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IOWA NATURAL RESOURCES COUNCIL
Bulletin No. 10

LOW-FLOW CHARACTERISTICS OF IOWA STREAMS THROUGH 1966

By
ALBERT J. HEINITZ
Hydraulic Engineer
U. S. Geological Survey

Prepared by the
U. S. GEOLOGICAL SURVEY
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LOW-FLOW CHARACTERISTICS OF IOWA STREAMS THROUGH 1966

by

ALBERT J. HEINITZ

ABSTRACT

This report contains information on average discharge, low-flow magnitude and frequency, duration of flow, storage requirements, and regional draft-storage relations for interior streams in the State of Iowa. Data on the duration of flow are given for 113 gaging stations and on low-flow frequency for 77 gaging stations. Storage requirements for selected draft rates are given for 65 gaging stations.

Annual 7-day low flows having a recurrence interval of 2 years were computed for 431 low-flow partial-record stations. For some partial-record stations, the 7-day low flow having a recurrence interval of 10 years is also given. These discharges were determined from correlations of periodic low-flow discharge measurements made at the partial-record sites and concurrent discharges at stream-gaging stations.

Gaging-station records for the 26-year period 1941-66 were used to define a relationship in which average discharge ($\overline{Q}$) is a function of size of drainage area (A) and normal annual precipitation for the period 1931-60 (P). The relation, $\overline{Q} = 0.0000007063A^{1.013}P^{3.88}$, can be used to compute the average flow for any location on Iowa streams not significantly affected by regulation.

INTRODUCTION

Purpose and Scope

This report is an updating of the Iowa Natural Resources Council Bulletin No. 9, "Low-flow Characteristics of Iowa Streams" (Schwob, 1958). This report contains the results of analyses based on an additional 10 years of streamflow record and supersedes Bulletin No. 9. The data analyzed were not adjusted to a common time period as was done in Bulletin No. 9.

The low flow of a stream is a limiting factor in the beneficial use of its water. Water requirements for domestic, municipal,

industrial, livestock use, waste dilution, irrigation, fish and wildlife, recreation, and power development are adversely affected by the occurrence and duration of critical periods of low flow. The increasing demands of these activities upon surface-water supplies emphasize the need for information on the low flow of streams. The purpose of this report is to present low-flow information on the interior streams of Iowa in a convenient and usable form.

This is a technical report which does not cover the requirements of Federal, State, or local regulatory agencies in the use or storage of water.

Acknowledgements

This report was prepared as part of a cooperative agreement between the Iowa Natural Resources Council, through the Iowa Geological Survey, and the U. S. Geological Survey. Streamflow records used in the preparation of the report were collected by the U. S. Geological Survey in cooperation with various Federal, State, and local agencies. The published records are contained in the annual series of U. S. Geological Survey Water-Supply Papers prior to 1961 and in the annual series of reports, "Water Resources Data for Iowa" since 1961. The cooperating agencies are identified in these publications.

The equation for average discharge is the result of a multiple regression analysis made by Harlan H. Schwob and Philip J. Carpenter, hydraulic engineers, U. S. Geological Survey.

AVAILABLE DATA

Gaging Stations

The primary data used in the analyses for this report are the published daily discharges for 113 stream-gaging stations. The locations of these stations are shown on plate 1. The daily discharge records furnished a detailed chronological record of the flow regime at gaging stations for the period of record. The period of record for each station is given in the "Records available" paragraph for each station in the section containing the gaging-station data. The daily-discharge records are published by water year, the 12-month period beginning October 1 and ending the following September 30. This period is designated as the year ending September 30. For example, the period October 1, 1965, to September 30, 1966, is the 1966 water year.

Low-Flow Partial-Record Stations

Additional data available for hydrologic analyses were low-flow discharge measurements made at 431 partial-record stations throughout the State. A low-flow partial-record station is a site at which low-flow data are collected on a systematic basis over a period of years for use in hydrologic analyses. The locations of these stations are shown on plate 2. The partial-record stations, with few exceptions, were established in 1957 and were measured on the average of about once a year. All discharge measurements made through the 1968 water year were used in the analysis of the partial-record stations.

DATA ANALYSIS

Average Discharge

The average discharge at a location on a stream defines the total water available from the stream at that point. The annual average discharge varies greatly from year to year but the average discharge derived from a long period of streamflow record is a stable value that is useful in many hydrologic studies. When so derived it furnishes the theoretical upper limit of usable flow.

The average discharge for the period 1941-66 has been determined for 106 stream-gaging stations in Iowa and 6 in Missouri. Not all stations had records of this length, but estimates for the short periods of missing record were made by correlation with nearby stations. The 112 average flows were used in a multiple regression to derive a relationship from which the average flow at any site on the interior streams of Iowa can be estimated.

Five variables were used in the regression analysis but only two, size of drainage area and the 1931-60 normal annual precipitation, were found significant. The formula from the regression computation is:

$$\overline{Q}=0.0000007063A^{1.013}P^{3.88}$$

in which

$\overline{Q}$ is the 1941-66 average discharge in cfs (cubic feet per second),

A is the drainage area in square miles, and

P is the normal annual precipitation in inches for the period 1931-60. This value is an average for the basin above the point of determination.

The standard error of estimate for the regression is 11.6 percent and the independent variables are significant at the 1-percent level.

Average discharges were computed for 20 of the 112 gaging stations for the period 1915-66. Four of these stations had records for the entire 52-year period, 6 had 45 years or more, and 4 stations had 40 years or more of record. The average discharges determined for the 1915-66 period were found to have an average ratio of 0.885 to the average discharges for the 1941-66 period. The drainage areas of the 20 stations ranged in size from 315 to 14,038 square miles.

A map and tables are included in this report to facilitate computation of the average discharge. The map (fig. 1) shows the isohyetals of the 1931-60 normal annual precipitation for the State. A visual estimate of the mean precipitation over a basin can be made from this map.

A solution for $A^{1.013}$ can be obtained from the following table by multiplying the selected drainage area by the factor listed for that size drainage area.

Drainage areas	Adjustment factor	Drainage areas	Adjustment factor
1.5 — 3.2	1.01	260 — 530	1.08
3.2 — 6.8	1.02	530 — 1,100	1.09
6.8 — 15	1.03	1,100 — 2,200	1.10
15 — 30	1.04	2,200 — 4,300	1.11
30 — 62	1.05	4,300 — 8,500	1.12
62 — 130	1.06	8,500 — 17,000	1.13
130 — 260	1.07		

A solution for the remainder of the equation, $0.0000007063P^{3.88}$, is given in table 1 for the range of precipitation values found in Iowa.

Table 1.—Values of $0.0000007063P^{3.88}$ in equation for average discharge

P inches	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
25	0.188	0.190	0.193	0.196	0.199	0.202	0.206	0.209	0.212	0.215
26	.218	.222	.225	.228	.232	.235	.239	.242	.246	.249
27	.253	.256	.260	.264	.268	.271	.275	.279	.283	.287
28	.291	.295	.299	.303	.308	.312	.316	.320	.325	.329
29	.334	.338	.343	.347	.352	.356	.361	.366	.371	.376
30	.380	.386	.390	.395	.401	.406	.411	.416	.422	.427
31	.432	.438	.443	.448	.454	.460	.465	.471	.477	.483
32	.489	.494	.501	.507	.513	.519	.525	.532	.538	.544
33	.550	.557	.564	.570	.577	.583	.590	.597	.604	.611
34	.618	.626	.632	.640	.647	.654	.662	.669	.677	.684
35	.692	.700	.707	.715	.723	.731	.739	.747	.755	.764

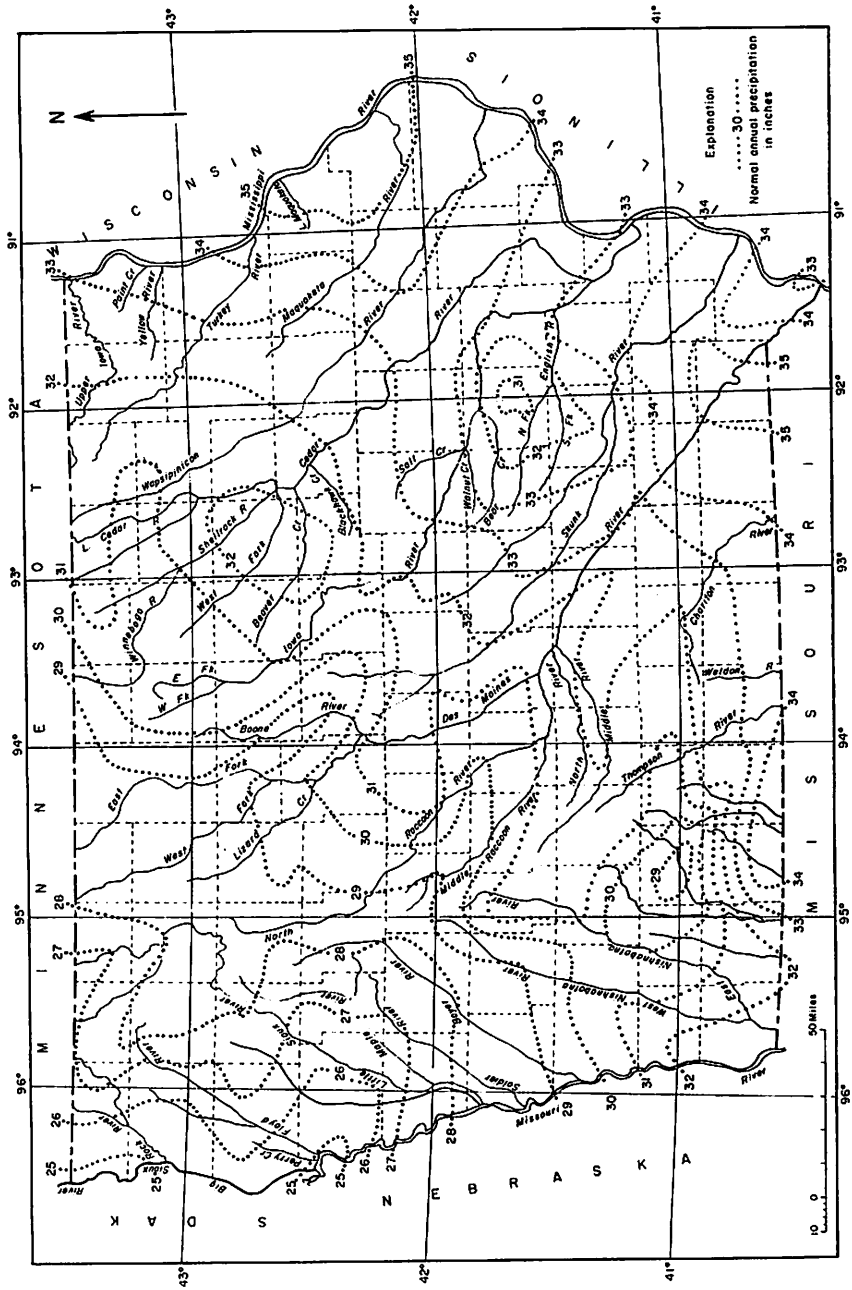


Figure 1. Isohyetal map of Iowa normal annual precipitation for period 1931-60.

Low-flow Magnitude and Frequency

It is frequently necessary, especially for economic studies, to know how often, on the average, certain minimum flows occur.

Low-flow frequency curves show the magnitude and frequency of minimum flows for periods of given length. They are based on analyses of past records of a stream and are used to estimate the frequency of flows.

The low-flow frequency data are analyzed by climatic year so that the complete low-water season is contained in the annual period. A climatic year is the 12-month period beginning April 1 and ending the following March 31, and is designated as the year beginning April 1. For example, the period April 1, 1965, to March 31, 1966, is the 1965 climatic year. Daily-discharge records through the 1965 climatic year were used in the analyses of the low-flow frequency data summarized in the gaging-station data.

Low-flow frequency curves were developed by ranking the

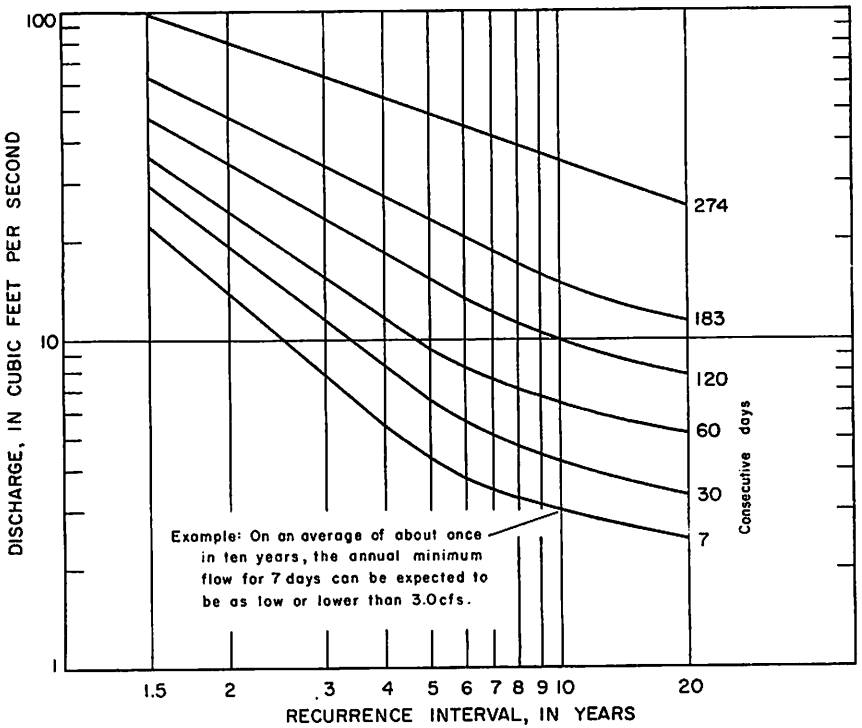


Figure 2. Low-flow frequency curves for Soldier River at Pisgah, Iowa

annual minimum discharges for each period of consecutive days in order of magnitude starting with the lowest as one. The average recurrence interval in years for each discharge was computed from the formula, $(n+1)/m$, where "n" is the number of years of record and "m" is the order of magnitude of the low flow. The recurrence intervals were plotted against their corresponding discharges on graph paper scaled to fit the theory of extreme values and a smooth curve was drawn through the plotted points for each low-flow period. A family of such curves is shown for the gaging station on Soldier River at Pisgah, Iowa, in figure 2. Curves similar to these, except for the 274-day period, can be drawn using the data tabulated in the section on "Gaging-station data".

Low-flow frequency data for the annual period and for the seasonal period, April 1 to September 30, were analyzed for all gaging stations with 10 years or more of record. Curves were prepared and summarized in tables for the stations where adequate definition of the curves was provided by the data.

Duration of Flow

The flow-duration curve is one of the common forms of presentation of streamflow distribution. It shows, for a particular period of time, the percentage of time that given flows were equaled or exceeded.

The slope of a duration curve indicates the variability of flow of the stream and the natural storage within the basin. A curve with a steep slope throughout denotes a highly variable stream whose flow is largely from surface runoff whereas a curve with a flat slope indicates a well sustained flow from surface or underground storage. Examples of flow-duration curves for two stations are shown in figure 3. The curve for the Upper Iowa River at Decorah shows the fairly well sustained low flow of the Upper Iowa River. The curve for the South Skunk River below Squaw Creek near Ames indicates a highly variable streamflow that has a poorly sustained low flow. The discharge is shown in cubic feet per second per square mile to facilitate comparison of streamflow variability.

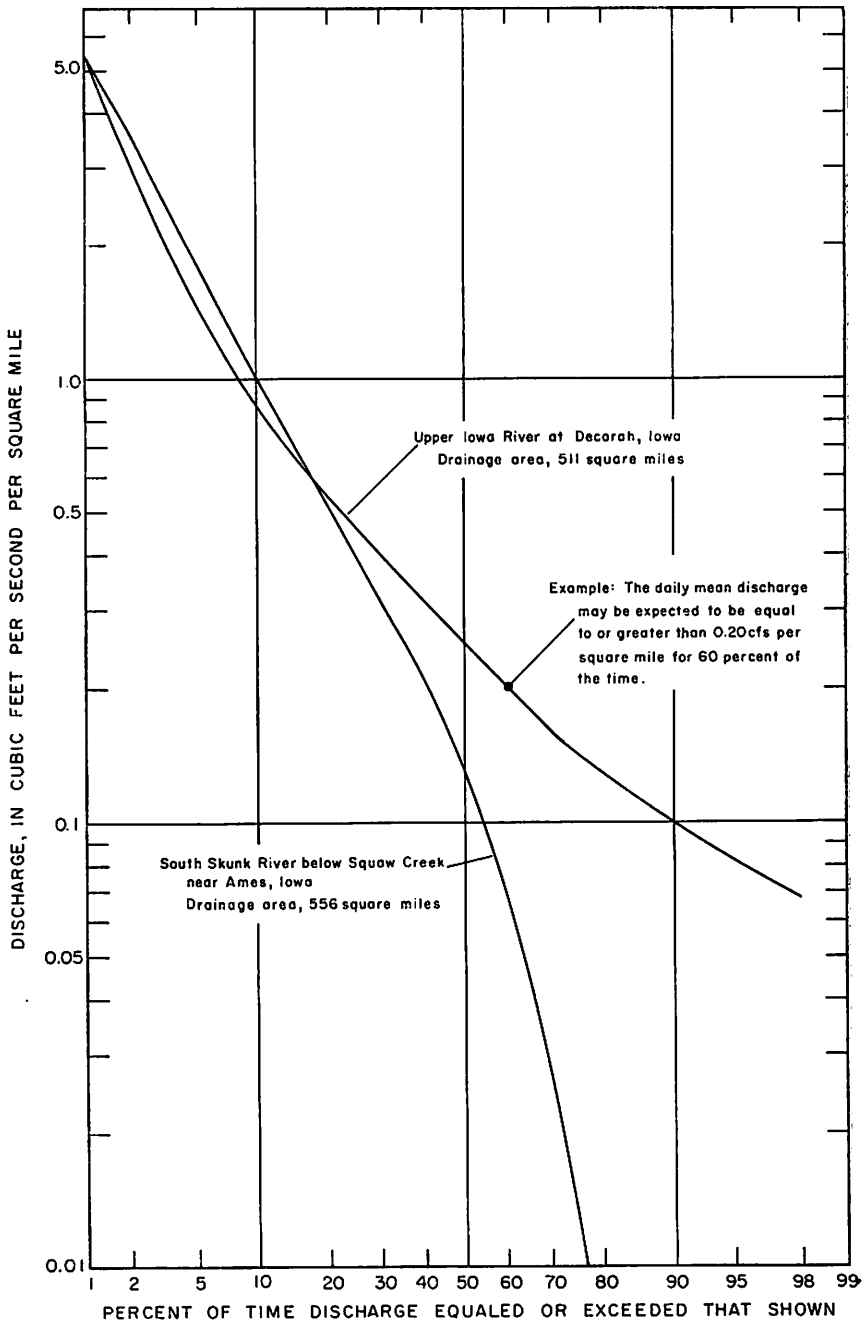


Figure 3. Flow-duration curves showing stream variability.

Daily discharge records through the 1966 water year were used in the analyses of flow-duration data. Curves for the water year and the seasonal period, April 1 to September 30, were drawn for all gaging stations with five or more years of record. These curves have been summarized in tables for the individual stations.

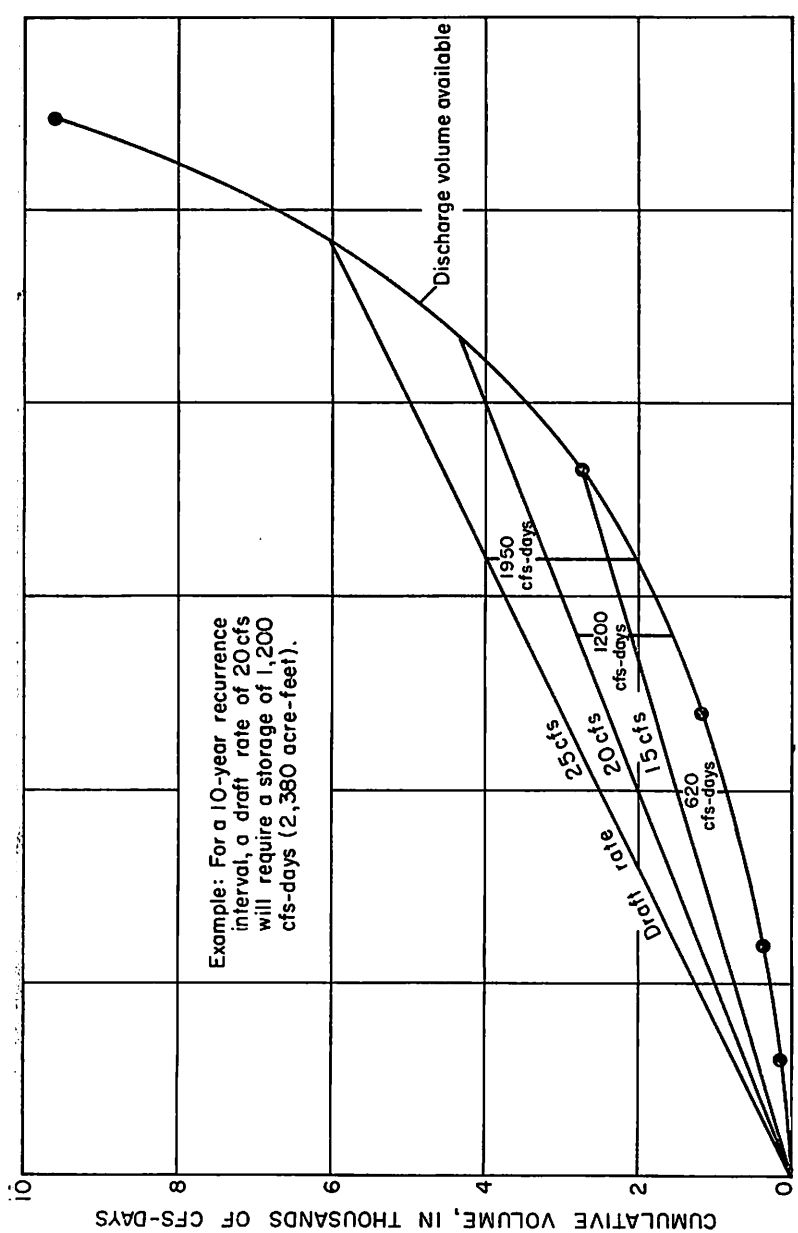


Figure 4. Frequency-mass curve and draft-storage lines for 10-year recurrence interval for Soldier River at Pisgah, Iowa.

Storage Required

Frequently during dry periods the flow of a stream is inadequate to meet the minimum requirements without the use of storage. Water stored during periods of high flow can be released to supplement low flows during these critical periods. The net storage required to meet specific draft rates can be estimated from analysis of low-flow records.

Discharge data from low-flow frequency curves were used in drawing frequency-mass curves that were used to compute storage requirements for various draft rates. For example, the volume of discharge available for the 183-day period (2,740 cfs-days) on the curve of figure 4 for the Soldier River at Pisgah was obtained by multiplying the 183-day discharge for the 10-year recurrence interval (15 cfs) by 183 days. Similar computations for other periods of consecutive days provided data needed to define the curve. A separate analysis must be made for each recurrence interval considered. The method used is described by Stall (1962).

The draft rates selected do not exceed the minimum annual average flow for the period of record, and the storage values computed represent within-year storage. Lines for the selected draft rates were superimposed on the frequency-mass curve. The required storage was determined by scaling the maximum vertical distance between the frequency-mass curve and the draft line.

Storage requirements were computed for most of the gaging stations for which adequate definition of low-flow frequency curves was possible. Some stations for which storage requirements were not computed include the lower Iowa River stations regulated by Coralville Reservoir and the lower Des Moines River stations which will be regulated by the Red Rock and Saylorville Reservoirs.

Net storage requirements for several draft rates are listed in the "Gaging-Station Data" section. For other draft rates within the range of those listed in the tables, net storage requirements can be picked from curves similar to that shown in figure 5 which is plotted from the station data (p. 116).

To obtain the total storage capacity required, dead storage and water losses from seepage, evaporation, and transpiration must be added to the net storage requirements given in this report.

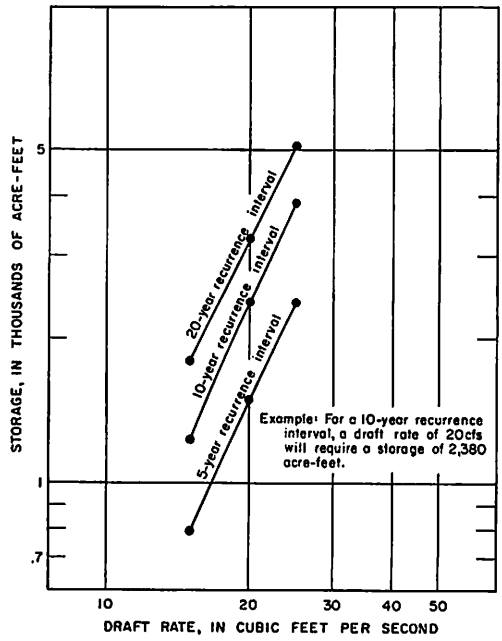


Figure 5. Storage-draft-frequency relations for Soldier River at Pisgah, Iowa.

Regional Draft-Storage Analysis

Regionalizing data is a means by which draft-storage requirements can be estimated for stream sites other than those where gaging stations are located. The regionalized curves shown in figure 6 were developed from draft-storage data computed for the gaging stations throughout the state. These curves were defined by plotting the annual average minimum flows for seven

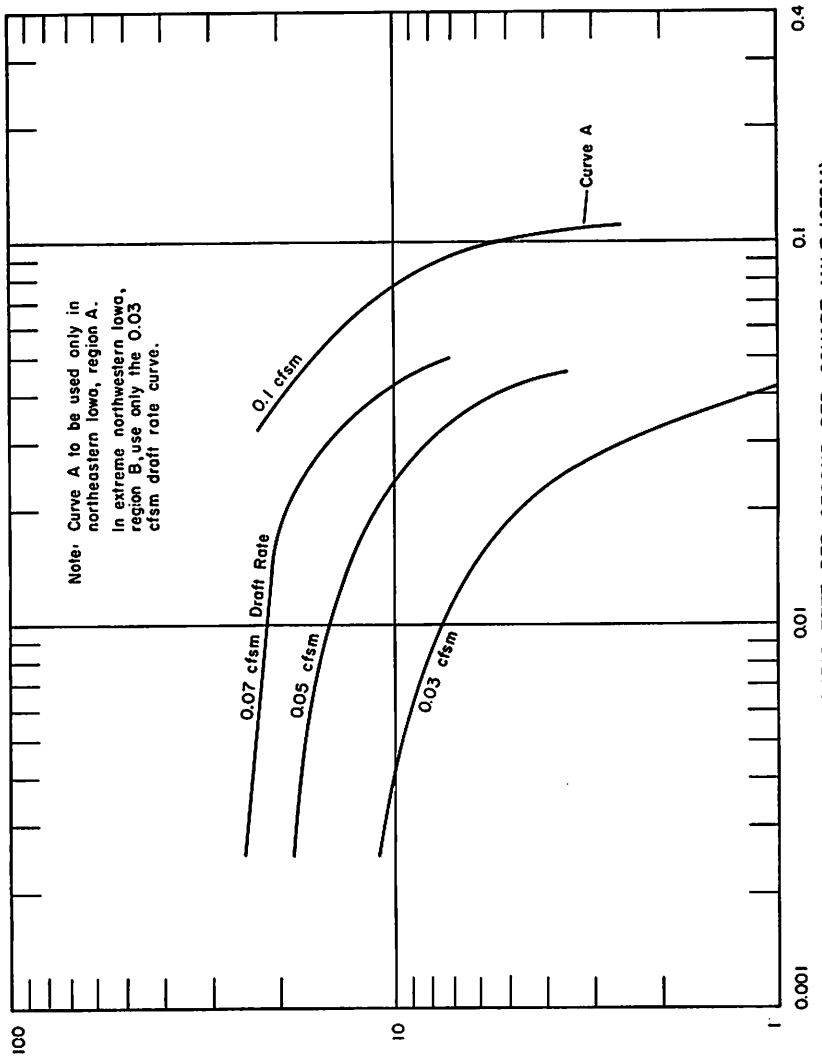


Figure 6. Regional draft-storage curves, 10-year recurrence interval.

consecutive days having a recurrence interval of 2 years (7-day Q_2) versus storage requirements for selected draft rates. To remove the effect of drainage-area size, all parameters were converted to per-square-mile basis.

Curve A is applicable only to northeastern Iowa, designated region A on plate 1. The other three curves apply to the remainder of the state except for the extreme northwestern corner, designated as region B on plate 1. In this region, within-year storage can sustain only the lowest of the draft rates considered, 0.03 cubic feet per second per square mile. The other curves in figure 6 should not be used in region B. Also, the reader is cautioned not to use draft rates greater than the minimum annual discharge.

To estimate required storage for an ungaged site, a 7-day Q_2 value can be determined for most locations by making a few low-flow discharge measurements, preferably over a period of several years. These discharge measurements are correlated with concurrent discharges for a nearby gaging station for which a 7-day Q_2 can be determined.

The 7-day Q_2 for the gaging station is transferred through the line of relation to obtain the 7-day Q_2 for the ungaged site. An estimate of required storage can now be made by dividing the 7-day Q_2 by the drainage area at the site and entering the appropriate regional draft-storage curve.

The regional draft-storage analysis was made for the 10-year recurrence interval rather than the 20-year recurrence interval because more draft-storage data were available at the gaging stations for this period.

The regional draft-storage relations should be useful for preliminary studies of storage requirements. Storage requirements must also be adjusted for reservoir seepage, sedimentation, and evaporation.

Low Flow at Partial-record Stations

The discharge measurements made at low-flow partial-record stations were correlated with concurrent discharges at nearby gaging stations to obtain curves of relation. From these, discharges for the 7-day Q_2 were determined. For stations having adequate correlation, the annual average minimum flows for 7 consecutive days having a recurrence interval of 10 years (7-day Q_{10}) were determined.

RELIABILITY OF RESULTS

Sustained low-flow discharges on streams of less than about 100 square miles are generally poorly defined throughout the State except in northeastern Iowa. Located in that area are nearly all the small streams for which reliable 7-day Q_{10} discharges can be estimated.

The 7-day Q_2 and 7-day Q_{10} discharges obtained by correlation for the partial-record stations are less accurate than those computed for the gaging stations. The reliability of low-flow data is closely related to the length of record available.

Flow-duration data are given for stations with as few as 5 years of record. For the stations having a short record, these data may not adequately represent conditions over a long period of time.

Storage requirements given in this report were computed without regard to the economic or feasibility aspects of storage. The draft rates analyzed are comparatively low and can be satisfied by within-year storage. Additional analysis would be needed to consider higher draft rates and long-period storage. As with the other data contained in this report, the reliability of storage requirements is directly related to length of record.

GAGING-STATION DATA

The gaging stations and low-flow partial-record stations for which data are given in this report, are numbered and listed in the downstream order used in the Water-Supply Papers of the U. S. Geological Survey. In this system, all stations on a tributary entering above a main-stem station are listed before that station. If a tributary enters between two main-stem stations, it is listed between them. The listing starts with streams contributing to the Mississippi River drainage (part 5), and those in the Missouri River drainage (part 6) follow. The part number is the first digit of the station number. The station numbers are used to locate the stations on plate 1.

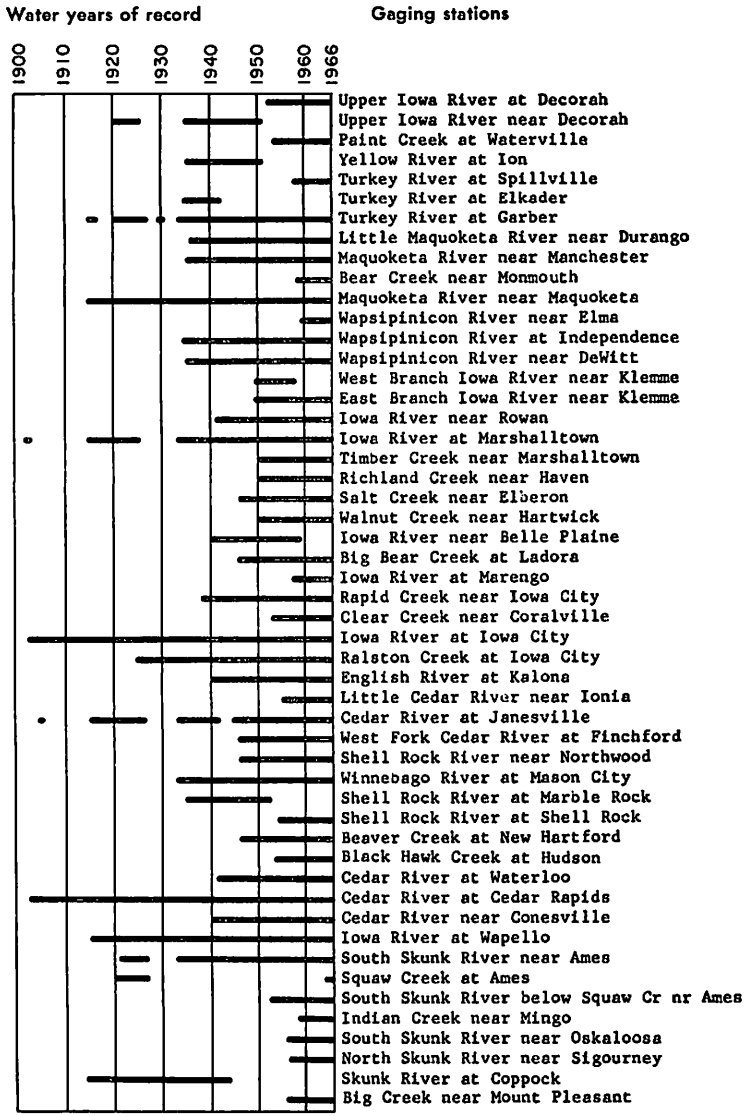
Following the station number and name are descriptive paragraphs containing information on the location, drainage area, records available, and average discharge. The first figure given for average discharge is computed from the actual record. The second figure is average discharge computed from the formula developed in the multiple regression analysis. The min-

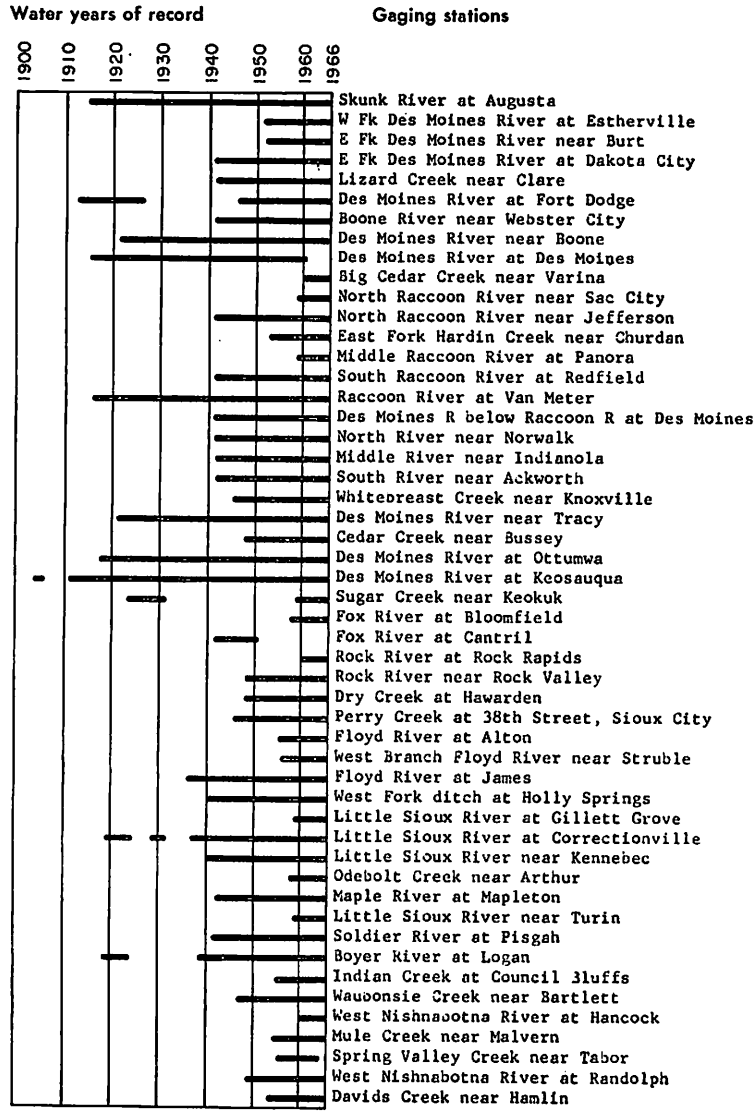
imum discharges for the period of record are tabulated following the descriptive paragraphs. The maximum daily and momentary discharges are given to indicate the range of flow.

