during winter.

1915–1930: Maximum discharge, 6,720 second-feet June 11, 1923 (gage height, 6.24 feet); minimum, 67 second-feet Oct. 7, 20, 1922 (gage height, 1.17 feet).

REMARKS.—Records good except those for periods of missing gage heights, Nov. 5 to Apr. 12, July 2–12, which were estimated on basis of comparison with flow of North Platte River at Saratoga. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | 353 | 195 | 350 | 1,060 | 1,980 | 265 | 397 | 286 |
| 2 | 342 | 206 | 360 | 1,010 | 2,020 | 250 | 328 | 256 |
| 3 | 391 | 229 | 410 | 1,060 | 1,560 | 220 | 323 | 244 |
| 4 | 486 | 248 | 600 | 1,110 | 1,170 | 190 | 369 | 237 |
| 5 | 455 | ------ | 950 | 942 | 990 | 170 | 397 | 240 |
| 6 | 391 | ------ | 1,400 | 802 | 914 | 148 | 443 | 256 |
| 7 | 359 | ------ | 2,000 | 688 | 838 | 140 | 414 | 282 |
| 8 | 386 | ------ | 3,200 | 628 | 829 | 135 | 414 | 295 |
| 9 | 443 | ------ | 3,100 | 607 | 942 | 145 | 414 | 295 |
| 10 | 480 | ------ | 3,500 | 578 | 1,070 | 180 | 432 | 265 |
| 11 | 492 | ------ | 3,900 | 486 | 1,200 | 210 | 386 | 225 |
| 12 | 461 | ------ | 3,600 | 449 | 1,260 | 260 | 364 | 199 |
| 13 | 414 | ------ | 3,200 | 391 | 1,300 | 309 | 391 | 180 |
| 14 | 369 | ------ | 2,700 | 353 | 1,240 | 369 | 600 | 167 |
| 15 | 353 | ------ | 2,390 | 323 | 1,080 | 314 | 1,330 | 164 |
| 16 | 337 | ------ | 2,070 | 323 | 1,000 | 252 | 1,260 | 161 |
| 17 | 328 | ------ | 1,640 | 348 | 923 | 184 | 971 | 158 |
| 18 | 318 | ------ | 1,200 | 364 | 923 | 203 | 604 | 158 |
| 19 | 314 | ------ | 1,110 | 375 | 1,120 | 240 | 600 | 148 |
| 20 | 309 | ------ | 1,140 | 348 | 1,010 | 309 | 492 | 139 |
| 21 | 304 | ------ | 1,160 | 295 | 981 | 337 | 426 | 129 |
| 22 | 295 | ------ | 1,320 | 318 | 1,100 | 359 | 369 | 132 |
| 23 | 290 | ------ | 1,470 | 537 | 900 | 391 | 342 | 132 |
| 24 | 277 | ------ | 1,580 | 504 | 750 | 337 | 318 | 184 |
| 25 | 273 | ------ | 1,710 | 449 | 650 | 328 | 304 | 233 |
| 26 | 269 | ------ | 1,790 | 443 | 544 | 304 | 299 | 309 |
| 27 | 282 | ------ | 1,720 | 455 | 437 | 265 | 309 | 304 |
| 28 | 290 | ------ | 1,640 | 607 | 369 | 244 | 332 | 277 |
| 29 | 282 | ------ | 1,440 | 866 | 318 | 261 | 348 | 261 |
| 30 | 180 | ------ | 1,190 | 1,140 | 286 | 359 | 323 | 248 |
| 31 | 188 | ------ | ------ | 1,390 | ------ | 414 | 295 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 492 | 180 | 346 | 21,300 |
| November | ------ | ------ | 250 | 14,900 |
| December | ------ | ------ | 200 | 12,300 |
| January | ------ | ------ | 130 | 8,000 |
| February | ------ | ------ | 220 | 12,200 |
| March | ------ | ------ | 235 | 14,400 |
| April | 3,900 | 350 | 1,790 | 107,000 |
| May | 1,390 | 295 | 621 | 38,200 |
| June | 2,020 | 286 | 990 | 58,900 |
| July | 414 | 135 | 261 | 16,000 |
| August | 1,330 | 295 | 471 | 29,000 |
| September | 309 | 129 | 219 | 13,000 |
| The year | 3,900 | ------ | 476 | 345,000 |

### NORTH PLATTE RIVER AT SARATOGA, WYO.

LOCATION.—Chain gage in sec. 14, T. 17 N., R. 84 W., at Saratoga. Zero of gage 6,773.8 feet above mean sea level.

DRAINAGE AREA.—2,880 square miles.

RECORDS AVAILABLE.—June, 1903, to October, 1906; April to December, 1909; April, 1911, to September, 1930.

EXTREMES.—Maximum discharge during year, 5,220 second-feet Apr. 10 (gage height, 7.2 feet); minimum (estimated), 183 second-feet Jan. 16–20.

1903–1906, 1909, 1911–1930: Maximum discharge, 18,000 second-feet June 8, 1909 (gage height, 11.06 feet); minimum, 87 second-feet Sept. 7, 1924.

REMARKS.—Records good except those for periods affected by ice, which are fair. A few diversions between Northgate and Saratoga.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 635 | 488 | 385 | 356 | 304 | 428 | 401 | 2,340 | 4,540 | 596 | 627 | 482 |
| 2 | 627 | 488 | 385 | | | 428 | 401 | 2,250 | 4,110 | 536 | 604 | 434 |
| 3 | 680 | 522 | 428 | | | 380 | 522 | 2,430 | 3,900 | 495 | 557 | 401 |
| 4 | 671 | 488 | 428 | | | 374 | 725 | 2,610 | 3,080 | 446 | 529 | 390 |
| 5 | 801 | 488 | 428 | | | 374 | 1,180 | 2,520 | 2,700 | 412 | 565 | 401 |
| 6 | 725 | 557 | 428 | 290 | 336 | 374 | 1,730 | 1,980 | 2,340 | 379 | 671 | 417 |
| 7 | 653 | 596 | 401 | | | 374 | 2,890 | 1,900 | 2,520 | 360 | 680 | 470 |
| 8 | 653 | 488 | 401 | | | 374 | 3,690 | 1,810 | 2,890 | 351 | 763 | 509 |
| 9 | 801 | 488 | 428 | | | 374 | 3,480 | 1,580 | 3,480 | 306 | 734 | 543 |
| 10 | 915 | 596 | 428 | | | 380 | 4,320 | 1,360 | 3,480 | 288 | 707 | 495 |
| 11 | 955 | 596 | 428 | 188 | 395 | 380 | 4,540 | 1,300 | 3,480 | 315 | 698 | 458 |
| 12 | 820 | 488 | 428 | | | 380 | 4,320 | 1,230 | 3,900 | 346 | 810 | 401 |
| 13 | 782 | 401 | 428 | | | 420 | 3,900 | 1,230 | 3,690 | 434 | 858 | 369 |
| 14 | 707 | 440 | 428 | | | 480 | 3,690 | 1,120 | 3,080 | 536 | 1,240 | 333 |
| 15 | 671 | 488 | 428 | | | 520 | 3,480 | 1,120 | 2,890 | 476 | 2,200 | 315 |
| 16 | 627 | 522 | 428 | 183 | 428 | 635 | 3,080 | 1,120 | 2,610 | 428 | 2,020 | 297 |
| 17 | 635 | 522 | 401 | | | 596 | 2,160 | 1,120 | 2,520 | 396 | 1,430 | 288 |
| 18 | 596 | 522 | 352 | | 488 | 522 | 1,580 | 1,070 | 2,340 | 374 | 1,120 | 280 |
| 19 | 596 | 488 | | | 522 | 522 | 1,730 | 1,180 | 2,520 | 379 | 945 | 293 |
| 20 | 596 | 428 | | | 557 | 522 | 1,900 | 1,230 | 2,430 | 482 | 820 | 276 |
| 21 | 596 | 360 | 312 | 213 | 488 | 557 | 2,070 | 1,580 | 2,520 | 557 | 707 | 276 |
| 22 | 557 | 315 | | | 488 | 522 | 2,250 | 2,160 | 2,430 | 573 | 619 | 280 |
| 23 | 522 | 302 | | | 428 | 522 | 2,610 | 1,900 | 2,340 | 557 | 580 | 297 |
| 24 | 522 | 328 | | | 458 | 458 | 2,890 | 1,810 | 2,160 | 529 | 543 | 333 |
| 25 | 488 | 428 | | | 557 | 458 | 3,280 | 1,900 | 1,580 | 516 | 529 | 522 |
| 26 | 522 | 428 | 348 | 230 | 550 | 458 | 3,480 | 2,250 | 1,230 | 488 | 516 | 536 |
| 27 | 522 | 428 | | | 509 | 401 | 3,480 | 2,610 | 1,020 | 476 | 573 | 596 |
| 28 | 522 | 428 | | | 470 | 428 | 3,080 | 3,280 | 915 | 446 | 588 | 619 |
| 29 | 596 | 428 | | | ------- | 428 | 2,700 | 3,480 | 772 | 464 | 619 | 543 |
| 30 | 557 | 401 | | | ------- | 351 | 2,520 | 4,110 | 680 | 516 | 604 | 550 |
| 31 | 488 | ------- | | | ------- | 376 | ------- | 4,540 | ------- | 565 | 529 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 955 | 488 | 646 | 39,700 |
| November | 596 | 302 | 465 | 27,700 |
| December | 428 | ---------- | 381 | 23,400 |
| January | ---------- | ---------- | 243 | 14,900 |
| February | 557 | ---------- | 411 | 22,800 |
| March | 635 | 351 | 445 | 27,400 |
| April | 4,540 | 401 | 2,600 | 155,000 |
| May | 4,540 | 1,070 | 2,000 | 123,000 |
| June | 4,540 | 680 | 2,600 | 155,000 |
| July | 596 | 288 | 482 | 27,000 |
| August | 2,200 | 516 | 806 | 49,600 |
| September | 619 | 276 | 413 | 24,600 |
| The year | 4,540 | ---------- | 954 | 691,000 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 7,700 second-feet Apr. 11 (gage height, 4.22 feet); minimum occurred during winter.

1913–1925, 1929–30: Maximum discharge, 18,800 second-feet June 26, 1917 (gage height, 6.2 feet); minimum, 72 second-feet Nov. 14, 1922.

REMARKS.—Records good 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, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 822 | 559 | ------- | 595 | 622 | 3,180 | 4,840 | 995 | 468 | 595 |
| 2 | 762 | 508 | ------- | 543 | 543 | 2,870 | 5,310 | 870 | 543 | 550 |
| 3 | 728 | 480 | ------- | 515 | 640 | 2,920 | 5,310 | 762 | 586 | 508 |
| 4 | 706 | 536 | ------- | 501 | 786 | 3,080 | 4,780 | 695 | 577 | 468 |
| 5 | 695 | 536 | ------- | 487 | 1,030 | 3,130 | 4,020 | 613 | 522 | 438 |
| 6 | 706 | 586 | ------- | 480 | 2,260 | 3,040 | 3,480 | 522 | 494 | 426 |
| 7 | 739 | 586 | ------- | 480 | 3,110 | 2,780 | 3,060 | 462 | 577 | 426 |
| 8 | 750 | 684 | ------- | 474 | 4,330 | 2,510 | 2,890 | 432 | 640 | 438 |
| 9 | 728 | 774 | ------- | 468 | 5,630 | 2,410 | 2,920 | 397 | 1,260 | 480 |
| 10 | 706 | 774 | ------- | 456 | 7,390 | 2,280 | 3,230 | 369 | 1,170 | 522 |
| 11 | 774 | 750 | ------- | 450 | 7,130 | 2,160 | 3,560 | 347 | 908 | 529 |
| 12 | 834 | 631 | ------- | 438 | 6,150 | 2,060 | 3,740 | 326 | 1,090 | 494 |
| 13 | 882 | 403 | ------- | 438 | 5,520 | 1,870 | 3,910 | 321 | 1,060 | 444 |
| 14 | 908 | 403 | ------- | 462 | 5,200 | 1,690 | 3,910 | 403 | 2,960 | 420 |
| 15 | 882 | 386 | ------- | 706 | 4,780 | 1,630 | 3,740 | 468 | 3,010 | 392 |
| 16 | 834 | 426 | ------- | 895 | 4,500 | 1,550 | 3,400 | 586 | 2,850 | 374 |
| 17 | 786 | 529 | ------- | 895 | 4,020 | 1,570 | 3,060 | 577 | 2,760 | 363 |
| 18 | 728 | 577 | ------- | 870 | 3,330 | 1,680 | 2,820 | 501 | 2,220 | 347 |
| 19 | 706 | 508 | ------- | 882 | 2,690 | 1,680 | 2,670 | 432 | 1,710 | 336 |
| 20 | 695 | 420 | ------- | 1,010 | 2,360 | 1,610 | 2,640 | 392 | 1,360 | 326 |
| 21 | 684 | 288 | ------- | 982 | 2,320 | 1,660 | 2,620 | 374 | 1,120 | 321 |
| 22 | 662 | 358 | ------- | 895 | 2,320 | 1,690 | 2,530 | 456 | 958 | 310 |
| 23 | 662 | 284 | ------- | 908 | 2,560 | 2,140 | 2,430 | 595 | 822 | 280 |
| 24 | 640 | 380 | 662 | 774 | 2,920 | 2,410 | 2,380 | 586 | 706 | 284 |
| 25 | 577 | 444 | 684 | 684 | 3,360 | 2,360 | 2,360 | 577 | 622 | 321 |
| 26 | 550 | 420 | 695 | 684 | 3,740 | 2,320 | 2,180 | 586 | 595 | 543 |
| 27 | 582 | } 460 | 673 | 728 | 3,910 | 2,360 | 1,840 | 529 | 595 | 673 |
| 28 | 613 | | 640 | 613 | 4,070 | 2,490 | 1,570 | 501 | 604 | 640 |
| 29 | 640 | | ------- | 550 | 3,820 | 2,890 | 1,320 | 474 | 640 | 673 |
| 30 | 651 | | ------- | 586 | 3,480 | 3,330 | 1,140 | 480 | 613 | 662 |
| 31 | 613 | ------- | ------- | 684 | ------- | 3,960 | ------- | 444 | 604 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 908 | 550 | 718 | 44,100 |
| November | 774 | 284 | 502 | 29,900 |
| December | ------- | ------- | 420 | 25,800 |
| January | ------- | ------- | 265 | 16,300 |
| February | ------- | ------- | 515 | 28,600 |
| March | 1,010 | 438 | 649 | 39,900 |
| April | 7,390 | 543 | 3,480 | 207,000 |
| May | 3,960 | 1,550 | 2,360 | 145,000 |
| June | 5,310 | 1,140 | 3,120 | 186,000 |
| July | 995 | 321 | 518 | 31,900 |
| August | 3,010 | 468 | 1,120 | 68,900 |
| September | 673 | 280 | 453 | 27,000 |
| The year | 7,390 | ------- | 1,180 | 850,000 |

### NORTH PLATTE RIVER BELOW PATHFINDER RESERVOIR, WYO.

LOCATION.—Chain gage in sec. 24, T. 29 N., R. 84 W., one-fourth mile below Pathfinder Dam.

DRAINAGE AREA.—10,700 square miles.

RECORDS AVAILABLE.—May, 1905, to September, 1930.

EXTREMES.—1905–1930: 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. Complete records furnished by United States Bureau of Reclamation.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,730 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 2,510 | 6,450 | 5,980 | 3,700 |
| 2 | 3,150 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 2,500 | 6,430 | 5,960 | 3,690 |
| 3 | 4,040 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 2,500 | 6,520 | 5,790 | 3,680 |
| 4 | 4,020 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 2,510 | 6,530 | 5,730 | 3,690 |
| 5 | 4,010 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 2,510 | 5,510 | 5,720 | 3,150 |
| 6 | 3,980 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 2,520 | 6,490 | 5,710 | 3,950 |
| 7 | 3,980 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 2,520 | 6,490 | 5,690 | 3,970 |
| 8 | 3,980 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 2,500 | 6,230 | 5,670 | 3,950 |
| 9 | 3,980 | 90 | 90 | 90 | 90 | 90 | 90 | 1,070 | 2,500 | 6,120 | 5,210 | 3,040 |
| 10 | 1,800 | 90 | 90 | 90 | 90 | 90 | 90 | 1,010 | 2,500 | 6,100 | 5,060 | 2,290 |
| 11 | 490 | 90 | 90 | 90 | 90 | 90 | 90 | 1,000 | 2,530 | 5,620 | 5,040 | 2,270 |
| 12 | 490 | 90 | 90 | 90 | 90 | 90 | 90 | 1,000 | 3,400 | 5,340 | 5,020 | 3,550 |
| 13 | 490 | 90 | 90 | 90 | 90 | 90 | 90 | 1,000 | 4,840 | 5,360 | 5,010 | 2,920 |
| 14 | 240 | 90 | 90 | 90 | 90 | 90 | 90 | 1,000 | 4,960 | 5,340 | 4,590 | 2,840 |
| 15 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 1,000 | 5,450 | 5,330 | 3,830 | 2,830 |
| 16 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 1,000 | 5,520 | 5,330 | 3,310 | 2,810 |
| 17 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 550 | 5,520 | 5,270 | 3,300 | 2,070 |
| 18 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 490 | 5,520 | 5,270 | 2,920 | 1,840 |
| 19 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 500 | 5,920 | 5,290 | 2,860 | 1,830 |
| 20 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 500 | 6,290 | 6,010 | 2,860 | 1,840 |
| 21 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 500 | 6,530 | 6,030 | 2,860 | 1,850 |
| 22 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 500 | 6,530 | 6,020 | 2,860 | 1,850 |
| 23 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 500 | 6,530 | 6,000 | 2,860 | 2,260 |
| 24 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 500 | 6,510 | 5,990 | 2,860 | 2,290 |
| 25 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 500 | 6,490 | 5,980 | 2,860 | 2,280 |
| 26 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 500 | 6,490 | 5,960 | 2,860 | 1,390 |
| 27 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 500 | 6,490 | 5,940 | 2,860 | 1,510 |
| 28 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 1,420 | 6,470 | 5,930 | 3,660 | 1,060 |
| 29 | 90 | 90 | 90 | 90 | ------ | 90 | 90 | 2,490 | 6,470 | 6,010 | 3,740 | 990 |
| 30 | 90 | 90 | 90 | 90 | ------ | 90 | 90 | 2,530 | 6,470 | 6,000 | 3,740 | 810 |
| 31 | 90 | ------ | 90 | 90 | ------ | 90 | ------ | 2,540 | ------ | 5,990 | 3,710 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 4,040 | 90 | 1,220 | 75,000 |
| November | 90 | 90 | 90 | 5,360 |
| December | 90 | 90 | 90 | 5,530 |
| January | 90 | 90 | 90 | 5,530 |
| February | 90 | 90 | 90 | 5,000 |
| March | 90 | 90 | 90 | 5,530 |
| April | 90 | 90 | 90 | 5,360 |
| May | 2,540 | 90 | 752 | 46,200 |
| June | 6,530 | 2,500 | 4,670 | 278,000 |
| July | 6,530 | 5,270 | 5,930 | 365,000 |
| August | 5,980 | 2,860 | 4,200 | 258,000 |
| September | 3,970 | 810 | 2,560 | 152,000 |
| The year | 6,530 | 90 | 1,670 | 1,210,000 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 8,500 second-feet Aug. 7 (gage height, 5.38 feet); minimum occurred during winter.

1929–30: Maximum discharge, 13,800 second-feet May 30, 1929; minimum occurred during winter.

REMARKS.—Records good except those during winter, which were estimated because of ice. Flow regulated by Pathfinder Reservoir. Gage-height record furnished by Midwest Refining Co.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,940 | 199 | | 140 | 171 | 114 | 2,540 | 6,260 | 6,090 | 3,990 |
| 2 | 2,700 | 190 | | 140 | 167 | 105 | 2,350 | 6,220 | 6,040 | 3,990 |
| 3 | 4,250 | 194 | 110 | 140 | 204 | 108 | 2,350 | 6,290 | 5,960 | 3,930 |
| 4 | 4,250 | 203 | | 140 | 248 | 105 | 2,310 | 6,310 | 6,150 | 3,990 |
| 5 | 4,050 | 182 | | 140 | 335 | 114 | 2,370 | 6,330 | 5,800 | 4,080 |
| 6 | 4,050 | 203 | | 121 | 335 | 152 | 2,320 | 6,310 | 5,780 | 4,310 |
| 7 | 4,050 | 182 | | 187 | 343 | 200 | 2,340 | 6,260 | 7,630 | 4,310 |
| 8 | 4,050 | 158 | 120 | 70 | 311 | 226 | 2,310 | 5,890 | 5,980 | 4,310 |
| 9 | 4,050 | 128 | | 100 | 305 | 760 | 2,320 | 5,870 | 5,260 | 3,870 |
| 10 | 3,300 | 158 | | 80 | 305 | 1,200 | 2,310 | 5,820 | 5,150 | 2,700 |
| 11 | 790 | 166 | | 58 | 299 | 1,090 | 2,310 | 5,430 | 5,130 | 2,000 |
| 12 | 710 | 160 | | 86 | 287 | 1,060 | 3,060 | 5,450 | 5,390 | 3,760 |
| 13 | 680 | 200 | | 175 | 287 | 1,080 | 4,620 | 5,280 | 5,740 | 3,040 |
| 14 | 670 | 240 | 130 | 421 | 293 | 1,060 | 4,500 | 5,170 | 4,890 | 3,000 |
| 15 | 343 | 230 | | 305 | 287 | 1,140 | 5,100 | 5,190 | 4,410 | 3,000 |
| 16 | 256 | 220 | | 281 | 275 | 1,170 | 5,100 | 5,210 | 4,930 | 3,000 |
| 17 | 230 | 200 | | 216 | 281 | 1,100 | 5,080 | 5,260 | 3,870 | 2,410 |
| 18 | 211 | 200 | | 232 | 242 | 520 | 5,080 | 5,210 | 3,280 | 2,030 |
| 19 | 203 | 180 | 160 | 248 | 208 | 500 | 5,460 | 5,340 | 3,200 | 2,050 |
| 20 | 199 | 160 | 180 | 187 | 212 | 491 | 5,710 | 6,180 | 3,140 | 2,030 |
| 21 | 190 | 140 | 212 | 212 | 212 | 465 | 5,910 | 6,220 | 3,120 | 2,020 |
| 22 | 190 | 130 | 358 | 191 | 204 | 482 | 5,870 | 6,150 | 3,120 | 2,000 |
| 23 | 190 | 120 | 200 | 212 | 167 | 491 | 5,870 | 6,150 | 3,070 | 2,200 |
| 24 | 190 | 120 | 163 | 212 | 160 | 482 | 5,840 | 6,110 | 3,060 | 2,440 |
| 25 | 190 | 130 | 148 | 179 | 171 | 456 | 5,870 | 6,020 | 3,060 | 2,490 |
| 26 | 178 | | 140 | 208 | 179 | 438 | 5,890 | 6,090 | 3,090 | 2,260 |
| 27 | 178 | | 102 | 195 | 140 | 447 | 5,960 | 6,040 | 3,060 | 1,800 |
| 28 | 178 | 130 | 204 | 216 | 127 | 994 | 5,890 | 6,040 | 4,410 | 1,460 |
| 29 | 190 | | -------- | 183 | 121 | 2,510 | 6,020 | 6,200 | 4,090 | 1,190 |
| 30 | 194 | | -------- | 167 | 121 | 2,490 | 6,150 | 6,180 | 4,030 | 1,120 |
| 31 | 182 | -------- | -------- | 183 | -------- | 2,450 | -------- | 6,130 | 4,010 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 4,250 | 178 | 1,390 | 85,500 |
| November | 240 | 120 | 168 | 10,000 |
| December | -------- | -------- | 115 | 7,070 |
| January | -------- | -------- | 100 | 6,150 |
| February | 358 | 102 | 145 | 8,050 |
| March | 421 | 58 | 181 | 11,100 |
| April | 343 | 121 | 233 | 13,900 |
| May | 2,510 | 105 | 775 | 47,700 |
| June | 6,150 | 2,310 | 4,290 | 255,000 |
| July | 6,330 | 5,170 | 5,890 | 362,000 |
| August | 7,630 | 3,060 | 4,580 | 282,000 |
| September | 4,310 | 1,120 | 2,820 | 168,000 |
| The year | 7,630 | -------- | 1,740 | 1,260,000 |

### NORTH PLATTE RIVER AT DOUGLAS, WYO.

LOCATION.—Chain gage on highway bridge 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, 1930.

EXTREMES.—Maximum discharge during year, 7,670 second-feet July 13 (gage height, 5.7 feet); minimum occurred during winter.

1891–1894, 1919–1923, 1929–30: Maximum discharge, 16,600 second-feet Sept. 28, 1923; minimum, 95 second-feet Apr. 1, 4, 1923.

REMARKS.—Records good except those during winter, which were estimated because of ice. Flow regulated by Pathfinder Reservoir.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5,430 | 249 | 170 | 176 | 617 | 2,720 | 6,180 | 5,930 | 3,920 |
| 2 | 2,570 | 249 | 160 | 184 | 529 | 2,770 | 6,180 | 5,910 | 3,980 |
| 3 | 3,160 | 240 | 153 | 176 | 463 | 2,700 | 6,160 | 5,910 | 3,960 |
| 4 | 4,010 | 562 | 165 | 200 | 380 | 2,770 | 6,210 | 5,840 | 3,900 |
| 5 | 3,990 | 340 | 190 | 249 | 496 | 2,700 | 6,210 | 5,910 | 3,980 |
| 6 | 3,990 | 240 | 200 | 390 | 452 | 2,700 | 6,260 | 5,650 | 3,420 |
| 7 | 4,100 | 276 | 220 | 639 | 441 | 2,750 | 6,230 | 5,750 | 4,090 |
| 8 | 4,100 | 240 | 240 | 716 | 420 | 2,700 | 6,210 | 6,400 | 4,150 |
| 9 | 4,120 | 240 | 260 | 864 | 496 | 2,670 | 5,890 | 5,690 | 4,210 |
| 10 | 2,580 | 224 | 285 | 967 | 595 | 2,620 | 5,890 | 5,110 | 3,690 |
| 11 | 1,280 | 276 | 267 | 978 | 1,290 | 2,630 | 5,930 | 5,150 | 3,690 |
| 12 | 1,280 | 267 | 200 | 978 | 1,340 | 2,530 | 6,020 | 5,050 | 2,100 |
| 13 | 1,100 | 350 | 176 | 1,040 | 1,340 | 3,300 | 6,650 | 5,250 | 3,530 |
| 14 | 944 | 485 | 216 | 1,140 | 1,340 | 4,530 | 5,520 | 5,540 | 3,020 |
| 15 | 898 | 463 | 400 | 1,230 | 1,540 | 4,670 | 5,440 | 5,560 | 3,000 |
| 16 | 584 | 452 | 390 | 1,130 | 1,790 | 5,150 | 5,370 | 4,470 | 3,000 |
| 17 | 452 | 312 | 380 | 956 | 1,750 | 5,190 | 5,330 | 4,650 | 2,970 |
| 18 | 400 | 267 | 294 | 1,200 | 1,660 | 5,110 | 5,170 | 3,770 | 2,400 |
| 19 | 360 | 240 | 249 | 683 | 1,240 | 5,250 | 5,460 | 3,350 | 2,100 |
| 20 | 370 | 220 | 267 | 650 | 1,190 | 5,580 | 5,500 | 3,280 | 2,060 |
| 21 | 303 | 210 | 285 | 672 | 1,100 | 5,890 | 5,710 | 3,150 | 2,120 |
| 22 | 276 | 200 | 285 | 683 | 1,060 | 6,020 | 5,890 | 3,050 | 1,980 |
| 23 | 267 | 180 | 267 | 661 | 1,090 | 6,180 | 5,950 | 3,050 | 2,100 |
| 24 | 258 | 180 | 285 | 683 | 1,060 | 6,260 | 5,950 | 3,070 | 2,270 |
| 25 | 276 | 180 | 267 | 738 | 1,000 | 6,210 | 5,890 | 3,150 | 2,460 |
| 26 | 258 | | 216 | 921 | 875 | 6,210 | 5,910 | 3,100 | 2,460 |
| 27 | 208 | | 200 | 875 | 818 | 6,210 | 5,840 | 3,070 | 2,160 |
| 28 | 240 | 180 | 192 | 794 | 749 | 6,180 | 5,820 | 3,100 | 2,020 |
| 29 | 249 | | 184 | 749 | 818 | 6,110 | 5,890 | 3,860 | 1,900 |
| 30 | 240 | | 168 | 650 | 2,270 | 6,210 | 5,980 | 3,940 | 1,310 |
| 31 | 249 | -------- | 176 | -------- | 2,620 | -------- | 6,020 | 3,940 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 5,430 | 208 | 1,570 | 96,500 |
| November | 562 | ---------- | 268 | 15,900 |
| December | ---------- | ---------- | 160 | 9,840 |
| January | ---------- | ---------- | 135 | 8,300 |
| February | ---------- | ---------- | 195 | 10,800 |
| March | 400 | 153 | 239 | 14,700 |
| April | 1,230 | 176 | 732 | 43,600 |
| May | 2,620 | 380 | 1,060 | 65,200 |
| June | 6,260 | 2,530 | 4,420 | 263,000 |
| July | 6,650 | 5,170 | 5,890 | 362,000 |
| August | 6,400 | 3,050 | 4,540 | 279,000 |
| September | 4,210 | 1,310 | 2,930 | 174,000 |
| The year | 6,650 | ---------- | 1,860 | 1,340,000 |

## NORTH PLATTE RIVER BELOW GUERNSEY RESERVOIR, WYO.

LOCATION.—Water-stage recorder in sec. 35, T. 27 N., R. 66 W., three-fourths 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, 1930.

REMARKS.—Flow regulated by Pathfinder and Guernsey Reservoirs. Only a few minor diversions for irrigation between this station and diversion dam at Whalen. Complete records furnished by United States Bureau of Reclamation.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5,450 | 450 | 330 | 345 | 468 | 450 | 535 | 1,220 | 2,670 | 5,820 | 5,480 | 3,690 |
| 2 | 1,420 | 600 | 375 | 433 | 358 | 400 | 525 | 1,220 | 2,500 | 5,770 | 5,400 | 3,750 |
| 3 | 1,580 | 670 | 405 | 476 | 418 | 480 | 525 | 1,340 | 2,560 | 5,740 | 5,480 | 3,770 |
| 4 | 1,550 | 675 | 420 | 452 | 447 | 550 | 575 | 1,750 | 2,600 | 5,600 | 5,480 | 3,780 |
| 5 | 1,420 | 590 | 400 | 358 | 425 | 600 | 590 | 1,760 | 2,630 | 5,700 | 5,450 | 3,800 |
| 6 | 1,050 | 525 | 365 | 417 | 485 | 475 | 450 | 1,770 | 2,660 | 5,580 | 5,430 | 3,780 |
| 7 | 1,620 | 475 | 400 | 432 | 451 | 640 | 575 | 1,690 | 2,740 | 5,650 | 5,430 | 3,670 |
| 8 | 1,380 | 365 | 340 | 463 | 475 | 525 | 665 | 1,660 | 2,790 | 5,620 | 5,450 | 3,800 |
| 9 | 325 | 370 | 420 | 431 | 313 | 525 | 1,060 | 1,650 | 2,790 | 5,620 | 5,290 | 3,550 |
| 10 | 531 | 285 | 395 | 416 | 378 | 470 | 962 | 1,550 | 3,000 | 5,650 | 5,260 | 3,270 |
| 11 | 440 | 395 | 437 | 468 | 383 | 525 | 953 | 1,450 | 3,340 | 5,670 | 5,260 | 3,570 |
| 12 | 410 | 365 | 464 | 328 | 373 | 525 | 1,040 | 1,450 | 3,690 | 5,670 | 5,210 | 3,360 |
| 13 | 325 | 390 | 541 | 384 | 366 | 1,900 | 1,530 | 1,420 | 4,050 | 5,820 | 5,140 | 3,240 |
| 14 | 600 | 410 | 581 | 384 | 383 | 950 | 1,580 | 1,420 | 4,440 | 5,650 | 5,080 | 3,190 |
| 15 | 800 | 315 | 575 | 421 | 388 | 900 | 1,570 | 1,430 | 4,600 | 5,670 | 4,820 | 3,170 |
| 16 | 875 | 405 | 563 | 425 | 335 | 565 | 1,630 | 1,410 | 4,860 | 5,650 | 4,180 | 3,120 |
| 17 | 1,000 | 305 | 584 | 382 | 351 | 525 | 1,540 | 1,410 | 5,080 | 5,670 | 3,870 | 3,150 |
| 18 | 950 | 450 | 517 | 459 | 383 | 525 | 1,640 | 1,410 | 5,290 | 5,670 | 3,890 | 3,150 |
| 19 | 875 | 335 | 492 | 325 | 371 | 565 | 1,630 | 1,400 | 5,600 | 5,670 | 3,860 | 3,220 |
| 20 | 600 | 405 | 440 | 442 | 401 | 555 | 1,650 | 1,410 | 5,790 | 5,670 | 3,860 | 3,240 |
| 21 | 790 | 475 | 446 | 398 | 451 | 565 | 1,430 | 1,420 | 5,830 | 5,700 | 3,800 | 3,120 |
| 22 | 650 | 445 | 333 | 410 | 436 | 575 | 1,280 | 1,460 | 5,890 | 5,700 | 3,860 | 3,100 |
| 23 | 540 | 375 | 462 | 398 | 477 | 475 | 1,240 | 1,520 | 5,940 | 5,670 | 3,890 | 3,200 |
| 24 | 525 | 285 | 511 | 408 | 1,700 | 510 | 1,220 | 1,560 | 5,820 | 5,650 | 3,890 | 3,340 |
| 25 | 570 | 355 | 348 | 424 | 2,100 | 500 | 1,200 | 1,610 | 5,820 | 5,600 | 3,760 | 3,220 |
| 26 | 600 | 380 | 372 | 324 | 2,280 | 495 | 1,170 | 1,940 | 5,670 | 5,530 | 3,990 | 2,590 |
| 27 | 450 | 370 | 492 | 433 | 1,660 | 475 | 1,170 | 2,000 | 5,700 | 5,530 | 4,200 | 2,330 |
| 28 | 575 | 295 | 480 | 434 | 515 | 470 | 1,190 | 2,850 | 5,720 | 5,500 | 4,480 | 2,290 |
| 29 | 500 | 320 | 339 | 439 | ------- | 525 | 1,260 | 2,770 | 5,770 | 5,530 | 4,240 | 1,990 |
| 30 | 415 | 370 | 345 | 402 | ------- | 465 | 1,260 | 2,680 | 5,820 | 5,500 | 3,970 | 1,710 |
| 31 | 475 | ------- | 512 | 406 | ------- | 470 | ------- | 2,660 | ------- | 5,600 | 3,730 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 5,450 | 325 | 945 | 58,100 |
| November | 675 | 285 | 415 | 24,700 |
| December | 584 | 330 | 441 | 27,100 |
| January | 476 | 324 | 410 | 25,200 |
| February | 2,280 | 313 | 628 | 34,900 |
| March | 1,900 | 400 | 586 | 36,000 |
| April | 1,640 | 450 | 1,120 | 66,600 |
| May | 2,850 | 1,220 | 1,690 | 104,000 |
| June | 5,940 | 2,500 | 4,390 | 261,000 |
| July | 5,820 | 5,500 | 5,650 | 347,000 |
| August | 5,480 | 3,730 | 4,620 | 284,000 |
| September | 3,800 | 1,710 | 3,200 | 190,000 |
| The year | 5,940 | 285 | 2,020 | 1,460,000 |

## 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, 1930.

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, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3,970 | 381 | 290 | 315 | 408 | 450 | 535 | 60 | 880 | 2,210 | 1,870 | 1,250 |
| 2 | 390 | 562 | 337 | 403 | 293 | 400 | 525 | 40 | 760 | 2,150 | 1,790 | 1,380 |
| 3 | 520 | 670 | 365 | 446 | 348 | 480 | 525 | 30 | 760 | 2,120 | 1,860 | 1,380 |
| 4 | 510 | 675 | 359 | 404 | 377 | 550 | 575 | 240 | 730 | 1,980 | 1,860 | 1,350 |
| 5 | 430 | 590 | 357 | 312 | 362 | 600 | 590 | 250 | 730 | 2,090 | 1,850 | 1,330 |
| 6 | 244 | 525 | 345 | 377 | 429 | 475 | 450 | 280 | 770 | 1,950 | 1,810 | 1,310 |
| 7 | 634 | 437 | 380 | 382 | 395 | 640 | 575 | 230 | 810 | 2,020 | 1,830 | 1,150 |
| 8 | 589 | 220 | 320 | 398 | 431 | 525 | 665 | 200 | 810 | 2,010 | 1,840 | 1,240 |
| 9 | 105 | 251 | 400 | 361 | 282 | 525 | 1,060 | 240 | 730 | 1,990 | 1,700 | 1,110 |
| 10 | 444 | 185 | 375 | 346 | 347 | 470 | 962 | 230 | 790 | 2,030 | 1,810 | 1,040 |
| 11 | 352 | 303 | 417 | 390 | 361 | 525 | 364 | 230 | 1,070 | 2,040 | 1,820 | 1,400 |
| 12 | 288 | 281 | 444 | 238 | 361 | 525 | 451 | 230 | 1,250 | 2,050 | 1,810 | 1,240 |
| 13 | 325 | 306 | 521 | 301 | 354 | 1,900 | 941 | 200 | 1,370 | 2,170 | 1,750 | 1,240 |
| 14 | 600 | 326 | 561 | 307 | 371 | 950 | 850 | 200 | 1,630 | 2,010 | 1,830 | 1,180 |
| 15 | 727 | 231 | 555 | 358 | 376 | 900 | 805 | 210 | 1,600 | 2,030 | 1,680 | 1,110 |
| 16 | 791 | 321 | 543 | 235 | 323 | 565 | 836 | 190 | 1,750 | 1,990 | 1,310 | 1,090 |
| 17 | 907 | 221 | 564 | 306 | 339 | 525 | 740 | 190 | 1,850 | 2,020 | 1,570 | 1,150 |
| 18 | 875 | 397 | 480 | 387 | 377 | 525 | 840 | 190 | 1,920 | 2,020 | 1,630 | 1,090 |
| 19 | 802 | 295 | 428 | 276 | 371 | 565 | 620 | 180 | 2,050 | 2,040 | 1,600 | 1,100 |
| 20 | 560 | 365 | 360 | 377 | 401 | 555 | 660 | 190 | 2,200 | 2,020 | 1,610 | 1,110 |
| 21 | 740 | 418 | 366 | 333 | 451 | 565 | 430 | 200 | 2,240 | 2,050 | 1,580 | 960 |
| 22 | 560 | 339 | 253 | 345 | 436 | 575 | 280 | 150 | 2,300 | 2,070 | 1,640 | 940 |
| 23 | 483 | 231 | 387 | 333 | 477 | 475 | 240 | 160 | 2,360 | 2,020 | 1,630 | 960 |
| 24 | 495 | 146 | 456 | 343 | 1,700 | 510 | 226 | 160 | 2,270 | 2,000 | 1,610 | 1,030 |
| 25 | 526 | 254 | 318 | 359 | 2,100 | 500 | 254 | 140 | 2,220 | 1,970 | 1,490 | 860 |
| 26 | 552 | 291 | 342 | 259 | 2,280 | 495 | 160 | 270 | 2,090 | 1,910 | 1,440 | 400 |
| 27 | 382 | 267 | 462 | 368 | 1,660 | 475 | 110 | 220 | 2,090 | 1,900 | 1,400 | 620 |
| 28 | 506 | 207 | 450 | 369 | 515 | 470 | 130 | 950 | 2,100 | 1,870 | 1,530 | 520 |
| 29 | 428 | 252 | 309 | 374 | ------ | 525 | 190 | 800 | 2,150 | 1,920 | 1,250 | 260 |
| 30 | 347 | 314 | 315 | 342 | ------ | 465 | 180 | 780 | 2,210 | 1,890 | 1,290 | 230 |
| 31 | 404 | ------ | 482 | 346 | ------ | 470 | ------ | 820 | ------ | 1,990 | 1,290 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 3,970 | 105 | 629 | 38,700 |
| November | 675 | 146 | 342 | 20,400 |
| December | 564 | 253 | 405 | 24,900 |
| January | 446 | 238 | 348 | 21,400 |
| February | 2,280 | 282 | 604 | 33,500 |
| March | 1,900 | 400 | 586 | 36,000 |
| April | 1,060 | 110 | 526 | 31,300 |
| May | 950 | 30 | 273 | 16,800 |
| June | 2,360 | 730 | 1,550 | 92,200 |
| July | 2,210 | 1,870 | 2,020 | 124,000 |
| August | 1,870 | 1,250 | 1,640 | 101,000 |
| September | 1,380 | 230 | 1,030 | 61,300 |
| The year | 3,970 | 30 | 831 | 602,000 |

## NORTH PLATTE RIVER AT WYOMING-NEBRASKA LINE

LOCATION.—Water-stage recorder in sec. 10, T. 23 N., R. 60 W., one-fourth mile above Wyoming-Nebraska line and 1 mile above Henry.

DRAINAGE AREA.—22,100 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 5,340 second-feet Oct. 1; minimum, 395 second-feet Jan. 11.

1929–30: Maximum discharge, 17,900 second-feet June 2, 1929 (gage height, 6.04 feet); minimum, that of Jan. 11, 1930.

REMARKS.—Records good. Large diversions for irrigation above station. Flow regulated by Pathfinder and Guernsey Reservoirs.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5,340 | 1,020 | 816 | 901 | | 1,200 | 705 | 1,120 | 1,480 | 1,960 | 1,770 | 1,840 |
| 2 | 4,640 | 1,010 | 890 | 934 | | 934 | 695 | 956 | 1,410 | 1,960 | 1,730 | 1,790 |
| 3 | 2,720 | 1,050 | 890 | 945 | 800 | 890 | 745 | 901 | 1,460 | 1,980 | 1,730 | 1,840 |
| 4 | 1,490 | 1,060 | 816 | 945 | | 838 | 755 | 1,020 | 1,440 | 1,890 | 1,700 | 1,820 |
| 5 | 1,440 | 1,100 | 880 | 923 | | 880 | 715 | 1,010 | 1,360 | 1,890 | 1,730 | 1,840 |
| 6 | 1,370 | 1,100 | 890 | 912 | | 901 | 796 | 912 | 1,300 | 1,860 | 1,830 | 1,790 |
| 7 | 1,280 | 1,110 | 848 | 880 | | 890 | 838 | 880 | 1,250 | 1,840 | 1,900 | 1,730 |
| 8 | 1,350 | 1,060 | 848 | 695 | 950 | 901 | 848 | 816 | 1,340 | 1,830 | 2,080 | 1,820 |
| 9 | 1,560 | 1,040 | 869 | 534 | | 890 | 880 | 869 | 1,290 | 1,860 | 2,040 | 1,630 |
| 10 | 1,280 | 1,020 | 880 | 465 | | 869 | 978 | 956 | 1,160 | 1,770 | 2,040 | 1,620 |
| 11 | 1,200 | 956 | 912 | 395 | | 816 | 1,080 | 1,160 | 1,190 | 1,830 | 2,120 | 1,860 |
| 12 | 1,130 | 967 | 901 | 670 | | 848 | 1,130 | 1,190 | 1,260 | 1,900 | 2,120 | 1,750 |
| 13 | 1,060 | 978 | 901 | | 930 | 838 | 1,050 | 1,200 | 1,360 | 1,900 | 2,080 | 1,730 |
| 14 | 956 | 934 | 912 | 830 | | 1,020 | 1,250 | 1,180 | 1,350 | 1,830 | 2,170 | 1,720 |
| 15 | 967 | 923 | 901 | | | 1,410 | 1,250 | 1,190 | 1,450 | 1,790 | 3,070 | 1,730 |
| 16 | 1,120 | 901 | 890 | | 890 | 1,170 | 1,220 | 1,180 | 1,440 | 1,750 | 2,830 | 1,730 |
| 17 | 1,100 | 890 | 912 | | 869 | 1,060 | 1,170 | 1,200 | 1,500 | 1,800 | 2,480 | 1,760 |
| 18 | 1,120 | 880 | 1,010 | 735 | 890 | 912 | 1,180 | 1,230 | 1,530 | 1,790 | 2,380 | 1,730 |
| 19 | 1,190 | 890 | 923 | | 890 | 880 | 1,160 | 1,250 | 1,610 | 1,800 | 2,290 | 1,700 |
| 20 | 1,240 | 967 | 880 | | 869 | 827 | 1,170 | 1,310 | 1,800 | 1,830 | 2,190 | 1,630 |
| 21 | 1,110 | 1,110 | 967 | | 880 | 806 | 1,140 | 1,230 | 1,900 | 1,860 | 2,080 | 1,610 |
| 22 | 1,060 | 989 | 945 | | 848 | 806 | 1,070 | 1,100 | 1,990 | 1,870 | 2,050 | 1,480 |
| 23 | 1,040 | 967 | 1,020 | 715 | 890 | 806 | 967 | 1,020 | 1,990 | 1,860 | 2,020 | 1,440 |
| 24 | 1,040 | 838 | 945 | | 858 | 775 | 838 | 1,010 | 1,900 | 1,860 | 1,940 | 1,370 |
| 25 | 1,040 | 838 | 912 | | 1,220 | 745 | 796 | 1,010 | 1,890 | 1,840 | 1,820 | 1,590 |
| 26 | 1,040 | 838 | 890 | | 1,860 | 806 | 775 | 978 | 1,860 | 1,840 | 1,700 | 1,530 |
| 27 | 1,010 | 838 | 848 | | 1,930 | 796 | 755 | 967 | 1,820 | 1,820 | 1,680 | 1,410 |
| 28 | 1,000 | 880 | 848 | 725 | 1,920 | 785 | 880 | 1,120 | 1,860 | 1,790 | 1,930 | 1,320 |
| 29 | 989 | 901 | 880 | | ------- | 745 | 1,000 | 1,250 | 1,840 | 1,790 | 1,980 | 1,250 |
| 30 | 1,010 | 816 | 858 | | ------- | 755 | 901 | 1,250 | 1,920 | 1,770 | 1,940 | 1,180 |
| 31 | 967 | ------- | 848 | | ------- | 735 | ------- | 1,340 | ------- | 1,770 | 1,860 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 5,340 | 956 | 1,450 | 89,200 |
| November | 1,110 | 816 | 962 | 57,200 |
| December | 1,020 | 816 | 895 | 55,000 |
| January | 945 | 395 | 751 | 46,200 |
| February | 1,930 | ---------- | 1,010 | 55,100 |
| March | 1,410 | 735 | 888 | 54,600 |
| April | 1,250 | 695 | 958 | 57,000 |
| May | 1,340 | 816 | 1,090 | 67,000 |
| June | 1,990 | 1,160 | 1,560 | 92,800 |
| July | 1,980 | 1,750 | 1,840 | 113,000 |
| August | 3,070 | 1,680 | 2,040 | 125,000 |
| September | 1,860 | 1,180 | 1,640 | 97,600 |
| The year | 5,340 | ---------- | 1,260 | 911,000 |

### 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 1,478.7 feet above mean sea level.

DRAINAGE AREA.—61,600 square miles.

RECORDS AVAILABLE.—October, 1928, to September, 1930. At point 7 miles downstream June, 1895, to September, 1915.

EXTREMES.—Maximum discharge during year, 22,700 second-feet June 5 (gage height, 4.68 feet); minimum, 7 second-feet Aug. 4.

1895–1915, 1928–1930: Maximum discharge, 51,100 second-feet June 23, 1905; no flow during part of summers of 1901, 1902, 1904, 1911, 1913, 1914.

REMARKS.—Records good except those during 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, 1929–30*

| Day | Oct. | Nov. | Dec. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2,410 | 4,690 | 300 | 2,900 | 5,000 | 2,380 | 4,980 | 3,220 | 756 | 9 | 3,150 |
| 2 | 2,290 | 4,280 | | | 3,000 | 2,320 | 5,560 | 2,940 | 660 | 9 | 3,120 |
| 3 | 2,350 | 4,030 | | | 2,500 | 2,290 | 6,360 | 3,080 | 463 | 8 | 2,810 |
| 4 | 3,590 | 4,410 | | | 2,200 | 2,180 | 5,500 | 5,890 | 427 | 7 | 2,410 |
| 5 | 3,520 | 4,280 | | | 2,040 | 1,920 | 4,500 | 17,600 | 336 | 9 | 2,290 |
| 6 | 4,200 | 3,520 | 520 | 2,970 | 2,720 | 1,820 | 4,280 | 18,600 | 236 | 10 | 2,210 |
| 7 | 3,790 | 3,290 | | | 2,650 | 1,820 | 7,460 | 17,700 | 146 | 17 | 2,560 |
| 8 | 8,100 | 3,480 | | | 2,980 | 1,780 | 8,020 | 13,100 | 87 | 17 | 2,940 |
| 9 | 7,540 | 3,400 | | | 7,860 | 1,720 | 10,100 | 9,100 | 60 | 17 | 3,400 |
| 10 | 6,660 | 3,590 | | | 5,290 | 1,550 | 14,900 | 6,850 | 40 | 17 | 3,400 |
| 11 | 5,890 | 4,930 | 700 | 2,800 | 5,840 | 1,510 | 14,100 | 4,640 | 31 | 17 | 4,030 |
| 12 | 5,190 | 4,030 | | | 4,980 | 1,590 | 10,100 | 3,710 | 21 | 17 | 3,260 |
| 13 | 4,410 | 4,930 | | | 3,950 | 1,630 | 7,860 | 4,790 | 21 | 17 | 2,500 |
| 14 | 3,290 | 5,450 | | | 4,070 | 1,550 | 8,800 | 6,160 | 21 | 69 | 2,410 |
| 15 | 3,040 | 3,630 | | | 3,750 | 2,590 | 9,940 | 4,840 | 21 | 60 | 2,040 |
| 16 | 2,840 | 3,560 | 600 | 5,000 | 3,560 | 2,980 | 8,100 | 3,120 | 21 | 78 | 1,760 |
| 17 | 2,720 | 4,160 | | | 3,330 | 3,440 | 6,850 | 2,410 | 21 | 55 | 1,590 |
| 18 | 2,590 | 4,280 | | | 3,480 | 5,400 | 7,620 | 2,260 | 21 | 45 | 1,720 |
| 19 | 2,620 | 3,560 | | | 3,370 | 5,140 | 7,780 | 2,410 | 19 | 63 | 1,920 |
| 20 | 2,350 | 3,300 | | | 2,910 | 5,610 | 7,780 | 2,530 | 17 | 106 | 1,780 |
| 21 | 2,210 | 3,000 | 600 | 12,500 | 3,010 | 6,360 | 8,800 | 2,260 | 21 | 257 | 2,020 |
| 22 | 2,260 | 2,000 | | 9,820 | 2,880 | 4,640 | 8,600 | 2,260 | 17 | 168 | 2,020 |
| 23 | 2,120 | | | 10,500 | 2,780 | 4,410 | 7,380 | 2,650 | 16 | 141 | 1,850 |
| 24 | 2,380 | | | 10,100 | 3,220 | 3,290 | 6,600 | 2,650 | 15 | 1,240 | 1,700 |
| 25 | 2,440 | | | 8,800 | 3,520 | 2,750 | 5,610 | 2,840 | 15 | 2,720 | 1,420 |
| 26 | 2,320 | 1,200 | 1,000 | 7,240 | 3,260 | 3,480 | 4,690 | 1,720 | 15 | 2,810 | 1,700 |
| 27 | 2,320 | | | 6,120 | 2,810 | 4,790 | 3,870 | 1,170 | 14 | 2,720 | 1,850 |
| 28 | 2,880 | | | 6,120 | 2,840 | 4,840 | 3,670 | 1,050 | 10 | 2,500 | 1,630 |
| 29 | 3,790 | | | ------- | 2,620 | 4,460 | 3,560 | 948 | 10 | 3,710 | 1,400 |
| 30 | 4,070 | | | ------- | 2,500 | 5,030 | 3,330 | 800 | 9 | 3,710 | 1,460 |
| 31 | 4,640 | ------- | | ------- | 2,440 | ------- | 3,010 | ------- | 10 | 3,790 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 8,100 | 2,120 | 3,570 | 220,000 |
| November | 5,450 | ------- | 3,260 | 194,000 |
| December | ------- | ------- | 632 | 38,900 |
| January | ------- | ------- | 1,000 | 61,500 |
| February | 12,500 | ------- | 4,980 | 277,000 |
| March | 7,860 | 2,040 | 3,460 | 213,000 |
| April | 6,360 | 1,510 | 3,180 | 189,000 |
| May | 14,900 | 3,010 | 7,090 | 436,000 |
| June | 18,600 | 800 | 5,110 | 304,000 |
| July | 756 | 9 | 115 | 7,070 |
| August | 3,790 | 7 | 788 | 48,500 |
| September | 4,030 | 1,400 | 2,280 | 136,000 |
| The year | 18,600 | 7 | 2,930 | 2,120,000 |

### 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 1,021.1 feet above mean sea level.

DRAINAGE AREA.—83,800 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 39,800 second-feet Feb. 19 (gage height, 6.05 feet); minimum, 1,720 second-feet Aug. 3.

1928–1930: Maximum and minimum, those of 1930.

REMARKS.—Records good except those during winter, which are fair. Numerous diversions from headwaters. No regulation except on North Platte River.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5,620 | 11,300 | -------- | 5,200 | 10,800 | 5,890 | 12,600 | 8,470 | 3,800 | 1,770 | 7,330 |
| 2 | 5,400 | 9,870 | -------- | | 8,000 | 5,850 | 13,100 | 7,430 | 3,590 | 1,750 | 7,040 |
| 3 | 5,180 | 8,920 | -------- | | 4,000 | 5,700 | 12,400 | 7,130 | 3,510 | 1,730 | 7,130 |
| 4 | 5,250 | 8,080 | -------- | | 3,000 | 5,470 | 11,500 | 6,700 | 3,170 | 1,780 | 6,330 |
| 5 | 5,930 | 7,590 | -------- | | 2,800 | 5,290 | 10,600 | 17,700 | 2,890 | 1,860 | 5,880 |
| 6 | 6,570 | 7,480 | -------- | 6,000 | 2,890 | 5,140 | 13,000 | 21,600 | 2,770 | 2,210 | 5,280 |
| 7 | 5,970 | 7,060 | -------- | | 5,140 | 5,220 | 14,300 | 18,100 | 2,710 | 3,220 | 5,110 |
| 8 | 6,760 | 6,850 | -------- | | 6,220 | 5,180 | 21,600 | 17,300 | 2,570 | 3,320 | 5,660 |
| 9 | 6,620 | 6,760 | -------- | | 7,880 | 5,250 | 22,000 | 15,900 | 2,590 | 2,560 | 5,880 |
| 10 | 10,100 | 7,770 | 3,340 | | 8,220 | 5,290 | 27,600 | 14,300 | 2,520 | 2,590 | 15,000 |
| 11 | 5,220 | 7,770 | -------- | 6,200 | 6,900 | 5,220 | 30,700 | 12,200 | 2,410 | 2,710 | 9,210 |
| 12 | 5,890 | 7,830 | -------- | | 8,840 | 5,110 | 33,500 | 10,500 | 2,270 | 2,920 | 7,890 |
| 13 | 8,920 | 7,940 | -------- | | 7,710 | 5,400 | 28,800 | 8,580 | 2,180 | 3,560 | 7,630 |
| 14 | 8,150 | 7,000 | -------- | | 7,940 | 5,440 | 23,900 | 10,700 | 2,160 | 4,160 | 6,890 |
| 15 | 7,320 | | -------- | | 7,880 | 5,890 | 19,700 | 20,000 | 2,070 | 3,960 | 6,140 |
| 16 | 6,480 | | -------- | 12,000 | 8,000 | 7,420 | 17,900 | 18,100 | 2,020 | 3,270 | 5,620 |
| 17 | 6,350 | 6,300 | -------- | | 8,150 | 13,200 | 16,100 | 12,500 | 1,920 | 3,270 | 4,870 |
| 18 | 6,180 | 6,480 | -------- | | 7,940 | 13,800 | 15,800 | 9,030 | 1,910 | 6,420 | 4,640 |
| 19 | 6,010 | 3,000 | -------- | 39,800 | 7,710 | 13,700 | 14,000 | 7,580 | 1,880 | 5,320 | 4,130 |
| 20 | 6,050 | | -------- | 27,600 | 7,880 | 13,600 | 13,500 | 6,420 | 1,910 | 5,400 | 3,920 |
| 21 | 6,260 | | -------- | 22,000 | 7,370 | 13,900 | 15,200 | 9,030 | 2,030 | 5,440 | 3,890 |
| 22 | 6,300 | | -------- | 15,700 | 7,260 | 13,700 | 14,800 | 13,600 | 2,120 | 11,400 | 3,740 |
| 23 | 6,390 | | -------- | 13,700 | 6,810 | 13,200 | 15,700 | 7,090 | 2,000 | 9,030 | 3,800 |
| 24 | 6,140 | 2,470 | -------- | 14,000 | 6,430 | 11,700 | 14,300 | 6,010 | 1,990 | 7,130 | 3,710 |
| 25 | 6,350 | 2,270 | -------- | 13,400 | 6,180 | 10,200 | 14,000 | 6,190 | 2,050 | 5,070 | 3,510 |
| 26 | 6,570 | 2,920 | -------- | 12,300 | 7,060 | 8,520 | 12,200 | 6,060 | 1,860 | 4,870 | 3,460 |
| 27 | 6,300 | 2,000 | -------- | 11,200 | 7,420 | 8,150 | 10,200 | 6,470 | 1,770 | 5,200 | 3,200 |
| 28 | 6,050 | | -------- | 10,100 | 6,710 | 11,300 | 8,600 | 6,240 | 1,790 | 5,920 | 4,300 |
| 29 | 6,480 | | -------- | -------- | 6,180 | 12,500 | 8,080 | 4,830 | 1,760 | 5,740 | 4,270 |
| 30 | 8,220 | | -------- | -------- | 6,050 | 11,800 | 8,220 | 4,130 | 1,800 | 6,100 | 3,960 |
| 31 | 11,700 | -------- | -------- | -------- | 5,930 | -------- | 6,620 | -------- | 1,820 | 7,230 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 11,700 | 5,180 | 6,670 | 410,000 |
| November | 11,300 | ---------- | 5,660 | 337,000 |
| December | ---------- | ---------- | 2,000 | 123,000 |
| January | ---------- | ---------- | 3,100 | 191,000 |
| February | 39,800 | ---------- | 10,800 | 600,000 |
| March | 10,800 | 2,800 | 6,820 | 419,000 |
| April | 13,900 | 5,110 | 8,600 | 512,000 |
| May | 33,500 | 6,620 | 16,100 | 990,000 |
| June | 21,600 | 4,130 | 10,700 | 637,000 |
| July | 3,800 | 1,760 | 2,320 | 143,000 |
| August | 11,400 | 1,730 | 4,420 | 272,000 |
| September | 15,000 | 3,200 | 5,650 | 336,000 |
| The year | 39,800 | ---------- | 6,860 | 4,970,000 |

## ROARING FORK NEAR WALDEN, COLO.

LOCATION.—Water-stage recorder in sec. 10, T. 8 N., R. 81 W., 11 miles southwest of Walden and 1½ miles above mouth.

DRAINAGE AREA.—84 square miles.

RECORDS AVAILABLE.—May, 1904, to October, 1905; October, 1923, to September, 1930.

EXTREMES.—Maximum discharge during year (estimated), 465 second-feet Apr. 12; minimum, 10 second-feet May 25 (gage height, 0.54 foot).

1904–5; 1923–1930: Maximum discharge, 790 second-feet June 15, 1924 (gage height, 3.73 feet); minimum, 2 second-feet Aug. 15, 1904.

REMARKS.—Records good except those for period of missing gage heights, Apr. 1–24, which were estimated. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|
| 1 | 60 | 45 | 142 | 230 | 40 | 79 | 36 |
| 2 | 60 | 48 | 153 | 160 | 36 | 87 | 36 |
| 3 | 80 | 50 | 142 | 96 | 26 | 88 | 36 |
| 4 | 78 | 75 | 117 | 66 | 23 | 107 | 35 |
| 5 | 69 | 100 | 95 | 64 | 23 | 102 | 35 |
| 6 | 60 | 198 | 85 | 55 | 26 | 107 | 38 |
| 7 | 58 | 270 | 75 | 87 | 23 | 100 | 43 |
| 8 | 76 | 430 | 66 | 144 | 22 | 88 | 45 |
| 9 | 83 | 230 | 45 | 216 | 43 | 83 | 48 |
| 10 | 88 | 248 | 24 | 238 | 83 | 79 | 43 |
| 11 | 78 | 344 | 20 | 261 | 96 | 80 | 38 |
| 12 | 72 | 465 | 14 | 320 | 96 | 75 | 33 |
| 13 | 63 | 183 | 14 | 340 | 86 | 83 | 35 |
| 14 | 59 | 67 | 12 | 290 | 77 | 188 | 27 |
| 15 | 56 | 63 | 12 | 218 | 56 | 218 | 22 |
| 16 | 54 | 113 | 14 | 216 | 42 | 142 | 19 |
| 17 | 50 | 280 | 16 | 228 | 38 | 110 | 22 |
| 18 | 49 | 310 | 16 | 255 | 39 | 93 | 19 |
| 19 | 50 | 320 | 14 | 224 | 50 | 82 | 16 |
| 20 | 48 | 350 | 12 | 238 | 69 | 71 | 18 |
| 21 | 44 | 290 | 12 | 244 | 80 | 58 | 16 |
| 22 | 44 | 240 | 22 | 246 | 110 | 54 | 18 |
| 23 | 44 | 220 | 18 | 240 | 88 | 52 | 25 |
| 24 | 41 | 215 | 12 | 175 | 90 | 48 | 32 |
| 25 | 41 | 203 | 11 | 137 | 79 | 46 | 52 |
| 26 | 41 | 199 | 13 | 117 | 87 | 52 | 49 |
| 27 | 42 | 188 | 55 | 95 | 82 | 58 | 46 |
| 28 | 43 | 173 | 125 | 85 | 80 | 55 | 45 |
| 29 | 44 | 157 | 175 | 58 | 93 | 50 | 42 |
| 30 | 46 | 149 | 224 | 46 | 110 | 46 | 45 |
| 31 | 46 | ------- | 257 | ------- | 90 | 42 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 88 | 41 | 57.0 | 3,500 |
| April | 465 | 45 | 207 | 12,300 |
| May | 257 | 11 | 64.9 | 3,990 |
| June | 340 | 46 | 180 | 10,700 |
| July | 110 | 22 | 64.0 | 3,940 |
| August | 218 | 42 | 84.6 | 5,200 |
| September | 52 | 16 | 33.8 | 2,010 |

## MICHIGAN RIVER[1] AT WALDEN, COLO.

LOCATION.—Water-stage recorder in NW. ¼ sec. 21, T. 9 N., R. 79 W., half a mile north of Walden.

DRAINAGE AREA.—185 square miles.

RECORDS AVAILABLE.—May, 1904, to October, 1905; May, 1923, to September, 1930.

EXTREMES.—Maximum discharge during year (estimated), 500 second-feet Apr. 9, 10; minimum, 3 second-feet July 8, 9.

1904–5, 1923–1930: Maximum discharge, 1,070 second-feet June 10, 1923 (gage height, 3.3 feet); minimum, that of July 8, 9, 1930.

REMARKS.—Records good except those for periods of missing gage heights, which were estimated. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|
| 1 | [a] 60 | 50 | 77 | 415 | 8 | 59 | 56 |
| 2 | [a] 60 | [a] 50 | 70 | 346 | 7 | [a] 63 | 50 |
| 3 | [a] 65 | [a] 60 | 77 | 232 | 6 | [a] 68 | 48 |
| 4 | [a] 70 | [a] 70 | 77 | 165 | 5 | [a] 70 | 47 |
| 5 | 70 | [a] 80 | 58 | 138 | 5 | [a] 70 | 48 |
| 6 | 63 | 90 | 49 | 120 | 4 | [a] 60 | 50 |
| 7 | 58 | [a] 100 | 49 | 108 | 4 | [a] 60 | [a] 52 |
| 8 | 59 | [a] 300 | 48 | 105 | 3 | 56 | [a] 55 |
| 9 | 68 | [a] 500 | 44 | 132 | 3 | 57 | [a] 54 |
| 10 | 65 | [a] 500 | 37 | 162 | [a] 5 | 54 | 53 |
| 11 | 61 | [a] 400 | 31 | 150 | [a] 8 | 54 | 51 |
| 12 | 61 | [a] 300 | 28 | 144 | [a] 10 | 60 | 46 |
| 13 | [a] 60 | 221 | 23 | 150 | [a] 12 | 72 | 44 |
| 14 | 59 | 197 | 20 | 135 | 15 | 181 | 40 |
| 15 | 59 | 135 | 18 | [a] 130 | 12 | 270 | 38 |
| 16 | 58 | 111 | 18 | [a] 110 | 8 | 260 | 38 |
| 17 | 58 | 105 | 18 | [a] 95 | [a] 8 | 178 | 35 |
| 18 | 57 | 117 | 18 | 85 | [a] 8 | 150 | 34 |
| 19 | 57 | 117 | 20 | 77 | [a] 8 | 120 | 31 |
| 20 | 52 | 129 | 21 | 72 | [a] 10 | 96 | 29 |
| 21 | 40 | 159 | 18 | 59 | [a] 12 | 79 | 26 |
| 22 | 24 | 162 | 24 | 88 | [a] 14 | 70 | 25 |
| 23 | 32 | 168 | 46 | 120 | [a] 16 | 68 | 26 |
| 24 | 36 | 178 | 58 | 59 | [a] 16 | 68 | 29 |
| 25 | 38 | 190 | 57 | 42 | [a] 18 | 65 | [a] 35 |
| 26 | 38 | 159 | 24 | [a] 35 | [a] 20 | 65 | 58 |
| 27 | [a] 38 | 144 | 25 | [a] 20 | [a] 20 | 63 | 54 |
| 28 | [a] 40 | 126 | 36 | 14 | 28 | 61 | 52 |
| 29 | [a] 45 | 99 | 60 | 12 | 39 | 61 | 49 |
| 30 | [a] 48 | 88 | 114 | 10 | 65 | 61 | 45 |
| 31 | 52 | ------- | 204 | ------- | 66 | 60 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 70 | 24 | 53.3 | 3,280 |
| April | 500 | 50 | 170 | 10,100 |
| May | 204 | 18 | 47.3 | 2,910 |
| June | 415 | 10 | 118 | 7,020 |
| July | 66 | 3 | 14.9 | 916 |
| August | 270 | 54 | 89.6 | 5,510 |
| September | 58 | 25 | 43.3 | 2,580 |

[a] Estimated.

[1] Formerly published as Michigan Creek.

### ILLINOIS CREEK AT WALDEN, COLO.

LOCATION.—Staff gage in NW. ¼ sec. 29, T. 9 N., R. 79 W., half a mile southwest of Walden.

DRAINAGE AREA.—254 square miles.

RECORDS AVAILABLE.—May, 1923, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,070 second-feet Apr. 9, 10 (gage height, 3.91 feet); minimum, 1 second-foot July 9.

1923–1930: Maximum discharge, 2,520 second-feet May 28, 1926 (gage height, 6.4 feet); minimum, 0.3 second-foot Sept. 7, 8, 1924 (gage height, 0.42 foot).

REMARKS—Records good. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | 45 | -------- | 50 | 108 | 275 | 10 | 34 | 40 |
| 2 | 48 | 24 | 50 | 92 | 360 | 8 | 31 | 36 |
| 3 | 50 | -------- | 60 | 88 | 245 | 5 | 35 | 32 |
| 4 | 54 | -------- | 80 | 92 | 161 | 2 | 43 | 30 |
| 5 | 52 | -------- | 100 | 94 | 132 | 2 | 43 | 31 |
| 6 | 50 | -------- | 200 | 72 | 115 | 2 | 34 | 34 |
| 7 | 48 | -------- | 300 | 72 | 90 | 1 | 34 | 36 |
| 8 | 46 | -------- | 455 | 77 | 74 | 1 | 33 | 42 |
| 9 | 48 | -------- | 1,070 | 81 | 88 | 1 | 57 | 36 |
| 10 | 50 | -------- | 1,070 | 68 | 118 | 2 | 45 | 27 |
| 11 | 52 | -------- | 712 | 62 | 115 | 3 | 34 | 22 |
| 12 | 52 | -------- | 622 | 44 | 108 | 3 | 40 | 21 |
| 13 | 48 | -------- | 515 | 42 | 101 | 6 | 44 | 22 |
| 14 | 46 | -------- | 308 | 34 | 83 | 6 | 108 | 22 |
| 15 | 45 | -------- | 248 | 24 | 103 | 4 | 161 | 17 |
| 16 | 45 | -------- | 224 | 23 | 81 | 6 | 185 | 16 |
| 17 | 40 | -------- | 155 | 22 | 69 | 5 | 170 | 16 |
| 18 | 39 | -------- | 143 | 20 | 63 | 5 | 94 | 16 |
| 19 | 38 | -------- | 137 | 23 | 55 | 5 | 90 | 15 |
| 20 | 37 | -------- | 140 | 21 | 50 | 6 | 72 | 15 |
| 21 | 35 | -------- | 143 | 19 | 46 | 8 | 35 | 13 |
| 22 | 35 | -------- | 140 | 27 | 45 | 10 | 50 | 12 |
| 23 | 34 | -------- | 152 | 23 | 74 | 12 | 43 | 13 |
| 24 | 38 | -------- | 170 | 53 | 57 | 11 | 42 | 16 |
| 25 | 38 | -------- | 185 | 50 | 40 | 10 | 37 | 17 |
| 26 | 37 | -------- | 224 | 51 | 34 | 10 | 36 | 26 |
| 27 | 38 | -------- | 191 | 45 | 24 | 15 | 34 | 27 |
| 28 | 37 | -------- | 164 | 43 | 18 | 13 | 32 | 29 |
| 29 | 34 | -------- | 120 | 45 | 15 | 15 | 44 | 29 |
| 30 | 32 | -------- | 120 | 72 | 11. | 27 | 52 | 22 |
| 31 | 32 | -------- | -------- | 155 | -------- | 31 | 47 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 54 | 32 | 42.7 | 2,630 |
| April | 1,070 | 50 | 275 | 16,400 |
| May | 155 | 17 | 55.9 | 3,440 |
| June | 360 | 11 | 95.0 | 5,650 |
| July | 31 | 1 | 7.90 | 486 |
| August | 185 | 31 | 59.3 | 3,650 |
| September | 42 | 12 | 24.3 | 1,450 |

## CANADIAN RIVER AT COWDREY, COLO.

LOCATION.—Chain gage in sec. 6, T. 10 N., R. 79 W., half a mile northeast of Cowdrey and one-third mile above Government Creek. Zero of gage 7,870.73 feet above mean sea level.

DRAINAGE AREA.—201 square miles.

RECORDS AVAILABLE.—May, 1904, to October, 1905; May, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year (estimated), 300 second-feet Apr. 9, 10; minimum, 1 second-foot July 8–10.

1904–5, 1929–30: Maximum discharge, 600 second-feet June 10, 1905; minimum, that of July 8–10, 1930.

REMARKS.—Records good. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|
| 1 | 47 | 40 | 54 | 227 | 8 | 22 | 23 |
| 2 | 33 | 40 | 40 | 212 | 7 | 20 | 22 |
| 3 | 33 | 40 | 36 | 200 | 5 | 24 | 22 |
| 4 | 46 | 50 | 39 | 172 | 3 | 27 | 24 |
| 5 | 51 | 70 | 42 | 141 | 2 | 35 | 24 |
| 6 | 45 | 100 | 47 | 114 | 2 | 33 | 25 |
| 7 | 45 | 150 | 43 | 95 | 2 | 30 | 26 |
| 8 | 43 | 250 | 47 | 86 | 1 | 28 | 25 |
| 9 | 42 | 300 | 49 | 87 | 1 | 30 | 24 |
| 10 | 41 | 300 | 55 | 90 | 1 | 29 | 22 |
| 11 | 40 | 250 | 57 | 98 | 2 | 29 | 22 |
| 12 | 40 | 200 | 51 | 87 | 7 | 30 | 22 |
| 13 | 40 | 160 | 46 | 86 | 11 | 37 | 19 |
| 14 | 37 | 143 | 42 | 86 | 12 | 61 | 17 |
| 15 | 33 | 138 | 41 | 80 | 11 | 112 | 15 |
| 16 | 29 | 112 | 38 | 70 | 11 | 106 | 15 |
| 17 | 31 | 75 | 37 | 58 | 8 | 86 | 13 |
| 18 | 32 | 72 | 37 | 54 | 9 | 62 | 11 |
| 19 | 29 | 57 | 39 | 65 | 27 | 53 | 11 |
| 20 | 29 | 61 | 38 | 59 | 24 | 42 | 15 |
| 21 | 28 | 66 | 39 | 57 | 23 | 36 | 14 |
| 22 | 28 | 65 | 47 | 57 | 22 | 34 | 16 |
| 23 | 25 | 64 | 48 | 57 | 20 | 27 | 20 |
| 24 | 25 | 68 | 47 | 57 | 20 | 25 | 23 |
| 25 | 25 | 78 | 48 | 53 | 19 | 25 | 34 |
| 26 | 30 | 75 | 51 | 45 | 17 | 24 | 42 |
| 27 | | 78 | 58 | 32 | 15 | 29 | 43 |
| 28 | | 81 | 70 | 22 | 15 | 33 | 36 |
| 29 | | 74 | 79 | 14 | 21 | 29 | 35 |
| 30 | | 65 | 84 | 8 | 23 | 27 | 29 |
| 31 | | ------- | 92 | ------- | 22 | 26 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 51 | 25 | 34.7 | 2,130 |
| April | 300 | 40 | 111 | 6,600 |
| May | 92 | 36 | 49.7 | 3,060 |
| June | 227 | 8 | 85.6 | 5,090 |
| July | 27 | 1 | 12.0 | 738 |
| August | 112 | 20 | 39.1 | 2,400 |
| September | 43 | 11 | 22.9 | 1,360 |

### ENCAMPMENT RIVER AT ENCAMPMENT, WYO.

LOCATION.—Chain gage in sec. 6, T. 14 N., R. 83 W., at Encampment. Zero of gage 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, 1930.

EXTREMES.—Maximum discharge during year, 1,720 second-feet May 29 (gage height, 6.83 feet); minimum, 24 second-feet Sept. 4, 16, 17.

1900, 1911–1924, 1929–30: Maximum discharge, 4,680 second-feet May 29, 1900; minimum, 3 second-feet July 24, 1919.

REMARKS.—Records fair. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | 97 | ------- | | 745 | 1,330 | 158 | 31 | 43 |
| 2 | 91 | 71 | | 940 | 985 | 121 | 34 | 32 |
| 3 | 130 | ------- | 60 | 860 | 1,170 | 117 | 34 | 32 |
| 4 | 108 | ------- | | 710 | 860 | 91 | 32 | 24 |
| 5 | 101 | ------- | | 710 | 680 | 80 | 32 | 37 |
| 6 | 93 | ------- | 70 | 540 | 710 | 76 | 32 | 55 |
| 7 | 93 | ------- | 100 | 490 | 900 | 69 | 32 | 55 |
| 8 | 135 | ------- | 130 | 468 | 940 | 63 | 36 | 58 |
| 9 | 207 | ------- | 150 | 422 | 1,080 | 55 | 45 | 55 |
| 10 | 165 | ------- | 198 | 400 | 1,080 | 37 | 69 | 63 |
| 11 | 150 | ------- | 242 | 360 | 1,080 | 37 | 68 | 55 |
| 12 | 112 | ------- | 312 | 360 | 1,120 | 62 | 71 | 43 |
| 13 | 108 | ------- | 380 | 320 | 1,030 | 76 | 88 | 34 |
| 14 | 104 | ------- | 445 | 340 | 940 | 66 | 229 | 32 |
| 15 | 95 | ------- | 380 | 340 | 1,030 | 46 | 222 | 30 |
| 16 | 97 | ------- | 301 | 360 | 940 | 66 | 192 | 24 |
| 17 | 93 | ------- | 265 | 380 | 860 | 49 | 165 | 24 |
| 18 | 102 | ------- | 255 | 400 | 940 | 34 | 140 | 29 |
| 19 | 93 | ------- | 275 | 422 | 900 | 49 | 88 | 33 |
| 20 | 90 | ------- | 282 | 515 | 710 | 66 | 58 | 33 |
| 21 | 77 | ------- | 360 | 745 | 590 | 53 | 55 | 27 |
| 22 | 79 | ------- | 468 | 820 | 540 | 40 | 49 | 28 |
| 23 | 69 | ------- | 565 | 650 | 445 | 34 | 32 | 36 |
| 24 | 64 | ------- | 650 | 620 | 340 | 32 | 37 | 48 |
| 25 | 63 | ------- | 710 | 710 | 229 | 34 | 55 | 58 |
| 26 | 83 | ------- | 710 | 900 | 210 | 34 | 66 | 51 |
| 27 | 87 | ------- | 710 | 1,080 | 204 | 34 | 71 | 66 |
| 28 | 93 | ------- | 680 | 1,330 | 204 | 30 | 71 | 80 |
| 29 | 76 | ------- | 620 | 1,680 | 210 | 27 | 58 | 97 |
| 30 | 87 | ------- | 590 | 1,680 | 181 | 27 | 55 | 112 |
| 31 | 79 | ------- | ------- | 1,500 | ------- | 27 | 49 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 207 | 63 | 101 | 6,210 |
| November | ------- | ------- | 65 | 3,870 |
| December | ------- | ------- | 45 | 2,770 |
| January | ------- | ------- | 38 | 2,340 |
| February | ------- | ------- | 42 | 2,330 |
| March | ------- | ------- | 50 | 3,070 |
| April | 710 | ------- | 338 | 20,100 |
| May | 1,680 | 320 | 708 | 43,500 |
| June | 1,330 | 181 | 745 | 44,300 |
| July | 158 | 27 | 57.7 | 3,550 |
| August | 229 | 31 | 73.6 | 4,530 |
| September | 112 | 24 | 46.3 | 2,760 |
| The year | 1,680 | ------- | 192 | 139,000 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 200 second-feet Apr. 7 (gage height, 4.1 feet); minimum, 2.6 second-feet Aug. 1.

1929–30: Maximum discharge, 450 second-feet May 23, 1929 (gage height, 5.5 feet); minimum, that of Aug. 1, 1930.