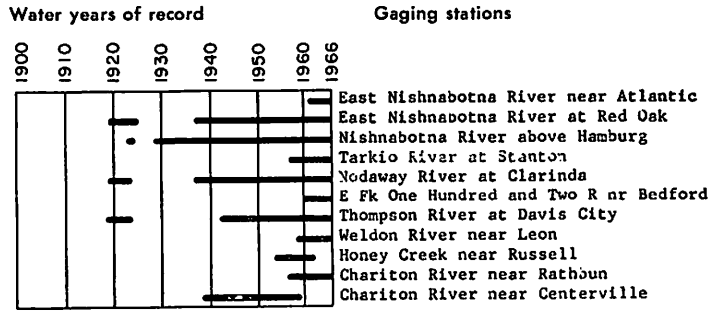
For some stations the low-flow magnitude and frequency could not be derived from station data. The 7-day Q_2 and 7-day Q_{10} discharges for these stations were obtained by correlation with other stream-gaging stations.

Information pertaining to conditions which affect the natural flow at the gaging stations is given under "Remarks" for the stations thus affected.

The data contained in the tables on the magnitude and frequency of low flow, duration of flow, and storage requirements are explained in preceding sections of this report.


Water years of record
Gaging stations
1900
1910
1920
1930
1940
1950
1960
1966
Upper Iowa River at Decorah
Upper Iowa River near Decorah
Paint Creek at Waterville
Yellow River at Ion
Turkey River at Spillville
Turkey River at Elkader
Turkey River at Garber
Little Maquoketa River near Durango
Maquoketa River near Manchester
Bear Creek near Monmouth
Maquoketa River near Maquoketa
Wapsipinicon River near Elma
Wapsipinicon River at Independence
Wapsipinicon River near DeWitt
West Branch Iowa River near Klemme
East Branch Iowa River near Klemme
Iowa River near Rowan
Iowa River at Marshalltown
Timber Creek near Marshalltown
Richland Creek near Haven
Salt Creek near Elberon
Walnut Creek near Hartwick
Iowa River near Belle Plaine
Big Bear Creek at Ladora
Iowa River at Marengo
Rapid Creek near Iowa City
Clear Creek near Coralville
Iowa River at Iowa City
Ralston Creek at Iowa City
English River at Kalona
Little Cedar River near Ionia
Cedar River at Janesville
West Fork Cedar River at Finchford
Shell Rock River near Northwood
Winnebago River at Mason City
Shell Rock River at Marble Rock
Shell Rock River at Shell Rock
Beaver Creek at New Hartford
Black Hawk Creek at Hudson
Cedar River at Waterloo
Cedar River at Cedar Rapids
Cedar River near Conesville
Iowa River at Wapello
South Skunk River near Ames
Squaw Creek at Ames
South Skunk River below Squaw Cr nr Ames
Indian Creek near Mingo
South Skunk River near Oskaloosa
North Skunk River near Sigourney
Skunk River at Coppock
Big Creek near Mount Pleasant


Water years of record
Gaging stations
1900
1910
1920
1930
1940
1950
1960
1966
Skunk River at Augusta
W Fk Des Moines River at Estherville
E Fk Des Moines River near Burt
E Fk Des Moines River at Dakota City
Lizard Creek near Clare
Des Moines River at Fort Dodge
Boone River near Webster City
Des Moines River near Boone
Des Moines River at Des Moines
Big Cedar Creek near Varina
North Raccoon River near Sac City
North Raccoon River near Jefferson
East Fork Hardin Creek near Churdan
Middle Raccoon River at Panora
South Raccoon River at Redfield
Raccoon River at Van Meter
Des Moines R below Raccoon R at Des Moines
North River near Norwalk
Middle River near Indianola
South River near Ackworth
Whitebreast Creek near Knoxville
Des Moines River near Tracy
Cedar Creek near Bussey
Des Moines River at Ottumwa
Des Moines River at Keosauqua
Sugar Creek near Keokuk
Fox River at Bloomfield
Fox River at Cantril
Rock River at Rock Rapids
Rock River near Rock Valley
Dry Creek at Hawarden
Perry Creek at 38th Street, Sioux City
Floyd River at Alton
West Branch Floyd River near Struble
Floyd River at James
West Fork ditch at Holly Springs
Little Sioux River at Gillett Grove
Little Sioux River at Correctionville
Little Sioux River near Kennebec
Odebolt Creek near Arthur
Maple River at Mapleton
Little Sioux River near Turin
Soldier River at Pisgah
Boyer River at Logan
Indian Creek at Council Bluffs
Waubonsie Creek near Bartlett
West Nishnabotna River at Hancock
Mule Creek near Malvern
Spring Valley Creek near Tabor
West Nishnabotna River at Randolph
Davids Creek near Hamlin


Water years of record
Gaging stations
1900
1910
1920
1930
1940
1950
1960
1966
East Nishnabotna River near Atlantic
East Nishnabotna River at Red Oak
Nishnabotna River above Hamburg
Tarkio River at Stanton
Nodaway River at Clarinda
E Fk One Hundred and Two R nr Bedford
Thompson River at Davis City
Weldon River near Leon
Honey Creek near Russell
Chariton River near Rathbun
Chariton River near Centerville

UPPER IOWA RIVER BASIN

5-3875. Upper Iowa River at Decorah, Iowa

LOCATION.—Lat 43°18'20", long 91°48'05", in NE¼SW¼ sec. 16, T.98 N., R.8 W., on right bank 1,200 ft. upstream from bridge on State Highway 52, 1,500 ft. downstream from Dry Run cutoff, and 3 miles upstream from Trout Run.

DRAINAGE AREA.—511 sq mi.

RECORDS AVAILABLE.—August 1951 to September 1966.

AVERAGE DISCHARGE.—15 years, 264 cfs; computed, 1941-66, 254 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	22	22.1	23.8	25.4	32.9	35.4
Climatic year	1958	1958	1958	1958	1958	1958

Maximum flow for period of record:

Daily, 15,000 cfs March 27, 1961; peak, 20,200 cfs March 27, 1961.

Magnitude and frequency of annual and seasonal low flow for climatic years 1952-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	59	51	42	35	31	27	24	22
30	69	59	49	40	35	31	27	24
60	77	66	54	44	39	34	29	26
120	106	84	65	50	43	38	33	30
183	145	110	81	61	52	44	37	33
	Lowest average flow for period April 1 to September 30							
7	95	76	60	50	45	41	37	35
30	112	87	68	56	50	45	40	38
60	150	108	81	68	55	49	43	40

Duration table of daily discharge for annual and seasonal periods for water years 1952-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
2,700	1,550	730	440	275	205	162	130	104	84	68	52	43	35	27
Discharge for period April 1 to September 30														
8,100	1,800	840	515	330	250	202	165	136	109	87	67	55	45	40

5-3880. Upper Iowa River near Decorah, Iowa

LOCATION.—Lat 43°18'20", long 91°45'00", in NE¼SE¼ sec. 14, T.98 N., R.8 W., on left bank 500 feet upstream from county highway bridge in Freeport, 1.2 miles downstream from Trout Run, and 3 miles downstream from Decorah.

DRAINAGE AREA.—568 sq. mi.

RECORDS AVAILABLE.—August 1913 to November 1914 "(no winter record)", May 1919 to June 1927, July 1933 to September 1951.

AVERAGE DISCHARGE.—25 years (1919-26, 1933-51), 338 cfs; computed, 1941-66, 283 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	*10	13.4	26.3	31.5	57.3	61.9
Climatic year	1934	1934	1934	1934	1949	1949

* On many days caused by regulation

Maximum flow for period of record:

Daily, 11,800 cfs March 16, 1945; peak, 28,500 cfs. May 29, 1941.

Magnitude and frequency of annual low flow for climatic years 1920-26, 1934-50

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	71	56	47	41	39	37	36	36
30	91	71	57	48	45	43	41	40
60	102	78	63	55	52	49	48	47
120	128	97	76	62	59	56	54	52
183	160	116	89	74	68	64	62	61

Duration table of daily discharge for annual and seasonal periods for water years 1920-27, 1934-51

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
3,100	2,100	1,100	660	380	270	207	162	126	100	80	62	52	41	31
Discharge for period April 1 to September 30														
3,000	2,000	1,170	750	470	345	268	210	167	130	97	76	64	45	29

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	60	65	70
10	1.39	2.18	3.17
20	1.79	2.58	3.97

PAINT CREEK BASIN

5-3885. Paint Creek at Waterville, Iowa

LOCATION.—Lat 43°12'35", long 91°18'20", in NW¼NW¼ sec. 22, T.97 N., R.4 W., on right bank 20 ft. downstream from bridge on State Highway 373 and 0.5 miles northwest of Waterville.

DRAINAGE AREA.—42.8 sq. mi.

RECORDS AVAILABLE.—October 1952 to September 1966.

AVERAGE DISCHARGE.—14 years, 15.0 cfs; computed, 1941-66, 24.4 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	1.1	1.1	1.3	1.4	1.6	1.7
Climatic year	1958	1958	1958	1958	1958	1958

Maximum flow for period of record:

Daily, 1,390 cfs March 28, 1962; peak, 3,250 cfs March 28, 1962.

Magnitude and frequency of annual and seasonal low flow for climatic years 1953-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	3.5	2.8	2.2	1.7	1.5	1.4	1.2	1.1
30	4.3	3.4	2.7	2.2	2.0	1.8	1.6	1.5
60	5.0	3.9	3.1	2.6	2.3	2.1	1.9	1.8
120	6.2	4.9	3.9	3.1	2.8	2.5	2.3	2.1
183	7.6	6.0	4.7	3.7	3.3	3.0	2.7	2.5
	Lowest average flow for period April 1 to September 30							
7	5.0	3.6	2.7	2.1	1.8	1.6	1.4	1.3
30	6.1	4.4	3.3	2.6	2.3	2.1	1.9	1.8
60	7.4	5.3	4.0	3.2	2.9	2.7	2.5	2.4

Duration table of daily discharge for annual and seasonal periods for water years 1953-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
215	102	32	19	12	9.2	7.4	6.2	5.1	4.2	3.3	2.5	2.0	1.6	1.4
Discharge for period April 1 to September 30														
175	100	35	21	14	11	8.4	6.8	5.6	4.6	3.7	2.8	2.2	1.7	1.5

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	2.0	2.5	3.0
5	....	0.02	0.06
10	....	0.05	0.13
20	0.02	0.10	0.21

5-3890. Yellow River at Ion, Iowa

LOCATION.—Lat 43°06'35", long 91°15'55", in SE¼SW¼ sec. 24, T.96 N., R.4 W., on downstream side of highway bridge at Ion, 7.5 miles northwest of McGregor and 8 miles upstream from mouth.

DRAINAGE AREA.—221 sq. mi.

RECORDS AVAILABLE.—October 1934 to September 1951.

AVERAGE DISCHARGE.—17 years, 140 cfs; computed, 1941-66, 127 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	14	17.7	19.4	20.1	22.1	23.1
Climatic year	1939	1937	1937	1937	1937	1937

Maximum flow for period of record:

Daily, 9,810 cfs March 26, 1950; peak, 18,500 cfs May 29, 1941.

Magnitude and frequency of annual and seasonal low flow for climatic years 1935-50

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	35	28	23	20	19	18	18	17
30	42	34	27	23	21	20	19	19
60	48	38	30	25	23	21	20	20
120	60	45	35	28	25	24	22	22
183	74	58	42	33	30	27	25	24
	Lowest average flow for period April 1 to September 30							
7	55	43	32	25	23	22	21	21
30	66	51	37	28	25	24	23	23
60	79	60	42	31	28	26	25	25

Duration table of daily discharge for annual and seasonal periods for water years 1935-51

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
1,500	870	410	236	138	99	78	64	54	45	36	28	24	22	21
Discharge for period April 1 to September 30														
1,400	860	440	265	165	123	99	81	68	56	46	35	28		

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	....	25	30
5	....	....	0.60
10	....	0.54	1.53
20	....	0.79	2.28

TURKEY RIVER BASIN

5-4116. Turkey River at Spillville, Iowa

LOCATION.—Lat 43°12'30", long 91°57'00", in SW¼NE¼ sec. 19, T.97 N., R.9 W., on right bank 60 ft. downstream from county highway bridge, at north edge of Spillville, 150 ft. downstream from old mill dam, and 3,000 ft. upstream from Wonder Creek.

DRAINAGE AREA.—177 sq. mi.

RECORDS AVAILABLE.—June 1956 to September 1966.

AVERAGE DISCHARGE.—10 years, 88.5 cfs; computed, 1941-66, 86.9 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	4.4	4.5	4.7	5.2	7.3	8.8
Climatic year	1958	1958	1958	1958	1958	1958

Maximum flow for period of record:

Daily, 5,810 cfs March 27, 1961; peak, 7,380 cfs March 29, 1962.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 15 cfs; 10 years, 7.6 cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1957-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
1,020	560	252	150	90	65	50	39	31	25	19	14	11	7.7	5.4
Discharge for period April 1 to September 30														
1,120	620	290	177	108	79	61	48	39	32	26	19	15	12	11

5-4120. Turkey River at Elkader, Iowa

LOCATION.—Lat 42°51'05", long 91°24'15", in NW¼SW¼ sec. 23, T.93 N., R.5 W., in tailrace of Central States Power & Light Corporation's hydroelectric plant in Elkader, 2.7 miles upstream from Roberts Creek.

DRAINAGE AREA.—891 sq. mi.

RECORDS AVAILABLE.—July 1933 to September 1942.

AVERAGE DISCHARGE.—9 years, 484 cfs; computed, 1941-66, 476 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	21	25.9	32.4	36.5	57.6	66.6
Climatic year	1939	1939	1939	1939	1939	1939

Maximum flow for period of record:

Daily, 16,800 cfs May 31, 1941; peak, 19,300 cfs May 31, 1941.

Turkey River at Elkader — Continued

Duration table of daily discharge for annual and seasonal periods for water years 1933-42.

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
4,500	3,100	1,700	1,020	570	385	280	218	170	130	96	67	51	39	34
Discharge for period April 1 to September 30														
4,500	3,100	1,700	1,070	650	465	350	270	207	156	112	75	56	42	35

5-4125. Turkey River at Garber, Iowa

LOCATION.—Lat 42°44'20", long 91°15'45", in NE¼SW¼ sec. 36, T.92 N., R.4 W., on left bank 10 ft. downstream from highway bridge at Garber, 800 ft. upstream from Wayman Creek, 2,000 ft. downstream from Elk Creek, and 1 mile downstream from Volga River, and 21 miles upstream from mouth.

DRAINAGE AREA.—1,545 sq. mi.

RECORDS AVAILABLE.—August 1913 to November 1916, May 1919 to September 1927, April 1929 to September 1930, October 1932 to September 1966.

AVERAGE DISCHARGE.—46 years (1913-16, 1919-27, 1929-30, 1932-66), 868 cfs; computed, 1941-66, 861 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	49	51.1	59.1	65.2	89.1	97.8
Climatic year	1939	1939	1939	1958	1958	1958

Maximum flow for period of record:

Daily, 25,300 cfs February 23, 1922; peak, 32,300 cfs February 23, 1922.

Magnitude and frequency of annual and seasonal low flow for climatic years 1914-15, 1920-26, 1933-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	200	150	110	90	83	75	67	62
30	245	185	132	103	91	82	74	68
60	285	210	150	120	110	98	88	80
120	390	285	200	152	132	118	107	100
183	490	350	240	172	146	128	114	108
	Lowest average flow for period April 1 to September 30							
7	270	203	146	111	105	99	92	89
30	350	263	185	138	128	119	110	105
60	480	345	232	180	165	152	140	132

Turkey River at Garber — Continued

Duration table of daily discharge for annual and seasonal periods for water years 1914-16, 1920-27, 1930, 1933-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
8,000	5,300	2,900	1,750	1,020	730	560	435	340	270	207	150	118	92	79
Discharge for period April 1 to September 30														
7,600	5,500	3,100	1,950	1,200	870	680	545	435	340	253	180	138	106	90

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	100	125	150
5	....	....	3.57
10	....	3.17	8.13
20	2.18	6.94	15.2

LITTLE MAQUOKETA RIVER BASIN

5-4145. Little Maquoketa River near Durango, Iowa

LOCATION.—Lat 42°33'25", long 90°44'45", in NW¼NE¼ sec. 5, T.89 N., R.2 E., on left bank 10 ft. upstream from highway bridge, 1½ miles east of Durango, 5 miles northwest of Dubuque, and 7.5 (revised) miles upstream from mouth.

DRAINAGE AREA.—130 sq. mi.

RECORDS AVAILABLE.—October 1934 to September 1966.

AVERAGE DISCHARGE.—32 years, 79.0 cfs; computed, 1941-66, 96.5 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	5	5.7	6.5	7.2	11.2	12.1
Climatic year	1936	1936	1936	1936	1955	1955

Maximum flow for period of record:

Daily, 6,590 cfs June 13, 1947; peak, 23,000 cfs June 13, 1947.

Little Maquoketa River near Durango — Continued

Magnitude and frequency of annual and seasonal low flow for climatic years 1935-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	15	12	9.7	8.1	7.4	6.9	6.4	6.0
30	19	15	12	10	9.1	8.3	7.5	7.1
60	25	18	14	12	10	9.6	9.0	8.6
120	30	22	18	15	13	12	11	11
183	38	28	21	17	16	15	14	14
	Lowest average flow for period April 1 to September 30							
7	18	14	11	8.9	8.0	7.1	6.3	5.9
30	25	18	14	11	9.8	8.7	7.8	7.2
60	35	27	20	16	14	12	11	10

Duration table of daily discharge for annual and seasonal periods for water years 1935-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
950	520	240	137	76	54	42	33	26	21	17	13	11	8.6	7.5
Discharge for period April 1 to September 30														
780	465	240	142	86	62	47	37	30	24	18	13	11	8.2	6.9

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	15	20	25
5	0.40	1.29	2.88
10	.79	1.94	3.67
20	1.09	2.38	3.97

MAQUOKETA RIVER BASIN

5-4170. Maquoketa River near Manchester, Iowa

LOCATION.—Lat 42°27'25", long 91°25'55", in NW¼NE¼ sec. 9, T.88 N., R.5 W., on left bank 2 miles southeast of Manchester and 4.7 miles downstream from Honey and Prairie Creeks.

DRAINAGE AREA.—305 sq. mi.

RECORDS AVAILABLE.—April 1933 to September 1966.

AVERAGE DISCHARGE.—33 years, 195 cfs; computed 1941-66, 175 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	6	9.3	11.7	17.1	25.6	27.8
Climatic year	1934	1934	1934	1934	1958	1958

Maximum flow for period of record:

Daily, 16,000 cfs June 13, 1947; peak 20,000 cfs June 13, 1947.

Remarks—Diurnal fluctuation at low stages caused by powerplant 2 miles above station.

Magnitude and frequency of annual and seasonal low flow for climatic years 1934-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	45	38	31	26	24	21	19	17
30	54	43	36	31	29	26	24	22
60	62	47	41	36	33	31	28	26
120	80	60	47	41	38	35	32	31
183	102	72	52	43	40	37	35	33
	Lowest average flow for period April 1 to September 30							
7	61	48	38	32	30	28	26	26
30	74	58	46	38	36	33	32	31
60	93	70	54	44	40	37	35	34

Duration table of daily discharge for annual and seasonal periods for water years 1934-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
2,000	1,200	590	360	207	148	112	90	72	58	47	38	32	26	22
Discharge for period April 1 to September 30														
1,850	1,200	620	380	228	167	130	103	84	68	54	42	34	27	23

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	35	40	45
5	....	....	0.60
10	0.80	1.19	2.78
20	.91	2.78	4.76

5-4177. Bear Creek near Monmouth, Iowa

LOCATION.—Lat 42°02'30", long 90°53'00", in NE¼SE¼ sec. 31, T.84 N., R.1 E., on right bank 15 ft. downstream from highway bridge, 1.6 miles upstream from Rat Run, 2.8 miles south of Monmouth, and 8.2 miles upstream from mouth.

DRAINAGE AREA.—61.3 sq. mi.

RECORDS AVAILABLE.—October 1957 to September 1966.

AVERAGE DISCHARGE.—9 years, 41.7 cfs; computed, 1941-66, 43.6 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	1.8	1.8	2.3	2.4	2.9	3.1
Climatic year	1958	1958	1958	1958	1958	1958

Maximum flow for period of record:

Daily, 3,680 cfs September 21, 1965; peak, 7,340 cfs September, 1965.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 4.8 cfs; 10 years, 2.0 cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1958-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
440	265	130	80	46	32	23	17	13	9.4	6.2	4.1	3.1	2.4	2.2
Discharge for period April 1 to September 30														
350	220	120	80	49	34	25	19	15	11	8.3	5.7	4.4	3.3	2.7

5-4185. Maquoketa River near Maquoketa, Iowa

LOCATION.—Lat 42°05'05", long 90°37'55", in SW¼NE¼ sec. 17, T.84 N., R.3 E., on right bank 500 ft. upstream from bridge on State Highway 62, 1,200 ft. upstream from Prairie Creek, 2.0 miles northeast of Maquoketa, and 2.2 miles downstream from North Fork, and 28 miles above the mouth.

DRAINAGE AREA.—1,553 sq. mi.

RECORDS AVAILABLE.—September 1913 to September 1966. Prior to October 1939, published as "below North Fork near Maquoketa".

AVERAGE DISCHARGE.—53 years, 958 cfs; computed, 1941-66, 1,068 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	105	105	117	157	172	185
Climatic year	1935	1935	1935	1958	1958	1958

Maximum flow for period of record:

Daily, 34,800 cfs June 27, 1944; peak, 48,000 cfs June 27, 1944.

Magnitude and frequency of annual and seasonal low flow for climatic years 1914-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	330	275	220	170	150	138	128	124
30	390	315	240	190	170	155	144	138
60	455	360	275	215	195	180	170	164
120	560	440	340	275	250	230	215	208
183	670	505	390	320	290	270	250	240
	Lowest average flow for period April 1 to September 30							
7	400	340	285	235	210	185	162	150
30	480	400	340	285	255	228	200	183
60	580	480	410	345	310	277	245	225

Duration table of daily discharge for annual and seasonal periods for water years 1914-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
6,900	4,700	2,700	1,760	1,140	860	700	580	490	415	345	270	220	180	157
Discharge for period April 1 to September 30														
6,300	4,400	2,600	1,800	1,220	950	780	650	550	465	385	300	245	197	170

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	200	250	300
5	....	4.17	10.3
10	3.97	9.92	17.8
20	4.96	12.3	23.8

5-4205.6 Wapsipinicon River near Elma, Iowa

LOCATION.—Lat 43°14'35", long 92°31'50", in NW¼NW¼ sec. 8, T.97 N., R.14 W., on right bank 10 ft. downstream from county highway bridge, 0.2 mile downstream from unnamed creek, and 4.9 miles west of Elma.

DRAINAGE AREA.—95.2 sq. mi.

RECORDS AVAILABLE.—October 1958 to September 1966.

AVERAGE DISCHARGE.—8 years, 51.9 cfs; computed, 1941-66, 45.8 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	2.4	3.9	4.3	5.4	6.5	6.9
Climatic year	1964	1964	1964	1964	1964	1964

Maximum flow for period of record:

Daily, 3,910 cfs March 27, 1961; peak, 5,700 cfs March 29, 1962.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 4.1 cfs; 10 years, ... cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1959-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
760	480	158	75	38	25	18	13	10	8.5	7.2	5.9	4.7	2.8	....
Discharge for period April 1 to September 30														
1,000	560	190	93	50	34	24	18	13	10	8.1	6.6	5.6	4.7	4.2

5-4210. Wapsipinicon River at Independence, Iowa

LOCATION.—Lat 42°27'50", long 91°53'40", in SE¼ sec. 4, T.88 N., R.9 W., on right bank at Sixth Street in Independence, 1,800 ft. downstream from dam at abandoned hydroelectric plant, 4¾ miles downstream from Otter Creek, and 10¼ miles upstream from Pine Creek.

DRAINAGE AREA.—1,048 sq. mi.

RECORDS AVAILABLE.—July 1933 to September 1966.

AVERAGE DISCHARGE.—33 years, 528 cfs; computed 1941-66, 532 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs.	8.0	8.0	9.8	16.7	27.7	36.0
Climatic year	1934	1934	1936	1936	1934	1955

Maximum flow for period of record:

Daily, 19,200 cfs April 30, 1951; peak 21,500 cfs June 14, 1947.

Magnitude and frequency of annual and seasonal low flow for climatic years 1934-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	56	38	26	19	16	14	12	11
30	74	52	37	26	22	19	16	14
60	98	69	50	36	31	26	22	20
120	160	107	73	52	44	37	32	29
183	230	152	97	65	54	45	39	35
	Lowest average flow for period April 1 to September 30							
7	84	60	39	25	20	16	12	11
30	136	93	59	38	30	23	18	16
60	210	140	85	54	42	33	26	22

Duration table of daily discharge for annual and seasonal periods for water years 1934-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
4,900	3,500	2,100	1,230	660	420	290	205	145	103	68	38	23	13	9.1
Discharge for period April 1 to September 30														
5,000	3,700	2,300	1,400	800	550	390	285	205	145	98	49	25	12	7.6

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	40	50	60
5	0.81	1.78	2.78
10	1.59	3.37	5.75
20	2.78	5.55	8.93

5-4220. Wapsipinicon River near DeWitt, Iowa

LOCATION.—Lat 41°45'55", long 90°32'00", in SW¼NE¼ sec. 6, T.80 N., R.4 E., on left bank 15 ft. downstream from bridge on U. S. Highway 61, 3 miles south of DeWitt, 6.2 miles upstream from Brophy Creek, and 18.2 (revised) miles upstream from mouth.

DRAINAGE AREA.—2,330 sq. mi. (includes that of Silver Creek).

RECORDS AVAILABLE.—June 1934 to September 1966.

AVERAGE DISCHARGE.—32 years, 1,358 cfs; computed 1941-66, 1,375 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	70	70	79.7	89.5	117	137
Climatic year	1939	1939	1939	1939	1939	1939

Maximum flow for period of record:

Daily, 21,300 cfs June 19, 1947; peak, 26,000 cfs June 27, 1944.

Magnitude and frequency of annual and seasonal low flow for climatic years 1935-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	250	185	140	112	102	92	86	82
30	300	220	160	128	113	103	94	89
60	385	270	195	148	130	115	103	97
120	560	390	265	190	162	142	129	123
183	680	470	310	220	190	168	151	143
	Lowest average flow for period April 1 to September 30							
7	340	260	200	156	140	122	110	100
30	430	330	250	195	170	150	132	122
60	600	460	350	270	234	204	180	143

Duration table of daily discharge for annual and seasonal periods for water years 1935-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
9,100	7,100	4,700	3,100	2,000	1,400	1,000	740	540	405	290	197	152	120	105
Discharge for period April 1 to September 30														
10,000	7,700	4,900	3,300	2,200	1,630	1,240	950	710	535	400	275	205	155	125

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	200	250	300
5	6.55	14.5	28.2
10	14.3	29.8	47.6
20	19.8	37.3	56.8

IOWA RIVER BASIN

5-4485. West Branch Iowa River near Klemme, Iowa

LOCATION.—Lat 42°57'50", long 93°42'20", in NE¼NW¼ sec. 17, T.94 N., R.24 W., on downstream side of highway bridge, 6 miles southwest of Klemme, and 12.4 miles upstream from confluence with East Branch Iowa River.

DRAINAGE AREA.—112 sq. mi.

RECORDS AVAILABLE.—April 1948 to September 1958. Published as West Fork Iowa River near Klemme in annual reports.

AVERAGE DISCHARGE.—8 years, 45.0 cfs; computed, 1941-66, 46.4 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0.3	0.3	0.3	0.4	1.1	1.7
Climatic year	1955	1955	1955	1955	1955	1949

Maximum flow for period of record:

Daily, 1,880 cfs June 21, 1954; peak, 1,920 cfs June 21, 1954.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 1.4 cfs; 10 years, 0.2 cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1949-58

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
515	330	150	70	37	22	14	8.3	5.2	3.5	2.4	1.4	.84	.49	.43
Discharge for period April 1 to September 30														
890	480	210	103	51	35	25	17	11	7.5	5.0	3.4	1.6	.80	.54

5-4490. East Branch Iowa River near Klemme, Iowa

LOCATION.—Lat 43°00'30", long 93°37'35", in NE¼NW¼ sec. 36, T.95 N., R.24 W., on left bank 15 ft. downstream from county highway bridge, 1.0 mile west of Klemme, and 15.4 miles upstream from confluence with West Branch Iowa River.

DRAINAGE AREA.—133 sq. mi.

RECORDS AVAILABLE.—April 1948 to September 1966. Prior to October 1958, published as East Fork Iowa River near Klemme.

AVERAGE DISCHARGE.—18 years, 55.5 cfs; computed, 1941-66, 56.9 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0.2	0.2	0.2	0.3	0.6	1.6
Climatic year	1958	1958	1958	1958	1958	1958

Maximum flow for period of record:

Daily, 3,880 cfs June 21, 1954; peak, 5,960 cfs June 19, 1954.

Magnitude and frequency of annual and seasonal low flow for climatic years 1949-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	4.4	2.7	1.7	1.1	.90	.76	.64	.58
30	5.3	3.2	2.0	1.3	1.0	.88	.75	.68
60	6.9	4.2	2.5	1.7	1.4	1.2	1.1	1.0
120	10	6.0	3.8	2.7	2.4	2.1	1.9	1.8
183	14	8.2	5.0	3.5	3.0	2.6	2.3	2.2
	Lowest average flow for period April 1 to September 30							
7	10	6.8	4.6	3.3	2.9	2.6	2.3	2.2
30	13	8.6	5.9	4.5	3.9	3.6	3.2	3.1
60	20	13	8.0	5.6	4.9	4.5	4.2	4.1

Duration table of daily discharge for annual and seasonal periods for water years 1949-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
670	450	220	118	55	31	20	14	9.8	7.0	5.0	3.1	1.9	1.0	.55
Discharge for period April 1 to September 30														
950	620	315	175	83	51	34	24	17	12	8.5	6.0	4.8	3.6	2.9

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	2	3	4
5	0.06	0.18	0.36
10	0.12	0.28	0.52
20	0.14	0.34	0.63

5-4495. Iowa River near Rowan, Iowa

LOCATION.—Lat 42°45'35", long 93°37'15", in NW¼NE¼ sec. 25, T.92 N., R.24 W., on left bank, 10 ft. downstream from county highway bridge, 3.8 miles northwest of Rowan, 9.4 miles downstream from confluence of East and West Branches, and at mile 316.4.

DRAINAGE AREA.—429 sq. mi.

RECORDS AVAILABLE.—October 1940 to September 1966.

AVERAGE DISCHARGE.—26 years, 185 cfs; computed, 1941-66, 185 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	2.9	3.0	3.1	3.6	6.0	7.2
Climatic year	1958	1958	1958	1958	1958	1958

Maximum flow for period of record:

Daily, 7,640 cfs June 21, 1954; peak 8,460 cfs June 21, 1954.

Magnitude and frequency of annual and seasonal low flow for climatic years 1941-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	17	13	8.6	6.2	5.4	4.6	4.0	3.7
30	22	16	11	7.9	6.7	5.7	4.9	4.4
60	29	21	15	11	9.4	8.0	6.7	6.0
120	42	28	19	14	12	10	9.0	8.2
183	57	36	23	16	14	12	9.8	9.0
	Lowest average flow for period April 1 to September 30							
7	34	25	17	11	9.3	7.8	6.6	6.0
30	46	32	22	15	12	10	8.4	7.6
60	72	46	29	19	16	13	11	10

Duration table of daily discharge for annual and seasonal periods for water years 1941-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
1,900	1,400	760	410	215	137	88	59	41	29	21	14	9.7	6.5	5.0
Discharge for period April 1 to September 30														
2,350	1,740	1,040	560	290	195	133	93	67	48	33	21	15	11	9.0

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	10	12	15
5	....	....	0.60
10	0.24	0.50	1.23
20	0.50	1.09	2.18

5-4515. Iowa River at Marshalltown, Iowa

LOCATION.—Lat 42°04'05", long 92°54'05", in NW¼SW¼ sec. 24, T.84 N., R.18 W., on right bank in city park in Marshalltown, 300 ft. upstream from Burnett Creek, 0.2 mile downstream from bridge on State Highway 14, 2.0 miles upstream from Linn Creek, and at mile 222.6 (revised).

DRAINAGE AREA.—1,564 sq. mi., including Burnett Creek.

RECORDS AVAILABLE.—October 1902 to September 1903, October 1914 to September 1927, October 1932 to September 1966.

AVERAGE DISCHARGE.—48 years (1902-3, 1914-27, 1932-66), 726 cfs; computed, 1941-66, 743 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	9	10.4	13.0	17.2	30.1	31.5
Climatic year	1939	1939	1939	1939	1939	1939

Maximum flow for period of record:

Daily, 39,400 cfs June 4, 1918; peak, 42,000 cfs June 4, 1918.

Magnitude and frequency of annual and seasonal low flow for climatic years 1915-26, 1933-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	88	62	40	27	24	22	20	20
30	110	76	50	35	30	27	25	24
60	150	105	68	44	37	33	30	29
120	248	162	98	64	55	48	43	41
183	320	215	132	83	70	60	54	51
	Lowest average flow for period April 1 to September 30							
7	135	90	62	43	35	29	24	21
30	190	126	83	59	49	40	34	30
60	300	195	127	88	73	62	53	48

Duration table of daily discharge for annual and seasonal periods for water years 1903, 1915-27, 1933-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
6,100	4,500	2,600	1,700	1,020	680	470	330	235	160	110	66	46	31	24
Discharge for period April 1 to September 30														
6,800	5,200	3,100	2,000	1,270	880	640	460	330	222	145	86	58	38	27

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	50	60	75
5	1.39	2.58	4.36
10	1.98	3.57	7.54
20	2.78	4.76	9.12

5-4517. Timber Creek near Marshalltown, Iowa

LOCATION.—Lat 42°00'25", long 92°51'30", in SE¼SW¼ sec. 8, T.83 N., R.17 W., on left bank 20 ft. downstream from bridge on U.S. Highway 30, 2.7 miles upstream from mouth and 3.0 miles southeast of Marshalltown.

DRAINAGE AREA.—118 sq. mi.

RECORDS AVAILABLE.—October 1949 to September 1966.

AVERAGE DISCHARGE.—17 years, 57.7 cfs; computed, 1941-66, 63.3 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0.3	0.4	0.7	1.0
Climatic year	1956	1956	1956	1955	1955	1950

Maximum flow for period of record:

Daily, 3,720 cfs June 12, 1966; peak, 5,200 cfs June 12, 1966.

Magnitude and frequency of annual and seasonal low flow for climatic years 1950-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	4.5	2.5	1.2	.47	.26	.18		
30	6.8	4.0	2.1	1.1	.70	.45		
60	8.6	5.2	2.9	1.5	1.0	.66		
120	12	7.5	4.4	2.5	1.7	1.2		
183	17	11	6.2	3.5	2.4	1.7		
	Lowest average flow for period April 1 to September 30							
7	8.0	5.0	2.9	1.6	1.1	.74		
30	12	7.3	4.2	2.3	1.6	1.1		
60	19	12	6.8	3.6	2.5	1.7		

Duration table of daily discharge for annual and seasonal periods for water years 1950-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
725	430	200	120	66	43	28	18	12	7.0	4.1	1.6	.80	.49	.36
Discharge for period April 1 to September 30														
570	360	205	132	82	56	40	28	19	13	8.1	3.2	1.6	.66	.36

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	1	2	3
5	....	0.07	0.20
10	0.04	0.20	0.50

5-4519. Richland Creek near Haven, Iowa

LOCATION.—Lat 41°53'55", long 92°28'35", in SE¼NE¼ sec. 21, T.82 N., R.14 W., on right bank 5 ft. upstream from highway bridge, 0.5 mile north of Haven, and 3.0 miles upstream from mouth.

DRAINAGE AREA.—56.1 sq. mi.

RECORDS AVAILABLE.—October 1949 to September 1966.

AVERAGE DISCHARGE.—17 years, 29.3 cfs; computed, 1941-66, 33.2 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0.1	0.1	0.1	0.1	0.3	0.4
Climatic year	1953 1956	1953 1956	1953 1956	1953	*	*

*Occurred in several years

Maximum flow for period of record:

Daily, 2,130 cfs March 30, 1960; peak, 3,650 cfs March 30, 1960.

Magnitude and frequency of annual and seasonal low flow for climatic years 1950-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	2.2	1.3	.59	.20	.10			
30	3.1	1.8	.77	.28	.14			
60	5.6	3.1	1.4	.58	.33	.18		
120	9.4	5.2	2.4	1.0	.60	.34		
183	13	7.1	3.4	1.5	.87	.50		
	Lowest average flow for period April 1 to September 30							
7	3.1	2.0	1.1	.56	.36	.22		
30	5.2	3.5	2.0	1.0	.68	.42		
60	9.2	6.2	3.7	2.0	1.3	.88		

Duration table of daily discharge for annual and seasonal periods for water years 1950-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
370	230	99	60	33	21	13	8.0	5.2	3.3	1.5	.49	.30	.22	.18
Discharge for period April 1 to September 30														
315	205	107	67	40	26	18	11	7.5	5.0	3.2	.95	.48	.27	.20

5-4520. Salt Creek near Elberon, Iowa

LOCATION.—Lat 41°57'45", long 92°18'55", in NW¼NW¼ sec. 36, T.83 N., R.13 W., near center of span on downstream side of bridge on U. S. Highway 30, 1.2 miles northwest of Irving, 2.5 miles south of Elberon, and 9.0 miles upstream from mouth.

DRAINAGE AREA.—201 sq. mi.

RECORDS AVAILABLE.—October 1945 to September 1966.

AVERAGE DISCHARGE.—21 years, 115 cfs; computed 1941-66, 124 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	2.4	2.4	3.3	3.6	3.9	4.6
Climatic year	1953	1953	1950	1950	1950	1950

Maximum flow for period of record:

Daily, 13,000 cfs June 13, 1947; peak, 35,000 cfs June 13, 1947.

Magnitude and frequency of annual and seasonal low flow for climatic years 1946-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	13	7.8	4.3	3.2	3.0	2.8	2.7	2.5
30	16	11	6.4	4.5	3.9	3.4	3.2	3.0
60	25	14	8.0	5.6	4.8	4.3	3.9	3.7
120	38	22	11	7.2	6.1	5.4	4.9	4.6
183	53	30	15	9.1	7.6	6.6	5.8	5.6
	Lowest average flow for period April 1 to September 30							
7	16	12	8.5	5.8	4.8	4.1	3.6	3.3
30	23	17	12	8.1	6.6	5.6	4.8	4.4
60	39	28	20	13	10	8.4	7.1	6.4

Duration table of daily discharge for annual and seasonal periods for water years 1946-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
1,380	820	375	215	125	83	58	40	29	20	13	7.4	5.3	4.0	3.4
Discharge for period April 1 to September 30														
1,380	830	410	240	145	100	71	52	38	27	19	11	7.4	5.1	4.2

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	10	12	15
5	0.72	1.23	2.22
10	1.29	1.98	2.98
20	1.62	2.28	3.37

5-4522. Walnut Creek near Hartwick, Iowa

LOCATION.—Lat 41°50'10", long 92°23'20", in SE¼SW¼ sec. 8, T.81 N., R.13 W., on left bank 5 ft. upstream from highway bridge, 1.2 miles downstream from North Walnut Creek, 4.0 miles northwest of Hartwick, and 6.5 miles upstream from mouth.

DRAINAGE AREA.—70.9 sq. mi.

RECORDS AVAILABLE.—October 1949 to September 1966.

AVERAGE DISCHARGE.—17 years, 36.5 cfs; computed, 1941-66, 41.8 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0	0	0.1	0.3
Climatic year	1954-57	1954-57	1955-56	1955-56	1955	1953

Maximum flow for period of record:

Daily, 2,410 cfs March 30, 1960; peak, 4,930 cfs September 3, 1958.

Magnitude and frequency of annual and seasonal low flow for climatic years 1950-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	2.6	0.91	0.19					
30	3.4	1.5	.31					
60	4.7	2.4	.78	0.15				
120	9.9	5.0	2.2	.65	0.29	0.12		
183	15	7.7	3.4	1.4	.83	.46		
	Lowest average flow for period April 1 to September 30							
7	3.2	2.2	.30	....	....	....		
30	4.5	3.0	1.2	.42	.22	.11		
60	8.6	5.5	3.2	1.8	1.3	.89		

Duration table of daily discharge for annual and seasonal periods for water years 1950-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
460	270	137	78	42	27	17	9.2	5.6	3.3	1.6	.33	.14		
Discharge for period April 1 to September 30														
410	250	137	86	49	32	21	13	8.2	5.1	2.9	.78	.19		

5-4525. Iowa River near Belle Plaine, Iowa

LOCATION.—Lat 41°51'30", long 92°16'50", in SW¼NW¼ sec. 5, T.81 N., R.12 W., on right bank 5 ft. downstream from bridge on State Highway 212, 1.1 miles downstream from Walnut Creek and 2.7 miles south of Belle Plaine.

DRAINAGE AREA.—2,455 sq. mi.

RECORDS AVAILABLE.—September 1939 to September 1959.

AVERAGE DISCHARGE.—20 years, 1,159 cfs; computed 1941-66, 1,299 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	19	35.4	39.7	43.9	57.1	78.5
Climatic year	1954	1955	1955	1955	1955	1955

Maximum flow for period of record:

Daily, 31,300 cfs June 14, 1947; peak, 34,000 cfs June 14, 1947.

Magnitude and frequency of annual and seasonal low flow for climatic years 1940-58

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	165	108	74	54	47	41	37	35
30	210	135	90	65	56	48	43	40
60	265	170	113	79	67	58	50	47
120	400	254	160	110	91	76	64	58
183	540	330	200	137	113	95	80	72
	Lowest average flow for period April 1 to September 30							
7	280	170	95	64	59	58	57	56
30	380	230	128	94	91	88	86	84
60	580	360	205	130	120	117	112	110

Duration table of daily discharge for annual and seasonal period for water years 1940-59

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
8,800	6,600	4,200	2,800	1,700	1,140	770	520	365	245	158	91	70	48	38
Discharge for period April 1 to September 30														
10,800	7,800	4,800	3,300	2,050	1,480	1,100	810	580	400	268	150	107	79	68

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	100	125	150
5	2.98	5.55	9.92
10	6.85	11.9	19.8
20	11.1	19.4	27.8

5-4530. Big Bear Creek at Ladora, Iowa
(Formerly published as Bear Creek at Ladora)

LOCATION.—Lat 41°45'00", long 92°11'00", in SW¼SW¼ sec. 7, T.80 N., R.11 W., on left bank 10 ft. downstream from highway bridge, a quarter of a mile south of Ladora, and 2½ miles upstream from Little Bear Creek.

DRAINAGE AREA.—189 sq. mi.

RECORDS AVAILABLE.—October 1945 to September 1966.

AVERAGE DISCHARGE.—21 years, 107 cfs; computed, 1941-66, 106 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0	0.1	0.6	1.8
Climatic year	1955	1955	1955	1955	1955	1955

Maximum flow for period of record:

Daily, 9,480 cfs March 30, 1960; peak, 10,500 cfs March 30, 1960.

Magnitude and frequency of annual and seasonal low flow for climatic years 1946-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	6.6	3.5	1.6	0.70	0.38	0.16		
30	9.4	5.0	2.4	1.1	.62	.31		
60	17	8.7	3.8	1.6	.93	.53		
120	27	14	6.8	3.3	2.1	1.4		
183	42	22	11	5.6	3.9	2.7		
	Lowest average flow for period April 1 to September 30							
7	10	6.8	4.2	2.5	1.8	1.3		
30	15	9.7	6.0	3.6	2.6	1.8		
60	27	18	11	6.6	4.8	3.4		

Duration table of daily discharge for annual and seasonal periods for water years 1946-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
1,250	790	380	225	124	77	50	32	20	12	7.0	3.1	1.4	.60	.32
Discharge for period April 1 to September 30														
1,250	790	415	250	145	90	59	41	28	18	11	4.9	2.8	1.1	.65

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	4	6	8
5	0.30	0.72	1.19
10	.64	1.25	1.94

5-4531. Iowa River at Marengo, Iowa

LOCATION.—Lat 41°48'35", long 92°04'20", in NW¼SE¼ sec. 24, T.81 N., R.11 W., on right bank 10 ft. downstream from abandoned highway bridge, 0.7 mile downstream from Bear Creek, 0.8 mile north of Marengo, and 4.9 miles upstream from Hilton Creek, and at mile 139.4.

DRAINAGE AREA.—2,794 sq. mi.

RECORDS AVAILABLE.—October 1956 to September 1966.

AVERAGE DISCHARGE.—10 years, 1,550 cfs; computed, 1941-66, 1,497 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	*54	75.4	83.3	117	160	184
Climatic year	1956	1963	1963	1963	1963	1963

* Estimated.

Maximum flow for period of record:

Daily, 29,000 cfs March 21, 1960; peak, 30,800 cfs March 31, 1960.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 140 cfs; 10 years, 55 cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1957-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
11,500	9,000	5,700	3,700	2,200	1,500	1,080	800	560	380	255	160	115	81	70
Discharge for period April 1 to September 30														
12,700	9,800	6,400	4,400	2,600	1,900	1,480	1,120	870	660	470	310	260	225	210

5-4540. Rapid Creek near Iowa City, Iowa

LOCATION.—Lat 41°42'00", long 91°29'05", in NE¼NE¼ sec. 36, T.80 N., R.6 W., on left bank 80 ft. upstream from bridge on State Highway 1, 3 miles northeast of Iowa City, and 4.0 miles upstream from mouth.

DRAINAGE AREA.—25.3 sq. mi.

RECORDS AVAILABLE.—October 1937 to September 1966.

AVERAGE DISCHARGE.—29 years, 13.6 cfs; computed, 1941-66, 14.1 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0	0	0	0
Climatic year	*	*	†	†	1953 1955	1955

* Occurred during most year. † Occurred during several years.

Maximum flow for period of record:

Daily, 1,460 cfs July 14, 1962; peak, 6,100 cfs May 23, 1965.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 0 cfs; 10 years, 0 cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1938-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
190	113	50	28	14	8.0	5.0	3.0	1.5	.72	.27				
Discharge for period April 1 to September 30														
157	98	51	29	16	9.9	6.2	3.8	2.2	1.1	.35				

5-4543. Clear Creek near Coralville, Iowa

LOCATION.—Lat 41°40'35", long 91°35'55", in NW¼SW¼ sec. 6, T.79 N., R.6 W., on left bank about 50 ft upstream from highway bridge, 1.2 miles west of Coralville, and 2.2 miles upstream from mouth.

DRAINAGE AREA.—98.1 sq. mi.

RECORDS AVAILABLE.—October 1952 to September 1966.

AVERAGE DISCHARGE.—14 years, 51.8 cfs; computed, 1941-66, 50.8 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0.1	0.3	0.3	0.3	0.7	0.9
Climatic year	1956	1953 1955-57	1953	1953	1955	1955

Maximum flow for period of record:

Daily, 4,420 cfs May 29, 1962; peak, 5,390 cfs May 29, 1962.

Magnitude and frequency of annual and seasonal low flow for climatic years 1953-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	3.0	1.6	0.70	0.32	0.23	0.17		
30	4.3	2.2	1.0	.44	.30	.22		
60	8.0	4.1	1.8	.78	.52	.37		
120	13	6.6	3.0	1.3	.94	.68		
183	21	11	4.9	2.3	1.6	1.1		
	Lowest average flow for period April 1 to September 30							
7	3.5	2.0	.96	.53	.42	.35		
30	6.2	3.4	1.7	.92	.73	.61		
60	14	8.5	4.7	2.5	1.9	1.5		

Duration table of daily discharge for annual and seasonal periods for water years 1953-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
670	410	190	105	55	34	21	13	7.2	4.2	2.4	1.1	.74	.48	.37
Discharge for period April 1 to September 30														
620	390	190	118	66	41	26	17	10	5.8	3.3	1.6	.96	.60	.45

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	1	2	3
5	0.04	0.18	0.42
10	0.08	0.35	0.70

5-4545. Iowa River at Iowa City, Iowa

LOCATION.—Lat 41°39'25", long 91°32'25", in SE¼SE¼ sec. 9, T.79 N., R.6 W., on right bank 25 ft. downstream from Hydraulics Laboratory of State University of Iowa in Iowa City, 175 ft. downstream from University Dam, 0.9 mile upstream from Ralston Creek, 3.6 miles downstream from Clear Creek, and at mile 74.2.

DRAINAGE AREA.—3,271 sq. mi.

RECORDS AVAILABLE.—June 1903 to September 1966.

AVERAGE DISCHARGE.—63 years, 1,547 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	29	34.4	38.8	48.6	77.8	105
Climatic year	1916	1939	1939	1939	1955	1939

Maximum flow for period of record:

Daily, 40,500 cfs June 8, 1918; peak, 42,500 cfs June 8, 1918.

Remarks—Diurnal fluctuation at low stages caused by powerplants above station. Flow regulated by Coralville Reservoir since Sept. 17, 1958 (capacity, 489,000 acre-ft.).

Magnitude and frequency of annual low flow for climatic years 1904-57

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	222	152	105	76	65	56	49	45
30	305	203	135	97	82	70	62	56
60	400	267	170	118	100	85	73	66
120	590	390	250	170	145	122	107	98
183	780	520	335	230	190	163	140	128

Duration table of daily discharge for annual and seasonal periods for water years 1904-58

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
9,400	7,200	5,000	3,500	2,200	1,550	1,080	770	570	400	260	158	110	77	62
Discharge for period April 1 to September 30														
10,200	7,700	5,400	3,900	2,600	1,880	1,400	1,030	750	540	360	200	138	94	76

5-4550. Ralston Creek at Iowa City, Iowa

LOCATION.—Lat 41°39'50", long 91°30'45", in SE¼NW¼ sec. 11, T.79 N., R.6 W., on left bank 10 ft. upstream from bridge on Rochester Avenue (formerly State Highway 1), near east edge of Iowa City, and 2.2 miles upstream from mouth.

DRAINAGE AREA.—3.01 sq. mi.

RECORDS AVAILABLE.—September 1924 to September 1966.

AVERAGE DISCHARGE.—42 years, 1.53 cfs; computed, 1941-66, 1.63 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0	0	0	0
Climatic year	*	*	*	†	†	†

* Occurred during most years. † Occurred during several years.

Maximum flow for period of record:

Daily, 184 cfs July 14, 1962; peak, 1,690 cfs July 18, 1956.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 0 cfs; 10 years, 0 cfs.

Duration table of daily discharge for annual period for water years 1925-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
26	14	5.4	2.8	1.3	.77	.48	.29	.15						

5-4555. English River at Kalona, Iowa

LOCATION.—Lat 41°28'10", long 91°43'00", in SE¼SE¼ sec. 13, T.77 N., R.8 W., on right bank 30 ft. upstream from bridge on State Highway 1, 1 mile south of Kalona, 4.5 miles downstream from Smith Creek, and 14.5 miles upstream from mouth.

DRAINAGE AREA.—573 sq. mi.

RECORDS AVAILABLE.—September 1939 to September 1966.

AVERAGE DISCHARGE.—27 years, 333 cfs; computed, 1941-66, 302 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	1.1	1.1	1.7	1.9	2.2	2.9
Climatic year	1955	1955	1955	1955	1955	1955

Maximum flow for period of record:

Daily 17,300 cfs September 21, 1965; peak, 20,000 cfs September 21, 1965.

English River at Kalona — Continued

Magnitude and frequency of annual and seasonal low flow for climatic years 1940-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	14	8.6	4.9	2.9	2.2	1.8	1.4	1.3
30	21	13	7.2	4.2	3.1	2.4	1.9	1.6
60	40	22	11	5.8	4.1	3.1	2.4	2.0
120	74	40	20	10	7.1	5.0	3.7	3.1
183	108	62	35	17	12	8.2	5.6	4.5
	Lowest average flow for period April 1 to September 30							
7	20	12	7.3	4.4	3.3	2.6	2.0	1.8
30	35	22	13	7.6	5.6	4.1	3.1	2.5
60	59	43	27	17	12	9.2	6.7	5.4

Duration table of daily discharge for annual and seasonal periods for water year 1940-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
4,120	2,790	1,440	760	368	224	139	83	52	30	15	6.7	3.9	2.6	2.2
Discharge for period April 1 to September 30														
4,400	3,120	1,590	650	432	269	168	108	71	44	25	12	6.5	3.3	2.6

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	10	15	20
5	0.44	1.19	2.50
10	1.25	2.73	4.36
20	2.02	3.85	5.67

5-4580. Little Cedar River near Ionia, Iowa

LOCATION.—Lat 43°02'00", long 92°30'10", in SW¼NE¼ sec. 21, T.95 N., R.14 W., on left bank 12 ft. downstream from county highway bridge, 2.5 miles west of Ionia and 7.0 miles upstream from mouth.

DRAINAGE AREA.—306 sq. mi.

RECORDS AVAILABLE.—October 1954 to September 1966.

AVERAGE DISCHARGE.—12 years, 124 cfs; computed, 1941-66, 144 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	3.0	3.0	3.3	3.7	6.1	8.9
Climatic year	1958	1958	1958	1958	1958	1958

Maximum flow for period of record:

Daily, 9,930 cfs March 27, 1961; peak, 10,800 cfs March 27, 1961.

Little Cedar River near Ionia — Continued

Magnitude and frequency of annual and seasonal low flow for climatic years 1955-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	21	15	10	6.5	4.8	3.5	2.5	2.0
30	22	16	11	7.0	5.2	3.8	2.7	2.2
60	27	20	13	8.3	6.3	4.7	3.4	2.8
120	39	27	18	12	9.0	7.0	5.2	4.3
183	56	38	25	16	12	9.2	6.9	5.7
	Lowest average flow for period April 1 to September 30							
7	28	23	17	13	11	8.7	7.0	6.0
30	35	27	20	15	12	10	8.2	7.0
60	50	40	30	21	18	14	11	9.7

Duration table of daily discharge for annual and seasonal periods for water years 1955-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
1,600	900	360	200	113	78	57	44	35	28	21	15	10	6.0	4.0
Discharge for period April 1 to September 30														
1,900	980	420	245	142	100	75	59	48	39	30	21	16	12	10

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	5	6	7
10	0.12	0.16	0.30
20	0.28	0.46	0.66

5-4585. Cedar River at Janesville, Iowa

LOCATION.—Lat 42°39'00", long 92°27'50", in NE¼SW¼ sec. 35, T.91 N., R.14 W., on left bank 300 ft. downstream from county highway bridge at Janesville, 3.3 miles upstream from West Fork Cedar River, and at mile 207.7 above the mouth of Iowa River.

DRAINAGE AREA.—1,661 sq. mi.

RECORDS AVAILABLE.—October 1904 to September 1906, October 1914 to September 1927, October 1932 to September 1942, October 1945 to September 1966.

AVERAGE DISCHARGE.—46 years (1904-6, 1914-27, 1932-42, 1945-66), 721 cfs; computed, 1941-66 average, 741 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	28	50	62.3	73.7	84.7	93.4
Climatic year	1922	1917	1958	1916	1934	1934

Maximum flow for period of record:

Daily, 34,800 cfs March 28, 1961; peak, 37,000 cfs March 28, 1961.

Remarks—Diurnal fluctation during low water caused by powerplant at Waverly, 10 miles above station.

Magnitude and frequency of annual and seasonal low flow for climatic years 1905, 1915-26, 1933-41, 1946-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	155	118	91	73	67	62	57	55
30	190	148	116	94	84	76	70	66
60	215	168	132	107	96	87	80	75
120	290	222	172	138	123	112	102	96
183	370	270	203	158	140	127	115	108
	Lowest average flow for period April 1 to September 30							
7	240	190	152	127	115	104	93	86
30	300	240	190	153	140	128	117	110
60	410	300	222	174	158	148	140	140

Duration table of daily discharge for annual and seasonal periods for water years 1905-06, 1915-27, 1933-42, 1946-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
6,000	4,200	2,400	1,450	870	610	460	360	285	230	188	140	107	84	72
Discharge for period April 1 to September 30														
6,000	4,300	2,600	1,700	1,020	770	600	475	380	300	235	170	132	102	85

Cedar River at Janesville — Continued

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	100	125	150
5	....	2.18	4.96
10	1.98	4.96	9.92
20	5.95	7.34	14.9

5-4589. West Fork Cedar River at Finchford, Iowa

LOCATION.—Lat 42°37′50″, long 92°32′25″, in SW¼SE¼ sec. 6, T.90 N., R.14 W., on left bank 100 ft. downstream from county highway bridge in Finchford, and 3.2 miles upstream from Shell Rock River.

DRAINAGE AREA.—846 sq. mi.

RECORDS AVAILABLE.—October 1945 to September 1966. Prior to October 1955, published as West Fork Shell Rock River at Finchford.

AVERAGE DISCHARGE.—21 years, 393 cfs; computed, 1941-66 average, 418 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	5.9	6.1	6.4	7.8	12.9	17.5
Climatic year	1958	1958	1958	1958	1958	1958

Maximum flow for period of record:

Daily, 25,100 cfs June 27, 1951; peak, 31,900 cfs June 27, 1951.

Remarks—An authorized diversion is made into Big Marsh (16 miles upstream from gage) of 2,100 acre-ft. each year between Sept. 1 and Nov. 15. Net effect on daily flows at gage is unknown.

Magnitude and frequency of annual and seasonal low flow for climatic years 1946-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	50	35	23	15	12	9.6	7.4	6.2
30	64	43	28	19	15	11	8.6	7.2
60	79	52	34	21	17	13	9.7	8.0
120	110	72	46	30	24	19	15	12
183	152	96	61	40	32	26	21	18
	Lowest average flow for period April 1 to September 30							
7	76	56	40	27	22	18	16	15
30	102	77	54	37	31	26	22	21
60	174	120	76	49	40	34	29	26

West Fork Cedar River at Finchford — Continued

Duration table of daily discharge for annual and seasonal periods for water years 1946-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
4,000	2,700	1,400	820	450	300	200	147	108	77	55	34	22	13	9.7
Discharge for period April 1 to September 30														
4,600	3,200	1,800	1,100	610	425	310	225	165	120	85	52	36	25	21

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	20	25	30
10	0.79	1.59	2.58
20	1.88	3.17	4.56

5-4590. Shell Rock River near Northwood, Iowa

LOCATION.—Lat 43°24'50", long 93°13'10", in NW¼NW¼ sec. 9, T.99 N., R.20 W., on right bank 50 ft. downstream from county highway bridge, 2 miles south of Northwood, and 4.1 miles upstream from Elk Creek.

DRAINAGE AREA.—300 sq. mi.

RECORDS AVAILABLE.—October 1945 to September 1966.

AVERAGE DISCHARGE.—21 years, 123 cfs; computed, 1941-66 average 114 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0.3	0.3	0.4	0.7	2.3	5.6
Climatic year	1958	1958	1958	1958	1958	1958

Maximum flow for period of record:

Daily, 3,200 cfs April 8, 1965; peak, 3,400 cfs April 8, 1965.

Magnitude and frequency of annual and seasonal low flow for climatic years 1946-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	14	12	11	9.5	8.8	8.2	7.6	7.2
30	20	16	14	12	11	10	9.6	9.0
60	26	20	18	15	14	13	12	11
120	37	26	21	18	17	16	14	13
183	42	29	22	20	18	17	15	14
	Lowest average flow for period April 1 to September 30							
7	22	18	14	11	9.6	8.2	6.8	6.0
30	30	25	20	16	13	12	9.8	8.7
60	41	34	27	21	18	16	13	12

Shell Rock River near Northwood — Continued

Duration table of daily discharge for annual and seasonal periods for water years 1946-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
1,120	800	460	280	158	104	67	46	33	26	21	16	12	6.0	2.5
Discharge for period April 1 to September 30														
1,400	1,030	580	360	230	162	117	75	51	36	27	19	14	8.6	6.0

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	15	17	20
5	0.24	0.32	0.60
10	0.34	0.50	1.19
20	0.46	0.99	2.08

5-4595. Winnebago River at Mason City, Iowa

LOCATION.—Lat 43°10'00", long 93°11'40", in NE¼NW¼ sec. 3, T.96 N., R.20 W., on right bank 650 ft. upstream from Thirteenth Street Bridge in Mason City, and 1.0 mile upstream from Willow Creek.

DRAINAGE AREA.—526 sq. mi.

RECORDS AVAILABLE.—October 1932 to September 1966. Prior to October 1959, published as Lime Creek at Mason City.

AVERAGE DISCHARGE.—34 years, 221 cfs; computed, 1941-66, 220 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	2.5	3.1	4.5	5.3	9.0	11.2
Climatic year	1933	1933	1933	1934	1934	1933

Maximum flow for period of record:

Daily, 9,370 cfs March 27, 1961; peak, 10,800 cfs March 30, 1933.

Winnebago River at Mason City — Continued

Magnitude and frequency of annual and seasonal low flow for climatic years 1933-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	26	17	11	8.3	7.6	6.8	6.0	5.6
30	32	22	13	9.7	8.6	7.7	6.9	6.4
60	41	27	18	12	10	8.9	7.8	7.3
120	62	38	25	17	14	12	10	9.4
183	88	51	30	20	16	14	12	11
	Lowest average flow for period April 1 to September 30							
7	42	30	20	13	11	8.9	7.6	7.0
30	60	41	26	17	14	11	9.5	8.6
60	100	65	39	23	18	15	12	11

Duration table of daily discharge for annual and seasonal periods for water years 1933-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
2,100	1,500	900	530	270	170	113	78	54	38	26	17	12	8.3	6.4
Discharge for period April 1 to September 30														
2,500	1,800	1,100	690	375	242	173	128	90	63	43	23	15	8.9	6.3

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	10	15	20
5	....	0.36	0.99
10	0.14	0.73	2.18
20	0.30	2.48	3.31

5-4605. Shell Rock River at Marble Rock, Iowa

LOCATION.—Lat 42°58'00", long 92°52'15", in SE¼SE¼ sec. 8, T.94 N., R.17 W., on left wingwall of dam at Marble Rock, 0.5 mile upstream from unnamed creek entering from right, 9.5 miles downstream from Winnebago River.

DRAINAGE AREA.—1,318 sq. mi.

RECORDS AVAILABLE.—July 1933 to September 1953.

AVERAGE DISCHARGE.—20 years, 611 cfs; computed, 1941-66, 559 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	6.0	20.3	27.6	31.5	38.8	46.5
Climatic year	1934	1934	1934	1934	1934	1934

Maximum flow for period of record:

Daily, 19,300 cfs April 7, 1951; peak, 22,700 cfs April 7, 1951.

Magnitude and frequency of annual and seasonal low flow for climatic years 1934-52

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	87	61	44	33	29	25	22	20
30	104	74	55	42	37	33	30	27
60	135	91	67	53	47	43	38	36
120	190	130	90	74	66	60	55	52
183	255	158	107	87	78	71	65	60
	Lowest average flow for period April 1 to September 30							
7	158	112	74	52	43	36	31	28
30	215	150	97	66	54	45	38	34
60	310	200	125	83	68	56	46	41

Duration table of daily discharge for annual and seasonal periods for water years 1934-53

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
5,200	3,900	2,400	1,500	820	540	370	255	180	130	95	65	48	34	27
Discharge for period April 1 to September 30														
5,500	4,200	2,700	1,750	1,040	730	560	415	290	200	140	86	53	32	24

5-4620. Shell Rock River at Shell Rock, Iowa

LOCATION.—Lat 42°42'50", long 92°34'55", in NW¼NE¼ sec. 11, T.91 N., R.15 W., on right bank 400 ft. upstream from bridge on State Highway 3 in Shell Rock, and 11 miles upstream from mouth.

DRAINAGE AREA.—1,746 sq. mi.

RECORDS AVAILABLE.—June 1953 to September 1966.

AVERAGE DISCHARGE.—13 years, 732 cfs; computed, 1941-66, 770 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	39	39.1	42.2	45.3	60.9	72.8
Climatic year	1958	1958	1958	1958	1958	1958

Maximum flow for period of record:

Daily, 32,100 cfs March 28, 1961; peak, 33,500 cfs March 28, 1961.

Remarks.—Diurnal fluctuation at low stages caused by powerplant at Greene.

Magnitude and frequency of annual and seasonal low flow for climatic years 1954-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	167	130	100	77	67	57		
30	190	147	112	87	75	64		
60	212	162	122	92	79	67		
120	310	217	152	112	94	80		
183	410	277	190	138	117	100		
	Lowest average flow for period April 1 to September 30							
7	200	160	128	107	97	87		
30	270	205	160	130	115	102		
60	380	280	210	162	145	127		

Duration table of daily discharge for annual and seasonal periods for water years 1954-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
6,800	4,200	2,300	1,500	940	640	440	325	260	205	160	115	91	70	60
Discharge for period April 1 to September 30														
7,600	5,300	2,900	1,960	1,300	910	680	510	390	300	225	160	126	100	88

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	100	125	150
5	....	3.97	8.93
10	4.96	11.1	18.2

5-4630. Beaver Creek at New Hartford, Iowa

LOCATION.—Lat 42°34'20", long 92°36'55", in SE¼SE¼ sec. 28, T.90 N., R.15 W., on downstream side of center bridge pier on county highway bridge, a quarter of a mile north of New Hartford, and 8 miles upstream from mouth.

DRAINAGE AREA.—347 sq. mi.

RECORDS AVAILABLE.—October 1945 to September 1966.

AVERAGE DISCHARGE.—21 years, 172 cfs; computed, 1941-66, 188 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	2.3	2.3	2.8	3.3	6.6	8.7
Climatic years	1955	1955	1955	1955	1955	1956

Maximum flow for period of record:

Daily, 16,300 cfs June 13, 1947; peak, 18,000 cfs June 13, 1947.

Magnitude and frequency of annual and seasonal low flow for climatic years 1946-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	.5	2	3	5	7	10	15	20
7	18	12	8.3	5.8	4.7	3.9	3.1	2.7
30	22	14	9.8	6.8	5.6	4.5	3.7	3.2
60	29	18	12	8.4	6.9	5.8	4.8	4.2
120	42	26	17	12	9.8	8.4	7.3	6.7
183	56	33	21	15	12	11	9.1	8.4
	Lowest average flow for period April 1 to September 30							
7	34	25	17	12	9.0	7.0	5.2	4.3
30	45	32	22	14	11	8.5	6.3	5.1
60	72	48	32	20	15	12	8.4	6.7

Duration table of daily discharge for annual and seasonal periods for water years 1946-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
2,000	1,150	570	330	180	120	82	58	42	30	21	13	8.4	5.5	4.2
Discharge for period April 1 to September 30														
2,000	1,280	690	410	230	155	112	82	62	47	34	22	13	7.4	5.4

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	10	15	20
5	0.12	0.79	2.10
10	0.48	1.69	3.29
20	0.87	2.38	4.09

5-4635. Black Hawk Creek at Hudson, Iowa

LOCATION.—Lat 42°24'30", long 92°27'45", in SW¼NE¼ sec. 27, T.88 N., R.14 W., on left bank 35 ft. downstream from bridge on State Highway 58, and 0.2 mile northwest of Chicago Great Western Railway tracks in the west edge of Hudson.