REMARKS.—Records good. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 16 | 17 | -------- | 14 | 16 | 45 | 119 | 6.4 | 2.9 | 5.3 |
| 2 | 16 | 18 | -------- | 14 | 15 | 53 | 72 | 5.9 | 3.6 | 5.3 |
| 3 | 18 | 21 | -------- | 14 | 32 | 78 | 69 | 5.0 | 3.7 | 5.7 |
| 4 | 20 | 20 | -------- | 15 | 59 | 73 | 53 | 5.1 | 4.0 | 4.6 |
| 5 | 17 | 18 | -------- | 15 | 95 | 79 | 61 | 4.8 | 5.9 | 5.3 |
| 6 | 16 | 18 | -------- | 15 | 169 | 63 | 41 | 5.3 | 5.7 | 5.5 |
| 7 | 16 | 17 | -------- | 16 | 163 | 60 | 43 | 4.6 | 5.5 | 5.9 |
| 8 | 19 | 16 | -------- | 16 | 169 | 56 | 33 | 4.8 | 5.7 | 6.6 |
| 9 | 30 | 17 | -------- | 16 | 169 | 57 | 27 | 5.1 | 6.4 | 7.1 |
| 10 | 21 | 17 | -------- | 16 | 134 | 45 | 26 | 4.0 | 7.6 | 7.3 |
| 11 | 20 | 17 | -------- | 16 | 103 | 45 | 21 | 3.6 | 7.8 | 5.5 |
| 12 | 18 | 15 | -------- | 15 | 99 | 44 | 16 | 3.9 | 8.7 | 4.2 |
| 13 | 17 | 15 | -------- | 15 | 112 | 36 | 13 | 4.8 | 43 | 4.0 |
| 14 | 17 | 16 | -------- | 18 | 107 | 40 | 14 | 4.8 | 25 | 4.2 |
| 15 | 17 | 18 | -------- | 33 | 117 | 49 | 29 | 4.2 | 31 | 4.2 |
| 16 | 17 | 18 | -------- | 20 | 69 | 53 | 26 | 3.7 | 14 | 4.4 |
| 17 | 17 | 17 | -------- | 18 | 58 | 32 | 25 | 3.4 | 38 | 4.8 |
| 18 | 17 | 17 | -------- | 17 | 46 | 43 | 31 | 3.4 | 7.6 | 4.2 |
| 19 | 16 | 16 | -------- | 36 | 63 | 43 | 31 | 3.2 | 6.6 | 3.7 |
| 20 | 16 | 15 | -------- | 20 | 61 | 49 | 28 | 4.0 | 5.5 | 4.4 |
| 21 | 15 | | -------- | 17 | 74 | 61 | 26 | 4.0 | 6.4 | 4.4 |
| 22 | 15 | | -------- | 17 | 81 | 113 | 27 | 4.0 | 5.9 | 5.1 |
| 23 | 14 | | 17 | 15 | 86 | 89 | 24 | 3.7 | 5.3 | 8.3 |
| 24 | 13 | | 18 | 14 | 88 | 56 | 13 | 3.9 | 5.7 | 8.3 |
| 25 | 15 | | 17 | 14 | 95 | 53 | 10 | 3.4 | 5.3 | 20 |
| | | 16 | | | | | | | | |
| 26 | 16 | | 16 | 15 | 86 | 70 | 8.3 | 3.9 | 5.7 | 12 |
| 27 | 16 | | 15 | 15 | 81 | 85 | 6.6 | 3.2 | 7.6 | 10 |
| 28 | 16 | | 14 | 16 | 60 | 84 | 7.1 | 3.6 | 6.1 | 9.4 |
| 29 | 15 | | -------- | 18 | 49 | 92 | 5.9 | 3.2 | 6.1 | 9.4 |
| 30 | 18 | | -------- | 20 | 47 | 90 | 6.9 | 3.4 | 5.5 | 9.0 |
| 31 | 16 | -------- | -------- | 14 | -------- | 92 | -------- | 3.9 | 4.8 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 30 | 13 | 17.1 | 1,050 |
| November | 21 | 15 | 16.8 | 1,000 |
| February 23–28 | 18 | 14 | 16.2 | 193 |
| March | 36 | 14 | 17.2 | 1,060 |
| April | 169 | 15 | 86.8 | 5,160 |
| May | 113 | 32 | 62.2 | 3,820 |
| June | 119 | 5.9 | 30.4 | 1,810 |
| July | 6.4 | 3.2 | 4.20 | 258 |
| August | 43 | 2.9 | 9.76 | 600 |
| September | 20 | 3.7 | 6.60 | 393 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 510 second-feet Aug. 13 (gage height, 3.17 feet); minimum, 0.6 second-foot Aug. 2 (gage height, 0.13 foot).

1928–1930: Maximum discharge, 1,180 second-feet May 29, 30, 1928; minimum, that of Aug. 2, 1930.

REMARKS.—Records good except those during 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, 1929–30*

| Day | Oct. | Nov. | Jan. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11 | 14 | | | 15 | 31 | 293 | 5.9 | 0.7 | 2.2 |
| 2 | 12 | | | | 20 | 27 | 158 | 5.4 | .6 | 2.2 |
| 3 | 13 | | | | 30 | 40 | 120 | 5.4 | .8 | 2.0 |
| 4 | 13 | | | | 50 | 70 | 97 | 5.9 | .9 | 1.8 |
| 5 | 13 | | | | 65 | 47 | 74 | 6.3 | 1.0 | 1.6 |
| 6 | 12 | | | | 73 | 43 | 62 | 5.9 | 1.0 | 1.7 |
| 7 | 12 | | | | 74 | 27 | 52 | 5.4 | 1.0 | 3.3 |
| 8 | 17 | | | | 76 | 40 | 62 | 4.2 | 1.1 | 5.9 |
| 9 | 20 | 27 | | | 77 | 53 | 85 | 3.3 | 1.3 | 5.0 |
| 10 | 16 | | | | 76 | 69 | 101 | 2.0 | 2.5 | 3.8 |
| 11 | 15 | | | | 76 | 46 | 99 | 1.7 | 8.3 | 2.2 |
| 12 | 14 | | | | 74 | 36 | 90 | 1.8 | 18 | 2.1 |
| 13 | 13 | | | 19 | 70 | 28 | 92 | 4.6 | 130 | 2.1 |
| 14 | 12 | | | | 65 | 22 | 61 | 5.4 | 85 | 2.0 |
| 15 | 12 | | | | 62 | 21 | 43 | 4.6 | 97 | 1.7 |
| 16 | 11 | | | | 50 | 25 | 33 | 2.5 | 50 | 1.6 |
| 17 | 11 | | | | 42 | 41 | 30 | 1.6 | 32 | 1.5 |
| 18 | 11 | | | | 38 | 37 | 29 | 1.1 | 23 | 1.3 |
| 19 | 11 | | | | 33 | 38 | 40 | 1.2 | 17 | 1.2 |
| 20 | 10 | | | | 34 | 26 | 31 | 4.2 | 13 | 1.1 |
| 21 | 10 | | | | 30 | 20 | 21 | 4.2 | 9.9 | 1.2 |
| 22 | 9.4 | | 2 | | 29 | 19 | 31 | 4.2 | 8.8 | 1.2 |
| 23 | 9.4 | | | | 29 | 61 | 22 | 2.9 | 6.7 | 1.6 |
| 24 | 10 | | | | 32 | 53 | 16 | 2.4 | 5.4 | 2.1 |
| 25 | 10 | | | | 47 | 36 | 11 | 2.4 | 5.4 | 3.3 |
| 26 | 10 | | | | 41 | 34 | 9.9 | 2.1 | 5.4 | 3.8 |
| 27 | 10 | | | | 41 | 52 | 7.8 | 1.2 | 5.4 | 2.4 |
| 28 | 12 | | | | 44 | 108 | 5.9 | 1.0 | 5.9 | 2.4 |
| 29 | 15 | | | | 34 | 166 | 5.9 | .8 | 6.3 | 2.4 |
| 30 | 14 | | | | 38 | 205 | 5.9 | 1.0 | 5.0 | 2.9 |
| 31 | 15 | | | | | 271 | | 1.0 | 2.5 | |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 20 | 9.4 | 12.4 | 762 |
| November | | | 15.0 | 893 |
| December | | | 12.0 | 738 |
| January | | | 6.0 | 369 |
| February | | | 15.0 | 833 |
| March | | | 18.0 | 1,110 |
| April | 77 | 15 | 48.8 | 2,900 |
| May | 271 | 19 | 57.8 | 3,550 |
| June | 293 | 5.9 | 59.6 | 3,550 |
| July | 6.3 | .8 | 3.28 | 202 |
| August | 130 | .6 | 17.8 | 1,090 |
| September | 5.9 | 1.1 | 2.32 | 138 |
| The year | 293 | | 22.3 | 16,100 |

## DEER CREEK AT GLENROCK, WYO.

LOCATION.—Staff gage in sec. 4, T. 33 N., R. 75 W., at Glenrock, one-fourth mile above mouth.

DRAINAGE AREA.—216 square miles.

RECORDS AVAILABLE.—April, 1916, to September, 1924; May, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 705 second-feet Apr. 15 (gage height, 4.20 feet); minimum, 0.2 second-foot July 7, 8.

1916–1924, 1928–1930: Maximum discharge, 4,600 second-feet Apr. 15, 1924; no flow during summers of 1919 and 1922.

REMARKS.—Records good. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 18 | 21 | ------- | 18 | 34 | 151 | 73 | 3.0 | 0.3 | 8.0 |
| 2 | 18 | 25 | ------- | 18 | 36 | 127 | 172 | .6 | .3 | 6.0 |
| 3 | 19 | 25 | ------- | 18 | 33 | 109 | 113 | .6 | .4 | 5.6 |
| 4 | 20 | 23 | ------- | 18 | 54 | 98 | 90 | .6 | .5 | 6.0 |
| 5 | 19 | 25 | ------- | 18 | 80 | 100 | 80 | .6 | .5 | 5.2 |
| 6 | 16 | 25 | ------- | 20 | 132 | 118 | 78 | .3 | .6 | 2.2 |
| 7 | 17 | 25 | ------- | 14 | 198 | 160 | 71 | .2 | .6 | 3.0 |
| 8 | 18 | 25 | ------- | 22 | 296 | 127 | 64 | .2 | .6 | 2.0 |
| 9 | 18 | 25 | ------- | 23 | 331 | 201 | 62 | .6 | .6 | 4.5 |
| 10 | 17 | 21 | ------- | 23 | 389 | 162 | 59 | .7 | .6 | 5.2 |
| 11 | 19 | 21 | ------- | 22 | 409 | 169 | 46 | .8 | .6 | 4.5 |
| 12 | 11 | 21 | ------- | 23 | 409 | 172 | 36 | 69 | .8 | 5.2 |
| 13 | 4 | 20 | ------- | 23 | 449 | 229 | 33 | 28 | 1.0 | 5.6 |
| 14 | 5 | 20 | ------- | 24 | 596 | 220 | 24 | 16 | .8 | 6.0 |
| 15 | 6 | 20 | ------- | 25 | 596 | 314 | 23 | 7.0 | .5 | 1.5 |
| 16 | 8 | | ------- | 32 | 369 | 429 | 4 | 5.2 | .8 | .7 |
| 17 | 11 | | ------- | 36 | 280 | 331 | 1 | 4.5 | 5.2 | .8 |
| 18 | 16 | | ------- | 34 | 229 | 296 | 1 | 3.3 | 5.6 | .8 |
| 19 | 16 | | ------- | 31 | 213 | 296 | 3 | 2.2 | 6.0 | 1.0 |
| 20 | 16 | | ------- | 30 | 248 | 263 | 10 | 2.2 | 6.0 | 1.0 |
| 21 | 17 | | ------- | 31 | 216 | 248 | 11 | 1.7 | 8.5 | 1.0 |
| 22 | 19 | | ------- | 32 | 232 | 263 | 15 | .9 | 5.2 | 1.2 |
| 23 | 20 | 18 | 24 | 38 | 232 | 263 | 13 | .5 | 2.0 | 1.4 |
| 24 | 20 | | 24 | 36 | 226 | 213 | 11 | .3 | 1.6 | 3.0 |
| 25 | 20 | | 20 | 37 | 369 | 167 | 4 | .3 | 1.0 | 3.7 |
| 26 | 20 | | 20 | 33 | 409 | 144 | 3 | .4 | .8 | 6.0 |
| 27 | 20 | | 20 | 28 | 296 | 120 | 6 | .4 | .8 | 7.0 |
| 28 | 20 | | 20 | 27 | 263 | 98 | 4 | .3 | 1.0 | 6.5 |
| 29 | 20 | | ------- | 29 | 226 | 76 | 3 | .3 | 26 | 8.0 |
| 30 | 20 | | ------- | 33 | 178 | 62 | 3 | .3 | 16 | 8.0 |
| 31 | 20 | ------- | ------- | 33 | ------- | 52 | ------- | .3 | 11 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 20 | 4 | 16.4 | 1,010 |
| November | 25 | ---------- | 20.4 | 1,210 |
| February 23–28 | 24 | 20 | 21.3 | 253 |
| March | 38 | 14 | 26.7 | 1,640 |
| April | 596 | 33 | 268 | 15,900 |
| May | 429 | 52 | 184 | 11,300 |
| June | 172 | 1 | 37.2 | 2,210 |
| July | 69 | .2 | 4.88 | 300 |
| August | 26 | .3 | 3.43 | 211 |
| September | 8.0 | .7 | 4.02 | 239 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 448 second-feet May 16 (gage height, 4.05 feet); minimum, 0.4 second-foot July 19.

1911, 1916–1924, 1928–1930: Maximum discharge, 2,050 second-feet May 22, 1922; no flow during summers of 1922 and 1929.

REMARKS.—Records good. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 8.0 | 6.2 | ------- | | 12 | 132 | 144 | 2.0 | 0.9 | 2.0 |
| 2 | 8.0 | 6.8 | ------- | | 16 | 119 | 160 | 1.6 | 1.1 | 2.4 |
| 3 | 8.0 | 8.6 | ------- | 10 | 16 | 113 | 132 | 1.5 | 1.0 | 2.0 |
| 4 | 7.4 | 9.2 | ------- | | 28 | 115 | 117 | 1.2 | 1.0 | 1.7 |
| 5 | 5.0 | 9.8 | ------- | | 90 | 113 | 111 | 1.1 | 1.2 | 1.7 |
| 6 | 3.7 | 12 | ------- | | 119 | 115 | 115 | 1.0 | 1.1 | 2.0 |
| 7 | 4.0 | 14 | ------- | | 148 | 94 | 107 | 1.0 | 1.3 | 2.0 |
| 8 | 4.3 | 13 | ------- | 12 | 201 | 94 | 102 | 1.1 | 1.5 | 2.4 |
| 9 | 5.6 | 12 | ------- | | 261 | 113 | 96 | 1.1 | 1.3 | 2.7 |
| 10 | 6.2 | 12 | ------- | | 280 | 132 | 96 | .9 | 1.1 | 2.7 |
| 11 | 6.2 | 12 | ------- | 15 | 274 | 132 | 92 | .9 | 1.0 | 3.0 |
| 12 | 6.8 | 10 | ------- | 16 | 271 | 126 | 87 | 6.8 | 1.1 | 2.7 |
| 13 | 8.6 | 10 | ------- | 16 | 297 | 139 | 71 | 4.3 | 1.1 | 3.4 |
| 14 | 9.2 | 13 | ------- | 21 | 343 | 165 | 56 | 1.0 | 1.2 | 3.7 |
| 15 | 9.8 | 11 | ------- | 25 | 360 | 307 | 57 | .5 | 1.3 | 3.7 |
| 16 | 9.8 | 12 | ------- | 30 | 267 | 380 | 57 | .6 | 2.0 | 3.0 |
| 17 | 9.2 | 13 | ------- | 26 | 190 | 310 | 51 | .6 | 7.4 | 3.4 |
| 18 | 9.2 | 14 | ------- | 28 | 148 | 284 | 36 | .5 | 2.0 | 4.0 |
| 19 | 9.2 | 15 | ------- | 24 | 139 | 271 | 25 | .4 | 1.6 | 4.7 |
| 20 | 10 | 13 | ------- | 22 | 137 | 252 | 19 | .5 | 2.0 | 5.0 |
| 21 | 9.8 | 11 | ------- | 21 | 165 | 249 | 19 | .5 | 1.7 | 5.6 |
| 22 | 8.6 | 10 | 17 | 25 | 148 | 267 | 8.6 | .5 | 2.0 | 5.6 |
| 23 | 10 | 9 | 15 | 30 | 162 | 287 | 8.6 | .5 | 2.0 | 5.0 |
| 24 | 8.0 | 10 | 14 | 27 | 168 | 249 | 7.4 | .5 | 2.0 | 4.7 |
| 25 | 7.4 | 11 | 13 | 27 | 237 | 206 | 6.8 | .5 | 2.0 | 4.7 |
| 26 | 7.4 | | 12 | 23 | 243 | 170 | 6.2 | .5 | 2.0 | 4.7 |
| 27 | 7.4 | | 11 | 21 | 206 | 139 | 5.6 | .5 | 2.0 | 7.4 |
| 28 | 7.4 | 12 | 10 | 18 | 201 | 126 | 5.0 | .5 | 2.0 | 8.0 |
| 29 | 6.8 | | ------- | 19 | 178 | 119 | 5.0 | .6 | 2.0 | 8.0 |
| 30 | 6.8 | | ------- | 16 | 153 | 111 | 3.7 | .9 | 2.0 | 8.6 |
| 31 | 6.8 | ------- | ------- | 16 | ------- | 107 | ------- | 1.0 | 2.0 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 10 | 3.7 | 7.57 | 465 |
| November | 15 | 6.2 | 11.3 | 672 |
| February 22-28 | 17 | 10 | 13.1 | 182 |
| March | 30 | ------- | 18.6 | 1,140 |
| April | 360 | 12 | 182 | 10,800 |
| May | 380 | 94 | 179 | 11,000 |
| June | 160 | 3.7 | 60.1 | 3,[illegible] |
| July | 6.8 | .4 | 1.13 | 69 |
| August | 7.4 | .9 | 1.74 | 107 |
| September | 8.6 | 1.7 | 4.02 | 239 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 478 second-feet May 15 (gage height, 7.76 feet); minimum, 2.8 second-feet July 19 (gage height, 3.5 feet).

1919–1930: 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, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.2 | 6.4 | 15 | 11 | | 15 | 15 | 120 | 122 | 3.2 | 3.0 | 5.3 |
| 2 | 5.6 | 6.4 | 10 | 15 | | 14 | 25 | 113 | 120 | 3.2 | 3.0 | 5.3 |
| 3 | 5.3 | 9.4 | 10 | 15 | | 13 | 35 | 107 | 101 | 3.2 | 3.2 | 5.6 |
| 4 | 5.0 | 11 | 11 | 14 | | 12 | 50 | 107 | 96 | 3.2 | 3.0 | 5.9 |
| 5 | 5.0 | 7.6 | 12 | 13 | | 11 | 65 | 107 | 92 | 3.2 | 3.2 | 6.2 |
| | | | | | 10 | | | | | | | |
| 6 | 4.8 | 7.9 | 13 | 13 | | 11 | 89 | 107 | 83 | 3.7 | 3.2 | 6.2 |
| 7 | 4.8 | 8.8 | 14 | 12 | | 11 | 120 | 107 | 64 | 3.7 | 4.1 | 6.2 |
| 8 | 4.6 | 8.8 | 15 | 11 | | 11 | 181 | 107 | 58 | 3.5 | 4.1 | 5.6 |
| 9 | 4.6 | 10 | 14 | 10 | | 11 | 194 | 107 | 55 | 3.2 | 3.9 | 5.6 |
| 10 | 4.6 | 9.4 | 13 | 9 | | 7.6 | 185 | 129 | 44 | 2.8 | 3.7 | 5.3 |
| 11 | 5.0 | 9.4 | 12 | | | 7.9 | 172 | 154 | 37 | 3.7 | 3.7 | 5.3 |
| 12 | 5.0 | 9.0 | 11 | | | 7.9 | 167 | 146 | 29 | 7.3 | 3.7 | 5.0 |
| 13 | 5.5 | 9.0 | 11 | 7 | 11 | 8.0 | 214 | 184 | 22 | 4.8 | 3.9 | 5.0 |
| 14 | 6.2 | 9.0 | 11 | | | 10 | 245 | 202 | 15 | 4.3 | 3.9 | 5.0 |
| 15 | 6.2 | 9.0 | 11 | | | 13 | 224 | 404 | 13 | 4.1 | 4.5 | 4.8 |
| 16 | 6.2 | 9.1 | 11 | | | 13 | 179 | 325 | 10 | 3.7 | 5.3 | 4.6 |
| 17 | 6.2 | 9.1 | 10 | | | 13 | 138 | 263 | 6.2 | 3.2 | 4.6 | 4.3 |
| 18 | 6.2 | 9.1 | 9 | 6 | 20 | 13 | 122 | 227 | 5.3 | 3.0 | 4.3 | 4.3 |
| 19 | 6.2 | 9.0 | 8 | | | 13 | 118 | 223 | 5.0 | 2.8 | 4.3 | 4.1 |
| 20 | 6.2 | 9.0 | 9 | | | 13 | 122 | 213 | 5.9 | 3.0 | 5.3 | 4.1 |
| 21 | 6.2 | 8.0 | 13 | | | 13 | 128 | 239 | 6.7 | 3.0 | 5.3 | 4.1 |
| 22 | 6.2 | 12 | 17 | | | 13 | 129 | 268 | 7.6 | 3.0 | 5.6 | 4.1 |
| 23 | 6.2 | 17 | 17 | 6 | 18 | 13 | 144 | 254 | 7.3 | 3.0 | 5.9 | 3.7 |
| 24 | 6.2 | 16 | 18 | | | 12 | 146 | 209 | 5.3 | 3.0 | 5.0 | 3.5 |
| 25 | 6.2 | 19 | 19 | | | 12 | 220 | 171 | 4.6 | 3.0 | 4.6 | 3.5 |
| 26 | 6.2 | 15 | 18 | | 17 | 12 | 205 | 144 | 4.1 | 3.0 | 4.1 | 3.5 |
| 27 | 5.9 | 15 | 17 | | 17 | 11 | 179 | 124 | 3.7 | 3.0 | 6.2 | 3.7 |
| 28 | 6.2 | 13 | 17 | 8 | 16 | 11 | 167 | 118 | 3.2 | 3.0 | 5.9 | 3.7 |
| 29 | 6.4 | 19 | 16 | | ------- | 11 | 145 | 120 | 3.2 | 3.0 | 5.3 | 3.7 |
| 30 | 6.7 | 20 | 14 | | ------- | 11 | 134 | 100 | 3.2 | 3.0 | 5.0 | 3.7 |
| 31 | 6.4 | ------- | 13 | | ------- | 11 | ------- | 92 | ------- | 3.0 | 5.0 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 6.7 | 4.6 | 5.75 | 354 |
| November | 20 | 6.4 | 11.0 | 655 |
| December | 19 | 8 | 13.2 | 812 |
| January | 15 | ---------- | 8.58 | 528 |
| February | ---------- | ---------- | 14.1 | 788 |
| March | 150 | 7.6 | 11.6 | 713 |
| April | 245 | 15 | 142 | 8,450 |
| May | 404 | 92 | 171 | 10,500 |
| June | 122 | 3.2 | 34.4 | 2,050 |
| July | 7.3 | 2.8 | 3.41 | 209 |
| August | 6.2 | 3 | 4.38 | 269 |
| September | 6.2 | 3.5 | 4.70 | 280 |
| The year | 245 | ---------- | 35.1 | 25,600 |

### 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-fourths 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, 1930.

EXTREMES.—Maximum discharge during year, 46 second-feet June 24 (gage height, 1.28 feet); minimum, 0.1 second-foot June 15 (gage height, 0.31 foot).

1916, 1918, 1923–24, 1928–1930: Maximum discharge, 437 second-feet May 10, 1918; minimum that of June 15, 1930.

REMARKS.—Records good. Diversions for irrigation above station. Flow regulated by La Prele Reservoir, capacity, 20,000 acre-feet.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 14 | 21 | ------- | 2.4 | 17 | 2.5 | 0.5 | 0.5 | 9.6 |
| 2 | 16 | 22 | ------- | 1.8 | 13 | 2.5 | .2 | .2 | 12 |
| 3 | 19 | 21 | ------- | 2.0 | 16 | 1.8 | .4 | .6 | 9.6 |
| 4 | 22 | 20 | ------- | 2.4 | 18 | 1.3 | .9 | 1.0 | 7.4 |
| 5 | 24 | 22 | ------- | 2.8 | 19 | 1.6 | 1.3 | 2.0 | 5.7 |
| 6 | 23 | 24 | ------- | 2.4 | 21 | 2.0 | 1.9 | 3.0 | 4.5 |
| 7 | 20 | 26 | ------- | 3.2 | 24 | 1.6 | 2.5 | 4.5 | 3.8 |
| 8 | 17 | 25 | 25 | 3.8 | 25 | 1.6 | 2.5 | 6.8 | 4.5 |
| 9 | 14 | 24 | 23 | 4.8 | 27 | 1.8 | 1.8 | 6.4 | 6.0 |
| 10 | 16 | 25 | 8.2 | 4.5 | 23 | 1.3 | 1.4 | 5.0 | 5.7 |
| 11 | 19 | 26 | 2.0 | 4.0 | 17 | 1.0 | 2.4 | 5.4 | 4.5 |
| 12 | 21 | 28 | 1.2 | 2.8 | 17 | .8 | 4.2 | 6.4 | 4.0 |
| 13 | 22 | 31 | .5 | 3.2 | 19 | .6 | 7.8 | 9.6 | 5.0 |
| 14 | 21 | 32 | 1.9 | 3.5 | 21 | .4 | 13 | 14 | 5.7 |
| 15 | 19 | 30 | 2.4 | 6.0 | 19 | .1 | 8.5 | 19 | 4.8 |
| 16 | 18 | 27 | 2.8 | 13 | 16 | .6 | 7.1 | 18 | 4.0 |
| 17 | 19 | 25 | 4.0 | 15 | 15 | .8 | 4.5 | 21 | 5.0 |
| 18 | 21 | 22 | 4.8 | 16 | 15 | .4 | 2.4 | 20 | 5.7 |
| 19 | 19 | 21 | 6.0 | 21 | 17 | 1.3 | 1.0 | 16 | 4.2 |
| 20 | 20 | 18 | 7.4 | 18 | 18 | 7.4 | 1.3 | 14 | 3.2 |
| 21 | 22 | 17 | 6.8 | 15 | 16 | 21 | 1.3 | 12 | 3.5 |
| 22 | 21 | 20 | 3.2 | 12 | 13 | 32 | 1.4 | 9.0 | 4.5 |
| 23 | 19 | 22 | 2.2 | 13 | 12 | 42 | .9 | 11 | 6.4 |
| 24 | 18 | 25 | 1.8 | 15 | 13 | 45 | .5 | 13 | 7.4 |
| 25 | 20 | 25 | 1.2 | 18 | 13 | 25 | .4 | 15 | 9.0 |
| 26 | 21 | 24 | 1.2 | 21 | 15 | 16 | .7 | 18 | 7.8 |
| 27 | 20 | 22 | 1.8 | 24 | 12 | 11 | .6 | 14 | 6.8 |
| 28 | 18 | } | 2.4 | 26 | 5.0 | 8.2 | .4 | 12 | 7.8 |
| 29 | 16 | } 20 | 2.8 | 29 | 4.2 | 3.0 | .8 | 9.6 | 9.6 |
| 30 | 16 | } | 3.2 | 30 | 2.8 | .8 | .8 | 7.4 | 12 |
| 31 | 19 | ------- | 2.5 | ------- | 1.9 | ------- | .8 | 8.2 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 24 | 14 | 19.2 | 1,180 |
| November | 32 | ------- | 23.5 | 1,400 |
| March 8–31 | 25 | .5 | 4.93 | 234 |
| April | 30 | 1.8 | 11.2 | 666 |
| May | 27 | 1.9 | 15.6 | 959 |
| June | 45 | .1 | 7.85 | 467 |
| July | 13 | .2 | 2.39 | 147 |
| August | 21 | .2 | 9.76 | 600 |
| September | 12 | 3.2 | 6.32 | 376 |

### WAGONHOUND CREEK NEAR LA BONTE, WYO.

LOCATION.—Staff 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 September, 1930.

EXTREMES.—Maximum discharge during year, about 300 second-feet May 16 (gage height, 6.3 feet); no flow during periods from June to September.

1916–1924, 1929–30: Maximum discharge, 907 second-feet May 11, 12, 1920; no flow during summers of 1918, 1919, 1922, 1930.

REMARKS.—Records fair. Diversion for irrigation above station.

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

| Day | Apr. | May | June | Aug. | Sept. | Day | Apr. | May | June | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ------- | 9 | 8 | 0 | 10 | 16 | ------- | 269 | 3 | 2 | 19 |
| 2 | ------- | 5 | 8 | 0 | 12 | 17 | ------- | 180 | 3 | 3 | 13 |
| 3 | ------- | 1 | 6 | 0 | 12 | 18 | ------- | 148 | 3 | 3 | 4 |
| 4 | ------- | 1 | 6 | 0 | 12 | 19 | ------- | 89 | 3 | 3 | 1 |
| 5 | ------- | 2 | 6 | 0 | 13 | 20 | 32 | 88 | 3 | 2 | 0 |
| 6 | ------- | 41 | 5 | 0 | 14 | 21 | 37 | 76 | 3 | 2 | 0 |
| 7 | ------- | 10 | 5 | 0 | 16 | 22 | 34 | 67 | 3 | 1 | 0 |
| 8 | ------- | 14 | 4 | 0 | 65 | 23 | 23 | 64 | 2 | 1 | 0 |
| 9 | ------- | 47 | 5 | 0 | 21 | 24 | 26 | 62 | 2 | 0 | 0 |
| 10 | ------- | 104 | 4 | 0 | 19 | 25 | 29 | 41 | 2 | 6 | 0 |
| 11 | ------- | 105 | 4 | 0 | 20 | 26 | 39 | 34 | 1 | 6 | 0 |
| 12 | ------- | 94 | 4 | 0 | 17 | 27 | 27 | 27 | 0 | 6 | 0 |
| 13 | ------- | 94 | 4 | 0 | 16 | 28 | 23 | 24 | 0 | 6 | 0 |
| 14 | ------- | 129 | 4 | 0 | 18 | 29 | 23 | 7 | 0 | 6 | 10 |
| 15 | ------- | 167 | 4 | 1 | 18 | 30 | 13 | 3 | 0 | 6 | 2 |
| | | | | | | 31 | ------- | 2 | ------- | 9 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| April 20–30 | 39 | 13 | 27.8 | 606 |
| May | 269 | 1 | 64.6 | 3,979 |
| June | 8 | 0 | 3.5 | 208 |
| August | 9 | 0 | 2.2 | 135 |
| September | 65 | 0 | 11.1 | 66 |
| The period | | | | 5,580 |

NOTE.—No flow during July.

### LA BONTE CREEK NEAR LA BONTE, WYO.

LOCATION.—Staff gage in sec. 21, T. 31 N., R. 71 W., 3 miles east of La Bonte and 1½ miles above mouth.

DRAINAGE AREA.—302 square miles.

RECORDS AVAILABLE.—April, 1916, to September, 1924; May, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 944 second-feet Aug. 28 (gage height, 3.44 feet); minimum, 4 second-feet Sept. 6.

1916–1924, 1928–1930: Maximum discharge, 2,750 second-feet May 22, 23, 1923 (gage height, 7.5 feet); no flow during summer of 1917 and 1918.

REMARKS.—Records good except those for period Nov. 10–30, which were estimated because of ice. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.4 | 11 | ------- | 16 | 34 | 164 | 254 | 8.6 | 5.5 | 11 |
| 2 | 7.7 | 11 | ------- | 16 | 42 | 146 | 268 | 6.5 | 5.2 | 11 |
| 3 | 7.4 | 11 | ------- | 16 | 54 | 141 | 198 | 7.4 | 5.4 | 9.9 |
| 4 | 7.7 | 12 | ------- | 18 | 90 | 150 | 155 | 7.0 | 5.5 | |
| 5 | 7.4 | 12 | ------- | 21 | 127 | 150 | 143 | 7.4 | 5 | 8.6 |
| 6 | 7.4 | 12 | ------- | 24 | 139 | 195 | 137 | 7.2 | 4 | 8.4 |
| 7 | 7.2 | 13 | ------- | 42 | 234 | 169 | 121 | 7.0 | 5.2 | 7.9 |
| 8 | 7.4 | 13 | ------- | 16 | 301 | 206 | 121 | 5.9 | 5.7 | 9 |
| 9 | 7.7 | 18 | ------- | 17 | 333 | 396 | 117 | 5.4 | 5.2 | 11 |
| 10 | 7.7 | 18 | ------- | 15 | 313 | 432 | 96 | 5.0 | 5.2 | 9 |
| 11 | 7.4 | 16 | ------- | 14 | 383 | 460 | 85 | 4.8 | 5.7 | 7.4 |
| 12 | 7.4 | 14 | ------- | 15 | 370 | 424 | 74 | 4.6 | 5.9 | 6.5 |
| 13 | 7.4 | | ------- | 16 | 401 | 540 | 68 | 4.6 | 7 | 6.8 |
| 14 | 7.7 | | ------- | 18 | 406 | 530 | 62 | 4.6 | 7.2 | 6.5 |
| 15 | 7.7 | | ------- | 19 | 353 | 755 | 55 | 4.4 | 9.5 | 6.8 |
| 16 | 7.9 | 12 | ------- | 25 | 329 | 744 | 50 | 4.8 | 11 | 6.3 |
| 17 | 7.9 | | ------- | 34 | 254 | 640 | 46 | 4.8 | 20 | 6.1 |
| 18 | 8.1 | | ------- | 25 | 231 | 540 | 39 | 4.8 | 18 | 5.9 |
| 19 | 8.1 | | ------- | 30 | 231 | 482 | 37 | 4.6 | 14 | 5.9 |
| 20 | 8.1 | | ------- | 35 | 237 | 392 | 39 | 4.6 | 10 | 5.7 |
| 21 | 8.4 | | 26 | 34 | 237 | 349 | 33 | 4.8 | 8.6 | 5.5 |
| 22 | 8.4 | 10 | 25 | 35 | 240 | 349 | 33 | 9.9 | 9 | 5.5 |
| 23 | 8.6 | | 24 | 40 | 234 | 374 | 30 | 8.1 | 9 | 5.2 |
| 24 | 8.6 | | 23 | 46 | 224 | 345 | 27 | 7.2 | 9 | 5.2 |
| 25 | 8.6 | | 19 | 36 | 325 | 264 | 25 | 7.0 | 8.4 | 5.4 |
| 26 | 8.6 | | 18 | 36 | 301 | 228 | 26 | 6.8 | 7.9 | 5.5 |
| 27 | 8.6 | | 17 | 36 | 244 | 195 | 21 | 6.3 | 7.2 | 5.7 |
| 28 | 9.0 | 8 | 16 | 33 | 224 | 169 | 19 | 6.3 | 535 | 5.9 |
| 29 | 9.5 | | ------- | 38 | 201 | 166 | 17 | 6.1 | 31 | 5.9 |
| 30 | 9.5 | | ------- | 36 | 192 | 155 | 12 | 5.9 | 19 | 5.7 |
| 31 | 11 | ------- | ------- | 36 | ------- | 133 | ------- | 5.9 | 13 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 11 | 7.2 | 8.11 | 499 |
| November | 18 | ---------- | 11.5 | 684 |
| February 21–28 | 26 | 16 | 21 | 332 |
| March | 46 | 14 | 27 | 1,660 |
| April | 406 | 34 | 243 | 14,500 |
| May | 755 | 133 | 335 | 20,600 |
| June | 268 | 12 | 80.3 | 4,780 |
| July | 9.9 | 4.4 | 6.07 | 373 |
| August | 535 | 4 | 26.4 | 1,620 |
| September | 11 | 5.2 | 7.14 | 425 |

### 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, 1930.
EXTREMES.—Maximum discharge during year, 281 second-feet May 17 (gage height, 3.32 feet); minimum, 1 second-foot during parts of July and August.
1916–1919, 1921–1924, 1928–1930: Maximum discharge, 1,210 second-feet June 2, 1929 (gage height, 6.8 feet); no flow during summers of 1918 and 1919.
REMARKS.—Records fair. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3 | 6 | 10 | 19 | 46 | 190 | 2 | 1 | 26 |
| 2 | 2 | 6 | 10 | 18 | 33 | 162 | 2 | 1 | 24 |
| 3 | 2 | 7 | 11 | 18 | 31 | 147 | 2 | 1 | 23 |
| 4 | 2 | 7 | 16 | 20 | 32 | 115 | 2 | 1 | 21 |
| 5 | 2 | 8 | 16 | 32 | 42 | 97 | 2 | 1 | 18 |
| 6 | 3 | 8 | 15 | 42 | 49 | 91 | 2 | 1 | 15 |
| 7 | 4 | 8 | 12 | 45 | 41 | 77 | 1 | 1 | 14 |
| 8 | 4 | 8 | 14 | 51 | 56 | 66 | 2 | 1 | 13 |
| 9 | 4 | 9 | 15 | 55 | 77 | 56 | 2 | 1 | 11 |
| 10 | 4 | 9 | 13 | 57 | 82 | 38 | 2 | 1 | 7 |
| 11 | 4 | 9 | 14 | 63 | 78 | 24 | 2 | 4 | 5 |
| 12 | 4 | 8 | 15 | 68 | 107 | 15 | 2 | 2 | 4 |
| 13 | 4 | 8 | 14 | 72 | 114 | 13 | 2 | 2 | 4 |
| 14 | 4 | 8 | 15 | 72 | 133 | 11 | 1 | 2 | 4 |
| 15 | 4 | 9 | 15 | 90 | 172 | 9 | 2 | 3 | 3 |
| 16 | 4 | 9 | 16 | 77 | 174 | 9 | 1 | 2 | 4 |
| 17 | 4 | 9 | 18 | 74 | 269 | 7 | 1 | 4 | 3 |
| 18 | 4 | 8 | 18 | 63 | 234 | 5 | 1 | 2 | 4 |
| 19 | 4 | 8 | 20 | 52 | 201 | 4 | 1 | 2 | 3 |
| 20 | 4 | 8 | 18 | 55 | 180 | 4 | 2 | 2 | 3 |
| 21 | 4 | 8 | 18 | 59 | 150 | 3 | 2 | 2 | 3 |
| 22 | 4 | 8 | 18 | 50 | 147 | 3 | 1 | 1 | 3 |
| 23 | 4 | 7 | 22 | 48 | 160 | 3 | 1 | 1 | 3 |
| 24 | 4 | 7 | 23 | 47 | 140 | 3 | 1 | 1 | 3 |
| 25 | 4 | 8 | 22 | 47 | 119 | 2 | 1 | 1 | 3 |
| 26 | 4 | 8 | 20 | 60 | 106 | 2 | 1 | 1 | 3 |
| 27 | 6 | 8 | 20 | 60 | 94 | 2 | 1 | 1 | 3 |
| 28 | 6 | 8 | 20 | 52 | 90 | 2 | 1 | 217 | 3 |
| 29 | 6 | 8 | 19 | 54 | 84 | 2 | 1 | 42 | 3 |
| 30 | 6 | 9 | 20 | 56 | 87 | 2 | 1 | 30 | 3 |
| 31 | 6 | ------- | 20 | ------- | 82 | ------- | 1 | 28 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 6 | 2 | 4.00 | 246 |
| November | 9 | 6 | 7.97 | 474 |
| March | 23 | 10 | 16.7 | 1,030 |
| April | 90 | 18 | 52.5 | 3,120 |
| May | 269 | 31 | 110 | 6,760 |
| June | 190 | 2 | 38.8 | 2,310 |
| July | 2 | 1 | 1.48 | 91 |
| August | 217 | 1 | 11.6 | 713 |
| September | 26 | 3 | 7.97 | 474 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 630 second-feet Aug. 28; minimum, 2 second-feet during part of October, March, April, July, August.

1916–1924, 1929–30: Maximum discharge, 840 second-feet June 1, 1929; minimum, 0.2 second-feet during June, July, August, September, 1919.

Maximum stage known, 10.6 feet Aug. 15, 1927 (discharge, about 5,800 second-feet).

REMARKS.—Records fair. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 9 | -------- | 4 | 6 | 48 | 9 | 3 | 29 |
| 2 | 3 | 10 | -------- | 3 | 6 | 54 | 6 | 3 | 28 |
| 3 | 2 | 10 | -------- | 3 | 6 | 42 | 5 | 4 | 26 |
| 4 | 2 | 10 | -------- | 3 | 5 | 41 | 5 | 2 | 26 |
| 5 | 3 | 10 | -------- | 2 | 4 | 41 | 4 | 2 | 25 |
| 6 | 3 | 9 | -------- | 2 | 5 | 36 | 4 | 2 | 24 |
| 7 | 4 | 9 | -------- | 2 | 4 | 32 | 4 | 2 | 24 |
| 8 | 4 | 8 | -------- | 2 | 6 | 32 | 4 | 2 | 24 |
| 9 | 3 | 8 | -------- | 5 | 6 | 28 | 4 | 2 | 24 |
| 10 | 3 | 9 | -------- | 4 | 6 | 26 | 4 | 2 | 28 |
| 11 | 3 | 10 | -------- | 5 | 6 | 24 | 3 | 2 | 28 |
| 12 | 3 | 9 | -------- | 5 | 6 | 20 | 2 | 2 | 24 |
| 13 | 3 | 8 | -------- | 5 | 6 | 15 | 4 | 2 | 21 |
| 14 | 3 | 9 | -------- | 4 | 6 | 13 | 4 | 2 | 21 |
| 15 | 4 | 9 | 6 | 3 | 6 | 12 | 4 | 2 | 21 |
| 16 | 4 | 9 | 4 | 2 | 17 | 10 | 4 | 6 | 21 |
| 17 | 4 | 9 | 4 | 4 | 46 | 10 | 4 | 35 | 21 |
| 18 | 4 | 10 | 4 | 3 | 66 | 9 | 4 | 25 | 21 |
| 19 | 4 | 9 | 2 | 4 | 64 | 13 | 4 | 24 | 21 |
| 20 | 4 | 8 | 3 | 4 | 61 | 12 | 4 | 20 | 21 |
| 21 | 4 | 7 | 4 | 4 | 44 | 11 | 4 | 16 | 21 |
| 22 | 4 | 7 | 5 | 4 | 44 | 11 | 4 | 16 | 19 |
| 23 | 4 | 7 | 5 | 3 | 38 | 9 | 4 | 15 | 17 |
| 24 | 4 | 8 | 4 | 2 | 38 | 9 | 4 | 14 | 16 |
| 25 | 4 | 8 | 3 | 5 | 34 | 9 | 3 | 13 | 16 |
| 26 | 5 | | 2 | 6 | 32 | 9 | 3 | 12 | 16 |
| 27 | 6 | | 2 | 6 | 246 | 9 | 3 | 27 | 16 |
| 28 | 6 | 8 | 2 | 5 | 30 | 9 | 3 | 101 | 16 |
| 29 | 6 | | 4 | 6 | 26 | 9 | 3 | 41 | 16 |
| 30 | 7 | | 2 | 6 | 27 | 9 | 3 | 35 | 16 |
| 31 | 8 | -------- | 6 | -------- | 28 | -------- | 3 | 32 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 8 | 2 | 4.0 | 246 |
| November | 10 | 7 | 8.6 | 512 |
| March 15–31 | 6 | 2 | 3.6 | 121 |
| April | 6 | 2 | 3.9 | 232 |
| May | 246 | 4 | 29.8 | 1,830 |
| June | 54 | 9 | 20.4 | 1,210 |
| July | 9 | 2 | 4.0 | 246 |
| August | 101 | 2 | 15.0 | 922 |
| September | 29 | 16 | 21.6 | 1,290 |

### LARAMIE RIVER NEAR GLENDEVEY, COLO.

LOCATION.—Water-stage recorder in SW. ¼ sec. 25, T. 10 N., R. 76 W., 3 miles east of Glendevey and just below Nunn Creek.

DRAINAGE AREA.—101 square miles.

RECORDS AVAILABLE.—June, 1904, to October, 1905; August, 1910, to September, 1930.

EXTREMES.—Maximum discharge during year, 492 second-feet May 31 (gage height, 1.57 feet); minimum, 22 second-feet Apr. 4.

1904–5, 1910–1930: Maximum discharge, 2,240 second-feet June 9, 1923; minimum, 5 second-feet Feb. 14, 15, 1911.

REMARKS.—Records excellent. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 34 | 43 | -------- | 25 | 123 | 357 | 56 | 36 | 37 |
| 2 | 35 | 49 | -------- | 25 | 146 | 217 | 51 | 37 | 36 |
| 3 | 42 | 51 | -------- | 24 | 165 | 159 | 49 | 40 | 36 |
| 4 | 37 | 47 | -------- | 24 | 123 | 149 | 49 | 40 | 36 |
| 5 | 35 | 49 | -------- | 26 | 114 | 143 | 49 | 39 | 36 |
| 6 | 33 | -------- | -------- | 30 | 86 | 143 | 47 | 47 | 36 |
| 7 | 32 | -------- | -------- | 39 | 88 | 172 | 45 | 54 | 36 |
| 8 | 37 | -------- | -------- | 52 | 76 | 206 | 42 | 60 | 35 |
| 9 | 40 | -------- | -------- | 65 | 70 | 232 | 45 | 56 | 35 |
| 10 | 40 | -------- | -------- | 74 | 70 | 238 | 45 | 45 | 34 |
| 11 | 37 | -------- | -------- | 76 | 65 | 211 | 47 | 45 | 33 |
| 12 | 39 | -------- | -------- | 104 | 63 | 275 | 51 | 67 | 31 |
| 13 | 34 | -------- | -------- | 106 | 72 | 275 | 91 | 74 | 32 |
| 14 | 34 | -------- | -------- | 126 | 81 | 227 | 67 | 165 | 33 |
| 15 | 36 | -------- | -------- | 117 | 104 | 162 | 47 | 134 | 32 |
| 16 | 37 | -------- | -------- | 83 | 96 | 162 | 58 | 60 | 32 |
| 17 | 39 | -------- | -------- | 51 | 101 | 169 | 39 | 47 | 32 |
| 18 | 37 | -------- | -------- | 46 | 81 | 172 | 36 | 45 | 31 |
| 19 | 39 | -------- | -------- | 47 | 98 | 128 | 40 | 41 | 30 |
| 20 | 34 | -------- | -------- | 46 | 131 | 140 | 40 | 40 | 29 |
| 21 | 31 | -------- | -------- | 47 | 217 | 169 | 37 | 36 | 26 |
| 22 | 30 | -------- | -------- | 61 | 227 | 175 | 41 | 36 | 30 |
| 23 | 30 | -------- | -------- | 101 | 156 | 162 | 39 | 40 | 34 |
| 24 | 29 | -------- | -------- | 131 | 149 | 114 | 37 | 37 | 35 |
| 25 | 31 | -------- | -------- | 159 | 172 | 93 | 37 | 36 | 40 |
| 26 | 42 | -------- | -------- | 137 | 217 | 74 | 40 | 40 | 39 |
| 27 | 47 | -------- | -------- | 143 | 264 | 67 | 43 | 43 | 43 |
| 28 | 42 | -------- | -------- | 111 | 291 | 65 | 43 | 39 | 43 |
| 29 | 41 | -------- | -------- | 111 | 330 | 65 | 41 | 41 | 43 |
| 30 | 43 | -------- | 25 | 120 | 352 | 60 | 41 | 43 | 45 |
| 31 | 42 | -------- | 25 | -------- | 408 | -------- | 37 | 39 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 47 | 29 | 36.7 | 2,260 |
| April | 159 | 24 | 76.9 | 4,580 |
| May | 408 | 63 | 153 | 9,410 |
| June | 357 | 60 | 166 | 9,880 |
| July | 91 | 36 | 46.1 | 2,830 |
| August | 165 | 36 | 51.7 | 3,180 |
| September | 45 | 26 | 35.0 | 2,080 |

### LARAMIE RIVER NEAR JELM, WYO.

LOCATION.—Water-stage recorder in sec. 15, T. 12 N., R. 77 W., one-fourth mile north of Colorado-Wyoming line and 4 miles south of old Jelm. Zero of gage 7,685.32 feet above mean sea level.

DRAINAGE AREA.—297 square miles.

RECORDS AVAILABLE.—June, 1904, to October, 1905; May, 1911, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,280 second-feet June 1 (gage height, 3.20 feet); minimum occurred during winter.

1904–5, 1911–1930: Maximum discharge, 4,200 second-feet June 9, 1923 (gage height, 4.15 feet); minimum, 22 second-feet Sept. 22–24, Oct. 4–8, 18–23, 28–31, 1905.

REMARKS.—Records good except those for periods Apr. 1–10, Sept. 16–26, which are fair. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|
| 1 | 59 | | 356 | 1,020 | 131 | 108 | 65 |
| 2 | 57 | | 440 | 696 | 128 | 100 | 59 |
| 3 | 100 | 45 | 483 | 556 | 108 | 95 | 57 |
| 4 | 107 | | 378 | 522 | 98 | 201 | 57 |
| 5 | 77 | | 372 | 470 | 93 | 137 | 63 |
| 6 | 64 | 60 | 299 | 464 | 93 | 117 | 69 |
| 7 | 59 | 75 | 268 | 549 | 91 | 169 | 82 |
| 8 | 100 | 100 | 235 | 612 | 84 | 176 | 80 |
| 9 | 100 | 150 | 219 | 658 | 73 | 155 | 72 |
| 10 | 87 | 172 | 216 | 612 | 77 | 143 | 61 |
| 11 | 94 | 193 | 204 | 598 | 152 | 134 | 53 |
| 12 | 80 | 216 | 186 | 658 | 190 | 172 | 48 |
| 13 | 59 | 212 | 197 | 642 | 361 | 247 | 43 |
| 14 | 55 | 231 | 197 | 549 | 216 | 361 | 40 |
| 15 | 57 | 247 | 239 | 422 | 131 | 378 | 37 |
| 16 | 55 | 227 | 243 | 372 | 98 | 201 | 38 |
| 17 | 54 | 172 | 272 | 405 | 88 | 149 | 40 |
| 18 | 55 | 159 | 239 | 399 | 128 | 120 | 40 |
| 19 | 59 | 152 | 281 | 346 | 114 | 95 | 36 |
| 20 | 57 | 131 | 337 | 327 | 117 | 80 | 37 |
| 21 | 54 | 140 | 476 | 378 | 117 | 75 | 37 |
| 22 | 55 | 169 | 628 | 405 | 108 | 75 | 42 |
| 23 | 49 | 216 | 446 | 410 | 88 | 73 | 55 |
| 24 | 40 | 290 | 416 | 268 | 88 | 73 | 62 |
| 25 | 44 | 416 | 464 | 243 | 106 | 73 | 75 |
| 26 | 64 | 358 | 522 | 235 | 95 | 73 | 90 |
| 27 | 73 | 388 | 680 | 201 | 91 | 95 | 95 |
| 28 | 66 | 356 | 752 | 169 | 86 | 95 | 103 |
| 29 | 59 | 337 | 870 | 155 | 122 | 93 | 100 |
| 30 | 52 | 346 | 950 | 140 | 134 | 84 | 100 |
| 31 | 66 | ------- | 1,040 | ------- | 117 | 69 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 107 | 40 | 66.4 | 4,080 |
| April | 416 | ------- | 192 | 11,400 |
| May | 1,040 | 186 | 416 | 25,600 |
| June | 1,020 | 140 | 449 | 26,700 |
| July | 361 | 73 | 120 | 7,380 |
| August | 378 | 69 | 136 | 8,360 |
| September | 103 | 36 | 61.2 | 3,640 |

### LARAMIE RIVER NEAR WHEATLAND, WYO.

LOCATION.—Chain gage in sec. 35, T. 25 N., R. 69 W., at highway bridge 10 miles west of Wheatland.

DRAINAGE AREA.—2,480 square miles.

RECORDS AVAILABLE.—April to November, 1912; April, 1915, to November, 1916; October, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 127 second-feet Apr. 5 (gage height, 2.92 feet); no flow July 9–11.

1912, 1915–16, 1929–30: Maximum discharge, 183 second-feet Aug. 22, 1915; no flow in 1916 and 1930.

REMARKS.—Records good. Diversions for irrigation above station. Flow regulated by Wheatland reservoir, capacity 110,000 acre-feet.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 15 | 17 | 15 | ------- | 42 | 42 | 57 | 50 | 1.4 | 1.0 | 7.1 |
| 2 | 14 | 16 | 15 | ------- | 40 | 45 | 52 | 51 | .8 | .5 | 7.4 |
| 3 | 12 | 16 | 15 | ------- | 35 | 54 | 50 | 42 | .6 | .6 | 7.4 |
| 4 | 11 | 17 | 16 | ------- | 35 | 76 | 57 | 37 | 1.1 | .5 | 6.8 |
| 5 | 10 | 17 | 15 | ------- | 36 | 114 | 70 | 35 | 1.1 | .7 | 7.7 |
| 6 | 10 | 14 | 16 | ------- | 56 | 119 | 63 | 32 | 1.1 | .6 | 7.4 |
| 7 | 10 | 15 | 16 | ------- | 30 | 118 | 60 | 28 | .4 | 2.1 | 8.1 |
| 8 | 11 | 16 | 16 | ------- | 34 | 105 | 73 | 24 | .2 | 4.2 | 8.1 |
| 9 | 12 | 17 | 17 | ------- | 31 | 92 | 116 | 22 | 0 | 5.2 | 8.1 |
| 10 | 12 | 17 | 16 | ------- | 44 | 84 | 105 | 18 | 0 | 5.2 | 8.1 |
| 11 | 12 | 16 | 17 | ------- | 48 | 79 | 96 | 12 | 0 | 6.6 | 7.1 |
| 12 | 12 | 15 | 17 | ------- | 38 | 72 | 88 | 9.8 | 1.6 | 8.1 | 6.3 |
| 13 | 12 | 15 | 17 | ------- | 52 | 72 | 81 | 4.6 | 4.2 | 8.4 | 4.6 |
| 14 | 11 | 16 | 17 | ------- | 53 | 81 | 73 | 4.2 | 7.1 | 8.1 | 4.6 |
| 15 | 11 | 16 | ------- | ------- | 57 | 65 | 78 | 29 | 4.2 | 9.4 | 6.0 |
| 16 | 11 | 16 | ------- | ------- | 19 | 58 | 78 | 69 | 1.9 | 9.1 | 5.7 |
| 17 | 11 | 12 | ------- | ------- | 63 | 52 | 96 | 54 | 1.4 | 9.8 | 5.7 |
| 18 | 11 | 13 | ------- | ------- | 64 | 49 | 102 | 16 | 1.1 | 9.8 | 4.9 |
| 19 | 11 | 12 | ------- | ------- | 46 | 49 | 98 | .8 | 1.0 | 11.0 | 4.6 |
| 20 | 12 | 12 | ------- | ------- | 44 | 53 | 85 | 6.8 | 1.0 | 9.1 | 5.4 |
| 21 | 12 | 13 | ------- | ------- | 44 | 53 | 84 | 5.2 | 1.0 | 7.4 | 4.4 |
| 22 | 12 | 13 | ------- | ------- | 51 | 49 | 104 | 4.9 | .8 | 8.4 | 4.9 |
| 23 | 12 | 13 | ------- | 56 | 65 | 48 | 68 | 4.2 | 5.2 | 8.4 | 5.2 |
| 24 | 12 | 14 | ------- | 60 | 45 | 47 | 55 | 3.5 | 4.2 | 7.7 | 4.4 |
| 25 | 14 | 15 | ------- | 54 | 52 | 86 | 47 | 1.8 | 4.6 | 8.1 | 7.4 |
| 26 | 15 | 14 | ------- | 48 | 50 | 77 | 42 | 2.2 | 2.6 | 7.1 | 7.4 |
| 27 | 14 | 15 | ------- | 47 | 45 | 59 | 39 | 1.3 | 1.9 | 6.0 | 7.4 |
| 28 | 15 | 15 | ------- | 45 | 39 | 59 | 36 | 1.1 | 1.9 | 9.1 | 7.4 |
| 29 | 15 | 15 | ------- | ------- | 38 | 60 | 37 | .6 | 2.1 | 6.8 | 6.8 |
| 30 | 16 | 15 | ------- | ------- | 57 | 65 | 36 | 2.1 | 1.9 | 6.0 | 6.8 |
| 31 | 17 | ------- | ------- | ------- | 45 | ------- | 38 | ------- | 1.1 | 7.7 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 17 | 10 | 12.4 | 762 |
| November | 17 | 12 | 14.9 | 887 |
| December 1–14 | 17 | ---------- | 16.1 | 447 |
| February 23–28 | 60 | ---------- | 51.7 | 615 |
| March | 65 | 19 | 44.5 | 2,740 |
| April | 119 | 42 | 69.4 | 4,130 |
| May | 116 | 36 | 69.8 | 4,290 |
| June | 69 | .6 | 19.3 | 1,150 |
| July | 7.1 | 0 | 1.85 | 114 |
| August | 11 | .5 | 6.22 | 382 |
| September | 8.1 | 4.4 | 6.44 | 383 |

### 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, 1930.

REMARKS.—Diversions for irrigation above station. During the 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, 110,000 acre-feet. Complete records furnished by United States Bureau of Reclamation.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 280 | 235 | 275 | 300 | 145 | 260 | 290 | 495 | 365 | 130 | 45 | 260 |
| 2 | 266 | 235 | 200 | 245 | 150 | 210 | 280 | 410 | 365 | 95 | 45 | 210 |
| 3 | 200 | 235 | 160 | 230 | 170 | 210 | 280 | 320 | 550 | 63 | 45 | 187 |
| 4 | 200 | 225 | 195 | 245 | 195 | 290 | 270 | 320 | 550 | 63 | 45 | 165 |
| 5 | 190 | 215 | 260 | 255 | 200 | 290 | 270 | 320 | 450 | 45 | 45 | 147 |
| 6 | 190 | 265 | 280 | 230 | 250 | 290 | 530 | 448 | 365 | 45 | 45 | 147 |
| 7 | 190 | 285 | 340 | 160 | 280 | 290 | 600 | 410 | 365 | 45 | 200 | 147 |
| 8 | 220 | 290 | 470 | 150 | 280 | 280 | 510 | 410 | 450 | 95 | 200 | 165 |
| 9 | 220 | 290 | 290 | 175 | 350 | 270 | 510 | 448 | 410 | 63 | 150 | 165 |
| 10 | 225 | 290 | 290 | 190 | 470 | 270 | 510 | 575 | 360 | 45 | 125 | 165 |
| 11 | 215 | 280 | 290 | 180 | 290 | 270 | 510 | 569 | 300 | 45 | 105 | 165 |
| 12 | 215 | 280 | 290 | 180 | 360 | 270 | 510 | 520 | 270 | 45 | 130 | 165 |
| 13 | 215 | 290 | 290 | 185 | 290 | 270 | 460 | 520 | 150 | 45 | 165 | 165 |
| 14 | 205 | 290 | 290 | 185 | 260 | 270 | 460 | 520 | 130 | 45 | 185 | 147 |
| 15 | 205 | 260 | 280 | 160 | 260 | 280 | 390 | 520 | 115 | 45 | 235 | 130 |
| 16 | 205 | 270 | 280 | 160 | 250 | 280 | 390 | 555 | 100 | 30 | 290 | 130 |
| 17 | 205 | 280 | 280 | 160 | 290 | 280 | 340 | 595 | 100 | 30 | 415 | 130 |
| 18 | 205 | 280 | 210 | 135 | 320 | 300 | 320 | 645 | 130 | 30 | 320 | 130 |
| 19 | 205 | 280 | 140 | 135 | 305 | 280 | 320 | 595 | 150 | 30 | 320 | 117 |
| 20 | 195 | 280 | 130 | 135 | 305 | 280 | 320 | 595 | 130 | 30 | 290 | 117 |
| 21 | 195 | 155 | 730 | 135 | 310 | 280 | 320 | 520 | 410 | 25 | 260 | 130 |
| 22 | 195 | 225 | 115 | 135 | 320 | 280 | 320 | 520 | 410 | 25 | 210 | 117 |
| 23 | 195 | 180 | 130 | 135 | 290 | 290 | 280 | 520 | 280 | 25 | 190 | 117 |
| 24 | 195 | 225 | 180 | 135 | 290 | 290 | 280 | 520 | 150 | 25 | 165 | 130 |
| 25 | 195 | 205 | 220 | 135 | 290 | 300 | 280 | 520 | 115 | 25 | 147 | 117 |
| 26 | 195 | 210 | 245 | 145 | 290 | 300 | 320 | 412 | 100 | 25 | 130 | 147 |
| 27 | 185 | 230 | 245 | 145 | 280 | 300 | 450 | 335 | 90 | 25 | 165 | 187 |
| 28 | 185 | 280 | 245 | 145 | 260 | 290 | 410 | 410 | 80 | 25 | 130 | 260 |
| 29 | 190 | 270 | 260 | 145 | ------ | 290 | 320 | 320 | 80 | 115 | 210 | 235 |
| 30 | 190 | 255 | 270 | 145 | ------ | 280 | 760 | 365 | 80 | 63 | 260 | 210 |
| 31 | 195 | ------ | 300 | 145 | ------ | 280 | ------ | 365 | ------ | 54 | 385 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 280 | 185 | 205 | 12,600 |
| November | 290 | 155 | 253 | 15,100 |
| December | 470 | 115 | 245 | 15,100 |
| January | 300 | 135 | 172 | 10,600 |
| February | 470 | 145 | 277 | 15,400 |
| March | 300 | 210 | 278 | 17,100 |
| April | 760 | 270 | 394 | 23,400 |
| May | 645 | 320 | 471 | 29,000 |
| June | 550 | 80 | 253 | 15,100 |
| July | 130 | 25 | 48.3 | 2,970 |
| August | 415 | 45 | 182 | 11,200 |
| September | 260 | 117 | 160 | 9,520 |
| The year | 760 | 25 | 244 | 177,000 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 225 second-feet Aug. 14 (gage height, 4.4 feet); minimum, 3 second-feet Apr. 10 (gage height, 1.80 feet).

1928–1930: Maximum discharge, 340 second-feet June 2, 1929 (gage height, 5.5 feet); minimum, that of Apr. 10, 1930.

REMARKS.—Records good except those for period of missing gage heights, Feb. 1–22, which are fair. No diversions. Low water flow represents return seepage from Interstate Canal.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 39 | 29 | | 24 | 24 | 22 | 70 | 14 | 22 | 33 |
| 2 | 36 | 29 | | 20 | 21 | 11 | 46 | 13 | 19 | 51 |
| 3 | 34 | 29 | 25 | 24 | 16 | 38 | 46 | 12 | 14 | 59 |
| 4 | 33 | 27 | | 21 | 11 | 49 | 46 | 14 | 13 | 56 |
| 5 | 33 | 36 | | 24 | 11 | 56 | 41 | 14 | 13 | 50 |
| 6 | 33 | 36 | 30 | 22 | 11 | 48 | 34 | 22 | 13 | 48 |
| 7 | 33 | 36 | 35 | 22 | 13 | 39 | 42 | 23 | 54 | 42 |
| 8 | 31 | 28 | 38 | 26 | 11 | 34 | 48 | 22 | 78 | 34 |
| 9 | 31 | 29 | 42 | 34 | 11 | 53 | 53 | 25 | 90 | 30 |
| 10 | 42 | 33 | | 36 | 5 | 31 | 45 | 25 | 78 | 34 |
| 11 | 52 | 35 | | 27 | 49 | 57 | 42 | 24 | 65 | 39 |
| 12 | 33 | 33 | | 28 | 13 | 38 | 34 | 27 | 83 | 43 |
| 13 | 31 | 33 | | 30 | 13 | 35 | 49 | 38 | 98 | 47 |
| 14 | 32 | 27 | | 30 | 13 | 35 | 62 | 39 | 163 | 48 |
| 15 | 31 | 33 | | 30 | 10 | 48 | 41 | 30 | 192 | 43 |
| 16 | 30 | 31 | 35 | 28 | 9 | 70 | 34 | 29 | 82 | 39 |
| 17 | 29 | 29 | | 33 | 11 | 59 | 33 | 27 | 56 | 37 |
| 18 | 31 | 33 | | 31 | 10 | 74 | 30 | 27 | 49 | 38 |
| 19 | 36 | 33 | | 27 | 9 | 53 | 38 | 27 | 46 | 43 |
| 20 | 34 | 28 | | 28 | 18 | 41 | 51 | 36 | 43 | 46 |
| 21 | 34 | 28 | | 28 | 13 | 40 | 38 | 41 | 43 | 46 |
| 22 | 32 | 38 | | 28 | 11 | 41 | 28 | 36 | 43 | 43 |
| 23 | 29 | 29 | 29 | 29 | 11 | 38 | 27 | 35 | 42 | 48 |
| 24 | 29 | 29 | 25 | 28 | 14 | 32 | 24 | 38 | 43 | 54 |
| 25 | 28 | 30 | 26 | 25 | 20 | 30 | 21 | 36 | 40 | 94 |
| 26 | 29 | 27 | 24 | 22 | 22 | 30 | 19 | 30 | 30 | 86 |
| 27 | 31 | 28 | 24 | 22 | 22 | 34 | 18 | 38 | 32 | 56 |
| 28 | 31 | 29 | 13 | 21 | 48 | 31 | 18 | 36 | 41 | 39 |
| 29 | 33 | 29 | ------- | 20 | 34 | 28 | 18 | 30 | 37 | 52 |
| 30 | 34 | 22 | ------- | 22 | 38 | 29 | 18 | 28 | 28 | 51 |
| 31 | 33 | ------- | ------- | 22 | ------- | 35 | ------- | 24 | 25 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 52 | 28 | 33.1 | 2,040 |
| November | 38 | 22 | 30.5 | 1,810 |
| February | 42 | ---------- | 30.9 | 1,720 |
| March | 36 | 20 | 26.2 | 1,610 |
| April | 49 | 5 | 17.4 | 1,040 |
| May | 74 | 11 | 40.6 | 2,500 |
| June | 70 | 18 | 37.1 | 2,210 |
| July | 41 | 12 | 27.7 | 1,700 |
| August | 192 | 13 | 54.0 | 3,320 |
| September | 94 | 30 | 47.6 | 2,830 |

### 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, 1930.
EXTREMES.—Maximum discharge during year, 268 second-feet May 4 (gage height, 6.0 feet); minimum occurred during winter.
1928–1930: 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. 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, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11 | 11 | ------- | 4 | 7 | 19 | 28 | 27 | 36 | 27 |
| 2 | 10 | 11 | ------- | 4 | 4 | 19 | 29 | 26 | 38 | 30 |
| 3 | 11 | 11 | ------- | 3 | 5 | 21 | 20 | 25 | 39 | 31 |
| 4 | 11 | 11 | ------- | 5 | 4 | 101 | 23 | 28 | 37 | 31 |
| 5 | 10 | 12 | ------- | 7 | 5 | 38 | 17 | 27 | 39 | 30 |
| 6 | 10 | 11 | ------- | 5 | 5 | 22 | 17 | 29 | 42 | 25 |
| 7 | 10 | 11 | ------- | 6 | 5 | 20 | 15 | 29 | 45 | 27 |
| 8 | 10 | 11 | ------- | 4 | 5 | 21 | 15 | 28 | 43 | 32 |
| 9 | 10 | 11 | ------- | 6 | 5 | 27 | 20 | 26 | 38 | 31 |
| 10 | 10 | 11 | ------- | 4 | 6 | 18 | 15 | 26 | 42 | 28 |
| 11 | 10 | 11 | ------- | 4 | 4 | 18 | 15 | 25 | 37 | 71 |
| 12 | 10 | 10 | ------- | 4 | 6 | 16 | 14 | 39 | 36 | 30 |
| 13 | 10 | 10 | ------- | 4 | 5 | 19 | 14 | 37 | 36 | 26 |
| 14 | 10 | 10 | ------- | 6 | 9 | 14 | 13 | 34 | 34 | 26 |
| 15 | 10 | 10 | ------- | 5 | 5 | 33 | 13 | 31 | 60 | 25 |
| 16 | 10 | 11 | ------- | 6 | 7 | 24 | 13 | 34 | 35 | 22 |
| 17 | 10 | 11 | ------- | 8 | 6 | 44 | 13 | 33 | 38 | 19 |
| 18 | 10 | 10 | ------- | 6 | 6 | 34 | 17 | 34 | 33 | 19 |
| 19 | 10 | 9 | ------- | 6 | 6 | 30 | 20 | 30 | 35 | 16 |
| 20 | 10 | 8 | ------- | 4 | 6 | 28 | 23 | 35 | 31 | 19 |
| 21 | 10 | 8 | ------- | 4 | 6 | 30 | 17 | 32 | 31 | 25 |
| 22 | 10 | 7 | ------- | 4 | 5 | 28 | 16 | 34 | 29 | 26 |
| 23 | 10 | 8 | ------- | 4 | 5 | 27 | 18 | 37 | 30 | 22 |
| 24 | 10 | 9 | 6 | 4 | 6 | 26 | 28 | 36 | 30 | 20 |
| 25 | 10 | 9 | 3 | 6 | 7 | 26 | 25 | 34 | 17 | 36 |
| 26 | 10 | 10 | 4 | 6 | 5 | 23 | 26 | 38 | 16 | 21 |
| 27 | 10 | 10 | 4 | 5 | 6 | 23 | 26 | 36 | 16 | 19 |
| 28 | 11 | 10 | 4 | 5 | 6 | 21 | 25 | 36 | 35 | 22 |
| 29 | 11 | 9 | ------- | 5 | 28 | 20 | 26 | 34 | 31 | 23 |
| 30 | 11 | 8 | ------- | 5 | 22 | 19 | 25 | 37 | 26 | 21 |
| 31 | 11 | ------- | ------- | 5 | ------- | 20 | ------- | 35 | 28 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 11 | 10 | 10.2 | 627 |
| November | 12 | 7 | 10.0 | 595 |
| March | 8 | 3 | 5.0 | 307 |
| April | 28 | 4 | 6.9 | 411 |
| May | 101 | 14 | 26.7 | 1,640 |
| June | 28 | 13 | 19.2 | 1,140 |
| July | 39 | 25 | 32.0 | 1,970 |
| August | 60 | 16 | 34.3 | 2,110 |
| September | 71 | 16 | 26.7 | 1,590 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 153 second-feet Aug. 17 (gage height, 2.57 feet); minimum, 0.1 second-foot July 9–11, 18–19.

1928–1930: 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 during winter, which were estimated because of ice. Diversions for irrigation above station. Flow regulated by Hawk Springs Reservoir, capacity, 19,400 acre-feet.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.7 | 24 | 79 | | | 70 | 26 | 2.3 | 15 | 0.3 | 0.7 | 64 |
| 2 | 5.5 | 19 | 77 | | | 74 | 11 | 1.8 | 12 | .3 | .8 | 64 |
| 3 | 2.7 | 31 | 84 | | 45 | 78 | 7.2 | 2.7 | 10 | .2 | .3 | 64 |
| 4 | 2.5 | 29 | 75 | | | 75 | 2.7 | 3.8 | 12 | .3 | .6 | 61 |
| 5 | 2.0 | 29 | 66 | | | 75 | 2.3 | 5.5 | 9.3 | .3 | 1.2 | 62 |
| 6 | 1.8 | 32 | 70 | | | 62 | 2.0 | 13 | 8.7 | .2 | 1.6 | 62 |
| 7 | 1.8 | 42 | 71 | | | 57 | 1.8 | 2.9 | 8.7 | .2 | 1.8 | 58 |
| 8 | 2.0 | 48 | 70 | 50 | 50 | 50 | 1.6 | 3.1 | 7.2 | .2 | 2.0 | 58 |
| 9 | 1.8 | 47 | 67 | | | 40 | 1.5 | 5.1 | 6.4 | .1 | 1.3 | 62 |
| 10 | 1.8 | 45 | 64 | | | 35 | 2.0 | 6.0 | 5.5 | .1 | 1.3 | 63 |
| 11 | 1.5 | 46 | 60 | | | 25 | 1.8 | 5.5 | 6.8 | .1 | 3.8 | 93 |
| 12 | 1.5 | 58 | 61 | | | 7.2 | 4.7 | 3.8 | 6.0 | .2 | 5.5 | 76 |
| 13 | 1.5 | 77 | 58 | | 70 | 6.0 | 4.7 | 3.1 | 5.5 | .3 | 13 | 72 |
| 14 | 1.5 | 62 | 58 | – | | 7.2 | 8.1 | 2.9 | 5.5 | .3 | 26 | 67 |
| 15 | 1.6 | 54 | 58 | | | 7.2 | 4.7 | 3.8 | 5.5 | .4 | 103 | 67 |
| 16 | 1.6 | 51 | 55 | | | 6.4 | 3.4 | 3.6 | 3.4 | .4 | 116 | 62 |
| 17 | 1.5 | 51 | 52 | | | 11 | 1.6 | 13 | 2.3 | .2 | 122 | 54 |
| 18 | 1.6 | 54 | 47 | | 100 | 22 | 1.6 | 27 | 1.8 | .1 | 130 | 44 |
| 19 | 1.6 | 51 | 40 | | | 19 | 1.5 | 30 | 1.5 | .1 | 107 | 35 |
| 20 | 1.5 | 71 | 35 | | | 31 | 1.3 | 42 | 1.2 | .2 | 104 | 29 |
| 21 | 1.5 | 70 | 35 | 40 | 100 | 45 | 1.3 | 42 | 1.1 | .7 | 115 | 26 |
| 22 | 1.6 | 50 | 40 | | 121 | 42 | 1.5 | 38 | 1.0 | .4 | 101 | 23 |
| 23 | 1.6 | 53 | 40 | | 116 | 40 | 1.5 | 30 | 1.0 | .3 | 94 | 23 |
| 24 | 2.0 | 50 | 40 | | 111 | 40 | 1.3 | 26 | .8 | .2 | 85 | 21 |
| 25 | 2.0 | 62 | 40 | | 108 | 40 | 2.5 | 17 | .7 | .2 | 83 | 37 |
| 26 | 2.0 | 71 | | | 94 | 42 | 2.9 | 16 | .7 | .2 | 81 | 35 |
| 27 | 2.0 | 86 | | | 78 | 41 | 3.1 | 15 | .7 | .2 | 78 | 32 |
| 28 | 2.5 | 105 | 45 | 45 | 74 | 40 | 3.4 | 14 | .8 | .2 | 76 | 29 |
| 29 | 20 | 79 | | | ------ | 40 | 3.4 | 15 | .3 | .2 | 78 | 24 |
| 30 | 24 | 82 | | | ------ | 35 | 2.9 | 15 | .3 | .2 | 70 | 22 |
| 31 | 26 | ------ | | | ------ | 33 | ------ | 12 | ------ | .2 | 64 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 26 | 1.5 | 4.2 | 258 |
| November | 105 | 19 | 54.3 | 3,230 |
| December | 84 | 35 | 55.2 | 3,390 |
| January | ---------- | ---------- | 45.8 | 2,820 |
| February | ---------- | ---------- | 76.0 | 4,220 |
| March | 78 | 6.0 | 38.6 | 2,370 |
| April | 26 | 1.3 | 3.84 | 228 |
| May | 42 | 1.8 | 13.6 | 836 |
| June | 15 | .3 | 4.72 | 281 |
| July | .7 | .1 | .24 | 15 |
| August | 130 | .3 | 53.8 | 3,310 |
| September | 93 | 21 | 49.6 | 2,950 |
| The year | 130 | ---------- | 33.0 | 23,900 |

### SOUTH PLATTE RIVER NEAR LAKE GEORGE, COLO.

LOCATION.—Water-stage recorder in NW. ¼ sec. 21, T. 13 S., R. 72 W., in Elevenmile Canyon, about 8 miles above Lake George. Zero of gage 8,423.95 feet above mean sea level.

DRAINAGE AREA.—929 square miles.

RECORDS AVAILABLE.—October, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 990 second-feet Aug. 15 (gage height, 4.8 feet); no flow Jan. 25.

REMARKS.—Records excellent except those for winter periods and for periods Oct. 1–22, Apr. 1–11, 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, 1929–30*

| Day | Oct. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|
| 1 | 130 | 45 | 7.0 | 317 | 114 | 517 | 153 |
| 2 | 120 | 48 | 7.0 | 185 | 88 | 483 | 138 |
| 3 | 115 | 50 | 8.2 | 90 | 81 | 436 | 127 |
| 4 | 108 | 52 | 8.2 | 45 | 85 | 344 | 178 |
| 5 | 105 | 52 | 8.7 | 21 | 70 | 398 | 346 |
| 6 | 98 | 54 | 14 | 26 | 74 | 438 | 371 |
| 7 | 89 | 54 | 12 | 53 | 66 | 458 | 365 |
| 8 | 79 | 54 | 11 | 88 | 54 | 450 | 379 |
| 9 | 80 | 56 | 8.7 | 123 | 43 | 392 | 390 |
| 10 | 82 | 56 | 9.2 | 185 | 45 | 411 | 365 |
| 11 | 79 | 56 | 9.2 | 201 | 59 | 506 | 352 |
| 12 | 72 | 57 | 11 | 160 | 85 | 514 | 336 |
| 13 | 65 | 47 | 11 | 144 | 90 | 542 | 319 |
| 14 | 63 | 44 | 13 | 170 | 268 | 717 | 311 |
| 15 | 63 | 33 | 26 | 172 | 193 | 915 | 306 |
| 16 | 63 | 31 | 24 | 151 | 90 | 884 | 303 |
| 17 | 51 | 30 | 50 | 160 | 72 | 611 | 322 |
| 18 | 48 | 38 | 85 | 165 | 60 | 475 | 306 |
| 19 | 45 | 32 | 68 | 172 | 88 | 373 | 295 |
| 20 | 41 | 26 | 56 | 158 | 118 | 314 | 290 |
| 21 | 39 | 20 | 43 | 142 | 167 | 271 | 284 |
| 22 | 38 | 17 | 37 | 144 | 246 | 260 | 284 |
| 23 | 37 | 12 | 50 | 151 | 142 | 241 | 295 |
| 24 | 38 | 11 | 51 | 107 | 72 | 204 | 273 |
| 25 | 38 | 9.2 | 40 | 73 | 48 | 183 | 249 |
| 26 | 38 | 8.7 | 34 | 60 | 77 | 175 | 254 |
| 27 | 39 | 8.7 | 36 | 55 | 142 | 167 | 249 |
| 28 | 38 | 9.2 | 40 | 69 | 172 | 236 | 244 |
| 29 | 32 | 8.7 | 66 | 74 | 365 | 260 | 260 |
| 30 | 24 | 7.0 | 123 | 77 | 506 | 201 | 282 |
| 31 | 33 | ------- | 252 | ------- | 427 | 180 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 130 | 24 | 64.2 | 3,950 |
| November | ------- | ------- | 20 | 1,190 |
| December | ------- | ------- | 10 | 615 |
| January | ------- | ------- | 2 | 123 |
| February | ------- | ------- | 30 | 1,670 |
| March | ------- | ------- | 40 | 2,460 |
| April | 57 | 7.0 | 34.2 | 2,040 |
| May | 252 | 7.0 | 39.3 | 2,420 |
| June | 317 | 21 | 125 | 7,440 |
| July | 506 | 43 | 136 | 8,360 |
| August | 915 | 167 | 405 | 24,900 |
| September | 390 | 127 | 288 | 17,100 |
| The year | 915 | ------- | 99.8 | 72,300 |

## SOUTH PLATTE RIVER AT SOUTH PLATTE, COLO.

LOCATION.—Water-stage recorder in sec. 25, T. 7 S., R. 70 W., at South Platte, just below mouth of North Fork of South Platte River. Zero of gage 6,078.43 feet above mean sea level.

DRAINAGE AREA.—2,550 square miles.

RECORDS AVAILABLE.—March, 1902, to September, 1930.

EXTREMES.—Maximum discharge during year, 2,110 second-feet Aug. 14 (gage height, 4.69 feet); minimum occurred during winter.

1902–1930: 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 during 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, 1929–30*

| Day | Oct. | Nov. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | 492 | 203 | | 373 | 990 | 801 | 1,580 | 630 |
| 2 | 457 | 173 | | 362 | 1,080 | 768 | 1,530 | 580 |
| 3 | 457 | 227 | | 376 | 1,100 | 768 | 1,350 | 555 |
| 4 | 457 | 177 | | 358 | 630 | 726 | 1,090 | 570 |
| 5 | 441 | 208 | | 338 | 1,170 | 684 | 1,060 | 585 |
| 6 | 437 | 198 | 150 | 331 | 550 | 666 | 1,290 | 585 |
| 7 | 422 | 210 | | 314 | 580 | 702 | 1,320 | 590 |
| 8 | 404 | ------- | | 299 | 565 | 690 | 1,200 | 640 |
| 9 | 397 | ------- | | 275 | 666 | 714 | 998 | 630 |
| 10 | 390 | ------- | | 263 | 768 | 684 | 1,090 | 650 |
| 11 | 411 | ------- | | 265 | 899 | 696 | 1,180 | 510 |
| 12 | 425 | ------- | | 265 | 920 | 808 | 1,550 | 470 |
| 13 | 324 | ------- | 340 | 278 | 738 | 1,080 | 1,730 | 483 |
| 14 | 288 | ------- | | 273 | 678 | 934 | 2,010 | 453 |
| 15 | 283 | ------- | 433 | 285 | 732 | 1,130 | 1,850 | 418 |
| 16 | 290 | ------- | 418 | 369 | 829 | 998 | 1,390 | 411 |
| 17 | 285 | ------- | 359 | 492 | 762 | 565 | 1,360 | 421 |
| 18 | 273 | ------- | 327 | 575 | 645 | 660 | 1,200 | 449 |
| 19 | 260 | ------- | 330 | 635 | 787 | 525 | 962 | 401 |
| 20 | 258 | ------- | 327 | 625 | 934 | 465 | 906 | 355 |
| 21 | 248 | ------- | 348 | 672 | 885 | 655 | 871 | 394 |
| 22 | 240 | ------- | 376 | 640 | 794 | 1,010 | 878 | 324 |
| 23 | 228 | ------- | 394 | 545 | 666 | 906 | 836 | 334 |
| 24 | 220 | ------- | 394 | 600 | 678 | 732 | 892 | 344 |
| 25 | 220 | ------- | 437 | 605 | 590 | 515 | 762 | 619 |
| 26 | 233 | ------- | 437 | 640 | 492 | 535 | 843 | 592 |
| 27 | 290 | ------- | 433 | 615 | 492 | 525 | 892 | 575 |
| 28 | 310 | ------- | 415 | 575 | 441 | 600 | 801 | 585 |
| 29 | 350 | ------- | 383 | 620 | 425 | 998 | 787 | 560 |
| 30 | 410 | ------- | 376 | 750 | 672 | 1,540 | 843 | 615 |
| 31 | 240 | ------- | ------- | 948 | ------- | 1,760 | 660 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 492 | 220 | 337 | 20,700 |
| November | ------- | ------- | 165 | 9,940 |
| December | ------- | ------- | 136 | 8,360 |
| January | ------- | ------- | 116 | 7,130 |
| February | ------- | ------- | 138 | 7,600 |
| March | ------- | ------- | 107 | 6,580 |
| April | 437 | 150 | 302 | 18,000 |
| May | 948 | 263 | 469 | 28,800 |
| June | 1,176 | 425 | 739 | 44,000 |
| July | 1,760 | 465 | 801 | 49,200 |
| August | 2,010 | 660 | 1,150 | 70,700 |
| September | 650 | 324 | 508 | 30,200 |
| The year | 2,010 | ------- | 417 | 301,000 |

### NORTH FORK OF SOUTH PLATTE RIVER AT SOUTH PLATTE, COLO.

LOCATION.—Water-stage recorder in sec. 26, T. 7 S., R. 70 W., one-third mile above South Platte. Zero of gage 6,090.55 feet above mean sea level.

DRAINAGE AREA.—484 square miles.

RECORDS AVAILABLE.—June, 1909, to September, 1910; April, 1913, to September, 1930.

EXTREMES.—Maximum discharge during year, 670 second-feet Aug. 14 (gage height, 3.74 feet); minimum occurred during winter.

1909–10, 1913–1930: 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. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 190 | 94 | | | 183 | 487 | 208 | 292 | 268 |
| 2 | 183 | 94 | | | 199 | 400 | 192 | 273 | 258 |
| 3 | 190 | 135 | | | 208 | 348 | 179 | 273 | 255 |
| 4 | 162 | 92 | | | 183 | 329 | 175 | 286 | 260 |
| 5 | 160 | 121 | | | 172 | 329 | 166 | 354 | 301 |
| 6 | 155 | 118 | | | 153 | 335 | 166 | 316 | 307 |
| 7 | 155 | 131 | | | 151 | 364 | 166 | 301 | 295 |
| 8 | 150 | | | | 145 | 390 | 164 | 307 | 338 |
| 9 | 150 | | | | 127 | 400 | 158 | 322 | 316 |
| 10 | 145 | | | | 127 | 396 | 158 | 351 | 289 |
| 11 | 144 | | | | 121 | 393 | 166 | 420 | 234 |
| 12 | 141 | | | | 125 | 416 | 204 | 403 | 215 |
| 13 | 141 | | | | 127 | 410 | 313 | 547 | 199 |
| 14 | 139 | | | | 133 | 383 | 342 | 660 | 181 |
| 15 | 137 | | | 179 | 149 | 406 | 250 | 655 | 179 |
| 16 | 133 | | | 175 | 186 | 436 | 213 | 578 | 175 |
| 17 | 127 | | | 141 | 195 | 424 | 197 | 578 | 164 |
| 18 | 123 | | | 137 | 186 | 426 | 208 | 512 | 160 |
| 19 | 121 | | | 135 | 192 | 443 | 220 | 477 | 160 |
| 20 | 127 | | | 131 | 195 | 406 | 218 | 433 | 160 |
| 21 | 125 | | 50 | 139 | 220 | 393 | 236 | 406 | 158 |
| 22 | 116 | | | 162 | 265 | 406 | 338 | 406 | 153 |
| 23 | 112 | | | 177 | 234 | 329 | 238 | 387 | 150 |
| 24 | 104 | | | 181 | 246 | 298 | 227 | 354 | 145 |
| 25 | 106 | | | 204 | 241 | 276 | 213 | 345 | 145 |
| 26 | 123 | | | 213 | 265 | 263 | 199 | 387 | 140 |
| 27 | 104 | | | 220 | 316 | 253 | 181 | 351 | 139 |
| 28 | 120 | | | 197 | 342 | 234 | 222 | 351 | 131 |
| 29 | 130 | | | 179 | 374 | 227 | 345 | 332 | 127 |
| 30 | 150 | | | 181 | 446 | 211 | 316 | 298 | 119 |
| 31 | 128 | | | | 560 | | 307 | 278 | |

| Month | Maximum | Minimum | Mean | Run off in acre-feet |
|---|---|---|---|---|
| October | 190 | 104 | 138 | 8,480 |
| November 1–7 | 135 | 94 | 112 | 1,550 |
| April 15–30 | 220 | 131 | 172 | 5,460 |
| May | 560 | 121 | 218 | 13,400 |
| June | 487 | 211 | 360 | 21,400 |
| July | 345 | 158 | 222 | 13,600 |
| August | 660 | 273 | 395 | 24,300 |
| September | 338 | 119 | 204 | 12,100 |

## 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 8,271.27 feet above mean sea level.

DRAINAGE AREA.—57 square miles.

RECORDS AVAILABLE.—June, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 720 second-feet June 18 (gage height, 2.26 feet); minimum, 8.6 second-feet Mar. 4.

1929–30: Maximum and minimum discharges, those of 1930.

REMARKS.—Records good except those during winter, which were estimated because of ice. Possibly a few diversions for mining purposes.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 49 | 28 | | | | | 14 | 70 | 365 | 235 | 129 | 55 |
| 2 | 49 | 30 | | | | | 15 | 76 | 264 | 213 | 124 | 52 |
| 3 | 51 | 28 | 12 | | | | 16 | 82 | 222 | 191 | 119 | 51 |
| 4 | 48 | 28 | | | | | 14 | 75 | 200 | 172 | 114 | 52 |
| 5 | 46 | 28 | | 12 | 12 | 9 | 16 | 70 | 212 | 165 | 110 | 52 |
| 6 | 44 | 29 | | | | | 21 | 65 | 244 | 146 | 106 | 50 |
| 7 | 44 | 28 | | | | | 25 | 60 | 299 | 132 | 104 | 47 |
| 8 | 43 | 28 | | | | | 30 | 56 | 350 | 121 | 102 | 51 |
| 9 | 42 | 28 | | | | | 34 | 51 | 342 | 114 | 94 | 45 |
| 10 | 44 | 28 | 15 | | | | 37 | 49 | 372 | 108 | 100 | 44 |
| 11 | 44 | 28 | | | | | 37 | 46 | 420 | 106 | 93 | 42 |
| 12 | 44 | 26 | | | | | 40 | 44 | 588 | 108 | 90 | 42 |
| 13 | 40 | | | | | 10 | 43 | 44 | 534 | 157 | 110 | 41 |
| 14 | 41 | | | | | | 46 | 46 | 552 | 132 | 129 | 40 |
| 15 | 40 | 20 | | 11 | 10 | | 47 | 53 | 516 | 108 | 121 | 39 |
| 16 | 39 | | | | | 10 | 44 | 58 | 516 | 100 | 119 | 37 |
| 17 | 38 | | | | | 8 | 42 | 57 | 516 | 104 | 116 | 36 |
| 18 | 37 | | | | | 7 | 42 | 56 | 507 | 110 | 112 | 35 |
| 19 | 36 | | | | | | 38 | 56 | 498 | 104 | 108 | 32 |
| 20 | 34 | | 12 | | | | 37 | 58 | 498 | 94 | 102 | 31 |
| 21 | 34 | 15 | | | | 12 | 40 | 70 | 525 | 102 | 98 | 31 |
| 22 | 31 | | | | 9 | | 43 | 80 | 534 | 100 | 94 | 31 |
| 23 | 31 | | | | | | 46 | 73 | 454 | 83 | 90 | 32 |
| 24 | 26 | | | | 8 | | 52 | 78 | 438 | 86 | 85 | 32 |
| 25 | 31 | | | | 10 | | 59 | 86 | 404 | 88 | 80 | 33 |
| 26 | 31 | 18 | | 10 | 10 | | 61 | 102 | 358 | 85 | 76 | 34 |
| 27 | 30 | | | | 9 | | 64 | 138 | 328 | 85 | 72 | 33 |
| 28 | 31 | | 14 | | 9 | 10 | 64 | 183 | 306 | 112 | 72 | 32 |
| 29 | 35 | | | | ------- | | 64 | 244 | 278 | 132 | 65 | 32 |
| 30 | 28 | | | | ------- | | 67 | 320 | 250 | 142 | 62 | 32 |
| 31 | 27 | ------- | | | ------- | | ------- | 412 | ------- | 132 | 58 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 51 | 26 | 38.3 | 2,360 |
| November | 30 | ---------- | 21.9 | 1,300 |
| December | ---------- | ---------- | 13.4 | 824 |
| January | ---------- | ---------- | 11.0 | 676 |
| February | ---------- | ---------- | 10.5 | 583 |
| March | ---------- | ---------- | 10.0 | 615 |
| April | 67 | 14 | 39.9 | 2,370 |
| May | 412 | 44 | 95.4 | 5,870 |
| June | 588 | 200 | 396 | 23,600 |
| July | 235 | 83 | 125 | 7,690 |
| August | 129 | 58 | 98.5 | 6,060 |
| September | 55 | 31 | 39.9 | 2,370 |
| The year | 588 | ---------- | 75.0 | 54,300 |

### NORTH ST. VRAIN CREEK NEAR ALLENS PARK, COLO.

**Location.**—Staff gage in SW. ¼ sec. 14, T. 3 N., R. 73 W., 2½ miles north of Allens Park.

**Drainage area.**—33 square miles.

**Records available.**—October, 1925, to September, 1930.

**Extremes.**—Maximum discharge during year, 333 second-feet Aug. 14 (gage height, 2.1 feet); minimum occurred during winter.

1925–1930: Maximum discharge (estimated), 1,000 second-feet June 9, 1929, caused by breaking of Copeland Lake Dam; minimum occurred during winter.

**Remarks.**—Records good except those during winter, which were estimated because of ice. Practically no diversions above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Jan. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 46 | 20 | ------- | | 10 | 62 | 152 | 122 | 112 | 60 |
| 2 | 46 | 18 | ------- | | 10 | 64 | 140 | 120 | 107 | 57 |
| 3 | 45 | 20 | ------- | | 10 | 87 | 114 | 124 | 112 | 54 |
| 4 | 46 | 24 | ------- | | 10 | 84 | 127 | 132 | 127 | 62 |
| 5 | 48 | 25 | ------- | | 11 | 64 | 110 | 132 | 130 | 73 |
| 6 | 48 | 18 | ------- | | 11 | 44 | 122 | 127 | 132 | 78 |
| 7 | 50 | 16 | ------- | | 11 | 43 | 142 | 122 | 134 | 75 |
| 8 | 48 | 14 | ------- | 4 | 12 | 37 | 154 | 114 | 134 | 73 |
| 9 | 48 | 14 | ------- | | 12 | 29 | 160 | 110 | 124 | 62 |
| 10 | 56 | 24 | ------- | | 14 | 28 | 192 | 107 | 120 | 67 |
| 11 | 52 | 33 | ------- | | 19 | 27 | 210 | 112 | 114 | 60 |
| 12 | 46 | 35 | ------- | | 27 | 30 | 227 | 134 | 137 | 56 |
| 13 | 44 | 34 | ------- | | 37 | 27 | 240 | 140 | 187 | 54 |
| 14 | 39 | 31 | ------- | | 39 | 31 | 222 | 130 | 302 | 52 |
| 15 | 37 | 27 | ------- | | 44 | 37 | 192 | 114 | 287 | 51 |
| 16 | 35 | 22 | ------- | | 43 | 40 | 197 | 120 | 207 | 50 |
| 17 | 34 | 20 | ------- | | 35 | 43 | 207 | 120 | 157 | 46 |
| 18 | 32 | 17 | 5 | | 26 | 43 | 214 | 117 | 140 | 45 |
| 19 | 30 | 16 | ------- | 6 | 23 | 40 | 224 | 110 | 122 | 43 |
| 20 | 25 | 14 | ------- | | 26 | 54 | 232 | 110 | 124 | 41 |
| 21 | 23 | 14 | ------- | | 30 | 102 | 217 | 114 | 112 | 38 |
| 22 | 22 | 14 | ------- | | 38 | 100 | 214 | 114 | 94 | 37 |
| 23 | 25 | 14 | ------- | 7 | 39 | 90 | 207 | 102 | 84 | 34 |
| 24 | 26 | 11 | ------- | 7 | 50 | 78 | 187 | 100 | 82 | 33 |
| 25 | 25 | 11 | ------- | 8 | 60 | 75 | 174 | 107 | 75 | 32 |
| 26 | 23 | 10 | ------- | 8 | 54 | 117 | 170 | 102 | 78 | 30 |
| 27 | 20 | 10 | ------- | 9 | 52 | 150 | 154 | 97 | 87 | 31 |
| 28 | 18 | 9 | ------- | 9 | 54 | 174 | 142 | 100 | 80 | 30 |
| 29 | 17 | 10 | ------- | 7 | 52 | 194 | 140 | 112 | 71 | 29 |
| 30 | 18 | 9 | ------- | 9 | 52 | 182 | 140 | 134 | 64 | 29 |
| 31 | 20 | ------- | ------- | 9 | ------- | 154 | ------- | 124 | 67 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 56 | 17 | 35.2 | 2,160 |
| November | 35 | 9 | 18.4 | 1,090 |
| December | ------- | ------- | 8 | 492 |
| January | ------- | ------- | 7 | 430 |
| February | ------- | ------- | 4 | 222 |
| March | 9 | ------- | 5.6 | 344 |
| April | 60 | 10 | 30.3 | 1,800 |
| May | 194 | 27 | 75.1 | 4,620 |
| June | 240 | 110 | 177 | 10,500 |
| July | 140 | 97 | 117 | 7,190 |
| August | 302 | 64 | 126 | 7,750 |
| September | 78 | 29 | 49.4 | 2,940 |
| The year | 302 | ------- | 54.7 | 39,500 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 176 second-feet June 8 (gage height, 2.17 feet); minimum, 1 second-foot Mar. 20.

1926–27, 1929–30: Maximum discharge, 313 second-feet June 7, 1926; minimum, that of Mar. 20, 1930.

REMARKS.—Records good except those during winter and for periods May 15–23, July 14–28, which are estimated. No diversions above station. Flow regulated by several small lakes.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Jan. | Mar. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | 18 | | | 26 | 96 | 86 | 59 | 11 |
| 2 | 18 | | | 35 | 67 | 85 | 54 | 11 |
| 3 | 33 | | | 35 | 55 | 81 | 49 | 12 |
| 4 | 25 | | | 26 | 55 | 82 | 45 | 14 |
| 5 | 19 | | | 22 | 58 | 81 | 37 | 16 |
| 6 | 18 | | | 19 | 64 | 80 | 35 | 16 |
| 7 | 20 | | | 17 | 84 | 75 | 32 | 15 |
| 8 | 25 | | | 15 | 96 | 72 | 32 | 20 |
| 9 | 26 | | | 13 | 98 | 73 | 30 | 19 |
| 10 | 26 | | | 11 | 105 | 71 | 70 | 18 |
| 11 | 22 | | | 11 | 119 | 75 | 53 | 19 |
| 12 | 18 | | | 10 | 154 | 72 | 53 | 17 |
| 13 | 18 | | | 11 | 138 | 86 | 78 | 15 |
| 14 | 17 | | | 16 | 121 | 80 | 126 | 14 |
| 15 | 16 | | | 18 | 102 | 70 | 94 | 13 |
| 16 | 16 | | | 20 | 100 | 60 | 47 | 12 |
| 17 | 15 | 3 | | 25 | 107 | 55 | 32 | 12 |
| 18 | 15 | | | 30 | 107 | 55 | 26 | 11 |
| 19 | 14 | | | 35 | 108 | 54 | 20 | 11 |
| 20 | 12 | | 1 | 40 | 105 | 54 | 16 | 11 |
| 21 | 12 | | | 42 | 121 | 60 | 15 | 11 |
| 22 | 13 | | | 40 | 156 | 58 | 15 | 11 |
| 23 | 13 | | | 38 | 130 | 45 | 14 | 11 |
| 24 | 13 | | | 35 | 94 | 38 | 13 | 10 |
| 25 | 13 | | | 37 | 78 | 40 | 12 | 11 |
| 26 | 11 | | | 52 | 72 | 40 | 13 | 11 |
| 27 | 11 | | | 77 | 70 | 50 | 13 | 11 |
| 28 | 12 | | | 91 | 73 | 75 | 14 | 10 |
| 29 | 13 | | | 107 | 86 | 82 | 15 | 9 |
| 30 | 12 | | | 115 | 90 | 77 | 13 | 9 |
| 31 | 12 | | | 126 | | 67 | 12 | |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 33 | 11 | 17.0 | 1,050 |
| November | | | 10 | 595 |
| December | | | 8 | 492 |
| January | | | 5 | 307 |
| February | | | 4 | 222 |
| March | | | 4 | 246 |
| April | | | 20 | 1,190 |
| May | 126 | 10 | 38.5 | 2,370 |
| June | 156 | 55 | 97.0 | 5,770 |
| July | 86 | 38 | 67.1 | 4,130 |
| August | 126 | 12 | 37.3 | 2,290 |
| September | 20 | 9 | 13.0 | 774 |
| The year | 156 | | 26.8 | 19,400 |

## MIDDLE ST. VRAIN CREEK NEAR ALLENS PARK, COLO.

LOCATION.—Water-stage recorder in sec. 3, T. 2 N., R. 72 W., 9 miles southeast of Allens Park and 2 miles below Cave Creek.

DRAINAGE AREA.—28 square miles.

RECORDS AVAILABLE.—April, 1926, to September, 1930.

EXTREMES.—Maximum discharge during year, 211 second-feet Aug. 14 (gage height, 2.43 feet); minimum, 3.5 second-feet Mar. 5.

1926–1930: Maximum discharge, 322 second-feet June 6, 1926; minimum, 3.1 second-feet Mar. 5, 1929.

REMARKS.—Records good except those during winter, which were estimated because of ice, and those for period Sept. 2–30, which were based on comparison with North St. Vrain, near Allens Park. Practically no diversion above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|
| 1 | 26 | | 60 | 143 | 86 | 58 | 31 |
| 2 | 26 | | 66 | 108 | 81 | 53 | |
| 3 | 34 | | 72 | 94 | 79 | 49 | |
| 4 | 31 | | 60 | 94 | 85 | 60 | |
| 5 | 26 | 20 | 55 | 98 | 81 | 53 | |
| 6 | 25 | | 50 | 105 | 72 | 51 | 26 |
| 7 | 26 | | 47 | 124 | 64 | 50 | |
| 8 | 28 | | 44 | 136 | 61 | 47 | |
| 9 | 30 | | 42 | 136 | 65 | 48 | |
| 10 | 33 | 35 | 40 | 138 | 66 | 53 | |
| 11 | 35 | 36 | 36 | 148 | 72 | 49 | |
| 12 | 35 | 42 | 35 | 164 | 68 | 71 | |
| 13 | 30 | 46 | 34 | 163 | 89 | 79 | |
| 14 | 28 | 46 | 37 | 152 | 89 | 159 | |
| 15 | 28 | 46 | 42 | 143 | 71 | 148 | |
| 16 | 27 | 42 | 42 | 136 | 62 | 100 | 9 |
| 17 | 26 | 36 | 41 | 143 | 60 | 76 | |
| 18 | 25 | 34 | 39 | 152 | 62 | 62 | |
| 19 | 24 | 34 | 40 | 146 | 61 | 54 | |
| 20 | 22 | 32 | 45 | 143 | 61 | 48 | |
| 21 | 22 | 35 | 66 | 159 | 59 | 45 | |
| 22 | 20 | 39 | 86 | 170 | 55 | 42 | |
| 23 | 20 | 42 | 63 | 150 | 50 | 39 | |
| 24 | 18 | 47 | 57 | 126 | 48 | 39 | |
| 25 | 22 | 54 | 64 | 106 | 58 | 34 | |
| 26 | 22 | 54 | 78 | 98 | 52 | 32 | 13 |
| 27 | 22 | 56 | 114 | 95 | 48 | 36 | |
| 28 | 21 | 54 | 143 | 94 | 57 | 36 | |
| 29 | 20 | 54 | 154 | 91 | 124 | 35 | |
| 30 | 22 | 54 | 163 | 86 | 106 | 32 | |
| 31 | 22 | ------- | 170 | ------- | 72 | 32 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 35 | 18 | 25.7 | 1,580 |
| November | ---------- | ---------- | 15 | 893 |
| December | ---------- | ---------- | 7 | 430 |
| January | ---------- | ---------- | 4 | 246 |
| February | ---------- | ---------- | 4 | 222 |
| March | ---------- | ---------- | 7 | 430 |
| April | 56 | ---------- | 36.6 | 2,180 |
| May | 170 | 34 | 67.3 | 4,140 |
| June | 170 | 86 | 128 | 7,620 |
| July | 124 | 48 | 69.8 | 4,290 |
| August | 159 | 32 | 57.1 | 3,510 |
| September | ---------- | ---------- | 19.5 | 1,160 |
| The year | 170 | ---------- | 36.9 | 26,700 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 280 second-feet Aug. 26 (gage height, 2.8 feet); minimum, 1.9 second-feet Mar. 20 (gage height, 0.86 foot).

1929–30: Maximum discharge, that of Aug. 26, 1930; minimum, that of Mar. 20, 1930.

REMARKS.—Records good except those during winter, which were estimated because of ice. Small ditch diverts water just above station. Water diverted from South St. Vrain Creek enters Lefthand Creek 2½ miles above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Jan. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 21 | 2.9 | -------- | 4.4 | 4.1 | 43 | 92 | 87 | 55 | 19 |
| 2 | 20 | 9.6 | -------- | 4.4 | 3.1 | 48 | 84 | 84 | 52 | 18 |
| 3 | 29 | 10 | -------- | 4.4 | 4.6 | 52 | 73 | 78 | 47 | 19 |
| 4 | 30 | 14 | -------- | 4.4 | 5.5 | 46 | 70 | 79 | 44 | 21 |
| 5 | 24 | 8.4 | -------- | 4.2 | 6.0 | 38 | 70 | 79 | 43 | 25 |
| 6 | 20 | 8.0 | -------- | 4.0 | 9.6 | 30 | 71 | 73 | 34 | 25 |
| 7 | 20 | 5.5 | -------- | 3.8 | 14 | 29 | 84 | 67 | 39 | 22 |
| 8 | 26 | 5.8 | -------- | 3.5 | 20 | 27 | 99 | 64 | 61 | 30 |
| 9 | 28 | 6.4 | -------- | 3.2 | 26 | 25 | 101 | 64 | 65 | 29 |
| 10 | 27 | 5.0 | -------- | 3.0 | 31 | 21 | 101 | 62 | 87 | 31 |
| 11 | 26 | 5.0 | -------- | 2.8 | 34 | 19 | 108 | 67 | 76 | 47 |
| 12 | 21 | 5.3 | -------- | 2.4 | 39 | 18 | 119 | 70 | 62 | 40 |
| 13 | 21 | 4.3 | -------- | 2.2 | 43 | 17 | 119 | 91 | 82 | 35 |
| 14 | 19 | 5.3 | -------- | 2.2 | 44 | 20 | 114 | 89 | 130 | 30 |
| 15 | 17 | 5.8 | 2.3 | 2.2 | 46 | 26 | 108 | 71 | 140 | 28 |
| 16 | 16 | 5.5 | -------- | 3.1 | 46 | 27 | 106 | 61 | 92 | 23 |
| 17 | 14 | 5.3 | -------- | 2.9 | 34 | 30 | 110 | 57 | 68 | 20 |
| 18 | 14 | 3.4 | -------- | 2.8 | 31 | 25 | 114 | 61 | 55 | 16 |
| 19 | 13 | 4.1 | -------- | 3.8 | 29 | 26 | 123 | 57 | 44 | 13 |
| 20 | 12 | 4.6 | -------- | 1.9 | 28 | 27 | 114 | 57 | 39 | 12 |
| 21 | 12 | | -------- | 2.2 | 32 | 41 | 117 | 64 | 34 | 13 |
| 22 | 8.8 | | -------- | 2.6 | 40 | 58 | 136 | 62 | 30 | 12 |
| 23 | 8.0 | | -------- | 2.6 | 44 | 46 | 130 | 48 | 27 | 12 |
| 24 | 7.6 | | -------- | 2.1 | 50 | 41 | 105 | 39 | 24 | 10 |
| 25 | 8.0 | | -------- | 2.1 | 60 | 46 | 87 | 42 | 22 | 12 |
| 26 | 8.0 | 4 | -------- | 2.8 | 57 | 49 | 73 | 42 | 44 | 12 |
| 27 | 8.0 | | -------- | 2.9 | 57 | 71 | 71 | 35 | 27 | 12 |
| 28 | 8.0 | | -------- | 4.1 | 53 | 86 | 68 | 39 | 28 | 11 |
| 29 | 8.0 | | -------- | 5.3 | 47 | 92 | 82 | 79 | 27 | 10 |
| 30 | 7.6 | | -------- | 4.6 | 43 | 99 | 86 | 78 | 23 | 9.2 |
| 31 | 6.8 | -------- | -------- | 4.1 | -------- | 101 | -------- | 65 | 21 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 30 | 6.8 | 16.4 | 1,010 |
| November | 14 | -------- | 5.47 | 325 |
| December | -------- | -------- | 4 | 246 |
| January | -------- | -------- | 3 | 184 |
| February | -------- | -------- | 4 | 222 |
| March | 5.3 | 1.9 | 3.26 | 200 |
| April | 60 | 3.1 | 82.7 | 1,950 |
| May | 101 | 17 | 42.7 | 2,630 |
| June | 136 | 68 | 97.8 | 5,820 |
| July | 91 | 35 | 64.9 | 3,990 |
| August | 140 | 21 | 52.3 | 3,220 |
| September | 47 | 9.2 | 20.5 | 1,220 |
| The year | 140 | -------- | 29.0 | 21,000 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 228 second-feet Aug. 14 (gage height, 2.48 feet); no flow during winter.

1929–30: Maximum discharge, 259 second-feet Aug. 5, 1929 (gage height, 2.6 feet); no flow during winter of current year.

REMARKS.—Records good. Diversion for city of Boulder above station. Flow regulated by several lakes at headwaters.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | 22 | 10 | 0 | 38 | 94 | 64 | 55 | 50 |
| 2 | 29 | 2.3 | 0 | 41 | 81 | 60 | 58 | 33 |
| 3 | 24 | 1.2 | 0 | 41 | 72 | 60 | 60 | 26 |
| 4 | 26 | 5 | 0 | 25 | 70 | 60 | 56 | 29 |
| 5 | 23 | 58 | 0 | 22 | 66 | 58 | 52 | 29 |
| 6 | 19 | 24 | 0 | 22 | 64 | 58 | 50 | 26 |
| 7 | 20 | 12 | 11 | 22 | 72 | 56 | 48 | 20 |
| 8 | 20 | 8 | 11 | 18 | 70 | 70 | 46 | 23 |
| 9 | 26 | 1.4 | 14 | 17 | 74 | 70 | 64 | 29 |
| 10 | 24 | 1.6 | 16 | 15 | 70 | 68 | 116 | 34 |
| 11 | 25 | 3.2 | 16 | 14 | 74 | 58 | 92 | 19 |
| 12 | 21 | 2.3 | 19 | 14 | 81 | 39 | 92 | 16 |
| 13 | 15 | 2.0 | 21 | 16 | 78 | 50 | 134 | 17 |
| 14 | 11 | 2.0 | 21 | 17 | 68 | 40 | 182 | 30 |
| 15 | 11 | 1.5 | 16 | 20 | 68 | 64 | 191 | 24 |
| 16 | 13 | 1.5 | 11 | 19 | 72 | 86 | 202 | 20 |
| 17 | 9.9 | 1.1 | 10 | 18 | 76 | 86 | 167 | 24 |
| 18 | 11 | .6 | 9 | 19 | 89 | 72 | 141 | 28 |
| 19 | 15 | .2 | 8 | 20 | 137 | 64 | 109 | 27 |
| 20 | 21 | .3 | 11 | 21 | 177 | 64 | 78 | 17 |
| 21 | 15 | | 15 | 29 | 191 | 74 | 56 | 14 |
| 22 | 12 | | 18 | 30 | 200 | 60 | 48 | 20 |
| 23 | 10 | | 21 | 25 | 180 | 48 | 39 | 9.7 |
| 24 | 3 | | 25 | 26 | 160 | 44 | 39 | 9.7 |
| 25 | 17 | .2 | 28 | 33 | 140 | 43 | 33 | 10 |
| 26 | 16 | | 30 | 48 | 130 | 43 | 30 | 19 |
| 27 | 12 | | 32 | 66 | 115 | 43 | 31 | 17 |
| 28 | 11 | | 29 | 89 | 102 | 56 | 33 | 18 |
| 29 | 15 | | 25 | 109 | 72 | 58 | 31 | 20 |
| 30 | 18 | | 26 | 134 | 68 | 56 | 27 | 17 |
| 31 | 17 | ------- | ------- | 116 | ------- | 52 | 35 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 29 | 3 | 17.2 | 1,060 |
| November | 58 | 0.2 | 4.67 | 278 |
| April | 32 | 0 | 14.8 | 881 |
| May | 134 | 14 | 36.9 | 2,270 |
| June | 200 | 64 | 100 | 5,950 |
| July | 86 | 39 | 58.8 | 3,620 |
| August | 202 | 30 | 77.2 | 4,750 |
| September | 50 | 9.7 | 22.5 | 1,340 |
| The year | 202 | 0.2 | 27.8 | 20,100 |

NOTE.—No flow during months for which no discharge is shown.

## THOMPSON RIVER BELOW POWER HOUSE, NEAR DRAKE, COLO.

LOCATION.—Water-stage recorder in NW. ¼ sec. 7, T. 5 N., R. 70 W., one-fourth 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, 1930. Comparable record at site 3 miles upstream, from September, 1917, to December, 1926.

EXTREMES.—Maximum discharge during year, 868 second-feet Aug. 14 (gage height, 4.19 feet); minimum, 10 second-feet Dec. 19 (gage height, 0.48 foot).

1928–1930: Maximum discharge, that of Aug. 14, 1930; minimum that of Dec. 19, 1929. Maximum discharge known, 8,000 second-feet July 31, 1919.

REMARKS.—Records good. Gage-height record furnished by city of Loveland.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 200 | 61 | 57 | 28 | | 20 | 20 | 157 | 541 | 276 | 320 | 190 |
| 2 | 190 | 78 | 46 | 27 | | 18 | 30 | 188 | 494 | 270 | 276 | 178 |
| 3 | 220 | 96 | 50 | 25 | 20 | 21 | 35 | 246 | 326 | 254 | 257 | 170 |
| 4 | 210 | 88 | 61 | 25 | | 22 | 42 | 226 | 302 | 239 | 347 | 170 |
| 5 | 182 | 98 | 56 | 23 | | 23 | 44 | 186 | 293 | 244 | 347 | 180 |
| 6 | 156 | 89 | 55 | 29 | | 23 | 54 | 157 | 329 | 241 | 332 | 190 |
| 7 | 150 | 88 | 52 | 26 | | 22 | 62 | 134 | 412 | 226 | 377 | 172 |
| 8 | 157 | 71 | 46 | 25 | 25 | 21 | 70 | 124 | 488 | 217 | 344 | 176 |
| 9 | 182 | 93 | 53 | 24 | | 18 | 83 | 118 | 530 | 219 | 341 | 182 |
| 10 | 192 | 76 | 54 | 25 | | 21 | 96 | 111 | 516 | 224 | 362 | 159 |
| 11 | 190 | 78 | 52 | 23 | | 22 | 96 | 106 | 510 | 231 | 380 | 145 |
| 12 | 178 | 58 | 50 | 17 | | 24 | 101 | 101 | 541 | 282 | 371 | 124 |
| 13 | 165 | 47 | 48 | | | 26 | 105 | 98 | 544 | 440 | 380 | 126 |
| 14 | 157 | 61 | 48 | | 22 | 25 | 112 | 96 | 502 | 429 | 712 | 118 |
| 15 | 149 | 78 | 44 | | | 29 | 117 | 110 | 436 | 332 | 760 | 111 |
| 16 | 142 | 86 | 44 | 12 | | 26 | 116 | 128 | 432 | 259 | 608 | 106 |
| 17 | 137 | 86 | 43 | | 25 | 25 | 97 | 135 | 443 | 234 | 566 | 104 |
| 18 | 132 | 66 | 26 | | 27 | 24 | 90 | 126 | 443 | 338 | 510 | 100 |
| 19 | 129 | 60 | 16 | | 28 | 21 | 84 | 138 | 422 | 287 | 457 | 96 |
| 20 | 123 | 25 | 21 | | 26 | 23 | 82 | 163 | 429 | 296 | 412 | 95 |
| 21 | 117 | 23 | 22 | | 30 | 27 | 84 | 205 | 478 | 268 | 371 | 89 |
| 22 | 106 | 23 | 20 | | 29 | 29 | 96 | 314 | 548 | 273 | 347 | 85 |
| 23 | 98 | 49 | 33 | 16 | 28 | 29 | 112 | 224 | 510 | 241 | 317 | 89 |
| 24 | 88 | 62 | 32 | | 32 | 22 | 130 | 186 | 418 | 231 | 290 | 88 |
| 25 | 98 | 68 | 33 | | 24 | 24 | 197 | 219 | 365 | 222 | 273 | 102 |
| 26 | 101 | 72 | 38 | | 22 | 19 | 180 | 257 | 326 | 210 | 268 | 98 |
| 27 | 100 | 30 | 36 | | 22 | 18 | 170 | 390 | 314 | 190 | 259 | 95 |
| 28 | 97 | 71 | 33 | 18 | 19 | 17 | 163 | 474 | 308 | 190 | 270 | 89 |
| 29 | 98 | 63 | 28 | | ------- | 19 | 149 | 520 | 305 | 254 | 270 | 88 |
| 30 | 96 | 62 | 32 | | ------- | 22 | 152 | 576 | 279 | 408 | 234 | 85 |
| 31 | 95 | ------- | 34 | | ------- | 24 | ------- | 611 | ------- | 394 | 205 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 220 | 88 | 143 | 8,790 |
| November | 98 | 23 | 66.9 | 3,980 |
| December | 61 | 16 | 40.7 | 2,500 |
| January | 29 | ---------- | 18.7 | 1,150 |
| February | 32 | ---------- | 23.9 | 1,330 |
| March | 29 | 17 | 22.7 | 1,400 |
| April | 197 | 20 | 99.0 | 5,890 |
| May | 611 | 96 | 220 | 13,500 |
| June | 548 | 279 | 423 | 25,200 |
| July | 440 | 190 | 272 | 16,700 |
| August | 760 | 205 | 373 | 22,900 |
| September | 190 | 85 | 127 | 7,560 |
| The year | 760 | ---------- | 153 | 111,000 |

### THOMPSON RIVER AT MOUTH OF CANYON, NEAR DRAKE, COLO.

LOCATION.—Water-stage recorder in sec. 4, T. 5 N., R. 70 W., 1 mile above mouth of canyon and 6 miles east of Drake.

DRAINAGE AREA.—301 square miles.

RECORDS AVAILABLE.—March, 1927, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,590 second-feet Aug. 14 (gage height, 5.75 feet); minimum occurred during winter.

1927–1930: Maximum discharge, 1,800 second-feet May 31, 1928.

REMARKS.—Records good except those for periods of missing gage heights, Nov. 1, 7, 8, 12–14, Apr. 1–12, May 24 to June 2, Aug. 21–24, Sept. 28, which are fair. Diversion for irrigation above station. Gage-height record furnished by city of Loveland.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | 192 | 80 | 20 | 161 | 530 | 292 | 339 | 194 |
| 2 | 183 | 85 | 28 | 179 | 390 | 288 | 298 | 183 |
| 3 | 206 | 97 | 33 | 232 | 306 | 270 | 282 | 179 |
| 4 | 197 | 90 | 40 | 201 | 295 | 260 | 369 | 175 |
| 5 | 175 | 101 | 42 | 171 | 288 | 262 | 366 | 186 |
| 6 | 163 | 85 | 52 | 149 | 312 | 258 | 351 | 197 |
| 7 | 161 | 78 | 60 | 130 | 396 | 248 | 396 | 183 |
| 8 | 188 | 73 | 68 | 126 | 498 | 238 | 330 | 190 |
| 9 | 215 | 89 | 82 | 123 | 552 | 240 | 363 | 192 |
| 10 | 206 | 67 | 94 | 113 | 539 | 245 | 396 | 173 |
| 11 | 192 | 65 | 94 | 105 | 518 | 252 | 414 | 157 |
| 12 | 175 | 52 | 98 | 98 | 598 | 298 | 430 | 141 |
| 13 | 169 | 50 | 105 | 95 | 602 | 472 | 483 | 130 |
| 14 | 159 | 60 | 125 | 92 | 544 | 469 | 1,140 | 123 |
| 15 | 149 | 83 | 139 | 105 | 448 | 357 | 1,200 | 116 |
| 16 | 143 | 81 | 135 | 134 | 452 | 285 | 823 | 107 |
| 17 | 134 | 76 | 85 | 159 | 462 | 262 | 670 | 104 |
| 18 | 132 | ------- | 77 | 137 | 462 | 345 | 548 | 92 |
| 19 | 126 | ------- | 64 | 157 | 438 | 306 | 462 | 92 |
| 20 | 118 | ------- | 60 | 151 | 441 | 318 | 396 | 89 |
| 21 | 110 | ------- | 63 | 206 | 510 | 290 | 372 | 85 |
| 22 | 104 | ------- | 86 | 295 | 630 | 295 | 348 | 83 |
| 23 | 95 | ------- | 104 | 230 | 562 | 268 | 324 | 84 |
| 24 | 81 | ------- | 137 | 180 | 430 | 255 | 300 | 86 |
| 25 | 95 | ------- | 192 | 210 | 378 | 245 | 275 | 102 |
| 26 | 101 | ------- | 181 | 240 | 336 | 235 | 268 | 102 |
| 27 | 99 | ------- | 171 | 360 | 330 | 215 | 255 | 95 |
| 28 | 94 | ------- | 163 | 450 | 321 | 215 | 265 | 90 |
| 29 | 95 | ------- | 159 | 480 | 315 | 280 | 270 | 86 |
| 30 | 91 | ------- | 153 | 530 | 292 | 430 | 232 | 84 |
| 31 | 94 | ------- | ------- | 570 | ------- | 417 | 213 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 215 | 81 | 143 | 8,790 |
| November 1–17 | 101 | 50 | 77.2 | 2,600 |
| April | 192 | 20 | 97.0 | 5,770 |
| May | 570 | 92 | 212 | 13,000 |
| June | 630 | 288 | 439 | 26,100 |
| July | 472 | 215 | 294 | 18,100 |
| August | 1,200 | 213 | 425 | 26,100 |
| September | 197 | 83 | 130 | 7,740 |

### LITTLE THOMPSON RIVER NEAR BERTHOUD, COLO.

LOCATION.—Water-stage recorder in sec. 2, T. 3 N., R. 70 W., 10 miles southwest of Berthoud.

DRAINAGE AREA.—100 square miles.

RECORDS AVAILABLE.—May, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 3,620 second-feet Aug. 10 (gage height, 7.2 feet); minimum, 0.2 second-foot July 9.

1929–30: Maximum discharge, that of Aug. 10, 1930; minimum, that of July 9, 1930.

REMARKS.—Records good except those for periods Dec. 3 to Feb. 24, Sept. 2–30, which were estimated. One small ditch diverts water above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.4 | 3.4 | 4.1 | ------ | ------ | 1.6 | 2.5 | 8.1 | 18 | 0.4 | 6.9 | 20 |
| 2 | 5.2 | 3.6 | 4.3 | ------ | ------ | 1.5 | 2.4 | 7.3 | 17 | .3 | 5.8 | |
| 3 | 4.7 | 4.1 | ------ | ------ | ------ | 1.4 | 3.4 | 7.3 | 16 | .3 | 5.0 | 20 |
| 4 | 4.5 | 5.0 | ------ | ------ | ------ | 1.3 | 6.9 | 9.2 | 15 | .3 | 4.1 | |
| 5 | 4.5 | 4.1 | ------ | ------ | ------ | 1.3 | 6.9 | 8.8 | 14 | .3 | 5.8 | |
| 6 | 4.1 | 5.2 | ------ | ------ | ------ | 1.3 | 6.2 | 8.4 | 13 | .3 | 12 | |
| 7 | 3.6 | 5.0 | ------ | ------ | ------ | 1.2 | 7.7 | 8.4 | 12 | .3 | 8.1 | |
| 8 | 3.6 | 4.3 | ------ | ------ | ------ | 1.1 | 8.1 | 8.4 | 10 | .3 | 6.4 | 25 |
| 9 | 4.3 | 5 | ------ | ------ | ------ | 1.1 | 8.3 | 10 | 9.8 | .2 | 6.2 | |
| 10 | 4.3 | 5 | ------ | ------ | ------ | 1.1 | 8.3 | 12 | 9.8 | .3 | 170 | |
| 11 | 3.4 | 4.7 | ------ | ------ | ------ | 1.0 | 12 | 12 | 9.2 | .3 | 188 | |
| 12 | 2.8 | 4.3 | ------ | ------ | ------ | 1.2 | 12 | 10 | 7.3 | .3 | 212 | |
| 13 | 1.3 | 3.2 | ------ | ------ | ------ | 1.1 | 10 | 9.2 | 6.2 | .4 | 157 | 28 |
| 14 | 1.0 | 4.1 | ------ | ------ | ------ | 1.2 | 11 | 8.4 | 5.0 | .9 | 584 | |
| 15 | .8 | 4.5 | ------ | 0.4 | ------ | 1.4 | 9.2 | 8.5 | 4.5 | 1.0 | 299 | |
| 16 | .7 | 4.5 | ------ | ------ | ------ | 1.7 | 9.2 | 13 | 4.3 | .6 | 181 | |
| 17 | .7 | 4.7 | ------ | ------ | ------ | 2.4 | 12 | 21 | 3.4 | .5 | 141 | |
| 18 | 1.0 | 5 | ------ | ------ | ------ | 2.5 | 12 | 18 | 2.8 | .4 | 95 | 20 |
| 19 | 2.4 | 5 | ------ | ------ | ------ | 2.4 | 9.8 | 18 | 3.1 | .5 | 64 | |
| 20 | 2.9 | 3.6 | ------ | ------ | ------ | 2.4 | 8.8 | 16 | 2.9 | 1.2 | 48 | |
| 21 | 3.1 | 3.8 | ------ | ------ | ------ | 1.8 | 8.6 | 13 | 2.1 | 1.8 | 40 | |
| 22 | 3.4 | 4.1 | ------ | ------ | ------ | 2.1 | 8.1 | 13 | 1.7 | 3.1 | 32 | |
| 23 | 3.9 | 4.5 | ------ | ------ | ------ | 3.6 | 8.1 | 15 | 1.7 | 3.2 | 30 | 12 |
| 24 | 4.1 | 4.3 | ------ | ------ | ------ | 3.2 | 9.8 | 14 | 1.6 | 2.5 | 28 | |
| 25 | 4.3 | 4.1 | ------ | ------ | 1.6 | 3.4 | 13 | 13 | 1.2 | 2.4 | 28 | |
| 26 | 4.3 | 4.3 | ------ | ------ | 1.6 | 3.0 | 11 | 13 | .9 | 2.1 | 130 | |
| 27 | 4.1 | 4.1 | ------ | ------ | 1.6 | 2.4 | 8.8 | 13 | .8 | 1.7 | 53 | |
| 28 | 4.1 | 4.1 | ------ | ------ | 1.6 | 2.4 | 8.8 | 12 | .6 | 2.2 | 35 | 8 |
| 29 | 3.9 | 3.9 | ------ | ------ | ------ | 2.2 | 8.8 | 13 | .5 | 6.2 | 33 | |
| 30 | 3.6 | 4.3 | ------ | ------ | ------ | 2.4 | 8.8 | 13 | .5 | 11.0 | 28 | |
| 31 | 3.6 | ------ | ------ | ------ | ------ | 2.4 | ------ | 14 | ------ | 8.4 | 23 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 5.4 | 0.7 | 3.34 | 205 |
| November | 5.2 | 3.2 | 4.33 | 258 |
| December | ------ | ------ | 3.0 | 184 |
| January | ------ | ------ | .4 | 25 |
| February | ------ | ------ | 1.0 | 56 |
| March | 3.6 | 1.0 | 1.91 | 117 |
| April | 13 | 2.4 | 8.68 | 516 |
| May | 21 | 7.3 | 11.9 | 732 |
| June | 18 | .5 | 6.5 | 387 |
| July | 11 | .2 | 1.73 | 106 |
| August | 584 | 4.1 | 85.8 | 5,280 |
| September | ------ | ------ | 18.8 | 1,120 |
| The year | 584 | ------ | 12.4 | 8,990 |

### 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 one-fourth mile above Chambers Lake outlet.

DRAINAGE AREA.—91 square miles.

RECORDS AVAILABLE.—May, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,400 second-feet May 30 (gage height, 4.63 feet); minimum (estimated), 5 second-feet Mar. 1–10.

1929–30: Maximum discharge, 1,720 second-feet June 8, 1929 (gage height, 4.4 feet); minimum, that of Mar. 1–10, 1930.

REMARKS.—Records good except those during winter, which were estimated because of ice. No diversions above station. Flow increased by diversion from Colorado River Basin.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 73 | | | | | | | 272 | 805 | 221 | 128 | 52 |
| 2 | 72 | | | | | | | 336 | 566 | 202 | 106 | 49 |
| 3 | 94 | | 15 | | | | | 320 | 510 | 193 | 99 | 77 |
| 4 | 77 | | | | | | 18 | 209 | 454 | 177 | 154 | 214 |
| 5 | 76 | 30 | | 12 | 8 | 5 | | 158 | 427 | 163 | 120 | 204 |
| 6 | 90 | | | | | | | 120 | 566 | 168 | 134 | 207 |
| 7 | 100 | | | | | | | 107 | 724 | 161 | 190 | 195 |
| 8 | 114 | | | | | | | 94 | 823 | 156 | 130 | 202 |
| 9 | 112 | | | | | | | 86 | 841 | 152 | 122 | 202 |
| 10 | 102 | | 18 | | | | | 76 | 814 | 145 | 120 | 59 |
| 11 | 89 | | | | | | | 69 | 828 | 147 | 156 | 47 |
| 12 | 78 | | | | | | 40 | 65 | 890 | 147 | 154 | 45 |
| 13 | 72 | | | | | | | 64 | 832 | 279 | 202 | 45 |
| 14 | 67 | | | | | | | 79 | 702 | 214 | 582 | 45 |
| 15 | 64 | 25 | | 12 | 6 | 8 | | 107 | 590 | 165 | 411 | 42 |
| 16 | 60 | | | | | | | 110 | 558 | 122 | 288 | 40 |
| 17 | 60 | | | | | | | 120 | 514 | 106 | 260 | 38 |
| 18 | 57 | | | | | | 55 | 128 | 464 | 100 | 204 | 37 |
| 19 | 55 | | | | | | | 136 | 437 | 109 | 170 | 34 |
| 20 | 52 | | 12 | | | | | 236 | 458 | 143 | 141 | 33 |
| 21 | 51 | | | | | | 65 | 390 | 510 | 132 | 114 | 32 |
| 22 | 42 | | | | | | 90 | 411 | 598 | 114 | 111 | 32 |
| 23 | 48 | | | | | | 112 | 250 | 510 | 87 | 100 | 38 |
| 24 | 75 | | | | | | 145 | 291 | 387 | 89 | 94 | 40 |
| 25 | 73 | 20 | | 10 | 6 | 15 | 250 | 387 | 320 | 86 | 97 | 46 |
| 26 | 58 | | | | | | 262 | 478 | 303 | 77 | 104 | 42 |
| 27 | 58 | | | | | | 226 | 715 | 293 | 69 | 120 | 47 |
| 28 | 47 | | 14 | | | | 190 | 841 | 274 | 91 | 136 | 49 |
| 29 | 46 | | | | ------- | | 179 | 985 | 250 | 165 | 126 | 47 |
| 30 | 45 | | | | ------- | | 200 | 1,110 | 238 | 240 | 102 | 45 |
| 31 | 40 | ------- | | | ------- | | ------- | 1,080 | ------- | 134 | 64 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 114 | 40 | 69.3 | 4,260 |
| November | ------- | ------- | 25.0 | 1,490 |
| December | ------- | ------- | 14.8 | 910 |
| January | ------- | ------- | 11.3 | 695 |
| February | ------- | ------- | 6.7 | 372 |
| March | ------- | ------- | 9.5 | 584 |
| April | 262 | ------- | 80.6 | 4,800 |
| May | 1,110 | 64 | 317 | 19,500 |
| June | 890 | 238 | 550 | 32,700 |
| July | 279 | 69 | 147 | 9,040 |
| August | 582 | 64 | 163 | 10,000 |
| September | 214 | 32 | 76.2 | 4,530 |
| The year | 1,110 | ------- | 123 | 88,900 |

## 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 7,092.12 feet above mean sea level.

DRAINAGE AREA.—235 square miles.

RECORDS AVAILABLE.—January, 1909, to December, 1911; May, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 1,850 second-feet May 31 (gage height, 3.20 feet); minimum, 14.8 second-feet Mar. 7.

1909–1911, 1929–30: Maximum discharge, 3,110 second-feet June 19, 1909; minimum, 10 second-feet Feb. 2, 3, 1911.

REMARKS.—Records good except those during winter, which were estimated because of ice. Diversions for irrigation above station. Flow partly regulated by Chambers Lake.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 148 | 44 | | | | | 38 | 401 | 1,530 | 275 | 252 | 217 |
| 2 | 137 | 66 | | | | | 43 | 506 | 1,030 | 280 | 241 | 248 |
| 3 | 202 | 61 | 35 | 30 | | | 42 | 572 | 840 | 317 | 201 | 248 |
| 4 | 179 | 70 | | | | | 42 | 472 | 762 | 379 | 230 | 379 |
| 5 | 154 | 94 | | | | | 41 | 386 | 655 | 342 | 241 | 398 |
| 6 | 142 | 90 | | | 20 | 15 | 45 | 327 | 801 | 424 | 237 | 424 |
| 7 | 142 | 90 | | | | | 45 | 302 | 1,190 | 424 | 288 | 393 |
| 8 | 240 | 87 | | | | | 48 | 269 | 1,310 | 398 | 255 | 370 |
| 9 | 218 | 90 | | | | | 59 | 265 | 1,410 | 393 | 227 | 365 |
| 10 | 199 | 81 | | | | | 74 | 240 | 1,440 | 398 | 259 | 347 |
| 11 | 156 | 72 | 40 | 30 | | | 87 | 224 | 1,370 | 409 | 296 | 170 |
| 12 | 146 | 62 | | | | | 101 | 211 | 1,600 | 430 | 304 | 113 |
| 13 | 158 | 45 | | | | 20 | 110 | 205 | 1,490 | 524 | 308 | 100 |
| 14 | 139 | 50 | | | | | 116 | 221 | 1,200 | 325 | 752 | 91 |
| 15 | 142 | 58 | | | | | 137 | 310 | 1,200 | 217 | 742 | 82 |
| 16 | 135 | 70 | | | 15 | | 135 | 372 | 952 | 198 | 599 | 77 |
| 17 | 142 | 65 | | | | | 126 | 372 | 762 | 181 | 517 | 72 |
| 18 | 139 | 58 | | | | 20 | 122 | 269 | 733 | 176 | 388 | 75 |
| 19 | 131 | 58 | | | | | 122 | 272 | 615 | 181 | 300 | 75 |
| 20 | 122 | 45 | | | | | 142 | 339 | 762 | 404 | 292 | 70 |
| 21 | 126 | 40 | 30 | 20 | | 30 | 139 | 541 | 896 | 379 | 255 | 75 |
| 22 | 122 | 45 | | | | 32 | 182 | 730 | 1,220 | 347 | 248 | 77 |
| 23 | 106 | 50 | | | | 34 | 202 | 489 | 1,000 | 304 | 217 | 78 |
| 24 | 90 | 50 | | | | 35 | 258 | 506 | 801 | 313 | 208 | 88 |
| 25 | 104 | 50 | | | 15 | 42 | 372 | 563 | 631 | 317 | 208 | 91 |
| 26 | 87 | 50 | | | | 33 | 433 | 679 | 591 | 296 | 192 | 91 |
| 27 | 101 | 50 | | | | 38 | 381 | 1,050 | 575 | 201 | 237 | 104 |
| 28 | 92 | 50 | 35 | 22 | | 35 | 343 | 1,430 | 538 | 211 | 201 | 102 |
| 29 | 89 | 50 | | | ------- | 40 | 318 | 1,440 | 477 | 370 | 234 | 100 |
| 30 | 72 | 45 | | | ------- | 43 | 335 | 1,710 | 459 | 404 | 227 | 94 |
| 31 | 89 | ------- | | | ------- | 43 | ------- | 1,940 | ------- | 292 | 241 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 240 | 72 | 137 | 8,420 |
| November | 94 | 40 | 61.2 | 3,640 |
| December | ------- | ------- | 35.0 | 2,150 |
| January | ------- | ------- | 25.2 | 1,550 |
| February | ------- | ------- | 16.8 | 933 |
| March | 43 | ------- | 24.4 | 1,500 |
| April | 433 | 38 | 155 | 9,220 |
| May | 1,940 | 205 | 568 | 34,900 |
| June | 1,600 | 459 | 963 | 57,300 |
| July | 524 | 176 | 326 | 20,000 |
| August | 752 | 192 | 303 | 18,600 |
| September | 424 | 70 | 174 | 10,400 |
| The year | 1,940 | ------- | 233 | 169,000 |

### 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 one-third mile above Little Beaver Creek.

DRAINAGE AREA.—69 square miles.

RECORDS AVAILABLE.—May, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 312 second-feet June 13 (gage height, 2.28 feet); minimum, 7.9 second-feet Mar. 9.

1929–30: Maximum discharge, 359 second-feet June 9, 1929 (gage height, 2.38 feet); minimum, that of Mar. 9, 1930.

REMARKS.—Records excellent except those during winter, which were estimated because of ice. Minor diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 40 | | | | | | | 48 | 234 | 94 | 81 | 44 |
| 2 | 40 | | | | | | | 59 | 171 | 96 | 70 | 40 |
| 3 | 48 | | | | | | | 78 | 144 | 94 | 100 | 39 |
| 4 | 40 | | | | | | | 59 | 141 | 85 | 151 | 39 |
| 5 | 38 | | | | | | | 50 | 134 | 76 | 136 | 39 |
| | | | | | | 8 | 18 | | | | | |
| 6 | 37 | | | | | | | 42 | 141 | 72 | 144 | 38 |
| 7 | 38 | | | | | | | 42 | 171 | 78 | 151 | 36 |
| 8 | 48 | 20 | 18 | 12 | 11 | | | 40 | 212 | 91 | 146 | 38 |
| 9 | 45 | | | | | | | 37 | 230 | 68 | 134 | 36 |
| 10 | 44 | | | | | | | 35 | 224 | 70 | 100 | 35 |
| 11 | 39 | | | | | | | 35 | 230 | 72 | 91 | 34 |
| 12 | 36 | | | | | | | 33 | 264 | 94 | 78 | 32 |
| 13 | 34 | | | | | | | 32 | 250 | 148 | 89 | 31 |
| 14 | 32 | | | | | | | 33 | 190 | 107 | 150 | 29 |
| 15 | 31 | | | | | | | 38 | 158 | 89 | 130 | 28 |
| | | | | | | 9 | 25 | | | | | |
| 16 | 31 | | | | | | | 37 | 158 | 64 | 122 | 27 |
| 17 | 31 | | | | | | | 37 | 158 | 66 | 107 | 27 |
| 18 | 31 | | | | | | | 36 | 156 | 70 | 94 | 26 |
| 19 | 31 | | | | | | | 39 | 151 | 81 | 81 | 26 |
| 20 | 29 | | | | | | | 38 | 164 | 85 | 74 | 24 |
| 21 | 28 | | | | | | | 68 | 193 | 78 | 70 | 24 |
| 22 | 27 | | | | 12 | | | 100 | 224 | 74 | 64 | 24 |
| 23 | 27 | 15 | 12 | 10 | | | | 68 | 184 | 64 | 61 | 24 |
| 24 | | | | | | | | 63 | 144 | 59 | 61 | 25 |
| 25 | | | | | | | 35 | 81 | 126 | 57 | 61 | 29 |
| | | | | | | 10 | | | | | | |
| 26 | | | | | | | | 94 | 119 | 55 | 63 | 26 |
| 27 | 25 | | | | | | | 151 | 117 | 45 | 64 | 27 |
| 28 | | | | | | | | 182 | 117 | 46 | 59 | 26 |
| 29 | | | | | ------- | | | 209 | 117 | 70 | 55 | 25 |
| 30 | | | | | ------- | | 45 | 240 | 105 | 94 | 50 | 25 |
| 31 | | ------- | | | ------- | | ------- | 271 | ------- | 81 | 45 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 48 | 25 | 33.1 | 2,040 |
| November | ---------- | ---------- | 17.5 | 1,040 |
| December | ---------- | ---------- | 14.9 | 916 |
| January | ---------- | ---------- | 11.0 | 676 |
| February | ---------- | ---------- | 11.5 | 639 |
| March | ---------- | ---------- | 9.03 | 555 |
| April | ---------- | ---------- | 26.3 | 1,560 |
| May | 271 | 32 | 76.6 | 4,710 |
| June | 264 | 105 | 171 | 10,200 |
| July | 148 | 45 | 78.2 | 4,810 |
| August | 151 | 45 | 93.0 | 5,720 |
| September | 44 | 24 | 30.8 | 1,830 |
| The year | 271 | ---------- | 47.9 | 34,700 |

## 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 5,717.13 feet above mean sea level.

DRAINAGE AREA.—541 square miles.

RECORDS AVAILABLE.—May, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 6,800 second-feet May 31 (gage height, 9.82 feet); minimum (estimated), 6 second-feet Jan. 16–31.

1929–30: Maximum discharge, that of May 31, 1930; minimum, that of Jan. 16–31, 1930.

Maximum flood known, 20,000 second-feet May 20, 1904 (gage height, 16.2 feet).

REMARKS.—Records good except those during winter, which were estimated because of ice. Diversions for irrigation above station. Flow regulated by Halligan Reservoir.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 14 | 16 | | | | | 8 | 8 | 451 | 9 | 12 | 34 |
| 2 | 14 | 16 | | | | | 8 | 8 | 355 | 10 | 9 | 35 |
| 3 | 14 | 14 | | | | | 10 | 8 | 298 | 10 | 7 | 35 |
| 4 | 13 | 16 | | | | 8 | 10 | 10 | 241 | 8 | 9 | 30 |
| 5 | 13 | 14 | | | | | 10 | 11 | 219 | 8 | 14 | 29 |
| 6 | 13 | 13 | | | 7 | | 13 | 9 | 179 | 8 | 14 | 33 |
| 7 | 13 | 13 | | | | 8 | 14 | 8 | 56 | 9 | 10 | 52 |
| 8 | 14 | 13 | 10 | 7 | | 7 | 16 | 9 | 39 | 7 | 11 | 51 |
| 9 | 16 | 14 | | | | 7 | 16 | 8 | 31 | 7 | 7 | 56 |
| 10 | 13 | | | | | 6 | 14 | 9 | 29 | 7 | 99 | 50 |
| 11 | 12 | | | | | 6 | 13 | 8 | 26 | 7 | 877 | 45 |
| 12 | 13 | | | | | 6 | 12 | 8 | 21 | 12 | 276 | 40 |
| 13 | 13 | | | | | 6 | 13 | 7 | 16 | 20 | 309 | 29 |
| 14 | 13 | | | | | 6 | 12 | 8 | 14 | 11 | 470 | 21 |
| 15 | 13 | 12 | | | | 6 | 11 | 8 | 13 | 10 | 459 | 20 |
| 16 | 11 | | | | | 6 | 10 | 10 | 12 | 8 | 258 | 18 |
| 17 | 13 | | | | 8 | 6 | 9 | 26 | 10 | 10 | 179 | 31 |
| 18 | 13 | | | | | 7 | 8 | 150 | 10 | 15 | 150 | 29 |
| 19 | 13 | | | | | 7 | 10 | 345 | 11 | 26 | 168 | 30 |
| 20 | 13 | | | | | 9 | 9 | 352 | 10 | 50 | 117 | 27 |
| 21 | 13 | | | | | 8 | 10 | 305 | 10 | 53 | 72 | 26 |
| 22 | 13 | | | | | 9 | 12 | 276 | 9 | 33 | 52 | 26 |
| 23 | 13 | | | | | 9 | 10 | 283 | 9 | 21 | 46 | 35 |
| 24 | 14 | | 9 | 6 | 9 | 8 | 425 | 294 | 10 | 17 | 44 | 39 |
| 25 | 13 | | | | 9 | 8 | 72 | 276 | 14 | 14 | 42 | 39 |
| 26 | 13 | 10 | | | 12 | 8 | 28 | 247 | 11 | 12 | 80 | 41 |
| 27 | 13 | | | | 10 | 8 | 14 | 226 | 9 | 11 | 62 | 51 |
| 28 | 14 | | | | 10 | 8 | 10 | 226 | 7 | 10 | 55 | 50 |
| 29 | 13 | | | | ------- | 7 | 10 | 183 | 9 | 10 | 55 | 48 |
| 30 | 14 | | | | ------- | 8 | 8 | 150 | 9 | 11 | 48 | 48 |
| 31 | 17 | ------- | | | ------- | 7 | ------- | 1,670 | ------- | 11 | 42 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 17 | 11 | 13.4 | 824 |
| November | 16 | 10 | 12.0 | 714 |
| December | ---------- | ---------- | 9.5 | 584 |
| January | ---------- | ---------- | 6.5 | 400 |
| February | • 12 | ---------- | 7.6 | 422 |
| March | 9 | 6 | 7.4 | 455 |
| April | 425 | 8 | 27.5 | 1,640 |
| May | 1,670 | 7 | 166 | 10,200 |
| June | 451 | 7 | 72.9 | 4,340 |
| July | 53 | 7 | 14.7 | 904 |
| August | 877 | 7 | 131 | 8,060 |
| September | 56 | 18 | 36.6 | 2,180 |
| The year | 1,670 | ---------- | 42.4 | 30,700 |

### 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 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, 1930.

EXTREMES.—Maximum discharge during year, 8,050 second-feet June 4 (gage height, 2.7 feet); minimum, 230 second-feet Nov. 23 (gage height, 0.30 foot). 1895–1897, 1899, 1903, 1928–1930: Maximum discharge, 16,000 second-feet June 6, 1896; minimum, that of Nov. 23, 1929.

REMARKS.—Records fair. No diversions or regulation.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,040 | 1,090 | 285 | 825 | 925 | 1,500 | 1,120 | 1,890 | 1,800 | 750 | 810 | 1,440 |
| 2 | 960 | 990 | | | | 1,300 | 1,300 | 1,470 | 2,380 | 750 | 962 | 1,380 |
| 3 | 1,110 | 945 | | | | 1,300 | 1,030 | 1,670 | 4,360 | 790 | 850 | 1,550 |
| 4 | 1,140 | 960 | | | | 1,400 | 1,320 | 1,410 | 7,870 | 640 | 830 | 1,520 |
| 5 | 1,140 | 812 | | | | 1,920 | 1,220 | 1,730 | 4,400 | 850 | 790 | 1,760 |
| 6 | 990 | 800 | 500 | | | 2,210 | 1,380 | 1,150 | 3,030 | 1,050 | 850 | 1,440 |
| 7 | 1,020 | 900 | | | | 1,920 | 1,320 | 939 | 1,410 | 730 | 1,030 | 1,470 |
| 8 | 960 | 960 | | | | 1,600 | 1,180 | 750 | 1,030 | 655 | 1,150 | 4,230 |
| 9 | 930 | 840 | | | | 1,300 | 1,180 | 1,120 | 1,100 | 625 | 1,280 | 3,750 |
| 10 | 900 | 1,040 | | 700 | | 1,030 | 1,320 | 1,120 | 1,610 | 810 | 1,520 | 1,730 |
| 11 | 930 | 1,020 | 550 | | 2,500 | 1,050 | 1,700 | 3,030 | 1,640 | 520 | 1,440 | 1,440 |
| 12 | 920 | 960 | | | | 1,180 | 2,020 | 4,940 | 1,800 | 640 | 1,890 | 1,180 |
| 13 | 900 | 990 | | | | 1,280 | 1,950 | 3,440 | 1,410 | 580 | 1,610 | 1,180 |
| 14 | 900 | 915 | | | | 1,250 | 2,460 | 2,150 | 6,720 | 550 | 2,210 | 1,150 |
| 15 | 930 | 850 | | | 5,800 | 1,520 | 3,440 | 1,950 | 6,540 | 640 | 2,350 | 1,120 |
| 16 | 920 | | 340 | | 5,400 | 1,150 | 3,100 | 2,120 | 2,560 | 750 | 1,670 | 893 |
| 17 | 900 | | | | 4,750 | 1,350 | 3,210 | 2,380 | 1,280 | 790 | 1,300 | 830 |
| 18 | 880 | | | | 5,600 | 1,520 | 3,210 | 2,850 | 1,050 | 730 | 1,220 | 893 |
| 19 | 900 | | | | 5,200 | 1,150 | 2,520 | 3,060 | 5,150 | 670 | 1,350 | 850 |
| 20 | 900 | 700 | | 650 | 4,070 | 1,250 | 1,700 | 2,280 | 7,470 | 640 | 3,590 | 790 |
| 21 | 960 | 300 | 450 | | 3,320 | 1,150 | 1,380 | 1,610 | 3,990 | 1,010 | 3,060 | 730 |
| 22 | 940 | | | | 3,030 | 1,050 | 1,120 | 1,470 | 2,020 | 870 | 1,410 | 730 |
| 23 | 990 | 230 | | | 2,180 | 1,030 | 1,250 | 1,730 | 1,380 | 830 | 1,220 | 710 |
| 24 | 870 | | | | 2,000 | 1,350 | 1,300 | 1,800 | 1,180 | 810 | 1,080 | 710 |
| 25 | 900 | | | | 1,830 | 1,550 | 1,500 | 1,920 | 1,180 | 790 | 1,080 | 962 |
| 26 | 880 | 500 | 675 | 750 | 1,900 | 1,280 | 2,250 | 1,950 | 1,120 | 655 | 1,050 | 1,050 |
| 27 | 870 | | | | 1,920 | 1,200 | 2,420 | 1,550 | 810 | 595 | 1,030 | 1,010 |
| 28 | 990 | | | | 1,670 | 1,350 | 1,520 | 1,890 | 710 | 625 | 1,010 | 893 |
| 29 | 1,390 | | | | ------- | 1,300 | 1,470 | 2,630 | 710 | 770 | 1,080 | 810 |
| 30 | 1,570 | 272 | | | ------- | 1,410 | 1,980 | 2,420 | 670 | 730 | 1,300 | 830 |
| 31 | 1,370 | ------- | | | ------- | 1,030 | ------- | 1,860 | ------- | 893 | 1,520 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 1,570 | 870 | 1,000 | 61,500 |
| November | 1,090 | 230 | 746 | 44,400 |
| December | ---------- | ---------- | 487 | 29,900 |
| January | ---------- | ---------- | 714 | 43,900 |
| February | 5,800 | ---------- | 2,420 | 134,000 |
| March | 2,210 | 1,030 | 1,350 | 83,000 |
| April | 3,440 | 1,030 | 1,800 | 107,000 |
| May | 4,940 | 750 | 2,010 | 124,000 |
| June | 7,870 | 670 | 2,610 | 155,000 |
| July | 1,050 | 520 | 733 | 45,100 |
| August | 3,590 | 790 | 1,400 | 86,100 |
| September | 4,230 | 710 | 1,300 | 77,400 |
| The year | 7,870 | ---------- | 1,370 | 991,000 |

## 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 1,542.0 feet above mean sea level.

DRAINAGE AREA.—13,400 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 11,200 second-feet June 4 (gage height, 3.2 feet); minimum (estimated), 550 second-feet Dec. 1–5.

1928–1930: Maximum discharge, 20,000 second-feet Mar. 12, 1929; minimum, that of Dec. 1–5, 1929.

REMARKS.—Records fair. No diversions or regulation.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2,340 | 2,160 | | | | 2,890 | 2,550 | 4,220 | 3,250 | 1,750 | 1,870 | 2,840 |
| 2 | 2,210 | 1,970 | | | | 2,800 | 2,620 | 3,550 | 3,330 | 1,740 | 1,860 | 2,710 |
| 3 | 2,230 | 1,860 | 550 | 1,650 | 1,900 | 2,700 | 2,550 | 3,410 | 5,370 | 1,740 | 1,860 | 2,730 |
| 4 | 2,780 | 1,800 | | | | 2,600 | 2,150 | 4,420 | 10,600 | 1,820 | 1,840 | 2,840 |
| 5 | 2,780 | 1,800 | | | | 2,300 | 2,160 | 4,110 | 10,000 | 1,880 | 1,800 | 2,470 |
| 6 | 2,940 | 1,660 | | | | 3,500 | 2,680 | 3,350 | 6,240 | 2,000 | 1,800 | 2,680 |
| 7 | 2,370 | 1,600 | | | | 4,670 | 2,680 | 4,420 | 2,940 | 2,280 | 1,900 | 3,190 |
| 8 | 2,360 | 1,700 | | 1,600 | 1,900 | 2,960 | 2,720 | 3,460 | 2,680 | 1,920 | 2,020 | 6,600 |
| 9 | 2,430 | 1,820 | | | | 2,240 | 2,560 | 4,780 | 2,940 | 1,700 | 2,500 | 5,860 |
| 10 | 2,410 | 2,090 | | | | 2,380 | 2,590 | 7,260 | 2,800 | 1,640 | 2,540 | 3,800 |
| 11 | 2,590 | 2,130 | 1,000 | | | 2,460 | 2,640 | 9,480 | 2,840 | 1,650 | 2,780 | 2,710 |
| 12 | 2,450 | 2,130 | | | | 2,410 | 3,070 | 8,540 | 2,800 | 1,570 | 2,910 | 2,500 |
| 13 | 2,340 | 2,160 | | 1,400 | 5,000 | 2,500 | 3,650 | 5,690 | 2,860 | 1,610 | 2,710 | 2,480 |
| 14 | 2,410 | 2,070 | | | | 2,480 | 3,730 | 4,930 | 5,640 | 1,560 | 2,710 | 2,450 |
| 15 | 2,340 | 1,970 | | | | 2,480 | 6,530 | 4,530 | 9,840 | 1,600 | 3,940 | 2,300 |
| 16 | 2,260 | 1,920 | | | 10,600 | 2,600 | 6,580 | 4,180 | 5,730 | 1,600 | 4,160 | 2,120 |
| 17 | 2,260 | 1,870 | | | 9,930 | 2,580 | 5,820 | 4,180 | 3,650 | 1,590 | 3,420 | 1,990 |
| 18 | 2,320 | 1,740 | | 1,300 | 8,700 | 2,730 | 6,520 | 4,560 | 2,940 | 1,630 | 2,840 | 1,970 |
| 19 | 2,340 | 1,700 | | | 10,300 | 2,700 | 5,010 | 4,420 | 3,020 | 1,620 | 2,540 | 1,890 |
| 20 | 2,320 | 1,300 | 800 | | 8,450 | 2,510 | 3,530 | 4,250 | 9,480 | 1,620 | 3,940 | 1,770 |
| 21 | 2,450 | | | | 6,400 | 2,680 | 3,730 | 3,310 | 5,820 | 1,740 | 4,660 | 1,740 |
| 22 | 2,410 | | | | 3,880 | 2,930 | 3,460 | 3,330 | 3,480 | 1,840 | 4,050 | 1,690 |
| 23 | 2,430 | 1,000 | | 1,450 | 3,310 | 3,150 | 3,230 | 3,350 | 2,830 | 1,700 | 2,780 | 1,620 |
| 24 | 2,300 | | | | 3,290 | 3,080 | 2,990 | 3,230 | 2,680 | 1,700 | 2,590 | 1,600 |
| 25 | 2,070 | | | | 3,530 | 3,210 | 3,020 | 3,190 | 3,070 | 1,660 | 3,060 | 1,650 |
| 26 | 1,990 | | | | 3,860 | 3,180 | 5,060 | 3,180 | 2,940 | 1,670 | 3,030 | 1,960 |
| 27 | 1,990 | | | | 3,600 | 3,020 | 5,870 | 3,330 | 1,850 | 1,640 | 2,100 | 2,260 |
| 28 | 2,320 | 800 | 1,400 | 1,600 | 3,460 | 2,840 | 4,750 | 3,630 | 1,780 | 1,590 | 2,130 | 2,280 |
| 29 | 2,610 | | | | ------- | 2,830 | 4,180 | 3,780 | 1,700 | 1,640 | 2,100 | 2,030 |
| 30 | 3,100 | | | | ------- | 2,830 | 5,980 | 3,730 | 1,740 | 1,630 | 2,200 | 2,080 |
| 31 | 2,500 | ------- | | | ------- | 2,700 | ------- | 3,650 | ------- | 1,660 | 2,360 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 3,100 | 1,990 | 2,410 | 148,000 |
| November | 2,160 | ---------- | 1,550 | 92,200 |
| December | ---------- | ---------- | 940 | 57,800 |
| January | ---------- | ---------- | 1,500 | 92,200 |
| February | 10,600 | ---------- | 4,400 | 244,000 |
| March | 4,670 | 2,240 | 2,820 | 173,000 |
| April | 6,580 | 2,150 | 3,820 | 227,000 |
| May | 9,480 | 3,180 | 4,370 | 269,000 |
| June | 10,600 | 1,700 | 4,280 | 252,000 |
| July | 2,280 | 1,560 | 1,710 | 105,000 |
| August | 4,660 | 1,800 | 2,680 | 165,000 |
| September | 6,600 | 1,600 | 2,560 | 152,000 |
| The year | 10,600 | ---------- | 2,680 | 1,980,000 |

### 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, 1930.
EXTREMES.—Maximum discharge during year, 9,850 second-feet June 14 (gage height, 3.4 feet); minimum, 225 second-feet Dec. 1–3.
1895–1897, 1899, 1903, 1928–1930: Maximum discharge (estimated), 90,000 second-feet June 6, 1896; minimum, that of Dec. 1–3, 1929.
REMARKS.—Records fair. No diversions.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 790 | 1,040 | 225 | 750 | 850 | 690 | 995 | 1,810 | 868 | 678 | 715 | 1,380 |
| 2 | 778 | 894 | | | | 1,000 | 920 | 1,780 | 842 | 654 | 715 | 842 |
| 3 | 740 | 881 | | | | | 855 | 1,420 | 3,160 | 740 | 702 | 894 |
| 4 | 1,150 | 868 | | | | | 868 | 1,400 | 1,780 | 790 | 740 | 868 |
| 5 | 1,230 | 816 | | | | | 1,040 | 1,250 | 3,770 | 855 | 765 | 816 |
| 6 | 1,070 | 790 | 450 | 650 | | 1,250 | 842 | 1,610 | 2,150 | 855 | 765 | 868 |
| 7 | 920 | 842 | | | | 881 | 868 | 1,250 | 1,090 | 790 | 752 | 868 |
| 8 | 829 | 790 | | | | 740 | 842 | 1,250 | 920 | 816 | 1,130 | 1,980 |
| 9 | 868 | 790 | | | | 868 | 829 | 1,420 | 935 | 740 | 1,090 | 1,190 |
| 10 | 868 | 980 | | | | 868 | 829 | 1,350 | 907 | 690 | 702 | 1,010 |
| 11 | 950 | 1,010 | 500 | | 2,000 | 907 | 920 | 2,110 | 935 | 690 | 728 | 920 |
| 12 | 920 | 765 | | | | 907 | 950 | 2,080 | 1,040 | 644 | 1,670 | 920 |
| 13 | 920 | 1,040 | | | | 950 | 935 | 2,040 | 1,040 | 581 | 1,020 | 894 |
| 14 | 907 | 800 | | | | 950 | 2,900 | 1,850 | 3,880 | 560 | 980 | 920 |
| 15 | 868 | | | | 3,200 | 995 | 2,010 | 1,670 | 1,110 | 665 | 950 | 868 |
| 16 | 868 | | 300 | 600 | 3,000 | 980 | 1,610 | 1,450 | 842 | 644 | 1,300 | 790 |
| 17 | 842 | | | | 2,600 | 1,010 | 3,110 | 1,500 | 816 | 665 | 965 | 715 |
| 18 | 842 | | | | 3,100 | 1,090 | 1,700 | 1,230 | 765 | 690 | 1,150 | 690 |
| 19 | 842 | 600 | | | 3,540 | 1,110 | 1,880 | 1,210 | 1,250 | 690 | 1,040 | 678 |
| 20 | 842 | | | | 2,110 | 1,110 | 1,670 | 1,400 | 2,410 | 665 | 2,080 | 715 |
| 21 | 816 | | 400 | | 1,700 | 1,190 | 1,580 | 1,400 | 1,350 | 740 | 1,530 | 715 |
| 22 | 842 | 350 | | | 1,250 | 1,150 | 1,530 | 1,250 | 1,190 | 715 | 1,110 | 690 |
| 23 | 868 | | | | 1,170 | 1,070 | 1,230 | 1,130 | 1,040 | 665 | 868 | 602 |
| 24 | 765 | | | | 1,230 | 1,170 | 1,250 | 935 | 920 | 665 | 2,770 | 623 |
| 25 | 778 | | | | 1,070 | 1,060 | 1,720 | 894 | 1,420 | 665 | 1,880 | 790 |
| 26 | 765 | 350 | 600 | 700 | 894 | 995 | 2,440 | 842 | 1,130 | 665 | 950 | 935 |
| 27 | 765 | | | | 816 | 1,020 | 1,810 | 765 | 829 | 678 | 920 | 842 |
| 28 | 894 | | | | 950 | 920 | 1,720 | 1,040 | 765 | 690 | 894 | 816 |
| 29 | 1,170 | | | | ------ | 980 | 2,220 | 1,190 | 665 | 715 | 790 | 790 |
| 30 | 1,190 | | | | ------ | 842 | 2,770 | 1,040 | 665 | 690 | 995 | 803 |
| 31 | 1,190 | ------ | | | ------ | 950 | ------ | 950 | ------ | 690 | 1,250 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 1,230 | 740 | 906 | 55,700 |
| November | 1,040 | ---------- | 682 | 40,600 |
| December | ---------- | ---------- | 433 | 26,600 |
| January | ---------- | ---------- | 660 | 40,600 |
| February | 3,540 | ---------- | 1,540 | 85,500 |
| March | ---------- | ---------- | 989 | 60,800 |
| April | 2,900 | 829 | 1,490 | 88,700 |
| May | 2,110 | 765 | 1,370 | 84,200 |
| June | 3,880 | 665 | 1,350 | 80,300 |
| July | 855 | 560 | 699 | 43,000 |
| August | 2,770 | 702 | 1,090 | 67,000 |
| September | 1,980 | 602 | 881 | 52,400 |
| The year | 3,880 | ---------- | 1,000 | 725,000 |

## ELKHORN RIVER AT WATERLOO, NEBR.

LOCATION.—Chain gage in sec. 10, T. 15 N., R. 10 E., at Waterloo. Zero of gage 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, 1930.