DRAINAGE AREA.—303 sq. mi.

RECORDS AVAILABLE.—April 1952 to September 1966.

AVERAGE DISCHARGE.—14 years, 138 cfs; computed, 1941-66, 158 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs.	1.9	2.0	2.2	2.6	4.4	5.7
Climatic year	1955	1955	1955	1955	1955	1955

Maximum flow for period of record:

Daily, 7,500 cfs March 31, 1960; peak, about 9,000 cfs March 31, 1960.

Magnitude and frequency of annual and seasonal low flow for climatic years 1953-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	17	12	8.0	5.2	3.9	3.0		
30	22	16	10	6.6	5.1	3.8		
60	30	20	13	9.0	7.1	5.6		
120	44	28	18	12	9.5	7.4		
183	57	36	23	15	12	9.0		
	Lowest average flow for period April 1 to September 30							
7	24	20	15	11	9.5	8.0		
30	33	26	20	15	12	10		
60	64	47	32	21	17	13		

Duration table of daily discharge for annual and seasonal periods for water years 1953-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
1,500	910	490	300	170	107	71	51	36	25	18	11	7.5	4.0	2.8
Discharge for period April 1 to September 30														
1,500	950	520	335	205	140	97	70	52	38	28	18	11	5.6	3.6

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	10	12	15
5	0.12	0.32	0.83
10	0.62	1.09	2.12

5-4640. Cedar River at Waterloo, Iowa

LOCATION.—Lat 42°29'40", long 92°20'00", in NW¼NW¼ sec. 25, T.89 N., R.13 W., on left bank at foot of East Seventh Street, 0.3 mile upstream from Eleventh Avenue Bridge in Waterloo, 1 mile downstream from Blackhawk Creek, and at mile 187.9 above mouth of Iowa River.

DRAINAGE AREA.—5,146 sq. mi.

RECORDS AVAILABLE.—October 1940 to September 1966.

AVERAGE DISCHARGE.—26 years, 2,554 cfs; computed 1941-66, 2,460 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	152	173	183	222	289	346
Climatic year	1958	1958	1958	1958	1958	1958

Maximum flow for period of record:

Daily, 74,000 cfs March 29, 1961; peak, 76,700 cfs March 29, 1961.

Remarks—Slight diurnal fluctuation during low flow caused by power plant above station.

Magnitude and frequency of annual and seasonal low flow for climatic years 1941-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	600	475	375	300	270	240	215	200
30	680	540	425	340	305	270	240	225
60	790	610	465	370	325	290	260	240
120	1,060	760	560	440	390	350	320	300
183	1,340	920	660	500	445	400	370	350
	Lowest average flow for period April 1 to September 30							
7	870	700	560	460	420	380	350	330
30	1,150	880	700	570	520	480	430	410
60	1,600	1,180	880	690	610	550	500	460

Duration table of daily discharge for annual and seasonal periods for water years 1941-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
20,000	14,500	8,400	5,200	3,200	2,400	1,800	1,300	1,030	820	640	470	380	290	250
Discharge for period April 1 to September 30														
22,000	15,700	9,800	6,300	4,000	3,100	2,500	2,000	1,500	1,180	920	680	540	450	410

Cedar River at Waterloo — Continued

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	400	500	600
5	5.95	17.9	41.7
10	13.9	37.7	71.4
20	23.8	53.6	92.2

5-4645. Cedar River at Cedar Rapids, Iowa

LOCATION.—Lat 41°58'20", long 91°40'05", in SE¼NW¼ sec. 28, T.83 N., R.7 W., on right bank 500 ft. upstream from Eighth Avenue Bridge in Cedar Rapids, 2.7 miles upstream from Prairie Creek, and at mile 112.7 above mouth of Iowa River.

DRAINAGE AREA.—6,510 sq. mi.

RECORDS AVAILABLE.—October 1902 to September 1966.

AVERAGE DISCHARGE.—64 years, 3,094 cfs; computed, 1941-66, 3,268 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	212	250	280	321	386	448
Climatic year	1949	1958	1958	1958	1955	1955

Maximum flow for period of record:

Daily, 71,500 cfs March 31, 1961; peak, 73,000 cfs March 31, 1961.

Remarks.—Diurnal Fluctuation at low stages caused by powerplant half a mile above station.

Magnitude and frequency of annual and seasonal low flow for climatic years 1903-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	740	600	480	390	350	310	290	270
30	850	690	550	450	400	360	330	310
60	1,020	800	640	510	450	400	360	340
120	1,430	1,070	780	620	550	500	460	440
183	1,800	1,340	970	730	650	580	540	520
	Lowest average flow for period April 1 to September 30							
7	1,100	900	730	590	520	470	430	410
30	1,330	1,090	860	680	600	540	480	460
60	1,780	1,380	1,050	820	710	630	560	540

Cedar River at Cedar Rapids — Continued

Duration table of daily discharge for annual and seasonal periods for water years 1903-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
19,700	14,800	9,600	6,600	4,300	3,100	2,400	1,800	1,400	1,080	840	620	490	390	340
Discharge for period April 1 to September 30														
20,500	15,500	10,300	7,600	5,200	3,800	2,950	2,300	1,840	1,470	1,130	820	640	495	420

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	500	600	700
5	8.97	11.9	23.8
10	11.9	25.8	49.6
20	21.8	39.7	65.5

5-4650. Cedar River near Conesville, Iowa

LOCATION.—Lat 41°24'30", long 91°17'15", in SW¼SW¼ sec. 2, T.76 N., R.4 W., on right bank 10 ft. downstream from highway bridge, 3.4 miles northeast of Conesville, 5.2 miles downstream from Wapsinonoc Creek, 10.7 miles upstream from mouth, and at mile 39.8 upstream from mouth of Iowa River.

DRAINAGE AREA.—7,785 sq. mi.

RECORDS AVAILABLE.—September 1939 to September 1966.

AVERAGE DISCHARGE.—27 years, 4,050 cfs; computed, 1941-66, 4,058 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	250	329	357	403	493	552
Climatic year	1955	1939	1939	1939	1955	1955

Maximum flow for period of record:

Daily, 66,700 cfs April 12, 1965; peak, 70,800 cfs April 2, 1961.

Magnitude and frequency of annual and seasonal low flow for climatic years 1940-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	1,000	785	610	483	429	390	362	352
30	1,260	990	760	596	525	470	430	413
60	1,480	1,120	740	640	560	498	455	441
120	1,960	1,450	1,050	778	670	585	540	521
183	2,390	1,700	1,200	890	785	700	642	618
	Lowest average flow for period April 1 to September 30							
7	1,380	1,160	910	765	705	650	600	570
30	1,900	1,480	1,170	940	850	770	715	680
60	2,550	1,970	1,490	1,160	1,040	925	840	800

Cedar River near Conesville — Continued

Duration table of daily discharge for annual and seasonal periods for water years 1940-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
25,200	20,000	12,800	8,700	5,640	4,230	3,200	2,410	1,890	1,420	1,070	780	620	483	421
Discharge for period April 1 to September 30														
28,000	20,200	14,500	10,000	6,900	5,250	4,160	3,360	2,640	2,080	1,620	1,150	920	760	670

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	600	800	1,000
5	....	17.9	55.5
10	13.9	51.6	113
20	19.8	69.4	139

5-4655. Iowa River at Wapello, Iowa

LOCATION.—Lat 41°10'40", long 91°10'55", in NW¼SE¼ sec. 27, T.74 N., R.3 W., on right bank 30 ft downstream from bridge on State Highway 99 at east edge of Wapello, 13.0 miles downstream from Cedar River, and at mile 16.0.

DRAINAGE AREA.—12,499 sq. mi.

RECORDS AVAILABLE.—October 1914 to September 1966.

AVERAGE DISCHARGE.—52 years, 6,253 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive das	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	300	401	459	499	622	722
Climatic year	1955	1955	1955	1939	1955	1955

Maximum flow for period of record:

Daily, 92,400 cfs June 18, 1947; peak, 94,000 cfs June 18, 1947.

Remarks.—High flows regulated by Coraville Flood Control Reservoir (capacity, 489,000 acre-ft) since Sept. 17, 1958.

Iowa River at Wapello — Continued

Magnitude and frequency of annual and seasonal low flow for climatic years 1915-57

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	1,250	980	760	612	554	507	465	446
30	1,550	1,200	920	730	650	590	540	514
60	2,000	1,510	1,120	850	748	670	607	578
120	2,700	1,990	1,440	1,100	980	880	800	760
183	3,610	2,610	1,870	1,360	1,170	1,020	905	850
	Lowest average flow for period April 1 to September 30							
7	1,300	1,440	1,090	840	740	665	600	575
30	2,310	1,730	1,330	1,050	935	845	760	718
60	3,300	2,420	1,860	1,410	1,210	1,040	900	825

Duration table of daily discharge for annual and seasonal periods for water years 1915-1958

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
35,000	28,200	19,300	13,500	8,600	6,200	4,620	3,520	2,700	2,500	1,500	1,060	840	645	565
Discharge for period April 1 to September 30														
36,000	30,000	21,900	15,600	10,100	7,500	5,900	4,550	3,530	2,700	2,030	1,360	1,030	785	660

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	800	1,000	1,200
5	....	23.8	39.7
10	15.9	37.7	75.4
20	27.8	57.5	125

5-4700. South Skunk River near Ames, Iowa
(Formerly published as Skunk River near Ames)

LOCATION.—Lat 42°04'05", long 93°37'05", in NW¼SW¼ sec. 23, T.84 N., R.24 W., on left bank 2.5 miles north of Ames, 3.5 miles downstream from Keigley Branch, 5.2 miles upstream from Squaw Creek, and at mile 228.1.

DRAINAGE AREA.—315 sq mi.

RECORDS AVAILABLE.—July 1920 to September 1927, October 1932 to September 1966.

AVERAGE DISCHARGE.—41 years (1920-27, 1932-66), 133 cfs; computed 1941-66, 129 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0	0	0	0.1
Climatic year	*	*	*	1955	1955	1955

* Occurred in several years

Maximum flow for period of record:

Daily, 5,760 cfs June 11, 1954; peak, 8,630 cfs June 10, 1954.

Magnitude and frequency of annual low flow for climatic years 1921-26, 1933-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	3.8	1.7	.66	.22	.11			
30	6.9	3.2	1.3	.44	.22	.10		
60	13	6.3	2.6	1.0	.57	.31	.16	.10
120	33	16	6.4	2.4	1.3	.68	.34	.21
183	60	29	12	4.7	2.6	1.4	.72	.45

Duration table of daily discharge for annual and seasonal periods for water years 1921-27, 1933-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
1,500	990	530	315	165	103	68	43	26	13	5.3	1.6	.56	.15	
Discharge for period April 1 to September 30														
1,800	1,240	680	410	217	135	91	61	37	19	8.0	2.5	.85	.20	

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	2	4	6
5	....	0.40	0.89
10	0.32	0.93	1.61
20	0.50	1.13	1.80

5-4705. Squaw Creek at Ames, Iowa

LOCATION.—Lat 42°01'20", long 93°37'55", in NE¼NW¼ sec. 10, T.83 N., R.24 W., on left bank 65 ft downstream from Lincoln Way Bridge in Ames and 1.8 miles upstream from mouth.

DRAINAGE AREA.—204 sq mi.

RECORDS AVAILABLE.—May 1919 to April 1927, May 1965 to September 1966.

AVERAGE DISCHARGE.—9 years (1919-27, 1965-66) 90.4 cfs; computed, 1941-66, 95.9 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	....	....	....	....
Climatic year	1919 1925	1919				

Maximum flow for period of record:

Daily, 3,220 cfs July 17, 1922; peak, 4,130 cfs July 17, 1922.

Duration table of daily discharge for annual and seasonal periods for water years 1920-27, 1966

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
870	570	320	195	113	81	60	45	31	20	11	4.4	2.0	.89	.50
Discharge for period April 1 to September 30														
1,030	710	385	235	135	98	65	43	25	13	5.0	1.8	.93	.45	.28

5-4710. South Skunk River below Squaw Creek near Ames, Iowa (Formerly published as Skunk River below Squaw Creek near Ames)

LOCATION.—Lat 42°00'30", long 93°35'40", in NE¼NW¼ sec. 13, T.83 N., R.24 W., on right bank 15 ft downstream from county highway bridge, a quarter of a mile downstream from Squaw Creek, a quarter of a mile upstream from bridge on U.S. Highway 30, 2 miles southeast of Ames, and at mile 222.6.

DRAINAGE AREA.—556 sq mi.

RECORDS AVAILABLE.—October 1952 to September 1966.

AVERAGE DISCHARGE.—14 years, 242 cfs; computed, 1941-66, 239 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in Cfs	0	0	0	0	0	0.2
Climatic year	*	*	*	*	1955	1955

* Occurred in several years.

Maximum flow for period of record:

Daily, 8,540 cfs March 30, 1960; peak 9,260 cfs March 30, 1960.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 2.3 cfs; 10 years, ... cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1953-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
2,900	2,000	1,020	560	285	175	114	71	38	15	3.6	.65			
Discharge for period April 1 to September 30														
3,600	2,550	1,380	780	415	260	175	115	72	41	17	4.3	1.0		

5-4712. Indian Creek near Mingo, Iowa

LOCATION.—Lat 41°48'20", long 93°18'25", in NW¼NW¼ sec. 28, T.81 N., R.21 W., on right bank 30 ft downstream from bridge on State Highway 117, 0.7 mile downstream from Wolf Creek, 2.2 miles upstream from Byers Branch, and 3.75 miles northwest of Mingo.

DRAINAGE AREA.—276 sq mi.

RECORDS AVAILABLE.—May 1958 to September 1966.

AVERAGE DISCHARGE.—7 years, 167 cfs; computed, 1941-66, 140 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	1.9	2.0	....	....	....	....
Climatic year	1966	1966				

Maximum flow for period of record:

Daily, 6,000 cfs June 12, 1966; peak, 7,380 cfs June 12, 1966.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 6.0 cfs; 10 years, ... cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1959-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
2,000	1,180	600	380	210	135	89	56	33	19	11	6.4	4.5	3.3	2.7
Discharge for period April 1 to September 30														
2,450	1,480	720	440	280	190	135	93	62	37	20	9.3	5.0	3.0	2.5

5-4715. South Skunk River near Oskaloosa, Iowa
(Formerly published as Skunk River near Oskaloosa)

LOCATION.—Lat 41°21'15", long 92°39'30", in NW¼SW¼ sec. 25, T.76 N., R.16 W., on right bank 300 ft upstream from bridge on U.S. Highway 63, 4 miles north of Oskaloosa, and at mile 147.3.

DRAINAGE AREA.—1,635 sq mi.

RECORDS AVAILABLE.—October 1945 to September 1966.

AVERAGE DISCHARGE.—21 years, 795 cfs; computed, 1941-66, 849 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	1.8	2.0	4.9	5.6	10.2	22.8
Climatic year	1956	1956	1955	1955	1956	1955

Maximum flow for period of record:

Daily, 18,400 cfs June 16, 1947; peak, 20,000 cfs June 15, 1947.

Magnitude and frequency of annual and seasonal low flow for climatic years 1946-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	70	40	21	10	7.2	4.8	3.3	2.5
30	110	66	37	20	14	9.6	6.5	5.1
60	140	80	41	21	15	10	7.2	5.8
120	225	132	71	37	26	18	13	11
183	285	182	107	60	43	30	22	17
	Lowest average flow for period April 1 to September 30							
7	117	85	56	35	25	17	11	7.8
30	185	126	80	46	36	26	18	14
60	278	194	126	79	59	43	31	24

Duration table of daily discharge for annual and seasonal periods for water years 1946-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
7,000	5,200	3,150	1,980	1,110	730	488	313	203	131	74	36	20	9.6	5.8
Discharge for period April 1 to September 30														
8,100	5,760	3,800	2,360	1,390	940	670	470	325	216	139	72	41	22	15

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	20	30	40
5	....	0.99	2.58
10	1.42	3.27	5.55
20	2.18	4.88	8.38

5-4725. North Skunk River near Sigourney, Iowa

LOCATION.—Lat 41°18'05", long 92°12'10", in NE¼SE¼ sec. 14, T.75 N., R.12 W., on right bank 20 ft downstream from bridge on State Highway 149, 2½ miles south of Sigourney, and 16.2 miles upstream from mouth.

DRAINAGE AREA.—730 sq mi.

RECORDS AVAILABLE.—October 1945 to September 1966.

AVERAGE DISCHARGE.—21 years, 406 cfs; computed, 1941-66, 425 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0.1	0.1	0.1	0.2	2.3	4.8
Climatic year	1956	1956	1956	1956	1956	1953

Maximum flow for period of record:

Daily, 23,200 cfs March 31, 1960; peak, 27,500 cfs March 31, 1960.

Magnitude and frequency of annual and seasonal low flow for climatic years 1946-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	26	15	7.4	3.2	1.9	.98	.41	.18
30	37	21	11	5.4	3.4	2.0	1.2	.80
60	65	37	19	8.4	5.2	3.0	1.6	1.1
120	105	59	29	14	8.5	5.2	3.2	2.4
183	140	77	39	20	18	8.8	6.0	4.8
	Lowest average flow for period April 1 to September 30							
7	87	24	14	7.7	5.0	2.8	1.2	.51
30	68	44	26	14	9.4	5.9	3.4	2.3
60	112	76	47	27	18	12	7.0	4.6

Duration table of daily discharge for annual and seasonal periods for water year 1946-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
4,800	3,060	1,730	1,000	480	300	188	118	74	46	25	9.9	4.5	2.2	1.8
Discharge for period April 1 to September 30														
4,550	3,360	1,910	1,120	580	358	232	152	105	71	43	19	9.9	5.2	2.4

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	10	15	20
5	0.24	0.91	1.82
10	1.13	2.60	4.19
20	1.88	3.71	5.47

5-4730. Skunk River at Coppock, Iowa

LOCATION.—Lat 41°09'50", long 91°43'05", in NE¼NE¼ sec. 1, T.73 N., R.8 W., on downstream side of bridge on State Highway 78, half a mile west of Coppock and three-quarters of a mile upstream from Crooked Creek.

DRAINAGE AREA.—2,916 sq mi.

RECORDS AVAILABLE.—October 1913 to September 1944.

AVERAGE DISCHARGE.—30 years. 1,382 cfs; computed, 1941-66, 1,780 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	8.0	8.7	11.2	21.2	45.8	65.8
Climatic year	1939	1939	1939	1939	1939	1939

Maximum flow for period of record:

Daily, 38,700 cfs May 24, 1944; peak, 41,500 cfs May 24, 1944.

Magnitude and frequency of annual and seasonal low flow for climatic years 1914-43

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	148	99	61	37	27	20	15	12
30	220	144	86	51	37	27	19	15
60	311	211	134	82	61	45	33	27
120	515	348	209	126	94	72	56	49
183	695	468	301	188	146	113	90	78
	Lowest average flow for period April 1 to September 30							
7	212	143	96	68	56	46	38	32
30	450	235	156	105	84	67	53	44
60	555	375	253	171	139	111	87	73

Duration table of daily discharge for annual and seasonal periods for water years 1914-44

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
10,200	8,000	5,200	3,350	1,870	1,220	865	600	430	300	190	103	63	37	22
Discharge for period April 1 to September 30														
10,700	8,500	5,900	3,850	2,170	1,230	1,080	800	565	370	252	135	85	52	34

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	50	75	100
10	1.98	3.17	7.54
20	2.78	6.35	12.3

5-4735. Big Creek near Mount Pleasant, Iowa

LOCATION.—Lat 41°00'50", long 91°34'45", in NW¼NW¼ sec. 29, T.72 N., R.6 W., on left bank 12 ft downstream from highway bridge, 100 ft downstream from Lynn Creek, 0.7 mile downstream from Brandywine Creek, and 3.4 miles northwest of Mount Pleasant.

DRAINAGE AREA.—106 sq mi.

RECORDS AVAILABLE.—October 1955 to September 1966.

AVERAGE DISCHARGE.—11 years, 59.2 cfs; computed, 1941-66, 71.6 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0	0	0	....
Climatic year	*	*	1955-56 1963-64	1955-56	1955-56	

* Occurred during most years.

Maximum flow for period of record:

Daily, 5,460 cfs September 21, 1965; peak, 6,150 cfs September 21, 1965.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 0 cfs; 10 years, ... cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1956-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
880	560	270	132	50	27	15	6.8	3.0	1.0	.26	....	....	....	....
Discharge for period April 1 to September 30														
920	640	290	154	64	32	18	9.0	4.4	1.6	.45	....	....	....	....

5-4740. Skunk River at Augusta, Iowa

LOCATION.—Lat 40°45'10", long 91°16'30", in NE¼NE¼ sec. 26, T.69 N., R.4 W., on left bank 300 ft upstream from bridge on State Highway 394 at Augusta, 3 miles upstream from Long Creek, and at mile 12.5.

DRAINAGE AREA.—4,303 sq mi.

RECORDS AVAILABLE.—September to November 1913, October 1914 to September 1966.

AVERAGE DISCHARGE.—52 years (1914-66), 2,233 cfs, computed, 1941-66, 2,592 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	7.0	7.4	15.1	17.5	19.2	53.0
Climatic year	1934	1934	1956	1956	1956	1953

Maximum flow for period of record:

Daily, 50,100 cfs April 3, 1960; peak, 51,000 cfs April 3, 1960.

Magnitude and frequency of annual and seasonal low flow for climatic years 1915-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	183	118	69	39	28	20	15	12
30	263	166	97	55	40	30	23	20
60	407	258	153	88	63	45	33	27
120	710	450	263	152	109	77	55	44
183	870	610	350	207	153	117	90	78
	Lowest average flow for period April 1 to September 30							
7	282	208	142	95	71	53	36	27
30	468	350	250	168	131	98	70	55
60	800	580	425	295	235	183	138	112

Duration table of daily discharge for annual and seasonal periods for water years 1915-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
18,000	14,200	9,400	5,860	3,080	1,990	1,320	880	600	407	244	122	66	36	23
Discharge for period April 1 to September 30														
19,500	16,000	10,400	6,600	3,600	2,380	1,700	1,210	850	570	382	205	120	70	48

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	100	150	200
5	2.38	6.94	15.1
10	7.14	18.6	32.7
20	13.7	27.8	44.0

DES MOINES RIVER BASIN

5-4765. West Fork Des Moines River at Estherville, Iowa

LOCATION.—Lat 43°24'00", long 94°50'40", in SW¼SE¼ sec. 10, T.99 N., R.34 W., on right bank in city park, 1,200 ft downstream from bridge on State Highway 9 at Estherville, 2.5 miles upstream from Brown Creek, and at mile 404.2 (revised) upstream from mouth of Des Moines River.

DRAINAGE AREA.—1,372 sq mi.

RECORDS AVAILABLE.—October 1951 to September 1966.

AVERAGE DISCHARGE.—15 years, 271 cfs; computed, 1941-66, 339 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0.2	0.4	0.6	0.7	1.2	1.0
Climatic year	1958	1958	1958	1958	1958	1958

Maximum flow for period of record:

Daily, 9,660 cfs April 10, 1965; peak, 10,800 cfs June 8, 1953.

Remarks—Diurnal fluctuation at low flow caused by powerplant 0.3 mile above station which discharges an average daily flow of about 0.5 cfs into river from subterranean wells.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 11 cfs; 10 years, < 0.1 cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1952-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
3,200	2,200	1,200	660	310	170	105	66	42	27	15	4.5	1.4	.95	.77
Discharge for period April 1 to September 30														
4,200	3,200	2,000	1,160	610	380	240	150	92	55	33	12	3.3	1.4	.79

5-4780. East Fork Des Moines River near Burt, Iowa

LOCATION.—Lat 43°12'35", long 94°10'40", in NW¼NE¼ sec. 20, T.97 N., R.28 W., on right bank 30 ft downstream from highway bridge, 0.8 mile upstream from Buffalo Creek, 2.5 miles northeast of Burt, 5.3 miles downstream from Mud Creek, and at mile 389.7 upstream from mouth of Des Moines River.

DRAINAGE AREA.—462 sq mi.

RECORDS AVAILABLE.—October 1951 to September 1966.

AVERAGE DISCHARGE.—15 years, 126 cfs; computed, 1941-66, 160 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0	0	0.4	0.5
Climatic year	1958	1958	1958	1958	1958	1958

Maximum flow for period of record:

Daily, 4,500 cfs April 9, 1965; peak, 5,000 cfs April 6, 1965.

Magnitude and frequency of annual and seasonal low flow for climatic years 1952-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	4.1	2.2	0.91	0.32	0.17			
30	5.7	3.2	1.5	.61	.34	.17		
60	8.5	4.8	2.3	.95	.54	.29		
120	14	7.6	3.7	1.7	1.1	.63		
183	20	11	5.0	2.2	1.4	.85		
	Lowest average flow for period April 1 to September 30							
7	9.3	3.5	1.4	.65	.43	.28		
30	21	8.5	3.1	1.4	.92	.63		
60	52	23	9.0	3.5	2.3	1.5		

Duration table of daily discharge for annual and seasonal periods for water years 1952-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
1,420	1,020	610	320	145	82	50	29	15	7.6	3.9	1.7	.83	.39	.20
Discharge for period April 1 to September 30														
1,700	1,280	860	570	275	168	105	67	44	26	12	3.5	1.6	.65	.37

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	2	4	6
5	0.14	0.64	1.39
10	0.42	1.15	1.94

5-4790. East Fork Des Moines River at Dakota City, Iowa

LOCATION.—Lat 42°43'25", long 94°11'30", in NW¼SE¼ sec. 6, T.91 N., R. 28 W., on right bank 50 ft upstream from old mill dam, in city park at east edge of Dakota City, 500 ft upstream from county highway bridge, 0.6 mile downstream from bridge on State Highway 3, 3.4 miles upstream from confluence with West Fork Des Moines River and at mile 333.8 upstream from mouth of Des Moines River.

DRAINAGE AREA.—1,308 sq mi. At site used prior to Oct. 1, 1954, 1,268 sq mi.

RECORDS AVAILABLE.—March 1940 to September 1966. Prior to October 1954, published as "near Hardy".

AVERAGE DISCHARGE.—26 years, 480 cfs; computed, 1941-66, 461 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	5.0	6.7	8.6	9.7	11.2	11.4
Climatic year	1948	1948	1958	1958	1958	1958

Maximum flow for period of record:

Daily, 17,800 cfs June 21, 1954; peak, 18,800 cfs June 21, 1954.

Magnitude and frequency of annual and seasonal low flow for climatic years 1940-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	34	22	15	12	10	9.2	8.3	7.7
30	44	27	18	14	12	11	10	9.6
60	66	36	21	16	14	13	13	12
120	100	55	29	21	19	18	17	16
183	145	77	37	25	22	20	19	18
	Lowest average flow for period April 1 to September 30							
7	56	33	19	12	10	8.8	7.6	7.1
30	96	52	31	20	17	14	13	12
60	200	117	61	38	31	26	22	21

Duration table of daily discharge for annual and seasonal periods for water years 1941-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
4,100	3,000	1,950	1,250	680	410	260	170	100	57	32	20	15	12	10
Discharge for period April 1 to September 30														
5,100	3,900	2,550	1,700	990	650	450	310	200	122	74	38	23	15	11

East Fork Des Moines River at Dakota City — Continued

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	20	30	40
5	0.44	1.98	5.36
10	0.79	3.57	6.94
20	1.09	4.17	7.93

5-4800. Lizard Creek near Clare, Iowa

LOCATION.—Lat 42°32'40", long 94°20'45", in NE¼NE¼ sec. 11, T.89 N., R.30 W., on right bank 20 ft. downstream from county highway bridge, 3 miles south of Clare, 8 miles northwest of Fort Dodge, and 8.9 miles upstream from South Lizard Creek.

DRAINAGE AREA.—257 sq mi.

RECORDS AVAILABLE.—March 1940 to September 1966. Prior to October 1954, published as North Lizard Creek near Clare.

AVERAGE DISCHARGE.—26 years, 92.9 cfs; computed, 1941-66, 90.5 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0.1	0.2	0.4	0.7
Climatic year	1943 1956	1956	1955-56 1958	1956 1958	1956	1956

Maximum flow for period of record:

Daily, 5,500 cfs June 23, 1947; peak, 10,000 cfs June 23, 1947.

Magnitude and frequency of annual and seasonal low flow for climatic years 1941-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	2.8	1.4	0.63	0.26	0.15			
30	4.0	2.1	1.0	.44	.27	.16		
60	6.4	3.5	1.7	.74	.45	.27		
120	12	6.8	3.7	2.1	1.5	1.1		
183	19	10	5.2	2.9	2.1	1.5		
	Lowest average flow for period April 1 to September 30							
7	6.2	3.1	1.3	.54	.31	.17		
30	9.2	5.2	3.0	1.7	1.3	.92		
60	21	13	8.0	5.4	4.4	3.7		

Lizard Creek near Clare — Continued

Duration table of daily discharge for annual and seasonal periods for water years 1941-65

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
970	700	370	220	115	70	42	24	14	7.8	4.0	1.5	.63	.30	.20
Discharge for period April 1 to September 30														
1,300	890	500	290	160	108	74	51	32	18	9.0	3.3	1.3	.32	.17

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	2	3	4
5	0.16	0.28	0.44
10	0.22	0.54	0.91

5-4805. Des Moines River at Fort Dodge, Iowa

LOCATION.—Lat 42°30'25", long 93°12'00", in NW¼SW¼ sec. 19, T.89 N., R.28 W., on right bank 400 ft upstream from Soldier Creek, 1,800 ft downstream from Illinois Central Railroad bridge in Fort Dodge, 2,000 ft downstream from Lizard Creek, and at mile 314.6.

DRAINAGE AREA.—4,190 sq mi.

RECORDS AVAILABLE.—April 1905 to July 1906 (no winter records) August 1911 to September 1913 (in report of Iowa State Planning Board), October 1913 to Sept. 1927 (published as "at Kalo"), October 1946 to September 1966.

AVERAGE DISCHARGE.—34 years (1913-27, 1946-66), 1,334 cfs; computed, 1941-66, 1,283 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	14	28.4	32.9	34.2	41.0	43.9
Climatic year	1955	1956	1956	1958	1958	1958

Maximum flow for period of record:

Daily, 35,100 cfs April 8, 1965; peak, 35,600 cfs April 8, 1965.

Remarks.—Diurnal fluctuation at low flow caused by powerplant above station.

Des Moines River at Fort Dodge — Continued

Magnitude and frequency of annual and seasonal low flow for climatic years 1912, 1947-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	93	70	54	39	33	27	22	18
30	130	95	72	53	44	36	29	25
60	163	118	87	64	52	43	35	30
120	230	158	117	86	71	58	47	40
183	310	200	145	108	89	73	59	50
	Lowest average flow for period April 1 to September 30							
7	200	140	99	74	64	56	50	46
30	280	190	130	94	80	70	61	56
60	500	310	200	140	118	100	84	76

Duration table of daily discharge for annual and seasonal periods for water years 1912-13, 1947-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
12,000	8,800	5,500	3,300	1,700	1,000	640	410	270	190	130	79	54	36	30
Discharge for period April 1 to September 30														
14,400	11,000	7,200	4,800	2,800	1,820	1,230	850	570	385	250	140	94	66	54

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	60	80	100
5	....	1.98	4.17
10	1.98	5.16	10.3
20	4.36	10.7	17.9

5-4810. Boone River near Webster City, Iowa

LOCATION.—Lat 42°26'00", long 93°48'15", in NW¼SE¼ sec. 18, T.88 N., R.25 W., on right bank 10 ft upstream from bridge on State Highway 60, 2 miles south of Webster City, and 4.5 miles downstream from White Fox Creek.

DRAINAGE AREA.—844 sq mi.

RECORDS AVAILABLE.—March 1940 to September 1966.

AVERAGE DISCHARGE.—26 years, 357 cfs; computed, 1941-66, 337 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	1.6	2.0	3.1	4.3	7.7	7.7
Climatic year	1956	1956	1956	1949	1949	1949

Maximum flow for period of record:

Daily 19,500 cfs June 22, 1954; peak, 20,300 cfs June 22, 1954.

Boone River near Webster City — Continued

Magnitude and frequency of annual and seasonal low flow for climatic years 1941-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	17	11	7.8	5.4	4.4	8.6	2.9	2.4
30	22	15	10	7.1	5.8	4.8	4.0	3.5
60	33	20	13	8.9	7.5	6.4	5.5	5.0
120	58	33	18	13	11	9.8	8.7	8.0
183	96	50	25	17	14	12	10	9.4
	Lowest average flow for period April 1 to September 30							
7	29	18	11	6.9	5.4	4.2	3.2	2.7
30	50	29	18	12	10	8.1	6.7	6.0
60	115	68	36	22	17	14	11	9.4

Duration table of daily discharge for annual and seasonal periods for water years 1941-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
3,800	2,600	1,500	850	440	260	160	96	60	36	21	13	8.9	5.8	4.4
Discharge for period April 1 to September 30														
4,900	3,450	1,900	1,140	620	400	280	190	122	73	42	21	13	7.6	5.0

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	15	20	25
5	0.69	1.59	2.98
10	1.23	2.98	4.76
20	1.98	3.71	5.75

5-4815. Des Moines River near Boone, Iowa

LOCATION.—Lat 42°04'40", long 93°55'55", in NE¼NE¼ sec. 24, T.84 N., R.27 W., on left bank 30 ft upstream from Boone Water Department dam, 2 miles northwest of Boone, 2.2 miles upstream from Bluff Creek, and at mile 258.8.

DRAINAGE AREA.—5,511 sq mi.

RECORDS AVAILABLE.—April 1920 to September 1966 in reports of Geological Survey. December 1904 to April 1920 (fragmentary gage height during high-water periods only) in reports of U.S. Weather Bureau.

AVERAGE DISCHARGE.—46 years, 1,658 cfs; computed, 1941-66, 1,872 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	17	19.1	22.7	35.0	55.0	66.4
Climatic year	1939	1939	1939	1939	1958	1958

Maximum flow for period of record:

Daily, 55,900 cfs June 22, 1954; peak, 57,400 cfs June 22, 1954.