EXTREMES.—Maximum discharge during year, 12,600 second-feet May 12 (gage height, 8.3 feet); minimum probably occurred during December.

1911–1913, 1928–1930: Maximum discharge, that of May 12, 1930; minimum occurred during December, 1929.

REMARKS.—Records good except those during winter, which were estimated because of ice. No diversions.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 441 | 754 | | 992 | 685 | 2,860 | 1,200 | 649 | 241 | 1,300 |
| 2 | 430 | 839 | | 404 | 670 | 2,440 | 1,200 | 607 | 230 | 1,270 |
| 3 | 435 | 839 | 400 | 284 | 678 | 2,610 | 1,100 | 569 | 224 | 874 |
| 4 | 521 | 796 | | 446 | 693 | 2,570 | 1,140 | 563 | 227 | 628 |
| 5 | 521 | 731 | | 649 | 678 | 2,420 | 1,230 | 532 | 268 | 515 |
| 6 | 497 | 693 | | 964 | 656 | 2,710 | 1,390 | 515 | 1,340 | 469 |
| 7 | 503 | 663 | | 1,220 | 635 | 2,540 | 1,540 | 521 | 2,160 | 430 |
| 8 | 538 | 649 | 800 | 1,100 | 621 | 5,680 | 1,530 | 486 | 874 | 398 |
| 9 | 569 | 649 | | 1,020 | 614 | 6,490 | 1,580 | 469 | 569 | 404 |
| 10 | 563 | 685 | | 955 | 607 | 9,240 | 1,280 | 480 | 480 | 388 |
| 11 | 575 | 663 | | 883 | 607 | 11,500 | 1,220 | 458 | 521 | 424 |
| 12 | 581 | 693 | | 830 | 614 | 12,400 | 1,090 | 452 | 521 | 532 |
| 13 | 642 | 708 | 1,200 | 822 | 607 | 9,080 | 1,000 | 424 | 521 | 1,140 |
| 14 | 746 | 678 | | 848 | 621 | 6,980 | 2,400 | 398 | 383 | 746 |
| 15 | 693 | 693 | | 848 | 656 | 5,170 | 2,420 | 378 | 360 | 532 |
| 16 | 635 | 678 | 1,700 | 848 | 716 | 3,820 | 2,020 | 346 | 332 | 469 |
| 17 | 614 | 685 | 1,800 | 883 | 1,020 | 3,030 | 1,360 | 324 | 324 | 419 |
| 18 | 569 | 693 | 1,760 | 874 | 1,060 | 2,840 | 1,560 | 320 | 856 | 398 |
| 19 | 550 | 649 | 1,810 | 892 | 1,200 | 2,650 | 1,250 | 316 | 731 | 388 |
| 20 | 521 | 614 | 2,550 | 918 | 1,160 | 2,400 | 936 | 312 | 2,360 | 364 |
| 21 | 509 | 581 | 1,450 | 865 | 1,200 | 2,270 | 805 | 350 | 2,270 | 350 |
| 22 | 532 | 244 | 1,250 | 830 | 2,460 | 2,300 | 754 | 328 | 2,190 | 342 |
| 23 | 521 | 260 | 1,080 | 805 | 1,620 | 2,210 | 731 | 324 | 2,590 | 324 |
| 24 | 480 | 346 | 1,120 | 813 | 1,450 | 2,120 | 656 | 409 | 2,330 | 324 |
| 25 | 509 | 398 | 1,160 | 822 | 1,520 | 1,840 | 628 | 350 | 1,390 | 320 |
| 26 | 497 | 435 | 1,100 | 771 | 1,570 | 1,620 | 1,080 | 312 | 865 | 328 |
| 27 | 521 | 470 | 1,020 | 723 | 1,690 | 1,580 | 1,080 | 292 | 635 | 355 |
| 28 | 550 | 350 | 1,040 | 731 | 1,860 | 1,500 | 874 | 292 | 544 | 360 |
| 29 | 581 | 300 | ------- | 700 | 2,000 | 1,250 | 763 | 280 | 474 | 378 |
| 30 | 614 | 280 | ------- | 708 | 2,480 | 1,160 | 723 | 276 | 1,490 | 378 |
| 31 | 693 | ------- | ------- | 708 | ------- | 1,160 | ------- | 276 | 1,100 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 746 | 430 | 553 | 34,000 |
| November | 839 | 244 | 591 | 35,200 |
| December | ------- | ------- | 150 | 9,220 |
| January | ------- | ------- | 250 | 15,400 |
| February | 2,550 | ------- | 1,100 | 61,100 |
| March | 1,220 | 284 | 811 | 49,900 |
| April | 2,480 | 607 | 1,090 | 64,900 |
| May | 12,400 | 1,160 | 3,820 | 235,000 |
| June | 2,420 | 628 | 1,220 | 72,600 |
| July | 649 | 276 | 407 | 25,000 |
| August | 2,590 | 224 | 948 | 58,300 |
| September | 1,300 | 320 | 518 | 30,800 |
| The year | 12,400 | ------- | 955 | 691,000 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 1,560 second-feet June 19 (gage height, 6.86 feet); minimum, 18 second-feet Sept. 26 (gage height, 0.20 foot).

1922–1930: 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 fair except those for periods of ice effect, Nov. 20–25, 28–30, Dec. 1–9, 17–31, Jan. 1–31, Feb. 1–9, 15–17, Mar. 2–4, which are poor.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 70 | 484 | 80 | 144 | 70 | 110 | 86 | 116 | 97 | 160 | 36 | 42 |
| 2 | 70 | 330 | 103 | 160 | 70 | 116 | 86 | 97 | 97 | 136 | 32 | 39 |
| 3 | 75 | 258 | 116 | 160 | 70 | 103 | 86 | 91 | 91 | 129 | 29 | 29 |
| 4 | 230 | 230 | 160 | 160 | 80 | 116 | 86 | 80 | 97 | 116 | 28 | 28 |
| 5 | 110 | 221 | 176 | 160 | 91 | 136 | 80 | 75 | 194 | 103 | 28 | 31 |
| 6 | 97 | 212 | 194 | 160 | 129 | 116 | 80 | 103 | 288 | 97 | 26 | 28 |
| 7 | 86 | 194 | 194 | 160 | 700 | 136 | 75 | 604 | 136 | 91 | 26 | 31 |
| 8 | 80 | 194 | 176 | 160 | 580 | 116 | 75 | 239 | 110 | 86 | 25 | 26 |
| 9 | 330 | 185 | 176 | 144 | 462 | 116 | 75 | 176 | 103 | 80 | 28 | 288 |
| 10 | 230 | 230 | 194 | 129 | 484 | 110 | 75 | 168 | 97 | 75 | 70 | 60 |
| 11 | 160 | 194 | 212 | 116 | 288 | 103 | 70 | 628 | 97 | 70 | 31 | 51 |
| 12 | 129 | 374 | 194 | 103 | 288 | 97 | 70 | 352 | 91 | 70 | 34 | 44 |
| 13 | 110 | 330 | 185 | 91 | 194 | 97 | 80 | 203 | 91 | 70 | 36 | 40 |
| 14 | 103 | 374 | 185 | 91 | 152 | 103 | 80 | 160 | 308 | 65 | 32 | 46 |
| 15 | 97 | 308 | 176 | 80 | 103 | 103 | 152 | 160 | 374 | 58 | 29 | 32 |
| 16 | 97 | 258 | 176 | 80 | 116 | 91 | 110 | 144 | 194 | 60 | 42 | 28 |
| 17 | 97 | 248 | 144 | 80 | 194 | 168 | 97 | 152 | 122 | 56 | 32 | 26 |
| 18 | 97 | 221 | 116 | 80 | 212 | 160 | 86 | 268 | 116 | 53 | 288 | 24 |
| 19 | 1,280 | 212 | 60 | 70 | 221 | 136 | 86 | 203 | 1,560 | 48 | 86 | 21 |
| 20 | 556 | 160 | 51 | 70 | 221 | 122 | 80 | 176 | 230 | 47 | 65 | 20 |
| 21 | 176 | 116 | 51 | 70 | 212 | 110 | 91 | 136 | 168 | 53 | 55 | 21 |
| 22 | 185 | 116 | 51 | 70 | 212 | 103 | 86 | 144 | 144 | 53 | 47 | 20 |
| 23 | 160 | 144 | 51 | 70 | 176 | 103 | 80 | 176 | 129 | 51 | 37 | 20 |
| 24 | 136 | 194 | 51 | 70 | 168 | 97 | 80 | 136 | 122 | 49 | 36 | 19 |
| 25 | 136 | 212 | 51 | 70 | 160 | 97 | 70 | 122 | 116 | 47 | 31 | 20 |
| 26 | 136 | 194 | 60 | 70 | 136 | 91 | 97 | 116 | 248 | 40 | 31 | 18 |
| 27 | 129 | 194 | 70 | 70 | 129 | 86 | 86 | 116 | 129 | 36 | 29 | 20 |
| 28 | 700 | 144 | 91 | 70 | 129 | 91 | 80 | 110 | 122 | 34 | 32 | 20 |
| 29 | 418 | 80 | 116 | 70 | ------- | 91 | 103 | 110 | 110 | 34 | 91 | 20 |
| 30 | 508 | 80 | 129 | 70 | ------- | 91 | 136 | 103 | 440 | 34 | 49 | 20 |
| 31 | 1,210 | ------- | 144 | 70 | ------- | 91 | ------- | 103 | ------- | 37 | 80 | ------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 1,280 | 70 | 258 | 0.508 | 0.59 |
| November | 484 | 80 | 223 | .439 | .49 |
| December | 212 | 51 | 127 | .250 | .29 |
| January | 160 | 70 | 102 | .201 | .23 |
| February | 700 | 70 | 216 | .425 | .44 |
| March | 168 | 86 | 110 | .217 | .25 |
| April | 152 | 70 | 87.5 | .172 | .19 |
| May | 628 | 75 | 180 | .354 | .41 |
| June | 1,560 | 91 | 207 | .407 | .45 |
| July | 160 | 34 | 69.0 | .136 | .16 |
| August | 288 | 25 | 49.1 | .097 | .11 |
| September | 288 | 18 | 37.7 | .074 | .08 |
| The year | 1,560 | 18 | 138 | .272 | 3.69 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 6,220 second-feet May 7 (gage height, 11.20 feet); minimum, 15 second-feet Sept. 18–20.

1922–1930: 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.

ACCURACY.—Records fair except those for periods of ice effect, Nov. 20–26, 29, 30, Dec. 1–4, 18–31, Jan. 1–31, Feb. 1–8, 15–17, Mar. 2–4, which are poor. Discharge estimated Mar. 19–21.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 53 | 1,830 | 132 | 243 | 90 | 275 | 170 | 275 | 138 | 206 | 44 | 62 |
| 2 | 52 | 1,050 | 132 | 243 | 90 | 156 | 156 | 275 | 134 | 193 | 39 | 65 |
| 3 | 52 | 669 | 183 | 243 | 110 | 110 | 156 | 243 | 220 | 158 | 36 | 62 |
| 4 | 58 | 415 | 212 | 243 | 132 | 156 | 151 | 183 | 266 | 143 | 34 | 51 |
| 5 | 90 | 342 | 275 | 243 | 156 | 198 | 146 | 144 | 850 | 136 | 36 | 36 |
| 6 | 72 | 342 | 275 | 243 | 243 | 156 | 137 | 156 | 3,810 | 125 | 34 | 39 |
| 7 | 65 | 275 | 275 | 243 | 497 | 121 | 132 | 4,600 | 2,040 | 109 | 34 | 33 |
| 8 | 58 | 259 | 275 | 212 | 1,550 | 79 | 110 | 2,280 | 910 | 119 | 51 | 26 |
| 9 | 72 | 243 | 259 | 183 | 1,980 | 47 | 114 | 1,450 | 350 | 113 | 51 | 36 |
| 10 | 259 | 275 | 275 | 156 | 1,280 | 50 | 106 | 2,200 | 298 | 107 | 52 | 56 |
| 11 | 151 | 228 | 308 | 156 | 1,100 | 65 | 102 | 2,910 | 220 | 100 | 67 | 65 |
| 12 | 170 | 275 | 1,000 | 156 | 1,410 | 79 | 94 | 1,800 | 206 | 91 | 56 | 46 |
| 13 | 84 | 581 | 950 | 132 | 1,280 | 132 | 128 | 970 | 206 | 91 | 46 | 28 |
| 14 | 80 | 854 | 435 | 132 | 854 | 170 | 151 | 500 | 2,910 | 88 | 46 | 24 |
| 15 | 76 | 761 | 292 | 110 | 497 | 170 | 156 | 402 | 4,000 | 73 | 45 | 30 |
| 16 | 60 | 669 | 308 | 90 | 243 | 170 | 292 | 368 | 2,120 | 72 | 51 | 22 |
| 17 | 52 | 497 | 275 | 90 | 308 | 183 | 243 | 630 | 1,520 | 72 | 46 | 21 |
| 18 | 43 | 415 | 156 | 90 | 667 | 435 | 275 | 730 | 970 | 62 | 206 | 15 |
| 19 | 63 | 308 | 65 | 90 | 807 | 405 | 228 | 540 | 585 | 54 | 250 | 15 |
| 20 | 415 | 243 | 56 | 76 | 854 | 375 | 212 | 440 | 500 | 54 | 119 | 15 |
| 21 | 342 | 183 | 56 | 76 | 854 | 345 | 228 | 440 | 350 | 65 | 80 | 16 |
| 22 | 243 | 156 | 56 | 76 | 761 | 308 | 292 | 282 | 282 | 70 | 67 | 18 |
| 23 | 106 | 156 | 65 | 76 | 625 | 275 | 415 | 585 | 235 | 65 | 59 | 16 |
| 24 | 94 | 183 | 76 | 76 | 539 | 212 | 259 | 500 | 220 | 54 | 56 | 18 |
| 25 | 84 | 212 | 90 | 76 | 497 | 212 | 198 | 480 | 1,240 | 56 | 49 | 16 |
| 26 | 76 | 212 | 110 | 76 | 396 | 183 | 212 | 282 | 680 | 56 | 46 | 16 |
| 27 | 74 | 243 | 132 | 76 | 342 | 183 | 183 | 220 | 266 | 50 | 44 | 18 |
| 28 | 106 | 228 | 156 | 76 | 325 | 183 | 198 | 193 | 193 | 45 | 39 | 19 |
| 29 | 292 | 183 | 183 | 76 | ------ | 170 | 183 | 170 | 182 | 44 | 67 | 18 |
| 30 | 308 | 156 | 212 | 76 | ------ | 183 | 198 | 158 | 1,660 | 41 | 56 | 19 |
| 31 | 3,020 | ------ | 243 | 76 | ------ | 183 | ------ | 147 | ------ | 46 | 85 | ------ |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 3,020 | 43 | 218 | 0.176 | 0.20 |
| November | 1,830 | 156 | 415 | .335 | .37 |
| December | 1,000 | 56 | 242 | .195 | .22 |
| January | 243 | 76 | 136 | .110 | .13 |
| February | 1,980 | 90 | 660 | .532 | .55 |
| March | 435 | 47 | 193 | .156 | .18 |
| April | 415 | 94 | 188 | .152 | .17 |
| May | 4,600 | 144 | 792 | .639 | .74 |
| June | 4,000 | 134 | 919 | .741 | .83 |
| July | 206 | 41 | 89.0 | .072 | .08 |
| August | 250 | 34 | 64.2 | .052 | .06 |
| September | 65 | 15 | 30.7 | .025 | .03 |
| The year | 4,600 | 15 | 325 | .262 | 3.56 |

## 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 one-half 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, 4,200 second-feet June 16 (gage height, 14.02 feet); minimum, 2.7 second-feet Sept. 28 (gage height, 4.58 feet). 1921–1925, 1928–1930: Maximum discharge, 12,200 second-feet July 6, 1929 (gage height, 21.70 feet); minimum, 0.48 second-foot Jan. 30, 1922.

REMARKS.—Records fair except those for periods of ice effect, Nov. 28 to Dec. 11, Dec. 19 to Feb. 8, which are poor. Discharge estimated Nov. 2, May 13–17, July 8–10.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 8 | 510 | 37 | 49 | 13 | 168 | 42 | 45 | 60 | 228 | 8 | 39 |
| 2 | 9 | 362 | 37 | 49 | 13 | 53 | 42 | 64 | 53 | 218 | 7 | 30 |
| 3 | 10 | 214 | 37 | 49 | 13 | 45 | 22 | 68 | 49 | 178 | 8 | 33 |
| 4 | 12 | 98 | 37 | 49 | 18 | 45 | 20 | 64 | 56 | 150 | 7 | 26 |
| 5 | 13 | 57 | 37 | 49 | 26 | 36 | 17 | 56 | 208 | 42 | 6 | 15 |
| 6 | 9 | 24 | 49 | 49 | 37 | 33 | 12 | 60 | 531 | 22 | 7 | 10 |
| 7 | 10 | 57 | 49 | 49 | 62 | 30 | 10 | 990 | 250 | 20 | 5 | 7 |
| 8 | 11 | 49 | 49 | 8 | 77 | 30 | 9 | 655 | 208 | 19 | 7 | 8 |
| 9 | 14 | 18 | 62 | 13 | 234 | 33 | 8 | 330 | 188 | 18 | 6 | 6 |
| 10 | 108 | 21 | 62 | 18 | 239 | 30 | 9 | 106 | 72 | 16 | 8 | 8 |
| 11 | 224 | 20 | 77 | 18 | 218 | 26 | 7 | 442 | 64 | 15 | 9 | 7 |
| 12 | 37 | 17 | 89 | 18 | 228 | 26 | 7 | 306 | 60 | 12 | 7 | 6 |
| 13 | 49 | 68 | 98 | 18 | 218 | 24 | 9 | 228 | 60 | 10 | 8 | 5 |
| 14 | 14 | 510 | 105 | 18 | 198 | 24 | 10 | 159 | 42 | 11 | 6 | 33 |
| 15 | 12 | 323 | 92 | 13 | 102 | 22 | 208 | 106 | 1,420 | 7 | 5 | 30 |
| 16 | 11 | 323 | 82 | 13 | 150 | 20 | 442 | 117 | 3,480 | 7 | 7 | 24 |
| 17 | 11 | 57 | 78 | 13 | 208 | 30 | 306 | 140 | 1,660 | 3 | 33 | 12 |
| 18 | 10 | 49 | 32 | 13 | 188 | 198 | 102 | 717 | 386 | 11 | 218 | 15 |
| 19 | 9 | 42 | 26 | 13 | 121 | 198 | 121 | 414 | 239 | 11 | 42 | 12 |
| 20 | 169 | 37 | 26 | 13 | 121 | 188 | 94 | 330 | 208 | 10 | 30 | 10 |
| 21 | 125 | 35 | 26 | 13 | 113 | 130 | 72 | 208 | 150 | 12 | 12 | 10 |
| 22 | 57 | 30 | 26 | 13 | 110 | 72 | 68 | 94 | 117 | 14 | 10 | 9 |
| 23 | 12 | 18 | 26 | 13 | 113 | 83 | 64 | 2,300 | 94 | 11 | 9 | 10 |
| 24 | 11 | 15 | 37 | 13 | 198 | 91 | 56 | 1,510 | 83 | 10 | 7 | 9 |
| 25 | 20 | 97 | 37 | 8 | 208 | 79 | 45 | 386 | 414 | 7 | 8 | 7 |
| 26 | 15 | 92 | 37 | 8 | 188 | 72 | 36 | 208 | 748 | 6 | 6 | 4 |
| 27 | 13 | 62 | 37 | 8 | 188 | 64 | 36 | 198 | 208 | 10 | 7 | 3 |
| 28 | 20 | 49 | 37 | 8 | 178 | 56 | 39 | 188 | 198 | 10 | 5 | 2.7 |
| 29 | 125 | 37 | 49 | 8 | ------- | 45 | 30 | 178 | 106 | 10 | 5 | 3 |
| 30 | 214 | 37 | 49 | 8 | ------- | 45 | 42 | 60 | 1,860 | 10 | 8 | 4 |
| 31 | 1,860 | ------- | 49 | 8 | ------- | 49 | ------- | 62 | ------- | 7 | 49 | ------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 1,860 | 8 | 104 | 0.211 | 0.24 |
| November | 510 | 15 | 111 | .226 | .25 |
| December | 105 | 26 | 50.7 | .103 | .12 |
| January | 49 | 8 | 20.6 | .042 | .05 |
| February | 239 | 13 | 135 | .274 | .29 |
| March | 198 | 20 | 66.0 | .134 | .15 |
| April | 442 | 7 | 66.2 | .135 | .15 |
| May | 2,300 | 45 | 348 | .707 | .82 |
| June | 3,480 | 42 | 442 | .898 | 1.00 |
| July | 228 | 3 | 35.9 | .073 | .08 |
| August | 218 | 5 | 18.1 | .037 | .04 |
| September | 39 | 2.7 | 13.3 | .027 | .03 |
| The year | 3,480 | 2.7 | 117 | .238 | 3.22 |

## PLATTE RIVER AT AGENCY, MO.

LOCATION.—Chain gage in NE. ¼ sec. 29, T. 56 N., R. 34 W., at highway bridge in Agency.

DRAINAGE AREA.—1,790 square miles.

RECORDS AVAILABLE.—May, 1924, to August, 1930 (discontinued).

EXTREMES.—Maximum discharge during year, 6,690 second-feet June 6 (gage height, 14.66 feet); minimum, 28 second-feet Aug. 6, 9 (gage height, 1.73 feet).

1924–1930: Maximum discharge, 22,600 second-feet Sept. 18, 1926 (gage height, 26.83 feet); minimum discharge, 24 second-feet several days during September and December, 1927, and January, 1928; minimum gage height, 1.42 feet Jan. 30, 31, 1928.

Maximum stage known, 31.4 feet in July, 1915.

REMARKS.—Records good except those for periods of ice effect, Dec. 2–4, 19–29, Jan. 5 to Feb. 8, which are poor.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 47 | 4,450 | 174 | 190 | 78 | 458 | 151 | 1,070 | 193 | 1,750 | 33 |
| 2 | 47 | 4,000 | 168 | 228 | 78 | 354 | 163 | 654 | 171 | 1,750 | 35 |
| 3 | 41 | 3,780 | 144 | 278 | 98 | 228 | 149 | 1,280 | 158 | 414 | 30 |
| 4 | 39 | 1,120 | 144 | 315 | 98 | 163 | 144 | 706 | 149 | 244 | 34 |
| 5 | 42 | 552 | 151 | 120 | 144 | 244 | 139 | 334 | 4,500 | 171 | 29 |
| 6 | 47 | 436 | 156 | 120 | 168 | 296 | 120 | 260 | 6,690 | 134 | 28 |
| 7 | 47 | 374 | 190 | 120 | 334 | 296 | 116 | 1,540 | 4,950 | 151 | 30 |
| 8 | 58 | 374 | 196 | 98 | 654 | 260 | 111 | 3,240 | 2,320 | 109 | 31 |
| 9 | 154 | 296 | 244 | 98 | 3,680 | 244 | 109 | 3,080 | 1,020 | 94 | 28 |
| 10 | 112 | 278 | 244 | 98 | 3,510 | 228 | 102 | 1,640 | 602 | 92 | ------- |
| 11 | 1,070 | 278 | 260 | 98 | 2,810 | 260 | 90 | 1,020 | 414 | 82 | ------- |
| 12 | 1,020 | 278 | 296 | 98 | 2,260 | 202 | 94 | 914 | 334 | 706 | ------- |
| 13 | 1,020 | 374 | 334 | 78 | 1,640 | 225 | 88 | 1,070 | 278 | 458 | ------- |
| 14 | 914 | 504 | 354 | 78 | 528 | 202 | 96 | 862 | 244 | 334 | ------- |
| 15 | 174 | 1,170 | 374 | 78 | 414 | 166 | 185 | 577 | 706 | 260 | ------- |
| 16 | 125 | 1,230 | 374 | 78 | 414 | 156 | 914 | 394 | 1,380 | 215 | ------- |
| 17 | 105 | 914 | 374 | 78 | 552 | 166 | 1,490 | 315 | 2,920 | 174 | ------- |
| 18 | 88 | 914 | 374 | 78 | 862 | 215 | 862 | 1,590 | 3,840 | 130 | ------- |
| 19 | 86 | 628 | 334 | 78 | 810 | 1,070 | 706 | 966 | 862 | 94 | ------- |
| 20 | 244 | 504 | 228 | 78 | 810 | 810 | 481 | 1,070 | 528 | 63 | ------- |
| 21 | 315 | 394 | 168 | 78 | 914 | 602 | 374 | 810 | 414 | 54 | ------- |
| 22 | 602 | 315 | 144 | 78 | 914 | 458 | 296 | 602 | 481 | 109 | ------- |
| 23 | 414 | 278 | 120 | 78 | 810 | 354 | 244 | 1,020 | 334 | 54 | ------- |
| 24 | 222 | 278 | 120 | 78 | 706 | 315 | 228 | 3,080 | 260 | 71 | ------- |
| 25 | 154 | 278 | 98 | 78 | 810 | 260 | 212 | 3,240 | 334 | 68 | ------- |
| 26 | 125 | 354 | 98 | 78 | 1,430 | 218 | 218 | 1,430 | 278 | 60 | ------- |
| 27 | 118 | 278 | 98 | 78 | 810 | 222 | 228 | 758 | 1,490 | 46 | ------- |
| 28 | 130 | 260 | 98 | 78 | 577 | 196 | 244 | 458 | 758 | 41 | ------- |
| 29 | 862 | 209 | 120 | 78 | ------- | 179 | 228 | 334 | 458 | 37 | ------- |
| 30 | 914 | 209 | 149 | 78 | ------- | 171 | 228 | 260 | 244 | 35 | ------- |
| 31 | 1,120 | ------- | 202 | 78 | ------- | 171 | ------- | 222 | ------- | 31 | ------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 1,120 | 39 | 337 | 0.188 | 0.22 |
| November | 4,450 | 209 | 844 | .472 | .53 |
| December | 374 | 98 | 211 | .118 | .14 |
| January | 315 | 78 | 108 | .060 | .07 |
| February | 3,680 | 78 | 961 | .537 | .56 |
| March | 1,070 | 156 | 303 | .169 | .19 |
| April | 1,490 | 88 | 294 | .164 | .18 |
| May | 3,240 | 222 | 1,120 | .626 | .72 |
| June | 6,690 | 149 | 1,240 | .693 | .77 |
| July | 1,750 | 31 | 259 | .145 | .17 |
| August 1–9 | 35 | 28 | 30.9 | .017 | .006 |

## KANSAS RIVER BASIN

### REPUBLICAN RIVER AT MAX, NEBR.

LOCATION.—Staff gage in sec. 32, T. 2 N., R. 36 W., three-fourths mile south of Max. Zero of gage 2,873.6 feet above mean sea level.
DRAINAGE AREA.—6,220 square miles.
RECORDS AVAILABLE.—August, 1928, to September, 1930.
EXTREMES.—Maximum discharge during year, 1,810 second-feet June 4 (gage height, 2.90 feet); no flow July 11, 12.
1928–1930: Maximum discharge, that of June 4, 1930; no flow for parts of July and August, 1929, and July, 1930.
REMARKS.—Records good. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 88 | 224 | -------- | 196 | 158 | 132 | 196 | 17 | 100 | 127 |
| 2 | 88 | 212 | -------- | 184 | 176 | 127 | 208 | 17 | 87 | 122 |
| 3 | 84 | 190 | -------- | 172 | 172 | 127 | 196 | 16 | 74 | 118 |
| 4 | 163 | 185 | -------- | 154 | 172 | 114 | 1,290 | 17 | 57 | 127 |
| 5 | 127 | 180 | -------- | 163 | 158 | 122 | 674 | 13 | 66 | 104 |
| 6 | 114 | 202 | -------- | 150 | 172 | 118 | 349 | 11 | 78 | 83 |
| 7 | 99 | 207 | -------- | 140 | 176 | 109 | 266 | 8 | 61 | 74 |
| 8 | 99 | 261 | -------- | 127 | 176 | 118 | 226 | 4 | 57 | 585 |
| 9 | 95 | 230 | -------- | 127 | 181 | 118 | 208 | 4 | 53 | 196 |
| 10 | 84 | 230 | -------- | 181 | 181 | 168 | 190 | 1 | 57 | 136 |
| 11 | 103 | 224 | -------- | 158 | 158 | 358 | 220 | 0 | 57 | 127 |
| 12 | 107 | 218 | -------- | 176 | 181 | 353 | 202 | 0 | 181 | 100 |
| 13 | 110 | 140 | -------- | 181 | 190 | 322 | 186 | 104 | 181 | 96 |
| 14 | 107 | 145 | -------- | 176 | 168 | 266 | 176 | 45 | 238 | 104 |
| 15 | 99 | | 186 | 163 | 181 | 266 | 163 | 33 | 530 | 145 |
| 16 | 99 | 150 | 154 | 154 | 208 | 258 | 136 | 17 | 306 | 145 |
| 17 | 95 | | 181 | 154 | 226 | 456 | 127 | 15 | 282 | 127 |
| 18 | 95 | | 176 | 172 | 208 | 509 | 122 | 16 | 232 | 109 |
| 19 | 114 | | 196 | 226 | 208 | 488 | 154 | 11 | 176 | 100 |
| 20 | 114 | 154 | 186 | 226 | 190 | 456 | 154 | 8 | 154 | 91 |
| 21 | 99 | 91 | 196 | 190 | 172 | 378 | 145 | 140 | 140 | 83 |
| 22 | 95 | | 202 | 190 | 158 | 282 | 127 | 282 | 140 | 74 |
| 23 | 103 | | 202 | 186 | 136 | 266 | 104 | 172 | 140 | 74 |
| 24 | 88 | | 226 | 154 | 140 | 250 | 96 | 238 | 158 | 70 |
| 25 | 103 | 130 | 226 | 154 | 163 | 244 | 83 | 154 | 186 | 83 |
| 26 | 122 | | 220 | 158 | 196 | 214 | 61 | 132 | 158 | 100 |
| 27 | 127 | | 220 | 140 | 196 | 196 | 45 | 109 | 150 | 91 |
| 28 | 140 | | 232 | 122 | 168 | 190 | 41 | 91 | 145 | 100 |
| 29 | 174 | 140 | -------- | 140 | 145 | 190 | 21 | 66 | 154 | 91 |
| 30 | 243 | 107 | -------- | 145 | 154 | 214 | 17 | 109 | 150 | 78 |
| 31 | 196 | -------- | -------- | 145 | -------- | 208 | -------- | 114 | 140 | -------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 243 | 84 | 115 | 7,070 |
| November | 261 | 91 | 167 | 9,940 |
| February 15–28 | 232 | 154 | 200 | 5,550 |
| March | 226 | 122 | 165 | 10,100 |
| April | 226 | 136 | 176 | 10,500 |
| May | 509 | 109 | 246 | 15,100 |
| June | 1,290 | 17 | 206 | 12,300 |
| July | 282 | 0 | 63.4 | 3,900 |
| August | 530 | 53 | 151 | 9,280 |
| September | 585 | 70 | 122 | 7,260 |

## 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 1,822.5 feet above mean sea level.

DRAINAGE AREA.—19,000 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 11,000 second-feet June 5 (gage height, 8.54 feet); minimum, 125 second-feet Oct. 1 (gage height, 0.74 foot). 1929–30: Maximum discharge, that of June 5, 1930; minimum, 109 second-feet Sept. 3, 1929.

REMARKS.—Records good except those during winter, which were estimated because of ice. Minor diversions for irrigation.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 126 | 342 | | | | 565 | 454 | 3,380 | 618 | 472 | 284 | 1,320 |
| 2 | 134 | 339 | | | | 550 | 444 | 2,100 | 612 | 424 | 263 | 797 |
| 3 | 145 | 368 | | | | 540 | 444 | 1,150 | 607 | 408 | 254 | 530 |
| 4 | 149 | 350 | | | | 530 | 458 | 959 | 4,510 | 384 | 272 | 436 |
| 5 | 149 | 336 | | | | 530 | 449 | 912 | 10,800 | 356 | 272 | 436 |
| 6 | 149 | 336 | 425 | 375 | 400 | 520 | 444 | 1,480 | 7,660 | 336 | 263 | 2,220 |
| 7 | 162 | 332 | | | | 510 | 454 | 980 | 4,140 | 318 | 254 | 1,850 |
| 8 | 190 | 339 | | | | 505 | 436 | 797 | 2,370 | 297 | 215 | 1,940 |
| 9 | 202 | 372 | | | | 525 | 428 | 707 | 1,870 | 281 | 200 | 2,270 |
| 10 | 210 | 368 | | | | 530 | 424 | 1,140 | 3,550 | 263 | 198 | 1,970 |
| 11 | 678 | 376 | | | | 505 | 412 | 1,420 | 4,650 | 254 | 190 | 1,240 |
| 12 | 646 | 420 | | | | 495 | 420 | 2,780 | 2,630 | 245 | 180 | 1,180 |
| 13 | 1,120 | | | | | 495 | 428 | 2,530 | 1,710 | 233 | 173 | 952 |
| 14 | 428 | | | | | 490 | 440 | 1,590 | 1,330 | 230 | 176 | 785 |
| 15 | 275 | 400 | 400 | 320 | | 485 | 500 | 1,330 | 1,110 | 225 | 185 | 684 |
| 16 | 248 | | | | 450 | 480 | 1,960 | 1,200 | 980 | 222 | 590 | 575 |
| 17 | 228 | | | | | 490 | 1,580 | 1,210 | 886 | 233 | 1,900 | 476 |
| 18 | 218 | 436 | | | | 490 | 2,100 | 1,390 | 815 | 322 | 1,120 | 404 |
| 19 | 236 | 376 | | | | 490 | 2,890 | 2,150 | 2,580 | 304 | 737 | 360 |
| 20 | 218 | 440 | | | | 490 | 1,540 | 2,150 | 3,310 | 284 | 719 | 339 |
| 21 | 251 | 449 | | | | 480 | 1,020 | 1,650 | 2,820 | 275 | 791 | 325 |
| 22 | 222 | 444 | | | | 480 | 809 | 1,400 | 1,530 | 263 | 900 | 308 |
| 23 | 202 | | | | 634 | 495 | 725 | 1,200 | 1,440 | 822 | 803 | 275 |
| 24 | 200 | | | | 634 | 485 | 652 | 1,110 | 1,390 | 1,710 | 749 | 254 |
| 25 | 185 | | | | 607 | 467 | 640 | 994 | 1,060 | 1,280 | 634 | 254 |
| 26 | 195 | 450 | 375 | 350 | 590 | 454 | 710 | 874 | 932 | 926 | 525 | 242 |
| 27 | 195 | | | | 570 | 444 | 791 | 809 | 803 | 565 | 460 | 236 |
| 28 | 212 | | | | 565 | 444 | 809 | 785 | 662 | 436 | 396 | 228 |
| 29 | 222 | | | | ------ | 444 | 822 | 701 | 570 | 384 | 332 | 222 |
| 30 | 263 | | | | ------ | 472 | 874 | 1,240 | 515 | 342 | 304 | 218 |
| 31 | 325 | ------ | | | ------ | 454 | ------ | 743 | ------ | 339 | 1,700 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 1,120 | 126 | 270 | 16,600 |
| November | ------ | 332 | 401 | 23,900 |
| December | ------ | ------ | 399 | 24,500 |
| January | ------ | ------ | 348 | 21,400 |
| February | 634 | ------ | 464 | 25,800 |
| March | 565 | 444 | 495 | 30,400 |
| April | 2,890 | 412 | 819 | 48,700 |
| May | 3,380 | 701 | 1,380 | 84,800 |
| June | 10,800 | 515 | 2,280 | 136,000 |
| July | 1,710 | 222 | 433 | 26,600 |
| August | 1,900 | 173 | 517 | 31,800 |
| September | 2,270 | 218 | 778 | 46,300 |
| The year | 10,800 | 126 | 714 | 517,000 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 8,820 second-feet June 6 (gage height, 8.56 feet); minimum, 150 second-feet Oct. 1, 7, July 18 (gage height, 2.05 feet).

1919–1925, 1928–1930: 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 known stage, 14.2 feet June 30, 1915.

REMARKS.—Records good except those for period of ice effect, November, December, January, February, which are fair. Operation of power plant at Superior probably causes slight fluctuations during low flow.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 150 | 229 | 329 | | | 582 | 409 | 3,120 | 915 | 409 | 441 | 545 |
| 2 | 157 | 284 | 229 | | | 509 | 409 | 4,190 | 742 | 305 | 353 | 785 |
| 3 | 157 | 284 | 329 | 270 | 260 | 545 | 409 | 2,700 | 700 | 329 | 305 | 785 |
| 4 | 166 | 381 | 353 | | | 700 | 409 | 3,420 | 620 | 305 | 264 | 915 |
| 5 | 175 | 381 | 381 | | | 582 | 409 | 2,180 | 2,840 | 329 | 305 | 828 |
| 6 | 166 | 381 | 545 | | | 509 | 409 | 1,600 | 8,420 | 284 | 246 | 509 |
| 7 | 157 | 353 | 473 | | 600 | 509 | 409 | 3,120 | 6,180 | 264 | 214 | 509 |
| 8 | 175 | 353 | 582 | 250 | | 509 | 409 | 2,840 | 4,190 | 246 | 246 | 1,720 |
| 9 | 175 | 381 | 582 | | | 473 | 409 | 1,600 | 3,120 | 229 | 214 | 2,180 |
| 10 | 199 | 381 | 620 | | 950 | 545 | 409 | 2,980 | 2,300 | 199 | 214 | 1,720 |
| 11 | 229 | 509 | 620 | | 1,000 | 620 | 381 | 3,570 | 2,840 | 214 | 199 | 1,830 |
| 12 | 199 | 473 | 620 | | 1,100 | 509 | 353 | [a] 2,940 | 4,990 | 264 | 214 | 2,060 |
| 13 | 785 | 441 | 700 | 250 | 1,380 | 545 | 353 | 2,300 | 3,270 | 214 | 214 | 1,600 |
| 14 | 785 | 409 | 660 | | 1,060 | 660 | 353 | 2,840 | 1,830 | 199 | 175 | 1,160 |
| 15 | 870 | 381 | 700 | | 915 | 409 | 381 | 2,980 | 1,490 | 187 | 175 | 870 |
| 16 | 700 | 409 | | | 870 | 473 | 409 | 1,720 | 1,220 | 166 | 187 | 742 |
| 17 | 473 | 409 | | | 870 | 441 | 509 | 1,600 | 960 | 166 | | 870 |
| 18 | 409 | 441 | 400 | | 742 | 409 | 441 | 1,600 | 870 | 150 | [a] 190 | 960 |
| 19 | 353 | 473 | | | 700 | 441 | 1,940 | 1,490 | 1,110 | 166 | | 742 |
| 20 | 353 | 409 | | | 700 | 409 | 2,980 | 2,430 | 4,670 | 166 | 900 | 545 |
| 21 | 246 | 329 | | 240 | 620 | 441 | 1,940 | 2,060 | 3,120 | 214 | 1,600 | 545 |
| 22 | [a] 276 | 305 | | | [a] 601 | 441 | 1,490 | 1,940 | 3,120 | 187 | 1,490 | 441 |
| 23 | 305 | 284 | 330 | | 582 | 381 | 1,060 | 1,830 | 2,430 | 187 | 785 | 381 |
| 24 | 229 | 353 | | | 660 | 409 | 870 | 1,490 | 1,490 | 187 | [a] 785 | 381 |
| 25 | 214 | 381 | | | 582 | 441 | 785 | 1,320 | 1,220 | 199 | [a] 785 | 381 |
| 26 | 214 | 582 | | | [a] 601 | 441 | 742 | 1,270 | 1,220 | 1,830 | 785 | 353 |
| 27 | 246 | 545 | | | 620 | 409 | 785 | 870 | 870 | 870 | 870 | 305 |
| 28 | 229 | 441 | 300 | 245 | 545 | 409 | 828 | 1,010 | 828 | 828 | 742 | 329 |
| 29 | 229 | 381 | | | ------- | 409 | 915 | 785 | 582 | 473 | 700 | 353 |
| 30 | 214 | 409 | | | ------- | 409 | 915 | 742 | 545 | 441 | 545 | 329 |
| 31 | 199 | ------- | | | ------- | 441 | ------- | 1,110 | ------- | 441 | 509 | ---- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 870 | 150 | 304 | 18,700 |
| November | 582 | 229 | 392 | 23,300 |
| December | 700 | 229 | 425 | 26,100 |
| January | ---------- | ---------- | 249 | 15,300 |
| February | 1,380 | ---------- | 671 | 37,300 |
| March | 700 | 381 | 484 | 29,800 |
| April | 2,980 | 353 | 751 | 44,700 |
| May | 4,190 | 742 | 2,120 | 130,000 |
| June | 8,420 | 545 | 2,290 | 136,000 |
| July | 1,830 | 150 | 343 | 21,100 |
| August | 1,600 | 175 | 485 | 29,800 |
| September | 2,180 | 305 | 856 | 50,900 |
| The year | 8,420 | 150 | 778 | 563,000 |

[a] Interpolated or estimated.

### REPUBLICAN RIVER AT WAKEFIELD, KANS.

LOCATION.—Chain gage in NE. ¼ sec. 5, T. 10 S., R. 4 E., one-fourth 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, 1930.

EXTREMES.—Maximum discharge during year, 9,720 second-feet May 8 (gage height, 9.64 feet); minimum, 94 second-feet Oct. 2 (gage height, 2.45 feet). 1917–1930: Maximum discharge, 20,100 second-feet June 4, 1923 (gage height, 12.86 feet); minimum, 16 second-feet Oct. 21, 1922.

REMARKS.—Records good except those for period of ice effect, Dec. 19 to Feb. 7, and for periods Oct. 1–19, Mar. 3–31, Apr. 1–15, 21–30, June 5–11, July 11 to Aug. 21, which are fair.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 114 | 399 | 570 | 600 | | 910 | 515 | 1,160 | 1,080 | 1,260 | 765 | 695 |
| 2 | 97 | 465 | 542 | 600 | | 835 | 542 | 3,450 | 1,160 | 1,080 | 570 | 570 |
| 3 | 132 | 420 | 378 | 490 | 500 | 695 | 515 | 4,050 | 2,120 | 990 | 515 | 490 |
| 4 | 135 | 420 | 515 | 490 | | 835 | 542 | 4,370 | 1,560 | 910 | 490 | 695 |
| 5 | 132 | 465 | 465 | 490 | | 800 | 542 | 4,210 | 5,650 | 835 | 420 | 1,030 |
| 6 | 122 | 490 | 465 | | 630 | 695 | 515 | 6,330 | 3,600 | 765 | 399 | 950 |
| 7 | 114 | 465 | 600 | | 730 | 695 | 515 | 7,420 | 5,330 | 695 | 399 | 835 |
| 8 | 114 | 490 | 542 | 350 | 950 | 765 | 515 | 8,450 | 5,990 | 662 | 378 | 835 |
| 9 | 189 | 515 | 570 | | 800 | 630 | 465 | 5,330 | 4,690 | 730 | 378 | 695 |
| 10 | 212 | 570 | 570 | | 765 | 570 | 465 | 4,210 | 3,750 | 600 | 296 | 990 |
| 11 | 242 | 570 | 662 | | 695 | 695 | 465 | 3,170 | 3,030 | 600 | 296 | 2,000 |
| 12 | 193 | 570 | 765 | | 695 | 695 | 490 | 5,820 | 2,640 | 465 | 257 | 1,780 |
| 13 | 223 | 515 | 695 | | 872 | 765 | 542 | 4,530 | 3,450 | 515 | 257 | 2,120 |
| 14 | 204 | 600 | 765 | | 1,030 | 662 | 465 | 3,450 | 4,530 | 465 | 250 | 2,250 |
| 15 | 276 | 515 | 765 | | 1,030 | 662 | 1,260 | 3,030 | 3,900 | 465 | 195 | 1,560 |
| | | | | 300 | | | | | | | | |
| 16 | 662 | 570 | 835 | | 1,160 | 662 | 662 | 3,600 | 2,640 | 490 | 215 | 2,000 |
| 17 | 600 | 600 | 872 | | 1,260 | 630 | 662 | 2,640 | 2,250 | 465 | 316 | 1,260 |
| 18 | 910 | 600 | 695 | | 1,260 | 662 | 630 | 2,380 | 1,780 | 399 | 662 | 990 |
| 19 | 765 | 630 | 600 | | 1,080 | 630 | 630 | 2,250 | 1,670 | 378 | 910 | 835 |
| 20 | 1,030 | 630 | 520 | | 1,080 | 662 | 835 | 1,890 | 1,560 | 336 | 542 | 835 |
| 21 | 872 | 630 | | | 1,030 | 600 | 1,560 | 1,890 | 2,770 | 357 | 257 | 800 |
| 22 | 600 | 490 | | | 990 | 600 | 2,000 | 1,890 | 3,900 | 357 | 2,770 | 730 |
| 23 | 515 | 399 | 450 | 285 | 1,030 | 630 | 2,380 | 2,510 | 3,310 | 378 | 1,780 | 600 |
| 24 | 420 | 399 | | | 1,030 | 630 | 1,670 | 2,120 | 3,170 | 420 | 1,260 | 662 |
| 25 | 420 | 378 | | | 990 | 600 | 1,360 | 1,780 | 2,510 | 420 | 1,080 | 542 |
| 26 | 399 | 420 | | | 910 | 600 | 1,260 | 1,560 | 2,000 | 399 | 990 | 515 |
| 27 | 399 | 420 | | | 910 | 600 | 1,160 | 1,460 | 1,670 | 336 | 950 | 515 |
| 28 | 420 | 570 | 500 | 300 | 872 | 600 | 1,030 | 1,360 | 1,670 | 600 | 872 | 465 |
| 29 | 378 | 530 | | | ------- | 600 | 2,120 | 1,260 | 1,460 | 1,260 | 835 | 442 |
| 30 | 378 | 490 | | | ------- | 570 | 1,260 | 1,160 | 1,260 | 1,080 | 990 | 442 |
| 31 | 399 | ------- | | | ------- | 570 | ------- | 1,160 | ------- | 950 | 835 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 1,030 | 97 | 376 | 23,100 |
| November | 630 | 378 | 508 | 30,200 |
| December | 872 | 378 | 569 | 35,000 |
| January | 600 | ---------- | 343 | 21,100 |
| February | 1,260 | ---------- | 868 | 48,200 |
| March | 910 | 570 | 670 | 41,200 |
| April | 2,380 | 465 | 919 | 54,700 |
| May | 8,450 | 1,160 | 3,220 | 198,000 |
| June | 5,990 | 1,080 | 2,870 | 171,000 |
| July | 1,260 | 336 | 634 | 39,000 |
| August | 2,770 | 195 | 682 | 41,900 |
| September | 2,250 | 442 | 971 | 57,800 |
| The year | 8,450 | 97 | 1,050 | 761,000 |

### KANSAS RIVER AT OGDEN, KANS.

LOCATION.—Chain gage in SE. ¼ sec. 12, T. 11 S., R. 6 E., three-fourths 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, 1930.

EXTREMES.—Maximum discharge during year, 23,700 second-feet May 8 (gage height, 16.14 feet); minimum, 572 second-feet Oct. 1 (gage height, 5.46 feet).

1917–1930: 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 period of ice effect, Dec. 18 to Feb. 8, and for period May 9–16, which are fair.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 692 | 1,190 | 1,100 | 1,020 | | 1,370 | 935 | 2,610 | 2,380 | 2,740 | 1,380 | 2,280 |
| 2 | 795 | 1,100 | 1,190 | 1,020 | | 1,280 | 1,020 | 3,590 | 2,880 | 2,500 | 1,200 | 1,860 |
| 3 | 870 | 1,190 | 935 | 1,020 | 1,000 | 1,190 | 935 | 4,720 | 2,740 | 2,380 | 1,200 | 1,560 |
| 4 | 760 | 1,100 | 1,100 | 935 | | 1,190 | 1,020 | 5,280 | 3,910 | 2,280 | 1,020 | 1,380 |
| 5 | 834 | 1,190 | 935 | 935 | | 1,280 | 1,020 | 4,900 | 13,200 | 2,170 | 1,020 | 1,460 |
| 6 | 834 | 1,190 | 1,100 | | | 1,190 | 935 | 7,400 | 15,700 | 1,960 | 945 | 2,060 |
| 7 | 760 | 1,280 | 1,100 | | 1,200 | 1,190 | 935 | 22,600 | 12,700 | 1,860 | 945 | 2,060 |
| 8 | 795 | 1,280 | 1,020 | | | 1,190 | 935 | 22,600 | 16,600 | 1,760 | 908 | 1,760 |
| 9 | 908 | 1,280 | 1,100 | | 1,460 | 1,190 | 898 | 16,300 | 13,200 | 1,760 | 834 | 1,760 |
| 10 | 834 | 1,280 | 1,100 | | 1,460 | 1,190 | 935 | 13,700 | 11,400 | 1,660 | 834 | 2,740 |
| 11 | 870 | 1,190 | 1,100 | | 1,370 | 1,190 | 860 | 11,700 | 9,300 | 1,660 | 870 | 5,690 |
| 12 | 870 | 1,280 | 1,190 | 900 | 1,280 | 1,100 | 935 | 9,520 | 7,450 | 1,560 | 870 | 7,200 |
| 13 | 834 | 1,280 | 1,190 | | 1,280 | 1,100 | 935 | 8,860 | 6,060 | 1,560 | 834 | 5,850 |
| 14 | 795 | 1,280 | 1,280 | | 1,460 | 1,100 | 1,190 | 7,450 | 7,450 | 1,560 | 834 | 5,470 |
| 15 | 834 | 1,280 | 1,280 | | 1,560 | 1,100 | 4,050 | 6,850 | 13,500 | 1,460 | 795 | 6,230 |
| 16 | 870 | 1,280 | 1,370 | | 1,560 | 1,100 | 4,900 | 6,850 | 10,900 | 1,280 | 908 | 5,660 |
| 17 | 908 | 1,370 | 1,370 | | 1,860 | 1,190 | 2,170 | 6,450 | 11,400 | 1,200 | 834 | 5,280 |
| 18 | 1,200 | 1,370 | | | 1,860 | 1,190 | 1,460 | 6,060 | 9,300 | 1,200 | 908 | 4,050 |
| 19 | 1,460 | 1,370 | 1,000 | | 1,660 | 1,100 | 1,280 | 4,960 | 6,850 | 1,110 | 1,110 | 2,860 |
| 20 | 1,460 | 1,370 | | | 1,560 | 1,100 | 1,280 | 4,600 | 5,690 | 1,110 | 1,110 | 2,380 |
| 21 | 1,660 | 1,370 | | | 1,460 | 1,100 | 1,560 | 4,240 | 4,960 | 1,110 | 1,020 | 2,060 |
| 22 | 1,660 | 1,370 | | 800 | 1,460 | 1,020 | 2,060 | 3,910 | 6,450 | 1,020 | 1,660 | 1,960 |
| 23 | 1,560 | 1,370 | 900 | | 1,370 | 1,100 | 2,610 | 3,910 | 6,060 | 1,020 | 4,600 | 1,860 |
| 24 | 1,560 | 1,280 | | | 1,370 | 1,100 | 2,610 | 4,080 | 5,500 | 945 | 3,150 | 1,660 |
| 25 | 1,460 | 1,100 | | | 1,370 | 1,100 | 2,060 | 3,600 | 4,960 | 1,020 | 2,280 | 1,660 |
| 26 | 1,280 | 1,100 | | | 1,460 | 1,020 | 2,060 | 3,150 | 4,600 | 945 | 1,960 | 1,560 |
| 27 | 1,280 | 1,100 | | | 1,370 | 1,020 | 2,060 | 3,010 | 3,910 | 945 | 1,760 | 1,460 |
| 28 | 1,280 | 1,100 | 800 | 850 | 1,370 | 1,020 | 1,860 | 2,740 | 3,440 | 945 | 1,660 | 1,280 |
| 29 | 1,280 | 1,190 | | | ------ | 935 | 3,140 | 2,620 | 3,300 | 1,200 | 1,660 | 1,100 |
| 30 | 1,190 | 1,190 | | | ------ | 1,020 | 3,000 | 2,380 | 3,010 | 1,660 | 1,860 | 1,190 |
| 31 | 1,190 | ------ | | | ------ | 935 | ------ | 2,280 | ------ | 1,460 | 2,740 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 1,660 | 692 | 1,080 | 66,400 |
| November | 1,370 | 1,100 | 1,240 | 73,800 |
| December | 1,370 | ------ | 1,020 | 62,700 |
| January | 1,020 | ------ | 882 | 54,200 |
| February | 1,860 | ------ | 1,360 | 75,500 |
| March | 1,370 | 935 | 1,130 | 69,500 |
| April | 4,900 | 860 | 1,720 | 102,000 |
| May | 22,600 | 2,280 | 6,870 | 422,000 |
| June | 15,700 | 2,380 | 7,630 | 454,000 |
| July | 2,740 | 945 | 1,520 | 93,500 |
| August | 4,600 | 795 | 1,410 | 86,700 |
| September | 7,200 | 1,100 | 2,850 | 170,000 |
| The year | 22,600 | ------ | 2,390 | 1,730,000 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 53,400 second-feet May 8 (gage height, 16.30 feet); minimum, 800 second-feet Jan. 9, 10 (gage height, 1.8 feet Jan. 9).

1919–1930: Maximum discharge, that of May 8, 1930; minimum, 330 second-feet in October, 1922.

REMARKS.—Records fair. Stage-discharge relation affected by ice Dec. 19 to Jan. 2, Jan. 10 to Feb. 8. Gage-height record furnished by United States Weather Bureau.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,080 | 2,480 | 1,430 | 1,500 | | 2,160 | 1,430 | 9,070 | 4,220 | 5,260 | 2,480 | 4,630 |
| 2 | 890 | 2,320 | 1,430 | 1,400 | 1,500 | 2,160 | 1,430 | 16,400 | 4,420 | 4,840 | 2,320 | 4,020 |
| 3 | 1,080 | 2,320 | 1,430 | 1,310 | | 2,000 | 1,430 | 11,100 | 4,840 | 4,420 | 2,160 | 3,420 |
| 4 | 1,080 | 2,160 | 1,190 | 1,310 | 1,700 | 1,850 | 1,430 | 10,500 | 4,840 | 4,220 | 2,000 | 2,830 |
| 5 | 1,080 | 1,850 | 1,310 | 1,310 | 1,800 | 1,850 | 1,430 | 8,820 | 23,500 | 3,820 | 1,850 | 2,480 |
| 6 | 1,080 | 1,850 | 1,310 | 1,310 | 2,500 | 1,700 | 1,310 | 9,070 | 27,400 | 3,420 | 1,700 | 3,020 |
| 7 | 1,190 | 1,700 | 1,310 | 1,310 | 3,000 | 1,700 | 1,310 | 39,400 | 18,700 | 3,420 | 1,700 | 3,220 |
| 8 | 1,080 | 2,000 | 1,310 | 980 | 3,600 | 1,700 | 1,310 | 50,600 | 18,400 | 3,020 | 1,560 | 3,420 |
| 9 | 1,310 | 2,000 | 1,190 | 800 | 4,220 | 1,850 | 1,310 | 46,000 | 16,700 | 2,830 | 1,560 | 3,220 |
| 10 | 1,310 | 2,320 | 1,310 | 800 | 4,020 | 2,000 | 1,310 | 28,800 | 13,900 | 2,650 | 1,560 | 4,840 |
| 11 | 1,430 | 1,850 | 1,430 | | 3,220 | 1,850 | 1,190 | 21,800 | 13,000 | 2,650 | 1,560 | 7,450 |
| 12 | 1,700 | 1,700 | 1,310 | | 3,020 | 1,700 | 1,190 | 16,400 | 11,100 | 2,480 | 1,560 | 10,500 |
| 13 | 1,430 | 1,780 | 1,700 | 1,200 | 2,650 | 1,700 | 1,310 | 19,100 | 9,600 | 2,480 | 1,430 | 8,820 |
| 14 | 1,430 | 2,000 | 1,430 | | 2,650 | 1,560 | 1,560 | 18,700 | 9,600 | 2,480 | 1,430 | 8,820 |
| 15 | 1,310 | 1,700 | 1,430 | | 2,650 | 1,560 | 4,020 | 19,100 | 18,000 | 2,480 | 2,160 | 7,900 |
| 16 | 1,310 | 1,700 | 1,700 | | 2,650 | 1,560 | 7,680 | 19,400 | 18,000 | 2,480 | 7,000 | 8,350 |
| 17 | 1,190 | 1,700 | 1,850 | | 2,480 | 1,430 | 7,000 | 19,800 | 16,700 | 2,480 | 15,500 | 7,900 |
| 18 | 1,190 | 1,700 | 1,700 | | 2,320 | 2,000 | 4,020 | 18,700 | 13,000 | 2,160 | 9,330 | 6,550 |
| 19 | 1,560 | 1,700 | | | 3,020 | 1,850 | 3,020 | 14,800 | 11,400 | 2,000 | 8,120 | 4,840 |
| 20 | 2,000 | 2,000 | | | 2,650 | 1,700 | 2,650 | 12,600 | 11,400 | 1,850 | 7,900 | 3,620 |
| 21 | 3,220 | 2,000 | 1,650 | 1,350 | 2,480 | 1,560 | 2,650 | 9,600 | 10,500 | 1,850 | 8,820 | 3,420 |
| 22 | 3,820 | 1,850 | | | 2,480 | 1,560 | 2,480 | 7,900 | 10,800 | 1,850 | 8,350 | 2,830 |
| 23 | 3,420 | 1,700 | | | 2,320 | 1,560 | 2,650 | 7,450 | 10,200 | 1,700 | 9,070 | 2,650 |
| 24 | 2,830 | 1,700 | | | 2,160 | 1,560 | 2,650 | 6,550 | 3,350 | 1,850 | 10,500 | 2,480 |
| 25 | 2,650 | 1,430 | 1,600 | | 2,160 | 1,560 | 3,220 | 6,550 | 7,450 | 1,850 | 7,450 | 2,480 |
| 26 | 2,000 | 1,310 | | | 2,160 | 1,560 | 3,420 | 6,120 | 7,450 | 1,700 | 5,260 | 2,480 |
| 27 | 2,000 | 1,430 | | | 2,160 | 1,560 | 3,220 | 5,680 | 9,880 | 1,700 | 4,220 | 2,480 |
| 28 | 2,000 | 1,430 | | 1,400 | 2,160 | 1,560 | 2,650 | 5,260 | 9,070 | 1,700 | 3,820 | 2,160 |
| 29 | 1,560 | 1,430 | 1,700 | | ------- | 1,560 | 4,630 | 4,840 | 6,330 | 1,700 | 4,020 | 2,000 |
| 30 | 1,700 | 1,430 | | | ------- | 1,560 | 7,000 | 4,420 | 5,260 | 1,850 | 4,020 | 2,000 |
| 31 | 1,560 | ------- | | | ------- | 1,560 | ------- | 4,020 | ------- | 2,160 | 3,820 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 3,820 | 890 | 1,690 | 104,000 |
| November | 2,480 | 1,310 | 1,820 | 108,000 |
| December | 1,850 | 1,190 | 1,520 | 93,500 |
| January | 1,500 | 800 | 1,290 | 79,300 |
| February | 4,220 | ------- | 2,530 | 141,000 |
| March | 2,160 | 1,430 | 1,710 | 105,000 |
| April | 7,680 | 1,190 | 2,730 | 162,000 |
| May | 50,600 | 4,020 | 15,400 | 947,000 |
| June | 27,400 | 4,220 | 11,800 | 702,000 |
| July | 5,260 | 1,700 | 2,620 | 161,010 |
| August | 15,500 | 1,430 | 4,650 | 286,001 |
| September | 10,500 | 2,000 | 4,490 | 267,000 |
| The year | 50,600 | ------- | 4,360 | 3,160,000 |

### 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, 1930.
EXTREMES.—Maximum discharge during year, 69,000 second-feet May 8 (gage height, 21.9 feet); minimum probably occurred during January.
1917–1930: 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, Dec. 19 to Feb. 7, and for periods June 19 to Aug. 16, Sept. 18–30, which are fair. Gage-height record furnished by United States Weather Bureau.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,310 | 1,890 | 1,360 | | | 2,340 | 1,490 | 8,370 | 4,250 | 6,170 | 2,190 | 3,710 |
| 2 | 1,310 | 2,340 | 1.620 | | | 2,040 | 1,490 | 6,570 | 3,890 | 5,770 | 2,190 | 4,440 |
| 3 | 1,310 | 2,190 | 1,620 | | | 1,890 | 1,490 | 19,400 | 4,250 | 5,390 | 1,890 | 4,070 |
| 4 | 1,440 | 2,190 | 1,620 | 1,700 | 1,600 | 2,190 | 1,620 | 13,000 | 4,630 | 5,390 | 1,890 | 3,710 |
| 5 | 1,440 | 2,040 | 1,750 | | | 2,040 | 1,490 | 9,590 | 5,200 | 5,390 | 1,890 | 3,350 |
| 6 | 1,440 | 1,890 | 1,890 | | | 2,040 | 1,490 | 9,170 | 38,200 | 5,010 | 1,890 | 2,670 |
| 7 | 1,440 | 1,890 | 1,890 | | | 1,890 | 1,490 | 23,000 | 25,600 | 4,630 | 1,890 | 3,180 |
| 8 | 1,440 | 1,750 | 1,890 | | 3,530 | 2,040 | 1,360 | 69,000 | 22,600 | 3,890 | 1,890 | 3,890 |
| 9 | 1,570 | 1,750 | 1,890 | | 3,890 | 2.040 | 1,360 | 54,300 | 19,400 | 3,890 | 1,560 | 3,530 |
| 10 | 1,570 | 1,890 | 1,620 | | 4,250 | 2,040 | 1,360 | 42,700 | 16,400 | 3,530 | 1,560 | 3,010 |
| 11 | 1,700 | 1,890 | 1,750 | 1,300 | 3,710 | 1,890 | 1,240 | 31,500 | 14,200 | 3,180 | 1,680 | 4,440 |
| 12 | 1,840 | 1,890 | 1,890 | | 3,530 | 1,890 | 1,240 | 23,700 | 12,700 | 3,180 | 1,680 | 6,970 |
| 13 | 1,840 | 1,890 | 1,890 | | 3,180 | 1,890 | 1,360 | 19,400 | 11,000 | 2,840 | 1,680 | 10,500 |
| 14 | 1,700 | 1,890 | 2,040 | | 3,010 | 1,750 | 1,490 | 21,200 | 9,590 | 2,840 | 1,560 | 10,000 |
| 15 | 1,700 | 1,890 | 2,040 | | 2,840 | 1,750 | 2,190 | 20,400 | 9,590 | 2,500 | 1,890 | 14,200 |
| 16 | 1,440 | 1,890 | 2,190 | | 2,840 | 1,750 | 13,900 | 21,200 | 32,600 | 2,500 | 3,890 | 12,100 |
| 17 | 1,570 | 1,890 | 2,340 | | 2,840 | 1,750 | 12,700 | 21,200 | 20,800 | 2,500 | 6,970 | 8,970 |
| 18 | 1,570 | 1,890 | 2,190 | | 2,670 | 1,750 | 5,970 | 20,800 | 17,400 | 2,190 | 12,400 | 8,370 |
| 19 | 1,570 | 1,890 | | | 2,840 | 2,040 | 4,250 | 21,500 | 16,100 | 2,190 | 9,380 | 6,970 |
| 20 | 2,340 | 1,890 | | 1,250 | 3,010 | 1,890 | 3,710 | 14,800 | 15,500 | 2,190 | 8,570 | 5,390 |
| 21 | 2,190 | 1,890 | 1,500 | | 2,670 | 1,750 | 3,530 | 11,200 | 11,200 | 2,190 | 7,570 | 3,530 |
| 22 | 2,670 | 2,040 | | | 2,500 | 1,890 | 3,350 | 9,380 | 10,200 | 1,680 | 8,170 | 3,710 |
| 23 | 3,180 | 1,890 | | | 2,500 | 1,750 | 3,180 | 8,570 | 9,810 | 1,890 | 8,370 | 3,350 |
| 24 | 3,010 | 1,750 | | | 2,500 | 1,750 | 3,530 | 7,570 | 10,200 | 1,890 | 9,170 | 3,180 |
| 25 | 2,670 | 1,750 | | | 2,500 | 1,750 | 4,070 | 7,170 | 8,970 | 2,190 | 9,810 | 2,840 |
| 26 | 2,190 | 1,750 | | | 2,340 | 1,750 | 4,070 | 6,970 | 8,170 | 1,890 | 7,370 | 2,500 |
| 27 | 1,890 | 1,750 | 1,600 | | 2,340 | 1,750 | 4,630 | 6,170 | 7,770 | 1,890 | 5,580 | 2,500 |
| 28 | 1,890 | 1,750 | | 1,300 | 2,340 | 1,620 | 5,010 | 5,770 | 10,200 | 1,890 | 4,630 | 2,190 |
| 29 | 2,040 | 1,750 | | | ------- | 1,620 | 4,250 | 5,390 | 8,170 | 1,680 | 4,070 | 2,040 |
| 30 | 2,040 | 1,240 | | | ------- | 1,490 | 6,770 | 4,630 | 6,570 | 1,680 | 4,440 | 2,040 |
| 31 | 2,190 | ------- | 1,800 | | ------- | 1,490 | ------- | 4,630 | ------- | 1,890 | 4,070 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 3,180 | 1,310 | 1,850 | 114,000 |
| November | 2,340 | 1,240 | 1,880 | 112,000 |
| December | 2,340 | ---------- | 1,740 | 107,000 |
| January | ---------- | ---------- | 1,360 | 83,600 |
| February | 4,250 | ---------- | 2,610 | 145,000 |
| March | 2,340 | 1,490 | 1,860 | 114,000 |
| April | 13,900 | 1,240 | 3,500 | 208,000 |
| May | 69,000 | 4,630 | 17,700 | 1,090,000 |
| June | 38,200 | 3,890 | 13,200 | 786,000 |
| July | 6,170 | 1,680 | 3,090 | 190,000 |
| August | 12,400 | 1,560 | 4,570 | 281,000 |
| September | 14,200 | 2,040 | 5,040 | 300,000 |
| The year | 69,000 | ---------- | 4,870 | 3,530,000 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 72,200 second-feet May 9 (gage height, 18.40 feet); minimum occurred during winter.

1917–1930: 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 period of ice effect, Dec. 26 to Feb. 6, and during periods May 23 to June 7, July 3 to Aug. 18, Sept. 17–30, which are fair.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1,630 | 4,500 | 1,750 | 1,700 | 1,530 | 2,360 | 1,790 | 7,400 | 5,000 | 7,680 | 1,980 | 4,150 |
| 2 | 1,630 | 4,080 | 1,750 | 1,700 | 1,750 | 2,360 | 1,710 | 11,000 | 4,780 | 6,380 | 2,100 | 3,950 |
| 3 | 1,630 | 3,100 | 1,370 | 1,700 | 1,870 | 2,360 | 1,710 | 17,700 | 4,570 | 6,140 | 2,100 | 4,570 |
| 4 | 1,530 | 2,580 | 1,530 | 1,700 | 2,270 | 2,100 | 1,710 | 15,400 | 4,570 | 5,450 | 2,100 | 4,150 |
| 5 | 1,630 | 2,420 | 1,530 | 1,630 | 2,610 | 1,980 | 1,790 | 10,100 | 5,450 | 5,220 | 2,100 | 3,950 |
| 6 | 1,630 | 2,270 | 1,750 | 1,690 | 3,000 | 2,100 | 1,710 | 9,760 | 12,000 | 5,220 | 1,980 | 3,560 |
| 7 | 1,630 | 2,130 | 1,750 | 1,630 | 3,950 | 2,100 | 1,710 | 17,700 | 35,900 | 4,780 | 1,930 | 3,370 |
| 8 | 1,630 | 2,000 | 1,870 | 1,410 | 4,570 | 2,100 | 1,710 | 56,900 | 23,700 | 4,780 | 1,880 | 3,190 |
| 9 | 1,750 | 2,000 | 1,750 | 1,400 | 5,000 | 2,100 | 1,710 | 72,200 | 17,200 | 4,260 | 1,790 | 3,750 |
| 10 | 2,130 | 2,000 | 1,630 | 1,400 | 5,220 | 2,220 | 1,710 | 58,800 | 15,900 | 3,750 | 1,790 | 3,750 |
| 11 | 2,580 | 2,000 | 1,630 | | 5,000 | 1,980 | 1,640 | 45,200 | 15,900 | 3,370 | 1,710 | 3,370 |
| 12 | 3,100 | 2,270 | 1,630 | | 4,150 | 1,980 | 1,640 | 34,800 | 14,100 | 3,370 | 1,790 | 4,780 |
| 13 | 2,920 | 2,000 | 1,750 | | 3,950 | 1,980 | 1,640 | 25,600 | 13,000 | 3,190 | 1,790 | 7,680 |
| 14 | 2,130 | 2,000 | 1,750 | | 3,370 | 1,980 | 1,640 | 22,800 | 11,700 | 3,190 | 1,880 | 10,100 |
| 15 | 2,130 | 2,000 | 1,870 | | 3,010 | 1,880 | 1,710 | 22,800 | 10,700 | 3,190 | 1,710 | 17,700 |
| 16 | 1,750 | 2,000 | 1,750 | 1,350 | 2,840 | 1,880 | 9,150 | 22,300 | 26,600 | 3,010 | 1,790 | 28,600 |
| 17 | 1,630 | 2,000 | 1,630 | | 2,840 | 1,980 | 22,300 | 22,300 | 38,200 | 2,840 | 2,220 | 14,600 |
| 18 | 1,750 | 2,000 | 1,530 | | 2,840 | 1,980 | 12,000 | 22,800 | 21,800 | 2,840 | 8,550 | 8,550 |
| 19 | 1,750 | 2,130 | 1,370 | | 2,670 | 1,880 | 6,870 | 23,700 | 17,200 | 2,510 | 11,700 | 7,400 |
| 20 | 1,750 | 2,000 | 1,750 | | 2,840 | 2,100 | 4,570 | 22,300 | 16,800 | 2,360 | 11,000 | 5,910 |
| 21 | 2,000 | 2,000 | 1,630 | | 2,840 | 2,100 | 4,150 | 15,400 | 16,800 | 2,360 | 8,260 | 4,780 |
| 22 | 2,130 | 2,130 | 1,530 | | 2,840 | 1,980 | 3,750 | 12,700 | 13,400 | 2,360 | 7,400 | 3,750 |
| 23 | 2,580 | 2,130 | 1,630 | 1,200 | 2,510 | 1,980 | 3,370 | 11,400 | 10,400 | 2,360 | 7,970 | 3,190 |
| 24 | 2,750 | 1,750 | 1,750 | | 2,220 | 1,880 | 3,190 | 11,400 | 10,700 | 2,220 | 7,680 | 2,840 |
| 25 | 2,750 | 1,870 | 1,750 | | 2,510 | 1,880 | 3,190 | 9,760 | 10,100 | 2,220 | 8,850 | 2,840 |
| 26 | 2,580 | 1,870 | | | 2,510 | 1,790 | 3,750 | 7,970 | 8,850 | 2,220 | 9,760 | 2,670 |
| 27 | 2,270 | 1,630 | | | 2,670 | 1,790 | 4,150 | 7,680 | 8,550 | 2,100 | 6,870 | 2,510 |
| 28 | 2,130 | 1,750 | 1,740 | 1,250 | 2,670 | 1,790 | 4,360 | 7,130 | 8,260 | 2,100 | 5,220 | 2,220 |
| 29 | 2,270 | 1,870 | | | ------- | 1,880 | 4,780 | 6,380 | 10,100 | 1,980 | 4,570 | 2,220 |
| 30 | 2,270 | 1,750 | | | ------- | 1,790 | 4,570 | 5,680 | 7,680 | 1,980 | 4,150 | 2,220 |
| 31 | 2,420 | ------- | | | ------- | 1,710 | ------- | 5,450 | ------- | 1,880 | 4,150 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 3,100 | 1,530 | 2,080 | 128,000 |
| November | 4,500 | 1,630 | 2,210 | 132,000 |
| December | 1,870 | 1,370 | 1,680 | 103,000 |
| January | 1,700 | ------- | 1,390 | 85,500 |
| February | 5,220 | 1,530 | 3,070 | 170,000 |
| March | 2,360 | 1,710 | 2,000 | 123,000 |
| April | 22,300 | 1,640 | 3,990 | 237,000 |
| May | 72,200 | 5,450 | 20,700 | 1,270,000 |
| June | 38,200 | 4,570 | 14,000 | 833,000 |
| July | 7,680 | 1,880 | 3,460 | 213,000 |
| August | 11,700 | 1,710 | 4,480 | 275,000 |
| September | 28,600 | 2,220 | 5,880 | 350,000 |
| The year | 72,200 | ------- | 5,420 | 3,920,000 |

### 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 2,798.43 feet above mean sea level.

DRAINAGE AREA.—1,420 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 321 second-feet Aug. 29 (gage height, 4.0 feet); minimum, 56 second-feet July 9 (gage height, 1.14 feet).

1929–30: Maximum discharge, 1,050 second-feet June 6, 1929 (gage height, 6.0 feet); minimum, that of July 9, 1930.

Maximum stage known, 9.1 feet about Aug. 3, 1928.