Remarks.—Slight diurnal fluctuation at low stages caused by powerplant at Fort Dodge.

Magnitude and frequency of annual and seasonal low flow for climatic years 1920-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	130	88	67	54	47	41	35	32
30	180	120	93	74	65	56	48	43
60	240	160	120	94	80	69	58	52
120	390	250	170	137	118	100	85	75
183	610	380	230	170	150	127	107	94
	Lowest average flow for period April 1 to September 30							
7	280	170	104	70	61	56	52	50
30	430	260	160	112	96	84	76	72
60	740	430	260	174	146	124	110	102

Duration table of daily discharge for annual and seasonal periods for water years 1921-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
13,300	10,000	6,300	4,100	2,300	1,500	970	630	410	270	180	110	79	56	45
Discharge for period April 1 to September 30														
16,500	12,300	8,000	5,400	3,400	2,400	1,700	1,200	800	510	315	175	118	77	62

Des Moines River near Boone — Continued

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	100	150	200
5	....	6.35	15.9
10	3.57	11.9	26.8
20	6.15	19.8	37.7

5-4820. Des Moines River at Des Moines, Iowa

LOCATION.—Lat 41°36'45", long 93°37'15", in NE¼NE¼ sec. 34, T.79 N., R.24 W., on right bank 5 ft upstream from Second Avenue Bridge in Des Moines, 1.8 miles upstream from Iowa Power and Light Co. dam 2.8 miles upstream from Raccoon River and 4.5 miles downstream from Beaver Creek.

DRAINAGE AREA.—6,245 sq mi.

RECORDS AVAILABLE.—October 1902 to August 1903, May 1905 to July 1906, March 1915 to September 1961.

AVERAGE DISCHARGE.—46 years (1915-61) 1,983 cfs; computed, 1941-66, 2,241 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	24	24.4	29.9	44.4	65.3	77.2
Climatic year	1939	1939	1939	1939	1955	1955

Maximum flow for period of record:

Daily, 59,100 cfs June 24, 1954; peak, 60,200 cfs June 24, 1954.

Magnitude and frequency of annual and seasonal low flow for climatic years 1915-60

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	170	107	79	62	54	47	41	38
30	220	145	105	79	68	59	52	47
60	320	210	137	95	80	70	60	55
120	510	330	210	140	116	98	85	78
183	770	480	300	200	160	133	113	103
	Lowest average flow for period April 1 to September 30							
7	370	240	150	100	81	67	57	52
30	580	360	220	142	113	92	76	68
60	900	540	320	208	163	130	104	92

Duration table of daily discharge for annual and seasonal periods for water years 1916-61

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
15,000	11,500	7,500	5,000	2,900	1,900	1,250	830	550	360	220	130	92	65	52
Discharge for period April 1 to September 30														
18,000	14,000	9,200	6,400	4,100	2,900	2,100	1,500	1,000	650	410	285	140	83	65

5-4821.7 Big Cedar Creek near Varina, Iowa

LOCATION.—Lat 42°41'21", long 94°47'55", in NE¼NE¼ sec. 24, T.91 N., R. 34 W., on left bank 5 ft. downstream from highway bridge, 3.1 miles upstream from Drainage Ditch 74, and 5.5 miles northeast of Varina.

DRAINAGE AREA.—80.0 sq. mi.

RECORDS AVAILABLE—October 1959 to September 1966.

AVERAGE DISCHARGE.—7 years, 33.9 cfs; computed, 1941-66, 27.2 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0	0.1		
Climatic year	1963	1963	1963	1963		

Maximum flow for period of record:

Daily, 1,900 cfs August 31, 1962; peak, 2,080 cfs August 31, 1962.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 0.5 cfs; 10 years, ... cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1960-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
460	290	140	72	33	20	12	7.0	4.4	2.8	1.8	1.1	.65	.15	
Discharge for period April 1 to September 30														
500	350	200	110	52	32	23	17	12	6.8	3.9	2.1	1.5	1.1	.45

5-4823. North Raccoon River near Sac City, Iowa

LOCATION.—Lat 42°20'20", long 94°59'10", in NE¼NW¼ sec. 24, T.87 N., R.36 W., on right bank 15 ft. downstream from highway bridge, 0.2 mile upstream from Indian Creek, and 4.5 miles south of Sac City.

DRAINAGE AREA.—713 sq. mi.

RECORDS AVAILABLE—June 1958 to September 1966.

AVERAGE DISCHARGE.—8 years, 247 cfs; computed, 1941-66, 236 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	1.0	1.0	....	....	....	....
Climatic year	1958	1958				

Maximum flow for period of record:

Daily, 10,600 cfs September 1, 1962; peak, 10,800 cfs September 1, 1962.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 6.5 cfs; 10 years, ... cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1959-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
3,300	2,100	980	520	260	155	94	62	43	31	21	12	7.4	2.6	1.2
Discharge for period April 1 to September 30														
3,750	2,600	1,400	780	400	265	187	135	87	53	36	23	17	12	9.3

5-4825. North Raccoon River near Jefferson, Iowa

LOCATION.—Lat 41°59'20", long 94°22'30", in SW¼NW¼ sec. 20, T.83 N., R.30 W., on right bank 50 ft downstream from bridge on State Highway 17, 2 miles south of Jefferson, and 4.2 miles upstream from Hardin Creek.

DRAINAGE AREA.—1,619 sq. mi.

RECORDS AVAILABLE.—March 1940 to September 1966. Prior to October 1955, published as Raccoon River near Jefferson.

AVERAGE DISCHARGE.—26 years, 620 cfs; computed, 1941-66, 594 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0.6	0.9	3.2	9.3	12.6	17.3
Climatic year	1956	1956	1956	1956	1956	1955

Maximum flow for period of record:

Daily, 23,200 cfs June 24, 1947; peak, 29,100 cfs June 23, 1947.

Magnitude and frequency of annual and seasonal low flow for climatic years 1940-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	46	32	23	16	13	12	8.6	7.5
30	61	43	29	20	16	13	11	9.2
60	83	56	37	24	20	16	13	11
120	130	84	53	34	27	22	17	15
183	190	116	70	46	36	29	23	20
	Lowest average flow for period April 1 to September 30							
7	80	47	37	29	25	21	18	16
30	108	62	50	42	37	33	29	26
60	230	113	83	64	55	47	39	35

Duration table of daily discharge for annual and seasonal period for water years 1941-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
6,200	4,500	2,500	1,500	820	510	330	210	130	87	56	33	22	15	11
Discharge for period April 1 to September 30														
7,400	5,600	3,350	2,050	1,170	770	530	370	250	160	95	52	35	19	12

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	20	25	30
10	0.60	1.09	1.98
20	1.21	2.38	8.97

5-4830. East Fork Hardin Creek near Churdan, Iowa

LOCATION.—Lat 42°06'25", long 94°22'10", in SE¼SW¼ sec. 5, T.84 N., R.30 W., on left bank 35 ft. upstream from county highway bridge, 4.4 miles upstream from mouth, and 6.5 miles southeast of Churdan.

DRAINAGE AREA.—24.0 sq. mi.

RECORDS AVAILABLE.—July 1952 to September 1966.

AVERAGE DISCHARGE.—14 years, 7.80 cfs; computed 1941-66, 10.8 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0	0		
Climatic year	*	*	*	*		

* Occurred during most years.

Maximum flow for period of record:

Daily, 272 cfs June 12, 1966; peak, 413 cfs May 5, 1960.

Remarks.—Small diversion for irrigation above station.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 0 cfs; 10 years, 0 cfs.

Duration table of daily discharge for annual period for water years 1953-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
125	75	31	17	9.0	5.2	2.6	1.0	.38	.17					

5-4836. Middle Raccoon River at Panora, Iowa

LOCATION.—Lat 41°41'15", long 94°22'15", in NE¼NW¼, sec. 5, T.79 N., R.30 W., on left bank 15 ft downstream from county highway bridge, 0.2 mile southwest of Panora, and 1.5 miles upstream from Andy's Branch.

DRAINAGE AREA.—440 sq mi.

RECORDS AVAILABLE.—June 1958 to September 1966.

AVERAGE DISCHARGE.—8 years, 194 cfs; computed 1941-66, 163 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	12	18.3	24.1	25.7	29.7	32.9
Climatic year	1959	1959	1959	1959	1959	1959

Maximum flow for period of record:

Daily, 4,670 cfs July 2, 1958; peak, 9,150 cfs July 2, 1958.

Remarks.—City of Panora diverts approximately 100 acre-ft per year above station.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 20 cfs; 10 years, ... cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1959-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
2,150	1,370	660	390	230	160	113	79	55	44	36	27	22	19	17
Discharge for period April 1 to September 30														
2,200	1,550	830	480	300	218	170	130	97	71	54	40	32	26	23

5-4840. South Raccoon River at Redfield, Iowa

LOCATION.—Lat 41°34'45", long 94°11'00", in SW¼SW¼ sec. 3, T.78 N., R.29 W., on left bank 10 ft upstream from county highway bridge at Redfield, 0.8 mile downstream from bridge on State Highway 90, 1 mile downstream from Middle Raccoon River, and 15.6 miles upstream from mouth.

DRAINAGE AREA.—988 sq mi.

RECORDS AVAILABLE.—March 1940 to September 1966.

AVERAGE DISCHARGE.—26 years, 426 cfs; computed, 1941-66, 405 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	19	20.0	27.3	32.6	33.1	33.5
Climatic year	1940 1955	1953	1955	1955	1955	1955

Maximum flow for period of record:

Daily, 18,600 cfs July 2, 1958; peak, 35,000 cfs July 2, 1958

Magnitude and frequency of annual and seasonal low flow for climatic years 1941-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	52	43	36	30	28	25	23	22
30	68	56	47	39	38	32	28	26
60	86	70	58	47	43	38	35	32
120	113	90	72	58	52	47	42	40
183	170	130	100	80	71	63	56	52
	Lowest average flow for period April 1 to September 30							
7	92	66	49	40	37	35	33	32
30	135	93	65	52	48	44	41	40
60	217	148	102	82	77	74	71	69

Duration table of daily discharge for annual and seasonal periods for water years 1941-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
4,300	2,800	1,500	900	510	340	240	170	125	96	72	52	40	32	28
Discharge for period April 1 to September 30														
5,200	3,250	1,850	1,160	690	470	345	260	190	140	100	64	48	37	31

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	50	75	100
5	....	4.17	10.1
10	1.39	6.74	14.1
20	2.38	8.93	17.3

5-4845. Raccoon River at Van Meter, Iowa

LOCATION.—Lat 41°32'00", long 93°57'10", in SW¼SW¼ sec. 22, T.78 N., R.27 W., on right bank 100 ft downstream from highway bridge, 0.3 mile northeast of Van Meter, 1.2 miles downstream from confluence of North and South Raccoon River, and 30 miles upstream from mouth.

DRAINAGE AREA.—3,441 sq mi.

RECORDS AVAILABLE.—April 1915 to September 1966.

AVERAGE DISCHARGE.—51 years, 1,211 cfs; computed, 1941-66, 1,398 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	10	10.0	13.9	24.1	39.6	41.6
Climatic year	1939	1939	1939	1939	1939	1939

Maximum flow for period of record:

Daily, 33,000 cfs June 13, 1947; peak, 41,200 cfs June 13, 1947.

Magnitude and frequency of annual and seasonal low flow for climatic years 1916-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	118	88	64	46	38	31	25	22
30	158	116	83	59	49	40	33	28
60	210	145	103	75	62	52	43	37
120	330	220	150	107	88	74	62	54
183	460	300	200	140	114	95	78	70
	Lowest average flow for period April 1 to September 30							
7	220	147	96	65	52	42	34	29
30	340	222	147	98	78	63	50	44
60	540	340	220	148	118	94	75	64

Duration table of daily discharge for annual and seasonal periods for water years 1916-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
10,800	7,600	4,500	2,900	1,700	1,080	720	490	320	230	150	94	63	41	31
Discharge for period April 1 to September 30														
12,700	9,500	5,700	3,700	2,230	1,520	1,070	740	510	345	225	130	88	57	43

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	100	125	150
5	3.37	5.95	10.3
10	6.35	12.3	19.8
20	11.9	19.8	28.8

5-4855. Des Moines River below Raccoon River at Des Moines, Iowa

LOCATION.—Lat 41°34'30", long 93°35'40", in NE¼SE¼ sec. 10, T.78 N., R.24 W., on right bank 10 ft downstream from Southeast 14th Street bridge, 0.8 mile downstream from Raccoon River at Scott Street dam, and at mile 200.7.

DRAINAGE AREA.—9,879 sq mi.

RECORDS AVAILABLE.—April 1940 to September 1966.

AVERAGE DISCHARGE.—26 years, 3,861 cfs; computed, 1941-66, 3,773 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	55	60.4	85.2	95.4	108	127
Climatic year	1956	1956	1956	1955	1955	1955

Maximum flow for period of record:

Daily, 74,000 cfs June 26, 1947; peak, 77,000 cfs June 26, 1947.

Remarks.—Des Moines municipal water supply is taken from infiltration galleries on Raccoon River, 3.5 miles above station. Average daily pumpage was about 50 cfs. At times, water is pumped from Raccoon River into recharge basins, or into Waterworks Reservoir (capacity, 4,800 acre-ft). Effluent from sewage treatment plant enters the river 2.3 miles below station. Net effect of diversions not known.

Magnitude and frequency of annual and seasonal low flow for climatic years 1940-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	370	260	170	110	94	82	73	69
30	520	360	220	140	120	103	92	88
60	660	450	280	180	147	125	110	102
120	1,030	680	410	250	200	167	142	130
183	1,560	1,020	620	360	290	240	200	180
	Lowest average flow for period April 1 to September 30							
7	770	490	320	220	180	142	110	94
30	1,200	770	500	350	290	240	193	167
60	2,000	1,260	800	540	460	380	320	280

Duration table of daily discharge for annual and seasonal periods for water years 1941-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
29,000	22,000	14,000	9,300	5,700	3,900	2,600	1,750	1,150	730	470	270	163	114	98
Discharge for period April 1 to September 30														
36,500	28,000	18,400	12,800	7,800	5,700	4,300	3,200	2,200	1,470	930	500	330	200	145

5-4860. North River near Norwalk, Iowa

LOCATION.—Lat 41°27'25", long 93°39'10", in NW¼SW¼ sec. 20, T.77 N., R.24 W., on left bank 10 ft downstream from highway bridge, 1¾ miles southeast of Norwalk, 8 miles northwest of Indianola, 8.7 miles upstream from Middle Creek, and 9 miles south of Des Moines.

DRAINAGE AREA.—349 sq mi.

RECORDS AVAILABLE.—February 1940 to September 1966.

AVERAGE DISCHARGE.—26 years, 171 cfs; computed, 1941-66, 175 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0	0.2	0.3	0.7
Climatic year	1954-57	1954-57	1957	1953 1955 1957	1955	1953

Maximum flow for period of record:

Daily, 21,600 cfs June 13, 1947; peak, 32,000 cfs June 13, 1947.

Magnitude and frequency of annual and seasonal low flow for climatic years 1941-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	4.5	1.7	0.50	0.12				
30	10	4.2	1.3	.34	0.14			
60	17	9.0	3.5	1.0	.41	0.16		
120	31	18	7.8	2.9	1.5	.79		
183	50	27	13	6.2	3.8	2.3		
	Lowest average flow for period April 1 to September 30							
7	6.7	3.1	1.0	.20	....	....		
30	15	7.0	2.9	1.1	.60	.32		
60	35	20	11	5.3	3.4	2.2		

Duration table of daily discharge for annual and seasonal periods for water years 1941-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
2,100	1,450	750	410	185	100	60	37	23	13	5.9	1.6	.55	.20	.10
Discharge for period April 1 to September 30														
2,400	1,720	970	500	285	138	84	53	33	20	9.3	2.7	.57	.14	

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	6	8	10
5	0.75	1.19	1.79
10	1.39	2.08	2.78

5-4864.9 Middle River near Indianola, Iowa

LOCATION.—Lat 41°25'25", long 93°35'05", in SW¼SE¼ sec. 35, T.77 N., R.24 W., on right bank 10 ft downstream from county highway bridge, 0.5 mile upstream from Cavitt Creek, and 4.5 miles northwest of Indianola.

DRAINAGE AREA.—503 sq mi.

RECORDS AVAILABLE.—March 1940 to September 1966.

AVERAGE DISCHARGE.—26 years, 248 cfs; computed, 1941-66, 257 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	1.0	1.1	1.5	1.8	2.2	5.4
Climatic year	1955-56	1956	1955	1955	1955	1953

Maximum flow for period of record:

Daily, 21,400 cfs June 13, 1947; peak, 34,000 cfs June 13, 1947.

Magnitude and frequency of annual and seasonal low flow for climatic years 1941-59, 1961-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	15	8.0	3.8	2.0	1.6	1.4	1.2	1.1
30	23	13	6.0	3.2	2.5	2.1	1.8	1.6
60	35	19	9.3	5.1	4.0	3.3	2.8	2.5
120	55	30	15	7.6	5.9	4.8	4.0	3.5
183	90	50	24	12	9.3	7.5	6.3	5.8
	Lowest average flow for period April 1 to September 30							
7	22	14	8.6	5.2	3.9	2.9	2.2	1.7
30	36	24	16	10	8.1	6.2	4.7	3.8
60	65	41	25	16	13	9.8	7.3	6.0

Duration table of daily discharge for annual period for water years 1941-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
3,400	2,100	1,000	540	260	150	96	63	41	26	15	7.4	4.4	2.7	2.0

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	10	15	20
5	0.75	1.98	3.41
10	1.39	2.88	4.56
20	1.79	3.37	5.16

5-4874.7 South River near Ackworth, Iowa

LOCATION.—Lat 41°20'15", long 93°29'05", in SE¼SE¼ sec. 34, T.76 N., R.23 W., on right bank 15 ft downstream from county highway bridge, 2 miles southwest of Ackworth and 0.6 mile downstream from Otter Creek.

DRAINAGE AREA.—460 sq mi.

RECORDS AVAILABLE.—February 1940 to September 1966.

AVERAGE DISCHARGE.—26 years, 231 cfs; computed, 1941-66, 241 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0	0.4	0.7	1.7
Climatic year	1956	1956	1956	1956	1956	1957

Maximum flow for period of record:

Daily, 26,800 cfs June 5, 1947; peak, 34,000 cfs June 5, 1947.

Magnitude and frequency of annual and seasonal low flow for climatic years 1941-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	4.7	3.1	1.9	1.2	0.90	0.64	0.42	0.30
30	6.3	4.0	2.5	1.6	1.2	.90	.63	.47
60	14	8.1	4.3	2.2	1.6	1.1	.73	.56
120	36	16	6.0	2.9	2.0	1.4	1.0	.86
183	70	29	11	4.7	3.1	2.3	1.9	1.7
	Lowest average flow for period April 1 to September 30							
7	5.5	3.9	2.6	1.6	1.2	.87	.59	.44
30	10	6.7	4.5	3.0	2.4	1.9	1.5	1.2
60	29	17	10	6.8	5.4	4.2	3.2	2.7

Duration table of daily discharge for annual period for water years 1941-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
3,900	2,400	1,000	400	170	91	52	29	15	7.6	4.3	2.3	1.5	.91	.68

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	5	10	15
5	0.56	2.02	3.77
10	0.99	2.74	4.68
20	1.19	2.94	4.96

5-4880. White Breast Creek near Knoxville, Iowa

LOCATION.—Lat 41°19'25", long 93°08'55", in NE¼SW¼ sec. 3, T.75 N., R.20 W., on right bank 10 ft downstream from bridge on State Highway 92, 2.2 miles west of Knoxville, 1.1 miles upstream from Butcher Creek, and 11.1 miles upstream from mouth.

DRAINAGE AREA.—380 sq mi.

RECORDS AVAILABLE.—July 1945 to September 1962.

AVERAGE DISCHARGE.—17 years, 198 cfs; computed, 1941-66, 198 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0.2	0.4	0.6	0.7	0.7	1.8
Climatic year	1956	1956	1955-56	1956	1956	1955

Maximum flow for period of record:

Daily, 10,500 cfs March 30, 1960; peak, 14,000 cfs June 6, 1947.

Magnitude and frequency of annual and seasonal low flow for climatic years 1946-61

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	2.5	1.6	1.0	0.73	0.62	0.53		
30	5.2	2.7	1.6	1.0	.82	.68		
60	9.5	4.1	2.2	1.3	1.0	.82		
120	21	8.2	3.8	2.1	1.6	1.2		
183	44	18	7.0	3.6	2.6	1.9		
	Lowest average flow for period April 1 to September 30							
7	2.9	1.9	1.3	.90	.75	.64		
30	6.0	4.0	2.6	1.8	1.5	1.2		
60	22	12	6.4	3.8	3.1	2.5		

Duration table of daily discharge for annual and seasonal periods for water years 1946-62

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
3,400	2,100	950	400	145	75	40	21	11	4.8	2.7	1.5	1.1	.74	.58
Discharge for period April 1 to September 30														
4,000	2,450	1,050	430	165	85	50	28	15	8.0	4.0	1.9	1.3	.88	.64

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	5	10	15
5	0.62	2.28	4.17
10	1.13	2.98	5.00

5-4885. Des Moines River near Tracy, Iowa

LOCATION.—Lat 41°16'55", long 92°51'30", in NW¼SE¼ sec. 19, T.75 N., R.17 W., on right bank 250 ft upstream from abandoned Bellefountaine Bridge, 0.5 mile downstream from bridge on State Highway 92, 0.8 miles east of Tracy, 3.1 miles upstream from Cedar Creek, and 6.4 miles downstream from English Creek, and at mile 130.4 (revised).

DRAINAGE AREA.—12,479 sq mi.

RECORDS AVAILABLE.—March 1920 to September 1966.

AVERAGE DISCHARGE.—46 years, 4,330 cfs; computed, 1941-66, 5,161 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	89	111	128	137	156	221
Climatic year	1956	1956	1955	1955	1955	1955

Maximum flow for period of record:

Daily 136,000 cfs June 14, 1947; peak, 155,000 cfs June 14, 1947.

Note: Lower minimum daily flows occurred in 1939, with a daily minimum of 40 cfs; however, these daily discharges are revised figures and are unpublished.

Magnitude and frequency of annual and seasonal low flow for climatic years 1920-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	507	370	254	174	140	112	88	75
30	565	465	314	210	168	133	104	88
60	900	640	427	280	220	174	135	114
120	1,370	960	623	424	340	270	212	181
183	1,860	1,290	847	560	450	360	284	245
	Lowest average flow for period April 1 to September 30							
7	920	660	460	325	267	222	188	170
30	1,460	1,000	690	495	405	336	280	248
60	2,260	1,530	1,020	670	530	430	353	320

Duration table of daily discharge for annual and seasonal periods for water years 1921-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
32,500	25,200	15,000	10,600	6,180	4,200	2,960	2,000	1,390	940	623	378	250	168	142
Discharge for period April 1 to September 30														
38,500	30,800	20,000	13,300	8,250	5,900	4,350	3,200	2,260	1,580	1,060	627	445	268	200

5-4890. Cedar Creek near Bussey, Iowa

LOCATION.—Lat 41°13'10", long 92°54'25", on south line in SW¼SW¼ sec. 11, T.74 N., R.18 W., on left bank at downstream side of bridge on State Highway 156, 1.6 miles northwest of Bussey, and 8.9 miles upstream from mouth.

DRAINAGE AREA.—374 sq mi.

RECORDS AVAILABLE.—October 1947 to September 1966.

AVERAGE DISCHARGE.—19 years, 192 cfs; computed, 1941-66, 210 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0.1	0.1	0.2	0.8
Climatic year	1955-56	1955-56	1955-56	1955	1955	1953

Maximum flow for period of record:

Daily, 15,200 cfs March 30, 1960; peak, 29,300 cfs May 9, 1950.

Magnitude and frequency of annual and seasonal low flow for climatic years 1948-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	2.8	1.7	.81	.31	.14	....	....	....
30	5.0	2.8	1.3	.54	.29	.14	....	....
60	11	5.9	2.6	1.0	.57	.29	....	....
120	29	15	6.6	2.6	1.4	.72	....	....
183	54	28	13	5.2	3.0	1.6	....	....
	Lowest average flow for period April 1 to September 30							
7	3.6	2.7	1.5	.59	.29	.11	....	....
30	7.3	5.2	3.8	2.2	1.5	.86	....	....
60	25	17	11	6.3	4.3	2.8	....	....

Duration table of daily discharge for annual and seasonal periods for water years 1948-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
3,080	1,950	820	350	133	73	39	23	12	5.8	3.1	1.2	.53	.25	.17
Discharge for period April 1 to September 30														
3,360	2,080	818	357	154	91	54	30	16	8.9	5.2	2.5	.86	.28	.18

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	5	10	15
5	0.60	1.88	3.57
10	1.25	3.17	5.32

5-4895. Des Moines River at Ottumwa, Iowa

LOCATION.—Lat 41°00'40", long 92°24'40", in SE¼NE¼ sec. 25, T.72 N., R.14 W., on right bank 15 ft downstream from Wabash Railroad Bridge at Ottumwa, 6.5 miles upstream from Village Creek, 9.5 miles downstream from South Avery Creek, and at mile 94.1.

DRAINAGE AREA.—13,374 sq mi.

RECORDS AVAILABLE.—March 1917 to September 1966 (published as "at Eldon" October 1930 to March 1935).

AVERAGE DISCHARGE.—49 years, 4,768 cfs; computed, 1941-66, 5,747 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	30	45.7	63.3	92.2	151	198
Climatic year	1939	1939	1939	1939	1939	1939

Maximum flow for period of record:

Daily, 126,000 cfs June 7, 1947; peak, 135,000 cfs June 7, 1947.

Remarks.—Prior to Dec. 12, 1958, and since Nov. 30, 1960, diurnal fluctuation at low flow caused by powerplant above station.

Magnitude and frequency of annual and seasonal low flow for climatic years 1917-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	530	370	243	160	127	100	78	67
30	720	513	340	223	174	134	105	90
60	975	680	440	292	240	195	157	135
120	1,480	1,030	660	423	334	268	219	190
183	2,080	1,430	940	600	473	374	300	259
	Lowest average flow for period April 1 to September 30							
7	1,000	710	485	342	278	225	180	154
30	1,540	1,060	710	508	416	345	284	250
60	2,420	1,750	1,210	850	700	565	460	400

Duration table of daily discharge for annual and seasonal periods for water years 1918-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
35,000	27,900	18,200	11,700	6,700	4,590	3,100	2,170	1,550	1,060	685	397	250	163	107
Discharge for period April 1 to September 30														
41,500	33,200	22,800	15,100	9,200	6,550	4,880	3,490	2,490	1,800	1,710	705	470	288	208

5-4905. Des Moines River at Keosauqua, Iowa

LOCATION.—Lat 40°43'45", long 91°57'45", in SE¼SW¼, sec. 36, T.69 N., R.10 W., on right bank 10 ft upstream from bridge on State Highway 1 at Keosauqua, 4.0 miles downstream from Chequest Creek, and at mile 51.3.

DRAINAGE AREA.—14,038 sq mi.

RECORDS AVAILABLE.—May 1903 to July 1906, April to December 1910, August 1911 to September 1966.

AVERAGE DISCHARGE.—56 years (1903-5, 1911-66), 5,254 cfs; computed, 1941-66, 6,191 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	40	62.9	85.3	109	179	233
Climatic year	1939	1939	1939	1939	1939	1939

Maximum flow for period of record:

Daily, 145,000 cfs June 1, 1903; peak, 146,000 cfs June 1, 1903.

Remarks.—Prior to Dec. 12, 1958, and since Nov. 30, 1960, some diurnal fluctuations at medium and low stages caused by powerplant at Ottumwa.

Magnitude and frequency of annual and seasonal low flow for climatic years 1904-5, 1912-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	626	440	294	198	158	126	103	90
30	885	618	404	267	212	170	136	120
60	1,080	746	495	324	259	208	168	148
120	1,790	1,220	785	507	395	310	248	216
183	2,500	1,680	1,050	660	513	402	323	284
	Lowest average flow for period April 1 to September 30							
7	1,100	780	560	400	330	272	222	196
30	1,630	1,160	830	605	500	410	332	290
60	2,500	1,800	1,260	900	755	630	518	460

Duration table of daily discharge for annual and seasonal periods for water years 1904-05, 1912-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
37,800	30,100	19,900	13,000	7,800	5,100	3,500	2,380	1,650	1,150	740	450	300	188	145
Discharge for period April 1 to September 30														
44,000	35,300	24,000	16,100	10,000	7,050	5,200	3,750	2,700	1,870	1,280	770	530	328	232

5-4910. Sugar Creek near Keokuk, Iowa

LOCATION.—Lat 40°26'45", long 91°28'55", in SE¼NW¼ sec. 7, T.65 N., R.5 W., on left bank 10 ft downstream from highway bridge, 4.1 miles upstream from mouth and 6 miles northwest of Keokuk.

DRAINAGE AREA.—105 sq mi.

RECORDS AVAILABLE.—April 1922 to September 1931, August 1958 to September 1966.

AVERAGE DISCHARGE.—17 years (1922-31, 1958-66), 65.2 cfs; computed, 1941-66, 67.8 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0	0	0	0
Climatic year	*	*	*	1963	1963	1963

*Occurred during several years.

Maximum flow for period of record:

Daily, 3,580 cfs in 1927, 1928 and 1929 water years: maximum peak recorded 6,620 cfs October 1, 1927.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, < 0.1 cfs; 10 years, 0 cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1923-31, 1959-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
1,030	630	265	112	49	30	18	11	5.8	2.4	.84				
Discharge for period April 1 to September 30														
1,350	740	315	113	46	28	16	9.9	5.0	2.4	.92				

FOX RIVER BASIN

5-4943. Fox River at Bloomfield, Iowa

LOCATION.—Lat 40°46'10", long 92°25'10", in SW¼SE¼ sec. 13, T.69 N., R.14 W., on left bank 15 ft downstream from highway bridge, 1.25 miles north of Bloomfield, and 8.6 miles downstream from North Fox Creek.

DRAINAGE AREA.—87.7 sq mi.

RECORDS AVAILABLE.—October 1957 to September 1966.

AVERAGE DISCHARGE.—9 years, 45.9 cfs; computed, 1941-66, 58.2 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0.1	0.2	0.5	0.6
Climatic year	1957-58 1961	1957 1961	1957 1961 1963	1963	1963-64	1963

Maximum flow for period of record:

Daily, 4,370 cfs May 6, 1960; peak, 8,600 cfs May 6, 1960.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, .15 cfs; 10 years, 0 cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1958-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
690	450	188	71	28	14	7.5	3.7	1.9	1.2	.74	.38	.21	.13	.10
Discharge for period April 1 to September 30														
725	470	143	58	24	13	7.0	3.4	1.7	1.0	.65	.30	.16	.12	.10

5-4945. Fox River at Cantril, Iowa

LOCATION.—Lat 40°39'35", long 92°03'40", in NW¼SW¼ sec. 30, T.68 N., R.10 W., on left bank 5 ft downstream from bridge on State Highway 2, a quarter of a mile upstream from Bone Run, and 1 mile northeast of Cantril.

DRAINAGE AREA.—161 sq mi.

RECORDS AVAILABLE.—August 1940 to September 1951.

AVERAGE DISCHARGE.—11 years, 97.7 cfs; computed, 1941-66, 111 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0.3	1.0	1.3	2.0
Climatic year	1941	1941	1941	1950	1950	1950

Maximum flow for period of record:

Daily, 12,700 cfs June 18, 1946; peak, 16,500 cfs June 18, 1946.

Magnitude and frequency of annual low flow for climatic years 1941-50

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	.93	.72	.46	.22	.13	....		
30	3.0	2.1	1.3	.67	.43	.27		
60	5.7	4.0	2.5	1.4	.90	.58		
120	13	8.1	4.7	2.6	1.8	1.2		
183	21	14	7.9	4.4	3.1	2.1		

Duration table of daily discharge for annual period for water years 1941-51

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
1,680	1,020	390	145	63	35	22	14	7.9	4.8	3.0	1.5	.96	.68	.46

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	10	15	20
5	1.98	3.77	5.55
10	2.98	4.88	6.84

BIG SIOUX RIVER BASIN

6-4832.7 Rock River at Rock Rapids, Iowa

LOCATION.—Lat 43°26'13", long 96°09'58", in NE¼SW¼ sec. 33, T.100 N., R.45 W., on right bank at dam on north side of city park in Rock Rapids, half a mile northeast of junction of U.S. Highways 75 and 9, a third of a mile upstream from Tom Creek, and at mile 42.8.

DRAINAGE AREA.—788 sq mi.

RECORDS AVAILABLE.—August 1959 to September 1966.

AVERAGE DISCHARGE.—7 years, 164 cfs; computed, 1941-66, 177 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0.8	1.0	1.6	2.6	5.6	13.1
Climatic year	1964	1964	1964	1964	1964	1968

Maximum flow for period of record:

Daily, 12,000 cfs March 29, 1962; peak, 16,400 cfs March 29, 1962.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 2.2 cfs; 10 years, ... cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1961-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
2,220	1,250	485	240	115	66	43	32	24	19	14	8.0	5.1	3.0	2.0
Discharge for period April 1 to September 30														
8,100	1,800	790	380	180	117	79	56	40	29	20	13	9.3	6.4	5.2

6-4835. Rock River near Rock Valley, Iowa

LOCATION.—Lat 43°12'05", long 96°20'15", in NE¼NE¼ sec. 25, T.97 N., R.47 W., on downstream side of bridge on U.S. Highway 18, 1.8 miles west of Rock Valley, and at mile 15.9.

DRAINAGE AREA.—1,600 sq mi.

RECORDS AVAILABLE.—June 1948 to September 1966.

AVERAGE DISCHARGE.—18 years, 295 cfs; computed, 1941-66, 379 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0.1	0.4	2.9	3.1
Climatic year	1958	1958	1958	1958	1958	1958

Maximum flow for period of record:

Daily, 23,500 cfs March 30, 1962; peak, 28,400 cfs March 30, 1962.