REMARKS.—Records good. Diversions for irrigation above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 85 | 90 | | 91 | 99 | 89 | 99 | 71 | 69 | 82 |
| 2 | 85 | 90 | | 89 | 105 | 89 | 99 | 64 | 66 | 77 |
| 3 | 87 | 94 | | 93 | 105 | 88 | 214 | 80 | 68 | 68 |
| 4 | 85 | 91 | | 90 | 105 | 90 | 137 | 74 | 71 | 76 |
| 5 | 81 | 91 | 95 | 90 | 99 | 95 | 139 | 73 | 67 | 73 |
| 6 | 80 | 90 | | 94 | 99 | 86 | 115 | 66 | 63 | 70 |
| 7 | 77 | 89 | | 86 | 96 | 88 | 114 | 63 | 69 | 64 |
| 8 | 77 | 92 | | 91 | 89 | 89 | 115 | 69 | 61 | 72 |
| 9 | 82 | 89 | | 89 | 85 | 89 | 100 | 56 | 66 | 71 |
| 10 | 87 | 91 | 121 | 89 | 85 | 95 | 98 | 61 | 65 | 67 |
| 11 | 90 | 90 | 118 | 88 | 86 | 111 | 101 | 61 | 64 | 74 |
| 12 | 95 | 90 | 115 | 88 | 86 | 116 | 104 | 64 | 69 | 66 |
| 13 | 94 | 93 | 113 | 93 | 91 | 141 | 110 | 233 | 64 | 79 |
| 14 | 89 | 92 | 106 | 90 | 93 | 108 | 100 | 113 | 70 | 75 |
| 15 | 91 | 91 | 105 | 89 | 87 | 102 | 102 | 90 | 76 | 69 |
| 16 | 93 | 91 | 102 | 89 | 91 | 105 | 99 | 90 | 81 | 68 |
| 17 | 93 | 96 | 103 | 88 | 99 | 113 | 93 | 89 | 83 | 71 |
| 18 | 88 | 91 | 101 | 86 | 99 | 132 | 91 | 89 | 84 | 71 |
| 19 | 85 | 90 | 104 | 92 | 90 | 138 | 96 | 89 | 76 | 68 |
| 20 | 85 | 91 | 103 | 90 | 89 | 135 | 94 | 74 | 114 | 67 |
| 21 | 83 | 90 | 98 | 90 | 87 | 125 | 89 | 265 | 73 | 68 |
| 22 | 81 | 88 | 96 | 92 | 83 | 111 | 87 | 90 | 67 | 69 |
| 23 | 83 | 80 | 105 | 97 | 90 | 111 | 86 | 76 | 64 | 65 |
| 24 | 85 | 90 | 106 | 100 | 88 | 109 | 84 | 81 | 75 | 70 |
| 25 | 81 | 102 | 99 | 103 | 90 | 101 | 85 | 76 | 74 | 71 |
| 26 | 83 | 89 | 93 | 103 | 92 | 101 | 82 | 79 | 74 | 75 |
| 27 | 83 | 91 | 92 | 101 | 90 | 99 | 81 | 76 | 74 | 72 |
| 28 | 83 | 90 | 93 | 103 | 95 | 104 | 81 | 64 | 76 | 71 |
| 29 | 83 | 91 | ------- | 99 | 90 | 101 | 81 | 68 | 303 | 70 |
| 30 | 91 | 90 | ------- | 105 | 90 | 103 | 72 | 72 | 98 | 68 |
| 31 | 92 | ------- | ------- | 100 | ------- | 99 | ------- | 70 | 92 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet. |
|---|---|---|---|---|
| October | 95 | 77 | 85.7 | 5,270 |
| November | 102 | 80 | 90.8 | 5,400 |
| December | ------- | ------- | 80 | 4,920 |
| January | ------- | ------- | 70 | 4,300 |
| February | 121 | 92 | 101 | 5,610 |
| March | 105 | 86 | 93.2 | 5,730 |
| April | 105 | 86 | 92.4 | 5,500 |
| May | 141 | 86 | 105 | 6,460 |
| June | 214 | 72 | 102 | 6,070 |
| July | 265 | 56 | 86.6 | 5,320 |
| August | 303 | 61 | 81.2 | 4,990 |
| September | 82 | 64 | 70.9 | 4,220 |
| The year | 303 | 56 | 88.1 | 63,800 |

## 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, 1930.
EXTREMES.—Maximum discharge during year, 1,380 second-feet June 19 (gage height, 15.8 feet); minimum, 0.1 second-foot Oct. 5, 6.
1929–30: Maximum discharge, that of June 19, 1930; minimum, 0.1 second-foot during 1929 and 1930.
REMARKS.—Records fair. Stage-discharge relation affected by ice Dec. 13 to Feb. 5.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.2 | 0.5 | 0.8 | | | 6 | 0.8 | 3 | 3 | 21 | 9 | 9 |
| 2 | .2 | .4 | .8 | | | 5 | .8 | 3 | 3 | 18 | 6 | 11 |
| 3 | .2 | .4 | .8 | | [b]15 | 4 | .8 | 13 | 3 | 16 | 5 | 13 |
| 4 | .2 | .5 | 1 | | | 4 | .8 | 3 | 239 | 15 | 5 | 33 |
| 5 | .1 | .5 | 2 | | | 3 | .8 | 3 | 406 | 13 | 3 | 52 |
| 6 | .1 | .4 | 2 | | 30 | 2 | .8 | 3 | 276 | 13 | 3 | 11 |
| 7 | .2 | .4 | 1 | | 33 | .9 | .8 | 3 | 185 | 11 | 2 | 5 |
| 8 | .2 | .5 | 1 | | 27 | .9 | .8 | 3 | 106 | 11 | 2 | 7 |
| 9 | .3 | .5 | 1 | | 24 | .9 | .7 | 3 | 60 | 9 | 2 | 148 |
| 10 | .3 | .5 | .8 | [b]0.5 | 36 | .8 | .7 | 3 | 42 | 9 | 2 | 36 |
| 11 | .3 | .5 | .5 | | 30 | .8 | .7 | 48 | 33 | 8 | 1 | 13 |
| 12 | .3 | .6 | .4 | | 24 | .8 | .8 | 36 | 27 | 8 | 1 | 9 |
| 13 | .3 | .6 | | | 24 | .7 | .9 | 24 | 24 | 7 | 2 | 7 |
| 14 | .4 | .7 | | | 27 | .7 | [a]2 | 14 | 22 | 7 | 2 | 5 |
| 15 | .3 | .7 | | | 27 | .7 | 3 | 6 | 16 | 7 | [a]20 | 5 |
| 16 | .3 | .8 | | | 30 | .7 | 15 | 24 | 14 | 7 | [a]65 | 5 |
| 17 | .3 | .8 | | | 33 | .8 | 45 | 48 | 10 | 6 | 121 | 5 |
| 18 | .2 | .8 | | | 24 | .8 | 24 | 39 | 112 | 6 | 306 | 4 |
| 19 | .3 | .7 | | | 10 | .9 | 9 | 36 | 734 | 5 | 27 | 4 |
| 20 | .3 | .7 | | | 6 | .8 | 8 | 24 | 172 | 5 | 21 | 4 |
| 21 | .3 | .7 | [b].5 | | 3 | .8 | 7 | 20 | 286 | 11 | 36 | 3 |
| 22 | .3 | .7 | | | 2 | .7 | 6 | 12 | 346 | 7 | 18 | 3 |
| 23 | .3 | .8 | | [b]1.0 | 1 | .7 | 3 | 10 | 111 | 5 | 7 | 2 |
| 24 | .3 | .8 | | | .3 | .7 | 4 | 8 | 76 | 5 | 11 | 1 |
| 25 | .3 | .9 | | | 1 | .7 | 4 | 6 | 68 | 4 | 8 | 1 |
| 26 | .4 | 1 | | | 2 | .8 | 4 | 5 | 36 | 4 | 6 | 1 |
| 27 | .5 | .9 | | | 3 | .8 | 3 | 4 | 36 | 3 | 3 | 2 |
| 28 | .5 | .9 | | [b]2.0 | 6 | .8 | 3 | 4 | 76 | 3 | 5 | 2 |
| 29 | .6 | .9 | | | ------- | .8 | 3 | 3 | 27 | 2 | 56 | 2 |
| 30 | 1 | .8 | | | ------- | .8 | 3 | 3 | 24 | 36 | 20 | 2 |
| 31 | .5 | ------- | | | ------- | .8 | ------- | 3 | ------- | 60 | 7 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 1 | 0.1 | 0.323 | 20 |
| November | 1 | .4 | .663 | 39 |
| December | 2 | ---------- | .697 | 43 |
| January | ---------- | ---------- | .871 | 54 |
| February | 36 | .3 | 17.1 | 950 |
| March | 6 | .7 | 1.41 | 87 |
| April | 45 | .7 | 5.21 | 310 |
| May | 48 | 3 | 13.5 | 830 |
| June | 734 | 3 | 119 | 7,090 |
| July | 60 | 2 | 11.0 | 678 |
| August | 306 | 1 | 25.2 | 1,550 |
| September | 148 | 1 | 13.5 | 803 |
| The year | 734 | ---------- | 17.2 | 12,500 |

[a] Interpolated. [b] Estimated.

### 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, 1930.

EXTREMES.—Maximum gage height during year, 15.0 feet Sept. 8 (discharge not determined); minimum discharge, 0.3 second-foot during January.

1929–30: Maximum gage height, that of Sept. 8, 1930; minimum discharge, that of January, 1930.

REMARKS.—Records fair except those for period Oct. 1 to Nov. 10, and for period of ice effect, Dec. 13 to Feb. 5, which are poor.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.5 | 1.0 | 0.5 | | | 3 | 4 | 8 | 14 | 3 | 4 | 2 |
| 2 | .5 | 1.0 | .5 | | | 3 | 4 | 9 | 13 | 3 | 3 | 2 |
| 3 | .5 | .5 | .5 | | 2 | 3 | 4 | 10 | 15 | 2 | 2 | 2 |
| 4 | .5 | .5 | .5 | | | 3 | 4 | 19 | 21 | 2 | 1 | 8 |
| 5 | 1 | .5 | .5 | | | 3 | 4 | 9 | 21 | 2 | 1 | 3 |
| 6 | 1 | .5 | .5 | | 5 | 3 | 4 | 8 | 19 | 2 | 1 | 1 |
| 7 | 1 | .5 | .5 | | 5 | 3 | 5 | 8 | 19 | 2 | 1 | 1 |
| 8 | 1 | 1.0 | .5 | | 5 | 3 | 5 | 9 | 18 | 2 | 1 | [a] 111 |
| 9 | .5 | 1.0 | .5 | | 4 | 3 | 5 | 9 | 16 | 2 | 1 | 27 |
| 10 | .5 | 1.0 | .5 | | 4 | 4 | 4 | 10 | 15 | 2 | 1 | 21 |
| 11 | .5 | .5 | .5 | | 4 | 4 | 4 | 10 | 15 | 2 | 1 | 16 |
| 12 | .5 | .5 | .5 | | 4 | 4 | 4 | 11 | 16 | 2 | 1 | 15 |
| 13 | .5 | .5 | | | 6 | 4 | 4 | 14 | 15 | 3 | .5 | 14 |
| 14 | .5 | .5 | | | 6 | 4 | 25 | 15 | 16 | 5 | 13 | 14 |
| 15 | .5 | .5 | | | 4 | 4 | 9 | 16 | 16 | 4 | 5 | 15 |
| 16 | .5 | .5 | | 0.5 | 8 | 4 | 10 | 18 | 16 | 2 | 2 | 16 |
| 17 | .5 | .5 | | | 8 | 4 | 11 | 19 | 13 | 2 | 9 | 14 |
| 18 | .5 | .5 | | | 8 | 4 | 18 | 22 | 11 | 2 | 5 | 14 |
| 19 | .5 | .5 | | | 6 | 4 | 14 | 24 | 13 | 2 | 3 | 13 |
| 20 | .5 | .5 | | | 4 | 4 | 10 | 24 | 11 | 2 | 2 | 13 |
| 21 | .5 | .5 | .5 | | 4 | 4 | 9 | 24 | 11 | 2 | 2 | 13 |
| 22 | .5 | .5 | | | 4 | 4 | 8 | 21 | 9 | 2 | 1 | 13 |
| 23 | .5 | .5 | | | 4 | 4 | 8 | 21 | 10 | 2 | 1 | 13 |
| 24 | .5 | .5 | | | 4 | 4 | 7 | 19 | 8 | 2 | 9 | 13 |
| 25 | .5 | .5 | | | 4 | 4 | 7 | 19 | 5 | 2 | 11 | 13 |
| 26 | .5 | .5 | | | 4 | 4 | 9 | 16 | 4 | 2 | 8 | 11 |
| 27 | .5 | .5 | | | 4 | 4 | 10 | 16 | 4 | 2 | 3 | 11 |
| 28 | .5 | .5 | | | 3 | 4 | 10 | 15 | 5 | 2 | 2 | 11 |
| 29 | .5 | .5 | | | ------ | 4 | 10 | 14 | 3 | 2 | 13 | 10 |
| 30 | 1.0 | .5 | | | ------ | 4 | 9 | 13 | 3 | 3 | 7 | 10 |
| 31 | 1.0 | ------ | | | ------ | 4 | ------ | 12 | ------ | 4 | 2 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 1 | 0.5 | 0.597 | 37 |
| November | 1 | .5 | .583 | 35 |
| December | ------ | ------ | .500 | 31 |
| January | ------ | ------ | .500 | 31 |
| February | 8 | ------ | 4.36 | 242 |
| March | 4 | 3 | 3.71 | 228 |
| April | 25 | 4 | 7.97 | 474 |
| May | 24 | 8 | 14.6 | 898 |
| June | 21 | 3 | 12.5 | 744 |
| July | 5 | 2 | 2.35 | 144 |
| August | 13 | .5 | 3.76 | 231 |
| September | 111 | 1 | 14.7 | 875 |
| The year | 111 | ------ | 5.48 | 3,970 |

[a] Estimated due to lack of definition of rating curve.

### 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, 1930.

EXTREMES.—Maximum discharge during year, 1,200 second-feet June 20 (gage height, 14.66 feet); minimum, less than 4 second-feet during period Jan. 1–10.

1929–30: Maximum discharge, 2,830 second-feet July 25, 1929 (gage height, 25.02 feet); minimum, that of Jan. 1–10, 1930.

REMARKS.—Records good except those for period Oct. 1 to May 11, which are fair.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | 28 | 6 | | | 12 | 10 | 122 | 13 | 30 | 16 | 24 |
| 2 | 4 | 18 | 5 | | | 10 | 11 | 32 | 12 | 30 | 11 | 11 |
| 3 | 4 | 7 | 4 | | 6 | 8 | 11 | 17 | 12 | 28 | 11 | 11 |
| 4 | 4 | 6 | 4 | | | 9 | 10 | 20 | 134 | 27 | 9 | 140 |
| 5 | 4 | 6 | 4 | 4 | | 10 | 10 | 77 | 992 | 27 | 8 | 45 |
| 6 | 5 | 5 | 10 | | | 14 | 11 | 35 | 516 | 26 | 8 | 67 |
| 7 | 7 | 5 | 11 | | | 14 | 11 | 16 | 152 | 24 | 8 | 26 |
| 8 | 4 | 6 | 10 | | | 15 | 11 | 15 | 98 | 22 | 7 | 341 |
| 9 | 4 | 6 | 8 | | 10 | 14 | 11 | 14 | 62 | 21 | 7 | 538 |
| 10 | 4 | 9 | 8 | | | 12 | 11 | 15 | 656 | 18 | 7 | 104 |
| 11 | 632 | 8 | 7 | | | 11 | 10 | 67 | 287 | 17 | 7 | 92 |
| 12 | 758 | 8 | 5 | | 47 | 11 | 9 | 420 | 98 | 16 | 6 | 62 |
| 13 | 116 | 8 | 7 | 5 | 49 | 12 | 9 | 104 | 67 | 17 | 6 | 35 |
| 14 | 71 | 7 | 7 | | 41 | 11 | 9 | 41 | 49 | 16 | 6 | 18 |
| 15 | 56 | 7 | 13 | | 32 | 11 | 10 | 27 | 41 | 18 | 9 | 15 |
| 16 | 11 | 6 | 7 | | 28 | 10 | 11 | 24 | 33 | 16 | 656 | 11 |
| 17 | 6 | 7 | 4 | | 27 | 10 | 20 | 53 | 32 | 14 | 98 | 10 |
| 18 | 6 | 6 | 10 | | 26 | 11 | 238 | 98 | 28 | 13 | 39 | 9 |
| 19 | 134 | 6 | 6 | | 26 | 11 | 35 | 87 | 430 | 12 | 30 | 8 |
| 20 | 76 | 6 | 5 | | 26 | 12 | 24 | 45 | 978 | 12 | 116 | 8 |
| 21 | 26 | 7 | 5 | | 28 | 12 | 16 | 32 | 323 | 12 | 37 | 8 |
| 22 | 5 | 6 | | | 28 | 12 | 15 | 26 | 262 | 140 | 26 | 8 |
| 23 | 4 | 4 | | 6 | 15 | 11 | 14 | 21 | 146 | 43 | 20 | 7 |
| 24 | 4 | 5 | | | 15 | 10 | 15 | 20 | 98 | 21 | 323 | 7 |
| 25 | 4 | 6 | | | 15 | 10 | 15 | 18 | 67 | 15 | 32 | 7 |
| 26 | 4 | 6 | 5 | | 14 | 10 | 16 | 17 | 53 | 13 | 16 | 7 |
| 27 | 4 | 7 | | | 13 | 10 | 17 | 14 | 45 | 12 | 11 | 6 |
| 28 | 22 | 7 | | | 13 | 10 | 17 | 14 | 41 | 11 | 9 | 6 |
| 29 | 76 | 7 | | | ------ | 10 | 16 | 14 | 37 | 10 | 134 | 6 |
| 30 | 81 | 6 | | | ------ | 10 | 254 | 15 | 32 | 12 | 47 | 6 |
| 31 | 64 | ------ | | | ------ | 9 | ------ | 14 | ------ | 12 | 35 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 758 | 4 | 71.1 | 4,370 |
| November | 28 | 4 | 7.53 | 448 |
| December | 13 | ---------- | 6.32 | 389 |
| January | ---------- | ---------- | 5.19 | 319 |
| February | 49 | ---------- | 19.0 | 1,060 |
| March | 15 | 8 | 11.0 | 676 |
| April | 254 | 9 | 29.2 | 1,740 |
| May | 420 | 14 | 49.5 | 3,040 |
| June | 992 | 12 | 193 | 11,500 |
| July | 140 | 10 | 22.7 | 1,400 |
| August | 656 | 6 | 56.6 | 3,480 |
| September | 538 | 6 | 54.8 | 3,260 |
| The year | 992 | ---------- | 43.8 | 31,700 |

### 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, 1930.
EXTREMES.—Maximum discharge during year, 5,500 second-feet June 4 (gage height, 9.9 feet); minimum, about 0.2 second-foot during winter.
1928–1930: Maximum and minimum discharges, those of 1930.
REMARKS.—Records fair.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 9 | 11 | 3.0 | 1 | 7 | 6 | 11 | 45 | 26 | 20 | 9 |
| 2 | 1 | 9 | 12 | | | 11 | 7 | 9 | 61 | 25 | 18 | 8 |
| 3 | 1 | 9 | 11 | | | 12 | 6 | 7 | 52 | 24 | 17 | 7 |
| 4 | 1 | 9 | 12 | | | 16 | 6 | 28 | 5,500 | 22 | 15 | 6 |
| 5 | 1 | 9 | 9 | | | 11 | 6 | 28 | 402 | 20 | 14 | 5 |
| 6 | 4 | 9 | 12 | | 7 | 10 | 4 | 11 | 210 | 20 | 13 | 6 |
| 7 | 4 | 9 | 13 | | 11 | 9 | 4 | 11 | 353 | 19 | 19 | 4 |
| 8 | 4 | 9 | 8 | | 28 | 3 | 4 | 11 | 242 | 15 | 15 | 4 |
| 9 | 1 | 13 | 12 | | 16 | 10 | 4 | 7 | 125 | 15 | 12 | 7 |
| 10 | 1 | 13 | 12 | | 7 | 9 | 4 | 7 | 125 | 14 | 11 | 5 |
| 11 | 775 | 18 | 16 | 1.0 | 14 | 8 | 4 | 278 | 92 | 12 | 10 | 5 |
| 12 | 255 | 13 | 12 | | 12 | 9 | 3 | 80 | 86 | 11 | 9 | 4 |
| 13 | 114 | 8 | 11 | | 12 | 8 | 4 | 36 | 86 | 13 | 8 | 4 |
| 14 | 46 | 7 | 11 | | 11 | 7 | 4 | 28 | 74 | 12 | 9 | 7 |
| 15 | 23 | 16 | 11 | | 8 | 7 | 4 | 45 | 69 | 10 | 152 | 4 |
| 16 | 23 | 16 | 12 | | 11 | 6 | 4 | 98 | 64 | 10 | 64 | 4 |
| 17 | 23 | 14 | 11 | | 10 | 6 | 11 | 465 | 72 | 9 | 25 | 3 |
| 18 | 18 | 11 | 9 | | 9 | 6 | 8 | 412 | 108 | 8 | 53 | 3 |
| 19 | 13 | 12 | 7 | | 11 | 6 | 7 | 234 | 92 | 8 | 36 | 3 |
| 20 | 13 | 12 | 8 | | 10 | 8 | 7 | 141 | 72 | 7 | 24 | 3 |
| 21 | 13 | 8 | 8 | | 9 | 7 | 6 | 106 | 64 | 72 | 19 | 3 |
| 22 | 9 | 6 | | | 8 | 6 | 6 | 71 | 62 | 20 | 16 | 2 |
| 23 | 9 | 10 | | | 9 | 6 | 7 | 63 | 53 | 19 | 15 | 2 |
| 24 | 9 | 13 | 2 | .2 | 10 | 6 | 7 | 50 | 42 | 14 | 14 | 2 |
| 25 | 9 | 12 | | | 11 | 4 | 7 | 45 | 39 | 1,920 | 13 | 2 |
| 26 | 9 | 10 | | | 10 | 3 | 28 | 41 | 37 | 377 | 12 | 2 |
| 27 | 9 | 13 | 3 | | 9 | 3 | 8 | 36 | 53 | 108 | 10 | 2 |
| 28 | 9 | 12 | 3 | | 11 | 3 | 11 | 386 | 25 | 116 | 10 | 2 |
| 29 | 9 | 10 | | | ------- | 7 | 11 | 141 | 24 | 39 | 14 | 2 |
| 30 | 13 | 8 | 4 | | ------- | 7 | 12 | 48 | 20 | 31 | 11 | 2 |
| 31 | 13 | ------- | | | ------- | 6 | ------- | 36 | ------- | 25 | 10 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 775 | 1 | 46.2 | 2,840 |
| November | 18 | 6 | 10.9 | 649 |
| December | 16 | ------- | 8.26 | 508 |
| January | ------- | ------- | .935 | 57 |
| February | 28 | ------- | 9.25 | 514 |
| March | 16 | 3 | 7.32 | 450 |
| April | 28 | 3 | 7.00 | 417 |
| May | 465 | 7 | 95.8 | 5,890 |
| June | 5,500 | 20 | 278 | 16,500 |
| July | 1,920 | 7 | 98.1 | 6,030 |
| August | 152 | 8 | 22.2 | 1,360 |
| September | 9 | 2 | 4.07 | 242 |
| The year | 5,500 | ------- | 49.1 | 35,500 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 2,100 second-feet June 6 (gage height, 6.50 feet); minimum, approximately 1 second-foot in January.

1929–30: 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. 16 to Jan. 31. Discharge interpolated Feb. 1, 8.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 25 | 28 | 25 | 28 | 20 | 17 | 13 | 17 | 82 | 65 | 80 | 93 |
| 2 | 23 | 28 | 28 | 33 | 35 | 18 | 13 | 18 | 79 | 59 | 84 | 90 |
| 3 | 23 | 30 | 23 | | 41 | 23 | 12 | 19 | 72 | 53 | 74 | 86 |
| 4 | 25 | 30 | 25 | | 38 | 53 | 11 | 23 | 79 | 86 | 67 | 79 |
| 5 | 28 | 28 | 23 | | 23 | 41 | 12 | 33 | 880 | 333 | 48 | 72 |
| 6 | 30 | 25 | 22 | 15 | 25 | 28 | 11 | 33 | 2,100 | 138 | 40 | 75 |
| 7 | 33 | 28 | 22 | | 28 | 56 | 12 | 28 | 499 | 134 | 34 | 82 |
| 8 | 30 | 28 | 22 | | 26 | 65 | 13 | 22 | 464 | 82 | 42 | 90 |
| 9 | 28 | 28 | 19 | | 25 | 56 | 12 | 19 | 499 | 68 | 46 | 190 |
| 10 | 30 | 30 | 18 | | 23 | 50 | 13 | 22 | 990 | 62 | 48 | 165 |
| 11 | 30 | 33 | 17 | 5 | 22 | 14 | 12 | 30 | 1,580 | 59 | 88 | 154 |
| 12 | 35 | 35 | 18 | | 17 | 14 | 11 | 129 | 645 | 53 | 80 | 154 |
| 13 | 53 | 38 | 18 | | 18 | 13 | 12 | 105 | 365 | 50 | 77 | 68 |
| 14 | 56 | 33 | 19 | | 17 | 15 | 13 | 75 | 365 | 47 | 88 | 65 |
| 15 | 62 | 28 | 17 | | 17 | 16 | 12 | 72 | 365 | 44 | 154 | 72 |
| 16 | 53 | 28 | 18 | | 17 | 15 | 13 | 65 | 365 | 41 | 154 | 188 |
| 17 | 41 | 28 | 17 | | 16 | 16 | 13 | 59 | 397 | 50 | 154 | 82 |
| 18 | 41 | 28 | 16 | 1 | 16 | 17 | 12 | 82 | 730 | 44 | 88 | 79 |
| 19 | 33 | 25 | | | 15 | 15 | 13 | 97 | 365 | 47 | 92 | 75 |
| 20 | 28 | 28 | | | 14 | 14 | 10 | 101 | 165 | 44 | 107 | 68 |
| 21 | 30 | 28 | | | 14 | 14 | 11 | 90 | 165 | 44 | 127 | 62 |
| 22 | 30 | 25 | | | 13 | 13 | 11 | 79 | 143 | 41 | 165 | 56 |
| 23 | 33 | 23 | | | 14 | 14 | 12 | 75 | 125 | 93 | 127 | 56 |
| 24 | 30 | 23 | 14 | | 15 | 13 | 12 | 65 | 101 | 79 | 123 | 53 |
| 25 | 28 | 19 | | | 15 | 14 | 12 | 62 | 97 | 75 | 119 | 50 |
| 26 | 28 | 19 | | | 16 | 15 | 13 | 68 | 93 | 82 | 111 | 50 |
| 27 | 25 | 18 | | 10 | 17 | 14 | 13 | 72 | 82 | 75 | 107 | 47 |
| 28 | 28 | 19 | | | 16 | 13 | 12 | 121 | 65 | 86 | 92 | 50 |
| 29 | 30 | 22 | | | ------- | 14 | 13 | 97 | 75 | 93 | 95 | 47 |
| 30 | 33 | 23 | | | ------- | 14 | 15 | 117 | 65 | 101 | 92 | 30 |
| 31 | 30 | ------- | 19 | | ------- | 14 | ------- | 109 | ------- | 86 | 92 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 62 | 23 | 33.3 | 2,050 |
| November | 38 | 18 | 26.9 | 1,600 |
| December | 28 | ---------- | 17.9 | 1,100 |
| January | 33 | ---------- | 8.74 | 537 |
| February | 41 | 13 | 20.5 | 1,140 |
| March | 65 | 13 | 22.8 | 1,400 |
| April | 15 | 10 | 12.2 | 726 |
| May | 129 | 17 | 64.6 | 3,970 |
| June | 2,100 | 65 | 403 | 24,000 |
| July | 333 | 41 | 77.9 | 4,790 |
| August | 165 | 34 | 93.3 | 5,740 |
| September | 190 | 30 | 84.3 | 5,020 |
| The year | 2,100 | ---------- | 71.9 | 52,100 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 9,880 second-feet June 5 (gage height, 16.59 feet); minimum occurred during winter.

1895–1905, 1918–1925, 1928–1930: 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, about 24,000 second-feet).

REMARKS.—Records good except those for period of ice effect, December, January, February, and for period July 1 to Aug. 16, which are fair.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 54 | 64 | 75 | 64 | | 54 | 42 | 45 | 1,100 | 172 | 142 | 108 |
| 2 | 49 | 64 | 75 | 64 | 40 | 54 | 42 | 45 | 2,390 | 162 | 115 | 100 |
| 3 | 49 | 70 | 70 | 59 | | 45 | 38 | 49 | 832 | 152 | 100 | 94 |
| 4 | 54 | 64 | 75 | 59 | 70 | 54 | 35 | 64 | 506 | 142 | 87 | 94 |
| 5 | 54 | 64 | 70 | 59 | 70 | 54 | 35 | 94 | 6,850 | 132 | 81 | 2,660 |
| 6 | 49 | 59 | 70 | 59 | 81 | 54 | 35 | 1,260 | 1,700 | 308 | 81 | 720 |
| 7 | 54 | 64 | 70 | | 87 | 54 | 35 | 908 | 2,390 | 295 | 81 | 270 |
| 8 | 54 | 64 | 70 | 40 | 81 | 42 | 35 | 473 | 2,720 | 220 | 81 | 258 |
| 9 | 64 | 64 | 70 | | 81 | 42 | 35 | 320 | 1,020 | 172 | 75 | 335 |
| 10 | 59 | 64 | 70 | | 75 | 49 | 35 | 232 | 1,020 | 142 | 75 | 362 |
| 11 | 59 | 64 | 64 | | 70 | 49 | 35 | 184 | 3,510 | 124 | 152 | 347 |
| 12 | 54 | 70 | 64 | | 70 | 54 | 35 | 184 | 2,660 | 115 | 100 | 335 |
| 13 | 54 | 64 | 70 | | 70 | 54 | 35 | 152 | 2,130 | 208 | 64 | 376 |
| 14 | 54 | 70 | 70 | | 70 | 49 | 35 | 142 | 1,980 | 320 | 64 | 115 |
| 15 | 54 | 70 | 64 | 20 | 70 | 49 | 35 | 152 | 946 | 295 | 142 | 115 |
| 16 | 49 | 64 | 64 | | 64 | 49 | 35 | 208 | 683 | 184 | 124 | 108 |
| 17 | 70 | 70 | 64 | | 64 | 49 | 35 | 195 | 506 | 100 | 232 | 108 |
| 18 | 87 | 70 | 59 | | 64 | 45 | 35 | 184 | 575 | 75 | 1,020 | 142 |
| 19 | 115 | 64 | | | 64 | 45 | 35 | 172 | 392 | 59 | 506 | 142 |
| 20 | 115 | 70 | 50 | | 64 | 49 | 35 | 184 | 295 | 49 | 720 | 124 |
| 21 | 108 | 70 | | | 59 | 54 | 35 | 208 | 362 | 49 | 575 | 646 |
| 22 | 94 | 64 | | | 59 | 54 | 33 | 195 | 362 | 45 | 320 | 100 |
| 23 | 87 | 70 | | 15 | 59 | 54 | 33 | 184 | 320 | 75 | 245 | 94 |
| 24 | 81 | 75 | | | 59 | 54 | 33 | 184 | 335 | 87 | 320 | 81 |
| 25 | 81 | 75 | 60 | | 54 | 54 | 35 | 172 | 320 | 100 | 1,700 | 75 |
| 26 | 70 | 75 | | | 54 | 49 | 38 | 172 | 320 | 100 | 1,700 | 75 |
| 27 | 70 | 75 | | | 54 | 49 | 38 | 162 | 308 | 100 | 610 | 75 |
| 28 | 64 | 75 | 64 | 20 | 54 | 49 | 38 | 172 | 282 | 100 | 646 | 75 |
| 29 | 64 | 75 | 64 | | ------ | 49 | 38 | 473 | 220 | 100 | 195 | 70 |
| 30 | 64 | 75 | 64 | | ------ | 45 | 42 | 195 | 195 | 115 | 142 | 70 |
| 31 | 70 | ------ | 64 | | ------ | 42 | ------ | 308 | ------ | 162 | 115 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 115 | 49 | 67.9 | 4,180 |
| November | 75 | 59 | 68.2 | 4,060 |
| December | 75 | ---------- | 64.2 | 3,950 |
| January | 64 | ---------- | 29.6 | 1,820 |
| February | 87 | ---------- | 63.8 | 3,540 |
| March | 54 | 42 | 49.9 | 3,070 |
| April | 42 | 33 | 36.0 | 2,140 |
| May | 1,260 | 45 | 247 | 15,200 |
| June | 6,850 | 195 | 1,240 | 73,800 |
| July | 308 | 45 | 144 | 8,850 |
| August | 1,700 | 64 | 342 | 21,000 |
| September | 2,660 | 70 | 276 | 16,400 |
| The year | 6,850 | ---------- | 218 | 158,000 |

### 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 to September, 1930.

EXTREMES.—Maximum discharge during year, 5,390 second-feet June 7 (gage height, 23.6 feet); minimum, 66 second-feet in February and April (gage height, 3.8 feet).

Maximum known stages, 27.2 feet June 15, 1909, and 31.5 feet in May, 1903.

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

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1 | 66 | 80 | 72 | 80 | 281 | 292 | 146 | 173 |
| 2 | 69 | 80 | 72 | 80 | 304 | 270 | 173 | 164 |
| 3 | 80 | 80 | 72 | 80 | 3,350 | 270 | 164 | 155 |
| 4 | 95 | 80 | 72 | 90 | 712 | 248 | 155 | 146 |
| 5 | 108 | 80 | 72 | 108 | 555 | 237 | 137 | 155 |
| 6 | 108 | 80 | 72 | 115 | 3,430 | 226 | 129 | 155 |
| 7 | 115 | 80 | 69 | 4,280 | 5,390 | 215 | 129 | 679 |
| 8 | 122 | 76 | 69 | 4,280 | 1,770 | 570 | 108 | 1,770 |
| 9 | 122 | 76 | 69 | 889 | 2,020 | 366 | 95 | 647 |
| 10 | 129 | 76 | 69 | 457 | 1,250 | 292 | 95 | 1,220 |
| 11 | 122 | 76 | 69 | 834 | 1,680 | 248 | 101 | 600 |
| 12 | 108 | 76 | 66 | 512 | 1,830 | 226 | 101 | 405 |
| 13 | 101 | 76 | 66 | 328 | 3,620 | 215 | 101 | 316 |
| 14 | 95 | 76 | 66 | 248 | 2,740 | 193 | 101 | 281 |
| 15 | 95 | 76 | 66 | 226 | 1,300 | 173 | 101 | 259 |
| 16 | 90 | 76 | 72 | 237 | 2,780 | 173 | 115 | 237 |
| 17 | 90 | 76 | 72 | 304 | 1,320 | 164 | 108 | 226 |
| 18 | 90 | 76 | 69 | 484 | 1,130 | 164 | 108 | 193 |
| 19 | 85 | 72 | 69 | 816 | 908 | 146 | 193 | 164 |
| 20 | 85 | 72 | 69 | 484 | 798 | 137 | 631 | 146 |
| 21 | 85 | 72 | 66 | 304 | 663 | 137 | 392 | 155 |
| 22 | 85 | 72 | 66 | 248 | 555 | 137 | 555 | 164 |
| 23 | 85 | 72 | 66 | 226 | 512 | 129 | 570 | 155 |
| 24 | 85 | 72 | 66 | 237 | 457 | 155 | 405 | 146 |
| 25 | 85 | 72 | 66 | 215 | 431 | 155 | 304 | 137 |
| 26 | 80 | 72 | 66 | 204 | 405 | 137 | 512 | 129 |
| 27 | 80 | 72 | 69 | 193 | 392 | 137 | 763 | 129 |
| 28 | 80 | 72 | 69 | 183 | 353 | 146 | 392 | 122 |
| 29 | ------- | 72 | 76 | 2,020 | 340 | 129 | 366 | 122 |
| 30 | ------- | 72 | 80 | 946 | 316 | 129 | 270 | 115 |
| 31 | ------- | 72 | ------- | 457 | ------- | 129 | 204 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| February | 129 | 66 | 94.3 | 5,240 |
| March | 80 | 72 | 75.2 | 4,620 |
| April | 80 | 66 | 69.4 | 4,130 |
| May | 4,280 | 80 | 650 | 40,000 |
| June | 5,390 | 281 | 1,390 | 82,700 |
| July | 570 | 129 | 205 | 12,600 |
| August | 763 | 95 | 249 | 15,300 |
| September | 1,770 | 115 | 316 | 18,800 |
| The period | 5,390 | 66 | 382 | 183,000 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 4,200 second-feet June 8 (gage height, 21.9 feet); minimum not determined.

1923–1930: Maximum discharge, 7,450 second-feet Aug. 17, 1927 (gage height, 25.8 feet); minimum, 12 second-feet in August, 1926.

REMARKS.—Records fair. Gage-height record furnished by United States Weather Bureau and city of Salina.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 117 | 157 | 85 | 63 | 75 | 110 | 103 | 117 | 414 | 340 | 149 | 201 |
| 2 | 110 | 141 | 80 | 63 | 90 | 110 | 96 | 103 | 320 | 320 | 183 | 201 |
| 3 | 103 | 141 | 103 | 63 | 96 | 103 | 90 | 103 | 620 | 310 | 183 | 192 |
| 4 | 110 | 133 | 90 | 60 | 117 | 103 | 90 | 125 | 755 | 291 | 192 | 183 |
| 5 | 110 | 117 | 75 | | 125 | 110 | 90 | 165 | 755 | 282 | 174 | 183 |
| 6 | 103 | 110 | 71 | | 149 | 103 | 90 | 133 | 770 | 273 | 165 | 183 |
| 7 | 103 | 103 | 71 | 55 | 149 | 103 | 90 | 1,180 | 3,160 | 264 | 149 | 1,720 |
| 8 | 103 | 96 | 67 | | 165 | 110 | 90 | 3,220 | 4,200 | 255 | 141 | 1,060 |
| 9 | 110 | 103 | 71 | | 165 | 103 | 90 | 2,640 | 2,220 | 511 | 133 | 940 |
| 10 | 117 | 96 | 71 | | 157 | 103 | 90 | 680 | 1,380 | 360 | 133 | 1,140 |
| 11 | 125 | 125 | 67 | | 149 | 103 | 85 | 710 | 1,630 | 310 | 133 | 869 |
| 12 | 133 | 125 | 63 | | 141 | 103 | 85 | 710 | 1,360 | 273 | 125 | 537 |
| 13 | 133 | 141 | 63 | | 141 | 103 | 85 | 461 | 2,550 | 255 | 117 | 381 |
| 14 | 141 | 149 | 63 | | 125 | 103 | 85 | 350 | 2,910 | 237 | 117 | 350 |
| 15 | 133 | 141 | 67 | 60 | 117 | 103 | 85 | 291 | 1,440 | 228 | 117 | 320 |
| 16 | 133 | 117 | 67 | | 125 | 103 | 80 | 273 | 1,700 | 219 | 117 | 291 |
| 17 | 125 | 117 | 67 | | 125 | 103 | 80 | 273 | 2,100 | 210 | 117 | 255 |
| 18 | 117 | 117 | 63 | | 125 | 103 | 90 | 291 | 1,140 | 192 | 125 | 228 |
| 19 | 133 | 117 | | | 125 | 103 | 85 | 473 | 959 | 183 | 125 | 210 |
| 20 | 133 | 125 | | | 125 | 103 | 85 | 620 | 835 | 192 | 403 | 201 |
| 21 | 141 | 125 | 60 | | 125 | 103 | 85 | 414 | 770 | 201 | 485 | 201 |
| 22 | 201 | 125 | | | 125 | 103 | 80 | 320 | 695 | 201 | 461 | 219 |
| 23 | 310 | 117 | | 45 | 117 | 103 | 80 | 291 | 578 | 201 | 449 | 201 |
| 24 | 273 | 103 | 63 | | 117 | 103 | 80 | 264 | 514 | 201 | 360 | 192 |
| 25 | 273 | 90 | 63 | | 117 | 103 | 80 | 264 | 485 | 192 | 350 | 273 |
| 26 | 237 | 90 | 67 | | 110 | 96 | 80 | 264 | 449 | 192 | 310 | 174 |
| 27 | 192 | 85 | 63 | | 110 | 96 | 80 | 246 | 425 | 183 | 1,140 | 165 |
| 28 | 183 | 85 | 67 | 60 | 110 | 96 | 85 | 237 | 403 | 174 | 564 | 157 |
| 29 | 174 | 96 | 63 | | ------- | 96 | 96 | 237 | 360 | 165 | 340 | 149 |
| 30 | 174 | 90 | 67 | | ------- | 96 | 110 | 2,100 | 350 | 149 | 291 | 183 |
| 31 | 165 | ------- | 63 | | ------- | 96 | ------- | 635 | ------- | 149 | 282 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 310 | 103 | 152 | 9,350 |
| November | 157 | 85 | 116 | 6,900 |
| December | 103 | ---------- | 68.4 | 4,210 |
| January | ---------- | ---------- | 56.9 | 3,500 |
| February | 165 | 75 | 126 | 7,000 |
| March | 110 | 96 | 103 | 6,330 |
| April | 110 | 80 | 87.3 | 5,190 |
| May | 3,220 | 103 | 587 | 36,100 |
| June | 4,200 | 320 | 1,210 | 72,000 |
| July | 511 | 149 | 242 | 14,900 |
| August | 1,140 | 117 | 262 | 16,100 |
| September | 1,720 | 149 | 385 | 22,900 |
| The year | 4,200 | ---------- | 282 | 204,000 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 10,800 second-feet May 9 (gage height, 21.7 feet); minimum, 245 second-feet Aug. 18, 19.

1904, 1922–1930: Maximum discharge, 18,400 second-feet Aug. 10, 1928 (gage height, 28.0 feet); minimum, 25 second-feet Oct. 14, 1925.

Maximum known stage, about 35.0 feet during flood of 1903.

REMARKS.—Records fair. Gage-height records furnished by United States Weather Bureau.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 395 | 495 | 495 | 395 | | 445 | 370 | 495 | 1,270 | 844 | 470 | 817 |
| 2 | 420 | 495 | 495 | 395 | 400 | 395 | 370 | 470 | 927 | 844 | 395 | 628 |
| 3 | 420 | 470 | 395 | 370 | | 420 | 320 | 495 | 2,170 | 790 | 370 | 682 |
| 4 | 445 | 495 | 470 | 395 | | 395 | 320 | 547 | 2,350 | 736 | 395 | 927 |
| 5 | 445 | 628 | 470 | 445 | 530 | 420 | 320 | 709 | 3,040 | 709 | 395 | 1,160 |
| 6 | 445 | 547 | 495 | 470 | 520 | 445 | 320 | 2,550 | 7,700 | 682 | 395 | 871 |
| 7 | 420 | 547 | 520 | 470 | 520 | 445 | 320 | 6,410 | 6,620 | 655 | 395 | 655 |
| 8 | 370 | 547 | 495 | | 495 | 420 | 370 | 9,400 | 6,970 | 709 | 370 | 655 |
| 9 | 420 | 601 | 445 | 400 | 495 | 395 | 320 | 10,800 | 6,020 | 682 | 370 | 2,040 |
| 10 | 420 | 547 | 495 | | 520 | 395 | 370 | 7,620 | 5,040 | 709 | 370 | 4,260 |
| 11 | 395 | 547 | 495 | | 520 | 395 | 345 | 3,640 | 3,480 | 736 | 345 | 4,260 |
| 12 | 420 | 547 | 470 | 370 | 547 | 395 | 345 | 2,650 | 2,450 | 655 | 320 | 3,040 |
| 13 | 420 | 547 | 470 | | 574 | 420 | 345 | 3,090 | 2,300 | 601 | 320 | 2,980 |
| 14 | 420 | 601 | 495 | | 601 | 395 | 370 | 3,760 | 2,500 | 547 | 320 | 3,940 |
| 15 | 445 | 601 | 470 | 350 | 574 | 420 | 370 | 2,870 | 5,430 | 547 | 320 | 3,090 |
| 16 | 445 | 601 | 470 | | 547 | 395 | 345 | 2,170 | 9,600 | 520 | 320 | 2,650 |
| 17 | 682 | 601 | 495 | | 495 | 370 | 320 | 1,590 | 5,950 | 495 | 270 | 1,900 |
| 18 | 682 | 655 | 495 | 360 | 495 | 395 | 345 | 1,270 | 3,640 | 470 | 245 | 1,100 |
| 19 | 601 | 628 | | | 495 | 395 | 370 | 1,310 | 2,500 | 470 | 245 | 1,590 |
| 20 | 628 | 628 | | | 470 | 370 | 370 | 1,390 | 2,450 | 470 | 370 | 817 |
| 21 | 1,200 | 601 | 450 | | 495 | 370 | 345 | 1,350 | 1,990 | 445 | 1,630 | 736 |
| 22 | 984 | 655 | | | 470 | 420 | 320 | 1,200 | 1,630 | 445 | 2,300 | 682 |
| 23 | 445 | 682 | 470 | 370 | 470 | 370 | 320 | 1,010 | 1,310 | 420 | 1,200 | 682 |
| 24 | 736 | 601 | 470 | | 470 | 370 | 320 | 927 | 1,430 | 395 | 871 | 628 |
| 25 | 628 | 601 | 470 | | 445 | 395 | 345 | 899 | 1,630 | 395 | 790 | 601 |
| 26 | 547 | 547 | 470 | | 445 | 420 | 370 | 844 | 1,270 | 420 | 709 | 547 |
| 27 | 547 | 547 | 445 | | 445 | 395 | 395 | 736 | 1,100 | 420 | 736 | 495 |
| 28 | 520 | 520 | 420 | 380 | 445 | 345 | 395 | 628 | 1,040 | 420 | 763 | 470 |
| 29 | 495 | 495 | 395 | | ------- | 320 | 395 | 682 | 899 | 370 | 1,630 | 470 |
| 30 | 495 | 495 | 370 | | ------- | 395 | 709 | 682 | 871 | 370 | 984 | 445 |
| 31 | 495 | ------- | 395 | | ------- | 370 | ------- | 1,350 | ------- | 420 | 984 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 1,200 | 370 | 530 | 32,600 |
| November | 682 | 470 | 569 | 33,900 |
| December | 520 | 370 | 463 | 28,500 |
| January | 470 | ---------- | 383 | 23,600 |
| February | 601 | 400 | 489 | 27,200 |
| March | 445 | 320 | 397 | 24,400 |
| April | 709 | 320 | 361 | 21,500 |
| May | 10,800 | 470 | 2,370 | 146,000 |
| June | 9,600 | 871 | 3,190 | 190,000 |
| July | 844 | 370 | 561 | 34,500 |
| August | 2,300 | 245 | 632 | 38,900 |
| September | 4,260 | 445 | 1,460 | 86,900 |
| The year | 10,800 | ---------- | 949 | 688,000 |

### SALINE RIVER NEAR WILSON, KANS.

LOCATION.—Chain gage in SW. ¼ sec. 11, T. 13 S., R. 11 W., three-fourths mile above Hell Creek and 8 miles northwest of Wilson.

DRAINAGE AREA.—1,900 square miles.

RECORDS AVAILABLE.—May, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 4,140 second-feet Sept. 10 (gage height, 13.50 feet); minimum, approximately 5 second-feet in January.

1929-30: Maximum and minimum discharges, those of 1930.

REMARKS.—Records fair except those for period of ice effect, Dec. 17 to Feb. 3, which are poor.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 42 | 79 | 54 | | 32 | 40 | 36 | 67 | 52 | 62 | 21 | 1,550 |
| 2 | 39 | 69 | 60 | | 36 | 38 | 42 | 76 | 62 | 56 | 16 | 1,510 |
| 3 | 42 | 62 | 64 | 20 | 39 | 52 | 39 | 85 | 76 | 49 | 18 | 1,480 |
| 4 | 48 | 56 | 60 | | 52 | 59 | 33 | 96 | 88 | 48 | 24 | 1,440 |
| 5 | 45 | 52 | 57 | | 59 | 56 | 28 | 181 | 181 | 56 | 21 | 2,440 |
| 6 | 42 | 49 | 54 | | 62 | 52 | 33 | 216 | 204 | 52 | 16 | 2,340 |
| 7 | 39 | 46 | 51 | | 69 | 49 | 39 | 204 | 181 | 45 | 16 | 2,790 |
| 8 | 45 | 52 | 54 | | 72 | 43 | 36 | 171 | 171 | 49 | 14 | 2,200 |
| 9 | 48 | 59 | 57 | | 62 | 40 | 31 | 159 | 181 | 52 | 18 | 2,490 |
| 10 | 45 | 62 | 51 | | 56 | 43 | 25 | 138 | 181 | 46 | 21 | 4,020 |
| 11 | 42 | 65 | 48 | 10 | 52 | 46 | 28 | 171 | 148 | 38 | 16 | 1,890 |
| 12 | 51 | 72 | 45 | | 49 | 52 | 33 | 181 | 470 | 32 | 21 | 1,630 |
| 13 | 64 | 65 | 42 | | 52 | 56 | 36 | 171 | 441 | 32 | 24 | 1,480 |
| 14 | 74 | 62 | 39 | | 56 | 52 | 31 | 148 | 413 | 38 | 18 | 1,360 |
| 15 | 60 | 59 | 36 | | 59 | 46 | 32 | 148 | 441 | 32 | 14 | 1,170 |
| 16 | 54 | 65 | 39 | | 56 | 43 | 31 | 128 | 900 | 26 | 46 | 1,000 |
| 17 | 51 | 72 | | | 52 | 40 | 36 | 115 | 845 | 29 | 228 | 845 |
| 18 | 48 | 65 | | | 46 | 46 | 33 | 115 | 644 | 35 | 216 | 673 |
| 19 | 77 | 62 | | | 56 | 49 | 28 | 115 | 192 | 36 | 192 | 528 |
| 20 | 67 | 65 | | | 52 | 52 | 25 | 108 | 113 | 32 | 181 | 253 |
| 21 | 57 | 69 | | | 46 | 46 | 31 | 96 | 85 | 29 | 159 | 128 |
| 22 | 48 | 72 | 30 | | 49 | 59 | 33 | 88 | 74 | 24 | 138 | 100 |
| 23 | 42 | 76 | | 5 | 52 | 52 | 28 | 76 | 65 | 18 | 117 | 92 |
| 24 | 45 | 79 | | | 46 | 43 | 31 | 65 | 56 | 24 | 113 | 83 |
| 25 | 48 | 83 | | | 43 | 35 | 39 | 67 | 49 | 29 | 441 | 87 |
| 26 | 51 | 87 | | | 52 | 40 | 45 | 72 | 56 | 26 | 528 | 85 |
| 27 | 48 | 79 | | | 49 | 38 | 51 | 64 | 65 | 29 | 557 | 77 |
| 28 | 51 | 72 | 18 | | 43 | 35 | 57 | 70 | 79 | 24 | 586 | 70 |
| 29 | 54 | 65 | 15 | | ------- | 32 | 51 | 64 | 77 | 24 | 731 | 64 |
| 30 | 69 | 62 | 12 | | ------- | 29 | 56 | 57 | 67 | 32 | 1,260 | 57 |
| 31 | 77 | ------- | 15 | | ------- | 26 | ------- | 51 | ------- | 26 | 1,550 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 77 | 39 | 52.0 | 3,200 |
| November | 87 | 46 | 66.1 | 3,930 |
| December | 64 | 12 | 38.7 | 2,380 |
| January | ---------- | ---------- | 9.03 | 555 |
| February | 72 | 32 | 51.8 | 2,880 |
| March | 59 | 26 | 44.8 | 2,750 |
| April | 57 | 25 | 35.9 | 2,140 |
| May | 216 | 51 | 115 | 7,070 |
| June | 900 | 49 | 222 | 13,200 |
| July | 62 | 18 | 36.5 | 2,240 |
| August | 1,550 | 14 | 236 | 14,500 |
| September | 4,020 | 57 | 1,130 | 67,200 |
| The year | 4,020 | ---------- | 169 | 122,000 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 1,980 second-feet Sept. 13 (gage height, 19.48 feet); minimum, 20 second-feet Aug. 11 (gage height, 3.18 feet).

1919–1930: Maximum discharge, 6,150 second-feet July 12, 1928 (gage height, 29.48 feet); minimum, 0.5 second-foot in July, 1926.

REMARKS.—Records fair except those for periods of ice effect during November, December, January, February, which are poor. Discharge interpolated Oct. 7, 19, Oct. 30 to Nov. 1, Nov. 3.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 56 | [a] 64 | 80 | 64 | | 53 | 47 | 68 | 80 | 95 | 36 | 100 |
| 2 | 53 | 64 | 80 | 64 | 44 | 53 | 44 | 84 | 100 | 85 | 21 | 809 |
| 3 | 56 | [a] 68 | 80 | 64 | | 53 | 44 | 72 | 405 | 76 | 36 | 515 |
| 4 | 64 | 72 | 76 | 64 | | 56 | 47 | 84 | 123 | 76 | 25 | 284 |
| 5 | 60 | 76 | 72 | 64 | 50 | 53 | 50 | 89 | 338 | 72 | 27 | 149 |
| 6 | 56 | 80 | 72 | | 53 | 50 | 50 | 84 | 1,160 | 60 | 39 | 135 |
| 7 | [a] 52 | 76 | 72 | 56 | 56 | 56 | 47 | 788 | 675 | 60 | 32 | 615 |
| 8 | 47 | 68 | 68 | | 72 | 64 | 44 | 998 | 485 | 64 | 30 | 845 |
| 9 | 50 | 76 | 68 | | 68 | 68 | 44 | 387 | 266 | 68 | 34 | 977 |
| 10 | 47 | 64 | 72 | 44 | 72 | 56 | 47 | 327 | 163 | 68 | 22 | 1,040 |
| 11 | 50 | 36 | 68 | | 72 | 50 | 44 | 763 | 156 | 68 | 20 | 1,360 |
| 12 | 50 | 44 | 64 | | 72 | 50 | 47 | 752 | 163 | 64 | 33 | 1,620 |
| 13 | 60 | 47 | 68 | | 72 | 50 | 47 | 302 | 185 | 42 | 30 | 1,940 |
| 14 | 53 | 99 | 68 | | 68 | 56 | 44 | 249 | 209 | 52 | 33 | 1,570 |
| 15 | 64 | 114 | 76 | | 64 | 56 | 44 | 201 | 395 | 52 | 45 | 585 |
| 16 | 60 | 99 | 72 | 36 | 72 | 53 | 44 | 170 | 302 | 60 | 44 | 445 |
| 17 | 76 | 76 | 68 | | 72 | 56 | 47 | 170 | 425 | 60 | 24 | 257 |
| 18 | 60 | 84 | 68 | | 68 | 56 | 44 | 185 | 605 | 56 | 22 | 241 |
| 19 | [a] 60 | 84 | | | 64 | 53 | 41 | 177 | 495 | 46 | 76 | 193 |
| 20 | 60 | 84 | | | 64 | 53 | 41 | 170 | 266 | 42 | 257 | 177 |
| 21 | 56 | | 60 | | 60 | 53 | 44 | 156 | 177 | 40 | 142 | 201 |
| 22 | 53 | 50 | | | 56 | 56 | 41 | 149 | 149 | 42 | 85 | 193 |
| 23 | 56 | | | 32 | 56 | 53 | 47 | 142 | 149 | 46 | 76 | 117 |
| 24 | 53 | | | | 56 | 50 | 47 | 142 | 123 | 46 | 105 | 111 |
| 25 | 68 | 64 | 64 | | 53 | 50 | 44 | 90 | 117 | 48 | 117 | 111 |
| 26 | 64 | 68 | 64 | | 50 | 47 | 44 | 64 | 100 | 48 | 111 | 105 |
| 27 | 64 | 68 | 64 | | 53 | 44 | 47 | 72 | 90 | 40 | 105 | 105 |
| 28 | 64 | 72 | 64 | 34 | 50 | 47 | 44 | 72 | 95 | 40 | 435 | 105 |
| 29 | 64 | 80 | 64 | | ------- | 47 | 41 | 72 | 100 | 44 | 249 | 100 |
| 30 | [a] 64 | 84 | 68 | | ------- | 47 | 64 | 76 | 111 | 44 | 142 | 100 |
| 31 | [a] 64 | ------- | 68 | | ------- | 50 | ------- | 85 | ------- | 49 | 129 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 76 | 47 | 58.2 | 3,580 |
| November | 114 | 36 | 70.4 | 4,190 |
| December | 80 | ---------- | 68.0 | 4,180 |
| January | 64 | ---------- | 42.5 | 2,610 |
| February | 72 | ---------- | 59.6 | 3,310 |
| March | 68 | 44 | 52.9 | 3,250 |
| April | 64 | 41 | 45.7 | 2,720 |
| May | 998 | 64 | 234 | 14,400 |
| June | 1,160 | 80 | 274 | 16,300 |
| July | 95 | 39 | 56.2 | 3,460 |
| August | 435 | 20 | 83.3 | 5,120 |
| September | 1,940 | 100 | 504 | 30,000 |
| The year | 1,940 | 100 | 128 | 93,100 |

[a] Estimated.

### SOUTH FORK OF SOLOMON RIVER AT ALTON, KANS.

LOCATION.—Chain gage in SW. ¼ sec. 12, T. 7 S., R. 15 W., three-fourths mile south of Alton.

DRAINAGE AREA.—1,720 square miles.

RECORDS AVAILABLE.—August, 1919, to June, 1925; August, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 3,130 second-feet Sept. 10 (gage height, 11.53 feet); minimum, 5 second-feet Aug. 10 (gage height, 1.46 feet). 1919–1925, 1928–1930: 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 fair except those for periods of ice effect, Dec. 18–26, Jan. 2–31, which are estimated .

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 61 | 20 | 36 | 20 | 40 | 34 | 61 | 35 | 82 | 16 | 237 |
| 2 | 15 | 45 | 22 | | 30 | 42 | 34 | 59 | 33 | 52 | 14 | 220 |
| 3 | | 41 | 27 | 30 | 39 | 44 | 34 | 58 | 33 | 30 | 13 | 89 |
| 4 | | 38 | 32 | | 66 | 45 | 33 | 60 | 32 | 37 | 12 | 32 |
| 5 | 16 | 34 | 37 | | 75 | 45 | 34 | 61 | 452 | 37 | 11 | 27 |
| 6 | 15 | 36 | 42 | | 82 | 44 | 34 | 125 | 289 | 28 | 9 | 26 |
| 7 | 15 | 50 | 50 | | 82 | 44 | 33 | 132 | 196 | 24 | 7 | 28 |
| 8 | 16 | 48 | 44 | 25 | 89 | 42 | 34 | 96 | 156 | 23 | 6 | 29 |
| 9 | 15 | 45 | 36 | | 74 | 40 | 33 | 271 | 148 | 21 | 6 | 980 |
| 10 | 15 | 45 | 34 | | 63 | 37 | 31 | 307 | 835 | 20 | 5 | 2,770 |
| 11 | 40 | 48 | 34 | | 61 | 36 | 28 | 343 | 415 | 19 | 6 | 980 |
| 12 | 46 | 50 | 34 | | 57 | 35 | 28 | 289 | 289 | 16 | 8 | 433 |
| 13 | 51 | 49 | 34 | 20 | 52 | 35 | 29 | 237 | 204 | 15 | 11 | 325 |
| 14 | 59 | 48 | 36 | | 52 | 37 | 30 | 188 | 172 | 13 | 9 | 289 |
| 15 | 54 | 48 | 34 | | 50 | 38 | 31 | 125 | 140 | 13 | 12 | 254 |
| 16 | 41 | 48 | 34 | | 50 | 37 | 30 | 125 | 110 | 14 | 13 | 204 |
| 17 | 37 | 36 | 32 | | 48 | 37 | 31 | 118 | 89 | 14 | 14 | 172 |
| 18 | 35 | 29 | 24 | | 46 | 36 | 31 | 103 | 74 | 11 | 16 | 110 |
| 19 | 38 | 25 | 16 | | 44 | 35 | 31 | 96 | 67 | 13 | 17 | 96 |
| 20 | 36 | 23 | 15 | | 44 | 34 | 30 | 89 | 62 | 10 | 18 | 69 |
| 21 | 30 | 27 | 15 | 10 | 38 | 35 | 31 | 89 | 89 | 164 | 16 | 61 |
| 22 | 28 | 33 | 15 | | 39 | 33 | 29 | 82 | 96 | 148 | 18 | 54 |
| 23 | 30 | 36 | 15 | | 41 | 32 | 27 | 76 | 82 | 52 | 19 | 48 |
| 24 | 26 | 39 | 15 | | 41 | 33 | 28 | 66 | 70 | 42 | 33 | 49 |
| 25 | 24 | 41 | 16 | | 41 | 33 | 96 | 58 | 60 | 37 | 307 | 47 |
| 26 | 26 | 43 | 16 | | 41 | 32 | 55 | 50 | 60 | 30 | 343 | 45 |
| 27 | 26 | 45 | 17 | | 41 | 31 | 57 | 46 | 65 | 23 | 196 | 44 |
| 28 | 38 | 48 | 19 | 15 | 40 | 32 | 59 | 41 | 63 | 22 | 82 | 42 |
| 29 | 62 | 48 | 20 | | ------- | 31 | 59 | 39 | 89 | 20 | 254 | 40 |
| 30 | 64 | 39 | 24 | | ------- | 33 | 61 | 37 | 89 | 18 | 254 | 39 |
| 31 | 56 | ------- | 27 | | ------- | 33 | ------- | 37 | ------- | 16 | 307 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 64 | ---------- | 32.2 | 1,980 |
| November | 61 | 23 | 41.5 | 2,470 |
| December | 50 | 15 | 27.0 | 1,660 |
| January | 36 | ---------- | 18.4 | 1,130 |
| February | 89 | 20 | 51.6 | 2,870 |
| March | 45 | 31 | 36.8 | 2,260 |
| April | 96 | 27 | 37.8 | 2,250 |
| May | 343 | 37 | 115 | 7,070 |
| June | 835 | 32 | 153 | 9,100 |
| July | 164 | 10 | 34.3 | 2,110 |
| August | 343 | 5 | 66.2 | 4,070 |
| September | 2,770 | 26 | 261 | 15,500 |
| The year | 2,770 | 5 | 72.6 | 52,500 |

## SOLOMON RIVER AT BELOIT, KANS.

LOCATION.—Water-stage recorder installed Mar. 19, 1930, in SW. ¼ sec. 9, T. 7 S., R. 7 W., on highway bridge in Beloit, 93 miles above junction with Smoky Hill River. Prior to Mar. 19 a chain gage at same site was used.

DRAINAGE AREA.—5,410 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1930.

EXTREMES.—Maximum discharge during year, 3,540 second-feet Sept. 11 (gage height, 15.65 feet); minimum, 5 second-feet at times of low flow during which power plant 200 feet upstream is shut down.

1929–30: 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 good except those for period Oct. 1 to Mar. 19, which are fair. Power plant located about 200 feet upstream regulates low-water flow.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 150 | 364 | 97 | 63 | 60 | 144 | 92 | 124 | 106 | 115 | 185 | 351 |
| 2 | 68 | 230 | 79 | 114 | 36 | 144 | 71 | 338 | 124 | 115 | 124 | 185 |
| 3 | 48 | 207 | 134 | 52 | 18 | 108 | 92 | 770 | 84 | 124 | 92 | 174 |
| 4 | 144 | 164 | 69 | 72 | 36 | 84 | 48 | 314 | 134 | 106 | 115 | 185 |
| 5 | 78 | 174 | 124 | 41 | 66 | 57 | 97 | 351 | 786 | 115 | 21 | 134 |
| 6 | 72 | 124 | 106 | 103 | 84 | 134 | 48 | 266 | 1,260 | 75 | 134 | 154 |
| 7 | 78 | 115 | 144 | 93 | 83 | 62 | 97 | 278 | 674 | 88 | 38 | 144 |
| 8 | 50 | 84 | 32 | 80 | 102 | 71 | 52 | 403 | 628 | 88 | 16 | 134 |
| 9 | 150 | 124 | 164 | 83 | 77 | 72 | 92 | 416 | 528 | 88 | 42 | 134 |
| 10 | 103 | 134 | 134 | 72 | 218 | 124 | 48 | 338 | 377 | 84 | 8 | 1,410 |
| 11 | 146 | 164 | 144 | 61 | 196 | 43 | 59 | 1,440 | 326 | 75 | 11 | 2,130 |
| 12 | 185 | 207 | 144 | 52 | 144 | 45 | 92 | 1,590 | 1,100 | 48 | 41 | 1,060 |
| 13 | 165 | 185 | 83 | 62 | 124 | 75 | 30 | 1,080 | 770 | 48 | 5 | 472 |
| 14 | 706 | 134 | 124 | 62 | 134 | 116 | 124 | 934 | 542 | 59 | 59 | 326 |
| 15 | 338 | 185 | 86 | 55 | 115 | 96 | 115 | 570 | 500 | 44 | 5 | 278 |
| 16 | 278 | 134 | 123 | 55 | 106 | 67 | 154 | 416 | 514 | 52 | 59 | 242 |
| 17 | 185 | 108 | 106 | 48 | 115 | 144 | 79 | 390 | 458 | 26 | 185 | 207 |
| 18 | 144 | 230 | 124 | 48 | 115 | 58 | 79 | 364 | 364 | 48 | 403 | 144 |
| 19 | 314 | 326 | 5 | 48 | 75 | 62 | 92 | 351 | 290 | 8 | 207 | 144 |
| 20 | 185 | 154 | 56 | 48 | 115 | 92 | 52 | 351 | 196 | 41 | 185 | 115 |
| 21 | 144 | 144 | 41 | 41 | 81 | 55 | 207 | 338 | 722 | 63 | 144 | 97 |
| 22 | 174 | 89 | 55 | 41 | 164 | 75 | 185 | 314 | 858 | 24 | 124 | 102 |
| 23 | 103 | 72 | 80 | 41 | 115 | 40 | 144 | 302 | 390 | 41 | 278 | 88 |
| 24 | 164 | 50 | 36 | 41 | 144 | 106 | 115 | 218 | 338 | 55 | 164 | 75 |
| 25 | 102 | 144 | 5 | 52 | 80 | 67 | 124 | 185 | 266 | 144 | 134 | 84 |
| 26 | 83 | 61 | 93 | 31 | 108 | 63 | 106 | 196 | 230 | 134 | 1,100 | 84 |
| 27 | 62 | 106 | 43 | 21 | 108 | 63 | 84 | 164 | 164 | 75 | 915 | 67 |
| 28 | 83 | 67 | 41 | 36 | 108 | 59 | 124 | 124 | 144 | 97 | 326 | 71 |
| 29 | 108 | 124 | 36 | 42 | ------ | 75 | 154 | 134 | 134 | 71 | 242 | 84 |
| 30 | 77 | 134 | 67 | 42 | ------ | 71 | 154 | 88 | 144 | 71 | 278 | 48 |
| 31 | 207 | ------ | 93 | 48 | ------ | 71 | ------ | 115 | ------ | 25 | 486 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 706 | 48 | 158 | 9,720 |
| November | 364 | 50 | 151 | 8,980 |
| December | 164 | 5 | 86.1 | 5,290 |
| January | 114 | 21 | 56.4 | 3,470 |
| February | 218 | 18 | 105 | 5,830 |
| March | 144 | 40 | 82.0 | 5,040 |
| April | 207 | 30 | 100 | 5,950 |
| May | 1,590 | 88 | 428 | 26,300 |
| June | 1,260 | 84 | 438 | 26,100 |
| July | 144 | 8 | 72.5 | 4,460 |
| August | 1,100 | 5 | 198 | 12,200 |
| September | 2,130 | 48 | 297 | 17,700 |
| The year | 2,130 | 5 | 181 | 131,000 |

### SOLOMON RIVER AT NILES, KANS.

LOCATION.—Chain gage in NW. ¼ sec. 31, T. 12 S., R. 1 W., three-fourths 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, 1930.

EXTREMES.—Maximum discharge during year, 4,710 second-feet June 5 (gage height, 18.20 feet); minimum, 48 second-feet Aug. 18 (gage height, 2.94 feet). 1897–1903, 1919–1930: Maximum discharge, 10,600 second-feet June 3, 1903; minimum, 1 second-foot Sept. 4, 1926.

REMARKS.—Records good except those for periods of ice effect, Dec. 18–24, Jan. 8 to Feb. 3, and for periods Oct. 1 to Dec. 17, Aug. 30 to Sept. 12, which are fair.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 105 | 139 | 158 | 130 | | 113 | 130 | 169 | 241 | 216 | 113 | 322 |
| 2 | 121 | 148 | 121 | 113 | 150 | 148 | 98 | 192 | 350 | 192 | 105 | 364 |
| 3 | 148 | 139 | 158 | 139 | | 130 | 84 | 192 | 904 | 192 | 105 | 538 |
| 4 | 169 | 180 | 192 | 192 | 204 | 148 | 91 | 392 | 658 | 180 | 139 | 378 |
| 5 | 158 | 228 | 169 | 139 | 192 | 169 | 91 | 576 | 2,550 | 169 | 130 | 350 |
| 6 | 130 | 216 | 158 | 130 | 204 | 148 | 98 | 3,100 | 4,420 | 192 | 121 | 308 |
| 7 | 98 | 216 | 158 | 105 | 204 | 158 | 158 | 3,670 | 3,060 | 216 | 130 | 267 |
| 8 | 98 | 204 | 139 | | 216 | 148 | 180 | 3,810 | 1,870 | 192 | 130 | 267 |
| 9 | 121 | 192 | 113 | | 139 | 148 | 139 | 1,830 | 848 | 169 | 113 | 392 |
| 10 | 98 | 216 | 139 | | 158 | 113 | 139 | 796 | 700 | 148 | 113 | 1,210 |
| 11 | 113 | 158 | 169 | 130 | 180 | 139 | 139 | 748 | 519 | 139 | 105 | 557 |
| 12 | 121 | 158 | 121 | | 180 | 158 | 139 | 2,100 | 500 | 148 | 105 | 1,050 |
| 13 | 113 | 204 | 158 | | 254 | 130 | 148 | 2,420 | 452 | 113 | 105 | 2,460 |
| 14 | 113 | 204 | 158 | | 241 | 139 | 148 | 2,180 | 772 | 121 | 105 | 1,710 |
| 15 | 180 | 267 | 158 | | 216 | 139 | 121 | 1,750 | 2,510 | 105 | 98 | 796 |
| 16 | 308 | 216 | 158 | | 204 | 113 | 91 | 1,180 | 616 | 113 | 75 | 538 |
| 17 | 468 | 204 | 139 | | 204 | 139 | 105 | 700 | 500 | 105 | 50 | 392 |
| 18 | 322 | 192 | | | 180 | 158 | 113 | 700 | 484 | 105 | 48 | 294 |
| 19 | 280 | 192 | 120 | | 192 | 148 | 169 | 500 | 500 | 113 | 91 | 241 |
| 20 | 378 | 192 | | | 180 | 139 | 148 | 468 | 378 | 105 | 876 | 216 |
| 21 | 241 | 204 | | 120 | 192 | 169 | 139 | 420 | 350 | 98 | 2,300 | 180 |
| 22 | 420 | 308 | 125 | | 192 | 121 | 130 | 378 | 294 | 113 | 679 | 180 |
| 23 | 294 | 241 | | | 180 | 113 | 130 | 378 | 322 | 84 | 267 | 169 |
| 24 | 241 | 204 | | | 169 | 169 | 130 | 392 | 991 | 75 | 192 | 169 |
| 25 | 180 | 169 | 148 | | 169 | 192 | 158 | 350 | 679 | 105 | 139 | 130 |
| 26 | 180 | 148 | 192 | | 148 | 113 | 180 | 294 | 436 | 105 | 228 | 91 |
| 27 | 148 | 139 | 158 | | 204 | 113 | 180 | 267 | 364 | 98 | 180 | 75 |
| 28 | 148 | 148 | 130 | 130 | 180 | 91 | 180 | 254 | 308 | 105 | 280 | 91 |
| 29 | 148 | 148 | 130 | | ------- | 139 | 616 | 254 | 267 | 98 | 1,300 | 98 |
| 30 | 148 | 121 | 130 | | ------- | 139 | 180 | 241 | 228 | 148 | 700 | 121 |
| 31 | 139 | ------- | 121 | | ------- | 148 | ------- | 254 | ------- | 113 | 406 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 468 | 98 | 191 | 11,700 |
| November | 308 | 121 | 190 | 11,300 |
| December | 192 | 113 | 143 | 8,790 |
| January | 192 | 105 | 128 | 7,870 |
| February | 254 | 139 | 187 | 10,400 |
| March | 192 | 91 | 140 | 8,610 |
| April | 616 | 84 | 152 | 9,040 |
| May | 3,810 | 169 | 999 | 61,400 |
| June | 4,420 | 228 | 902 | 53,700 |
| July | 216 | 75 | 135 | 8,300 |
| August | 2,300 | 48 | 307 | 18,900 |
| September | 2,460 | 75 | 465 | 27,700 |
| The year | 4,420 | 48 | 328 | 238,000 |

## 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-fourths mile below Bow Creek.

DRAINAGE AREA.—1,290 square miles.

RECORDS AVAILABLE.—August, 1919, to June, 1925; August, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 2,160 second-feet Aug. 24 (gage height, 10.6 feet); minimum, 1 second-foot Sept. 25, 26.

1919–1925, 1928–1930: 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 Dec. 15–27, Jan. 7–29.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5 | 69 | 43 | 48 | 47 | 35 | 23 | 365 | 18 | 27 | 16 | 22 |
| 2 | 7 | 56 | 40 | 39 | 47 | 39 | 7 | 107 | 20 | 20 | 18 | 27 |
| 3 | 9 | 53 | 38 | 37 | 50 | 39 | 28 | 54 | 16 | 21 | 6 | 22 |
| 4 | 11 | 43 | 43 | 36 | 44 | 31 | 26 | 122 | 46 | 22 | 16 | 25 |
| 5 | 4 | 45 | 37 | 45 | 41 | 34 | 35 | 222 | 114 | 19 | 18 | 31 |
| 6 | 12 | 45 | 41 | 51 | 43 | 28 | 31 | 155 | 173 | 31 | 12 | 20 |
| 7 | 5 | 48 | 48 | | 45 | 26 | 23 | 100 | 49 | 18 | 16 | 26 |
| 8 | 7 | 32 | 44 | | 39 | 24 | 146 | 65 | 26 | 10 | 9 | 32 |
| 9 | 12 | 48 | 47 | | 41 | 46 | 25 | 54 | 36 | 8 | 6 | 257 |
| 10 | 12 | 44 | 44 | | 48 | 31 | 26 | 48 | 660 | 8 | 2 | 48 |
| 11 | 37 | 48 | 41 | | 50 | 28 | 24 | 585 | 510 | 7 | 2 | 32 |
| 12 | 343 | 48 | 40 | | 40 | 31 | 23 | 413 | 189 | 9 | 2 | 24 |
| 13 | 237 | 32 | 44 | | 46 | 33 | 25 | 192 | 140 | 8 | 3 | 19 |
| 14 | 118 | 36 | 41 | | 41 | 34 | 22 | 114 | 105 | 14 | 18 | 24 |
| 15 | 69 | 51 | | | 37 | 35 | 25 | 60 | 92 | 7 | 8 | 16 |
| 16 | 44 | 48 | | | 36 | 39 | 29 | 58 | 74 | 6 | 155 | 16 |
| 17 | 69 | 43 | | | 39 | 35 | 33 | 100 | 69 | 9 | 43 | 9 |
| 18 | 132 | 47 | | 10 | 40 | 33 | 23 | 48 | 59 | 6 | 44 | 16 |
| 19 | 140 | 42 | | | 39 | 40 | 114 | 182 | 413 | 10 | 189 | 20 |
| 20 | 132 | 43 | | | 40 | 34 | 68 | 74 | 365 | 8 | 60 | 15 |
| 21 | 59 | 38 | 20 | | 37 | 21 | 33 | 21 | 208 | 18 | 40 | 16 |
| 22 | 51 | 43 | | | 31 | 27 | 32 | 146 | 125 | 21 | 44 | 8 |
| 23 | 29 | 47 | | | 31 | 19 | 26 | 21 | 98 | 8 | 42 | 5 |
| 24 | 26 | 40 | | | 32 | 21 | 38 | 23 | 58 | 13 | 1,240 | 2 |
| 25 | 47 | 39 | | | 39 | 20 | 38 | 28 | 50 | 21 | 321 | 1 |
| 26 | 44 | 44 | | | 37 | 21 | 41 | 21 | 43 | 7 | 98 | 1 |
| 27 | 32 | 51 | | | 35 | 18 | 33 | 21 | 43 | 12 | 64 | 7 |
| 28 | 44 | 47 | 39 | | 29 | 17 | 155 | 19 | 39 | 8 | 50 | 9 |
| 29 | 52 | 45 | 45 | | ------ | 28 | 485 | 14 | 37 | 16 | 40 | 10 |
| 30 | 52 | 47 | 52 | 15 | ------ | 14 | 277 | 21 | 26 | 7 | 24 | 11 |
| 31 | 64 | ------ | 48 | 30 | ------ | 17 | ------ | 21 | ------ | 10 | 31 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 343 | 4 | 61.5 | 3,780 |
| November | 69 | 32 | 45.4 | 2,700 |
| December | 52 | ------ | 33.4 | 2,050 |
| January | 51 | ------ | 17.1 | 1,050 |
| February | 50 | 29 | 40.1 | 2,230 |
| March | 46 | 14 | 29.0 | 1,780 |
| April | 485 | 7 | 63.8 | 3,800 |
| May | 585 | 14 | 112 | 6,890 |
| June | 660 | 16 | 130 | 7,740 |
| July | 31 | 6 | 13.2 | 812 |
| August | 1,240 | 2 | 85.0 | 5,230 |
| September | 257 | 1 | 25.7 | 1,530 |
| The year | 1,240 | 1 | 54.7 | 39,600 |

### BIG BLUE RIVER AT HULL, KANS.

LOCATION.—Chain gage in NW. ¼ sec. 3, T. 2 S., R. 7 E., one-fourth mile west of Hull and 2 miles above Deer Creek.

DRAINAGE AREA.—4,510 square miles.

RECORDS AVAILABLE.—August, 1919, to July, 1925; August, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 11,400 second-feet May 15 (gage height, 18.45 feet); minimum, 50 second-feet Aug. 8 (gage height, 2.29 feet). 1919–1925, 1928–1930: 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 ice effect, December, January, February, and for period of missing gage heights, Aug. 24 to Sept. 6, which are poor.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 122 | 292 | 176 | 197 | | | 115 | 595 | 595 | 524 | 130 | |
| 2 | 102 | 242 | 157 | 197 | | | 90 | 524 | 632 | 458 | 148 | |
| 3 | 85 | 292 | 148 | 148 | | 130 | 122 | 595 | 670 | 458 | 108 | |
| 4 | 80 | 280 | 157 | | 600 | | 108 | 595 | 823 | 365 | 85 | 400 |
| 5 | 148 | 176 | 166 | 148 | | | 96 | 670 | 784 | 305 | 80 | |
| 6 | 139 | 102 | 166 | | | | 108 | 2,760 | 670 | 280 | 66 | |
| 7 | 85 | 115 | 197 | | | | 115 | 2,760 | 595 | 280 | 56 | 305 |
| 8 | 115 | 130 | 186 | | 1,070 | | 122 | 1,580 | 823 | 320 | 53 | 292 |
| 9 | 292 | 96 | 139 | | 1,070 | | 130 | 1,580 | 902 | 292 | 66 | 427 |
| 10 | 139 | 122 | 130 | | | | 122 | 2,460 | 1,350 | 280 | 56 | 2,400 |
| 11 | 130 | 108 | 130 | 120 | | 120 | 90 | 3,990 | 2,040 | 335 | 70 | 1,700 |
| 12 | 148 | 130 | 130 | | 300 | | 96 | 3,610 | 1,520 | 320 | 280 | 943 |
| 13 | 197 | 115 | 102 | | | | 115 | 5,080 | 943 | 320 | 3,010 | 902 |
| 14 | 186 | 130 | 90 | | | | 186 | 8,840 | 823 | 268 | 3,990 | 2,520 |
| 15 | 90 | 157 | 115 | | | | 197 | 11,100 | 823 | 186 | 2,640 | 3,070 |
| 16 | 148 | 157 | 122 | | | | 219 | 10,700 | 823 | 122 | 2,580 | 1,990 |
| 17 | 148 | 166 | 130 | | | | 320 | 8,440 | 823 | 102 | 4,560 | 1,110 |
| 18 | 139 | 166 | 115 | | 200 | 140 | 350 | 5,520 | 985 | 90 | 3,200 | 985 |
| 19 | 208 | 130 | | | | | 365 | 2,700 | 1,070 | 80 | 5,980 | 670 |
| 20 | 197 | 108 | | 100 | | | 350 | 2,160 | 1,070 | 108 | 6,080 | 595 |
| 21 | 148 | 139 | 100 | | | | 365 | 1,700 | 902 | 96 | 4,560 | 458 |
| 22 | 102 | 139 | | | | | 490 | 1,580 | 862 | 75 | 4,560 | 157 |
| 23 | 122 | 166 | | | | | 365 | 1,460 | 746 | 70 | 2,950 | 108 |
| 24 | 157 | 186 | | | | | 365 | 1,460 | 670 | 70 | | 115 |
| 25 | 139 | 157 | 115 | | 150 | | 458 | 1,250 | 670 | 75 | | 130 |
| 26 | 197 | 130 | | | | 100 | 427 | 1,070 | 784 | 70 | | 122 |
| 27 | 85 | 102 | | | | | 350 | 1,070 | 862 | 75 | 800 | 80 |
| 28 | 102 | 130 | 130 | 150 | | | 396 | 943 | 746 | 75 | | 130 |
| 29 | 197 | 148 | | | ------- | | 670 | 902 | 670 | 108 | | 85 |
| 30 | 524 | 115 | | | ------- | | 708 | 823 | 559 | 157 | | 80 |
| 31 | 335 | ------- | 186 | | ------- | | ------- | 670 | ------- | 139 | | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 524 | 80 | 161 | 9,900 |
| November | 292 | 96 | 154 | 9,160 |
| December | 197 | 90 | 132 | 8,120 |
| January | 197 | ---------- | 128 | 7,870 |
| February | 1,070 | ---------- | 369 | 20,500 |
| March | ---------- | ---------- | 118 | 7,260 |
| April | 708 | 90 | 267 | 15,900 |
| May | 11,100 | 524 | 2,880 | 177,000 |
| June | 2,040 | 559 | 874 | 52,100 |
| July | 524 | 70 | 210 | 12,900 |
| August | 6,080 | 53 | 1,670 | 103,000 |
| September | 3,070 | 80 | 726 | 43,200 |
| The year | 11,100 | 53 | 644 | 467,000 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 29,900 second-feet May 8 (gage height, 22.79 feet); minimum, 235 second-feet Aug. 10 (gage height, 2.69 feet).

1918–1930: Maximum discharge, that of May 8, 1930; 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, December, January, February, which are fair.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 292 | 1,150 | 449 | | | 424 | 400 | 8,620 | 1,440 | 1,780 | 330 | 1,380 |
| 2 | 292 | 1,120 | 694 | | | 526 | 353 | 8,740 | 1,440 | 1,440 | 400 | 1,510 |
| 3 | 330 | 930 | 526 | 375 | 450 | 474 | 400 | 4,050 | 1,240 | 1,180 | 353 | 1,240 |
| 4 | 330 | 810 | 553 | | | 400 | 376 | 3,650 | 1,310 | 1,120 | 311 | 870 |
| 5 | 330 | 665 | 474 | | | 500 | 353 | 2,200 | 15,000 | 1,510 | 311 | 1,050 |
| 6 | 400 | 636 | 424 | | | 449 | 353 | 3,650 | 6,240 | 870 | 292 | 1,120 |
| 7 | 353 | 636 | 449 | | 1,100 | 474 | 424 | 23,400 | 2,950 | 870 | 276 | 870 |
| 8 | 400 | 636 | 424 | | | 474 | 353 | 28,700 | 1,860 | 694 | 292 | 930 |
| 9 | 449 | 606 | 400 | | 1,650 | 424 | 330 | 15,000 | 1,780 | 752 | 292 | 1,720 |
| 10 | 526 | 526 | 474 | | 2,100 | 449 | 353 | 9,770 | 2,280 | 636 | 248 | 3,150 |
| 11 | 474 | 500 | 580 | 350 | 1,380 | 449 | 330 | 6,790 | 2,660 | 580 | 248 | 4,050 |
| 12 | 376 | 474 | 553 | | 1,240 | 474 | 330 | 8,140 | 3,050 | 500 | 400 | 2,460 |
| 13 | 526 | 474 | 500 | | 1,180 | 474 | 353 | 9,640 | 2,850 | 553 | 580 | 1,650 |
| 14 | 500 | 665 | 474 | | 990 | 400 | 376 | 10,900 | 2,200 | 500 | 3,150 | 1,120 |
| 15 | 449 | 580 | 449 | | 870 | 400 | 1,310 | 11,700 | 6,460 | 474 | 4,360 | 2,280 |
| 16 | 500 | 526 | 474 | | 694 | 474 | 810 | 12,300 | 6,790 | 526 | 6,240 | 2,850 |
| 17 | 526 | 424 | 376 | | 752 | 526 | 1,380 | 11,100 | 2,280 | 449 | 9,640 | 1,440 |
| 18 | 500 | 580 | 310 | | 752 | 474 | 1,580 | 8,740 | 1,720 | 400 | 7,010 | 990 |
| 19 | 474 | 580 | | | 752 | 553 | 1,510 | 7,450 | 3,150 | 400 | 5,930 | 752 |
| 20 | 424 | 474 | | | 636 | 474 | 1,380 | 4,880 | 5,930 | 400 | 7,120 | 694 |
| 21 | 1,510 | 500 | 375 | | 694 | 474 | 990 | 3,750 | 4,460 | 424 | 6,790 | 580 |
| 22 | 1,120 | 810 | | | 606 | 449 | 990 | 3,150 | 3,450 | 424 | 6,140 | 580 |
| 23 | 810 | 1,380 | | 325 | 665 | 462 | 990 | 2,660 | 3,050 | 400 | 5,930 | 500 |
| 24 | 526 | 990 | | | 606 | 474 | 870 | 2,460 | 2,100 | 424 | 4,880 | 526 |
| 25 | 449 | 810 | | | 606 | 424 | 752 | 2,100 | 1,720 | 424 | 2,660 | 474 |
| 26 | 424 | 474 | | | 580 | 580 | 810 | 1,720 | 4,980 | 424 | 1,940 | 376 |
| 27 | 400 | 330 | | | 636 | 449 | 870 | 1,720 | 5,510 | 376 | 1,580 | 353 |
| 28 | 400 | 606 | 350 | | 474 | 376 | 810 | 1,650 | 2,280 | 400 | 870 | 400 |
| 29 | 449 | 449 | | | ------- | 376 | 1,940 | 1,440 | 1,860 | 400 | 1,510 | 553 |
| 30 | 752 | 449 | | | ------- | 376 | 2,380 | 1,440 | 2,020 | 376 | 1,310 | 474 |
| 31 | 1,050 | ------- | | | ------- | 376 | ------- | 1,380 | ------- | 353 | 1,050 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 1,510 | 292 | 527 | 32,400 |
| November | 1,380 | 330 | 661 | 39,300 |
| December | 694 | ---------- | 429 | 26,400 |
| January | ---------- | ---------- | 341 | 21,000 |
| February | 2,100 | ---------- | 836 | 46,400 |
| March | 580 | 376 | 455 | 28,000 |
| April | 2,380 | 330 | 815 | 48,500 |
| May | 28,700 | 1,380 | 7,190 | 442,000 |
| June | 15,000 | 1,240 | 3,470 | 206,000 |
| July | 1,780 | 353 | 647 | 39,800 |
| August | 9,640 | 248 | 2,660 | 164,000 |
| September | 4,050 | 353 | 1,230 | 73,200 |
| The year | 28,700 | ---------- | 1,610 | 1,170,000 |

### LITTLE BLUE RIVER NEAR ENDICOTT, NEBR.

LOCATION.—Water-stage recorder installed July 31, 1930, in sec. 5, T. 1 N., R. 3 E., 1½ miles southwest of Endicott. Chain gage at same site used prior to July 31.

DRAINAGE AREA.—2,590 square miles.

RECORDS AVAILABLE.—April, 1929, to September, 1930. At point several miles upstream May, 1908, to September, 1915.

EXTREMES.—Maximum discharge during year, 3,360 second-feet May 12 (gage height, 9.2 feet); minimum, 14 second-feet Nov. 22.

1908–1915, 1929–30: Maximum discharge, 13,700 second-feet June 6, 7, 1908; minimum, that of Nov. 22, 1929.

REMARKS.—Records good except those during winter, which were estimated because of ice. No diversions. Diurnal fluctuations caused by operation of power dams above station.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 120 | 180 | ------- | | 150 | 134 | 248 | 271 | 291 | 106 | 300 |
| 2 | 114 | 152 | ------- | | 162 | 123 | 1,360 | 267 | 258 | 102 | 175 |
| 3 | 114 | 144 | ------- | 85 | 133 | 137 | 1,490 | 238 | 221 | 93 | 161 |
| 4 | 92 | 147 | ------- | | 156 | 131 | 677 | 227 | 219 | 92 | 157 |
| 5 | 100 | 142 | ------- | | 159 | 125 | 1,400 | 208 | 219 | 92 | 161 |
| 6 | 104 | 142 | ------- | | 152 | 134 | 878 | 225 | 184 | 90 | 162 |
| 7 | 115 | 134 | ------- | | 144 | 129 | 2,220 | 464 | 193 | 85 | 169 |
| 8 | 114 | 139 | 78 | | 149 | 123 | 3,000 | 746 | 178 | 89 | 256 |
| 9 | 108 | 142 | ------- | | 139 | 129 | 2,310 | 410 | 154 | 92 | 814 |
| 10 | 115 | 125 | ------- | 100 | 149 | 100 | 1,900 | 352 | 141 | 82 | 616 |
| 11 | 109 | 115 | ------- | | 134 | 123 | 3,060 | 262 | 162 | 87 | 334 |
| 12 | 133 | 137 | ------- | | 137 | 114 | 3,240 | 252 | 133 | 108 | 262 |
| 13 | 125 | 131 | ------- | | 137 | 115 | 2,980 | 232 | 141 | 262 | 217 |
| 14 | 256 | 126 | ------- | | 134 | 126 | 2,400 | 223 | 137 | 145 | 200 |
| 15 | 204 | 125 | ------- | 147 | 134 | 269 | 1,840 | 211 | 117 | 150 | 161 |
| 16 | 141 | 129 | ------- | 145 | 136 | 280 | 914 | 195 | 120 | 1,580 | 145 |
| 17 | 134 | 125 | ------- | 154 | 128 | 646 | 719 | 182 | 106 | 966 | 144 |
| 18 | 159 | 125 | ------- | 149 | 142 | 854 | 661 | 182 | 134 | 217 | 129 |
| 19 | 169 | 126 | ------- | 156 | 134 | 366 | 605 | 719 | 115 | 186 | 125 |
| 20 | 166 | 110 | ------- | 156 | 134 | 546 | 511 | 1,230 | 103 | 154 | 123 |
| 21 | 145 | 70 | ------- | 150 | 128 | 429 | 481 | 1,710 | 125 | 145 | 112 |
| 22 | 141 | 14 | ------- | 161 | 128 | 273 | 461 | 1,180 | 108 | 481 | 120 |
| 23 | 144 | 35 | ------- | 147 | 123 | 262 | 423 | 481 | 110 | 324 | 112 |
| 24 | 147 | 65 | ------- | 149 | 134 | 254 | 366 | 326 | 106 | 204 | 106 |
| 25 | 147 | 90 | ------- | 159 | 139 | 208 | 314 | 1,720 | 108 | 169 | 104 |
| 26 | 144 | 115 | ------- | 152 | 123 | 221 | 291 | 2,050 | 106 | 145 | 108 |
| 27 | 120 | 120 | ------- | 149 | 123 | 211 | 271 | 458 | 109 | 136 | 106 |
| 28 | 128 | 120 | ------- | 150 | 134 | 225 | 262 | 326 | 96 | 128 | 103 |
| 29 | 128 | 100 | ------- | ------- | 129 | 280 | 252 | 461 | 93 | 156 | 108 |
| 30 | 145 | 70 | ------- | ------- | 136 | 280 | 339 | 302 | 93 | 157 | 103 |
| 31 | 129 | ------- | ------- | ------- | 123 | ------- | 380 | ------- | 103 | 658 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 256 | 92 | 136 | 8,360 |
| November | 180 | 14 | 116 | 6,900 |
| December | ------- | ------- | 85 | 5,230 |
| January | ------- | ------- | 75 | 4,610 |
| February | 161 | ------- | 123 | 6,830 |
| March | 162 | 123 | 138 | 8,480 |
| April | 854 | 100 | 245 | 14,600 |
| May | 3,240 | 248 | 1,170 | 71,900 |
| June | 2,050 | 182 | 537 | 32,000 |
| July | 291 | 93 | 145 | 8,920 |
| August | 1,580 | 82 | 241 | 14,800 |
| September | 814 | 103 | 196 | 11,700 |
| The year | 3,240 | ------- | 268 | 194,000 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 10,500 second-feet May 7 (gage height, 17.08 feet); minimum, 118 second-feet Oct. 1 (gage height, 1.98 feet).

1922–1925, 1928–1930: Maximum discharge, about 13,200 second-feet July 13, 1923 (gage height, 15.4 feet); minimum, 76 second-feet in December, 1924.

REMARKS.—Records fair except those for periods of ice effect, November, December, January, February, which are poor.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 118 | 191 | 191 | | | 173 | 156 | 5,780 | 556 | 490 | 164 | 300 |
| 2 | 125 | 200 | | | | 173 | 156 | 2,360 | 460 | 430 | 156 | 402 |
| 3 | 125 | 210 | 180 | 175 | 200 | 164 | 156 | 2,910 | 522 | 374 | 156 | 266 |
| 4 | 132 | 191 | | | | 173 | 156 | 1,650 | 750 | 346 | 156 | 220 |
| 5 | 125 | 200 | 182 | | | 182 | 156 | 1,130 | 2,840 | 318 | 148 | 220 |
| 6 | 132 | 191 | 182 | | | 182 | 156 | 2,230 | 1,410 | 279 | 148 | 191 |
| 7 | 125 | 200 | | | | 173 | 148 | 8,640 | 592 | 292 | 148 | 191 |
| 8 | 140 | 173 | | 150 | 600 | 173 | 148 | 8,640 | 630 | 279 | 148 | 254 |
| 9 | 156 | 182 | 180 | | | 173 | 148 | 8,460 | 830 | 254 | 140 | 750 |
| 10 | 156 | 191 | | | | 173 | 140 | 3,420 | 710 | 242 | 140 | 873 |
| 11 | 156 | 220 | | | | 164 | 140 | 3,200 | 556 | 242 | 140 | 670 |
| 12 | 132 | 200 | 210 | | | 164 | 140 | 5,780 | 490 | 220 | 191 | 556 |
| 13 | 156 | 210 | 210 | 140 | | 164 | 140 | 5,940 | 430 | 220 | 254 | 346 |
| 14 | 148 | 200 | 191 | | | 164 | 148 | 4,680 | 402 | 210 | 430 | 305 |
| 15 | 182 | 210 | 182 | | | 182 | 182 | 3,130 | 374 | 210 | 266 | 556 |
| 16 | 242 | 200 | 182 | | 300 | 164 | 710 | 2,230 | 374 | 200 | 4,760 | 402 |
| 17 | 191 | 191 | | | | 164 | 1,270 | 1,410 | 318 | 200 | 3,960 | 374 |
| 18 | 305 | | | 130 | | 191 | 556 | 1,700 | 305 | 191 | 1,600 | 210 |
| 19 | 279 | | | | | 182 | 959 | 1,410 | 2,980 | 182 | 1,220 | 191 |
| 20 | 490 | | | | | 173 | 490 | 1,180 | 2,770 | 182 | 959 | 164 |
| 21 | 522 | | 165 | | | 173 | 490 | 959 | 2,290 | 191 | 430 | 156 |
| 22 | 592 | | | 124 | | 164 | 430 | 790 | 1,980 | 191 | 592 | 148 |
| 23 | 220 | 190 | | | 191 | 164 | 430 | 750 | 1,220 | 200 | 1,000 | 140 |
| 24 | 191 | | | | 182 | 164 | 292 | 670 | 750 | 191 | 670 | 140 |
| 25 | 182 | | | | 182 | 164 | 254 | 592 | 2,630 | 191 | 374 | 140 |
| 26 | 182 | | | | 182 | 164 | 266 | 522 | 4,920 | 182 | 292 | 140 |
| 27 | 191 | | | 135 | 182 | 164 | 266 | 490 | 2,100 | 173 | 242 | 132 |
| 28 | 182 | | 170 | | 182 | 164 | 254 | 460 | 916 | 164 | 231 | 132 |
| 29 | 182 | | | | ------- | 164 | 750 | 460 | 630 | 173 | 210 | 132 |
| 30 | 210 | 210 | | | ------- | 164 | 556 | 430 | 750 | 164 | 191 | 125 |
| 31 | 191 | ------- | | | ------- | 164 | ------- | 430 | ------- | 164 | 210 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 592 | 118 | 208 | 12,800 |
| November | 220 | 173 | 195 | 11,600 |
| December | 210 | ---------- | 177 | 10,900 |
| January | ---------- | ---------- | 143 | 8,790 |
| February | ---------- | ---------- | 311 | 17,300 |
| March | 191 | 164 | 170 | 10,500 |
| April | 1,270 | 140 | 341 | 20,300 |
| May | 8,640 | 430 | 2,660 | 164,000 |
| June | 4,920 | 305 | 1,220 | 72,600 |
| July | 490 | 164 | 237 | 14,600 |
| August | 4,760 | 140 | 636 | 39,100 |
| September | 873 | 125 | 294 | 17,500 |
| The year | 8,640 | ---------- | 551 | 400,000 |

### 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, 1930.
EXTREMES.—Maximum discharge during year, 3,480 second-feet Sept. 16 (gage height, 15.50 feet); minimum not determined.
1929–30: Maximum discharge, 5,010 second-feet June 7 (gage height, 18.30 feet); minimum not determined.
REMARKS.—Records poor.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | [a] 14 | | [a] 17 | 22 | 6 | 68 | [a] 36 | | [a] 6 | 9 |
| 2 | | [a] 100 | [a] 14 | | [a] 20 | [a] 18 | 6 | 1,330 | 35 | | 7 | 8 |
| 3 | [a] 5 | | 15 | [a] 13 | 24 | 13 | 6 | [a] 150 | 30 | | | 9 |
| 4 | | 21 | 14 | | 29 | 12 | 11 | [a] 140 | 27 | [a] 5 | [a] 5 | 7 |
| 5 | | 19 | 14 | | 44 | 12 | [a] 8 | 131 | 308 | | | 6 |
| 6 | [a] 5 | 19 | 14 | | [a] 72 | 12 | [a] 7 | 490 | 153 | | | 7 |
| 7 | [a] 6 | 17 | 14 | | 104 | 12 | 6 | 1,860 | 104 | 22 | | [a] 10 |
| 8 | [a] 7 | 15 | | | [a] 95 | 11 | 6 | 2,730 | [a] 88 | | | 13 |
| 9 | [a] 8 | 15 | | | [a] 86 | [a] 10 | 6 | 1,200 | 72 | [a] 17 | [a] 4 | 12 |
| 10 | 10 | [a] 15 | [a] 16 | [a] 10 | 77 | 10 | 6 | 464 | 41 | | | 12 |
| 11 | | 15 | | | 72 | 8 | 6 | [a] 400 | 35 | 12 | | 12 |
| 12 | | 15 | | | [a] 64 | 8 | 5 | 360 | 31 | 10 | 4 | 31 |
| 13 | [a] 20 | 16 | 23 | | 55 | 10 | [a] 6 | 246 | 41 | [a] 10 | 5 | 27 |
| 14 | | 18 | | | 38 | 9 | 6 | 212 | 28 | 9 | [a] 5 | [a] 1,700 |
| 15 | | 15 | | | 32 | 9 | 1,490 | [a] 197 | 3,090 | [a] 9 | [a] 11 | 3,380 |
| 16 | | 24 | [a] 15 | | [a] 32 | [a] 10 | 1,490 | 182 | | [a] 8 | 17 | 3,480 |
| 17 | | [a] 22 | | | 32 | 10 | 464 | 162 | | [a] 8 | [a] 70 | 182 |
| 18 | | 19 | | | 31 | 12 | 111 | 396 | | [a] 7 | 124 | 87 |
| 19 | | 15 | | | 30 | 12 | 92 | 630 | [a] 1,160 | 7 | 660 | 64 |
| 20 | | 15 | | | 26 | 12 | [a] 72 | 412 | | [a] 6 | 138 | 55 |
| | [a] 6 | | | [a] 5 | | | | | | | | |
| 21 | | 14 | | | 26 | 12 | 51 | 131 | | 6 | 44 | [a] 46 |
| 22 | | 14 | | | 26 | 12 | 48 | [a] 104 | | | 38 | 38 |
| 23 | | 14 | [a] 10 | | [a] 34 | [a] 12 | 44 | 77 | 92 | [a] 6 | 32 | 35 |
| 24 | | [a] 14 | | | 41 | 12 | 44 | [a] 72 | 51 | | 212 | [a] 34 |
| 25 | | 14 | | | 38 | 10 | 44 | [a] 68 | 41 | | 223 | 32 |
| 26 | [a] 8 | 14 | | 10 | 35 | 9 | 44 | 64 | 38 | 5 | 124 | 28 |
| 27 | [a] 12 | 13 | | 12 | 31 | 8 | 82 | [a] 60 | 32 | [a] 5 | 12 | 24 |
| 28 | 21 | 13 | | 14 | 27 | 8 | 111 | 55 | | [a] 5 | 12 | [a] 24 |
| 29 | 48 | [a] 13 | | 15 | ------ | 7 | 87 | 44 | [a] 15 | 5 | 10 | 24 |
| 30 | 118 | [a] 13 | [a] 13 | 16 | ------ | [a] 7 | 77 | [a] 41 | | [a] 5 | 10 | 22 |
| 31 | ------ | ------ | | 17 | ------ | 7 | ------ | 38 | ------ | [a] 5 | 9 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 118 | ---------- | 14.3 | 879 |
| November | ---------- | 13 | 24.4 | 1,450 |
| December | ---------- | ---------- | 13.3 | 818 |
| January | ---------- | ---------- | 9.65 | 593 |
| February | 104 | 17 | 44.2 | 2,450 |
| March | 22 | 7 | 10.8 | 664 |
| April | 1,490 | 5 | 148 | 8,810 |
| May | 2,730 | 38 | 404 | 24,800 |
| June | 3,090 | ---------- | 418 | 24,900 |
| July | 22 | ---------- | 8.03 | 494 |
| August | 660 | ---------- | 58.5 | 3,600 |
| September | 3,480 | 6 | 314 | 18,700 |
| The year | 3,480 | ---------- | 122 | 88,200 |

[a] Estimated or interpolated.

## DELAWARE RIVER AT VALLEY FALLS, KANS.

LOCATION.—Chain gage installed May 27, 1930, in SW. ¼ sec. 18, T. 8 S., R. 18 E., at Valley Falls, 500 feet below Walnut Creek. Prior to May 27 a chain gage at site 300 feet upstream was used.

DRAINAGE AREA.—922 square miles.

RECORDS AVAILABLE.—June, 1922, to September, 1930.

EXTREMES.—Maximum discharge during year, 10,100 second-feet Sept. 15 (gage height, 19.69 feet); minimum, 10 second-feet Aug. 9 (gage height, 2.44 feet).

1922–1930: 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 of ice effect, Dec. 23 to Feb. 6, which are fair.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6 | 416 | 48 | | 30 | 274 | 49 | 1,960 | 105 | 86 | 15 | 14 |
| 2 | 5 | 330 | 54 | | 60 | 228 | 49 | 2,010 | 86 | 72 | 14 | 14 |
| 3 | 5 | 330 | [a] 54 | 25 | 90 | 163 | [a] 48 | 430 | 86 | [a] 67 | 15 | 14 |
| 4 | [a] 4 | 298 | 54 | | 95 | [a] 152 | 47 | 308 | 88 | [a] 63 | 15 | 13 |
| 5 | 4 | 266 | [a] 54 | | 96 | 142 | 47 | 274 | 4,540 | [a] 58 | 14 | 14 |
| 6 | 4 | 235 | 54 | | 150 | 117 | 43 | 1,800 | 5,430 | 54 | 14 | 17 |
| 7 | 6 | 220 | 48 | | 524 | 97 | 43 | 7,280 | 684 | 50 | 13 | 33 |
| 8 | 8 | 123 | 48 | | 564 | 78 | 41 | 4,540 | 308 | 47 | 12 | 22 |
| 9 | 96 | 54 | [a] 51 | | 524 | 63 | 41 | 856 | 242 | 44 | 10 | 31 |
| 10 | 164 | 65 | 54 | | 325 | 63 | 39 | 2,170 | 564 | 42 | 12 | 20 |
| 11 | 142 | [a] 56 | [a] 51 | 20 | 291 | 63 | 39 | 1,380 | 524 | 36 | 13 | 25 |
| 12 | 142 | 48 | 48 | | 274 | [a] 62 | 35 | 604 | 524 | 33 | 20 | 25 |
| 13 | 139 | [a] 44 | [a] 51 | | 242 | 61 | 55 | 412 | 524 | 30 | 22 | 34 |
| 14 | 98 | 39 | 54 | | 200 | [a] 61 | 90 | 359 | 486 | 29 | 22 | 3,370 |
| 15 | 50 | [a] 36 | 54 | | 103 | 61 | 2,220 | 308 | 6,230 | 26 | 21 | 9,810 |
| 16 | 37 | [a] 32 | 48 | | 101 | 61 | 6,230 | 291 | 4,180 | 26 | 157 | 376 |
| 17 | 34 | 29 | 48 | | 152 | [a] 59 | 604 | 274 | 726 | 24 | 604 | 99 |
| 18 | 25 | 20 | [a] 42 | | 160 | 58 | 308 | 1,800 | 325 | 20 | 684 | 103 |
| 19 | 27 | 33 | 37 | | 147 | [a] 58 | 258 | 856 | 394 | 20 | 524 | 63 |
| 20 | 74 | 37 | 33 | | 134 | 58 | 228 | 376 | 644 | 29 | 144 | 57 |
| 21 | 141 | [a] 38 | [a] 33 | 10 | 134 | [a] 58 | 187 | 325 | 1,040 | 29 | 86 | 47 |
| 22 | [a] 104 | 39 | 33 | | 122 | 58 | 165 | 258 | 359 | 20 | 53 | 46 |
| 23 | [a] 68 | 39 | | | 122 | 58 | 200 | 1,080 | 228 | 18 | 39 | 42 |
| 24 | 32 | 44 | | | 110 | 56 | 139 | 394 | 174 | 23 | 32 | 39 |
| 25 | 26 | 54 | | | 359 | 54 | 126 | 258 | 150 | 24 | 25 | 34 |
| 26 | [a] 26 | 44 | | | 376 | 54 | 165 | 200 | 342 | 22 | 20 | 31 |
| 27 | [a] 26 | [a] 46 | 25 | | 325 | 54 | 258 | 179 | 144 | 20 | 18 | 29 |
| 28 | 43 | 48 | | 15 | 291 | 51 | 291 | 155 | 106 | 19 | 17 | 26 |
| 29 | 206 | [a] 48 | | | ------- | 51 | 258 | 155 | 106 | 17 | 16 | 24 |
| 30 | 416 | 48 | | | ------- | 51 | 564 | 129 | 101 | 16 | 16 | 22 |
| 31 | 1,340 | ------- | | 18 | ------- | 49 | ------- | 110 | ------- | 16 | 15 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 1,340 | 4 | 113 | 6,950 |
| November | 416 | 20 | 105 | 6,250 |
| December | 54 | ---------- | 41.2 | 2,530 |
| January | ---------- | ---------- | 16.7 | 1,030 |
| February | 564 | 30 | 218 | 12,100 |
| March | 274 | 49 | 83.0 | 5,100 |
| April | 6,230 | 35 | 429 | 25,500 |
| May | 7,280 | 110 | 1,020 | 62,700 |
| June | 6,230 | 86 | 981 | 58,400 |
| July | 86 | 16 | 34.8 | 2,140 |
| August | 684 | 10 | 86.5 | 5,320 |
| September | 9,810 | 13 | 483 | 28,700 |
| The year | 9,810 | 4 | 299 | 217,000 |

[a] Interpolated.

### 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, 1930.

EXTREMES.—Maximum discharge during year, 1,220 second-feet June 20 (gage height, 11.38 feet); no flow during July, August, September.

1929–30: Maximum discharge, about 7,550 second-feet May 12, 1929 (gage height, 27.87 feet); no flow during July, August, September, 1930.

REMARKS.—Records fair. Rating curve not well defined for high water. Discharge estimated Jan. 7 to Feb. 3, because of ice effect.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 271 | 5 | 5 | 5 | 10 | 4 | 19 | 4 | 1.0 | 0 | 0 |
| 2 | 1 | 73 | 5 | 6 | 6 | 10 | 4 | 19 | 3 | 2 | 0 | 0 |
| 3 | 1 | 30 | 5 | 6 | 7 | 10 | 4 | 15 | 3 | 1 | 0 | 0 |
| 4 | 2 | 22 | 5 | 7 | 10 | 8 | 4 | 10 | 2 | .6 | 0 | 0 |
| 5 | 2 | 19 | 4 | 6 | 16 | 8 | 4 | 8 | 26 | .6 | 0 | 0 |
| 6 | 2 | 12 | 4 | 5 | 57 | 9 | 3 | 5 | 260 | .5 | 0 | 0 |
| 7 | 2 | 9 | 4 | | 104 | 8 | 3 | 250 | 112 | 70 | 0 | 0 |
| 8 | 1 | 8 | 5 | 4 | 150 | 15 | 3 | 617 | 39 | 12 | 0 | 0 |
| 9 | 3 | 5 | 5 | | 104 | 10 | 3 | 163 | 22 | 2 | 0 | 0 |
| 10 | 4 | 5 | 5 | | 76 | 8 | 2 | 89 | 16 | .6 | 0 | 0 |
| 11 | 5 | 6 | 5 | | 52 | 6 | 2 | 210 | 13 | 0 | 0 | 0 |
| 12 | 25 | 7 | 6 | | 42 | 5 | 3 | 315 | 12 | 0 | 0 | 0 |
| 13 | 32 | 5 | 6 | 3 | 34 | 5 | 3 | 89 | 10 | 0 | 0 | 0 |
| 14 | 13 | 5 | 5 | | 28 | 3 | 3 | 54 | 9 | 0 | 0 | 0 |
| 15 | 5 | 6 | 5 | | 24 | 5 | 3 | 43 | 52 | 0 | 0 | 5 |
| 16 | 6 | 14 | 5 | | 20 | 4 | 3 | 35 | 408 | 0 | 0 | 1 |
| 17 | 4 | 6 | 6 | | 19 | 4 | 4 | 29 | 76 | 0 | 0 | 4 |
| 18 | 4 | 6 | 2 | | 18 | 8 | 4 | 29 | 33 | 0 | 17 | 1 |
| 19 | 2 | 7 | 2 | | 18 | 8 | 4 | 29 | 24 | 0 | .5 | 0 |
| 20 | 3 | 7 | 6 | 1 | 14 | 8 | 4 | 39 | 912 | 0 | 0 | 0 |
| 21 | 2 | 6 | 6 | | 13 | 7 | 5 | 41 | 598 | 0 | 0 | 0 |
| 22 | 4 | 5 | 6 | | 13 | 6 | 5 | 31 | 76 | 0 | 0 | 0 |
| 23 | 2 | 5 | 5 | | 12 | 6 | 4 | 82 | 41 | 0 | 0 | 0 |
| 24 | 2 | 5 | 5 | | 10 | 5 | 4 | 79 | 37 | .5 | 0 | 0 |
| 25 | 2 | 5 | 4 | | 10 | 5 | 3 | 62 | 23 | 0 | 0 | 0 |
| 26 | 2 | 4 | 4 | | 14 | 4 | 3 | 33 | 17 | 0 | 0 | 0 |
| 27 | 2 | 4 | 4 | 2 | 13 | 4 | 4 | 23 | 12 | 0 | 0 | 0 |
| 28 | 6 | 5 | 5 | | 12 | 4 | 5 | 17 | 8 | 0 | 0 | 0 |
| 29 | 13 | 5 | 5 | | ------- | 4 | 8 | 14 | 4 | 0 | 0 | 0 |
| 30 | 19 | 6 | 5 | 5 | ------- | 4 | 7 | 9 | 5 | 0 | 0 | 0 |
| 31 | 66 | ------- | 5 | 5 | ------- | 4 | ------- | 8 | ------- | 0 | 0 | ------ |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 66 | 1 | 7.68 | 472 |
| November | 271 | 4 | 19.1 | 1,140 |
| December | 6 | 2 | 4.81 | 296 |
| January | 7 | ---------- | 3.03 | 186 |
| February | 150 | 5 | 32.2 | 1,790 |
| March | 15 | 3 | 6.61 | 406 |
| April | 8 | 2 | 3.83 | 228 |
| May | 617 | 5 | 79.5 | 4,890 |
| June | 912 | 2 | 95.2 | 5,660 |
| July | 70 | 0 | 2.93 | 180 |
| August | 17 | 0 | .565 | 35 |
| September | 5 | 0 | .367 | 22 |
| The year | 912 | 0 | 21.1 | 15,300 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 3,250 second-feet May 9 (gage height, 22.15 feet); minimum, 1 second-foot during Aug. 6–11.

1929–30: Maximum discharge, 10,600 second-feet June 2 (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 except those for periods Dec. 20 to Apr. 14, July 8 to Sept. 20, which are poor.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 1,300 | 18 | | | 34 | 18 | 532 | 36 | 10 | 1 | 2 |
| 2 | 2 | 938 | 17 | | | 30 | 17 | 1,860 | 32 | 10 | 1 | 2 |
| 3 | 2 | 101 | 17 | 22 | 15 | 26 | 17 | 1,010 | 32 | 9 | 1 | 2 |
| 4 | 2 | 71 | 18 | | | 23 | 16 | 290 | 28 | 9 | 1 | 2 |
| 5 | 3 | 56 | 20 | | | 30 | 16 | 202 | 54 | 8 | 1 | 2 |
| 6 | 3 | 44 | 20 | 18 | | 36 | 15 | 143 | 202 | 8 | 1 | 2 |
| 7 | 2 | 42 | 22 | 16 | 200 | 38 | 14 | 1,560 | 218 | 66 | 1 | 2 |
| 8 | 3 | 56 | 22 | 14 | | 36 | 13 | 2,620 | 89 | 11 | 1 | 2 |
| 9 | 4 | 71 | 23 | 13 | 364 | 32 | 12 | 2,410 | 40 | 3 | 1 | 2 |
| 10 | 314 | 34 | 24 | 12 | 274 | 28 | 12 | 490 | 28 | 3 | 1 | 2 |
| 11 | 995 | 30 | 24 | | 178 | 24 | 12 | 2,140 | 24 | 2 | 1 | 2 |
| 12 | 938 | 30 | 26 | | 122 | 23 | 11 | 2,020 | 24 | 2 | 2 | 3 |
| 13 | 129 | 34 | 26 | 10 | 101 | 22 | 11 | 532 | 24 | 2 | 2 | 6 |
| 14 | 115 | 38 | 28 | | 89 | 20 | 12 | 226 | 23 | 2 | 2 | 42 |
| 15 | 34 | 44 | 26 | | 68 | 20 | 129 | 171 | 77 | 2 | 2 | 518 |
| 16 | 26 | 51 | 24 | | 58 | 20 | 900 | 157 | 448 | 2 | 2 | 1,070 |
| 17 | 13 | 56 | 23 | | 56 | 20 | 2,490 | 157 | 1,670 | 2 | 2 | 101 |
| 18 | 9 | 51 | 20 | | 54 | 26 | 1,430 | 171 | 298 | 2 | 2 | 40 |
| 19 | 6 | 46 | 18 | | 51 | 28 | 218 | 1,300 | 77 | 2 | 32 | 20 |
| 20 | 4 | 38 | | | 51 | 32 | 150 | 306 | 900 | 1 | 77 | 13 |
| 21 | 24 | 34 | 15 | 3 | 48 | 36 | 122 | 164 | 334 | 1 | 32 | 10 |
| 22 | 83 | 32 | | | 48 | 30 | 101 | 129 | 136 | 1 | 11 | 8 |
| 23 | 64 | 30 | | | 48 | 28 | 89 | 344 | 95 | 2 | 6 | 7 |
| 24 | 20 | 30 | | | 48 | 26 | 77 | 592 | 22 | 2 | 5 | 7 |
| 25 | 13 | 30 | | | 64 | 26 | 77 | 136 | 24 | 2 | 3 | 6 |
| 26 | 10 | 26 | 9 | | 64 | 26 | 83 | 89 | 23 | 2 | 3 | 56 |
| 27 | 6 | 129 | | | 48 | 24 | 101 | 77 | 22 | 1 | 3 | 13 |
| 28 | 9 | 23 | | 4 | 42 | 23 | 136 | 66 | 22 | 1 | 3 | 5 |
| 29 | 89 | 20 | 15 | | ------- | 20 | 129 | 56 | 18 | 1 | 2 | 4 |
| 30 | 242 | 18 | 20 | | ------- | 18 | 143 | 46 | 14 | 1 | 2 | 4 |
| 31 | 608 | ------- | 25 | | ------- | 18 | ------- | 40 | ------- | 2 | 2 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 995 | 2 | 122 | 7,500 |
| November | 1,300 | 18 | 117 | 6,960 |
| December | 28 | ---------- | 18.7 | 1,150 |
| January | ---------- | ---------- | 9.26 | 569 |
| February | 364 | ---------- | 91.1 | 5,060 |
| March | 38 | 18 | 26.5 | 1,630 |
| April | 2,490 | 11 | 219 | 13,000 |
| May | 2,620 | 40 | 646 | 39,700 |
| June | 1,670 | 14 | 168 | 10,000 |
| July | 66 | 1 | 5.55 | 341 |
| August | 77 | 1 | 6.65 | 409 |
| September | 1,070 | 2 | 65.2 | 3,880 |
| The year | 2,620 | ---------- | 125 | 90,200 |

## 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 712.83 feet above mean sea level.

DRAINAGE AREA.—2,250 square miles.

RECORDS AVAILABLE.—June, 1921, to September, 1930.

EXTREMES.—Maximum discharge during year, 6,800 second-feet June 6; maximum gage height, 16.40 feet Feb. 9; minimum discharge, 25 second-feet Aug. 5–8, 10–12, Sept. 26; minimum gage height, 2.56 feet Sept. 24, 25.

1921–1930: 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, Nov. 28–31, Dec. 1–4, 18–27, Jan. 4 to Feb. 7, which are poor.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 33 | 1,810 | 99 | 127 | 72 | 650 | 262 | 302 | 244 | 3,520 | 29 | 50 |
| 2 | 37 | 1,520 | 99 | 157 | 85 | 515 | 244 | 5,600 | 217 | 1,080 | 27 | 62 |
| 3 | 37 | 830 | 99 | 164 | 99 | 490 | 226 | 2,600 | 199 | 515 | 27 | 52 |
| 4 | 41 | 490 | 99 | 172 | 99 | 346 | 226 | 970 | 181 | 280 | 26 | 35 |
| 5 | 41 | 302 | 92 | 157 | 127 | 324 | 208 | 515 | 2,420 | 199 | 25 | 30 |
| 6 | 37 | 244 | 92 | 127 | 190 | 390 | 172 | 390 | 6,800 | 157 | 25 | 29 |
| 7 | 41 | 164 | 106 | 60 | 490 | 390 | 164 | 1,110 | 4,340 | 142 | 25 | 34 |
| 8 | 41 | 150 | 120 | 60 | 3,590 | 368 | 164 | 3,850 | 1,270 | 120 | 25 | 31 |
| 9 | 66 | 150 | 172 | 72 | 6,350 | 346 | 157 | 2,420 | 680 | 99 | 37 | 30 |
| 10 | 99 | 150 | 181 | 85 | 4,700 | 302 | 142 | 1,270 | 440 | 93 | 25 | 127 |
| 11 | 490 | 164 | 164 | 99 | 2,480 | 262 | 134 | 5,750 | 346 | 73 | 25 | 390 |
| 12 | 770 | 244 | 217 | 85 | 2,020 | 262 | 127 | 4,060 | 280 | 73 | 25 | 120 |
| 13 | 740 | 262 | 302 | 85 | 2,240 | 244 | 127 | 1,660 | 226 | 71 | 28 | 54 |
| 14 | 390 | 346 | 302 | 72 | 1,520 | 226 | 134 | 900 | 244 | 64 | 34 | 61 |
| 15 | 226 | 1,860 | 280 | 72 | 1,040 | 217 | 172 | 620 | 368 | 57 | 32 | 830 |
| 16 | 134 | 1,520 | 262 | 72 | 540 | 199 | 900 | 490 | 2,600 | 53 | 42 | 465 |
| 17 | 85 | 800 | 226 | 72 | 680 | 208 | 1,270 | 440 | 1,960 | 51 | 44 | 226 |
| 18 | 85 | 540 | 127 | 72 | 935 | 226 | 830 | 900 | 1,270 | 42 | 47 | 106 |
| 19 | 72 | 440 | 113 | 72 | 900 | 1,810 | 620 | 2,660 | 515 | 42 | 1,610 | 64 |
| 20 | 85 | 390 | 85 | 72 | 900 | 1,390 | 465 | 1,230 | 346 | 40 | 540 | 47 |
| 21 | 346 | 226 | 72 | 72 | 830 | 865 | 390 | 830 | 280 | 36 | 226 | 39 |
| 22 | 590 | 199 | 72 | 72 | 800 | 590 | 324 | 620 | 324 | 38 | 113 | 34 |
| 23 | 199 | 150 | 60 | 72 | 710 | 440 | 280 | 650 | 302 | 36 | 72 | 28 |
| 24 | 217 | 150 | 60 | 72 | 590 | 390 | 262 | 3,920 | 226 | 48 | 46 | 27 |
| 25 | 142 | 150 | 50 | 72 | 3,590 | 390 | 262 | 2,420 | 199 | 46 | 36 | 27 |
| 26 | 106 | 142 | 50 | 72 | 2,840 | 440 | 226 | 1,110 | 865 | 40 | 36 | 25 |
| 27 | 85 | 142 | 50 | 72 | 2,840 | 390 | 262 | 565 | 970 | 36 | 32 | 41 |
| 28 | 106 | 127 | 55 | 72 | 1,040 | 346 | 262 | 440 | 830 | 35 | 30 | 208 |
| 29 | 1,080 | 113 | 60 | 72 | ------- | 302 | 262 | 346 | 390 | 32 | 32 | 99 |
| 30 | 3,330 | 113 | 72 | 72 | ------- | 262 | 262 | 346 | 244 | 29 | 32 | 67 |
| 31 | 2,720 | ------- | 85 | 72 | ------- | 262 | ------- | 262 | ------- | 29 | 43 | ------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 3,330 | 33 | 402 | 0.179 | 0.21 |
| November | 1,860 | 113 | 463 | .206 | .23 |
| December | 302 | 50 | 127 | .056 | .06 |
| January | 172 | 60 | 88.6 | .039 | .04 |
| February | 6,350 | 72 | 1,510 | .671 | .70 |
| March | 1,810 | 199 | 447 | .199 | .23 |
| April | 1,270 | 127 | 318 | .141 | .16 |
| May | 5,750 | 262 | 1,590 | .707 | .82 |
| June | 6,800 | 181 | 986 | .438 | .49 |
| July | 3,520 | 29 | 231 | .103 | .12 |
| August | 1,610 | 25 | 110 | .049 | .06 |
| September | 830 | 25 | 115 | .051 | .06 |
| The year | 6,800 | 25 | 525 | .233 | 3.18 |

### 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 630.77 feet above mean sea level.

DRAINAGE AREA.—6,880 square miles.

RECORDS AVAILABLE.—April, 1924, to September, 1930.

EXTREMES.—Maximum discharge during year, 18,200 second-feet Feb. 10; maximum gage height, 23.45 feet Oct. 31; minimum discharge, 114 second-feet Sept. 28 (gage height, 2.90 feet).

1924–1930: Maximum discharge, 110,000 second-feet June 4, 1929; maximum gage height, 35.35 feet Nov. 20, 1928; minimum discharge, that of Sept. 28, 1930; minimum gage height, 2.80 feet Dec. 2, 1924.

Maximum stage known, 36.7 feet July 9, 1909 (discharge, about 150,000 second-feet).

REMARKS.—Records good except those for periods of ice effect, Nov. 24 to Dec. 10, Dec. 18 to Feb. 8, which are poor.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 285 | 16,400 | 430 | 430 | 300 | 2,670 | 1,400 | 1,070 | 810 | 9,000 | 190 | 171 |
| 2 | 270 | 13,200 | 430 | 500 | 300 | 2,000 | 1,230 | 5,530 | 690 | 6,440 | 185 | 162 |
| 3 | 255 | 8,000 | 430 | 650 | 300 | 1,620 | 1,180 | 13,000 | 650 | 3,230 | 185 | 158 |
| 4 | 270 | 3,830 | 430 | 610 | 330 | 1,280 | 1,020 | 6,260 | 570 | 1,680 | 180 | 154 |
| 5 | 285 | 2,260 | 430 | 570 | 360 | 1,280 | 975 | 3,530 | 570 | 850 | 180 | 154 |
| 6 | 315 | 1,620 | 430 | 500 | 570 | 1,340 | 890 | 2,530 | 4,660 | 610 | 176 | 150 |
| 7 | 285 | 1,280 | 430 | 395 | 890 | 1,400 | 810 | 4,660 | 6,860 | 535 | 171 | 158 |
| 8 | 255 | 1,070 | 465 | 395 | 2,400 | 1,340 | 770 | 9,000 | 5,530 | 500 | 167 | 154 |
| 9 | 285 | 930 | 570 | 360 | 15,800 | 1,280 | 730 | 10,100 | 2,740 | 448 | 167 | 150 |
| 10 | 975 | 890 | 730 | 360 | 17,800 | 1,180 | 650 | 7,200 | 1,740 | 412 | 270 | 150 |
| 11 | 6,690 | 890 | 890 | 360 | 13,400 | 1,120 | 650 | 11,000 | 1,070 | 395 | 240 | 146 |
| 12 | 7,640 | 1,180 | 1,020 | 360 | 11,800 | 1,020 | 650 | 15,800 | 850 | 360 | 190 | 448 |
| 13 | 11,300 | 1,280 | 1,280 | 360 | 11,900 | 975 | 650 | 10,200 | 730 | 345 | 185 | 270 |
| 14 | 8,180 | 4,970 | 1,340 | 360 | 9,360 | 890 | 650 | 5,210 | 690 | 330 | 180 | 195 |
| 15 | 5,290 | 10,200 | 1,280 | 330 | 5,370 | 850 | 650 | 3,380 | 975 | 285 | 176 | 535 |
| 16 | 1,740 | 7,460 | 1,180 | 330 | 2,740 | 810 | 890 | 2,600 | 5,290 | 270 | 200 | 1,340 |
| 17 | 1,070 | 4,660 | 1,070 | 330 | 2,810 | 810 | 9,720 | 2,000 | 9,540 | 270 | 255 | 1,020 |
| 18 | 810 | 3,020 | 890 | 330 | 3,830 | 850 | 6,690 | 1,880 | 9,360 | 270 | 465 | 570 |
| 19 | 650 | 2,400 | 730 | 330 | 3,980 | 4,130 | 3,680 | 9,000 | 5,450 | 255 | 430 | 315 |
| 20 | 650 | 1,880 | 650 | 300 | 3,760 | 5,450 | 2,400 | 6,600 | 2,810 | 240 | 1,070 | 208 |
| 21 | 1,880 | 1,500 | 500 | 300 | 3,830 | 3,830 | 1,880 | 4,060 | 2,070 | 240 | 850 | 167 |
| 22 | 3,980 | 1,070 | 465 | 300 | 3,530 | 2,670 | 1,560 | 2,810 | 1,500 | 225 | 500 | 154 |
| 23 | 2,260 | 770 | 430 | 300 | 3,230 | 1,940 | 1,340 | 2,140 | 1,400 | 225 | 315 | 150 |
| 24 | 1,230 | 690 | 395 | 300 | 2,810 | 1,560 | 1,180 | 6,350 | 1,120 | 225 | 255 | 150 |
| 25 | 890 | 650 | 395 | 300 | 2,530 | 1,880 | 1,180 | 8,460 | 975 | 225 | 207 | 135 |
| 26 | 730 | 570 | 395 | 300 | 3,900 | 4.730 | 1,070 | 4,060 | 4,730 | 225 | 195 | 131 |
| 27 | 570 | 535 | 395 | 300 | 6,690 | 4,200 | 975 | 2,670 | 3,680 | 225 | 180 | 124 |
| 28 | 650 | 500 | 395 | 300 | 5,210 | 2,950 | 930 | 1,620 | 2,950 | 210 | 167 | 114 |
| 29 | 2,950 | 430 | 395 | 300 | ------- | 2,330 | 975 | 1,180 | 1,880 | 200 | 162 | 240 |
| 30 | 10,600 | 430 | 395 | 300 | ------- | 2,000 | 1,020 | 1,020 | 1,500 | 195 | 162 | 208 |
| 31 | 17,500 | ------- | 395 | 300 | ------- | 1,620 | ------- | 890 | ------- | 190 | 176 | ------ |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 17,500 | 255 | 2,930 | 0.426 | 0.49 |
| November | 16,400 | 430 | 3,150 | .458 | .51 |
| December | 1,340 | 395 | 634 | .092 | .11 |
| January | 650 | 300 | 370 | .054 | .06 |
| February | 17,800 | 300 | 4,990 | .725 | .76 |
| March | 5,450 | 810 | 2,000 | .291 | .34 |
| April | 9,720 | 650 | 1,610 | .234 | .26 |
| May | 15,800 | 890 | 5,350 | .778 | .90 |
| June | 9,540 | 570 | 2,780 | .404 | .45 |
| July | 9,000 | 190 | 939 | .136 | .16 |
| August | 1,070 | 162 | 272 | .040 | .05 |
| September | 1,340 | 114 | 273 | .040 | .04 |
| The year | 17,800 | 114 | 2,090 | .304 | 4.13 |

### THOMPSON RIVER AT TRENTON, MO.

LOCATION.—Chain gage in SW. ¼ sec. 18, T. 61 N., R. 24 W., at bridge on State highway No. 6, 1 mile northwest of Trenton. Zero of gage about 737.15 feet above mean sea level.

DRAINAGE AREA.—1,670 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 5,980 second-feet Oct. 30, June 17; maximum gage height, 11.86 feet June 17; minimum discharge, 24 second-feet Sept. 20; minimum gage height, 2.70 feet Oct. 7, 8.

1928–1930: Maximum discharge, 26,700 second-feet Nov. 18, 1928 (gage height, 22.31 feet); minimum discharge, that of Sept. 20, 1930; minimum gage height, that of Oct. 7, 8, 1929.

Maximum stage known, 30.7 feet July 6, 1909.

REMARKS.—Records fair except those for periods of ice effect, Nov. 23–26, Nov. 30 to Dec. 12, Dec. 17 to Feb. 9, which are poor.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 66 | 2,620 | 150 | 157 | 75 | 538 | 292 | 580 | 256 | 335 | 53 | 43 |
| 2 | 62 | 945 | 137 | 157 | 75 | 498 | 268 | 580 | 223 | 331 | 53 | 41 |
| 3 | 62 | 580 | 137 | 157 | 75 | 256 | 256 | 374 | 212 | 245 | 51 | 38 |
| 4 | 64 | 422 | 137 | 157 | 86 | 374 | 256 | 318 | 186 | 194 | 51 | 39 |
| 5 | 70 | 358 | 137 | 157 | 96 | 390 | 234 | 280 | 1,770 | 171 | 50 | 39 |
| 6 | 64 | 292 | 137 | 157 | 144 | 358 | 212 | 292 | 630 | 164 | 50 | 38 |
| 7 | 60 | 256 | 137 | 86 | 223 | 331 | 203 | 2,800 | 2,200 | 157 | 50 | 38 |
| 8 | 60 | 212 | 137 | 86 | 440 | 331 | 194 | 2,900 | 890 | 150 | 50 | 34 |
| 9 | 72 | 203 | 150 | 86 | 1,060 | 304 | 186 | 2,120 | 538 | 131 | 75 | 34 |
| 10 | 1,840 | 256 | 164 | 75 | 2,200 | 280 | 178 | 1,370 | 304 | 125 | 65 | 34 |
| 11 | 1,120 | 344 | 194 | 75 | 1,980 | 268 | 178 | 3,500 | 256 | 119 | 63 | 34 |
| 12 | 2,530 | 280 | 234 | 75 | 3,000 | 256 | 164 | 1,370 | 223 | 119 | 59 | 34 |
| 13 | 538 | 2,620 | 304 | 75 | 2,620 | 245 | 171 | 890 | 194 | 119 | 59 | 31 |
| 14 | 245 | 4,200 | 292 | 75 | 1,300 | 234 | 178 | 835 | 164 | 102 | 57 | 43 |
| 15 | 171 | 2,050 | 280 | 75 | 780 | 234 | 538 | 580 | 1,500 | 96 | 54 | 91 |
| 16 | 137 | 1,180 | 268 | 75 | 478 | 245 | 1,840 | 422 | 5,060 | 96 | 54 | 38 |
| 17 | 119 | 835 | 234 | 75 | 780 | 245 | 1,500 | 390 | 5,980 | 91 | 157 | 38 |
| 18 | 108 | 630 | 194 | 75 | 1,060 | 1,500 | 835 | 1,980 | 2,800 | 86 | 70 | 31 |
| 19 | 102 | 498 | 150 | 75 | 835 | 1,240 | 630 | 780 | 1,000 | 70 | 64 | 31 |
| 20 | 1,560 | 374 | 125 | 75 | 1,060 | 890 | 498 | 780 | 730 | 69 | 59 | 24 |
| 21 | 1,240 | 331 | 113 | 75 | 1,060 | 630 | 406 | 498 | 630 | 70 | 52 | 28 |
| 22 | 304 | 256 | 102 | 75 | 945 | 498 | 358 | 440 | 538 | 75 | 61 | 28 |
| 23 | 194 | 212 | 102 | 64 | 780 | 442 | 331 | 2,360 | 440 | 75 | 59 | 28 |
| 24 | 157 | 212 | 102 | 66 | 630 | 390 | 422 | 3,500 | 374 | 66 | 52 | 28 |
| 25 | 144 | 212 | 91 | 66 | 1,370 | 1,370 | 331 | 1,980 | 730 | 63 | 50 | 28 |
| 26 | 131 | 234 | 102 | 66 | 2,620 | 890 | 292 | 730 | 680 | 61 | 49 | 35 |
| 27 | 113 | 256 | 102 | 66 | 1,120 | 538 | 256 | 478 | 440 | 55 | 47 | 35 |
| 28 | 125 | 268 | 113 | 66 | 630 | 440 | 280 | 390 | 331 | 55 | 45 | 51 |
| 29 | 2,710 | 280 | 131 | 66 | ------ | 358 | 268 | 358 | 256 | 55 | 63 | 70 |
| 30 | 5,980 | 164 | 144 | 66 | ------ | 331 | 344 | 280 | 3,700 | 54 | 46 | 60 |
| 31 | 3,100 | ------ | 157 | 66 | ------ | 318 | ------ | 256 | ------ | 54 | 43 | ------ |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 5,980 | 60 | 750 | 0.449 | 0.52 |
| November | 4,200 | 164 | 719 | .431 | .48 |
| December | 304 | 91 | 160 | .096 | .11 |
| January | 157 | 64 | 89.3 | .053 | .06 |
| February | 3,000 | 75 | 983 | .589 | .61 |
| March | 1,500 | 234 | 491 | .294 | .34 |
| April | 1,840 | 164 | 403 | .241 | .27 |
| May | 3,500 | 256 | 1,110 | .665 | .77 |
| June | 5,980 | 164 | 1,110 | .665 | .74 |
| July | 835 | 54 | 134 | .080 | .09 |
| August | 157 | 43 | 58.4 | .035 | .04 |
| September | 91 | 24 | 38.8 | .023 | .03 |
| The year | 5,980 | 24 | 499 | .299 | 4.06 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 1,890 second-feet Oct. 31 (gage height, 7.64 feet); minimum, 1.2 second-feet Sept. 4, 27 (gage height, 2.75 feet).

1921–1930: 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. 11, Dec. 19 to Feb. 9, and those estimated, Oct. 1–5, Mar. 9–17, Aug. 9, Sept. 11, which are poor.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11 | 1,250 | 15 | 21 | 15 | 84 | 63 | 720 | 26 | 54 | 2.4 | 2.4 |
| 2 | 11 | 562 | 15 | 21 | 21 | 39 | 51 | 172 | 12 | 63 | 1.7 | 2.7 |
| 3 | 12 | 161 | 15 | 21 | 21 | 37 | 47 | 76 | 19 | 30 | 2.0 | 1.7 |
| 4 | 12 | 94 | 15 | 15 | 28 | 58 | 37 | 49 | 17 | 18 | 2.4 | 1.2 |
| 5 | 12 | 70 | 15 | 15 | 37 | 56 | 33 | 41 | 56 | 14 | 3.4 | 1.5 |
| 6 | 12 | 56 | 15 | 15 | 47 | 55 | 28 | 35 | 169 | 10 | 2.4 | 1.3 |
| 7 | 11 | 45 | 15 | 15 | 70 | 54 | 25 | 45 | 63 | 8 | 2.0 | 2.4 |
| 8 | 12 | 37 | 21 | 11 | 102 | 51 | 24 | 49 | 42 | 7 | 2.0 | 1.6 |
| 9 | 134 | 32 | 24 | 11 | 144 | 45 | 22 | 51 | 121 | 6 | 16 | 3.0 |
| 10 | 444 | 30 | 42 | 11 | 675 | 40 | 25 | 97 | 47 | 3.0 | 30 | 4.0 |
| 11 | 229 | 73 | 77 | 11 | 810 | 35 | 22 | 161 | 11 | 6 | 13 | 2.8 |
| 12 | 606 | 84 | 102 | 11 | 855 | 30 | 19 | 178 | 15 | 5 | 9 | 1.7 |
| 13 | 205 | 106 | 98 | 11 | 765 | 25 | 28 | 80 | 19 | 4.7 | 3.4 | 1.6 |
| 14 | 112 | 1,350 | 92 | 11 | 255 | 30 | 22 | 49 | 16 | 4.0 | 7 | 3.4 |
| 15 | 81 | 1,050 | 55 | 11 | 63 | 37 | 68 | 30 | 495 | 3.7 | 4.3 | 3.0 |
| 16 | 45 | 418 | 64 | 11 | 255 | 24 | 855 | 27 | 237 | 4.0 | 5 | 3.7 |
| 17 | 37 | 155 | 188 | 11 | 185 | 22 | 178 | 22 | 90 | 3.4 | 5 | 2.7 |
| 18 | 35 | 128 | 59 | 11 | 178 | 765 | 81 | 418 | 33 | 3.0 | 4.0 | 3.7 |
| 19 | 31 | 106 | 37 | 11 | 237 | 630 | 63 | 110 | 27 | 3.0 | 4.3 | 1.5 |
| 20 | 169 | 81 | 15 | 11 | 237 | 255 | 58 | 42 | 25 | 3.7 | 19 | 1.6 |
| 21 | 157 | 58 | 6 | 11 | 237 | 172 | 49 | 49 | 27 | 2.7 | 9 | 1.5 |
| 22 | 72 | 35 | 6 | 11 | 194 | 81 | 41 | 27 | 47 | 3.7 | 3.0 | 1.6 |
| 23 | 56 | 28 | 6 | 11 | 121 | 47 | 37 | 166 | 28 | 3.7 | 3.0 | 1.5 |
| 24 | 46 | 28 | 6 | 15 | 117 | 78 | 33 | 855 | 19 | 4.3 | 3.4 | 2.0 |
| 25 | 35 | 37 | 8 | 15 | 198 | 440 | 32 | 161 | 144 | 3.4 | 4.0 | 2.7 |
| 26 | 30 | 37 | 11 | 15 | 495 | 518 | 29 | 51 | 25 | 3.0 | 3.4 | 2.4 |
| 27 | 30 | 37 | 15 | 15 | 185 | 273 | 28 | 39 | 27 | 2.4 | 3.0 | 1.2 |
| 28 | 22 | 28 | 11 | 15 | 106 | 150 | 32 | 39 | 28 | 1.7 | 2.7 | 1.5 |
| 29 | 1,350 | 21 | 8 | 15 | ------ | 113 | 27 | 27 | 15 | 2.0 | 7 | 1.5 |
| 30 | 1,670 | 15 | 15 | 15 | ------ | 49 | 55 | 26 | 220 | 1.7 | 3.0 | 1.6 |
| 31 | 1,890 | ------ | 21 | 15 | ------ | 76 | ----- | 24 | ------ | 1.7 | 2.7 | ------ |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 1,890 | 11 | 244 | 1.08 | 1.24 |
| November | 1,350 | 15 | 207 | .920 | 1.03 |
| December | 188 | 6 | 35.2 | .156 | .18 |
| January | 21 | 11 | 13.5 | .060 | .07 |
| February | 855 | 15 | 238 | 1.06 | 1.10 |
| March | 765 | 22 | 141 | .627 | .72 |
| April | 855 | 19 | 70.4 | .313 | .35 |
| May | 855 | 22 | 126 | .560 | .65 |
| June | 495 | 11 | 70.7 | .314 | .35 |
| July | 63 | 1.7 | 9.15 | .041 | .05 |
| August | 30 | 1.7 | 5.89 | .026 | .03 |
| September | 4 | 1.2 | 2.17 | .0096 | .01 |
| The year | 1,890 | 1.2 | 95.9 | .426 | 5.78 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 2,440 second-feet Oct. 31, Nov. 1 (gage height, 15.5 feet); minimum discharge, 0.1 second-foot Aug. 8; minimum gage height, 1.78 feet Sept. 13.

1921–1930: Maximum discharge, 3,880 second-feet Nov. 18, 1928 (gage height, 20.07 feet); minimum, that of Aug. 8, 1930.

REMARKS.—Records fair except those for periods of ice effect, Nov. 23 to Dec. 13, Dec. 19 to Feb. 10, which are poor.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 12 | 2,440 | 14 | 22 | 14 | 108 | 108 | 160 | 15 | 13 | 0.2 | 0.5 |
| 2 | 12 | 594 | 14 | 22 | 22 | 87 | 87 | 63 | 12 | 17 | .2 | .4 |
| 3 | 10 | 197 | 14 | 22 | 22 | 60 | 80 | 57 | 12 | 15 | .4 | .2 |
| 4 | 12 | 146 | 14 | 18 | 26 | 87 | 70 | 45 | 12 | 10 | .2 | .2 |
| 5 | 14 | 102 | 14 | 18 | 34 | 73 | 63 | 42 | 13 | 6.8 | .2 | .2 |
| 6 | 13 | 88 | 18 | 18 | 49 | 70 | 57 | 115 | 13 | 5.6 | .2 | .2 |
| 7 | 12 | 84 | 18 | 18 | 74 | 73 | 48 | 129 | 39 | 4.2 | .2 | .2 |
| 8 | 12 | 67 | 22 | 14 | 102 | 70 | 45 | 57 | 30 | 3.8 | .1 | .2 |
| 9 | 34 | 58 | 26 | 14 | 146 | 66 | 45 | 45 | 13 | 3.0 | .2 | .2 |
| 10 | 492 | 70 | 49 | 14 | 386 | 63 | 42 | 115 | 10 | 2.8 | .4 | .2 |
| 11 | 856 | 88 | 61 | 14 | 730 | 60 | 37 | 300 | 10 | 3.0 | .7 | .4 |
| 12 | 1,890 | 102 | 67 | 14 | 1,190 | 57 | 40 | 115 | 10 | 2.8 | .4 | .2 |
| 13 | 2,380 | 162 | 81 | 14 | 984 | 51 | 34 | 74 | 9 | 2.6 | .5 | .2 |
| 14 | 330 | 476 | 88 | 14 | 368 | 48 | 34 | 42 | 8 | 2.2 | .4 | 24 |
| 15 | 130 | 492 | 74 | 14 | 160 | 48 | 70 | 30 | 16 | 2.0 | 26 | 6.8 |
| 16 | 84 | 206 | 67 | 14 | 244 | 45 | 176 | 26 | 812 | 1.8 | 28 | 2.8 |
| 17 | 70 | 206 | 67 | 14 | 184 | 54 | 200 | 24 | 81 | 1.8 | 1.4 | 2.4 |
| 18 | 44 | 102 | 55 | 14 | 152 | 462 | 168 | 188 | 44 | 1.4 | .8 | 1.8 |
| 19 | 44 | 84 | 30 | 11 | 226 | 532 | 122 | 179 | 32 | 1.8 | .8 | 1.2 |
| 20 | 179 | 74 | 14 | 11 | 217 | 253 | 94 | 95 | 28 | 1.6 | .5 | .8 |
| 21 | 476 | 39 | 11 | 11 | 208 | 152 | 48 | 46 | 52 | 1.6 | .5 | .4 |
| 22 | 49 | 30 | 8 | 11 | 184 | 108 | 42 | 32 | 52 | 1.2 | .4 | .5 |
| 23 | 70 | 26 | 8 | 11 | 152 | 94 | 40 | 154 | 20 | 1.4 | .2 | .2 |
| 24 | 55 | 22 | 8 | 11 | 129 | 87 | 31 | 216 | 10 | 1.4 | .4 | .2 |
| 25 | 49 | 30 | 8 | 14 | 122 | 192 | 28 | 95 | 19 | 1.2 | .2 | .2 |
| 26 | 44 | 30 | 8 | 14 | 290 | 226 | 30 | 44 | 10 | .8 | .4 | 4.2 |
| 27 | 39 | 34 | 8 | 14 | 244 | 290 | 30 | 28 | 10 | .7 | .2 | 1.0 |
| 28 | 116 | 34 | 11 | 14 | 129 | 208 | 30 | 24 | 16 | .7 | .2 | .5 |
| 29 | 612 | 22 | 11 | 14 | ------- | 200 | 32 | 21 | 8 | .5 | .8 | .5 |
| 30 | 2,260 | 14 | 18 | 14 | ------- | 184 | 32 | 18 | 88 | .4 | 1.0 | .8 |
| 31 | 2,440 | ------- | 22 | 14 | ------- | 129 | ------- | 15 | ------- | .4 | .7 | ------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 2,440 | 10 | 414 | 1.84 | 2.12 |
| November | 2,440 | 14 | 204 | .907 | 1.01 |
| December | 88 | 8 | 29.9 | .133 | .15 |
| January | 22 | 11 | 14.7 | .065 | .07 |
| February | 1,190 | 14 | 242 | 1.08 | 1.12 |
| March | 532 | 45 | 137 | .609 | .70 |
| April | 200 | 28 | 65.4 | .291 | .32 |
| May | 300 | 15 | 83.7 | .372 | .43 |
| June | 812 | 8 | 50.1 | .223 | .25 |
| July | 17 | .4 | 3.63 | .016 | .02 |
| August | 28 | .1 | 5.38 | .024 | .03 |
| September | 24 | .2 | 1.72 | .008 | .01 |
| The year | 2,440 | .1 | 103 | .458 | 6.23 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 7,920 second-feet June 30 (gage height, 14.44 feet); minimum discharge, 4 second-feet Aug. 8, Sept. 25, 27, 30; minimum gage height, 2.58 feet Aug. 8.

1929–30: Maximum discharge, 14,100 second-feet Apr. 21, 1929 (gage height, 20.89 feet); minimum discharge and gage height, those of August and September, 1930.

REMARKS.—Records fair except those for periods of ice effect, Nov. 22 to Dec. 11, Dec. 18 to Feb. 10, which are poor. Discharge estimated Mar. 18–20.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 28 | 4,480 | 38 | 49 | 49 | 257 | 247 | 208 | 83 | 317 | 7 | 8 |
| 2 | 26 | 2,230 | 38 | 62 | 49 | 228 | 228 | 1,080 | 76 | 126 | 6 | 6 |
| 3 | 26 | 450 | 38 | 62 | 62 | 118 | 199 | 277 | 62 | 74 | 6 | 6 |
| 4 | 28 | 317 | 38 | 62 | 77 | 126 | 170 | 180 | 61 | 66 | 5 | 6 |
| 5 | 57 | 257 | 38 | 62 | 77 | 126 | 161 | 134 | 76 | 57 | 6 | 6 |
| 6 | 47 | 228 | 49 | 62 | 109 | 126 | 152 | 237 | 96 | 45 | 5 | 6 |
| 7 | 34 | 199 | 49 | 62 | 143 | 126 | 134 | 1,150 | 80 | 38 | 6 | 8 |
| 8 | 30 | 170 | 62 | 49 | 180 | 143 | 126 | 317 | 95 | 32 | 4 | 6 |
| 9 | 32 | 152 | 77 | 49 | 357 | 152 | 109 | 208 | 74 | 28 | 5 | 6 |
| 10 | 3,290 | 161 | 109 | 49 | 770 | 143 | 106 | 180 | 59 | 28 | 8 | 6 |
| 11 | 3,290 | 208 | 161 | 49 | 1,850 | 134 | 101 | 2,070 | 50 | 26 | 7 | 5 |
| 12 | 4,310 | 228 | 218 | 49 | 2,790 | 126 | 96 | 710 | 48 | 25 | 8 | 6 |
| 13 | 4,400 | 218 | 228 | 38 | 1,780 | 126 | 93 | 237 | 49 | 23 | 7 | 6 |
| 14 | 3,120 | 1,570 | 208 | 38 | 655 | 109 | 93 | 180 | 38 | 18 | 6 | 44 |
| 15 | 337 | 1,360 | 180 | 38 | 357 | 106 | 93 | 143 | 1,080 | 15 | 6 | 143 |
| 16 | 257 | 422 | 180 | 38 | 257 | 109 | 1,290 | 134 | 1,430 | 14 | 6 | 34 |
| 17 | 199 | 317 | 190 | 38 | 247 | 118 | 1,150 | 118 | 655 | 15 | 126 | 27 |
| 18 | 180 | 277 | 180 | 38 | 337 | 600 | 1,290 | 1,710 | 152 | 12 | 39 | 17 |
| 19 | 152 | 218 | 77 | 38 | 357 | 800 | 218 | 770 | 107 | 12 | 18 | 6 |
| 20 | 830 | 199 | 49 | 38 | 399 | 500 | 190 | 378 | 90 | 11 | 11 | 5 |
| 21 | 1,080 | 199 | 38 | 38 | 422 | 297 | 170 | 228 | 72 | 10 | 9 | 5 |
| 22 | 357 | 93 | 28 | 49 | 378 | 170 | 161 | 170 | 91 | 11 | 7 | 5 |
| 23 | 208 | 77 | 20 | 49 | 317 | 228 | 134 | 2,470 | 64 | 11 | 6 | 5 |
| 24 | 161 | 62 | 20 | 49 | 297 | 247 | 126 | 480 | 65 | 10 | 6 | 5 |
| 25 | 126 | 93 | 20 | 49 | 450 | 480 | 118 | 317 | 378 | 8 | 6 | 4 |
| 26 | 126 | 93 | 20 | 49 | 450 | 770 | 118 | 199 | 190 | 7 | 5 | 5 |
| 27 | 109 | 77 | 28 | 49 | 378 | 710 | 118 | 143 | 72 | 9 | 5 | 4 |
| 28 | 297 | 62 | 28 | 49 | 297 | 605 | 118 | 118 | 61 | 9 | 5 | 5 |
| 29 | 2,710 | 49 | 38 | 49 | ------- | 480 | 109 | 109 | 53 | 8 | 6 | 5 |
| 30 | 4,830 | 38 | 38 | 49 | ------- | 378 | 126 | 96 | 5,460 | 9 | 25 | 4 |
| 31 | 5,730 | ------- | 49 | 49 | ------- | 297 | ------- | 90 | ------- | 7 | 13 | ------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 5,730 | 26 | 1,170 | 2.13 | 2.46 |
| November | 4,480 | 38 | 483 | .878 | .98 |
| December | 228 | 20 | 81.7 | .149 | .17 |
| January | 62 | 38 | 48.3 | .088 | .10 |
| February | 2,790 | 49 | 496 | .902 | .94 |
| March | 800 | 106 | 288 | .524 | .60 |
| April | 1,290 | 93 | 251 | .456 | .51 |
| May | 2,470 | 90 | 479 | .871 | 1.00 |
| June | 5,460 | 38 | 366 | .665 | .74 |
| July | 317 | 7 | 34.9 | .063 | .07 |
| August | 126 | 4 | 12.4 | .023 | .03 |
| September | 143 | 4 | 13.5 | .025 | .03 |
| The year | 5,730 | 4 | 310 | .564 | 7.63 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 2,630 second-feet July 2 (gage height, 19.56 feet); minimum discharge, 1 second-foot Sept. 5–7, 10, 13; minimum gage height, 2.16 feet Sept. 5, 6.

1929–30: Maximum discharge, 6,450 second-feet Apr. 22, 1929 (gage height, 21.04 feet); minimum discharge and gage height, those of September, 1930.

REMARKS.—Records good except those for periods of ice effect, Nov. 24, 25, 30, Dec. 1–10, Dec. 17 to Feb. 9, which are poor.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 8 | 1,820 | 33 | 54 | 24 | 208 | 256 | 54 | 28 | 2,150 | 3 | 2 |
| 2 | 8 | 1,590 | 33 | 69 | 24 | 166 | 173 | 194 | 24 | 2,570 | 3 | 2 |
| 3 | 6 | 1,020 | 30 | 79 | 24 | 126 | 132 | 108 | 22 | 2,030 | 2 | 2 |
| 4 | 6 | 437 | 30 | 84 | 27 | 84 | 114 | 448 | 20 | 720 | 2 | 2 |
| 5 | 9 | 187 | 30 | 90 | 30 | 96 | 96 | 194 | 20 | 152 | 2 | 1 |
| 6 | 8 | 159 | 30 | 84 | 102 | 102 | 79 | 114 | 15 | 79 | 2 | 1 |
| 7 | 8 | 126 | 33 | 74 | 240 | 102 | 69 | 102 | 14 | 62 | 2 | 1 |
| 8 | 6 | 102 | 45 | 59 | 415 | 96 | 64 | 208 | 12 | 43 | 2 | 2 |
| 9 | 11 | 96 | 59 | 49 | 810 | 90 | 56 | 208 | 10 | 33 | 2 | 2 |
| 10 | 102 | 79 | 90 | 45 | 1,820 | 84 | 52 | 187 | 10 | 28 | 2 | 1 |
| 11 | 780 | 69 | 108 | 45 | 1,480 | 79 | 45 | 296 | 9 | 21 | 2 | 2 |
| 12 | 1,790 | 64 | 126 | 41 | 1,230 | 74 | 41 | 459 | 10 | 18 | 2 | 2 |
| 13 | 1,770 | 102 | 152 | 37 | 1,280 | 64 | 41 | 349 | 9 | 16 | 2 | 1 |
| 14 | 1,210 | 102 | 166 | 37 | 1,000 | 59 | 37 | 166 | 8 | 12 | 2 | 2 |
| 15 | 595 | 288 | 138 | 37 | 518 | 54 | 39 | 108 | 114 | 12 | 2 | 7 |
| 16 | 272 | 395 | 120 | 33 | 240 | 47 | 47 | 79 | 426 | 11 | 3 | 74 |
| 17 | 120 | 340 | 102 | 33 | 288 | 47 | 1,038 | 74 | 1,020 | 9 | 224 | 45 |
| 18 | 74 | 187 | 96 | 33 | 349 | 56 | 1,400 | 52 | 331 | 9 | 79 | 20 |
| 19 | 59 | 159 | 90 | 30 | 358 | 79 | 506 | 43 | 90 | 6 | 33 | 14 |
| 20 | 224 | 132 | 74 | 30 | 313 | 331 | 224 | 201 | 494 | 6 | 16 | 7 |
| 21 | 437 | 114 | 54 | 30 | 288 | 437 | 159 | 395 | 256 | 6 | 12 | 4 |
| 22 | 385 | 96 | 41 | 27 | 264 | 201 | 126 | 166 | 90 | 5 | 7 | 3 |
| 23 | 415 | 79 | 33 | 27 | 232 | 132 | 114 | 120 | 33 | 5 | 4 | 3 |
| 24 | 173 | 59 | 30 | 27 | 201 | 102 | 96 | 96 | 20 | 5 | 4 | 2 |
| 25 | 96 | 49 | 27 | 27 | 194 | 126 | 79 | 459 | 17 | 4 | 3 | 2 |
| 26 | 69 | 45 | 27 | 27 | 426 | 201 | 74 | 506 | 810 | 4 | 3 | 3 |
| 27 | 54 | 45 | 27 | 27 | 405 | 322 | 69 | 152 | 1,060 | 5 | 2 | 2 |
| 28 | 49 | 49 | 27 | 27 | 296 | 358 | 62 | 79 | 280 | 4 | 2 | 2 |
| 29 | 1,123 | 49 | 30 | 27 | ------- | 349 | 59 | 54 | 90 | 3 | 2 | 2 |
| 30 | 1,740 | 41 | 33 | 24 | ------- | 331 | 59 | 41 | 720 | 3 | 3 | 2 |
| 31 | 1,650 | ------- | 41 | 24 | ------- | 304 | ------- | 33 | ------- | 3 | 2 | ------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 1,790 | 6 | 428 | 0.968 | 1.12 |
| November | 1,820 | 41 | 269 | .609 | .68 |
| December | 166 | 27 | 63.1 | .143 | .16 |
| January | 90 | 24 | 43.1 | .098 | .11 |
| February | 1,820 | 24 | 460 | 1.04 | 1.08 |
| March | 437 | 47 | 158 | .357 | .41 |
| April | 1,400 | 37 | 180 | .407 | .45 |
| May | 506 | 33 | 185 | .419 | .48 |
| June | 1,060 | 8 | 202 | .457 | .51 |
| July | 2,570 | 3 | 259 | .586 | .68 |
| August | 224 | 2 | 13.9 | .031 | .04 |
| September | 74 | 1 | 7.17 | .016 | .02 |
| The year | 2,570 | 1 | 187 | .423 | 5.74 |

## CHARITON RIVER BASIN

### CHARITON RIVER AT ELMER, MO.

LOCATION.—Chain gage in SW. ¼ SW. ¼ sec. 2, T. 59 N., R. 16 W., at Atchison, Topeka & Santa Fe Railway bridge three-fourths mile southwest of Elmer. Zero of gage about 687.85 feet above mean sea level.

DRAINAGE AREA.—1,660 square miles.

RECORDS AVAILABLE.—July, 1921, to September, 1930.

EXTREMES.—Maximum discharge during year, 6,200 second-feet Nov. 1 (gage height, 13.80 feet); minimum discharge, 14 second-feet Sept. 25–30; minimum gage height, 2.20 feet Aug. 23–27, Sept. 3, 5, 1930.

1921–1930: Maximum discharge, 22,500 second-feet Nov. 17, 1928; maximum gage height, 27.56 feet Sept. 21, 1926; minimum discharge, 14 second-feet Sept. 26, 1927, Sept. 25–30, 1930; minimum gage height, that of Aug. 23–27, Sept. 3, 5, 1930.