Magnitude and frequency of annual and seasonal low flow for climatic years 1949-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	16	11	5.2	1.6	0.65	0.20		
30	22	15	7.7	3.0	1.4	.55		
60	30	20	11	4.7	2.6	1.3		
120	49	32	18	9.0	5.9	3.6		
183	71	49	30	17	12	8.8		
	Lowest average flow for period April 1 to September 30							
7	46	30	17	9.7	6.8	4.6		
30	68	46	29	17	13	9.1		
60	93	70	49	34	27	21		

Duration table of daily discharge for annual and seasonal periods for water years 1949-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
4,450	2,300	980	500	250	150	100	69	49	34	21	9.0	3.7	1.4	.70
Discharge for period April 1 to September 30														
6,300	3,000	1,300	700	380	257	182	133	97	70	47	27	16		

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	10	15	20
5	0.69	1.59	2.38
10	1.49	2.72	4.17

6-4840. Dry Creek at Hawarden, Iowa

LOCATION.—Lat 42°59'45", long 96°28'15", in NE¼NE¼ sec. 2, T.94 N., R.48 W., on left bank 6 ft downstream from bridge on State Highway 10 at east edge of Hawarden and 1.7 miles upstream from mouth.

DRAINAGE AREA.—48.4 sq mi.

RECORDS AVAILABLE.—June 1948 to September 1966.

AVERAGE DISCHARGE.—18 years, 7.82 cfs; computed, 1941-66, 9.97 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	188-day
Discharge in cfs	0	0	0	0	0	0
Climatic year	*	*	*	*	+	+

* Occurred during most years. + Occurred during several years.

Maximum flow for period of record:

Daily, 2,050 cfs June 7, 1953; peak, 10,900 cfs June 7, 1953.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 0 cfs; 10 years, 0 cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1949-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
130	52	18	8.8	3.6	2.1	1.2	.66	.31	.13					
Discharge for period April 1 to September 30														
105	52	19	10	5.0	2.9	2.0	1.2	.61	.29	.12				

6-6000. Perry Creek at 38th Street, Sioux City, Iowa

LOCATION.—Lat 42°32'05", long 96°24'35", in SE¼SE¼ sec. 8, T.89 N., R.47 W., on right upstream abutment of bridge on 38th Street in Sioux City, 3.6 miles upstream from mouth.

DRAINAGE AREA.—65.1 sq mi.

RECORDS AVAILABLE.—October 1945 to September 1966.

AVERAGE DISCHARGE.—21 years, 15.6 cfs; computed, 1941-66, 14.4 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0.1	0.1	0.4	0.5
Climatic year	1946 1958-60	1958-60	1958-59	1958	1958	1958

Maximum flow for period of record:

Daily, 1,780 cfs March 29, 1960; peak 7,780 cfs September 10, 1949.

Magnitude and frequency of annual low flow for climatic years 1946-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	1.1	0.46	0.14					
30	1.8	.96	.50	0.28	0.20	0.14		
60	2.2	1.3	.72	.42	.30	.22		
120	3.2	2.0	1.3	.93	.77	.64		
183	4.1	2.6	1.7	1.2	1.0	.84		

Duration table of daily discharge for annual and seasonal periods for water years 1946-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
250	123	42	21	10	6.3	4.3	3.1	2.2	1.6	1.1	.65	.41	.22	.11
Discharge for period April 1 to September 30														
280	123	42	23	12	7.6	5.4	3.9	2.6	1.7	.99	.45	.23	.10	

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	1	2	3
5	0.05	0.29	0.66
10	.09	.43	.85

FLOYD RIVER BASIN

6-6001. Floyd River at Alton, Iowa

LOCATION.—Lat 42°58'40", long 96°00'00", in NE¼ Sec. 11, T.94 N., R.44 W., on left bank at downstream side of Chicago and North Western Railway Co. bridge at east edge of Alton, 22 miles upstream from confluence with West Floyd River and at mile 51.6.

DRAINAGE AREA.—265 sq mi.

RECORDS AVAILABLE.—October 1955 to September 1966.

AVERAGE DISCHARGE.—11 years, 35.6 cfs; computed, 1941-66, 76.6 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0	0.1	0.1	0.1
Climatic year	1956 1958-59 1964	1956 1958 1964	1956 1958	1958	1958	1958

Maximum flow for period of record:

Daily, 7,000 cfs March 29, 1962; peak, 12,200 cfs March 28, 1962.

Magnitude and frequency of annual low flow for climatic years 1956-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	1.1	0.45						
30	1.8	1.0	0.37					
60	2.9	1.7	.75	0.25	0.12			
120	5.7	3.2	1.6	.67	.37	0.19		
183	9.5	5.4	2.7	1.3	.75	.41		

Duration table of daily discharge for annual and seasonal periods for water years 1956-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
540	250	92	48	24	13	7.8	5.0	3.3	2.2	1.2	.31	.18	.11	
Discharge for period April 1 to September 30														
540	260	120	69	38	24	15	9.5	5.8	3.7	2.3	1.3	.39	.18	

6-6003. West Branch Floyd River near Struble, Iowa

LOCATION.—Lat 42°55'15", long 96°10'30", in NE¼ sec. 32, T.94 N., R.45 W., on right bank at downstream side of county road bridge 0.2 mile west of U.S. Highway 75, 2.2 miles northeast of Struble, 14 miles upstream from confluence with Floyd River and at mile 39.3.

DRAINAGE AREA.—181 sq mi.

RECORDS AVAILABLE.—October 1955 to September 1966.

AVERAGE DISCHARGE.—11 years, 25.4 cfs; computed, 1941-66, 41.9 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0	0	0.1	0.1
Climatic year	*	*	*	*	1958	1958

* Occurred during several years.

Maximum flow for period of record:

Daily, 5,820 cfs March 29, 1962; peak, 8,060 cfs March 28, 1962.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 0 cfs; 10 years, 0 cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1956-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
370	170	55	27	12	7.0	4.3	2.8	1.7	1.1	.64	.19			
Discharge for period April 1 to September 30														
370	210	76	40	20	12	7.5	5.0	3.3	2.2	1.5	.76	.44	.24	.16

6-6005. Floyd River at James, Iowa

LOCATION.—Lat 42°34'30", long 96°18'45", in SE¼SE¼ sec. 30, T.90 N., R.46 W., on right bank at downstream side of highway bridge at James, 15.1 miles downstream from West Branch Floyd River and at mile 9.0.

DRAINAGE AREA.—882 sq mi.

RECORDS AVAILABLE.—December 1934 to September 1966.

AVERAGE DISCHARGE.—31 years (1935-66), 177 cfs; computed, 1941-66, 232 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	1.0	1.0	1.1	1.5	2.7	3.1
Climatic year	1936 1958	1958	1958	1958	1958	1958

Maximum flow for period of record:

Daily, 32,400 cfs June 8, 1953; peak, 71,500 cfs June 8, 1953.

Magnitude and frequency of annual and seasonal low flow for climatic years 1936-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	15	11	7.2	4.7	3.5	2.5	1.7	1.3
30	19	14	9.1	5.7	4.2	3.1	2.2	1.7
60	23	17	11	7.0	5.4	4.0	2.9	2.3
120	35	25	17	11	8.1	6.1	4.5	3.6
183	54	37	24	15	12	8.6	6.2	4.9
	Lowest average flow for period April 1 to September 30							
7	31	20	12	7.4	5.6	4.3	3.2	2.6
30	48	30	17	10	7.8	5.8	4.3	3.5
60	85	53	30	17	13	9.5	7.0	5.8

Duration table of daily discharge for annual and seasonal periods for water years 1936-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
2,300	1,400	660	360	170	100	65	46	33	23	16	9.1	5.8	3.4	2.5
Discharge for period April 1 to September 30														
2,600	1,500	760	420	240	157	110	78	56	39	26	16	10	5.6	3.8

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	10	15	20
5	.40	1.19	2.38
10	.99	2.38	4.13
20	1.88	3.77	5.95

6-6020. West Fork ditch at Holly Springs, Iowa

LOCATION.—Lat 42°15'34", long 96°04'41", in SE¼SE¼ sec. 16, T.86 N., R.45 W., on right bank 10 ft downstream from bridge on county road, three-quarters of a mile south of Holly Springs, 11.4 miles upstream from Wolf Creek, 15.7 miles north of Onawa, and 22 miles southeast of Sioux City.

DRAINAGE AREA.—399 sq mi.

RECORDS AVAILABLE.—April 1939 to September 1966.

AVERAGE DISCHARGE.—27 years, 95.9 cfs; computed, 1941-66, 103 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0.2	0.5	1.7	2.1	2.7	2.9
Climatic year	1956	1956	1956	1956	1956	1956

Maximum flow for period of record:

Daily, 9,000 cfs March 28, 1962; peak, 12,400 cfs March 28, 1962.

Remarks.—West Fork ditch is a dredged channel which diverts flow of West Fork Little Sioux River at Holly Springs and carries it 5.5 miles south, thence southeast 6.5 miles to a point 1.5 miles west of Kennebec, where Wolf Creek enters from left. From this point ditch roughly parallels Little Sioux River and becomes known as Monona-Harrison ditch 3 miles southwest of Turin.

Magnitude and frequency of annual and seasonal low flow for climatic years 1940-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	11	8.1	5.3	3.0	2.1	1.4	0.92	0.68
30	14	10	7.2	4.7	3.7	2.8	2.1	1.7
60	17	13	9.0	6.0	4.7	3.6	2.7	2.2
120	21	19	13	8.7	6.9	5.3	4.0	3.3
183	29	25	18	12	9.4	7.2	5.4	4.5
	Lowest average flow for period April 1 to September 30							
7	21	14	9.0	5.4	3.9	2.7	1.7	1.2
30	34	23	15	8.7	6.4	4.6	3.2	2.5
60	50	34	22	13	10	7.2	5.1	4.0

Duration table of daily discharge for annual and seasonal periods for water years 1940-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
1,200	770	345	180	89	56	40	30	23	17	12	6.7	4.2	2.5	1.7
Discharge for period April 1 to September 30														
1,360	880	430	235	125	81	59	44	33	24	17	11	6.6	3.4	2.0

West Fork ditch at Holly Springs — Continued

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	5	7	10
5	....	.12	.50
10	.14	.44	1.19
20	.44	.95	1.98

LITTLE SIOUX RIVER BASIN

6-6056. Little Sioux River at Gillett Grove, Iowa

LOCATION.—Lat 43°01'05", long 95°02'45", in SE¼NW¼ sec. 25, T.95 N., R.36 W., on left bank 5 ft downstream from county highway bridge, 0.2 mile northwest of Gillette Grove, 0.9 mile above Elk Creek, and at mile 146.1.

DRAINAGE AREA.—1,334 sq mi.

RECORDS AVAILABLE.—June 1958 to September 1966.

AVERAGE DISCHARGE.—8 years, 343 cfs; computed 1941-66, 398 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	1.0	1.0	1.0	1.4	....	....
Climatic year	1958	1958	1958	1958	....	....

Maximum flow for period of record:

Daily, 18,400 cfs April 7, 1965; peak, 20,200 cfs April 7, 1965.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 21 cfs; 10 years, 4.0 cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1959-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
4,100	2,600	1,350	750	370	210	130	85	59	43	31	21	9.6	3.0	1.2
Discharge for period April 1 to September 30														
4,900	3,400	1,920	1,170	640	410	280	180	116	78	55	38	29	23	20

6-6066. Little Sioux River at Correctionville, Iowa

LOCATION.—Lat 42°28'20", Long 95°47'50", in NE¼NW¼, sec. 1, T.88 N., R.43 W., on right bank 10 ft upstream from bridge on State Highway 31, 0.2 mile upstream from Bacon Creek, 0.5 mile west of Correctionville, 0.8 mile downstream from Pierson Creek, and at mile 56.0.

DRAINAGE AREA.—2,500 sq mi.

RECORDS AVAILABLE.—May 1918 to July 1925, Oct. 1928 to July 1932, June 1936 to September 1966.

AVERAGE DISCHARGE.—39 years (1918-24, 1928-31, 1936-66), 667 cfs; computed 1941-66, 774 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	4.0	4.6	6.3	7.8	14.0	14.0
Climatic year	1956	1956	1956	1958	1958	1958

Maximum flow for period of record:

Daily, 27,900 cfs April 7, 1965; peak, 29,800 cfs April 7, 1965.

Remarks.—Minimum flow of 2.6 cfs July 17, 25, 1936, caused by construction dam above gage.

Magnitude and frequency of annual and seasonal low flow for climatic years 1919-24, 1929-31, 1937-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	77	52	33	20	14	10	7.8	6.5
30	94	66	42	26	20	14	11	9.1
60	112	79	52	32	25	18	14	12
120	182	128	84	53	40	30	22	18
183	260	180	115	71	53	38	28	23
	Lowest average flow for period April 1 to September 30							
7	145	88	54	33	26	20	15	12
30	215	127	76	48	37	29	23	19
60	400	220	122	75	58	45	35	30

Duration table of daily discharge for annual and seasonal periods for water years 1919-24, 1929-31, 1937-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
5,900	4,200	2,600	1,600	900	570	390	265	185	125	80	42	26	15	11
Discharge for period April 1 to September 30														
7,000	5,200	3,300	2,200	1,300	890	640	460	320	217	135	66	36	20	15

Little Sioux River at Correctionville — Continued

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	30	40	50
10	1.39	2.58	4.96
20	2.98	6.15	9.92

6-6067. Little Sioux River near Kennebec, Iowa

LOCATION.—Lat 42°04'55", Long 96°00'50", in SE¼SW¼ sec. 18, T.84 N., R.44 W., near left bank on downstream side of pier of bridge on Monona County Highway A, 1.1 miles south of Kennebec, 5.5 miles northeast of Onawa, 6.2 miles upstream from Maple River, and at mile 22.0.

DRAINAGE AREA.—2,738 sq mi.

RECORDS AVAILABLE.—April 1939 to September 1966.

AVERAGE DISCHARGE.—27 years, 779 cfs; computed, 1941-66, 836 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	11	12.1	15.0	19.2	25.6	25.9
Climatic year	1956	1956	1956	1958	1958	1958

Maximum flow for period of record:

Daily, 27,900 cfs April 8, 1965; peak, 29,700 cfs April 8, 1965.

Magnitude and frequency of annual and seasonal low flow for climatic years 1940-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	101	77	54	37	29	23	17	14
30	120	93	65	44	35	27	20	17
60	152	118	82	54	42	32	24	20
120	230	172	120	78	60	46	34	28
183	315	228	155	102	78	60	44	35
	Lowest average flow for period April 1 to September 30							
7	200	125	79	51	40	31	24	20
30	2:5	175	110	71	57	46	37	32
60	450	275	170	113	90	74	60	52

Duration table of daily discharge for annual and seasonal periods for water years 1940-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
6,600	4,800	2,900	1,850	1,080	700	460	315	220	160	107	61	39	26	21
Discharge for period April 1 to September 30														
8,000	6,000	3,800	2,500	1,520	1,080	770	560	390	275	187	117	69	39	31

Little Sioux River near Kennebec — Continued

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	40	50	60
10	.81	1.98	3.57
20	2.98	5.55	9.12

6-6070. Odebolt Creek near Arthur, Iowa

LOCATION.—Lat 42°20'05", long 95°22'55", in SE¼NE¼ sec. 21, T.87 N., R.39 W., near center of span on downstream side of county highway bridge, 700 ft south of State Highway 175, 2 miles west of Arthur, 4.5 miles east of Ida Grove, and 5 miles upstream from mouth of Maple River.

DRAINAGE AREA.—39.3 sq mi.

RECORDS AVAILABLE.—October 1957 to September 1966.

AVERAGE DISCHARGE.—9 years, 16.1 cfs; computed, 1941-66, 11.7 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0.2	0.2	0.2	0.2	0.3	0.6
Climatic year	1958	1958	1958	1958	1958	1958

Maximum flow for period of record:

Daily, 2,270 cfs August 30, 1962; peak, 5,200 cfs August 30, 1962.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 0.8 cfs; 10 years, ... cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1958-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
160	88	42	26	17	12	8.4	5.8	4.3	3.3	2.5	1.5	.90	.33	.25
Discharge for period April 1 to September 30														
215	120	53	33	21	16	12	9.6	7.6	6.0	4.4	3.0	2.1	1.4	1.1

6-6072. Maple River at Mapleton, Iowa

LOCATION.—Lat 42°09'30", long 95°48'25", in SE¼SE¼ sec. 23, T.85 N., R.43 W., on right pier on downstream side of bridge on State Highway 175, 80 ft downstream from Chicago & North Western Railway Co. bridge, 0.5 mile southwest of Mapleton, 12.5 miles northeast of Turin, 16.0 miles upstream from mouth, and 30.9 miles upstream from mouth of Little Sioux River.

DRAINAGE AREA.—669 sq mi.

RECORDS AVAILABLE.—October 1941 to September 1966.

AVERAGE DISCHARGE.—25 years, 226 cfs; computed, 1941-66, 192 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	2.5	2.6	2.7	3.1	6.8	8.3
Climatic year	1958	1958	1958	1958	1958	1956

Maximum flow for period of record:

Daily, 12,400 cfs June 20, 1954; peak, 15,600 cfs June 20, 1954.

Remarks.—No flow September 21, 22, 1945, caused by temporary dam above gage.

Magnitude and frequency of annual and seasonal low flow for climatic years 1942-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	31	23	15	10	7.7	5.8	4.3	3.5
30	40	29	20	13	10	8.0	6.0	4.9
60	49	36	25	17	13	10	7.5	6.2
120	68	50	35	24	19	15	11	9.0
183	98	72	51	34	27	21	16	13
	Lowest average flow for period April 1 to September 30							
7	70	51	35	23	18	14	11	8.6
30	98	71	48	31	24	18	14	11
60	138	100	68	44	34	26	19	15

Duration table of daily discharge for annual and seasonal periods for water years 1942-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
2,350	1,470	770	450	250	170	120	90	68	50	34	21	14	7.0	4.6
Discharge for period April 1 to September 30														
3,250	1,880	980	580	340	240	180	138	106	80	56	35	22	11	7.0

Maple River at Mapleton — Continued

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	15	20	25
5	....	.44	.99
10	.44	1.25	2.48
20	1.39	2.68	4.46

6-6075. Little Sioux River near Turin, Iowa

LOCATION.—Lat 41°57'55", long 95°58'20", in NW¼NE¼ sec. 33, T.83 N., R.44 W., on left bank on downstream side of bridge on Brown's grade (revised), 1.0 mile east of gaging station on Monona-Harrison ditch near Turin, 2.5 miles downstream from Maple River, 3.8 miles south of Turin, 6.2 miles northeast of Blencoe, and at mile 13.5.

DRAINAGE AREA.—3,526 sq mi.

RECORDS AVAILABLE.—January 1958 to September 1966.

AVERAGE DISCHARGE.—8 years, 1,042 cfs; computed, 1941-66, 1,045 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	22	22	22.6	24.2	32.1	36.7
Climatic year	1958	1958	1958	1958	1958	1958

Maximum flow for period of record:

Daily, 26,600 cfs April 8, 1965; peak, 27,100 cfs April 8, 1965.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 130 cfs; 10 years, ... cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1959-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
12,000	7,200	3,600	2,200	1,200	800	570	420	320	245	188	140	57	28	26
Discharge for period April 1 to September 30														
12,600	9,100	4,400	2,800	1,680	1,170	860	650	485	370	270	195	153	79	54

SOLDIER RIVER BASIN

6-6085. Soldier River at Pisgah, Iowa

LOCATION.—Lat 41°49'50", long 95°55'50", in NW¼NE¼ sec. 14, T.81 N., R.44 W., on left bank on downstream side of highway bridge at west edge of Pisgah, 2.8 miles downstream from Stowe Creek, and 13.1 miles upstream from mouth.

DRAINAGE AREA.—407 sq mi.

RECORDS AVAILABLE.—March 1940 to September 1966.

AVERAGE DISCHARGE.—26 years, 128 cfs; computed, 1941-66, 119 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	2.0	2.0	3.3	3.9	7.0	9.7
Climatic year	1944	1944	1958	1958	1958	1958

Maximum flow for period of record:

Daily, 10,500 cfs June 4, 1940; peak, 22,500 cfs June 12, 1950.

Magnitude and frequency of annual and seasonal low flow for climatic years 1941-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	22	14	7.7	4.3	3.4	3.0	2.6	2.4
30	30	19	11	6.4	5.0	4.2	3.6	3.3
60	36	24	15	9.2	7.5	6.4	5.5	5.1
120	47	34	23	15	12	9.8	8.4	7.7
183	63	47	33	23	18	15	12	11
	Lowest average flow for period April 1 to September 30							
7	38	25	15	9.4	7.2	5.6	4.4	3.8
30	55	39	26	17	13	10	8.0	6.6
60	89	66	46	31	24	19	15	13

Duration table of daily discharge for annual and seasonal periods of water years 1941-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
1,650	980	400	215	120	87	66	51	39	30	21	13	8.5	5.6	4.3
Discharge for period April 1 to September 30														
1,900	1,180	480	260	152	110	85	66	50	38	27	16	11	7.5	6.0

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	15	20	25
5	.79	1.49	2.38
10	1.23	2.38	3.87
20	1.79	3.27	5.06

6-6095. Boyer River at Logan, Iowa

LOCATION.—Lat 41°38'30", Long 95°47'05", in SE¼NW¼ sec. 19, T.79 N., R.42 W., on left bank 9 ft downstream from Illinois Central Railroad bridge at Logan, 10.5 miles upstream from Willow Creek, and 15.8 miles upstream from mouth.

DRAINAGE AREA.—871 sq mi.

RECORDS AVAILABLE.—May 1918 to July 1925, November 1937 to September 1966.

AVERAGE DISCHARGE.—34 years (1918-24, 1938-66), 304 cfs; computed, 1941-66, 276 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	1.5	2.0	2.7	3.3	5.8	8.3
Climatic year	1938	1939	1939	1939	1939	1939

Maximum flow for period of record:

Daily, 17,600 cfs March 28, 1951; peak, 23,600 cfs June 16, 1957.

Magnitude and frequency of annual and seasonal low flow for climatic years 1919-23, 1938-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	49	30	17	9.3	6.7	4.9	3.6	2.9
30	58	38	24	15	12	9.1	6.9	5.6
60	74	52	35	23	18	14	11	9.3
120	102	74	52	36	29	23	19	16
183	140	102	78	52	44	36	30	26
	Lowest average flow for period April 1 to September 30							
7	86	60	38	23	17	13	9.0	7.1
30	133	94	62	40	30	23	18	15
60	215	158	108	78	67	59	52	48

Duration table of daily discharge for annual and seasonal periods for water years 1919-24, 1939-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
3,200	2,000	1,030	620	350	240	170	130	96	70	48	27	16	9.0	6.0
Discharge for period April 1 to September 30														
3,800	2,570	1,300	800	470	325	240	180	135	100	68	39	24	14	10

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	30	40	50
5	.81	2.18	3.57
10	1.98	3.97	6.55
20	3.47	6.35	9.32

INDIAN CREEK BASIN

6-6105. Indian Creek at Council Bluffs, Iowa

LOCATION.—Lat 41°17'32", long 95°50'00", in SE¼SW¼ sec. 18, T.75 N., R.43 W., on downstream side of left pile bent of bridge on Mud Hollow Road at north edge of Council Bluffs, 8.8 miles upstream from mouth.

DRAINAGE AREA.—7.99 sq mi.

RECORDS AVAILABLE.—July 1954 to September 1966.

AVERAGE DISCHARGE.—12 years, 1.72 cfs; computed, 1941-66, 3.3 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0	0	0	0.1
Climatic year	*	*	1955-57	1955	1955	1955-56

* Occurred during several years.

Maximum flow for period of record:

Daily, 280 cfs September 7, 1965; peak, 2,980 cfs September 7, 1965.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 0 cfs; 10 years, 0 cfs.

Duration table of daily discharge for annual period for water years 1955-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
26	14	4.8	2.5	1.6	1.1	.82	.64	.50	.35	.22				

WAUBONSIE CREEK BASIN

6-8060. Waubonsie Creek near Bartlett, Iowa

LOCATION.—Lat 40°53'05", long 95°44'45", in NE¼NE¼ sec. 11, T.70 N., R.43, W., on left pier on downstream side of highway bridge, 2.5 miles east of Bartlett and 3.5 miles west of Tabor.

DRAINAGE AREA.—30.4 sq mi.

RECORDS AVAILABLE.—January 1946 to September 1966.

AVERAGE DISCHARGE.—20 years, 11.6 cfs; computed, 1941-66, 16.0 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0	0	0.4	0.6
Climatic year	1954-58	1954-58	1955-56	1955	1956	1956

Maximum flow for period of record:

Daily, 2,640 cfs September 4, 1946; peak, 14,500 cfs May 8, 1950.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 1.0 cfs; 10 years, <0.1 cfs.

Waubonsie Creek near Bartlett — Continued

Duration table of daily discharge for annual and seasonal periods for water years 1947-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
145	80	28	14	8.7	6.7	5.4	4.4	3.4	2.6	1.9	1.1	.52		
Discharge for period April 1 to September 30														
250	117	45	18	10	7.6	6.0	5.0	4.0	3.0	2.1	1.2	.35		

6-8074.1 West Nishnabotna River at Hancock, Iowa

LOCATION.—Lat 41°23'28", long 95°22'10", in NE¼ sec. 18, T.76 N., R.39 W., on downstream side of bridge on County Highway C, 0.3 mile west of Hancock school and 2.0 miles downstream from Jim Creek.

DRAINAGE AREA.—609 sq mi.

RECORDS AVAILABLE.—October 1959 to September 1966.

AVERAGE DISCHARGE.—7 years, 260 cfs; computed, 1941-66, 237 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	12	12.6	16.0	22.0	30.3	38.3
Climatic year	1963	1963	1963	1963	1963	1963

Maximum flow for period of record:

Daily, 15,000 cfs March 1, 1965; peak, 18,000 cfs March 1, 1965.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 23 cfs; 10 years, ... cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1960-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
2,800	1,880	820	430	275	210	165	132	107	85	64	44	32	23	18
Discharge for period April 1 to September 30														
2,800	1,880	950	540	340	267	218	180	150	123	98	71	54	40	33

6-8080. Mule Creek near Malvern, Iowa

LOCATION.—Lat 40°56'40", long 95°35'40", in NW¼NW¼ sec. 20, T.71 N., R.41 W., on right bank 170 ft upstream from culvert on county highway V, 1.8 miles upstream from mouth, and 4.4 miles south of Malvern.

DRAINAGE AREA.—10.6 sq mi.

RECORDS AVAILABLE.—June 1954 to September 1966.

AVERAGE DISCHARGE.—12 years, 4.44 cfs; computed, 1941-66, 4.89 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0.1	0.1	0.2	0.3
Climatic year	1955	1955	1955-56	1955	1955	1955

Maximum flow for period of record:

Daily, 440 cfs May 22, 1965; peak, 2070 cfs August 21, 1954.

Magnitude and frequency of annual low flow for climatic years 1955-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	1.5	0.92	0.40	0.11				
30	2.0	1.4	.68	.24	0.10			
60	2.3	1.5	.83	.35	.19	0.10		
120	2.8	1.9	1.1	.60	.39	.25		
183	3.3	2.3	1.4	.80	.55	.36		

Duration table of daily discharge for annual period for water years 1955-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
45	25	11	7.1	4.8	3.8	2.9	2.3	1.8	1.4	.94	.50	.40	.32	.28

6-8082. Spring Valley Creek near Tabor, Iowa

LOCATION.—Lat 40°54'35", long 95°36'00", in SW¼NE¼ sec. 31, T.71 N., R.41 W., on left bank 20 ft downstream from highway bridge, 1.5 miles upstream from mouth and 4.0 miles northeast of Tabor.

DRAINAGE AREA.—7.65 sq mi.

RECORDS AVAILABLE.—October 1955 to September 1964.

AVERAGE DISCHARGE.—9 years, 3.20 cfs; computed, 1941-66, 3.53 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0	0.1	0.2	0.2
Climatic year	1955-58	1955-57	1956	1956	1956	1956

Maximum flow for period of record:

Daily, 257 cfs July 30, 1958; peak, 4,150 cfs July 30, 1958.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 0.4 cfs; 10 years, <0.1 cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1956-64

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
25	14	7.8	5.4	3.9	3.1	2.4	1.9	1.4	.95	.60	.31	.18	.10	
Discharge for period April 1 to September 30														
42	20	10	6.3	4.5	3.7	3.0	2.3	1.8	1.2	.76	.31	.14		

6-8085. West Nishnabotna River at Randolph, Iowa

LOCATION.—Lat 40°52'25", long 95°34'40", in NE¼NE¼ sec. 17, T.70 N., R.41 W., on downstream side of bridge on State Highway 184, 0.3 mile downstream from Deer Creek, 0.5 mile west of Randolph, and 16.2 miles upstream from confluence with East Nishnabotna River.

DRAINAGE AREA.—1,326 sq mi.

RECORDS AVAILABLE.—June 1948 to September 1966.

AVERAGE DISCHARGE.—18 years, 517 cfs; computed, 1941-66, 562 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	10	10.6	15.0	17.1	22.7	26.3
Climatic year	1955	1955	1956	1955	1955	1955

Maximum flow for period of record:

Daily, 25,000 cfs March 1, 1965; peak, 29,600 cfs May 9, 1950.

Magnitude and frequency of annual and seasonal low flow for climatic years 1949-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	118	81	52	32	24	17	12	9.5
30	147	103	68	42	32	24	17	13
60	170	120	78	49	37	28	20	16
120	222	160	108	70	53	40	30	24
183	300	213	143	92	71	54	39	32
	Lowest average flow for period April 1 to September 30							
7	200	130	79	45	32	23	15	12
30	300	195	118	67	48	33	23	17
60	430	280	170	100	71	50	34	26

Duration table of daily discharge for annual and seasonal periods for water years 1949-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
4,900	3,200	1,700	1,000	620	440	330	250	190	140	100	60	35	21	17
Discharge for period April 1 to September 30														
5,600	3,800	2,100	1,300	770	580	455	360	280	204	140	84	52	28	20

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	40	60	80
10	1.19	4.76	10.1
20	3.97	10.1	17.5

6-8090. Davids Creek near Hamlin, Iowa

LOCATION.—Lat 41°40'25", long 94°48'20", in NE¼NE¼ sec. 9, T.79 N., R.34 W., on left bank 20 ft downstream from bridge on State Highway 64, 5.2 miles east of Hamlin, and 8 miles upstream from mouth and East Nishnabotna River.

DRAINAGE AREA.—26.0 sq mi.

RECORDS AVAILABLE.—June 1952 to September 1966.

AVERAGE DISCHARGE.—14 years, 10.7 cfs; computed, 1941-66, 11.7 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0	0	0	0
Climatic year	1953 1955-56	1953 1955-56	1953 1955	1955	1955	1955

Maximum flow for period of record:

Daily, 1,620 cfs July 2, 1958; peak, 22,700 cfs July 2, 1958.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 0.8 cfs; 10 years, <0.1 cfs.

Duration table of daily discharge for annual period for water years 1953-65

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
124	71	35	22	13	8.4	5.4	3.6	2.4	1.6	.84	.28			

6-8092.1 East Nishnabotna River near Atlantic, Iowa

LOCATION.—Lat 41°22'30", long 95°04'00", in NW¼NE¼ sec. 23, T.76 N., R.37 W., on downstream side of bridge on county road, 3.4 miles southwest of junction of State Highways 83 and 6 in Atlantic, and 3.9 miles upstream from Turkey Creek.

DRAINAGE AREA.—432 sq mi.

RECORDS AVAILABLE.—October 1960 to September 1966.

AVERAGE DISCHARGE.—6 years, 205 cfs; computed, 1941-66, 207 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	7.0	7.0	9.7	14.4	18.9	22.0
Climatic year	1963	1963	1963	1963	1963	1963

Maximum flow for period of record:

Daily, 14,800 cfs March 1, 1965; peak, 20,500 cfs March 1, 1965.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 10 cfs; 10 years, ... cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1961-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
2,150	1,350	630	350	210	155	120	95	69	51	38	26	20	15	13
Discharge for period April 1 to September 30														
2,150	1,350	700	425	270	200	153	122	96	74	55	37	29	21	18

6-8095. East Nishnabotna River at Red Oak, Iowa

LOCATION (REVISED).—Lat 41°00'30", long 95°14'15", in N½SE¼ sec. 29, T.72 N., R.38 W., on left bank on downstream side of Coolbaugh Street bridge in Red Oak, and 0.4 mile upstream from Red Oak Creek.

DRAINAGE AREA.—894 sq mi.

RECORDS AVAILABLE.—May 1918 to July 1925, May 1936 to September 1966.

AVERAGE DISCHARGE.—36 years (1918-24, 1936-66), 357 cfs; computed, 1941-66, 411 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	6	8.1	12.0	13.1	16.4	17.3
Climatic year	1936	1937	1939	1939	1939	1937

Maximum flow for period of record:

Daily, 24,300 cfs July 3, 1958; peak, 36,200 cfs June 13, 1947.

Magnitude and frequency of annual and seasonal low flow for climatic years 1919, 1921 1937-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	50	35	23	17	14	12	11	9.9
30	66	46	30	21	18	16	14	13
60	83	59	39	27	23	20	18	17
120	118	83	55	38	32	28	24	22
183	173	125	84	55	45	37	31	28
	Lowest average flow for period April 1 to September 30							
7	90	59	36	22	19	17	15	14
30	137	91	56	36	30	26	23	21
60	200	130	84	60	50	43	39	36

Duration table of daily discharge for annual and seasonal periods for water years 1919-20, 1922, 1937-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
3,600	2,400	1,230	720	400	270	190	140	102	73	50	31	23	17	14
Discharge for period April 1 to September 30														
4,300	2,900	1,600	950	560	380	280	205	150	110	75	45	30	22	18

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	40	50	60
5	1.49	3.17	5.16
10	3.07	5.75	8.63
20	4.76	8.13	11.5

6-8100. Nishnabotna River above Hamburg, Iowa

LOCATION.—Lat 40°38'00", long 95°37'35", in SW¼SE¼ sec. 11, T.67 N., R.42 W., on left bank 1.6 miles downstream from confluence of East Nishnabotna and West Nishnabotna Rivers, and 2 miles northeast of Hamburg.

DRAINAGE AREA.—2,806 sq mi.

RECORDS AVAILABLE.—March 1922 to September 1923, October 1928 to September 1966.

AVERAGE DISCHARGE.—39 years, 972 cfs; computed, 1941-66, 1,279 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	4.5	9.9	14.9	24.8	34.8	39.9
Climatic year	1934	1934	1934	1939	1937	1937

Maximum flow for period of record:

Daily, 49,600 cfs June 14, 1947; peak, 55,500 cfs June 24, 1947.

Magnitude and frequency of annual and seasonal low flow for climatic years 1922, 1929-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	165	107	68	35	26	19	15	13
30	215	147	90	54	40	29	23	19
60	268	182	118	72	54	41	32	28
120	370	262	170	108	84	68	54	48
183	500	360	240	155	122	96	78	69
	Lowest average flow for period April 1 to September 30							
7	280	180	103	58	40	28	20	16
30	430	280	170	98	70	50	33	25
60	620	410	250	147	106	74	54	44

Duration table of daily discharge for annual and seasonal periods for water years 1923, 1929-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
8,800	6,300	3,700	2,300	1,300	840	590	430	310	220	140	83	54	33	24
Discharge for period April 1 to September 30														
9,700	7,200	4,400	2,800	1,650	1,120	820	600	435	310	200	118	70	41	25

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	100	125	150
5	3.37	6.35	10.9
10	7.93	13.9	21.3
20	12.9	20.8	29.2

6-8118.4 Tarkio River at Stanton, Iowa

LOCATION.—Lat 40°58'55", long 95°06'35", in NW¼SW¼ sec. 4, T.71 N., R.37 W., on right bank 10 ft downstream from bridge on county road, half a mile west of Stanton.

DRAINAGE AREA.—49.3 sq mi.

RECORDS AVAILABLE.—October 1957 to September 1966.

AVERAGE DISCHARGE.—9 years, 27.4 cfs; computed, 1941-66, 18.7 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0.1	0.2	0.5	0.8	1.1
Climatic year	1957	1963	1963	1963	1963	1963

Maximum flow for period of record:

Daily, 1,520 cfs March 29, 1960; peak, 6,840 cfs June 8, 1965

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 0.3 cfs; 10 years, <0.1 cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1958-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
350	190	83	50	30	20	15	11	7.6	5.2	3.2	1.3	.64	.38	.29
Discharge for period April 1 to September 30														
450	230	98	60	37	26	18	14	10	7.0	4.5	2.3	.84	.25	.23

NODAWAY RIVER BASIN

6-8170. Nodaway River at Clarinda, Iowa

LOCATION.—Lat 40°44'10", long 95°00'30", in NE¼ sec. 32, T.69 N., R.36 W., on downstream side of center bridge pier on State Highway 2, 0.5 mile downstream from Neele Branch, 1.2 miles east of city square of Clarinda, and 7.5 miles upstream from East Nodaway River.

DRAINAGE AREA.—762 sq mi.

RECORDS AVAILABLE.—May 1918 to July 1925, May 1936 to September 1966.

AVERAGE DISCHARGE.—36 years (1918-24, 1936-66), 306 cfs; computed, 1941-66, 323 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	1	1.3	2.1	3.8	8.2	9.2
Climatic year	1918 1923	1923	1923	1923	1937	1937

Maximum flow for period of record:

Daily, 18,900 cfs June 13, 1947; peak, 31,100 cfs June 13, 1947.

Magnitude and frequency of annual and seasonal low flow for climatic years 1920, 1923, 1937-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	24	16	9.6	6.8	6.0	5.4	5.0	4.9
30	33	22	14	9.7	8.2	7.2	6.5	6.1
60	43	28	19	12	10	8.6	7.4	6.8
120	65	42	27	18	15	12	10	9.0
183	113	73	46	30	24	19	16	14
	Lowest average flow for period April 1 to September 30							
7	34	23	16	11	9.0	7.7	6.8	6.3
30	62	40	26	18	15	12	10	9.6
60	108	68	42	28	23	19	17	15

Duration table of daily discharge for annual and seasonal periods for water years 1921, 1924, 1937-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
3,800	2,450	1,200	650	320	190	120	81	55	38	25	15	10	7.5	6.4
Discharge for period April 1 to September 30														
4,550	3,100	1,630	900	440	265	180	123	85	57	36	19	13	9.2	7.5

Nodaway River at Clarinda — Continued

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	20	30	40
5	.99	2.98	5.36
10	2.08	5.06	8.03
20	2.88	5.95	9.38

6-8191.9 East Fork One Hundred and Two River near Bedford, Iowa

LOCATION.—Lat 40°38'00", long 94°44'55", in NE¼NE¼ sec. 9, T.67 N., R.34 W., on left bank at downstream side of county highway bridge, a quarter of a mile upstream from Daugherty Creek, and 2.8 miles southwest of junction of U.S. Highways 2 and 148 in Bedford.

DRAINAGE AREA.—92.1 sq mi.

RECORDS AVAILABLE.—September 1959 to September 1966.

AVERAGE DISCHARGE.—7 years, 55.0 cfs; computed, 1941-66, 48.9 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0.1	0.1	0.1	0.2	0.3	0.4
Climatic year	1963	1963	1963	1963	1963	1963

Maximum flow for period of record:

Daily, 4,330 cfs January 13, 1960; peak, 5,400 cfs Jan. 12, 1960.

Remarks.—Slight regulation at low flow by low dam used for water supply in Bedford.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 0.1 cfs; 10 years, ... cfs.

Duration table of daily discharge for annual period for water years 1960-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
1,200	610	200	81	31	17	11	6.6	4.1	2.5	1.3	.60	.34	.24	.20

GRAND RIVER BASIN

6-8980. Thompson River at Davis City, Iowa

LOCATION.—Lat 40°38'20", long 93°48'30", in SE¼SE¼ sec. 35, T.68 N., R.26 W., on right bank 15 ft downstream from bridge on U.S. Highway 69 at Davis City, 5¼ miles upstream from Iowa-Missouri State line, and 9 miles downstream from Elk Creek.

DRAINAGE AREA.—701 sq mi.

RECORDS AVAILABLE.—May 1918 to July 1925, July 1941 to September 1966.

AVERAGE DISCHARGE.—31 years (1918-24, 1941-66), 356 cfs; computed, 1941-66, 360 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0.1	0.3	0.6	0.7	1.1	2.8
Climatic year	1956	1956	1955	1955	1955	1955

Maximum flow for period of record:

Daily, 18,200 cfs June 14, 1947; peak, 21,300 cfs June 14, 1947.

Magnitude and frequency of annual and seasonal low flow for climatic years 1919-20, 1922-24, 1942-65

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	17	11	6.2	3.0	1.9	1.2	0.71	0.49
30	27	17	9.2	4.5	2.9	1.8	1.1	.77
60	41	24	13	6.2	4.0	2.5	1.5	1.1
120	72	42	22	11	6.8	4.3	2.6	1.8
183	123	73	40	20	13	8.6	5.3	3.8
	Lowest average flow for period April 1 to September 30							
7	21	15	8.9	4.7	3.0	1.9	1.1	.75
30	45	31	19	10	6.7	4.2	2.5	1.7
60	100	62	36	19	13	8.8	5.4	3.9

Duration table of daily discharge for annual and seasonal periods for water years 1919-21, 1923-24, 1942-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
5,100	3,500	1,600	750	320	180	118	72	47	30	17	7.8	3.6	1.6	1.0
Discharge for period April 1 to September 30														
6,100	4,200	2,100	910	400	230	148	96	66	44	27	14	7.6	2.7	1.8

Thompson River at Davis City — Continued

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	10	20	80
5	.60	2.18	4.56
10	1.35	4.17	7.74
20	2.28	5.95	9.92

6-8984. Weldon River near Leon, Iowa

LOCATION.—Lat 40°41'50", long 93°38'15", in NE¼NE¼ sec. 17, T.68 N., R.24 W., on left bank 10 ft downstream from highway bridge, 5.7 miles upstream from Steele Creek, and 6.5 miles southeast of Leon.

DRAINAGE AREA.—104 sq mi.

RECORDS AVAILABLE.—October 1958 to September 1966.

AVERAGE DISCHARGE.—8 years, 84.8 cfs; computed, 1941-66, 58.5 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0.1	0.3	0.3	0.3	0.5	1.0
Climatic year	1963 1964	1963 1965	1963	1963	1963	1963

Maximum flow for period of record:

Daily, 16,400 cfs August 6, 1959; peak, 48,600 cfs August 6, 1959.

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 0.1 cfs; 10 years, ... cfs.

Duration table of daily discharge for annual and seasonal periods for water years 1959-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
1,570	880	320	120	43	24	15	8.7	5.1	3.1	1.8	.85	.51	.32	.25
Discharge for period April 1 to September 30														
1,900	1,000	320	110	40	20	11	6.5	3.9	2.3	1.3	.67	.41	.26	.20

CHARITON RIVER BASIN

6-9035. Honey Creek near Russell, Iowa

LOCATION.—Lat 40°55'25", long 93°07'55", in SW¼NW¼ sec. 26, T.71 N., R.20 W., on left bank 15 ft downstream from highway bridge, 5.5 miles southeast of Russell, and 0.7 mile upstream from Chariton River.

DRAINAGE AREA.—13.2 sq mi.

RECORDS AVAILABLE.—June 1952 to September 1962.

AVERAGE DISCHARGE.—10 years, 7.74 cfs; computed, 1941-66, 7.2 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0	0	0	0	0	0
Climatic year	*	*	+	+	+	+

* Occurred during each year. + Occurred during several years.

Maximum flow for period of record:

Daily, 1,100 cfs May 21, 1959; peak, 4,100 cfs May 21, 1959

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 0 cfs; 10 years, 0 cfs.

Duration table of daily discharge for annual period for water years 1953-62

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
140	80	28	9.6	3.2	1.8	1.0	.36							

6-9039. Chariton River near Rathbun, Iowa

LOCATION.—Lat 40°48'40", long 92°53'00", in NW¼NW¼ sec. 1, T.69 N., R.18 W., on left bank 5 ft downstream from highway bridge, 0.8 mile northeast of Rathbun, 1.0 mile upstream from Walnut Creek, and 1.3 miles downstream from Buck Branch.

DRAINAGE AREA.—551 sq mi.

RECORDS AVAILABLE.—October 1956 to September 1966.

AVERAGE DISCHARGE.—10 years, 326 cfs; computed, 1941-66, 323 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0.1	0.1	0.6	3.5	3.9	6.8
Climatic year	1957	1957	1963	1963	1963	1963

Maximum flow for period of record:

Daily, 19,000 cfs March 31, 1960; peak, 21,800 cfs March 31, 1960

Computed lowest average flow for 7 consecutive days for the recurrence intervals: 2 years, 2.2 cfs; 10 years, <0.1 cfs.

Duration table of daily discharge for annual period for water years 1957-66

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
3,850	2,630	1,640	960	290	140	73	41	23	13	6.4	2.4	1.0	.50	.32

6-9040. Chariton River near Centerville, Iowa

LOCATION.—Lat 40°44'20", long 92°48'05", in NE¼NW¼ sec. 34, T.69 N., R.17 W., on left bank 10 ft. downstream from bridge on State Highway 2, 3.5 miles downstream from Cooper Creek, and 3 miles east of Centerville.

DRAINAGE AREA.—708 sq mi.

RECORDS AVAILABLE.—May 1938 to September 1959.

AVERAGE DISCHARGE.—21 years, 336 cfs; computed, 1941-66, 415 cfs.

EXTREMES OF DISCHARGE.—

Minimum average flow for period of record:

Period of consecutive days	1-day	7-day	30-day	60-day	120-day	183-day
Discharge in cfs	0.1	0.2	0.4	0.5	0.8	1.1
Climatic year	1938 1940	1940 1956	1956	1956	1955	1955

Maximum flow for period of record:

Daily, 19,800 cfs June 20, 1946; peak, 21,700 cfs June 20, 1946.

Magnitude and frequency of annual low flow for climatic years 1939-58

Period of consecutive days	Lowest average flow, in cfs, on annual basis for recurrence interval, in years, indicated by column headings							
	1.5	2	3	5	7	10	15	20
7	3.7	1.9	0.88	0.43	0.30	0.21	0.15	0.12
30	7.6	3.5	1.8	1.0	.80	.62	.48	.41
60	18	7.2	2.8	1.5	1.1	.83	.62	.52
120	45	19	6.3	2.4	1.6	1.2	.94	.80
183	90	36	13	4.2	2.6	1.8	1.3	1.1

Duration table of daily discharge for annual and seasonal periods for water years 1939-59

Discharge, in cfs, equaled or exceeded for percentage of time indicated in column headings

1	2	5	10	20	30	40	50	60	70	80	90	95	98	99
4,200	3,000	1,850	840	290	185	72	39	20	9.5	4.0	1.8	1.1	.65	.48
Discharge for period April 1 to September 30														
5,800	3,900	2,200	1,050	375	180	97	55	31	16	8.0	2.9	1.2	.57	.44

Storage requirements

Recurrence interval (years)	Storage required, in thousands of acre-feet, to provide draft rate, in cfs, indicated by column headings		
	5	10	15
5	.60	2.08	3.77
10	1.15	2.98	4.96
20	1.89	3.37	5.55

LOW-FLOW PARTIAL-RECORD STATION DATA

Table 2 contains the following data for low-flow partial-record stations: station number, location, drainage area, computed average discharge, lowest measured discharge and date of measurement, computed 7-day Q_2, and for some of the stations, 7-day Q_{10}.

The location description is given as published in the annual reports, "Water Resources Data for Iowa". The symbols designating the degrees and minutes of latitude and longitude have been eliminated and the space for the seconds is printed with XX because seconds were not defined. For example, LAT 4321XX is latitude 43 degrees and 21 minutes.

The locations of the partial-record stations are shown on plate 2.

Table 2.—Average discharge and low-flow data for partial-record stations

(Period of record, with few exceptions, is 1957-68; 7-day Q_2 is the annual average minimum flow for 7 consecutive days having a recurrence interval of 2 years and 7-day Q_{10} has a recurrence interval of 10 years; the 7-day Q_2 and 7-day Q_{10} discharges were derived from curves of relation with gaging stations.)

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		MINNESOTA RIVER BASIN					
5-3176.5	Blue Earth R nr Lakota, Iowa.	Lat 4330XX, Long 9409XX, near SE Corner of Sec. 31, T. 100 N., R.27 W., at Bridge, 4 Miles NE of Lakota.	64.6	28	0.39 10-6-58	1.0	*
5-3177	Union Slough Outlet nr Lakota, Iowa	Lat 4324XX, Long 9407 XX, near S ¼ Corner of Sec. 11, T.99 N., R.28 W., at bridge 2 Miles NW of Lakota.	86.4	31	0.22 10-6-58	0.7	*
5-3178.1	WF Blue Earth R bl Minn.—Iowa State Line.	Lat 4326XX, Long 9404XX, near W ¼ Corner of Sec. 36, T.101 N., R.28 W., at Bridge 9 Miles NW of Lakota.	154	58	0.53 10-6-58	1.4	*
		UPPER IOWA RIVER BASIN					
5-3873	Upper Iowa R at Chester, Iowa	Lat 4330XX, Long 9222XX, in SE ¼ Sec. 10, T.100 N., R.13 W., at Bridge at North City Limits of Chester.	141	66	4.28 8-13-64	8.1	3.6
5-3874	Upper Iowa R nr Kendallville, Iowa	Lat 4328XX, Long 9202XX, near Center of Sec. 21, T.100 N., R.10 W., at Bridge, 1 Mile North of Kendallville.	273	134	13.3 10-7-58	21	10
5-3881	Canoe Cr nr Decorah, Iowa.	Lat 4321XX, Long 9141XX, in NE ¼ Sec. 33, T.99 N., R.7 W., at Bridge, 7 Miles NE of Decorah.	58.9	31	5.00 10-7-58	6.0	—
5-3883	Bear Cr nr Highlandville, Iowa.	Lat 4327XX, Long 9137XX, in SE¼ Sec. 25, T.100 N., R.7 W., at Bridge, 3 Miles East of Highlandville.	53.4	29	11.3 10-7-58	15	11
		VILLAGE CREEK BASIN					
5-3883.5	Village Cr at Village Creek, Iowa.	Lat 4319XX, Long 9114XX, in NW ¼ Sec. 18, T.98 N., R.3 W., at Bridge in Village Creek.	58.5	33	16.4 9-12-67	19	16
		YELLOW RIVER BASIN					
5-3888	Yellow R at Myron, Iowa.	Lat 4310XX, Long 9132XX, in NE ¼ Sec. 3, T.96 N., R.6 W., at Bridge, 0.5 Mile South of Myron.	59.5	31	2.42 9-12-67	4.6	2.5
5-3890	Yellow R at Ion, Iowa	Lat 4307XX, Long 9116XX, in SW¼ Sec. 24, T.96 N., R.4 W., at Bridge, 7.5 Miles NW of McGregor.	221	126	19.4 10-7-58	32	15

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		TURKEY RIVER BASIN					
5-4115.5	NB Turkey R nr Vernon Springs, Iowa	Lat 4321XX, Long 9211XX, in SW ¼ Sec. 31, T.99 N., R.11 W., at Bridge, 3 Miles West of Vernon Springs.	40.1	19	1.00 8-13-64	2.2	0.7
5-4115.6	Turkey R nr Vernon Springs, Iowa	Lat 4320XX, Long 9207XX, in NW ¼ Sec. 2, T.98 N., R.11 W., at Bridge, 2.5 Miles South of Vernon Springs.	87.0	41	1.43 8-13-64	1.4	0.6
5-4116.2	L Turkey R nr Waucoma, Iowa	Lat 4301XX, Long 9159XX, in NW ¼ Sec. 25, T.95 N., R.10 W., at Bridge, 4 Miles SE of Waucoma.	102	50	10.1 10-9-58	11	5.6
6-4117	Crane Cr nr Lourdes, Iowa	Lat 4315XX, Long 9219XX, in NW ¼ Sec. 6, T.97 N., R.12 W., at Bridge on State Highway 272, 1 Mile SW of Lourdes.	76.8	35	1.06 8-13-64	1.5	—
5-4118	L Turkey R nr Alpha, Iowa	Lat 4301XX Long 9157XX in SW ¼ Sec. 30 T.95 N. R.9 W. at Bridge 3 Miles NE of Alpha.	319	158	21.6 10-9-58	26	13
5-4121	Roberts Cr ab St. Olaf, Iowa	Lat 4256XX Long 9123XX in NW ¼ Sec. 25, T.94 N., R.5 W., at Bridge near North City Limits of St. Olaf.	70.7	41	0.01 8-11-64	*	0
5-4121.5	Roberts Cr at St. Olaf, Iowa	Lat 4256XX, Long 9123XX, in SW ¼ Sec. 25, T.94 N., R.5 W., at Bridge near East City Limits of St. Olaf.	101	60	0.06 8-11-64	*	0
5-4122	Volga R nr Fayette, Iowa.	Lat. 4249XX, Long 9153XX, in SW ¼ Sec. 35, T.93 N., R.9 W., at Bridge, 4.5 Miles SW of Fayette.	53.0	29	1.54 8-11-64	2.6	1.1
5-4123	L Volga R nr Fayette, Iowa	Lat 4249XX, Long 9153XX, near S ¼ Corner of Sec. 35, T.93 N. R.9 W., at Bridge, 4 Miles SW of Fayette.	31.0	16	0.64 8-11-64	1.0	0.4
5-4124	Volga R at Littleport, Iowa.	Lat 4245XX, Long 9122XX, in SE ¼ Sec. 25, T.92 N., R.5 W., at Bridge in Littleport.	348	219	21.1 10-6-58	33	17
		LITTLE MAQUOKETA RIVER BASIN					
5-4144.5	NF Little Maquoketa near Rickardsville, Iowa.	Lat 4235XX, Long 9051XX, near NW corner Sec. 28, T.90 N., R.1 E., at Bridge, 1 Mile NE of Rickardsville.	22.8	17	0.26 8-11-64	0.8	*

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		MAQUOKETA RIVER BASIN					
5-4163	Maquoketa R nr Dundee, Iowa	Lat 4237XX, Long 9134XX, in SW ¼ Sec. 9, T.90 N., R.6 W., at Bridge, 2.5 Miles North of Dundee.	61.1	34	6.51 11-6-58	7.6	4.2
5-4164	SF Maquoketa R nr Dundee, Iowa	Lat 4236XX, Long 9135XX, in SW ¼ Sec. 17, T.90 N., R.6 W., at Bridge, 2.5 Miles NW of Dundee.	54.8	30	2.03 11-6-58	2.7	1.5
5-4175.4	Plum Cr nr Earlville, Iowa	Lat 4226XX, Long 9114XX, in NE ¼ Sec. 18, T.88 N., R.3 W., at Bridge, 4 Miles SE of Earlville.	65.7	40	5.46 11-5-58	6.8	4.5
5-4175.6	Maquoketa R nr Hopkinton, Iowa	Lat 4222XX, Long 9116XX, in NE ¼ Sec. 11, T.87 N., R.4 W., at Bridge, 2 Miles NW of Hopkinton.	454	269	37.2 11-5-58	44	24
5-4175.8	Buck Cr nr Hopkinton, Iowa	Lat 4221XX, Long 9117XX, in SE ¼ Sec. 10, T.87 N., R.4 W., at Bridge, 2.5 Miles NW of Hopkinton.	50.7	30	3.31 11-5-58	4.5	2.5
5-4176	Maquoketa R nr Scotch Grove, Iowa	Lat 4212XX, Long 9101XX, near Center of Sec. 6, T.85 N., R.1 W., at Bridge on State Highway 136, 6 miles NE of Scotch Grove.	704	424	63.1 5-6-58	120	66
5-4181	NF Maquoketa R at Dyersville, Iowa	Lat 4229XX, Long 9108XX, in NW ¼ Sec. 31, T.89 N., R.2 W., at Bridge, in Dyersville.	80.2	54	6.08 11-5-58	7.8	5.0
5-4182	Whitewater Cr at Fillmore, Iowa	Lat 4219XX, Long 9055XX, in NE ¼ Sec. 26, T.87 N., R.1 W., at Bridge on U.S. Highway 151, 0.5 Miles West of Fillmore.	91.9	67	7.61 11-5-58	12	6.5
5-4183	Lytle Cr nr Bernard, Iowa	Lat 4218XX, Long 9047XX, in SE ¼ Sec. 36, T.87 N., R.1 E., at Bridge, 2.5 Miles SE of Bernard.	62.7	47	5.56 11-5-58	6.8	2.9
5-4183.5	Lytle Cr nr Fulton, Iowa	Lat 4212XX, Long 9045XX, near Center of Sec. 5. T.85 N., R.2 E., at Bridge, 5 Miles NW of Fulton.	114	87	12.1 11-4-58	18	9.8
5-4184	NF Maquoketa R nr Fulton, Iowa	Lat 4211XX, Long 9044XX, in SE ¼ Sec. 9, T.85 N., R.2 E., at Bridge, 3 Miles NW of Fulton.	499	378	61.1 11-4-58	82	52
5-4186.5	Deep Cr nr Charlotte, Iowa	Lat 4200XX, Long 9024XX, near Center of Sec. 17, T.83 N., R.5 E., at Bridge, 4 Miles NE of Charlotte.	67.7	47	2.39 11-4-58	4.3	1.8

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		MAQUOKETA RIVER BASIN—Continued					
5-4187	Deep Cr nr Preston, Iowa	Lat 4203XX, Long 9026XX, near N ¼ Corner of Sec. 31, T.84 N., R.5 E., at Bridge, 2 Miles West of Preston.	91.9	65	3.79 11-4-58	6.7	2.8
		ELK RIVER BASIN					
5-4203	Elk R nr Almont, Iowa	Lat 4201XX, Long 9012XX, near Center of Sec. 12, T.83 N., R.6 E., at Bridge, 2.5 Miles North of Almont.	55.9	41	3.75 11-4-58	6.9	2.7
		WAPSIPINICON RIVER BASIN					
5-4205.4	Wapsipinicon R nr Riceville, Iowa	Lat 4320XX, Long 9234XX, in NE ¼ Sec. 12, T.98 N., R.15 W., at Bridge, 2.5 Miles South of Riceville.	72.3	34	4.70 8-13-64	5.0	—
5-4205.8	Wapsipinicon R nr Ionia, Iowa	Lat 4301XX, Long 9223XX, in NW ¼ Sec. 33, T.95 N., R.13 W., at Bridge, 4 Miles SE of Ionia.	161	76	5.10 8-13-64	7.5	—
5-4206.4	Little Wapsipinicon R at Elma, Iowa	Lat 4314XX, Long 9227XX, in NW ¼ Sec. 12, T.97 N., R.14 W., at Bridge on County Road A near West City Limits of Elma.	37.3	17	1.62 8-13-64	2.4	—
5-4206.6	Wapsipinicon R nr New Hampton, Iowa	Lat 4259XX, Long 9222XX, in NW ¼ Sec. 10, T.94 N., R.13 W., at Bridge, 5 Miles SW of New Hampton.	291	140	9.28 8-13-64	14	—
5-4206.8	Wapsipinicon R nr Tripoli, Iowa	Lat 4250XX, Long 9215XX, in SW ¼ Sec. 27, T.93 N., R.12 W., at Bridge on State Highway 93, 2 Miles North of Tripoli.	343	164	9.02 8-14-64	11	—
5-4207	EF Wapsipinicon R nr Fredericksburg, Iowa	Lat 4301XX, Long 9213XX, in NW ¼ Sec. 36, T.95 N., R.12 W., at Bridge, 3 Miles North of Fredericksburg.	62.2	29	2.04 8-13-64	3.6	—
5-4207.2	EF Wapsipinicon R nr Tripoli, Iowa	Lat 4251XX, Long 9214XX, in NW ¼ Sec. 26, T.93 N., R.12 W., at Bridge on State Highway 93, 3 Miles North of Tripoli.	144	69	4.53 8-14-64	7.4	—
5-4207.4	Wapsipinicon R at Tripoli, Iowa	Lat 4248XX, Long 9214XX, in SW ¼ Sec. 2, T.92 N., R.12 W., at Bridge, 1.5 Miles East of Tripoli.	498	242	8.76 8-14-64	16	—

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		WAPSIPINICON RIVER BASIN—Continued					
5-4208	Crane Cr nr Denver, Iowa	Lat 4238XX, Long 9215XX, in NW ¼ Sec. 3, T.90 N., R.12 W., at Bridge, 5 Miles SE of Denver.	63.6	32	0 9-25-57	*	—
5-4208.2	Crane Cr at Dunkerton, Iowa	Lat 4234XX, Long 9210XX, in SW ¼ Sec. 29, T.90 N., R.11 W., at Bridge, near West City Limits of Dunkerton.	101	52	0 8-13-64	*	—
5-4208.4	L Wapsipinicon R nr Westgate, Iowa	Lat 4247XX, Long 9205XX, in NE ¼ Sec. 13, T.92 N., R.11 W., at Bridge, 4.5 Miles NW of Westgate.	57.4	30	1.31 8-14-64	2.5	—
5-4208.6	Buck Cr nr Littleton, Iowa	Lat 4235XX, Long 9203XX, near Center of Sec. 29, T.90 N., R.10 W., at Bridge, 3 Miles NW of Littleton.	57.0	29	0 8-13-64	0.9	—
5-4209	L Wapsipinicon R at Littleton, Iowa	Lat 4233XX, Long 9202XX, in NE Corner Sec. 9, T.89 N., R.10 W., at Bridge, 0.5 Mile North of Littleton.	205	108	3.27 8-13-64	6.0	—
5-4209.4	Otter Cr nr Otterville, Iowa	Lat 4233XX, Long 9157XX, near SW Corner of Sec. 5, T.89 N., R.9 W., at Bridge, 2 Miles North of Otterville.	101	54	8.34 10-20-58	11	—
5-4215	Wapsipinicon R at Stone City, Iowa	Lat 4207XX, Long 9121XX, in NE ¼ Sec. 6, T.84 N., R.4 W., at Bridge, in Stone City.	1324	689	74.4 11-5-58	90	45
5-4215.5	Buffalo Cr above Winthrop, Iowa	Lat 4230XX, Long 9144XX, near NE Corner Sec. 25, T.89 N., R.8 W., at Bridge, 1.5 Miles NE of Winthrop.	68.2	37	1.70 10-20-58	2.4	1.1
5-4217	Buffalo Cr nr Stone City, Iowa	Lat 4208XX, Long 9121XX, near E ¼ Corner Sec. 30, T.85 N., R.4 W., at Bridge, 2 Miles North of Stone City.	217	123	9.88 11-5-58	12	4.7
5-4218	Yankee Run at Wheatland, Iowa	Lat 4150XX, Long 9050XX, in NE ¼ Sec. 16, T.81 N., R.1 E., at Bridge, near South City Limits of Wheatland.	52.2	35	2.87 11-4-58	3.4	—
5-4218.5	Mud Cr nr Plainview, Iowa	Lat 4142XX, Long 9045XX, in NW ¼ Sec. 32, T.80 N., R.2 E., at Bridge, 2.5 Miles NE of Plainview.	109	68	1.66 9-23-57	2.1	—
5-4219	Silver Cr nr DeWitt, Iowa	Lat 4147XX, Long 9033XX, in SE ¼ Sec. 25, T.81 N., R.3 E., at Bridge, 2.5 Miles South of DeWitt.	60.8	41	6.44 11-4-58	7.0	—

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		WAPSIPINICON RIVER BASIN—Continued					
5-4221	Brophys Cr nr Low Moor, Iowa	Lat 4149XX, Long 9024XX, near N ¼ Corner Sec. 20 T.81 N., R.5 E., at Bridge on U.S. Highway 30, 3 Miles NW of Low Moor.	72.8	50	8.58 9-12-66	9.8	—
		IOWA RIVER BASIN					
5-4483	WB Iowa R nr Britt, Iowa	Lat 4306XX, Long 9345XX, near Center of Sec. 25, T.96 N., R.25 W., at Bridge on U.S. Highway 18, 3 Miles East of Britt.	61.5	25	1.19 10-23-58	2.1	0.8
5-4484	Westmain Drainage Ditch 1 & 2 nr Britt, Iowa	Lat 4306XX, Long 9347XX, in SW ¼ Sec. 27, T.96 N., R.25 W., at Bridge on U.S. Highway 18 near East City Limits of Britt.	21.2	8.6	0.75 10-4-60	1.2	0.5
5-4511	SF Iowa R nr Alden, Iowa	Lat 4228XX, Long 9427XX, near NW Corner of Sec. 5, T.88 N., R.22 W., at Bridge, 5 Miles SW of Alden.	79.5	33	0.44 9-25-57	0.4	—
5-4511.5	Tipton Cr nr New Providence, Iowa	Lat 4220XX, Long 9312XX, in SW ¼ Sec. 21, T.87 N., R.20 W., at Bridge, 3 Miles NW of New Providence.	81.4	39	0.05 12-26-64	0.7	—
5-4512	SF Iowa R nr New Providence, Iowa	Lat 4219XX, Long 9310XX, near N ¼ Corner Sec. 27, T.87 N., R.20 W., at Bridge, 3 Miles North of New Providence.	223	109	3.87 10-26-64	2.2	—
5-4512.5	Beaver Cr nr Eldora, Iowa	Lat 4221XX, Long 9308XX, near Center of Sec. 13, T.87 N., R.20 W., at Bridge, 2 Miles SW of Eldora.	69.4	35	2.14 10-26-64	1.9	—
5-4513	Honey Cr nr New Providence, Iowa	Lat 4216XX, Long 9311XX, at E ¼ Corner Sec. 16, T.86 N., R.20 W., at Bridge, 1.5 Miles South of New Providence.	66.5	32	0.34 10-26-64	0.6	*
5-4513.5	Honey Cr at Bangor, Iowa	Lat 4210XX, Long 9305XX, near W ¼ Corner Sec. 16, T.85 N., R.19 W., at Bridge, 1 Mile East of Bangor.	95.6	48	0.60 10-26-64	1.1	—
5-4514	Minerva Cr at Clemons, Iowa	Lat 4208XX, Long 9309XX, near Center of Sec. 35, T.85 N., R.20 W., at Bridge, 1 Mile NE of Clemons.	69.6	35	0.26 10-26-64	0.5	*
5-4514.5	Minerva Cr nr Clemons, Iowa	Lat 4207XX, Long 9305XX, near Center of Sec. 5, T.84 N., R.19 W., at Bridge, 3.5 Miles East of Clemons.	148	75	2.36 10-26-64	1.0	*

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		IOWA RIVER BASIN—Continued					
5-4516	Linn Cr at Marshalltown, Iowa	Lat 4202XX, Long 9255XX, in SW ¼ Sec. 35, T.84 N., R.18 W., at Bridge on State Highway 14 in Marshalltown.	60.5	33	2.52 10-21-59	2.0	—
5-4516.5	S Timber Cr nr LeGrand, Iowa	Lat 4159XX, Long 9250XX, in SW ¼ Sec. 21, T.83 N., R.17 W., at Bridge, 4 Miles SW of LeGrand.	62.0	35	1.36 10-6-58	1.3	—
5-4518	Deer Cr at Toledo, Iowa	Lat 4159XX, Long 9235XX, near W ¼ Corner Sec. 15, T.83 N., R.15 W., at Bridge near NW Limits of Toledo.	76.4	46	5.06 10-28-64	1.8	—
5-4519.3	Salt Cr nr Clutier, Iowa	Lat 4203XX, Long 9222XX, near E ¼ Corner Sec. 33, T.84 N., R.13 W., at Bridge, 3.5 Miles SE of Clutier.	85.2	51	5.25 10-28-64	2.0	—
5-4519.6	EB Salt Cr nr Elberon, Iowa	Lat 4204XX, Long 9220XX, near E ¼ Corner Sec. 27, T.84 N., R.13 W., at Bridge, 4 Miles NW of Elberon.	71.3	43	3.68 10-28-64	2.3	—
5-4527	Bear Cr at Brooklyn, Iowa	Lat 4145XX, Long 9226XX, near NE Corner of Sec. 14, T.80 N., R.14 W., at Bridge, 1 Mile North Brooklyn.	77.9	44	2.67 10-5-66	1.3	—
5-4542	Clear Cr nr Oxford, Iowa	Lat 4143XX, Long 9147XX, in NE ¼ Sec. 28, T.80 N., R.8 W., at Bridge, 1 Mile SE of Oxford.	55.0	26	0.10 9-23-57	0.5	0
5-4550.5	Old Mans Cr nr Parnell, Iowa	Lat 4136XX, Long 9157XX, near SW corner of Sec. 31, T.79 N., R.9 W., at Bridge, 3 Miles NE of Parnell.	81.2	37	0.14 9-25-57	0.4	*
5-4551	Old Mans Cr nr Iowa City, Iowa	Lat 4136XX, Long 9137XX, in NW ¼ Sec. 36, T.79 N., R.7 W., at Bridge, 3 Miles SW of Iowa City.	201	99	1.10 9-23-57	2.2	—
5-4552	NF English R nr Guernsey, Iowa	Lat 4133XX, Long 9224XX, near SW corner Sec. 17, T.79 N., R.13 W., at Bridge, 2.5 Miles West of Guernsey.	68.7	38	1.16 10-5-66	1.2	—
5-4552.5	NF English R nr North English, Iowa	Lat 4133XX, Long 9203XX, near SW Corner Sec. 17, T.78 N., R.10 W., at Bridge, 3.25 Miles NE of North English.	221	116	3.86 10-5-66	3.2	—
5-4552.6	MF English R nr North English, Iowa.	Lat 4132XX, Long 9204XX, near NE Corner Sec. 25, T.78 N., R.11 W., at Bridge, 2 Miles NE of North English.	66.7	32	0.16 9-25-57	*	0