REMARKS.—Records fair except those for periods of ice effect, Nov. 28–31, Dec. 1–3, 19–26, Jan. 4, 5, 12–31, Feb. 1–4, which are poor.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 98 | 6,200 | 193 | 193 | 108 | 1,270 | 825 | 910 | 193 | 745 | 31 | 26 |
| 2 | 89 | 5,810 | 193 | 249 | 124 | 1,090 | 445 | 1,450 | 146 | 309 | 28 | 23 |
| 3 | 84 | 5,270 | 193 | 264 | 146 | 865 | 445 | 705 | 121 | 294 | 27 | 22 |
| 4 | 78 | 3,740 | 220 | 260 | 220 | 665 | 445 | 665 | 105 | 234 | 26 | 22 |
| 5 | 86 | 1,930 | 278 | 265 | 865 | 550 | 392 | 625 | 98 | 180 | 27 | 22 |
| 6 | 89 | 955 | 249 | 264 | 1,320 | 480 | 326 | 515 | 86 | [a] 174 | 28 | 23 |
| 7 | 92 | 745 | 220 | 168 | 3,160 | 410 | 249 | 480 | 342 | 168 | 27 | [a] 23 |
| 8 | 81 | 705 | 220 | 249 | 2,800 | 375 | 249 | 625 | 515 | 146 | 28 | [a] 24 |
| 9 | 78 | 550 | 278 | 358 | 2,460 | 342 | 168 | 480 | 410 | 128 | 26 | [a] 25 |
| 10 | 1,148 | 550 | 294 | 392 | 2,460 | 326 | 180 | 480 | 309 | 98 | 118 | 26 |
| 11 | 2,400 | 515 | 342 | 358 | 2,520 | 294 | 264 | 445 | 193 | 95 | 118 | 20 |
| 12 | 2,920 | 550 | 410 | 309 | 3,480 | 278 | 249 | 410 | 137 | 89 | 193 | 20 |
| 13 | 3,220 | 865 | 445 | 278 | 3,740 | 264 | 220 | 392 | 111 | 78 | 326 | 18 |
| 14 | 2,300 | 1,140 | 480 | 249 | 3,040 | 249 | 157 | 445 | 102 | 66 | 68 | 128 |
| 15 | 1,680 | 1,360 | 515 | 193 | 2,130 | 234 | 220 | [a] 370 | 2,350 | 68 | 51 | 54 |
| 16 | 1,360 | 2,080 | 515 | 168 | 1,500 | 220 | 4,280 | 294 | 4,210 | 53 | 41 | 36 |
| 17 | 865 | 1,580 | 515 | 146 | 1,360 | 206 | 1,540 | 220 | 4,140 | 51 | 73 | 30 |
| 18 | 445 | 1,040 | 480 | 124 | 1,220 | 2,180 | 705 | 220 | 3,100 | 47 | 38 | 23 |
| 19 | 278 | 825 | 342 | 124 | 1,270 | 1,780 | 587 | 1,540 | 1,090 | 45 | 31 | 22 |
| 20 | 515 | 745 | 309 | 108 | 1,450 | 1,500 | 515 | 1,270 | 705 | 45 | 26 | 22 |
| 21 | 1,320 | 550 | 278 | 108 | 1,450 | 1,180 | 445 | 480 | 1,000 | 47 | 24 | 21 |
| 22 | 865 | 480 | 249 | 92 | 1,500 | 865 | 410 | 515 | 785 | 28 | 23 | 18 |
| 23 | 705 | 480 | 220 | 92 | 1,580 | 745 | 294 | 550 | 410 | 28 | 22 | 17 |
| 24 | 515 | 410 | 193 | 92 | 1,540 | 745 | 264 | 1,400 | 309 | 34 | 22 | 16 |
| 25 | 410 | [a] 400 | 193 | 92 | 1,500 | 665 | 249 | 1,140 | 2,300 | 31 | 22 | 14 |
| 26 | 375 | [a] 390 | 193 | 92 | 1,450 | 665 | 206 | 1,000 | 445 | 30 | 22 | 14 |
| 27 | 294 | 375 | 193 | 92 | 1,360 | 665 | 193 | 825 | 264 | 30 | 22 | 14 |
| 28 | 3,040 | 342 | 193 | 92 | 1,270 | 745 | 180 | 515 | 220 | 28 | 23 | 14 |
| 29 | 4,350 | 278 | 193 | 98 | ------- | 825 | 168 | 392 | 168 | 30 | 26 | 14 |
| 30 | 5,270 | 220 | 180 | 108 | ------- | 1,040 | 146 | 309 | 3,410 | 30 | 28 | 14 |
| 31 | 5,630 | ------- | 180 | 108 | ------- | 955 | ------- | 206 | ------- | 31 | 28 | ------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 5,630 | 78 | 1,310 | 0.789 | 0.91 |
| November | 6,200 | 220 | 1,370 | .825 | .92 |
| December | 515 | 180 | 289 | .174 | .20 |
| January | 392 | 92 | 187 | .113 | .13 |
| February | 3,740 | 108 | 1,680 | 1.01 | 1.05 |
| March | 2,180 | 206 | 731 | .440 | .51 |
| April | 4,280 | 146 | 501 | .302 | .34 |
| May | 1,540 | 206 | 641 | .386 | .44 |
| June | 4,210 | 86 | 926 | .558 | .62 |
| July | 745 | 28 | 112 | .067 | .08 |
| August | 326 | 22 | 51.4 | .031 | .04 |
| September | 128 | 14 | 25.5 | .015 | .02 |
| The year | 6,200 | 14 | 643 | .387 | 5.26 |

[a] Estimated

### 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, 1930.

EXTREMES.—Maximum discharge during year, 6,800 second-feet Nov. 2; maximum gage height, 19.05 feet Feb. 11; minimum discharge, 24 second-feet Sept. 26 (gage height, 1.77 feet).

1929–30: Maximum discharge, 18,700 second-feet Apr. 25, 1929 (gage height, 21.66 feet); minimum, that of Sept. 26, 1930.

Maximum stage known, 22.54 feet Nov. 18, 1928.

REMARKS.—Records good except those for periods of ice effect, Dec. 2–4, 20–27, Jan. 14–31, Feb. 1–5, 9–11, which are poor.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 138 | 6,600 | 210 | 220 | 138 | 1,360 | 970 | 214 | 303 | 5,020 | 44 | 43 |
| 2 | 120 | 6,800 | 210 | 290 | 138 | 1,330 | 826 | 390 | 242 | 1,510 | 43 | 37 |
| 3 | 102 | 6,700 | 250 | 334 | 156 | 1,060 | 686 | 1,700 | 214 | 630 | 43 | 35 |
| 4 | 99 | 5,750 | 290 | 270 | 210 | 798 | 578 | 742 | 204 | 480 | 41 | 34 |
| 5 | 89 | 3,320 | 290 | 290 | 334 | 658 | 480 | 528 | 194 | 346 | 39 | 35 |
| 6 | 91 | 1,400 | 260 | 290 | 1,110 | 578 | 434 | 434 | 185 | 282 | 43 | 35 |
| 7 | 91 | 1,000 | 240 | 192 | 2,860 | 528 | 390 | 390 | 166 | 262 | 42 | 39 |
| 8 | 80 | 792 | 290 | 290 | 3,220 | 504 | 346 | 578 | 138 | 242 | 43 | 37 |
| 9 | 86 | 688 | 260 | 444 | 3,100 | 480 | 303 | 630 | 504 | 242 | 41 | 35 |
| 10 | 230 | 610 | 312 | 512 | 3,000 | 457 | 303 | 770 | 528 | 194 | 44 | 34 |
| 11 | 1,490 | 560 | 356 | 512 | 3,000 | 434 | 262 | 798 | 368 | 176 | 45 | 32 |
| 12 | 2,780 | 584 | 422 | 466 | 4,540 | 412 | 303 | 1,210 | 262 | 166 | 120 | 36 |
| 13 | 3,450 | 560 | 466 | 440 | 4,480 | 390 | 262 | 940 | 204 | 147 | 147 | 32 |
| 14 | 4,000 | 740 | 536 | 356 | 4,100 | 368 | 242 | 686 | 166 | 128 | 147 | 34 |
| 15 | 3,180 | 1,310 | 512 | 312 | 3,140 | 346 | 232 | 504 | 176 | 111 | 111 | 73 |
| 16 | 1,230 | 1,900 | 488 | 270 | 2,190 | 324 | 303 | 434 | 3,400 | 96 | 104 | 147 |
| 17 | 662 | 2,060 | 488 | 250 | 1,770 | 324 | 3,450 | 368 | 4,200 | 96 | 90 | 71 |
| 18 | 488 | 1,900 | 512 | 210 | 1,570 | 368 | 1,510 | 324 | 4,100 | 83 | 147 | 51 |
| 19 | 400 | 1,370 | 400 | 192 | 1,420 | 1,240 | 854 | 324 | 2,300 | 78 | 90 | 46 |
| 20 | 488 | 948 | 356 | 156 | 1,450 | 2,370 | 658 | 1,450 | 1,540 | 70 | 67 | 38 |
| 21 | 1,030 | 740 | 334 | 138 | 1,610 | 1,510 | 553 | 854 | 910 | 67 | 52 | 32 |
| 22 | 1,230 | 584 | 312 | 138 | 1,640 | 1,180 | 480 | 798 | 1,030 | 71 | 50 | 34 |
| 23 | 1,230 | 488 | 312 | 138 | 1,610 | 970 | 412 | 412 | 742 | 57 | 48 | 30 |
| 24 | 662 | 400 | 290 | 138 | 1,390 | 798 | 368 | 390 | 528 | 49 | 39 | 28 |
| 25 | 512 | 334 | 270 | 125 | 1,330 | 770 | 346 | 1,480 | 412 | 47 | 37 | 27 |
| 26 | 444 | 356 | 270 | 120 | 1,570 | 798 | 303 | 1,060 | 2,440 | 47 | 37 | 24 |
| 27 | 356 | 356 | 270 | 120 | 1,360 | 826 | 303 | 1,240 | 798 | 52 | 35 | 27 |
| 28 | 312 | 378 | 270 | 120 | 1,360 | 798 | 282 | 1,030 | 434 | 48 | 34 | 27 |
| 29 | 3,630 | 356 | 260 | 120 | ------- | 798 | 262 | 604 | 346 | 42 | 38 | 25 |
| 30 | 5,260 | 230 | 260 | 120 | ------- | 910 | 194 | 457 | 2,010 | 40 | 42 | 25 |
| 31 | 6,040 | ------- | 270 | 120 | ------- | 1,030 | ------- | 368 | ------- | 43 | 56 | ------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 6,040 | 80 | 1,290 | 0.662 | 0.76 |
| November | 6,800 | 230 | 1,660 | .851 | .95 |
| December | 536 | 210 | 331 | .170 | .20 |
| January | 512 | 120 | 248 | .127 | .15 |
| February | 4,540 | 138 | 1,920 | .985 | 1.03 |
| March | 2,370 | 324 | 797 | .409 | .47 |
| April | 3,450 | 194 | 563 | .289 | .32 |
| May | 1,700 | 214 | 713 | .366 | .42 |
| June | 4,200 | 138 | 968 | .496 | .55 |
| July | 5,020 | 40 | 352 | .181 | .21 |
| August | 147 | 34 | 63.2 | .032 | .04 |
| September | 147 | 24 | 40.1 | .021 | .02 |
| The year | 6,800 | 24 | 735 | .376 | 5.12 |

## 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-fourths mile east of Clifton City. Zero of gage 622.60 feet above mean sea level.

DRAINAGE AREA.—598 square miles.

RECORDS AVAILABLE.—June, 1922, to September, 1930.

EXTREMES.—Maximum discharge during year, 7,260 second-feet Feb. 7 (gage height, 17.6 feet); minimum, 0.9 second-foot Sept. 5 (gage height, 1.22 feet).

1922–1930: Maximum discharge, 33,000 second-feet May 19, 1929 (gage height, 29.0 feet); minimum, that of Sept. 5, 1930.

Maximum stage known, 35.3 feet Sept. 18, 1905.

REMARKS.—Records good except those for periods of ice effect, Nov. 28–30, Dec. 1–12, 18–31, Jan. 10 to Feb. 6, which are poor.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6 | 685 | 17 | 1,280 | 17 | 257 | 76 | 86 | 11 | 20 | 9 | 1.8 |
| 2 | 5 | 272 | 17 | 3,890 | 17 | 212 | 76 | 100 | 11 | 16 | 6 | 1.6 |
| 3 | 4 | 184 | 17 | 840 | 58 | 184 | 91 | 81 | 11 | 13 | 6 | 1.2 |
| 4 | 9 | 146 | 17 | 422 | 1,040 | 162 | 152 | 72 | 10 | 10 | 5 | 1.0 |
| 5 | 6 | 115 | 17 | 304 | 1,840 | 157 | 130 | 62 | 12 | 10 | 4 | .9 |
| 6 | 7 | 95 | 17 | 242 | 2,740 | 152 | 110 | 66 | 10 | 9 | 3.6 | 1.2 |
| 7 | 7 | 76 | 17 | 257 | 5,780 | 141 | 91 | 66 | 9 | 7 | 3.2 | 242 |
| 8 | 8 | 63 | 17 | 227 | 4,090 | 125 | 76 | 108 | 9 | 66 | 2.8 | 51 |
| 9 | 76 | 54 | 17 | 179 | 4,490 | 115 | 72 | 95 | 9 | 39 | 2.4 | 16 |
| 10 | 304 | 51 | 17 | 157 | 2,290 | 100 | 58 | 74 | 8 | 10 | 2.0 | 12 |
| 11 | 242 | 47 | 17 | 130 | 1,440 | 95 | 54 | 95 | 17 | 7 | 1.8 | 10 |
| 12 | 100 | 47 | 17 | 105 | 1,760 | 86 | 47 | 86 | 17 | 5 | 1.8 | 440 |
| 13 | 76 | 44 | 27 | 81 | 1,400 | 76 | 40 | 70 | 20 | 4 | 2.4 | 78 |
| 14 | 51 | 51 | 198 | 58 | 760 | 67 | 37 | 51 | 23 | 3.6 | 2.8 | 82 |
| 15 | 37 | 58 | 168 | 58 | 545 | 63 | 40 | 44 | 25 | 3.2 | 3.2 | 66 |
| 16 | 30 | 51 | 141 | 40 | 405 | 63 | 47 | 36 | 20 | 2.8 | 3.2 | 51 |
| 17 | 23 | 47 | 120 | 40 | 440 | 63 | 51 | 36 | 86 | 2.4 | 3.2 | 29 |
| 18 | 19 | 44 | 105 | 40 | 440 | 70 | 47 | 33 | 78 | 2.2 | 4 | 17 |
| 19 | 16 | 40 | 81 | 40 | 354 | 72 | 44 | 33 | 44 | 1.8 | 7 | 13 |
| 20 | 16 | 37 | 81 | 27 | 320 | 67 | 37 | 33 | 31 | 1.6 | 78 | 10 |
| 21 | 130 | 35 | 58 | 27 | 272 | 58 | 35 | 33 | 22 | 1.6 | 22 | 9 |
| 22 | 67 | 30 | 58 | 27 | 3,100 | 51 | 32 | 31 | 17 | 118 | 12 | 7 |
| 23 | 47 | 30 | 40 | 27 | 3,010 | 51 | 35 | 27 | 14 | 22 | 9 | 6 |
| 24 | 35 | 27 | 27 | 27 | 1,000 | 54 | 32 | 23 | 14 | 354 | 6 | 5 |
| 25 | 27 | 26 | 27 | 27 | 720 | 86 | 30 | 20 | 17 | 288 | 5 | 5 |
| 26 | 23 | 25 | 27 | 17 | 580 | 115 | 30 | 19 | 800 | 90 | 3.6 | 3.6 |
| 27 | 19 | 25 | 27 | 17 | 388 | 130 | 37 | 16 | 173 | 62 | 3.2 | 2.8 |
| 28 | 63 | 17 | 27 | 17 | 304 | 115 | 44 | 15 | 82 | 33 | 2.8 | 2.4 |
| 29 | 1,280 | 17 | 27 | 17 | ------ | 100 | 86 | 16 | 41 | 20 | 2.4 | 2.8 |
| 30 | 405 | 17 | 40 | 17 | ------ | 91 | 86 | 14 | 31 | 14 | 2.0 | 2.4 |
| 31 | 422 | ------ | 40 | 17 | ------ | 81 | ------ | 12 | ------ | 11 | 1.8 | ------ |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 1,280 | 4 | 115 | 0.192 | 0.22 |
| November | 685 | 17 | 81.9 | .137 | .15 |
| December | 198 | 17 | 49.1 | .082 | .09 |
| January | 3,890 | 17 | 279 | .467 | .54 |
| February | 5,780 | 17 | 1,410 | 2.36 | 2.46 |
| March | 257 | 51 | 105 | .176 | .20 |
| April | 152 | 30 | 60.8 | .102 | .11 |
| May | 108 | 12 | 50.1 | .084 | .10 |
| June | 800 | 8 | 55.7 | .093 | .10 |
| July | 354 | 1.6 | 40.2 | .067 | .08 |
| August | 78 | 1.8 | 7.14 | .012 | .01 |
| September | 440 | .9 | 39.0 | .065 | .07 |
| The year | 5,780 | .9 | 183 | .306 | 4.13 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 4,770 second-feet May 8 (gage height, 18.6 feet); minimum, 0.2 second-foot Aug. 8 (gage height, 2.31 feet). 1922–1930: Maximum discharge, 18,600 second-feet Nov. 17, 1928 (gage height, 38.38 feet); no flow in July and August, 1926 (gage height, 2.20 feet).

REMARKS.—Records good except those for discharges above 3,000 second-feet and for period of ice effect, Jan. 9 to Feb. 4, which are fair. Above 2,100 second-feet discharge is based on comparison with flow at Ottawa, Kans.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6 | 2,970 | 41 | 23 | 25 | 66 | 20 | 196 | 38 | 26 | 1.0 | 0.9 |
| 2 | 5 | 637 | 17 | 38 | 30 | 50 | 18 | 124 | 31 | 19 | .4 | .8 |
| 3 | 4 | 234 | 29 | 46 | 35 | 44 | 17 | 93 | 25 | 16 | .4 | .6 |
| 4 | 5 | 187 | 34 | 44 | 40 | 45 | 15 | 83 | 22 | 14 | .4 | .6 |
| 5 | 9 | 141 | 31 | 40 | 51 | 41 | 16 | 100 | 30 | 10 | .3 | .6 |
| 6 | 9 | 93 | 33 | 32 | 1,430 | 39 | 18 | 196 | 93 | 8 | .3 | .8 |
| 7 | 8 | 67 | 38 | 23 | 1,380 | 36 | 18 | 1,820 | 282 | 8 | .3 | 1 |
| 8 | 8 | 56 | 36 | 22 | 763 | 38 | 17 | 3,560 | 320 | 2 | .2 | 1 |
| 9 | 16 | 54 | 33 | | 456 | 40 | 15 | 1,490 | 132 | 2 | .3 | 1 |
| 10 | 22 | 50 | 35 | | 301 | 40 | 14 | 596 | 67 | 2 | .4 | 2 |
| 11 | 32 | 41 | 38 | 20 | 247 | 33 | 12 | 4,000 | 206 | 2 | .6 | 2 |
| 12 | 44 | 34 | 33 | | 206 | 30 | 12 | 1,790 | 206 | 2 | .5 | 2 |
| 13 | 52 | 44 | 30 | | 168 | 28 | 9 | 536 | 159 | 3 | .8 | 1 |
| 14 | 75 | 46 | 32 | | 150 | 23 | 10 | 416 | 108 | 4 | 1.0 | 2 |
| 15 | 100 | 45 | 32 | | 124 | 18 | 12 | 282 | 931 | 2 | 1.0 | 4 |
| 16 | 36 | 52 | 33 | | 116 | 16 | 14 | 216 | 1,320 | 2 | .9 | 2 |
| 17 | 22 | 63 | 28 | | 108 | 14 | 14 | 216 | 282 | 1 | .8 | 3 |
| 18 | 12 | 301 | 29 | | 100 | 18 | 14 | 225 | 159 | 1 | 1 | 4 |
| 19 | 12 | 196 | 26 | | 86 | 21 | 14 | 206 | 358 | 1 | 1 | 2 |
| 20 | 187 | 159 | 23 | 15 | 78 | 26 | 15 | 225 | 1,380 | 1 | 1 | 2 |
| 21 | 187 | 132 | 21 | | 71 | 33 | 14 | 124 | 637 | 1 | 1 | 2 |
| 22 | 75 | 108 | 22 | | 80 | 30 | 12 | 72 | 206 | 1 | 2 | 1 |
| 23 | 25 | 80 | 21 | | 78 | 29 | 12 | 124 | 124 | 1 | 2 | 1 |
| 24 | 19 | 59 | 22 | | 71 | 28 | 10 | 141 | 196 | 2 | 2 | 1 |
| 25 | 14 | 56 | 21 | | 64 | 26 | 9 | 116 | 159 | 1 | 2 | 1 |
| 26 | 12 | 59 | 19 | | 75 | 23 | 10 | 93 | 396 | 1 | 1 | 1 |
| 27 | 15 | 56 | 18 | | 67 | 24 | 21 | 72 | 265 | 1 | 1 | 2 |
| 28 | 12 | 55 | 24 | 20 | 64 | 22 | 47 | 59 | 86 | 1 | 1 | 1 |
| 29 | 21 | 52 | 22 | | ------- | 21 | 93 | 52 | 66 | 1 | 1 | 1 |
| 30 | 476 | 44 | 20 | | ------- | 20 | 132 | 59 | 41 | 1 | 1 | .6 |
| 31 | 2,170 | ------- | 18 | | ------- | 18 | ------- | 46 | ------- | 1 | .8 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 2,170 | 4 | 119 | 7,320 |
| November | 2,970 | 34 | 206 | 12,300 |
| December | 41 | 17 | 27.7 | 1,700 |
| January | 46 | ---------- | 21.9 | 1,350 |
| February | 1,430 | 25 | 231 | 12,800 |
| March | 66 | 14 | 30.3 | 1,860 |
| April | 132 | 9 | 21.3 | 1,300 |
| May | 4,000 | 46 | 559 | 34,400 |
| June | 1,380 | 22 | 278 | 16,500 |
| July | 26 | 1 | 4.45 | 274 |
| August | 2 | .2 | .88 | 54 |
| September | 4 | .6 | 1.50 | 89 |
| The year | 4,000 | .2 | 124 | 89,900 |

### 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-fourths mile below Skunk Creek.

DRAINAGE AREA.—1,250 square miles.

RECORDS AVAILABLE.—October, 1918, to September, 1930. August, 1902, to October, 1905, at Main Street Bridge at Ottawa.

EXTREMES.—Maximum discharge during year, 3,610 second-feet May 8 (gage height, 11.97 feet); no flow Sept. 15–20.

1902–1905, 1918–1930: Maximum discharge, 58,400 second-feet Nov. 17, 1928 (gage height, 38.65 feet, present gage); no flow June 27, 28, 1920, and during 1930.

REMARKS.—Records for year ending Sept. 30, 1930, fair except those for periods of ice effect, which are poor. Discharge interpolated Feb. 28, Mar. 1–3, May 23, 24, 1930. Records for period 1902–1905 published herewith computed on basis of original discharge measurements supplemented by results of recent investigations for high water, rating curve for flood stages above 16,000 second-feet being based upon comparisons with rating curve for present station. Diversions for city of Ottawa water supply upstream. Low-water flow regulated by dams upstream.

*Daily discharge, in second-feet, 1902–1905 and 1929–30*

| Day | Aug. | Sept. | Day | Aug. | Sept. | Day | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1902 | | | 1902 | | | 1902 | | |
| 1 | ------- | 6,450 | 11 | ------- | 556 | 21 | ------- | 280 |
| 2 | ------- | 5,080 | 12 | ------- | 556 | 22 | ------- | 1,340 |
| 3 | ------- | 1,650 | 13 | ------- | 460 | 23 | ------- | 4,200 |
| 4 | ------- | 844 | 14 | ------- | 460 | 24 | ------- | 6,240 |
| 5 | ------- | 652 | 15 | ------- | 370 | 25 | ------- | 4,280 |
| 6 | ------- | 3,870 | 16 | ------- | 370 | 26 | 2,080 | 1,980 |
| 7 | ------- | 7,170 | 17 | ------- | 280 | 27 | 1,240 | 1,140 |
| 8 | ------- | 5,240 | 18 | ------- | 280 | 28 | 940 | 844 |
| 9 | ------- | 1,340 | 19 | ------- | 190 | 29 | 748 | 652 |
| 10 | ------- | 748 | 20 | ------- | 280 | 30 | 652 | 2,850 |
| | | | | | | 31 | 4,360 | ------- |

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1902-3 | | | | | | | | | | | | |
| 1 | 2,480 | 220 | 710 | 440 | 360 | 2,350 | 520 | 360 | 12,600 | 360 | 38 | 130 |
| 2 | 1,040 | 220 | 520 | 440 | 360 | 1,140 | 520 | 360 | 11,200 | 440 | 100 | 130 |
| 3 | 844 | 220 | 710 | 440 | 440 | 910 | 1,140 | 360 | 8,280 | 520 | 2,870 | 130 |
| 4 | 6,510 | 290 | 2,050 | 440 | 360 | 810 | 3,570 | 360 | 5,700 | 1,210 | 520 | 130 |
| 5 | 11,300 | 610 | 1,140 | 520 | | 810 | 2,750 | 360 | 4,720 | 1,340 | 290 | 130 |
| 6 | 11,400 | 610 | 610 | 440 | 330 | 1,280 | 1,520 | 440 | 3,800 | 440 | 3,480 | 130 |
| 7 | 6,920 | 440 | 520 | 360 | | 1,870 | 1,070 | 520 | 2,430 | 360 | 3,180 | 130 |
| 8 | 1,340 | 360 | 440 | | 290 | 2,870 | 810 | 610 | 1,460 | 360 | 4,320 | 190 |
| 9 | 1,000 | 290 | 440 | 330 | 290 | 1,070 | 710 | 520 | 1,210 | 440 | 4,120 | 2,080 |
| 10 | 810 | 290 | 440 | | 290 | 910 | 1,070 | 440 | 1,140 | 910 | 1,670 | 4,200 |
| 11 | 710 | 290 | 360 | | 290 | 1,720 | 2,710 | 440 | 1,000 | 360 | 2,550 | 2,180 |
| 12 | 610 | 220 | 520 | | 290 | 1,340 | 1,870 | 1,000 | 810 | 440 | 1,000 | 610 |
| 13 | 610 | 290 | 520 | 300 | 290 | 1,070 | 1,000 | 3,960 | 710 | 360 | 2,550 | 520 |
| 14 | 520 | 290 | 520 | | 290 | 810 | 1,000 | 3,540 | 710 | 440 | 3,880 | 520 |
| 15 | 440 | 1,570 | 440 | | | 710 | 1,210 | 1,620 | 610 | 440 | 5,450 | 360 |
| 16 | 440 | 1,400 | 400 | | | 710 | 910 | 1,210 | 520 | 400 | 6,750 | 290 |
| 17 | 440 | 910 | 360 | | | 610 | 710 | 910 | 520 | 360 | 4,840 | 220 |
| 18 | 360 | 610 | 360 | 250 | | 610 | 610 | 810 | 520 | 360 | 1,760 | 160 |
| 19 | 360 | 610 | 360 | | | 710 | 610 | 610 | 520 | 440 | 940 | 160 |
| 20 | 290 | 520 | 2,100 | | 200 | 2,790 | 610 | 520 | 710 | 220 | 748 | 100 |
| 21 | 290 | 440 | 4,600 | | | 1,770 | 610 | 520 | 910 | 100 | 652 | 100 |
| 22 | 290 | 440 | 3,180 | | | 1,000 | 520 | 1,000 | 610 | 100 | 556 | 100 |
| 23 | 290 | 440 | 1,520 | 200 | | 810 | 520 | 1,400 | 440 | 60 | 460 | 100 |
| 24 | 290 | 440 | 1,140 | | | 810 | 440 | 11,000 | 360 | 60 | 370 | 60 |
| 25 | 290 | 610 | 810 | | 710 | 910 | 440 | 13,200 | 360 | 60 | 370 | 60 |
| 26 | 290 | 610 | 710 | 360 | 1,000 | 910 | 360 | 11,000 | 1,460 | 36 | 280 | 60 |
| 27 | 220 | 520 | 710 | 440 | 1,520 | 810 | 360 | 3,960 | 710 | 30 | 280 | 60 |
| 28 | 220 | 440 | 610 | 520 | 3,480 | 710 | 360 | 4,040 | 610 | 38 | 190 | 38 |
| 29 | 220 | 360 | 610 | 610 | ------- | 610 | 360 | 5,450 | 440 | 38 | 190 | 38 |
| 30 | 220 | 360 | 520 | 520 | ------- | 610 | 360 | 8,350 | 360 | 88 | 190 | 38 |
| 31 | 220 | ------- | 520 | 440 | ------- | 520 | ------- | 11,700 | ------- | 38 | 190 | ------- |

*Daily discharge, in second-feet, of Osage River near Ottawa, Kans., 1902–1905 and 1929–30*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1903–4** | | | | | | | | | | | | |
| 1 | 40 | 5,700 | 460 | 280 | 460 | 280 | 844 | 1,070 | 23,600 | 3,390 | 100 | 18 |
| 2 | 80 | 6,240 | 460 | | 460 | 280 | 748 | 910 | 17,900 | 2,550 | 100 | 5,100 |
| 3 | 370 | 4,600 | 460 | 240 | 460 | 370 | 652 | 810 | 12,200 | 2,670 | 60 | 5,450 |
| 4 | 652 | 3,040 | 460 | | 460 | 370 | 652 | 710 | 12,300 | 3,120 | 60 | 1,000 |
| 5 | 370 | 1,980 | 460 | | 370 | 370 | 556 | 2,550 | 12,100 | 2,230 | 60 | 290 |
| 6 | 190 | 1,540 | 460 | | 190 | 370 | 556 | 5,550 | 7,400 | 9,120 | 60 | 160 |
| 7 | 9,800 | 1,240 | 370 | | 190 | 280 | 652 | 5,700 | 2,630 | 15,200 | 38 | 100 |
| 8 | 10,600 | 1,140 | 370 | 200 | | 280 | 844 | 3,240 | 1,340 | 24,300 | 38 | 100 |
| 9 | 5,790 | 1,040 | 370 | | 130 | 280 | 1,240 | 3,840 | 1,070 | 22,600 | 38 | 100 |
| 10 | 1,540 | 940 | 280 | | | 280 | 1,440 | 2,470 | 1,000 | 17,900 | 38 | 100 |
| 11 | 940 | 844 | 280 | | 130 | 280 | 1,760 | 1,340 | 2,050 | 7,640 | 38 | 100 |
| 12 | 652 | 1,140 | 370 | | 190 | 280 | 1,340 | 1,070 | 3,240 | 2,050 | 38 | 100 |
| 13 | 748 | 844 | 370 | 220 | 190 | 280 | 1,140 | 1,400 | 1,340 | 1,340 | 38 | 100 |
| 14 | 6,540 | 748 | 370 | | 130 | 370 | 844 | 2,180 | 910 | 1,070 | 360 | 100 |
| 15 | 7,650 | 748 | 370 | | 130 | 370 | 748 | 1,280 | 1,000 | 810 | 38 | 100 |
| 16 | 6,300 | 652 | 280 | | | 370 | 652 | 9,720 | 3,150 | 520 | 38 | 60 |
| 17 | 3,380 | 652 | 280 | | | 460 | 556 | 13,400 | 1,770 | 520 | 38 | 60 |
| 18 | 1,440 | 652 | 280 | 240 | | 1,440 | 556 | 12,600 | 1,070 | 440 | 38 | 60 |
| 19 | 1,240 | 556 | 190 | | 130 | 1,240 | 460 | 3,680 | 5,100 | 290 | 1,210 | 38 |
| 20 | 940 | 460 | 190 | | | 844 | 556 | 1,460 | 6,300 | 290 | 710 | 38 |
| 21 | 844 | 460 | 370 | 460 | | 844 | 2,720 | 1,280 | 4,200 | 290 | 360 | 18 |
| 22 | 844 | 460 | 370 | 652 | | 2,480 | 2,190 | 1,140 | 2,750 | 460 | 290 | 18 |
| 23 | 748 | 556 | 370 | 556 | 190 | 1,440 | 2,850 | 1,000 | 1,870 | 520 | 2,180 | 38 |
| 24 | 652 | 556 | 460 | 280 | 190 | 940 | 8,700 | 810 | 910 | 220 | 710 | 38 |
| 25 | 652 | 556 | 844 | 652 | 190 | 5,730 | 13,400 | 710 | 7,040 | 160 | 220 | 18 |
| 26 | 556 | 556 | 844 | 556 | 280 | 7,440 | 10,100 | 3,000 | 12,000 | 710 | 220 | 18 |
| 27 | 556 | 460 | 748 | 556 | 280 | 6,000 | 3,960 | 3,760 | 16,100 | 440 | 100 | 18 |
| 28 | 460 | 460 | 370 | 556 | 190 | 1,650 | 1,820 | 2,180 | 14,400 | 360 | 38 | 18 |
| 29 | 460 | 460 | 370 | 556 | 190 | 1,140 | 1,280 | 15,700 | 4,160 | 810 | 38 | 18 |
| 30 | 460 | 460 | 280 | 556 | ------- | 1,040 | 1,000 | 29,300 | 3,390 | 220 | 38 | 38 |
| 31 | 2,640 | ------- | 280 | 556 | ------- | 940 | -------- | 26,400 | -------- | 160 | 18 | ------ |
| **1904–5** | | | | | | | | | | | | |
| 1 | 60 | 5 | 18 | | | 810 | 1,070 | 220 | 810 | 290 | 910 | 28 |
| 2 | 60 | 10 | 18 | | | 360 | 810 | 160 | 520 | 2,870 | 520 | 18 |
| 3 | 60 | 10 | 18 | 20 | | 360 | 610 | 100 | 440 | 14,100 | 360 | 18 |
| 4 | 60 | 10 | 18 | | | 290 | 520 | 100 | 360 | 14,900 | 440 | 18 |
| 5 | 60 | 10 | 18 | | | 220 | 440 | 100 | 360 | 12,300 | 1,280 | 100 |
| 6 | 38 | 10 | 18 | | | 100 | 360 | 100 | 290 | 3,680 | 610 | 160 |
| 7 | 38 | 10 | 18 | | | 100 | 360 | 100 | 220 | 1,340 | 360 | 160 |
| 8 | 18 | 10 | 18 | 10 | | 100 | 360 | 100 | 220 | 1,000 | 220 | 160 |
| 9 | 18 | 10 | 18 | | | 60 | 220 | 360 | 100 | 910 | 160 | 610 |
| 10 | 18 | 10 | 18 | | | 100 | 220 | 440 | 100 | 1,000 | 100 | 5,000 |
| 11 | 18 | 10 | 18 | | 5 | 60 | 160 | 290 | 60 | 810 | 100 | 3,480 |
| 12 | 18 | 10 | | | | 38 | 100 | 160 | 60 | 520 | 60 | 1,280 |
| 13 | 18 | 10 | | 4 | | 60 | 100 | 440 | 60 | 480 | 60 | 520 |
| 14 | 18 | 10 | | | | 60 | 100 | 360 | 49 | 360 | 60 | 440 |
| 15 | 18 | 10 | | | | 60 | 100 | 360 | 38 | 290 | 100 | 6,500 |
| 16 | 10 | 10 | | | | 60 | 60 | 290 | 38 | 290 | 60 | 12,500 |
| 17 | 10 | 18 | | | | 38 | 60 | 220 | 38 | 220 | 38 | 7,880 |
| 18 | 10 | 18 | 10 | | | 1,140 | 60 | 160 | 28 | 160 | 1,570 | 11,100 |
| 19 | 10 | 18 | | | | 1,400 | 60 | 100 | 100 | 160 | 4,320 | 16,300 |
| 20 | 10 | 18 | | | | 1,280 | 38 | 60 | 220 | 160 | 1,460 | 16,100 |
| 21 | 10 | 18 | | 6 | | 810 | 60 | 60 | 160 | 100 | 1,140 | 11,300 |
| 22 | 10 | 10 | | | 60 | 100 | 38 | 38 | 100 | 100 | 360 | 2,310 |
| 23 | 10 | 10 | | | 1,870 | 520 | 60 | 38 | 100 | 100 | 220 | 910 |
| 24 | 10 | 18 | | | 2,590 | 1,140 | 38 | 38 | 60 | 60 | 160 | 810 |
| 25 | 5 | 18 | | | 2,630 | 1,210 | 60 | 1,460 | 60 | 60 | 160 | 440 |
| 26 | 5 | 18 | | | 2,180 | 710 | 520 | 6,860 | 38 | 60 | 60 | 360 |
| 27 | 5 | 18 | | | 1,400 | 520 | 810 | 6,000 | 60 | 3,150 | 60 | 290 |
| 28 | 5 | 18 | 5 | 9 | 1,070 | 4,520 | 610 | 1,520 | 60 | 3,880 | 38 | 160 |
| 29 | 5 | 18 | | | ------- | 7,400 | 360 | 1,960 | 520 | 1,670 | 38 | 160 |
| 30 | 5 | 18 | | | ------- | 5,000 | 290 | 1,960 | 360 | 810 | 38 | 100 |
| 31 | 5 | ------- | | | ------- | 1,870 | -------- | 1,340 | -------- | 910 | 38 | ------ |

*Daily discharge, in second-feet, of Osage River near Ottawa, Kans., 1902–1905 and 1929–30*—Continued

| Day | Oct. | Day | Oct. | Day | Oct. |
|---|---|---|---|---|---|
| 1905 | | 1905 | | 1905 | |
| 1 | 100 | 11 | 130 | 21 | 80 |
| 2 | 100 | 12 | 130 | 22 | 80 |
| 3 | 100 | 13 | 130 | 23 | 80 |
| 4 | 100 | 14 | 80 | 24 | 80 |
| 5 | 100 | 15 | 80 | 25 | 80 |
| 6 | 100 | 16 | 80 | 26 | 130 |
| 7 | 100 | 17 | 80 | 27 | 80 |
| 8 | 60 | 18 | 60 | 28 | 130 |
| 9 | 60 | 19 | 190 | 29 | 130 |
| 10 | 130 | 20 | 130 | 30 | 130 |
| | | | | 31 | 130 |

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1929-30 | | | | | | | | | | | | |
| 1 | 8 | 3,000 | 76 | 60 | 562 | 100 | 53 | 214 | 65 | 32 | 2 | 2 |
| 2 | 8 | 1,260 | 72 | 61 | 1,620 | 88 | 50 | 181 | 50 | 26 | 2 | 2 |
| 3 | 8 | 360 | 68 | 61 | 2,000 | 78 | 49 | 116 | 44 | 21 | 2 | 2 |
| 4 | 10 | 211 | 61 | 58 | 1,660 | 69 | 46 | 115 | 39 | 17 | 2 | 2 |
| 5 | 10 | 146 | 57 | 60 | 1,020 | 81 | 46 | 90 | 118 | 14 | 2 | 2 |
| 6 | 10 | 118 | 58 | 58 | 1,480 | 79 | 47 | 193 | 165 | 11 | 2 | 2 |
| 7 | 9 | 99 | 61 | 61 | 1,440 | 78 | 44 | 2,160 | 277 | 10 | 2 | 1 |
| 8 | 10 | 86 | 62 | 57 | 1,160 | 74 | 44 | 3,440 | 223 | 8 | 2 | 2 |
| 9 | 28 | 79 | 64 | 78 | 782 | 69 | 44 | 2,200 | 122 | 5 | 2 | 2 |
| 10 | 74 | 78 | 64 | 78 | 562 | 68 | 44 | 782 | 90 | 4 | 2 | 2 |
| 11 | 37 | 74 | 68 | 74 | 388 | 62 | 42 | 2,240 | 91 | 3 | 2 | 6 |
| 12 | 49 | 74 | 64 | 67 | 300 | 53 | 41 | 2,490 | 284 | 2 | 4 | 4 |
| 13 | 34 | 72 | 61 | 60 | 257 | 48 | 38 | 918 | 200 | 2 | 4 | 3 |
| 14 | 30 | 72 | 60 | 57 | 216 | 46 | 38 | 502 | 143 | 2 | 4 | 2 |
| 15 | 38 | 71 | 55 | 52 | 185 | 44 | 44 | 360 | 103 | 2 | 4 | 0 |
| 16 | 26 | 76 | 57 | 54 | 173 | 44 | 42 | 277 | 1,690 | 2 | 4 | 0 |
| 17 | 20 | 88 | 69 | | 156 | 47 | 38 | 228 | 577 | 1 | 4 | 0 |
| 18 | 17 | 274 | 64 | | 150 | 58 | 44 | 214 | 235 | 1 | 6 | 0 |
| 19 | 20 | 294 | 79 | | 143 | 55 | 57 | 219 | 158 | 1 | 2 | 0 |
| 20 | 31 | 183 | 76 | | 134 | 57 | 44 | 202 | 1,230 | 1 | 2 | 0 |
| 21 | 282 | 132 | 64 | 30 | 125 | 60 | 42 | 200 | 1,050 | 2 | 2 | 1 |
| 22 | 103 | 111 | 55 | | 115 | 61 | 39 | 165 | 262 | 2 | 2 | 1 |
| 23 | 43 | 100 | 48 | | 111 | 60 | 35 | 200 | 181 | 2 | 2 | 1 |
| 24 | 29 | 82 | 38 | | 108 | 61 | 33 | 180 | 144 | 6 | 2 | 1 |
| 25 | 25 | 78 | 38 | | 108 | 58 | 32 | 165 | 175 | 2 | 2 | 1 |
| 26 | 22 | 75 | 38 | | 113 | 54 | 46 | 152 | 325 | 2 | 3 | 1 |
| 27 | 20 | 79 | 39 | | 122 | 53 | 71 | 108 | 458 | 2 | 2 | 1 |
| 28 | 110 | 82 | 41 | 35 | 110 | 55 | 74 | 88 | 189 | 2 | 2 | 1 |
| 29 | 130 | 86 | 49 | | ------ | 54 | 113 | 74 | 61 | 2 | 2 | 1 |
| 30 | 284 | 82 | 49 | | ------ | 54 | 221 | 69 | 41 | 2 | 2 | 1 |
| 31 | 1,050 | ------ | 50 | | ------ | 53 | ------ | 90 | ------ | 2 | 2 | ------ |

*Monthly discharge, in second-feet, of Osage River at Ottawa, Kans., 1902–1905, and 1929–30*

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| **1902** | | | | |
| August 26–31 | 4,360 | 652 | 1,670 | 19,900 |
| September | 7,170 | 190 | 2,020 | 120,000 |
| The period | | | | 140,000 |
| **1902–3** | | | | |
| October | 11,400 | 220 | 1,650 | 101,000 |
| November | 1,570 | 220 | 497 | 29,600 |
| December | 4,600 | 360 | 918 | 56,400 |
| January | 610 | | 345 | 21,200 |
| February | 3,480 | | 473 | 26,300 |
| March | 2,790 | 520 | 1,120 | 68,900 |
| April | 3,570 | 360 | 975 | 58,000 |
| May | 13,200 | 360 | 2,920 | 180,000 |
| June | 12,600 | 360 | 2,180 | 130,000 |
| July | 1,340 | 38 | 349 | 21,500 |
| August | 6,750 | 38 | 1,770 | 109,000 |
| September | 4,200 | 38 | 438 | 26,100 |
| The year | 13,200 | 38 | 1,140 | 828,000 |
| **1903–4** | | | | |
| October | 10,600 | 40 | 2,200 | 135,000 |
| November | 6,240 | 460 | 1,300 | 77,400 |
| December | 844 | 190 | 401 | 24,700 |
| January | 652 | | 338 | 20,800 |
| February | 460 | | 213 | 12,200 |
| March | 7,440 | 280 | 1,250 | 76,900 |
| April | 13,400 | 460 | 2,160 | 129,000 |
| May | 29,300 | 710 | 5,170 | 318,000 |
| June | 23,600 | 910 | 6,140 | 365,000 |
| July | 24,300 | 160 | 3,950 | 243,000 |
| August | 2,180 | 18 | 237 | 14,600 |
| September | 5,450 | 18 | 447 | 26,600 |
| The year | 29,300 | 18 | 1,990 | 1,440,000 |
| **1904–5** | | | | |
| October | 60 | 5 | 20.8 | 1,280 |
| November | 18 | 5 | 13.0 | 774 |
| December | 18 | | 12.0 | 738 |
| January | | | 8.9 | 547 |
| February | 2,630 | | 425 | 23,600 |
| March | 7,400 | 38 | 984 | 60,500 |
| April | 1,070 | 38 | 288 | 17,100 |
| May | 6,860 | 38 | 822 | 50,600 |
| June | 810 | 28 | 188 | 11,200 |
| July | 14,900 | 60 | 2,150 | 13,200 |
| August | 4,320 | 38 | 487 | 29,900 |
| September | 16,300 | 18 | 3,310 | 197,000 |
| The year | 16,300 | | 726 | 525,000 |
| **1905** | | | | |
| October | 190 | 60 | 102 | 6,270 |
| **1929–30** | | | | |
| October | 1,050 | 8 | 83.1 | 5,110 |
| November | 3,000 | 71 | 254 | 15,100 |
| December | 79 | 38 | 58.2 | 3,580 |
| January | 78 | | 47.8 | 2,940 |
| February | 2,000 | 108 | 546 | 30,300 |
| March | 100 | 44 | 62.0 | 3,810 |
| April | 221 | 32 | 53.4 | 3,170 |
| May | 3,440 | 69 | 601 | 37,000 |
| June | 1,690 | 39 | 293 | 17,400 |
| July | 32 | 1 | 6.16 | 379 |
| August | 6 | 2 | 2.55 | 157 |
| September | 6 | 0 | 1.47 | 87 |
| The year | 3,440 | 0 | 164 | 119,000 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 7,720 second-feet May 11 (gage height, 14.34 feet); minimum, 0.3 second-foot Aug. 16 (gage height, 0.66 foot).

1921–1923, 1928–1930: Maximum discharge, 120,000 second-feet Nov. 18, 1928 (gage height, 34.45 feet); minimum, that of Aug. 16, 1930.

REMARKS.—Records good except those for estimated periods and for periods of ice effect, which are fair.

*Daily discharge, in second-feet, 1921–1923 and 1929–30*

| Day | Aug. | Sept. | Day | Aug. | Sept. | Day | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|
| 1921 | | | 1921 | | | 1921 | | |
| 1 | ------- | 181 | 11 | 7,640 | 477 | 21 | 1,420 | 3,980 |
| 2 | ------- | 4,400 | 12 | 14,200 | 3,560 | 22 | 840 | 3,560 |
| 3 | ------- | 13,400 | 13 | 17,100 | 9,560 | 23 | 650 | 1,830 |
| 4 | 1,140 | 13,800 | 14 | 21,400 | 18,200 | 24 | 510 | 1,050 |
| 5 | 1,050 | 7,720 | 15 | 18,200 | 15,600 | 25 | 385 | 5,600 |
| 6 | 2,000 | 2,240 | 16 | 8,320 | 7,100 | 26 | 330 | 6,350 |
| 7 | 445 | 840 | 17 | 3,980 | 1,320 | 27 | 275 | 2,000 |
| 8 | 251 | 580 | 18 | 8,480 | 4,640 | 28 | 251 | 1,140 |
| 9 | 155 | 477 | 19 | 9,920 | 1,320 | 29 | 725 | 800 |
| 10 | 126 | 445 | 20 | 7,640 | 2,900 | 30 | 358 | 545 |
| | | | | | | 31 | 219 | ------- |

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1921–22 | | | | | | | | | | | | |
| 1 | 545 | 83 | 61 | 56 | 28 | 40 | 2,580 | 5,840 | 2,310 | 39 | | 5 |
| 2 | 650 | 81 | 61 | 58 | 28 | 50 | 1,830 | 2,780 | 2,310 | 39 | | 4 |
| 3 | 1,180 | 81 | 65 | 58 | 27 | 54 | 5,240 | 2,960 | 2,240 | 39 | 194 | 21 |
| 4 | 840 | 83 | 69 | 58 | 27 | 58 | 16,600 | 3,380 | 2,160 | 39 | | 67 |
| 5 | 510 | 78 | 69 | 58 | 27 | 58 | 21,100 | 3,200 | 2,080 | 45 | | 56 |
| 6 | 363 | 78 | 74 | 56 | 27 | 58 | 21,800 | 3,020 | 1,920 | 48 | 210 | 48 |
| 7 | 251 | 74 | 76 | 54 | 27 | 61 | 21,800 | 2,780 | 1,730 | 52 | 210 | 42 |
| 8 | 358 | 72 | 78 | 54 | 25 | 61 | 26,100 | 2,580 | 1,520 | 48 | 237 | 39 |
| 9 | 336 | 72 | 78 | 54 | 25 | 61 | 29,000 | 1,830 | 1,270 | 48 | 123 | 36 |
| 10 | 308 | 74 | 74 | 54 | 25 | 174 | 27,900 | 1,180 | 1,050 | 45 | 265 | 52 |
| 11 | 261 | 69 | 74 | 54 | 25 | 159 | 29,500 | 1,090 | 800 | 48 | 170 | 67 |
| 12 | 241 | 65 | 69 | 54 | 25 | 152 | 31,300 | 1,010 | 725 | 2,380 | 136 | 65 |
| 13 | 206 | 61 | 69 | 54 | 25 | 2,580 | 30,100 | 965 | 615 | 3,500 | 90 | 58 |
| 14 | 185 | 61 | 69 | 54 | 25 | 12,000 | 29,000 | 1,050 | 477 | 4,400 | | 50 |
| 15 | 174 | 61 | 69 | 50 | 25 | 21,800 | 24,200 | 1,180 | 275 | 3,980 | | 34 |
| 16 | 170 | 58 | 65 | 50 | 25 | 22,800 | 16,600 | 1,320 | 227 | 1,140 | 64 | 40 |
| 17 | 155 | 58 | 65 | 48 | 25 | 22,800 | 7,920 | 1,220 | 155 | 580 | | 42 |
| 18 | 145 | 54 | 65 | 46 | 25 | 18,400 | 5,600 | 2,450 | 42 | 445 | | 22 |
| 19 | 126 | 63 | 61 | 46 | 25 | 10,900 | 3,200 | 2,960 | 45 | 227 | | 22 |
| 20 | 117 | 61 | 61 | 45 | 25 | 7,050 | 2,780 | 4,820 | 42 | 202 | 39 | 27 |
| 21 | 109 | 61 | 61 | 44 | 25 | 3,800 | 2,580 | 5,060 | 42 | 170 | 28 | 21 |
| 22 | 101 | 61 | 58 | 42 | 25 | 2,080 | 2,520 | 4,400 | 39 | 142 | 21 | 18 |
| 23 | 90 | 61 | 58 | 40 | 27 | 1,920 | 2,520 | 3,980 | 39 | 123 | 17 | 33 |
| 24 | 85 | 61 | 58 | 40 | 29 | 6,700 | 2,520 | 3,440 | 39 | [a] 829 | 14 | 27 |
| 25 | 83 | 61 | 54 | 39 | 29 | 14,900 | 2,650 | 2,720 | 39 | [a] 1,530 | 12 | 23 |
| 26 | 81 | 61 | 54 | 38 | 29 | 20,100 | 2,720 | 2,450 | 39 | 2,240 | 11 | 19 |
| 27 | 83 | 61 | 54 | 38 | 32 | 19,300 | 3,260 | 2,080 | 42 | | 9 | 16 |
| 28 | 83 | 61 | 54 | 34 | 34 | 20,100 | 8,160 | 1,730 | 42 | 1,210 | 9 | 15 |
| 29 | 81 | 61 | 54 | 34 | ------- | 13,300 | 10,300 | 1,620 | 40 | | 9 | 13 |
| 30 | 83 | 61 | 54 | 32 | ------- | 7,760 | 8,650 | 1,620 | 39 | | 8 | 12 |
| 31 | 83 | ------- | 56 | 29 | ------- | 4,100 | ------- | 2,000 | ------- | 178 | 5 | ------- |

[a] Interpolated

*Daily discharge, in second-feet, of Osage River at Trading Post, Kans, 1921-1923 and 1929-30*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May. | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1922-23 | | | | | | | | | | | | |
| 1 | 12 | 688 | 101 | 189 | 95 | 14 | 132 | 840 | 1,730 | 385 | 650 | 81 |
| 2 | 14 | 1,090 | 90 | 189 | 85 | 14 | [a] 132 | 725 | 2,000 | 363 | [a] 521 | 81 |
| 3 | 16 | 688 | 85 | 181 | 85 | [a] 14 | 132 | 580 | 1,730 | 385 | [a] 393 | [a] 76 |
| 4 | 17 | 615 | 85 | 181 | 81 | 14 | 126 | 545 | 1,830 | 445 | 265 | 72 |
| 5 | 16 | [a] 476 | 76 | 174 | 72 | [a] 14 | 126 | 510 | 2,000 | 415 | | [a] 74 |
| 6 | 12 | 336 | 81 | 174 | 67 | 14 | [a] 123 | 445 | 2,450 | 445 | | 76 |
| 7 | 10 | 275 | 81 | 174 | 59 | [a] 14 | 120 | 415 | 3,320 | 510 | | 76 |
| 8 | 8 | 189 | 90 | 174 | 59 | 14 | 114 | 385 | 6,350 | 477 | 250 | 72 |
| 9 | 7 | 139 | 95 | 166 | 56 | [a] 14 | [a] 112 | 319 | 10,000 | 545 | | 67 |
| 10 | 8 | 109 | 90 | 166 | 48 | 14 | 109 | 286 | 13,600 | 763 | | [a] 67 |
| 11 | 10 | 83 | 85 | 166 | 42 | 163 | 109 | 275 | 27,000 | 1,050 | | 67 |
| 12 | 12 | 189 | 85 | 159 | [a] 39 | 763 | 109 | 246 | 29,000 | 2,380 | 237 | 67 |
| 13 | 15 | 2,240 | 81 | 159 | 36 | 415 | [a] 106 | 237 | 26,100 | 3,320 | [a] 220 | 63 |
| 14 | 16 | 2,080 | 81 | 174 | [a] 32 | 545 | 104 | 237 | 27,000 | 3,320 | 202 | [a] 63 |
| 15 | 18 | 2,310 | 76 | 174 | 28 | 1,220 | 104 | 210 | 28,400 | 3,020 | [a] 190 | 63 |
| 16 | 18 | 1,180 | 72 | 166 | 26 | 4,280 | 117 | 265 | 27,400 | 2,900 | 178 | 95 |
| 17 | [a] 14 | 1,320 | 72 | 155 | 23 | 3,080 | 117 | 246 | 22,100 | [a] 2,450 | 170 | 117 |
| 18 | [a] 11 | 445 | 61 | 155 | 19 | 1,520 | [a] 117 | 237 | 10,500 | 2,000 | 155 | 178 |
| 19 | 7 | 385 | 61 | 148 | [a] 18 | 1,420 | 117 | 237 | 7,440 | [a] 1,860 | 142 | [a] 166 |
| 20 | 7 | 336 | 65 | 142 | 16 | [a] 1,300 | 117 | 227 | 4,400 | 1,730 | [a] 139 | 155 |
| 21 | 8 | 261 | 61 | 136 | [a] 16 | 1,180 | 129 | 210 | 2,650 | 1,620 | 136 | [a] 142 |
| 22 | 7 | 223 | 58 | 123 | 16 | 1,050 | 142 | 210 | 1,920 | 1,420 | 136 | 129 |
| 23 | 6 | 181 | 61 | 123 | [a] 16 | [a] 965 | 210 | 265 | 840 | 1,320 | 123 | 112 |
| 24 | 6 | 166 | 61 | 142 | 16 | 880 | 330 | 3,920 | 650 | [a] 1,270 | [a] 118 | 95 |
| 25 | 5 | 152 | 58 | 129 | 16 | 840 | 3,020 | 4,880 | 510 | 1,220 | 112 | [a] 858 |
| 26 | 5 | 145 | 65 | 123 | [a] 15 | 763 | 4,760 | 6,250 | 477 | 1,050 | 106 | 1,620 |
| 27 | 3 | 139 | 54 | 123 | [a] 15 | 477 | 4,880 | 5,000 | 510 | 965 | [a] 102 | 1,420 |
| 28 | 3 | 120 | 58 | 117 | 14 | 415 | 2,000 | 4,160 | 445 | [a] 902 | [a] 99 | 1,320 |
| 29 | 2 | 120 | 54 | 117 | ------- | 358 | 965 | 3,200 | 445 | 840 | 95 | 965 |
| 30 | 3 | 126 | 58 | 106 | ------- | 314 | 880 | 2,520 | 415 | [a] 782 | [a] 90 | 840 |
| 31 | 7 | ------- | 58 | 106 | ------- | 241 | ------- | 1,920 | ------- | 725 | 85 | ------- |

| Day | Oct. | Nov. | Dec. | Day | Oct. | Nov. | Dec. | Day | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1923 | | | | 1923 | | | | 1923 | | | |
| 1 | 1,620 | 1,420 | 385 | 11 | 2,000 | 1,180 | 965 | 21 | 3,080 | 650 | [a] 805 |
| 2 | 1,520 | [a] 1,490 | 880 | 12 | [a] 3,290 | 1,010 | [a] 1,290 | 22 | [a] 2,760 | 615 | 725 |
| 3 | 1,050 | [a] 1,550 | 1,270 | 13 | 4,580 | 880 | 1,620 | 23 | 2,450 | 580 | [a] 635 |
| 4 | [a] 1,010 | 1,620 | [a] 1,080 | 14 | 7,680 | 763 | 1,920 | 24 | 2,000 | 510 | 545 |
| 5 | 965 | [a] 1,520 | 880 | 15 | 11,500 | 725 | 2,000 | 25 | 1,620 | 477 | [a] 480 |
| 6 | [a] 864 | 1,420 | [a] 822 | 16 | 10,500 | 688 | 1,730 | 26 | 1,920 | [a] 446 | 415 |
| 7 | 763 | 1,320 | 763 | 17 | 9,210 | [a] 669 | [a] 1,480 | 27 | [a] 2,410 | 415 | [a] 367 |
| 8 | 725 | 1,420 | [a] 670 | 18 | 4,460 | 650 | [a] 1,220 | 28 | 2,900 | 385 | [a] 321 |
| 9 | 725 | [a] 1,420 | 580 | 19 | 3,800 | 650 | 965 | 29 | 2,450 | 385 | 275 |
| 10 | 922 | 1,420 | 580 | 20 | 3,380 | 580 | [a] 885 | 30 | [a] 2,110 | 374 | 256 |
| | | | | | | | | 31 | [a] 1,760 | ------- | 256 |

[a] Interpolated.

*Daily discharge, in second-feet, of Osage River at Trading Post, Kans., 1921–1923 and 1929–30*—Continued

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1929–30 | | | | | | | | | | | | |
| 1 | | 2,450 | 171 | 88 | 78 | 280 | 88 | 3,800 | 120 | 168 | 1.0 | 3.0 |
| 2 | | 3,200 | 129 | 115 | 78 | 291 | 93 | 2,840 | 118 | 133 | 1 | .6 |
| 3 | | 2,520 | 136 | 120 | 78 | 220 | 104 | 2,310 | 115 | 115 | 1 | .6 |
| 4 | 10 | 1,060 | 118 | [a] 120 | 100 | 194 | 98 | 845 | 104 | 56 | 1 | .4 |
| 5 | | 540 | 118 | 120 | 2,000 | 194 | 93 | 728 | 104 | 68 | 1 | .8 |
| 6 | | 728 | 106 | 140 | 3,000 | 202 | 82 | 577 | 198 | 64 | 1 | .8 |
| 7 | | 280 | 112 | 146 | 5,000 | 202 | 88 | 472 | 410 | 60 | 1 | .8 |
| 8 | | 238 | 118 | 133 | 4,000 | 212 | 88 | 3,260 | 376 | [a] 54 | .9 | 2 |
| 9 | | 212 | 123 | 115 | 3,000 | 179 | 77 | 6,300 | 364 | 47 | .8 | 6 |
| 10 | 500 | 187 | [a] 123 | 90 | 2,500 | 212 | 56 | 5,300 | 275 | 42 | .6 | 3 |
| 11 | | 179 | 123 | | 2,000 | 164 | 56 | 7,680 | 216 | 38 | .6 | 4 |
| 12 | | 179 | 129 | | 1,480 | 157 | 60 | 6,450 | 216 | [a] 26 | .7 | 3 |
| 13 | 198 | 171 | 123 | | 1,480 | 157 | 64 | 5,540 | 728 | 15 | [a] .6 | 5 |
| 14 | 171 | [a] 160 | 118 | | 1,020 | 136 | 52 | 2,710 | 614 | 22 | [a] .5 | 6 |
| 15 | 118 | 150 | 112 | 65 | 845 | 129 | 60 | 1,380 | 1,910 | 20 | [a] .4 | 140 |
| 16 | 123 | 143 | 118 | | 845 | 129 | 77 | 1,150 | 2,650 | 24 | .3 | 30 |
| 17 | 90 | 179 | 112 | | 845 | 123 | 198 | 806 | 2,160 | 24 | [a] .5 | 14 |
| 18 | 66 | 370 | 106 | | 622 | 143 | 225 | 767 | 1,480 | 15 | 3 | 12 |
| 19 | 48 | 347 | 106 | | 472 | 143 | 146 | 690 | 652 | 8 | 112 | 118 |
| 20 | 44 | 614 | 101 | | 441 | 157 | 146 | 614 | 441 | 6 | 238 | 88 |
| 21 | 46 | 472 | 101 | | 410 | 171 | 153 | 690 | 506 | 5 | 126 | 46 |
| 22 | 58 | [a] 371 | 95 | | 387 | 112 | 140 | 472 | 1,700 | 5 | 104 | 29 |
| 23 | 302 | 270 | 95 | 70 | 387 | 136 | 126 | 441 | 845 | 5 | 52 | 26 |
| 24 | 150 | 238 | 85 | | 376 | 106 | 109 | 376 | 399 | 3 | 15 | 14 |
| 25 | 95 | 230 | 75 | | 364 | 118 | 98 | 376 | 404 | 3 | [a] 12 | 15 |
| 26 | 54 | 220 | 75 | | 324 | 118 | 98 | 393 | 296 | 3 | 10 | 12 |
| 27 | 44 | 194 | 80 | | 324 | [a] 118 | 98 | 313 | 1,020 | [a] 2 | [a] 6 | 10 |
| 28 | 54 | 220 | 85 | 75 | 275 | 118 | 104 | 230 | 972 | 2 | 3 | 8 |
| 29 | 220 | 171 | 75 | | ------- | [a] 106 | 307 | 183 | 472 | 2 | 1 | 5 |
| 30 | 767 | 179 | 85 | | ------- | 95 | 2,160 | 150 | 225 | 2 | .8 | 7 |
| 31 | 1,190 | ------- | 90 | | ------- | 90 | ------- | 133 | ------- | 1 | .9 | ------ |

[a] Interpolated.

*Monthly discharge, in second-feet, of Osage River at Trading Post, Kans., 1921–1923 and 1929–30*

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| **1921** | | | | |
| August 4–31 | 21,400 | 126 | 4,570 | 254,000 |
| September | 18,200 | 181 | 4,520 | 269,000 |
| The period | | | | 523,000 |
| **1921–22** | | | | |
| October | 1,180 | 81 | 261 | 16,000 |
| November | 83 | 54 | 66.6 | 3,960 |
| December | 78 | 54 | 64.1 | 3,940 |
| January | 58 | 29 | 47.5 | 2,920 |
| February | 34 | 25 | 26.6 | 1,480 |
| March | 22,800 | 40 | 7,530 | 463,000 |
| April | 31,300 | 1,830 | 13,300 | 791,000 |
| May | 5,840 | 965 | 2,540 | 156,000 |
| June | 2,310 | 39 | 746 | 44,400 |
| July | 4,400 | 39 | 884 | 54,400 |
| August | 265 | 5 | 96.0 | 5,900 |
| September | 67 | 4 | 33.1 | 1,970 |
| The year | 31,300 | 4 | 2,140 | 1,540,000 |
| **1922–23** | | | | |
| October | 18 | 2 | 9.77 | 601 |
| November | 2,310 | 83 | 560 | 33,300 |
| December | 101 | 54 | 72.9 | 4,480 |
| January | 189 | 106 | 152 | 9,350 |
| February | 95 | 14 | 39.6 | 2,200 |
| March | 4,280 | 14 | 720 | 44,300 |
| April | 4,880 | 104 | 655 | 39,000 |
| May | 6,250 | 210 | 1,290 | 79,300 |
| June | 29,000 | 415 | 8,770 | 522,000 |
| July | 3,320 | 363 | 1,320 | 81,200 |
| August | 650 | 85 | 207 | 12,700 |
| September | 1,620 | 63 | 309 | 18,400 |
| The year | 29,000 | 2 | 1,170 | 847,000 |
| **1923** | | | | |
| October | 11,500 | 725 | 3,100 | 191,000 |
| November | 1,620 | 374 | 908 | 54,000 |
| December | 2,000 | 256 | 873 | 53,700 |
| The period | | | | 299,000 |
| **1929–30** | | | | |
| October | 1,190 | | 207 | 12,700 |
| November | 3,200 | 143 | 549 | 32,700 |
| December | 171 | 75 | 108 | 6,640 |
| January | 146 | | 85.1 | 5,230 |
| February | 5,000 | 78 | 1,170 | 65,000 |
| March | 291 | 90 | 158 | 9,720 |
| April | 2,160 | 52 | 178 | 10,600 |
| May | 7,680 | 133 | 1,870 | 115,000 |
| June | 2,650 | 104 | 670 | 39,900 |
| July | 168 | 1 | 33.5 | 2,060 |
| August | 238 | .3 | 22.5 | 1,380 |
| September | 140 | .4 | 20.3 | 1,210 |
| The year | 7,680 | .3 | 417 | 302,000 |

## 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 631.54 feet above mean sea level.

DRAINAGE AREA.—11,500 square miles.

RECORDS AVAILABLE.—October, 1925, to September, 1930.

EXTREMES.—Maximum discharge during year, 32,400 second-feet Feb. 9 (gage height, 16.4 feet); minimum, 42 second-feet Aug. 18 (gage height, 1.10 feet).

1925–1930: Maximum discharge, 89,700 second-feet May 19, 1929 (gage height, 34.8 feet); minimum, that of Aug. 18, 1930.

Maximum stage known, 44.4 feet in June, 1844 (discharge, about 135,000 second-feet).

REMARKS.—Records fair. Gage-height records Oct. 1 to July 31 furnished by United States Weather Bureau.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 150 | 1,840 | 540 | 465 | 1,840 | 3,530 | 720 | 2,570 | 720 | 2,200 | 150 | 140 |
| 2 | 150 | 2,950 | 540 | 2,570 | 1,660 | 3,140 | 720 | 5,860 | 825 | 1,500 | 158 | 126 |
| 3 | 150 | 3,530 | 340 | 2,200 | 1,500 | 2,760 | 825 | 9,670 | 625 | 940 | 150 | 109 |
| 4 | 150 | 4,780 | 400 | 1,840 | 3,330 | 2,570 | 1,060 | 8,520 | 465 | 825 | 132 | 104 |
| 5 | 190 | 4,780 | 400 | 1,340 | 27,900 | 2,200 | 1,190 | 5,860 | 625 | 825 | 115 | 112 |
| 6 | 190 | 3,330 | 400 | 1,190 | 23,900 | 2,200 | 940 | 4,150 | 625 | 465 | 104 | 104 |
| 7 | 190 | 2,020 | 400 | 1,060 | 27,700 | 2,380 | 940 | 3,330 | 625 | 825 | 101 | 112 |
| 8 | 150 | 1,660 | 400 | 1,060 | 30,200 | 2,950 | 625 | 2,950 | 540 | 400 | 101 | 217 |
| 9 | 150 | 825 | 400 | 940 | 32,400 | 3,940 | 825 | 2,760 | 540 | 400 | 101 | 772 |
| 10 | 150 | 720 | 400 | 1,340 | 31,600 | 3,140 | 720 | 4,780 | 720 | 400 | 101 | 3,730 |
| 11 | 190 | 625 | 340 | 1,190 | 29,600 | 2,760 | 720 | 6,720 | 1,060 | 465 | 87 | 3,330 |
| 12 | 285 | 625 | 340 | 1,190 | 27,200 | 2,380 | 625 | 7,600 | 2,570 | 400 | 98 | 4,570 |
| 13 | 235 | 625 | 400 | 1,500 | 21,200 | 1,840 | 625 | 14,000 | 8,980 | 400 | 93 | 5,000 |
| 14 | 720 | 540 | 400 | 5,000 | 12,000 | 1,660 | 625 | 13,600 | 8,750 | 400 | 98 | 3,730 |
| 15 | 940 | 540 | 465 | 8,980 | 7,830 | 1,660 | 625 | 10,800 | 8,060 | 340 | 112 | 3,530 |
| 16 | 940 | 465 | 465 | 7,830 | 6,080 | 1,500 | 625 | 7,380 | 21,900 | 235 | 90 | 4,570 |
| 17 | 720 | 540 | 400 | 5,860 | 5,220 | 1,190 | 465 | 4,780 | 24,800 | 400 | 58 | 3,730 |
| 18 | 720 | 625 | 400 | 6,500 | 4,570 | 1,190 | 465 | 5,640 | 19,300 | 340 | 50 | 2,570 |
| 19 | 400 | 465 | 625 | 6,080 | 4,360 | 1,190 | 825 | 6,940 | 11,700 | 285 | 62 | 2,200 |
| 20 | 400 | 465 | 540 | 5,220 | 3,730 | 1,060 | 940 | 5,430 | 7,600 | 190 | 67 | 1,580 |
| 21 | 625 | 540 | 465 | 4,360 | 3,730 | 1,190 | 1,060 | 5,000 | 5,220 | 235 | 60 | 772 |
| 22 | 625 | 540 | 465 | 4,150 | 3,330 | 1,190 | 940 | 3,940 | 3,730 | 190 | 226 | 582 |
| 23 | 400 | 625 | 465 | 4,150 | 4,360 | 1,060 | 825 | 3,140 | 3,140 | 150 | 625 | 582 |
| 24 | 340 | 720 | 465 | 3,530 | 3,730 | 1,190 | 625 | 2,760 | 3,730 | 150 | 540 | 532 |
| 25 | 285 | 720 | 540 | 2,950 | 3,730 | 1,190 | 625 | 2,200 | 3,330 | 235 | 318 | 465 |
| 26 | 235 | 625 | 625 | 2,760 | 3,940 | 940 | 720 | 2,200 | 2,380 | 235 | 302 | 352 |
| 27 | 235 | 825 | 465 | 2,380 | 3,730 | 1,060 | 825 | 2,020 | 2,020 | 150 | 250 | 480 |
| 28 | 285 | 625 | 540 | 2,380 | 3,730 | 1,060 | 825 | 1,840 | 1,840 | 285 | 170 | 720 |
| 29 | 400 | 540 | 400 | 2,200 | -------- | 940 | 825 | 1,500 | 3,330 | 285 | 150 | 370 |
| 30 | 940 | 540 | 540 | 2,200 | -------- | 940 | 1,190 | 1,190 | 2,760 | 150 | 154 | 285 |
| 31 | 1,500 | -------- | 400 | 2,020 | -------- | 825 | -------- | 940 | -------- | 115 | 146 | -------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 1,500 | 150 | 421 | 0.037 | 0.04 |
| November | 4,780 | 465 | 1,280 | .111 | .12 |
| December | 625 | 340 | 450 | .039 | .04 |
| January | 8,980 | 465 | 3,110 | .270 | .31 |
| February | 32,400 | 1,500 | 11,900 | 1.03 | 1.10 |
| March | 3,940 | 825 | 1,830 | .159 | .18 |
| April | 1,190 | 465 | 786 | .068 | .08 |
| May | 14,000 | 940 | 5,160 | .449 | .52 |
| June | 24,800 | 465 | 5,080 | .442 | .49 |
| July | 2,200 | 115 | 465 | .040 | .05 |
| August | 625 | 50 | 160 | .014 | .02 |
| September | 5,000 | 104 | 1,520 | .132 | .15 |
| The year | 32,400 | 50 | 2,610 | .227 | 3.10 |

### OSAGE RIVER NEAR BAGNELL, MO.

LOCATION.—Staff gage in N. ½ SE. ¼ sec. 21, T. 40 N,. R. 15 W., 1½ miles above Bagnell. Zero of gage 549.75 feet above mean sea level.

DRAINAGE AREA.—14,000 square miles.

RECORDS AVAILABLE.—May, 1925, to September, 1930.

EXTREMES.—Maximum discharge during year, 39,000 second-feet Feb. 10 (gage height, 18.36 feet); minimum discharge, 405 second-feet Aug. 5, 12, 24–26; minimum gage height, 3.86 feet Aug. 12.

1925–1930: Maximum discharge, 106,000 second-feet Apr. 17, 1927, May 21, 1929; maximum gage height, 36.61 feet Apr. 17, 1927; minimum discharge, 324 second-feet Sept. 10–12, 1925.

Maximum stage known, 43.1 feet in June, 1844 (discharge, about 150,000 second-feet).

REMARKS.—Records good except those for period of ice effect, Jan. 20 to Feb. 4, which are poor.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 640 | 3,350 | 1,250 | 1,250 | 2,680 | 6,000 | 1,990 | 2,270 | 1,900 | 3,580 | 550 | 525 |
| 2 | 610 | 3,810 | 1,250 | 2,580 | 2,470 | 5,250 | 1,820 | 3,810 | 1,670 | 2,900 | 610 | 475 |
| 3 | 610 | 4,770 | 1,200 | 5,750 | 2,270 | 4,530 | 1,820 | 7,280 | 1,480 | 2,580 | 580 | 428 |
| 4 | 670 | 5,010 | 1,200 | 5,010 | 2,270 | 4,050 | 1,900 | 11,800 | 1,420 | 2,180 | 525 | 428 |
| 5 | 702 | 5,750 | 1,150 | 4,050 | 11,600 | 3,810 | 2,080 | 9,660 | 1,360 | 1,740 | 405 | 450 |
| 6 | 702 | 6,000 | 1,060 | 3,350 | 28,000 | 3,580 | 2,270 | 7,020 | 1,300 | 1,480 | 450 | 475 |
| 7 | 702 | 4,770 | 1,060 | 2,900 | 32,900 | 4,290 | 2,180 | 5,250 | 1,200 | 1,360 | 475 | 528 |
| 8 | 702 | 3,580 | 1,060 | 2,680 | 35,200 | 6,500 | 1,990 | 4,050 | 1,200 | 1,300 | 450 | 580 |
| 9 | 702 | 2,900 | 1,060 | 2,680 | 37,300 | 6,500 | 1,820 | 3,580 | 1,150 | 1,360 | 450 | 640 |
| 10 | 770 | 2,370 | 1,060 | 2,580 | 38,600 | 6,500 | 1,600 | 3,580 | 1,100 | 1,200 | 450 | 702 |
| 11 | 842 | 1,900 | 1,010 | 2,080 | 36,600 | 5,500 | 1,670 | 4,530 | 1,200 | 1,010 | 428 | 4,050 |
| 12 | 922 | 1,670 | 1,060 | 2,180 | 33,500 | 4,770 | 1,540 | 7,280 | 1,670 | 880 | 405 | 4,290 |
| 13 | 965 | 1,480 | 1,060 | 3,810 | 30,600 | 4,050 | 1,480 | 9,940 | 1,540 | 842 | 428 | 5,500 |
| 14 | 1,010 | 1,480 | 1,250 | 7,540 | 22,700 | 3,580 | 1,420 | 14,900 | 9,940 | 880 | 428 | 6,760 |
| 15 | 1,540 | 1,600 | 1,200 | 13,700 | 14,300 | 3,120 | 1,420 | 14,900 | 10,200 | 805 | 450 | 7,020 |
| 16 | 1,360 | 1,480 | 1,250 | 16,100 | 10,200 | 3,120 | 1,480 | 12,200 | 11,100 | 805 | 475 | 7,280 |
| 17 | 1,820 | 1,420 | 1,360 | 13,400 | 8,320 | 2,680 | 1,480 | 9,100 | 23,700 | 805 | 450 | 6,760 |
| 18 | 1,670 | 1,420 | 1,360 | 12,800 | 7,280 | 2,580 | 1,420 | 8,580 | 26,000 | 770 | 500 | 6,000 |
| 19 | 1,540 | 1,360 | 1,420 | 11,900 | 6,500 | 2,470 | 1,360 | 8,840 | 20,500 | 702 | 525 | 4,290 |
| 20 | 1,480 | 1,420 | 1,360 | 11,300 | 5,750 | 2,370 | 1,300 | 9,100 | 13,100 | 670 | 525 | 3,350 |
| 21 | 1,360 | 1,420 | 1,480 | 10,800 | 5,250 | 2,370 | 1,600 | 7,540 | 9,100 | 735 | 525 | 3,350 |
| 22 | 1,200 | 1,300 | 1,540 | 10,000 | 5,010 | 2,270 | 1,670 | 6,500 | 6,500 | 770 | 475 | 2,580 |
| 23 | 1,250 | 1,300 | 1,480 | 9,260 | 4,770 | 2,370 | 1,820 | 5,250 | 5,010 | 770 | 428 | 1,900 |
| 24 | 1,300 | 1,360 | 1,420 | 8,500 | 5,750 | 2,270 | 1,600 | 4,290 | 4,050 | 702 | 405 | 1,480 |
| 25 | 1,200 | 1,420 | 1,360 | 7,730 | 5,750 | 2,270 | 1,540 | 3,580 | 4,050 | 702 | 405 | 1,300 |
| 26 | 1,060 | 1,540 | 1,360 | 6,960 | 5,500 | 2,370 | 1,420 | 3,350 | 4,050 | 702 | 405 | 1,200 |
| 27 | 922 | 1,480 | 1,300 | 6,190 | 5,750 | 2,370 | 1,360 | 3,120 | 3,580 | 670 | 922 | 1,150 |
| 28 | 965 | 1,420 | 1,420 | 5,420 | 6,250 | 2,370 | 1,480 | 2,900 | 2,900 | 610 | 842 | 1,100 |
| 29 | 1,820 | 1,540 | 1,420 | 4,660 | ------- | 2,270 | 1,900 | 2,790 | 2,680 | 610 | 610 | 965 |
| 30 | 2,180 | 1,420 | 1,300 | 3,890 | ------- | 2,080 | 1,990 | 2,470 | 3,120 | 610 | 580 | 1,010 |
| 31 | 2,580 | ------- | 1,300 | 3,120 | ------- | 1,990 | ------- | 2,180 | ------- | 550 | 580 | ------ |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 2,580 | 610 | 1,150 | 0.082 | 0.09 |
| November | 6,000 | 1,300 | 2,390 | .171 | .19 |
| December | 1,540 | 1,010 | 1,260 | .090 | .10 |
| January | 16,100 | 1,250 | 6,590 | .471 | .54 |
| February | 38,600 | 2,270 | 14,800 | 1.06 | 1.10 |
| March | 6,500 | 1,990 | 3,560 | .254 | .29 |
| April | 2,270 | 1,300 | 1,680 | .120 | .13 |
| May | 14,900 | 2,180 | 6,500 | .464 | .53 |
| June | 26,000 | 1,100 | 5,930 | .424 | .47 |
| July | 3,580 | 550 | 1,140 | .081 | .09 |
| August | 922 | 405 | 508 | .036 | .04 |
| September | 7,280 | 428 | 2,550 | .182 | .20 |
| The year | 38,600 | 405 | 3,920 | .280 | 3.77 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 3,000 second-feet Feb. 8 (gage height, 19.66 feet); no flow Aug. 1 to Sept. 10.

1929–30: Maximum discharge, 13,600 second-feet May 13, 1929; no flow Aug. 1 to Sept. 10, 1930.

Maximum stage known, 30.7 feet Oct. 4, 1927 (discharge, about 21,000 second-feet).

REMARKS.—Records fair.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.2 | 34 | 9 | 6 | 10 | 36 | 9 | 1,520 | 41 | 29 | 0 |
| 2 | .2 | 215 | 10 | 7 | 10 | 33 | 9 | 710 | 29 | 25 | 0 |
| 3 | .2 | 78 | 9 | 7 | 42 | 31 | 8 | 300 | 24 | 23 | 0 |
| 4 | .3 | 30 | 10 | 8 | 143 | 29 | 8 | 201 | 23 | 20 | 0 |
| 5 | .2 | 21 | 9 | 21 | 316 | 27 | 9 | 228 | 30 | 14 | 0 |
| 6 | .2 | 11 | 9 | 22 | 1,360 | 28 | 6 | 219 | 31 | 18 | 0 |
| 7 | .2 | 7 | 8 | 26 | 2,540 | 26 | 8 | 157 | 28 | 17 | 0 |
| 8 | .1 | 6 | 8 | 25 | 2,780 | 26 | 6 | 133 | 26 | 16 | 0 |
| 9 | .2 | 5 | 7 | 24 | 1,580 | 24 | 6 | 149 | 29 | 16 | 0 |
| 10 | .2 | 7 | 7 | 24 | 706 | 23 | 6 | 101 | 31 | 17 | 0 |
| 11 | .2 | 8 | 6 | 23 | 372 | 21 | 5 | 2,000 | 125 | 14 | .9 |
| 12 | .2 | 7 | 6 | 22 | 289 | 21 | 6 | 1,960 | 1,490 | 14 | 10 |
| 13 | .2 | 7 | 6 | 21 | 263 | 20 | 6 | 418 | 450 | 13 | 3.3 |
| 14 | .2 | 6 | 6 | 20 | 247 | 19 | 5 | 328 | 192 | 11 | 4 |
| 15 | .2 | 6 | 6 | 20 | 231 | 19 | 6 | 273 | 201 | 9 | 6 |
| 16 | .2 | 6 | 6 | 19 | 135 | 17 | 8 | 183 | 500 | 8 | 10 |
| 17 | .2 | 6 | 6 | 15 | 127 | 18 | 9 | 157 | 338 | 6 | 1.2 |
| 18 | .2 | 7 | 7 | 12 | 106 | 17 | 8 | 141 | 174 | 6 | .7 |
| 19 | .2 | 7 | 7 | 11 | 99 | 17 | 9 | 141 | 117 | 5 | .9 |
| 20 | .2 | 8 | 7 | 9 | 88 | 17 | 12 | 133 | 82 | 4.4 | .7 |
| 21 | .2 | 10 | 6 | 8 | 85 | 16 | 10 | 109 | 64 | 4 | 2.3 |
| 22 | .2 | 25 | 5 | 8 | 75 | 16 | 9 | 85 | 74 | 3.7 | 2 |
| 23 | .2 | 21 | 5 | 9 | 69 | 15 | 7 | 71 | 46 | 3 | 2.3 |
| 24 | .1 | 16 | 5 | 9 | 66 | 14 | 6 | 54 | 43 | 2.6 | 2 |
| 25 | .1 | 14 | 6 | 10 | 60 | 17 | 6 | 43 | 40 | 2.3 | 1.5 |
| 26 | .2 | 14 | 6 | 12 | 54 | 12 | 6 | 37 | 74 | 2.2 | 1.2 |
| 27 | .2 | 12 | 6 | 11 | 45 | 12 | 14 | 34 | 64 | 1.7 | .9 |
| 28 | .2 | 11 | 5 | 11 | 40 | 11 | 9 | 30 | 43 | .9 | .9 |
| 29 | .3 | 9 | 5 | 9 | -------- | 9 | 9 | 29 | 36 | .6 | .9 |
| 30 | .4 | 9 | 5 | 9 | -------- | 9 | 15 | 27 | 35 | .1 | .6 |
| 31 | .7 | -------- | 5 | 9 | -------- | 8 | -------- | 85 | -------- | .1 | -------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 0.7 | 0.1 | 0.22 | 0.00052 | 0.0006 |
| November | 215 | 5 | 20.8 | .049 | .05 |
| December | 10 | 5 | 6.71 | .016 | .02 |
| January | 26 | 6 | 14.4 | .034 | .04 |
| February | 2,780 | 10 | 426 | .998 | 1.04 |
| March | 36 | 8 | 19.6 | .046 | .05 |
| April | 15 | 5 | 8 | .019 | .02 |
| May | 2,000 | 27 | 324 | .759 | .88 |
| June | 1,490 | 23 | 149 | .349 | .39 |
| July | 29 | .1 | 9.89 | .023 | .03 |
| September | 10 | 0 | 1.74 | .004 | .004 |
| The year | 2,780 | 0 | 79.4 | .186 | 2.52 |

NOTE.—No flow during August.

### 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, 1930.

EXTREMES.—Maximum discharge during year, 5,180 second-feet June 12 (gage height, 26.53 feet); minimum, 1 second-foot Oct. 1–14.

1921–1925, 1929–30: Maximum discharge, 22,100 second-feet May 12, 1929 (gage height, 37.04 feet); minimum, 1 second-foot on several days in 1922, 1923, 1930.

Maximum stage known, 42.34 feet in 1915.

REMARKS.—Records good, except those for extreme high stages and for period of ice effect, Jan. 9 to Feb. 8, which are fair.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 2 | *10 | *6 | 6 | *60 | 18 | 720 | 11 | 17 | 2 | 2 |
| 2 | 1 | 2 | 8 | 6 | *9 | *56 | 16 | 282 | 9 | 15 | 2 | 2 |
| 3 | 1 | *19 | 6 | 6 | 12 | 53 | 17 | 179 | 8 | 14 | 2 | 2 |
| 4 | 1 | 36 | 5 | 6 | | 47 | 18 | 166 | 7 | 12 | 2 | 2 |
| 5 | 1 | 19 | 5 | *6 | | 37 | 19 | 227 | 13 | 9 | 2 | 3 |
| 6 | 1 | 13 | 5 | 6 | 1,000 | 32 | 17 | 154 | 7 | 8 | 2 | 3 |
| 7 | 1 | 13 | 5 | 6 | | 36 | 13 | 136 | 3 | 4 | 2 | 3 |
| 8 | 1 | 12 | *5 | 6 | | 37 | 16 | 216 | 3 | 3 | 2 | 3 |
| 9 | 1 | 12 | 5 | | | 33 | 14 | 126 | 7 | 3 | 2 | 2 |
| 10 | 1 | *8 | 5 | | 652 | 36 | 10 | 227 | 11 | 3 | 2 | 179 |
| 11 | 1 | 4 | 5 | 4 | 394 | 31 | 11 | 1,250 | 2,770 | 2 | 2 | 109 |
| 12 | 1 | 4 | 5 | | 334 | 33 | 14 | 508 | 4,110 | 2 | 2 | 154 |
| 13 | *1 | 4 | 5 | | 304 | 29 | 11 | 271 | 736 | 2 | 2 | 64 |
| 14 | *1 | 4 | 5 | | 282 | 28 | 7 | 204 | 304 | 2 | 2 | 35 |
| 15 | *2 | 2 | *5 | | 271 | 27 | 7 | 154 | 710 | 2 | 2 | 42 |
| 16 | *2 | 2 | 5 | | *206 | 27 | 11 | 120 | 924 | 2 | 2 | 384 |
| 17 | 2 | *2 | 5 | | 142 | 26 | 28 | 114 | 364 | 2 | 2 | 166 |
| 18 | 2 | 2 | 5 | 2 | 131 | 28 | 36 | 556 | 238 | 2 | 2 | 38 |
| 19 | 2 | 3 | 5 | | 120 | 28 | 29 | 293 | 166 | 2 | 2 | 25 |
| 20 | *2 | 50 | 5 | | 98 | 24 | 24 | 131 | 126 | 2 | 2 | 19 |
| 21 | 2 | 48 | 5 | | 38 | 21 | 18 | 93 | 104 | 2 | 2 | 13 |
| 22 | 2 | 22 | *5 | | *54 | 25 | 19 | 68 | 63 | 3 | 2 | 9 |
| 23 | 2 | 19 | 5 | 1 | *70 | 22 | 17 | 58 | 55 | 4 | 2 | 3 |
| 24 | 2 | *20 | 5 | | 88 | 23 | 13 | 93 | 47 | 5 | 2 | 3 |
| 25 | 2 | 21 | *6 | | 88 | 24 | 17 | 63 | 40 | 3 | 2 | 2 |
| 26 | 2 | 18 | 6 | | *80 | 21 | 16 | 31 | 126 | 2 | 2 | 2 |
| 27 | *2 | 14 | 6 | | *72 | 21 | 23 | 27 | 52 | 2 | 2 | 2 |
| 28 | 2 | *12 | 6 | 2 | 64 | 20 | *25 | 22 | 39 | 2 | 2 | 2 |
| 29 | 5 | 11 | *6 | | ------- | 21 | *23 | 16 | 30 | 2 | 2 | 1 |
| 30 | 5 | 11 | 6 | | ------- | 20 | *350 | 12 | 24 | 2 | 2 | 1 |
| 31 | 5 | ------- | 6 | | ------- | 20 | ------- | 9 | ------- | 2 | 2 | ------- |

| Month | Maximum | Minimum | Mean | Run-off in acre-feet |
|---|---|---|---|---|
| October | 5 | 1 | 1.84 | 113 |
| November | 50 | 2 | 13.6 | 809 |
| December | 10 | 5 | 5.52 | 339 |
| January | 6 | ---------- | 3.32 | 204 |
| February | ---------- | 6 | 340 | 18,900 |
| March | 60 | 20 | 30.5 | 1,880 |
| April | 380 | 7 | 29.6 | 1,760 |
| May | 1,250 | 9 | 211 | 13,000 |
| June | 4,110 | 3 | 370 | 22,000 |
| July | 17 | 2 | 4.42 | 272 |
| August | 2 | 2 | 2.00 | 123 |
| September | 384 | 1 | 42.5 | 2,530 |
| The year | 4,110 | ---------- | 85.5 | 61,900 |

* Interpolated.

### 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, 1930.

EXTREMES.—Maximum discharge during year, 8,800 second-feet Feb. 15 (gage height, 15.55 feet); minimum discharge, 48 second-feet Oct. 3; minimum gage height, 2.22 feet Sept. 6.

1921–1930: 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 Oct. 30, 31, Jan. 30, 31, Aug. 21, Sept. 25.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 50 | 378 | 90 | 159 | 396 | 770 | 291 | 2,190 | 308 | 414 | 91 | 62 |
| 2 | 50 | 310 | 108 | 154 | 610 | 675 | 291 | 990 | 291 | 376 | 91 | 62 |
| 3 | 48 | 264 | 112 | 310 | 1,050 | 675 | 308 | 770 | 274 | 342 | 91 | 62 |
| 4 | 58 | 234 | 99 | 279 | 7,680 | 585 | 291 | 585 | 258 | 308 | 84 | 57 |
| 5 | 95 | 206 | 90 | 249 | 7,500 | 585 | 291 | 540 | 242 | 291 | 77 | 55 |
| 6 | 121 | 180 | 86 | 234 | 4,160 | 562 | 258 | 475 | 274 | 274 | 74 | 52 |
| 7 | 117 | 159 | 84 | 249 | 4,090 | 2,430 | 228 | 475 | 274 | 258 | 71 | 138 |
| 8 | 104 | 140 | 82 | 249 | 2,670 | 1,590 | 228 | 562 | 258 | 258 | 68 | 186 |
| 9 | 95 | 137 | 80 | 264 | 2,430 | 770 | 228 | 475 | 242 | 242 | 62 | 990 |
| 10 | 90 | 135 | 78 | 279 | 2,310 | 720 | 213 | 475 | 228 | 274 | 62 | 675 |
| 11 | 125 | 135 | 78 | 294 | 1,950 | 675 | 213 | 3,060 | 395 | 258 | 62 | 376 |
| 12 | 170 | 135 | 78 | 310 | 1,710 | 585 | 213 | 1,710 | 1,170 | 242 | 62 | 308 |
| 13 | 220 | 135 | 82 | 415 | 1,590 | 518 | 213 | 1,350 | 675 | 228 | 62 | 242 |
| 14 | 206 | 135 | 78 | 3,390 | 1,350 | 496 | 228 | 990 | 820 | 213 | 62 | 186 |
| 15 | 149 | 130 | 70 | 3,390 | 1,230 | 475 | 228 | 820 | 5,000 | 174 | 68 | 291 |
| 16 | 125 | 104 | 90 | 2,600 | 1,110 | 454 | 228 | 720 | 8,040 | 174 | 150 | 475 |
| 17 | 117 | 104 | 90 | 2,280 | 990 | 434 | 496 | 1,230 | 3,390 | 174 | 138 | 376 |
| 18 | 104 | 112 | 66 | 2,020 | 1,050 | 434 | 395 | 1,110 | 2,190 | 174 | 116 | 274 |
| 19 | 90 | 121 | 66 | 1,830 | 875 | 562 | 325 | 930 | 1,650 | 161 | 414 | 242 |
| 20 | 104 | 117 | 66 | 1,650 | 820 | 540 | 291 | 720 | 1,230 | 138 | 540 | 213 |
| 21 | 108 | 117 | 66 | 1,410 | 770 | 475 | 274 | 630 | 1,050 | 134 | 300 | 174 |
| 22 | 93 | 117 | 66 | 1,230 | 675 | 434 | 258 | 630 | 875 | 129 | 150 | 161 |
| 23 | 86 | 112 | 66 | 1,050 | 675 | 414 | 258 | 562 | 770 | 161 | 116 | 150 |
| 24 | 82 | 108 | 66 | 870 | 675 | 414 | 242 | 720 | 720 | 186 | 112 | 134 |
| 25 | 78 | 104 | 66 | 710 | 675 | 395 | 228 | 540 | 675 | 161 | 103 | 125 |
| 26 | 78 | 104 | 66 | 610 | 930 | 395 | 213 | 475 | 630 | 138 | 95 | 116 |
| 27 | 78 | 104 | 66 | 514 | 930 | 376 | 200 | 414 | 585 | 134 | 88 | 103 |
| 28 | 125 | 104 | 66 | 474 | 820 | 359 | 228 | 376 | 518 | 91 | 81 | 95 |
| 29 | 135 | 104 | 86 | 434 | ------- | 342 | 213 | 359 | 475 | 99 | 77 | 88 |
| 30 | 216 | 99 | 117 | 396 | ------- | 308 | 325 | 342 | 434 | 161 | 74 | 84 |
| 31 | 297 | ------- | 112 | 396 | ------- | 291 | ------- | 342 | ------- | 88 | 68 | ------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 297 | 48 | 117 | 0.101 | 0.12 |
| November | 378 | 99 | 148 | .128 | .14 |
| December | 117 | 66 | 81 | .070 | .08 |
| January | 3,390 | 154 | 926 | .798 | .92 |
| February | 7,680 | 396 | 1,850 | 1.59 | 1.66 |
| March | 2,430 | 291 | 604 | .521 | .60 |
| April | 496 | 200 | 263 | .227 | .25 |
| May | 3,060 | 342 | 825 | .711 | .82 |
| June | 8,040 | 228 | 1,130 | .974 | 1.09 |
| July | 414 | 88 | 208 | .179 | .21 |
| August | 540 | 62 | 120 | .103 | .12 |
| September | 990 | 52 | 218 | .188 | .21 |
| The year | 8,040 | 48 | 531 | .458 | 6.22 |

### LITTLE SAC RIVER NEAR SPRINGFIELD, MO.

LOCATION.—Vertical 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 about 1,162 feet above mean sea level.

DRAINAGE AREA.—40 square miles.

RECORDS AVAILABLE.—May, 1927, to September, 1930.

EXTREMES.—Maximum discharge during year, 420 second-feet Feb. 4 (gage height, 4.16 feet); minimum discharge, 0.1 second-foot July 27, Sept. 17–19; minimum gage height, 1.30 feet Sept. 19.

1927–1930: 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, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.5 | 16 | 3.1 | 22 | 17 | 38 | 15 | 5.7 | 5.7 | 5.7 | 0.8 | 0.4 |
| 2 | .3 | 11 | 1.5 | 17 | 58 | 32 | 9 | 4.4 | 3.8 | 6.7 | .8 | .5 |
| 3 | .2 | 8 | 2.2 | 17 | 101 | 27 | 8 | 5.7 | 2.6 | 2.6 | 1.3 | .5 |
| 4 | 4.1 | 5.7 | 2.6 | 16 | 314 | 27 | 7 | 8 | 2.4 | 1.4 | 2.9 | .7 |
| 5 | .3 | 5.7 | 2.4 | 15 | 134 | 24 | 6.4 | 6.7 | 10 | 2.2 | 3.1 | .8 |
| 6 | .3 | 5.4 | 2.9 | 14 | 119 | 35 | 5.1 | 8 | 4.4 | 2.0 | 2.9 | .8 |
| 7 | 2.0 | 12 | 2.9 | 15 | 104 | 24 | 5.7 | 11 | 6.4 | 9 | 3.1 | 1.3 |
| 8 | .9 | 7 | 2.9 | 46 | 92 | 22 | 4.4 | 8 | 5.1 | 1.5 | 2.9 | .5 |
| 9 | .8 | 4.8 | 2.4 | 22 | 78 | 20 | 2.6 | 10 | 1.3 | 2.0 | 2.9 | .7 |
| 10 | .3 | 5.4 | 3.3 | 16 | 67 | 19 | 3.8 | 67 | 7 | 1.5 | 2.9 | .5 |
| 11 | 34 | 9 | 3.6 | 53 | 61 | 17 | 4.4 | 39 | 16 | 1.0 | 3.1 | .8 |
| 12 | 18 | 33 | 5.1 | 119 | 55 | 16 | 4.8 | 24 | 10 | .3 | 3.1 | .8 |
| 13 | 6.0 | 6.4 | 11 | 192 | 44 | 15 | 7 | 20 | 6.4 | 8 | 3.1 | .8 |
| 14 | 4.4 | 6.7 | 13 | 202 | 39 | 16 | 6.4 | 14 | 6.7 | 2.6 | 10 | .9 |
| 15 | 3.3 | 5.7 | 12 | 112 | 31 | 13 | 6.7 | 14 | 174 | 7 | 2.0 | .2 |
| 16 | 2.6 | 6.4 | 13 | 81 | 32 | 14 | 14 | 11 | 119 | 1.0 | 2.9 | .2 |
| 17 | 3.3 | 5.7 | 22 | 64 | 28 | 14 | 5.1 | 16 | 50 | .4 | .9 | .1 |
| 18 | 2.0 | 4.8 | 15 | 69 | 25 | 16 | 3.8 | 23 | 39 | .3 | 1.5 | .1 |
| 19 | 3.8 | 3.8 | 2.9 | 50 | 23 | 12 | 4.1 | 16 | 30 | 3.1 | 1.0 | .1 |
| 20 | 2.4 | 3.8 | 10 | 50 | 21 | 15 | 6.0 | 14 | 23 | .3 | 1.0 | 3.3 |
| 21 | 2.0 | 9 | 10 | 42 | 20 | 22 | 5.1 | 13 | 19 | 2.6 | 2.4 | 2.0 |
| 22 | 2.0 | .3 | 9 | 37 | 30 | 4.4 | 8 | 11 | 16 | .3 | 2.4 | 1.3 |
| 23 | .2 | 1.3 | 9 | 28 | 20 | 11 | 2.9 | 19 | 13 | .2 | 2.2 | 1.3 |
| 24 | .2 | 2.4 | 8 | 23 | 21 | 16 | 1.4 | 17 | 12 | .3 | 2.2 | 1.4 |
| 25 | .2 | 3.3 | 8 | 22 | 79 | 12 | .5 | 14 | 9 | .2 | 2.6 | 1.5 |
| 26 | .2 | 3.3 | 6.7 | 20 | 72 | 9 | 4.4 | 11 | 8 | .2 | 2.6 | 1.5 |
| 27 | .2 | 4.1 | 7 | 19 | 55 | 9 | .3 | 9 | 8 | .1 | 1.4 | 1.3 |
| 28 | 20 | 5.1 | 6.4 | 17 | 48 | 9 | 1.7 | 9 | 6.4 | 8 | 1.4 | 1.3 |
| 29 | 5.4 | 2.0 | 6.4 | 16 | ------ | 8 | 10 | 9 | 7 | 2.6 | 1.3 | 1.4 |
| 30 | 5.7 | 1.3 | 5.7 | 16 | ------ | 8 | 10 | 3.8 | 5.7 | 1.3 | .7 | 1.5 |
| 31 | 30 | ------ | 6.7 | 15 | ------ | 7 | ------ | 2.9 | ------ | .2 | .7 | ------ |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 34 | 0.2 | 5.05 | 0.126 | 0.15 |
| November | 33 | .3 | 6.61 | .165 | .18 |
| December | 22 | 1.5 | 6.99 | .175 | .20 |
| January | 202 | 14 | 46.7 | 1.16 | 1.34 |
| February | 314 | 17 | 63.9 | 1.60 | 1.67 |
| March | 38 | 4.4 | 17.1 | .428 | .49 |
| April | 15 | .3 | 5.79 | .145 | .16 |
| May | 67 | 2.9 | 14.3 | .358 | .41 |
| June | 174 | 1.3 | 20.9 | .522 | .58 |
| July | 9 | .1 | 2.41 | .060 | .07 |
| August | 10 | .7 | 2.33 | .058 | .07 |
| September | 3.3 | .1 | .95 | .024 | .03 |
| The year | 314 | .1 | 15.8 | .395 | 5.35 |

## 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 about 686.5 feet above mean sea level.

DRAINAGE AREA.—1,660 square miles.

RECORDS AVAILABLE.—June, 1921, to September, 1930.

EXTREMES.—Maximum discharge during year, 6,880 second-feet Feb. 11 (gage height, 15.32 feet); minimum discharge, 0.5 second-foot Aug. 11, 12; minimum gage height, 0.96 foot Aug. 12.

1921–1930: 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, 1930.

REMARKS.—Records good. Discharge estimated Oct. 12.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 725 | 32 | 147 | 23 | 260 | 48 | 176 | 14 | 31 | 4 | 1 |
| 2 | 2 | 925 | 30 | 395 | 23 | 186 | 45 | 306 | 11 | 20 | 3 | 1 |
| 3 | 1 | 436 | 24 | 120 | 24 | 176 | 208 | 197 | 7 | 14 | 2 | .9 |
| 4 | 7 | 260 | 23 | 90 | 550 | 156 | 186 | 147 | 7 | 11 | 1 | .8 |
| 5 | 7 | 156 | 23 | 83 | 875 | 156 | 120 | 104 | 6 | 9 | 1 | .8 |
| 6 | 7 | 104 | 24 | 77 | 2,100 | 138 | 83 | 104 | 7 | 8 | 1 | .8 |
| 7 | 4 | 77 | 26 | 83 | 4,900 | 138 | 58 | 90 | 7 | 5 | .9 | 2 |
| 8 | 4 | 58 | 28 | 58 | 5,140 | 147 | 52 | 83 | 176 | 5 | .8 | 3 |
| 9 | 5 | 44 | 24 | 48 | 6,520 | 156 | 47 | 77 | 129 | 5 | .8 | 70 |
| 10 | 13 | 46 | 23 | 45 | 6,820 | 138 | 37 | 77 | 77 | 55 | .7 | 376 |
| 11 | 10 | 38 | 22 | 45 | 6,880 | 112 | 30 | 71 | 208 | 48 | .5 | 376 |
| 12 | 16 | 32 | 23 | 59 | 5,020 | 97 | 28 | 1,380 | 306 | 27 | .5 | 138 |
| 13 | 436 | 36 | 32 | 64 | 2,480 | 90 | 26 | 1,020 | 112 | 17 | .7 | 97 |
| 14 | 197 | 38 | 29 | 68 | 1,280 | 83 | 25 | 376 | 97 | 10 | .9 | 357 |
| 15 | 120 | 59 | 29 | 61 | 825 | 71 | 18 | 208 | 2,040 | 7 | .9 | 233 |
| 16 | 97 | 56 | 29 | 44 | 575 | 60 | 25 | 147 | 1,330 | 5 | .8 | 90 |
| 17 | 68 | 62 | 28 | 43 | 340 | 59 | 26 | 104 | 925 | 5 | .9 | 34 |
| 18 | 44 | 53 | 28 | 43 | 395 | 69 | 376 | 97 | 436 | 4 | 2 | 26 |
| 19 | 32 | 50 | 26 | 34 | 376 | 69 | 208 | 83 | 186 | 3 | 2 | 22 |
| 20 | 197 | 64 | 26 | 31 | 340 | 54 | 147 | 77 | 104 | 2 | 38 | 16 |
| 21 | 186 | 83 | 24 | 30 | 290 | 71 | 97 | 63 | 63 | 1 | 138 | 12 |
| 22 | 58 | 77 | 20 | 25 | 416 | 77 | 77 | 64 | 56 | 2 | 50 | 7 |
| 23 | 34 | 71 | 18 | 22 | 416 | 77 | 67 | 64 | 40 | 1 | 26 | 7 |
| 24 | 26 | 38 | 16 | 17 | 416 | 77 | 55 | 64 | 30 | 2 | 13 | 5 |
| 25 | 24 | 51 | 16 | 15 | 322 | 83 | 50 | 138 | 26 | 2 | 8 | 3 |
| 26 | 14 | 50 | 15 | 19 | 220 | 71 | 43 | 90 | 22 | 3 | 6 | 340 |
| 27 | 9 | 38 | 15 | 19 | 220 | 69 | 50 | 63 | 39 | 15 | 4 | 71 |
| 28 | 7 | 36 | 15 | 19 | 357 | 67 | 48 | 42 | 290 | 24 | 3 | 43 |
| 29 | 322 | 35 | 15 | 19 | ------- | 62 | 61 | 30 | 138 | 14 | 2 | 14 |
| 30 | 120 | 33 | 16 | 19 | ------- | 58 | 147 | 23 | 54 | 8 | 1 | 8 |
| 31 | 458 | ------- | 16 | 20 | ------- | 54 | ------- | 15 | ------- | 6 | 2 | ------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 458 | 1 | 81.5 | 0.049 | 0.06 |
| November | 925 | 32 | 128 | .077 | .09 |
| December | 32 | 15 | 23.1 | .014 | .02 |
| January | 395 | 15 | 60.1 | .036 | .04 |
| February | 6,880 | 23 | 1,720 | 1.04 | 1.08 |
| March | 260 | 54 | 103 | .062 | .07 |
| April | 376 | 18 | 82.9 | .050 | .06 |
| May | 1,380 | 15 | 180 | .108 | .12 |
| June | 2,040 | 6 | 231 | .139 | .16 |
| July | 55 | 1 | 11.9 | .007 | .01 |
| August | 138 | .5 | 10.2 | .006 | .01 |
| September | 876 | .8 | 78.5 | .047 | .05 |
| The year | 6,880 | .5 | 215 | .130 | 1.77 |

### NIANGUA RIVER NEAR DECATURVILLE, MO.

LOCATION.—Staff gage used until Aug. 27, and water-stage recorder after that date, in SE. ¼ sec. 18, T. 37 N., R. 17 W., 8 miles west of Decaturville. Zero of gage about 665.9 feet above mean sea level.

DRAINAGE AREA.—About 627 square miles.

RECORDS AVAILABLE.—April to September, 1930.

EXTREMES.—Maximum discharge during year, 725 second-feet June 17 (gage height, 3.95 feet); minimum, 74 second-feet Sept. 30 (gage height, 2.27 feet).

REMARKS.—Records good. Flow regulated after Sept. 23 by hydroelectric plant of Missouri Electric Power Co.

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

| Day | Apr. | May | June | July | Aug. | Sept. | Day | Apr. | May | June | July | Aug | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 392 | 320 | 252 | 220 | 160 | 175 | 16 | 433 | 338 | 320 | 190 | 220 | 635 |
| 2 | 392 | 412 | 236 | 205 | 160 | 154 | 17 | 433 | 374 | 725 | 190 | 190 | 608 |
| 3 | 392 | 392 | 220 | 205 | 160 | 152 | 18 | 374 | 480 | 480 | 190 | 190 | 456 |
| 4 | 530 | 355 | 220 | 205 | 160 | 152 | 19 | 355 | 505 | 392 | 190 | 175 | 355 |
| 5 | 480 | 320 | 220 | 205 | 160 | 149 | 20 | 355 | 480 | 338 | 175 | 175 | 320 |
| 6 | 456 | 302 | 236 | 190 | 160 | 160 | 21 | 374 | 392 | 320 | 175 | 160 | 268 |
| 7 | 433 | 355 | 220 | 190 | 160 | 175 | 22 | 355 | 355 | 285 | 190 | 160 | 252 |
| 8 | 412 | 392 | 220 | 190 | 160 | 205 | 23 | 433 | 355 | 268 | 190 | 175 | 220 |
| 9 | 392 | 412 | 220 | 190 | 160 | 635 | 24 | 412 | 355 | 252 | 190 | 175 | 138 |
| 10 | 374 | 412 | 220 | 190 | 160 | 608 | 25 | 355 | 320 | 236 | 190 | 160 | 236 |
| 11 | 355 | 412 | 285 | 190 | 160 | 374 | 26 | 355 | 302 | 236 | 190 | 160 | 205 |
| 12 | 355 | 433 | 433 | 190 | 160 | 302 | 27 | 374 | 285 | 236 | 190 | 160 | 190 |
| 13 | 355 | 530 | 433 | 190 | 190 | 456 | 28 | 320 | 285 | 220 | 190 | 149 | 190 |
| 14 | 355 | 433 | 355 | 190 | 160 | 608 | 29 | 285 | 268 | 220 | 190 | 149 | 190 |
| 15 | 392 | 374 | 320 | 190 | 160 | 635 | 30 | 320 | 252 | 220 | 190 | 154 | 109 |
| | | | | | | | 31 | ------ | 252 | ------ | 160 | 154 | ------ |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| April | 530 | 285 | 387 | 0.617 | 0.69 |
| May | 530 | 252 | 369 | .589 | .68 |
| June | 725 | 220 | 295 | .470 | .52 |
| July | 220 | 160 | 191 | .305 | .35 |
| August | 220 | 149 | 166 | .265 | .31 |
| September | 635 | 109 | 310 | .494 | .55 |

### NIANGUA RIVER NEAR ROACH, MO.

LOCATION.—Vertical staff gage in SW. ¼ sec. 20, T. 38 N., R. 17 W., at bridge on State highway 54, 4 miles northeast of Roach. Zero of gage 615.15 feet above mean sea level.

DRAINAGE AREA.—About 698 square miles.

RECORDS AVAILABLE.—November, 1922, to October, 1930.

EXTREMES.—Maximum discharge during period Oct. 1, 1929, to Oct. 31, 1930, 6,560 second-feet Jan. 15 (gage height, 8.80 feet); minimum, 68 second-feet Oct. 6, 1930 (gage height, 1.08 feet).

1922–1930: Maximum discharge, 27,200 second-feet Aug. 9, 1927 (gage height, 17.00 feet); minimum, that of Oct. 6, 1930.

Maximum stage known, 23.8 feet in September, 1914.

REMARKS.—Records good.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 320 | 708 | 362 | 408 | 475 | 915 | 500 | 420 | 630 | 290 | 278 | 250 | 206 |
| 2 | 320 | 1,450 | 340 | 525 | 475 | 795 | 500 | 470 | 330 | 286 | 226 | 270 | 186 |
| 3 | 320 | 1,110 | 340 | 600 | 625 | 735 | 500 | 545 | 330 | 286 | 234 | 266 | 95 |
| 4 | 340 | 855 | 362 | 708 | 1,770 | 652 | 600 | 495 | 310 | 282 | 226 | 254 | 86 |
| 5 | 340 | 735 | 340 | 735 | 2,850 | 600 | 652 | 445 | 310 | 282 | 234 | 242 | 72 |
| 6 | 340 | 708 | 340 | 652 | 5,380 | 575 | 625 | 420 | 330 | 274 | 258 | 250 | 68 |
| 7 | 340 | 575 | 340 | 575 | 2,330 | 855 | 575 | 445 | 310 | 274 | 230 | 290 | 95 |
| 8 | 340 | 525 | 340 | 575 | 2,010 | 1,240 | 550 | 445 | 310 | 274 | 230 | 310 | 89 |
| 9 | 320 | 500 | 340 | 625 | 1,690 | 1,770 | 525 | 545 | 310 | 274 | 218 | 330 | 80 |
| 10 | 340 | 475 | 340 | 652 | 1,380 | 1,180 | 500 | 520 | 310 | 274 | 270 | 1,610 | 266 |
| 11 | 340 | 475 | 340 | 652 | 1,240 | 980 | 500 | 495 | 375 | 266 | 218 | 625 | 282 |
| 12 | 385 | 452 | 340 | 680 | 980 | 855 | 475 | 420 | 855 | 266 | 218 | 520 | 270 |
| 13 | 385 | 452 | 362 | 1,240 | 980 | 735 | 470 | 708 | 545 | 258 | 246 | 545 | 254 |
| 14 | 1,180 | 475 | 362 | 4,170 | 855 | 680 | 470 | 598 | 545 | 254 | 250 | 855 | 254 |
| 15 | 735 | 452 | 362 | 5,720 | 795 | 625 | 445 | 520 | 470 | 254 | 250 | 980 | 250 |
| 16 | 600 | 475 | 362 | 3,950 | 735 | 600 | 470 | 470 | 445 | 254 | 270 | 980 | 246 |
| 17 | 525 | 475 | 362 | 2,170 | 680 | 550 | 470 | 445 | 570 | 250 | 274 | 855 | 270 |
| 18 | 475 | 475 | 385 | 1,180 | 652 | 575 | 495 | 855 | 708 | 250 | 266 | 735 | 262 |
| 19 | 430 | 475 | 408 | 1,040 | 625 | 550 | 495 | 625 | 625 | 250 | 262 | 545 | 270 |
| 20 | 430 | 452 | 430 | 980 | 575 | 575 | 470 | 652 | 495 | 242 | 254 | 520 | 238 |
| 21 | 408 | 452 | 408 | 915 | 550 | 625 | 445 | 598 | 470 | 242 | 250 | 445 | 178 |
| 22 | 385 | 430 | 408 | 765 | 525 | 575 | 445 | 520 | 398 | 234 | 254 | 420 | 274 |
| 23 | 430 | 430 | 452 | 652 | 550 | 550 | 420 | 470 | 375 | 226 | 254 | 398 | 310 |
| 24 | 408 | 408 | 430 | 575 | 525 | 525 | 420 | 445 | 352 | 250 | 258 | 330 | 310 |
| 25 | 408 | 408 | 430 | 550 | 575 | 525 | 420 | 420 | 330 | 266 | 254 | 310 | 375 |
| 26 | 408 | 408 | 430 | 600 | 600 | 525 | 398 | 398 | 330 | 266 | 254 | 330 | 352 |
| 27 | 385 | 385 | 408 | 575 | 855 | 525 | 398 | 398 | 310 | 226 | 254 | 310 | 330 |
| 28 | 430 | 385 | 408 | 550 | 1,240 | 525 | 398 | 375 | 310 | 266 | 254 | 290 | 330 |
| 29 | 475 | 385 | 408 | 550 | ------- | 525 | 398 | 352 | 290 | 254 | 250 | 290 | 352 |
| 30 | 525 | 362 | 408 | 500 | ------- | 500 | 420 | 352 | 290 | 282 | 250 | 258 | 282 |
| 31 | 680 | ------- | 408 | 500 | ------- | 475 | ------- | 352 | ------- | 282 | 250 | ------- | 282 |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| **1929–30** | | | | | |
| October | 1,180 | 320 | 443 | 0.635 | 0.73 |
| November | 1,450 | 362 | 545 | .781 | .87 |
| December | 452 | 340 | 379 | .543 | .63 |
| January | 5,720 | 408 | 1,120 | 1.60 | 1.84 |
| February | 5,380 | 475 | 1,160 | 1.66 | 1.73 |
| March | 1,770 | 475 | 707 | 1.01 | 1.16 |
| April | 652 | 398 | 482 | .691 | .77 |
| May | 855 | 352 | 491 | .703 | .81 |
| June | 855 | 290 | 409 | .586 | .65 |
| July | 290 | 226 | 262 | .375 | .43 |
| August | 278 | 218 | 248 | .355 | .41 |
| September | 1,610 | 242 | 487 | .698 | .78 |
| The year | 5,720 | 218 | 557 | .798 | 10.81 |
| **1930** | | | | | |
| October | 375 | 68 | 233 | .334 | .39 |

### BENNETT SPRING AT BRICE, MO.

LOCATION.—Vertical staff gage in sec. 1, T. 34 N., R. 18 W., at Brice.

RECORDS AVAILABLE.—October, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 624 second-feet Jan. 14 (gage height, 1.56 feet); minimum discharge, 92 second-feet Aug. 21; minimum gage height, 0.79 foot Aug. 21, 22.

1929–30: Maximum gage height, 4.35 feet May 6, 1929 (discharge not determined); minimum discharge and gage height, those of Aug. 21, 22, 1930.

Maximum stage known, about 7 feet during June, 1928.

REMARKS.—Records fair. Discharge estimated Aug. 11. Discharge during high stages includes surface water from valley above spring.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 133 | 202 | 127 | 127 | 146 | 212 | 152 | 127 | 116 | 116 | 101 | 101 |
| 2 | 133 | 232 | 127 | 133 | 146 | 212 | 152 | 127 | 116 | 116 | 101 | 101 |
| 3 | 133 | 152 | 127 | 140 | 176 | 202 | 176 | 127 | 116 | 116 | 101 | 101 |
| 4 | 133 | 184 | 127 | 140 | 320 | 192 | 176 | 127 | 116 | 116 | 101 | 101 |
| 5 | 133 | 168 | 127 | 160 | 380 | 192 | 176 | 127 | 116 | 121 | 101 | 101 |
| 6 | 133 | 160 | 127 | 160 | 320 | 184 | 168 | 127 | 116 | 121 | 101 | 101 |
| 7 | 133 | 152 | 127 | 160 | 320 | 222 | 160 | 133 | 116 | 121 | 101 | 121 |
| 8 | 133 | 146 | 127 | 152 | 292 | 232 | 160 | 133 | 116 | 121 | 101 | 133 |
| 9 | 133 | 140 | 127 | 152 | 267 | 222 | 152 | 133 | 111 | 116 | 101 | 133 |
| 10 | 133 | 140 | 127 | 146 | 255 | 212 | 152 | 133 | 111 | 116 | 101 | 133 |
| 11 | 133 | 140 | 127 | 146 | 242 | 202 | 146 | 140 | 116 | 116 | 101 | 133 |
| 12 | 202 | 140 | 133 | 160 | 232 | 192 | 146 | 140 | 121 | 116 | 101 | 133 |
| 13 | 212 | 133 | 133 | 456 | 222 | 184 | 146 | 133 | 121 | 116 | 101 | 212 |
| 14 | 212 | 133 | 133 | 624 | 202 | 184 | 146 | 133 | 118 | 116 | 101 | 133 |
| 15 | 192 | 133 | 133 | 475 | 192 | 184 | 146 | 121 | 121 | 116 | 101 | 160 |
| 16 | 176 | 127 | 133 | 365 | 184 | 168 | 146 | 127 | 127 | 111 | 101 | 152 |
| 17 | 168 | 127 | 133 | 335 | 184 | 160 | 146 | 127 | 127 | 101 | 101 | 140 |
| 18 | 176 | 127 | 133 | 280 | 176 | 160 | 146 | 133 | 127 | 101 | 101 | 121 |
| 19 | 168 | 127 | 133 | 255 | 168 | 160 | 140 | 133 | 127 | 96 | 101 | 121 |
| 20 | 168 | 127 | 133 | 232 | 168 | 160 | 140 | 127 | 127 | 101 | 96 | 116 |
| 21 | 168 | 127 | 133 | 207 | 160 | 160 | 140 | 127 | 127 | 101 | 96 | 111 |
| 22 | 160 | 127 | 133 | 192 | 160 | 160 | 140 | 127 | 121 | 101 | 96 | 111 |
| 23 | 127 | 127 | 133 | 184 | 160 | 160 | 140 | 127 | 121 | 101 | 96 | 111 |
| 24 | 121 | 127 | 133 | 176 | 168 | 160 | 140 | 121 | 121 | 104 | 96 | 106 |
| 25 | 127 | 127 | 133 | 168 | 176 | 160 | 140 | 121 | 121 | 106 | 96 | 106 |
| 26 | 127 | 127 | 133 | 168 | 242 | 160 | 127 | 121 | 121 | 106 | 96 | 101 |
| 27 | 127 | 127 | 133 | 168 | 232 | 152 | 127 | 116 | 116 | 101 | 96 | 98 |
| 28 | 127 | 127 | 133 | 152 | 222 | 152 | 127 | 111 | 116 | 101 | 101 | 101 |
| 29 | 146 | 127 | 127 | 152 | ------ | 152 | 127 | 116 | 116 | 101 | 101 | 101 |
| 30 | 184 | 127 | 127 | 146 | ------ | 152 | 127 | 116 | 116 | 101 | 106 | 101 |
| 31 | 176 | ------ | 127 | 146 | ------ | 152 | ------ | 116 | ------ | 101 | 106 | ------ |

| Month | Maximum | Minimum | Mean | Month | Maximum | Minimum | Mean |
|---|---|---|---|---|---|---|---|
| October | 212 | 121 | 152 | May | 140 | 111 | 127 |
| November | 232 | 127 | 142 | June | 127 | 111 | 119 |
| December | 133 | 127 | 130 | July | 121 | 96 | 109 |
| January | 624 | 127 | 215 | August | 106 | 96 | 100 |
| February | 380 | 146 | 218 | September | 212 | 98 | 120 |
| March | 232 | 152 | 179 | | | | |
| April | 176 | 127 | 147 | The year | 624 | 96 | 146 |

## 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, 1930.

EXTREMES.—Maximum discharge during year, 15,200 second-feet Jan 15 (gage height, 14.48 feet); minimum, 45 second-feet Aug. 9 (gage height, 1.34 feet).

1929–30: Maximum discharge, 19,000 second-feet May 7, 1929 (gage height, 16.21 feet); minimum, that of Aug. 9, 1930.

Maximum stage known, 31.8 feet in January, 1916.

REMARKS.—Records good.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 97 | 6,980 | 244 | 380 | 560 | 2,330 | 500 | 260 | 325 | 110 | 64 | 52 |
| 2 | 94 | 6,460 | 244 | 560 | 680 | 1,870 | 530 | 260 | 298 | 107 | 60 | 52 |
| 3 | 92 | 1,940 | 244 | 740 | 770 | 1,520 | 620 | 249 | 276 | 104 | 58 | 51 |
| 4 | 110 | 1,380 | 223 | 920 | 3,500 | 1,240 | 560 | 239 | 254 | 100 | 58 | 51 |
| 5 | 110 | 1,120 | 223 | 860 | 5,870 | 1,120 | 500 | 234 | 244 | 97 | 56 | 50 |
| 6 | 110 | 920 | 213 | 985 | 4,200 | 1,050 | 470 | 234 | 244 | 94 | 52 | 62 |
| 7 | 110 | 770 | 208 | 1,120 | 2,920 | 1,240 | 440 | 249 | 234 | 92 | 48 | 130 |
| 8 | 114 | 650 | 204 | 1,240 | 2,330 | 2,920 | 410 | 254 | 208 | 94 | 47 | 142 |
| 9 | 114 | 590 | 199 | 1,380 | 1,870 | 2,330 | 410 | 239 | 204 | 100 | 45 | 130 |
| 10 | 117 | 530 | 199 | 1,240 | 1,590 | 1,800 | 380 | 234 | 194 | 97 | 47 | 180 |
| 11 | 123 | 500 | 204 | 1,180 | 1,380 | 1,450 | 352 | 352 | 244 | 97 | 48 | 218 |
| 12 | 2,250 | 470 | 204 | 1,730 | 1,240 | 1,310 | 352 | 1,050 | 286 | 92 | 52 | 470 |
| 13 | 1,120 | 470 | 213 | 5,980 | 1,120 | 1,120 | 352 | 920 | 325 | 87 | 56 | 500 |
| 14 | 860 | 500 | 234 | 13,000 | 1,050 | 985 | 352 | 680 | 325 | 84 | 50 | 314 |
| 15 | 650 | 470 | 254 | 15,000 | 920 | 860 | 325 | 560 | 303 | 82 | 82 | 620 |
| 16 | 470 | 500 | 308 | 5,210 | 860 | 770 | 325 | 470 | 270 | 80 | 97 | 620 |
| 17 | 380 | 500 | 440 | 3,300 | 770 | 740 | 325 | 440 | 260 | 77 | 82 | 590 |
| 18 | 325 | 470 | 770 | 2,490 | 740 | 740 | 320 | 440 | 260 | 74 | 77 | 530 |
| 19 | 320 | 470 | 1,180 | 1,800 | 680 | 770 | 308 | 1,120 | 249 | 72 | 77 | 440 |
| 20 | 286 | 410 | 1,240 | 1,590 | 620 | 740 | 308 | 1,450 | 228 | 72 | 80 | 352 |
| 21 | 265 | 380 | 1,050 | 1,240 | 620 | 680 | 286 | 1,450 | 208 | 70 | 74 | 303 |
| 22 | 223 | 352 | 860 | 1,050 | 620 | 650 | 292 | 1,240 | 189 | 72 | 82 | 254 |
| 23 | 208 | 320 | 740 | 1,050 | 710 | 590 | 298 | 740 | 180 | 77 | 80 | 228 |
| 24 | 194 | 320 | 620 | 985 | 770 | 590 | 286 | 800 | 170 | 82 | 77 | 208 |
| 25 | 184 | 308 | 560 | 920 | 2,170 | 590 | 281 | 800 | 158 | 82 | 72 | 189 |
| 26 | 175 | 308 | 500 | 770 | 7,260 | 620 | 276 | 710 | 146 | 77 | 72 | 170 |
| 27 | 175 | 298 | 470 | 740 | 5,980 | 620 | 270 | 590 | 138 | 72 | 68 | 154 |
| 28 | 199 | 286 | 470 | 710 | 3,500 | 560 | 260 | 500 | 130 | 72 | 64 | 138 |
| 29 | 204 | 270 | 440 | 620 | ------- | 530 | 260 | 440 | 123 | 72 | 54 | 127 |
| 30 | 204 | 254 | 410 | 590 | ------- | 530 | 281 | 380 | 117 | 68 | 52 | 123 |
| 31 | 2,410 | ------- | 410 | 590 | ------- | 530 | ------- | 352 | ------- | 66 | 52 | ------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 2,410 | 92 | 397 | 0.318 | 0.37 |
| November | 6,980 | 254 | 973 | .778 | .87 |
| December | 1,240 | 199 | 444 | .355 | .41 |
| January | 15,000 | 380 | 2,260 | 1.81 | 2.09 |
| February | 7,260 | 560 | 1,980 | 1.58 | 1.64 |
| March | 2,920 | 530 | 1,080 | .864 | 1.00 |
| April | 620 | 260 | 364 | .291 | .32 |
| May | 1,450 | 234 | 579 | .463 | .53 |
| June | 325 | 117 | 226 | .181 | .20 |
| July | 110 | 66 | 85 | .068 | .08 |
| August | 97 | 45 | 64 | .051 | .06 |
| September | 620 | 50 | 246 | .197 | .22 |
| The year | 15,000 | 45 | 717 | .574 | 7.79 |

### 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 739.34 feet above mean sea level.

DRAINAGE AREA.—1,680 square miles.

RECORDS AVAILABLE.—June, 1921, to September, 1930.

EXTREMES.—Maximum discharge during year, 16,800 second-feet Jan. 15 (gage height, 13.20 feet); minimum, 93 second-feet Aug. 11, 12 (gage height, 2.04 feet).

1921–1930: 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 (revised) Aug. 22, 1915.

REMARKS.—Records good.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 176 | 5,740 | 360 | 600 | 830 | 3,860 | 718 | 382 | 405 | 186 | 118 | 107 |
| 2 | 165 | 11,100 | 338 | 662 | 795 | 2,780 | 695 | 360 | 430 | 176 | 118 | 102 |
| 3 | 161 | 4,000 | 306 | 830 | 1,220 | 2,260 | 795 | 360 | 382 | 168 | 112 | 102 |
| 4 | 172 | 2,390 | 297 | 980 | 3,040 | 1,930 | 868 | 360 | 360 | 165 | 112 | 102 |
| 5 | 183 | 1,740 | 297 | 1,220 | 6,100 | 1,650 | 905 | 338 | 338 | 165 | 112 | 102 |
| 6 | 176 | 1,390 | 306 | 1,060 | 7,900 | 1,560 | 760 | 315 | 338 | 165 | 112 | 112 |
| 7 | 172 | 1,140 | 315 | 1,060 | 4,700 | 1,650 | 695 | 338 | 338 | 165 | 105 | 134 |
| 8 | 186 | 1,060 | 315 | 1,220 | 3,580 | 2,910 | 630 | 338 | 307 | 162 | 97 | 123 |
| 9 | 198 | 905 | 306 | 1,140 | 3,040 | 3,580 | 630 | 315 | 283 | 159 | 97 | 159 |
| 10 | 210 | 830 | 297 | 1,650 | 2,390 | 2,780 | 570 | 338 | 252 | 159 | 97 | 153 |
| 11 | 206 | 760 | 297 | 1,560 | 2,030 | 2,260 | 540 | 430 | 311 | 153 | 93 | 315 |
| 12 | 510 | 695 | 288 | 1,650 | 1,840 | 1,930 | 540 | 510 | 315 | 153 | 97 | 455 |
| 13 | 2,260 | 630 | 315 | 7,360 | 1,560 | 1,650 | 510 | 1,480 | 360 | 153 | 102 | 868 |
| 14 | 1,140 | 630 | 306 | 13,100 | 1,480 | 1,480 | 482 | 1,060 | 360 | 146 | 102 | 795 |
| 15 | 1,060 | 630 | 315 | 16,400 | 1,390 | 1,390 | 482 | 905 | 405 | 146 | 118 | 1,060 |
| 16 | 795 | 630 | 382 | 15,100 | 1,300 | 1,300 | 482 | 760 | 382 | 146 | 131 | 980 |
| 17 | 695 | 662 | 430 | 5,560 | 1,140 | 1,140 | 510 | 695 | 315 | 134 | 129 | 1,020 |
| 18 | 600 | 630 | 482 | 3,300 | 1,060 | 1,060 | 455 | 630 | 315 | 134 | 159 | 942 |
| 19 | 510 | 600 | 630 | 2,520 | 980 | 1,020 | 455 | 630 | 315 | 126 | 150 | 795 |
| 20 | 455 | 570 | 1,480 | 2,390 | 942 | 1,060 | 430 | 695 | 315 | 123 | 176 | 662 |
| 21 | 430 | 540 | 1,390 | 2,140 | 830 | 1,060 | 405 | 1,300 | 307 | 123 | 143 | 570 |
| 22 | 382 | 510 | 1,220 | 1,480 | 830 | 1,020 | 405 | 1,220 | 291 | 118 | 131 | 455 |
| 23 | 338 | 482 | 980 | 1,220 | 830 | 942 | 430 | 1,060 | 264 | 118 | 129 | 405 |
| 24 | 338 | 455 | 980 | 1,300 | 905 | 830 | 405 | 905 | 226 | 134 | 129 | 382 |
| 25 | 306 | 430 | 795 | 1,300 | 1,140 | 830 | 405 | 868 | 207 | 134 | 129 | 338 |
| 26 | 288 | 430 | 760 | 1,220 | 8,100 | 830 | 405 | 980 | 222 | 131 | 126 | 299 |
| 27 | 270 | 405 | 718 | 1,060 | 11,500 | 868 | 382 | 830 | 218 | 140 | 123 | 275 |
| 28 | 292 | 405 | 695 | 905 | 5,920 | 905 | 405 | 760 | 200 | 129 | 120 | 252 |
| 29 | 315 | 382 | 662 | 980 | ------- | 830 | 382 | 662 | 190 | 129 | 118 | 233 |
| 30 | 306 | 360 | 630 | 868 | ------- | 760 | 382 | 570 | 196 | 129 | 112 | 218 |
| 31 | 570 | ------- | 600 | 830 | ------- | 760 | ------- | 510 | ------- | 123 | 112 | ------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 2,260 | 161 | 447 | 0.266 | 0.31 |
| November | 11,100 | 360 | 1,370 | .815 | .91 |
| December | 1,480 | 288 | 564 | .336 | .39 |
| January | 16,400 | 600 | 2,990 | 1.78 | 2.05 |
| February | 11,500 | 795 | 2,760 | 1.64 | 1.71 |
| March | 3,860 | 760 | 1,580 | .940 | 1.08 |
| April | 905 | 382 | 539 | .321 | .36 |
| May | 1,480 | 315 | 674 | .401 | .46 |
| June | 430 | 190 | 305 | .182 | .20 |
| July | 186 | 118 | 145 | .086 | .10 |
| August | 176 | 93 | 120 | .071 | .08 |
| September | 1,060 | 102 | 417 | .248 | .28 |
| The year | 16,400 | 93 | 982 | .585 | 7.93 |

## 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 658.12 feet above mean sea level.

DRAINAGE AREA.—2,840 square miles.

RECORDS AVAILABLE.—January, 1923, to September, 1930. From April, 1903, to July, 1906, at Arlington, Mo.

EXTREMES.—Maximum discharge during year, 29,300 second-feet Jan. 15 (gage height, 15.52 feet); minimum, 420 second-feet Aug. 11, 12 (gage height, 1.49 feet).

1903–1906, 1923–1930: 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, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 670 | 8,300 | 940 | 1,340 | 1,740 | 7,000 | 1,620 | 990 | 1,090 | 560 | 469 | 462 |
| 2 | 630 | 11,100 | 890 | 1,620 | 1,860 | 5,460 | 1,620 | 990 | 1,040 | 560 | 455 | 476 |
| 3 | 630 | 8,900 | 890 | 1,740 | 2,220 | 4,430 | 1,620 | 990 | 990 | 560 | 455 | 469 |
| 4 | 710 | 4,570 | 845 | 1,980 | 5,620 | 3,730 | 1,740 | 990 | 940 | 560 | 455 | 448 |
| 5 | 710 | 3,470 | 845 | 2,220 | 8,700 | 3,340 | 1,740 | 940 | 890 | 560 | 441 | 441 |
| 6 | 670 | 2,820 | 845 | 2,100 | 10,400 | 3,210 | 1,620 | 940 | 890 | 525 | 441 | 469 |
| 7 | 670 | 2,340 | 890 | 2,220 | 8,100 | 5,460 | 1,620 | 940 | 890 | 525 | 427 | 670 |
| 8 | 670 | 2,100 | 845 | 2,340 | 6,280 | 6,640 | 1,510 | 940 | 845 | 560 | 427 | 595 |
| 9 | 710 | 1,860 | 845 | 2,820 | 5,010 | 6,820 | 1,400 | 940 | 800 | 560 | 427 | 710 |
| 10 | 755 | 1,740 | 845 | 2,950 | 4,290 | 5,780 | 1,340 | 940 | 800 | 560 | 427 | 800 |
| 11 | 845 | 1,620 | 845 | 2,950 | 3,730 | 4,710 | 1,290 | 1,040 | 890 | 560 | 420 | 755 |
| 12 | 3,730 | 1,510 | 845 | 4,010 | 3,340 | 4,010 | 1,290 | 1,400 | 940 | 525 | 441 | 940 |
| 13 | 3,470 | 1,510 | 845 | 10,000 | 3,080 | 3,470 | 1,240 | 1,860 | 890 | 525 | 560 | 1,290 |
| 14 | 3,210 | 1,400 | 940 | 23,800 | 2,820 | 3,210 | 1,240 | 2,100 | 890 | 490 | 525 | 1,740 |
| 15 | 2,220 | 1,340 | 890 | 28,200 | 2,700 | 2,820 | 1,190 | 1,860 | 890 | 490 | 490 | 1,980 |
| 16 | 1,860 | 1,340 | 1,190 | 20,200 | 2,460 | 2,700 | 1,240 | 1,620 | 890 | 490 | 525 | 2,220 |
| 17 | 1,620 | 1,340 | 1,290 | 11,300 | 2,340 | 2,460 | 1,190 | 1,510 | 845 | 490 | 525 | 2,220 |
| 18 | 1,400 | 1,340 | 1,740 | 6,460 | 2,220 | 2,460 | 1,190 | 1,400 | 845 | 483 | 670 | 1,860 |
| 19 | 1,290 | 1,290 | 2,220 | 5,160 | 1,980 | 2,340 | 1,140 | 1,510 | 800 | 483 | 595 | 1,620 |
| 20 | 1,190 | 1,240 | 2,700 | 4,430 | 1,980 | 2,220 | 1,140 | 1,620 | 800 | 483 | 560 | 1,340 |
| 21 | 1,140 | 1,190 | 2,700 | 3,870 | 1,860 | 2,220 | 1,090 | 1,860 | 800 | 469 | 560 | 1,140 |
| 22 | 1,040 | 1,140 | 2,460 | 3,340 | 1,860 | 2,100 | 1,090 | 2,220 | 755 | 490 | 525 | 1,040 |
| 23 | 940 | 1,140 | 2,220 | 2,820 | 2,220 | 1,980 | 1,140 | 1,980 | 710 | 490 | 490 | 940 |
| 24 | 940 | 1,090 | 1,980 | 2,580 | 2,580 | 1,980 | 1,090 | 1,740 | 710 | 525 | 490 | 845 |
| 25 | 890 | 1,090 | 1,860 | 2,460 | 5,620 | 1,860 | 1,090 | 1,620 | 630 | 525 | 483 | 800 |
| 26 | 845 | 1,040 | 1,740 | 2,340 | 11,800 | 1,860 | 1,040 | 1,620 | 630 | 525 | 483 | 755 |
| 27 | 845 | 1,040 | 1,620 | 2,340 | 13,400 | 1,860 | 1,040 | 1,620 | 630 | 490 | 483 | 710 |
| 28 | 890 | 990 | 1,510 | 2,100 | 11,500 | 1,860 | 1,040 | 1,510 | 595 | 490 | 469 | 670 |
| 29 | 890 | 940 | 1,510 | 1,980 | -------- | 1,740 | 1,040 | 1,340 | 595 | 483 | 469 | 630 |
| 30 | 890 | 940 | 1,400 | 1,980 | -------- | 1,740 | 990 | 1,240 | 560 | 476 | 469 | 630 |
| 31 | 2,950 | -------- | 1,340 | 1,860 | -------- | 1,620 | -------- | 1,190 | -------- | 469 | 469 | ------ |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 3,730 | 630 | 1,290 | 0.454 | 0.52 |
| November | 11,100 | 940 | 2,390 | .842 | .94 |
| December | 2,700 | 845 | 1,370 | .482 | .56 |
| January | 28,200 | 1,340 | 5,340 | 1.88 | 2.17 |
| February | 13,400 | 1,740 | 4,700 | 1.65 | 1.72 |
| March | 7,000 | 1,620 | 3,330 | 1.17 | 1.35 |
| April | 1,740 | 990 | 1,290 | .454 | .51 |
| May | 2,220 | 940 | 1,400 | .493 | .57 |
| June | 1,090 | 560 | 816 | .287 | .32 |
| July | 560 | 469 | 516 | .182 | .21 |
| August | 670 | 420 | 488 | .172 | .20 |
| September | 2,220 | 441 | 989 | .348 | .39 |
| The year | 28,200 | 420 | 1,980 | .697 | 9.46 |

### 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 554.24 feet above mean sea level.

DRAINAGE AREA.—3,180 square miles.

RECORDS AVAILABLE.—October, 1921, to September, 1930.

EXTREMES.—Maximum discharge during year, 25,700 second-feet Jan. 16 (gage height, 16.30 feet); minimum discharge, 435 second-feet Aug. 10–12; minimum gage height, 1.04 feet Aug. 11, 12.

1921–1930: 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. Discharge estimated Dec. 3, Aug. 29 to Sept. 1.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 710 | 3,690 | 1,020 | 1,600 | 1,960 | 10,100 | 1,780 | 1,100 | 1,180 | 675 | 468 | 500 |
| 2 | 710 | 12,200 | 900 | 2,160 | 2,160 | 6,710 | 1,780 | 1,100 | 1,180 | 640 | 468 | 500 |
| 3 | 710 | 11,500 | 960 | 2,060 | 2,600 | 5,120 | 1,870 | 1,100 | 1,100 | 640 | 468 | 500 |
| 4 | 745 | 7,350 | 1,020 | 2,060 | 5,660 | 4,470 | 1,960 | 1,020 | 1,020 | 605 | 468 | 468 |
| 5 | 745 | 4,600 | 940 | 2,270 | 8,150 | 3,950 | 1,960 | 1,020 | 980 | 605 | 468 | 500 |
| 6 | 780 | 3,440 | 940 | 2,270 | 10,600 | 3,560 | 1,870 | 1,020 | 940 | 605 | 468 | 500 |
| 7 | 745 | 2,960 | 980 | 2,380 | 11,200 | 7,190 | 1,780 | 1,020 | 940 | 570 | 468 | 3,690 |
| 8 | 745 | 2,490 | 980 | 2,720 | 7,670 | 6,100 | 1,690 | 1,020 | 900 | 605 | 468 | 1,600 |
| 9 | 980 | 2,160 | 980 | 2,840 | 5,950 | 6,400 | 1,600 | 1,020 | 860 | 570 | 468 | 1,430 |
| 10 | 860 | 2,060 | 940 | 3,080 | 5,120 | 7,030 | 1,520 | 1,020 | 820 | 570 | 435 | 1,430 |
| 11 | 1,020 | 1,960 | 940 | 3,320 | 4,340 | 6,100 | 1,430 | 1,020 | 940 | 605 | 435 | 1,180 |
| 12 | 3,080 | 1,780 | 940 | 4,340 | 3,820 | 4,860 | 1,430 | 1,100 | 980 | 570 | 435 | 1,520 |
| 13 | 3,320 | 1,690 | 1,180 | 12,200 | 3,560 | 4,080 | 1,690 | 1,870 | 940 | 570 | 780 | 1,260 |
| 14 | 4,470 | 1,690 | 1,100 | 16,800 | 3,080 | 3,690 | 1,520 | 1,870 | 940 | 535 | 980 | 1,520 |
| 15 | 2,960 | 1,600 | 1,100 | 23,600 | 2,840 | 3,200 | 1,430 | 1,870 | 940 | 500 | 605 | 3,440 |
| 16 | 2,270 | 1,520 | 1,100 | 25,200 | 2,840 | 2,960 | 1,340 | 1,780 | 940 | 535 | 535 | 2,490 |
| 17 | 1,960 | 1,520 | 1,340 | 20,800 | 2,720 | 2,840 | 1,340 | 2,270 | 940 | 500 | 605 | 2,490 |
| 18 | 1,690 | 1,520 | 1,430 | 9,900 | 2,490 | 2,600 | 1,260 | 1,690 | 900 | 500 | 640 | 2,380 |
| 19 | 1,520 | 1,520 | 2,840 | 6,870 | 2,270 | 2,490 | 1,260 | 2,060 | 860 | 500 | 745 | 1,960 |
| 20 | 1,340 | 1,340 | 2,490 | 5,380 | 2,160 | 2,380 | 1,260 | 1,780 | 860 | 500 | 675 | 1,780 |
| 21 | 1,260 | 1,340 | 2,960 | 4,730 | 2,060 | 2,270 | 1,180 | 1,690 | 820 | 468 | 605 | 1,520 |
| 22 | 1,180 | 1,340 | 2,720 | 3,820 | 2,060 | 2,270 | 1,180 | 2,060 | 780 | 468 | 570 | 1,340 |
| 23 | 1,100 | 1,260 | 2,490 | 3,440 | 2,380 | 2,160 | 1,180 | 2,270 | 780 | 500 | 570 | 1,180 |
| 24 | 1,100 | 1,180 | 2,270 | 3,080 | 2,720 | 2,060 | 1,180 | 2,060 | 745 | 570 | 535 | 1,100 |
| 25 | 1,020 | 1,180 | 2,060 | 3,080 | 3,820 | 1,960 | 1,180 | 1,780 | 745 | 570 | 535 | 980 |
| 26 | 980 | 1,180 | 1,960 | 2,840 | 11,200 | 2,060 | 1,180 | 1,690 | 820 | 570 | 500 | 900 |
| 27 | 980 | 1,100 | 1,870 | 2,490 | 13,200 | 2,060 | 1,180 | 1,690 | 745 | 535 | 500 | 780 |
| 28 | 980 | 1,100 | 1,780 | 2,270 | 14,100 | 1,960 | 1,100 | 1,690 | 675 | 500 | 500 | 780 |
| 29 | 1,020 | 1,020 | 1,690 | 2,060 | ------- | 1,960 | 1,180 | 1,520 | 640 | 500 | 500 | 745 |
| 30 | 980 | 1,020 | 1,600 | 2,060 | ------- | 1,870 | 1,180 | 1,430 | 640 | 468 | 500 | 1,730 |
| 31 | 2,380 | ------- | 1,600 | 2,060 | ------- | 1,870 | ------- | 1,260 | ------- | 468 | 500 | ------ |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 4,470 | 710 | 1,430 | 0.450 | 0.52 |
| November | 12,200 | 1,020 | 2,680 | .843 | .94 |
| December | 2,960 | 900 | 1,520 | .478 | .55 |
| January | 25,200 | 1,600 | 5,930 | 1.86 | 2.14 |
| February | 14,100 | 1,960 | 5,100 | 1.60 | 1.67 |
| March | 10,100 | 1,870 | 3,820 | 1.20 | 1.38 |
| April | 1,960 | 1,180 | 1,450 | .456 | .51 |
| May | 2,270 | 1,020 | 1,510 | .475 | .55 |
| June | 1,180 | 640 | 885 | .278 | .31 |
| July | 675 | 468 | 549 | .173 | .20 |
| August | 980 | 435 | 545 | .171 | .20 |
| September | 3,690 | 468 | 1,410 | .443 | .49 |
| The year | 25,200 | 435 | 2,220 | .698 | 9.46 |

### 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, 1930.

EXTREMES.—Maximum discharge during year, 9,840 second-feet Nov. 1 (gage height, 12.20 feet); minimum, 104 second-feet Aug. 11, 27 (gage height, 1.76 feet).

1921–1930: 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, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 143 | 8,340 | 186 | 305 | 387 | 1,240 | 324 | 218 | 218 | 138 | 107 | 115 |
| 2 | 138 | 1,720 | 175 | 305 | 410 | 1,020 | 344 | 212 | 212 | 129 | 115 | 115 |
| 3 | 133 | 1,090 | 175 | 570 | 512 | 810 | 305 | 205 | 212 | 129 | 115 | 107 |
| 4 | 148 | 750 | 180 | 486 | 1,160 | 810 | 324 | 212 | 186 | 124 | 111 | 107 |
| 5 | 158 | 690 | 192 | 410 | 2,060 | 690 | 305 | 212 | 186 | 124 | 111 | 115 |
| 6 | 133 | 512 | 180 | 410 | 1,560 | 950 | 286 | 212 | 192 | 115 | 109 | 115 |
| 7 | 143 | 460 | 186 | 364 | 1,240 | 2,060 | 344 | 218 | 186 | 124 | 111 | 133 |
| 8 | 138 | 410 | 192 | 410 | 1,020 | 2,060 | 286 | 218 | 180 | 115 | 107 | 286 |
| 9 | 133 | 364 | 186 | 486 | 880 | 1,560 | 268 | 218 | 169 | 180 | 107 | 251 |
| 10 | 138 | 305 | 180 | 541 | 810 | 1,160 | 286 | 251 | 175 | 148 | 111 | 251 |
| 11 | 158 | 286 | 186 | 660 | 690 | 1,020 | 251 | 1,240 | 205 | 124 | 104 | 218 |
| 12 | 950 | 324 | 192 | 720 | 630 | 810 | 251 | 720 | 218 | 124 | 111 | 251 |
| 13 | 1,400 | 251 | 199 | 5,540 | 600 | 810 | 251 | 541 | 218 | 129 | 124 | 950 |
| 14 | 660 | 234 | 218 | 9,260 | 600 | 720 | 251 | 410 | 192 | 120 | 115 | 950 |
| 15 | 435 | 286 | 205 | 4,330 | 541 | 660 | 251 | 364 | 180 | 120 | 138 | 950 |
| 16 | 364 | 286 | 251 | 2,060 | 512 | 600 | 251 | 324 | 180 | 107 | 143 | 1,020 |
| 17 | 286 | 286 | 364 | 1,880 | 486 | 570 | 251 | 324 | 175 | 111 | 251 | 570 |
| 18 | 268 | 251 | 410 | 1,160 | 410 | 570 | 251 | 305 | 175 | 111 | 158 | 460 |
| 19 | 234 | 268 | 1,090 | 950 | 410 | 512 | 234 | 600 | 169 | 107 | 164 | 344 |
| 20 | 234 | 251 | 750 | 950 | 410 | 486 | 234 | 660 | 164 | 111 | 148 | 286 |
| 21 | 218 | 251 | 660 | 810 | 387 | 460 | 234 | 512 | 158 | 111 | 120 | 251 |
| 22 | 175 | 218 | 410 | 600 | 387 | 435 | 218 | 435 | 153 | 124 | 129 | 218 |
| 23 | 192 | 199 | 410 | 541 | 435 | 410 | 251 | 344 | 148 | 153 | 124 | 212 |
| 24 | 186 | 212 | 387 | 570 | 1,090 | 410 | 234 | 410 | 143 | 153 | 115 | 192 |
| 25 | 175 | 218 | 344 | 570 | 5,430 | 410 | 218 | 410 | 133 | 153 | 115 | 212 |
| 26 | 158 | 218 | 324 | 512 | 5,540 | 410 | 218 | 324 | 143 | 133 | 115 | 175 |
| 27 | 175 | 192 | 324 | 460 | 2,240 | 364 | 218 | 305 | 140 | 138 | 104 | 153 |
| 28 | 180 | 180 | 324 | 460 | 1,560 | 364 | 234 | 286 | 133 | 133 | 115 | 153 |
| 29 | 192 | 186 | 305 | 410 | ------- | 344 | 218 | 251 | 143 | 115 | 111 | 148 |
| 30 | 186 | 186 | 286 | 410 | ------- | 344 | 218 | 234 | 143 | 115 | 111 | 148 |
| 31 | 950 | ------- | 251 | 387 | ------- | 344 | ------- | 234 | ------- | 115 | 111 | ------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 1,400 | 133 | 296 | 0.529 | 0.61 |
| November | 8,340 | 180 | 647 | 1.16 | 1.29 |
| December | 1,090 | 175 | 314 | .561 | .65 |
| January | 9,260 | 305 | 1,210 | 2.16 | 2.49 |
| February | 5,540 | 387 | 1,160 | 2.07 | 2.16 |
| March | 2,060 | 344 | 755 | 1.35 | 1.56 |
| April | 344 | 218 | 260 | .464 | .52 |
| May | 1,240 | 205 | 368 | .657 | .76 |
| June | 218 | 133 | 174 | .311 | .35 |
| July | 180 | 107 | 127 | .227 | .26 |
| August | 251 | 104 | 124 | .221 | .25 |
| September | 1,020 | 107 | 315 | .562 | .63 |
| The year | 9,260 | 104 | 475 | .848 | 11.53 |

### 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 696.99 feet above mean sea level.

DRAINAGE AREA.—200 square miles.

RECORDS AVAILABLE.—October, 1928, to September, 1930.

EXTREMES.—Maximum discharge during year, 6,700 second-feet Feb. 25 (gage height, 6.26 feet); minimum discharge, 49 second-feet July 20, Aug. 7, 30; minimum gage height, 1.12 feet July 7–12.

1929–30: Maximum discharge, 8,860 second-feet May 6, 1929 (gage height, 7.22 feet); minimum discharge and gage height, those of July and August, 1930.

Maximum stage known, 13.7 feet Aug. 20, 1915.

REMARKS.—Records good.

*Daily and monthly discharge, in second-feet, 1929–30*

| Day | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 65 | 360 | 73 | 132 | 121 | 420 | 106 | 87 | 65 | 55 | 54 | 50 |
| 2 | 65 | 305 | 73 | 332 | 180 | 247 | 126 | 80 | 65 | 52 | 54 | 50 |
| 3 | 65 | 196 | 76 | 204 | 247 | 247 | 144 | 80 | 62 | 52 | 54 | 57 |
| 4 | 80 | 158 | 67 | 172 | 570 | 238 | 137 | 83 | 62 | 52 | 54 | 55 |
| 5 | 70 | 137 | 73 | 158 | 420 | 230 | 137 | 80 | 62 | 52 | 54 | 57 |
| 6 | 67 | 126 | 73 | 144 | 360 | 204 | 129 | 80 | 65 | 52 | 54 | 57 |
| 7 | 65 | 115 | 83 | 172 | 295 | 1,220 | 132 | 98 | 62 | 50 | 49 | 212 |
| 8 | 65 | 106 | 73 | 212 | 256 | 670 | 115 | 83 | 59 | 50 | 51 | 76 |
| 9 | 67 | 98 | 73 | 172 | 238 | 480 | 110 | 80 | 59 | 50 | 51 | 73 |
| 10 | 76 | 106 | 73 | 137 | 196 | 420 | 106 | 87 | 59 | 50 | 51 | 98 |
| 11 | 90 | 98 | 70 | 137 | 180 | 332 | 102 | 80 | 80 | 50 | 51 | 76 |
| 12 | 1,520 | 98 | 70 | 1,060 | 172 | 285 | 102 | 80 | 65 | 50 | 51 | 94 |
| 13 | 247 | 98 | 76 | 1,460 | 165 | 256 | 102 | 76 | 62 | 51 | 108 | 102 |
| 14 | 180 | 94 | 126 | 2,370 | 158 | 221 | 102 | 76 | 59 | 51 | 60 | 80 |
| 15 | 132 | 90 | 110 | 670 | 132 | 196 | 102 | 73 | 62 | 51 | 56 | 212 |
| 16 | 110 | 87 | 305 | 540 | 126 | 180 | 106 | 73 | 59 | 51 | 63 | 132 |
| 17 | 102 | 83 | 295 | 420 | 121 | 165 | 102 | 94 | 59 | 51 | 63 | 94 |
| 18 | 94 | 87 | 276 | 332 | 121 | 196 | 94 | 90 | 59 | 51 | 78 | 83 |
| 19 | 87 | 83 | 256 | 305 | 115 | 158 | 90 | 87 | 59 | 51 | 63 | 76 |
| 20 | 87 | 80 | 196 | 266 | 110 | 158 | 106 | 73 | 58 | 49 | 57 | 70 |
| 21 | 87 | 80 | 158 | 238 | 110 | 144 | 94 | 73 | 55 | 54 | 52 | 67 |
| 22 | 80 | 76 | 151 | 204 | 261 | 132 | 87 | 73 | 55 | 56 | 55 | 65 |
| 23 | 80 | 76 | 144 | 204 | 420 | 126 | 106 | 73 | 55 | 54 | 52 | 65 |
| 24 | 80 | 76 | 132 | 158 | 332 | 132 | 90 | 73 | 55 | 60 | 52 | 65 |
| 25 | 76 | 76 | 121 | 137 | 3,160 | 132 | 90 | 67 | 55 | 58 | 55 | 65 |
| 26 | 76 | 76 | 121 | 126 | 940 | 126 | 90 | 67 | 59 | 58 | 52 | 67 |
| 27 | 76 | 80 | 121 | 137 | 570 | 126 | 87 | 67 | 55 | 56 | 52 | 65 |
| 28 | 83 | 76 | 121 | 115 | 480 | 115 | 87 | 67 | 55 | 56 | 52 | 60 |
| 29 | 80 | 76 | 115 | 106 | ------- | 115 | 87 | 70 | 55 | 56 | 50 | 62 |
| 30 | 76 | 73 | 110 | 110 | ------- | 110 | 87 | 67 | 57 | 56 | 50 | 59 |
| 31 | 900 | ------- | 106 | 115 | ------- | 106 | ------- | 65 | ------- | 56 | 50 | ------- |

| Month | Maximum | Minimum | Mean | Per square mile | Run-off in inches |
|---|---|---|---|---|---|
| October | 1,520 | 65 | 162 | 0.810 | 0.93 |
| November | 360 | 73 | 112 | .560 | .62 |
| December | 305 | 67 | 126 | .630 | .73 |
| January | 2,370 | 106 | 356 | 1.78 | 2.05 |
| February | 3,160 | 110 | 377 | 1.88 | 1.96 |
| March | 1,220 | 106 | 254 | 1.27 | 1.46 |
| April | 144 | 87 | 105 | .525 | .59 |
| May | 98 | 65 | 77.5 | .388 | .45 |
| June | 80 | 55 | 59.9 | .300 | .33 |
| July | 60 | 49 | 52.9 | .264 | .30 |
| August | 108 | 49 | 56.4 | .282 | .33 |
| September | 212 | 50 | 81.5 | .408 | .46 |
| The year | 3,160 | 49 | 151 | .755 | 10.21 |

## MISCELLANEOUS DISCHARGE MEASUREMENTS

In addition to the records of stream flow obtained at gaging stations and reported in the preceding pages, measurements of flow are 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, 1930*

| Date | Stream | Tributary to— | Locality | Gage height | Discharge |
|---|---|---|---|---|---|
| | | | | *Feet* | *Sec.-ft.* |
| Sept. 25 | Gardiner River | Yellowstone River | Above mouth of Panther Creek, 6 miles southwest of Mammoth Hotel, Yellowstone National Park. | | 23.2 |
| 25 | Panther Creek | Gardiner River | At mouth, 6 miles southwest of Mammoth Hotel, Yellowstone National Park. | | 3.75 |
| 25 | Glen Creek | do | One-eighth mile above Rustic Falls, 3 miles southwest of Mammoth Hotel, Yellowstone National Park. | | 14.3 |
| 6 | Clark Fork | Yellowstone River | Above mouth of Pilot Creek, Wyo. | | 47 |
| 4 | do | do | In sec. 34, T. 57 N., R. 106 W. (unsurveyed), at Henry Sirrine ranch, Wyo. | | 132 |
| 6 | Pilot Creek | Clark Fork | At mouth of creek, Wyo. | | 6 |
| 11 | Lake Creek | do | Southeast corner sec. 6, T. 57 N., R. 106 W. (unsurveyed), 2 miles above mouth of creek, Wyo. | | 107 |
| 5 | Beartooth Creek | do | Outlet of Beartooth Lake, Wyo. | | 20 |
| 3 | Crandall Creek | do | SW. ¼ sec. 8, T. 56 N., R. 106 W., 600 feet above mouth of North Fork of Crandall Creek, Wyo. | | 42 |
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