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		IOWA RIVER BASIN—Continued					
5-4554	S English R nr Keswick, Iowa	Lat 4128XX, Long 9216XX, in SW ¼ Sec. 16, T.77 N., R.12 W., at Bridge, 1.5 Miles NW of Keswick.	66.2	36	0.18 11-3-66	*	0
5-4554.5	SF English R nr Kinross, Iowa	Lat 4130XX, Long 9157XX, in NW ¼ Sec. 7, T.77 N., R.9 W., at Bridge, 3 Miles NE of Kinross.	125	65	1.64 10-3-58	1.1	—
5-4573	Otter Cr nr Otranto, Iowa	Lat 4328XX, Long 9258XX, in NW ¼ Sec. 22, T.100 N., R.18 W., at Bridge, 1.5 Miles NE of Otranto.	60.3	28	3.11 10-22-58	4.4	—
5-4573.5	Cedar R at Otranto, Iowa	Lat 4327XX, Long 9259XX, in NW ¼ Sec. 2[illegible], T.100 N., R.18 W., at Bridge near East City Limits of Otranto.	656	251	47.7 10-22-58	68	—
5-4574	Deer Cr nr Meltonville, Iowa	Lat 4326XX, Long 9305XX, in SW ¼ Sec. 27, T.100 N., R.19 W., at Bridge, 2.5 Miles West of Meltonville.	67.5	30	0 8-19-64	0.6	*
5-4574.5	Deer Cr at St. Ansgar, Iowa	Lat 4323XX, Long 9258XX, in SW ¼ Sec. 15, T.99 N., R.18 W., at Bridge, 2.5 Miles NW of St. Ansgar.	97.5	46	0.29 8-19-64	1.3	—
5-4576	Rock Cr nr Floyd, Iowa	Lat 4313XX, Long 9249XX, in NW ¼ Sec. 24, T.97 N., R.17 W., at Bridge, 6 Miles NW of Floyd	69.7	32	8.38 10-22-58	3.0	—
5-4578	L Cedar R nr Staceyville, Iowa	Lat 4328XX, Long 9247XX, in NE ¼ Sec. 19, T.100 N., R.16 W., at Bridge, 2 Miles North of Staceyville.	77.3	36	1.16 8-19-64	2.6	—
5-4584	Quarter Section Run nr Denver, Iowa	Lat 4240XX, Long 9224XX, in NE ¼ Sec. 29, T.91 N., R.13 W., at Bridge, 3 Miles SW of Denver.	83.5	43	0 Each Year	0	0
5-4585.5	Beaverdam Cr nr Rockwell, Iowa	Lat 4258XX, Long 9315XX, near East ¼ Corner Sec. 18, T.94 N., R.20 W., at Bridge, 3 Miles SW of Rockwell.	72.4	32	0.96 10-23-58	1.0	—
5-4586	Bailey Cr nr Sheffield, Iowa	Lat 4254XX, Long 9316XX, in NW ¼ Sec. 1, T.93 N., R.21 W., at Bridge, 4 Miles NW of Sheffield.	75.2	33	1.14 10-23-58	1.4	—
5-4587.5	Otter Cr nr Hansell, Iowa	Lat 4246XX, Long 9307XX, in NW ¼ Sec. 29, T.92 N., R.19 W., at Bridge, 1 Mile West of Hansell.	92.0	42	3.01 10-21-58	3.3	—

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		IOWA RIVER BASIN—Continued					
5-4587.7	Squaw Cr nr Hansell, Iowa	Lat 4244XX, Long 9307XX, near Center of Sec. 32, T.92 N., R.19 W., at Bridge, 1.5 Miles SW of Hansell.	24.2	11	1.23 9-24-57	1.3	—
5-4587.8	Hartgrave Cr nr Hansell, Iowa	Lat 4244XX, Long 9305XX, in NW ¼ Sec. 34, T.92 N., R.19 W., at Bridge, 1.5 Miles SE of Hansell.	161	79	8.58 10-21-58	8.2	—
5-4587.9	Boylan Cr nr Bristow, Iowa	Lat 4246XX, Long 9256XX, in NE ¼ Sec. 23, T.92 N., R.18 W., at Bridge, 1 Mile West of Bristow.	55.7	28	0 Several Years	0	0
5-4588	Maynes Cr nr Hampton, Iowa	Lat 4241XX, Long 9312XX, in NW ¼ Sec. 22, T.91 N., R.20 W., at Bridge on U.S. Highway 65, 4 Miles South of Hampton.	71.0	34	2.38 9-25-57	1.6	—
5-4588.5	Maynes Cr nr Dumont, Iowa	Lat 4242XX, Long 9258XX, in SW ¼ Sec. 15, T.91 N., R.18 W., at Bridge, 4 Miles South of Dumont.	121	62	3.72 9-24-57	5.6	—
5-4590.5	Lime Cr nr Scarville, Iowa	Lat 4327XX, Long 9335XX, in SW ¼ Sec. 28, T.100 N., R.23 W., at Bridge, 3.5 Miles SE of Scarville.	113	40	2.06 8-19-64	1.5	—
5-4592	Winnebago R nr Forest City, Iowa	Lat 4318XX, Long 9339XX, in NW ¼ Sec. 23, T.98 N., R.24 W., at Bridge, 2.5 Miles North of Forest City.	205	78	2.85 8-19-64	2.2	—
5-4593	Winnebago R nr Fertile, Iowa	Lat 4315XX, Long 9326XX, near West ¼ Corner Sec. 3, T.97 N., R.22 W., at Bridge, 1.5 Miles SW of Fertile.	303	121	8.47 10-23-58	8.0	—
5-4594	Beaver Cr nr Fertile, Iowa	Lat 4316XX, Long 9327XX, in SW ¼ Sec. 28, T.98 N., R.22 W., at Bridge, 2 Miles NW of Fertile.	54.9	23	0.47 10-23-58	0.4	*
5-4602	Willow Cr at Mason City, Iowa	Lat 4310XX, Long 9314XX, near West ¼ Corner Sec. 5, T.96 N., R.20 W., at Bridge near West City Limits of Mason City.	86.0	37	2.77 10-23-58	2.4	—
5-4611	Cold Water Cr nr Greene, Iowa	Lat 4253XX, Long 9251XX, in SW ¼ Sec. 10, T.93 N., R.17 W., at Bridge 2.5 Miles SW of Greene.	56.8	28	0 Several Years	0	0
5-4613	Flood Cr nr Rockford, Iowa	Lat 4303XX, Long 9251XX, in NW ¼ Sec. 15, T.95 N., R.17 W., at Bridge, 5 Miles East of Rockford.	59.3	26	0 Each Year	0	0

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		IOWA RIVER BASIN—Continued					
5-4614	Flood Cr nr Packard, Iowa	Lat 4253XX, Long 9242XX, in NE ¼ Sec. 23, T.93 N., R.16 W., at Bridge, 2 Miles NE of Packard.	145	70	0 Each Year	0	0
5-4627	Beaver Cr nr Ackley, Iowa	Lat 4234XX, Long 9302XX, in SW ¼ Sec. 36, T.90 N., R.19 W., at Bridge near East City Limits of Ackley.	55.5	28	1.59 9-25-57	1.7	—
5-4628	S Beaver Cr nr Parkersburg, Iowa	Lat 4234XX, Long 9249XX, in SE ¼ Sec. 35, T.90 N., R.17 W., at Culvert, 2 Miles SW of Parkersburg.	114	59	5.08 8-18-64	4.4	—
5-4631	Black Hawk Cr nr Grundy Center, Iowa	Lat 4222XX, Long 9244XX, near E ¼ Corner Sec. 8, T.87 N., R.16 W., at Bridge, 2 miles East of Grundy Center.	71.0	37	3.23 8-19-64	3.2	—
5-4632	Mosquito Cr at Reinbeck, Iowa	Lat 4220XX, Long 9237XX, in SE ¼ Sec. 20, T.87 N., R.15 W., at Bridge, 1 Mile West of Reinbeck.	24.0	13	0.40 8-19-64	0.3	*
5-4633	Black Hawk Cr at Reinbeck, Iowa	Lat 4220XX, Long 9236XX, near E ¼ Corner Sec. 21, T.87 N., R.15 W., at Bridge, 1 Mile North of Reinbeck.	135	70	6.30 8-19-64	8.0	—
5-4634	N Black Hawk Cr at Dike, Iowa	Lat 4227XX, Long 9237XX, near N ¼ Corner Sec. 8, T.88 N., R.15 W., at Bridge near SE Limits of Dike.	76.3	39	2.22 8-31-61	0.9	*
5-4640.5	Millers Cr nr LaPorte City, Iowa	Lat 4223XX, Long 9215XX, in SE ¼ Sec. 33, T.88 N., R.12 W., at Bridge on U.S. Highway 218, 6 Miles NW of LaPorte City.	54.8	29	1.53 10-27-64	0.8	*
5-4641	Wolf Cr nr Beaman, Iowa	Lat 4213XX, Long 9247XX, in SW ¼ Sec. 36, T.86 N., R.17 W., at Bridge, 2 Miles SE of Beaman.	63.2	33	1.77 10-27-64	1.1	—
5-4641.5	Twelvemile Cr nr Buckingham, Iowa	Lat 4214XX, Long 9226XX, in SW ¼ Sec. 24, T.86 N., R.14 W., at Bridge, 1.5 Miles South of Buckingham.	76.8	42	2.33 9-18-59	0.6	*
5-4642	Wolf Cr nr Buckingham, Iowa	Lat 4215XX, Long 9222XX, in NE ¼ Sec. 21, T.86 N., R.13 W., at Bridge, 4.5 Miles SE of Buckingham.	287	156	12.6 9-18-59	5.8	—
5-4642.5	Wolf Cr at LaPorte City, Iowa	Lat 4219XX, Long 9212XX, in SW ¼ Sec. 25, T.87 N., R.12 W., at Bridge on U.S. Highway 218 in LaPorte City.	327	181	17.1 10-27-64	7.6	—

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		IOWA RIVER BASIN—Continued					
5-4643	Spring Cr nr LaPorte City, Iowa	Lat 4220XX, Long 9206XX, in NW ¼ Sec. 23, T.87 N., R.11 W., at Bridge, 5 Miles NE of LaPorte City.	57.5	30	3.33 10-27-64	1.5	—
5-4643.2	E Blue Cr nr Center Point, Iowa	Lat 4212XX, Long 9148XX, in NW ¼ Sec. 8, T.85 N., R.8 W., at Bridge, 1 Mile West of Center Point.	27.1	15	1.30 10-20-58	0.9	—
5-4643.5	Opossum Cr at Shellsburg, Iowa	Lat 4206XX, Long 9153XX, in NW ¼ Sec. 15, T.84 N., R.9 W., at Bridge, 1 Mile West of Shellsburg.	55.8	33	1.44 10-27-64	0.5	—
5-4644	Opossum Cr nr Palo, Iowa	Lat 4205XX, Long 9148XX, in SE ¼ Sec. 17, T.84 N., R.8 W., at Bridge, 1 Mile North of Palo.	95.9	58	2.50 10-27-64	1.8	—
5-4644.6	Otter Cr nr Cedar Rapids, Iowa	Lat 4204XX, Long 9144XX, in SE ¼ Sec. 24, T.84 N., R.8 W., at Bridge, 7 Miles NW of Cedar Rapids.	65.1	38	2.85 10-21-58	2.1	—
5-4645.5	Prairie Cr nr Blairstown, Iowa	Lat 4156XX, Long 9208XX, near North ¼ Corner Sec. 9, T.82 N., R.11 W., at Bridge, 3 Miles NW of Blairstown.	64.2	37	1.43 10-6-66	0.4	*
5-4646	Prairie Cr at Norway, Iowa	Lat 4154XX, Long 9156XX, near SW Corner Sec. 19, T.82 N., R.9 W., at Bridge, 1 Mile SW of Norway.	126	81	4.50 10-28-64	2.8	—
5-4646.5	Prairie Cr at Cedar Rapids, Iowa	Lat 4156XX, Long 9140XX, in NW ¼ Sec. 9, T.82 N., R.7 W., at Bridge, 3 Miles South of Cedar Rapids.	208	128	10.5 10-28-64	6.0	—
5-4647	Indian Cr at Cedar Rapids, Iowa	Lat 4200XX, Long 9137XX, in SW ¼ Sec. 13, T.83 N., R.7 W., at Bridge, Near NE City Limits of Cedar Rapids.	72.0	42	2.91 10-21-58	2.2	—
5-4647.5	Big Cr at Bertram, Iowa	Lat 4157XX, Long 9132XX, near East ¼ Corner Sec. 34, T.83 N., R.6 W., at Bridge Near East City Limits of Bertram.	81.2	48	6.18 9-27-57	3.9	—
5-4648	Rock Cr at Rochester, Iowa	Lat 4141XX, Long 9110XX, in NE ¼ Sec. 2, T.79 N., R.3 W., at Bridge, 0.5 Mile NW of Rochester.	63.4	39	2.77 10-29-64	1.1	—
5-4648.5	Sugar Cr nr Bennett, Iowa	Lat 4142XX, Long 9103XX, near S ¼ Corner of Sec. 26, T.80 N., R.2 W., at Bridge, 4.5 Miles SW of Bennett.	80.7	50	2.15 10-29-64	0.8	*

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		IOWA RIVER BASIN—Continued					
5-4649	Mud Cr nr Wilton Junction, Iowa	Lat 4135XX, Long 9102XX, in NW ¼ Sec. 12, T.78 N., R.2 W., at Bridge, 1 Mile SW of Wilton Junction.	102	61	2.48 9-23-57	0.9	*
5-4649.2	Sugar Cr nr Moscow, Iowa	Lat 4134XX, Long 9104XX, near N ¼ Corner of Sec. 15, T.78 N., R.2 W., at Bridge, 1 Mile SE of Moscow.	218	134	7.36 10-29-64	3.6	—
5-4649.4	EB Wapsinonoc Cr at West Liberty, Iowa	Lat 4134XX, Long 9115XX, in SE ¼ Sec. 13, T.78 N., R.4 W., at Bridge on State Highway 76 near SE City Limits of West Liberty.	51.7	30	0.94 9-23-57	1.6	—
5-4649.5	WB Wapsinonoc Cr at West Liberty, Iowa	Lat 4134XX, Long 9116XX, near E ¼ Corner of Sec. 14, T.78 N., R.4 W., at Bridge, 1 Mile South of West Liberty.	52.5	30	0 1957, 58	*	0
5-4652	Long Cr nr Ainsworth, Iowa	Lat 4116XX Long 9130XX in SE ¼ Sec. 26, T.75 N., R.6 W., at Bridge, 2.5 Miles SE of Ainsworth.	68.4	42	0 1957, 66	*	0
5-4653	Long Cr nr Wapello, Iowa	Lat 4112XX, Long 9117XX, near South ¼ Corner Sec. 23, T.74 N., R.4 W., at Bridge, 5 Miles NW of Wapello.	146	90	0.03 9-24-57	*	0
5-4656	Otter Cr nr Wapello, Iowa	Lat 4107XX, Long 9109XX, near Center of Sec. 13, T.73 N., R.3 W., at Bridge, 4 Miles SE of Wapello.	64.7	40	0.69 9-24-57	4.0	2.5
		FLINT RIVER BASIN					
5-4697	Flint R nr Burlington, Iowa	Lat 4052XX, Long 9112XX, in NE ¼ Sec. 16, T.70 N., R.3 W., at Bridge, 6 Miles NW of Burlington.	107	70	0 1957, 66	0.2	0
		SKUNK RIVER BASIN					
5-4698	S. Skunk R nr Ellsworth, Iowa	Lat 4219XX, Long 9335XX, near N ¼ Corner of Sec. 36, T.87 N., R.24 W., at Bridge on State Highway 175, near West City Limits of Ellsworth.	54.9	21	0.37 10-21-58	*	0
5-4698.5	Mud Lake Drainage Ditch 71 at Jewell, Iowa	Lat 4219XX, Long 9338XX, in NW ¼ Sec. 28, T.87 N., R.24 W., at Bridge, 1 Mile North of Jewell.	64.1	24	0.33 10-21-58	0.1	—
5-4699.5	S Skunk R at Randall, Iowa	Lat 4214XX, Long 9335XX, in NE ¼ Sec. 25, T.86 N., R.24 W., at Bridge, 1 Mile East of Randall.	160	61	0.82 10-12-64	0.5	—

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		SKUNK RIVER BASIN—Continued					
5-4702	Squaw Cr nr Stanhope, Iowa	Lat 4212XX, Long 9347XX, near N ¼ Corner of Sec. 5, T.85 N., R.25 W., at Bridge, 5 Miles South of Stanhope.	62.6	27	0.04 9-8-66	0.1	—
5-4710.5	S Skunk R at Colfax, Iowa	Lat 4141XX, Long 9315XX, in NW ¼ Sec. 1, T.79 N., R.21 W. at Bridge on State Highway 117, at North City Limits of Colfax.	803	380	32.3 9-7-66	16	—
5-4711	EB Indian Cr nr Nevada, Iowa	Lat 4102XX, Long 9322XX, near N ¼ Corner of Sec. 2, T.83 N., R.22 W., at Bridge, 4 Miles NE of Nevada.	65.7	31	0 9-7-66	*	—
5-4711.5	WB Indian Cr nr Iowa Center, Iowa	Lat 4156XX, Long 9326XX, in NW ¼ Sec. 8, T.82 N., R.22 W., at Bridge, 2 Miles NW of Iowa Center.	65.9	32	0.09 9-7-66	*	—
5-4711.8	Indian Cr nr Iowa Center, Iowa	Lat 4155XX, Long 9325XX, near Center of Sec. 16, T.82 N., R.22 W., at Bridge, 1 Mile SW of Iowa Center.	203	104	0.14 9-7-66	0.4	—
5-4713.5	Clear Cr nr Mingo, Iowa	Lat 4147XX, Long 9316XX, in SW ¼ Sec. 35, T.81 N., R.21 W., at Bridge, 1 Mile NE of Mingo.	84.1	45	0.33 9-19-57	1.0	—
5-4714	Elk Cr nr Taintor, Iowa	Lat 4129XX, Long 9251XX, in NE ¼ Sec. 7, T.77 N., R.17 W., at Bridge, 6 Miles SW of Taintor.	59.9	36	0.46 11-1-66	0.4	0.1
5-4721	N Skunk R nr Newton, Iowa	Lat 4147XX, Long 9302XX, in NW ¼ Sec. 35, T.81 N., R.19 W., at Bridge, 6 Miles North of Newton.	101	52	0.27 6-10-68	0.5	—
5-4723	N Skunk R nr Searsboro, Iowa	Lat 4132XX, Long 9242XX, near Center of Sec. 27, T.78 N., R.16 W., at Bridge, 3.5 Miles South of Searsboro.	358	207	5.76 10-5-66	6.2	—
5-4724	Middle Cr nr Rose Hill, Iowa	Lat 4121XX, Long 9228XX, in NE ¼ Sec. 33, T.76 N., R.14 W., at Bridge, 2 Miles NW of Rose Hill.	58.5	34	0 11-3-66	0.1	0
5-4724.5	Cedar Cr nr Sigourney, Iowa	Lat 4119XX, Long 9214XX, in SE ¼ Sec. 10, T.75 N., R.12 W., at Bridge, 2 Miles SW of Sigourney.	92.5	50	0.48 10-13-64	0.5	0.1
5-4730	Skunk R at Coppock, Iowa	Lat 4110XX, Long 9143XX, in NE ¼ Sec. 1, T.73 N., R.8 W., at Bridge on State Highway 78, 0.5 Mile West of Coppock.	2916	1,580	87.1 11-1-66	99	—

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		SKUNK RIVER BASIN—Continued					
5-4730.2	EF Crooked Cr nr Winfield, Iowa	Lat 4109XX, Long 9126XX, in NE ¼ Sec. 9, T.73 N., R.5 W., at Bridge, 2 Miles North of Winfield.	65.3	42	0.05 1963, 64	0.2	*
5-4730.5	Crooked Cr nr Coppock, Iowa	Lat 4112XX, Long 9142XX, in NE ¼ Sec. 30, T.74 N., R.7 W., at Bridge, 2 Miles NE of Coppock.	259	163	0 11-1-66	0.1	0
5-4731	Walnut Cr at Germanville, Iowa	Lat 4106XX, Long 9146XX, in SW ¼ Sec. 27, T.73 N., R.8 W., at Bridge, 1 Mile West of Germanville.	66.3	44	0 9-17-57	0.1	0
5-4732	Cedar Cr nr Highland Center, Iowa	Lat 4106XX, Long 9222XX, in SW ¼ Sec. 21, T.73 N., R.13 W., at Bridge, 1 Mile SW of Highland Center.	73.6	43	0.12 10-14-64	0.1	0
5-4732.5	Competine Cr Below Forks Nr Batavia, Iowa	Lat 4102XX, Long 9207XX, in NE ¼ Sec. 21, T.72 N., R.11 W., at Bridge, 3 Miles NE of Batavia.	68.8	45	0 Several Years	0	0
5-4733	Cedar Cr nr Batavia, Iowa	Lat 4101XX, Long 9207XX, in NW ¼ Sec. 27, T.72 N., R.11 W., at Bridge on U.S. Highway 30, 2.5 Miles NE of Batavia.	252	167	0.08 10-14-64	0.1	0
5-4733.5	L Cedar Cr nr Salem, Iowa	Lat 4051XX, Long 9141XX, in SW ¼ Sec. 17, T.70 N., R.7 W., at Bridge, 4 Miles West of Salem.	55.0	38	0 10-2-57	0	0
5-4734	Cedar Cr nr Oakland Mills, Iowa	Lat 4055XX, Long 9140XX, in NW ¼ Sec. 28, T.71 N., R.7 W., at Bridge, 3 Miles West of Oakland Mills.	522	360	0.45 10-2-57	1.2	*
5-4734.5	Big Cr at Mt. Pleasant, Iowa	Lat 4100XX, Long 9132XX, in NW ¼ Sec. 34, T.72 N., R.6 W., at Bridge, 3 Miles NE of Mt. Pleasant.	58.0	38	0 Several Years	0	0
		DEVILS CREEK BASIN					
5-4741.9	Devils Cr nr Viele, Iowa	Lat 4037XX, Long 9125XX, in SW ¼ Sec. 10, T.67 N., R.5 W., at Bridge, 1 Mile NE of Viele.	20.0	18	0 Most Years	0	0
5-4742	Sugar Cr nr Franklin, Iowa	Lat 4040XX, Long 9129XX, in NE ¼ Sec. 30, T.68 N., R.5 W., at Bridge, 2 Miles East of Franklin.	75.6	51	0 1957, 66	*	—
5-4743	Sugar Cr nr Viele, Iowa	Lat 4037XX, Long 9126XX, in SE ¼ Sec. 9, T.67 N., R.5 W., at Bridge, 0.5 Mile West of Viele.	109	73	0 1957	*	—

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		DES MOINES RIVER BASIN					
5-4765.5	Jack Cr nr Ringsted, Iowa	Lat 4316XX, Long 9438XX, near S ¼ Corner of Sec. 28, T.98 N., R.32 W., at Bridge, 6 Miles SW of Ringsted.	74.8	24	0 1957, 58	*	—
5-4766	Silver Cr nr Emmetsburg, Iowa	Lat 4306XX, Long 9443XX, near N ¼ Corner Sec. 34, T.96 N., R.33 W., at Bridge, 3 Miles SW of Emmetsburg.	61.8	20	0.43 10-20-58	0.7	0.3
5-4766.5	Cylinder Cr nr Rodman, Iowa	Lat 4302XX, Long 9434XX, near S ¼ Corner Sec. 13, T.95 N., R.32 W., at Bridge, 2.5 Miles NW of Rodman.	88.6	30	1.04 10-20-58	1.5	0.6
5-4767	Prairie Cr nr West Bend, Iowa	Lat 4255XX, Long 9427XX, near N ¼ Corner Sec. 36, T.94 N., R.31 W., at Bridge, 2.5 Miles SW of West Bend.	61.1	21	0 10-8-58	0.1	—
5-4767.2	Beaver Cr nr Rolfe, Iowa	Lat 4250XX, Long 9428XX, near Center of Sec. 35, T.93 N., R.31 W., at Bridge, 3 Miles NE of Rolfe.	62.2	21	1.23 8-31-66	—	—
5-4767.4	Pilot Cr nr Rolfe, Iowa	Lat 4249XX, Long 9427XX, in SE ¼ Sec. 1, T.92 N., R.31 W., at Bridge, 4 Miles East of Rolfe.	97.0	34	1.77 8-31-66	—	—
5-4776	EF Des Moines R nr Dolliver, Iowa	Lat 4328XX, Long 9435XX, in SW ¼ Sec. 13, T.100 N., R.32 W., at Bridge, 2 Miles NE of Dolliver.	196	63	0 1958, 59, 66	*	—
5-4777	EF Des Moines R nr Swea City, Iowa	Lat 4319XX, Long 9425XX, near Center of Sec. 8, T.98 N., R.30 W., at Bridge 7 Miles SW of Swea City.	314	108	0 1957, 58, 59	*	—
5-4778	Mud Cr at Bancroft, Iowa	Lat 4318XX, Long 9412XX, near Center of Sec. 19, T.98 N., R.28 W., at Bridge, 1 Mile East of Bancroft.	68.1	24	0.23 10-20-58	0.3	*
5-4780.5	Buffalo Cr nr Titonka, Iowa	Lat 4314XX, Long 9359XX, in NW ¼ Sec. 12, T.97 N., R.27 W., at Bridge, 8 Miles East of Titonka.	47.9	18	0 1957, 58, 60	0	0
5-4781	N Buffalo Cr nr Buffalo Center, Iowa	Lat 4319XX, Long 9358XX, in NW ¼ Sec. 18, T.98 N., R.26 W., at Bridge, 5 Miles South of Buffalo Center.	62.5	28	0.03 10-6-58	0.3	*
5-4781.5	Black Cat Cr nr Lone Rock, Iowa	Lat 4312XX, Long 9420XX, near S ¼ Corner Sec. 24, T.97 N., R.30 W., at Bridge, 2 Miles SW of Lone Rock.	58.2	20	0 10-6-58	*	—

Table 2—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq. mi.)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		DES MOINES RIVER BASIN—Continued					
5-4782	Black Cat Cr nr Algona, Iowa	Lat 4308XX, Long 9414XX, near S ¼ Corner Sec. 11, T.96 N., R.29 W., at Bridge on U. S. Highway 169, 5 Miles North of Algona.	112	38	0 1957, 58	*	—
5-4783.5	Lotts Cr nr West Bend, Iowa	Lat 4358XX, Long 9423XX, near S ¼ Corner Sec. 9, T.94 N., R.30 W., at Bridge, 3 Miles East of West Bend.	66.2	22	0.41 10-20-58	0.9	0.4
5-4784	Lotts Cr at Livermore, Iowa	Lat 4252XX, Long 9411XX, in NW ¼ Sec. 18, T.93 N., R.28 W., at Bridge near NW City Limits of Livermore.	165	58	0.24 10-21-58	1.2	—
5-4796	Lizard Cr nr Palmer Iowa	Lat 4239XX, Long 9430XX, in NW ¼ Sec. 3, T.90 N., R.31 W., at Bridge, 5 Miles NE of Palmer.	66.4	24	0.31 10-22-58	0.4	*
5-4798	NB Lizard Cr nr Havelock, Iowa	Lat 4248XX, Long 9440XX, in NE ¼ Sec. 18, T.92 N., R.32 W., at Bridge, 4 Miles SE of Havelock.	79.4	27	0.25 10-22-58	0.2	*
5-4799	Lizard Cr nr Gilmore City, Iowa	Lat 4238XX, Long 9428XX, in NW ¼ Sec. 1, T.90 N., R.31 W., at Bridge, 6 Miles SW of Gilmore City.	219	82	1.22 10-22-58	0.8	—
5-4801	SB Lizard Cr nr Palmer, Iowa	Lat 4235XX, Long 9432XX, in SW ¼ Sec. 29, T.90 N., R.31 W., at Bridge, 4.5 Miles SE of Palmer.	66.4	25	0.03 8-31-66	*	—
5-4803	SB Lizard Cr nr Fort Dodge, Iowa	Lat 4230XX, Long 9414XX, in NE ¼ Sec. 26, T.89 N., R.29 W., at Bridge, 3 Miles West of Fort Dodge.	154	63	0.46 10-22-58	0.5	*
5-4806.2	Brushy Cr nr Homer, Iowa	Lat 4223XX, Long 9359XX, in SE ¼ Sec. 34, T.88 N., R.27 W., at Bridge, 3 Miles NW of Homer.	88.5	35	0.01 8-14-59	*	—
5-4806.6	Boone R nr Kanawha, Iowa	Lat 4255XX, Long 9353XX, near North ¼ Corner, Sec. 35, T.94 N., R.26 W., at Bridge, 4 Miles SW of Kanawha.	71.4	29	0 1957, 58, 60	*	—
5-4807	Boone R nr Renwick, Iowa	Lat 4253XX, Long 9355XX, in SW ¼ Sec. 3, T.93 N., R.26 W., at Bridge, 6 Miles NE of Renwick.	134	54	0.01 1958, 60	0.5	*
5-4807.2	Prairie Cr nr LuVerne, Iowa	Lat 4257XX, Long 9405XX, in SW ¼ Sec. 18, T.94 N., R.27 W., at Bridge, 3 Miles North of LuVerne.	68.6	25	0.10 9-25-57	0.4	*

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		DES MOINES RIVER BASIN—Continued					
5-4807.6	Prairie Cr nr Renwick, Iowa	Lat 4252XX, Long 9359XX, in NE ¼ Sec. 23, T.93 N., R.27 W., at Bridge, 3 Miles NW of Renwick.	118	45	0 1957, 58	*	—
5-4808	Otter Cr nr Goldfield, Iowa	Lat 4247XX, Long 9353XX, in NE ¼ Sec. 15, T.92 N., R.26 W., at Bridge, 4 Miles NE of Goldfield.	75.5	31	0.12 8-16-60	0.2	*
5-4808.2	Boone R nr Goldfield, Iowa	Lat 4243XX, Long 9357XX, near Center of Sec. 5, T.91 N., R.26 W., at Bridge, 1.5 Miles SW of Goldfield.	419	170	0.33 9-27-57	1.8	—
5-4808.6	Eagle Cr nr Eagle Grove, Iowa	Lat 4242XX, Long 9349XX, in SE ¼ Sec. 8, T.91 N., R.25 W., at Bridge, 5 Miles NE of Eagle Grove.	62.8	25	0.46 9-28-61	0.6	—
5-4809	Eagle Cr nr Woolstock, Iowa	Lat 4234XX, Long 9351XX, near Center of Sec. 36, T.90 N., R.26 W., at Bridge, 0.5 Mile West of Woolstock	105	42	1.40 9-27-57	0.9	—
5-4809.4	White Fox Cr nr Woolstock, Iowa	Lat 4236XX, Long 9345XX, in SW ¼ Sec. 13, T.90 N., R.25 W., at Bridge, 5 Miles NE of Woolstock.	62.0	25	1.86 9-27-57	1.6	—
5-4809.8	White Fox Cr at Webster City, Iowa	Lat 4230XX, Long 9348XX, in NW ¼ Sec. 28, T.89 N., R.25 W., at Bridge, 2 Miles North of Webster City.	111	44	1.68 8-14-59	1.8	—
5-4816	Big Cr at Polk City, Iowa	Lat 4146XX, Long 9342XX, in SE ¼ Sec. 1, T.80 N., R.25 W., at Bridge, 1 Mile SE of Polk City.	91.4	36	0 9-19-57	*	—
5-4817	Beaver Cr nr Beaver, Iowa	Lat 4202XX, Long 9409XX, near S ¼ Corner Sec. 6, T.83 N., R.28 W., at Bridge, 1 Mile SW of Beaver.	84.5	38	0 9-7-66	*	—
5-4818	Beaver Cr nr Berkley, Iowa	Lat 4155XX, Long 9406XX, in NW ¼ Sec. 15, T.82 N., R.28 W., at Bridge, 2 Miles South of Berkley.	175	79	0 9-7-66	*	—
5-4819	Beaver Cr at Granger, Iowa	Lat 4146XX, Long 9351XX, in SW ¼ Sec. 2, T.80 N., R.26 W., at Bridge. 1.5 Miles West of Granger.	314	149	1.08 9-7-66	*	—
5-4821	N Raccoon R nr Rembrandt, Iowa	Lat 4247XX, Long 9506XX, in NE ¼ Sec. 21, T.92 N., R.36 W., at Bridge, 5 Miles SE of Rembrandt.	77.4	27	0.63 9-13-66	0.5	—

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		DES MOINES RIVER BASIN—Continued					
5-4821.2	N Raccoon R nr Truesdale, Iowa	Lat 4242XX, Long 9505XX, in NE ¼ Sec. 15, T.91 N., R.36 W., at Bridge, 6 Miles SE of Truesdale.	164	55	0.90 10-21-58	0.7	—
5-4821.8	L Cedar Cr nr Fonda, Iowa	Lat 4237XX, Long 9451XX, in NW ¼ Sec. 15, T.90 N., R.34 W., at Bridge, 2 Miles North of Fonda.	83.5	28	0.20 10-21-58	0.2	*
5-4822	B Cedar Cr at Fonda, Iowa	Lat 4235XX, Long 9451XX, in SW ¼ Sec. 22, T.90 N., R.34 W., at Bridge on State Highway 5, at North City Limits of Fonda.	196	68	0.24 10-21-58	0.4	*
5-4822.2	B Cedar Cr at Sac City, Iowa	Lat 4224XX, Long 9459XX, in SE ¼ Sec. 25, T.88 N., R.36 W., at Bridge, 1 Mile SE of Sac City.	342	115	2.35 10-21-58	2.5	—
5-4823.2	Indian Cr nr Lake View, Iowa	Lat 4220XX, Long 9500XX, in NW ¼ Sec. 24, T.87 N., R.36 W., at Bridge, 4 Miles NE of Lake View.	90.2	29	1.16 10-21-58	1.0	—
5-4823.6	Camp Cr nr Lytton, Iowa	Lat 4223XX, Long 9450XX, in NW ¼ Sec. 5, T.87 N., R.34 W., at Bridge, 3 Miles SE of Lytton.	62.0	23	0.05 10-28-64	0.5	*
5-4823.8	Camp Cr nr Lake City, Iowa	Lat 4217XX, Long 9450XX, in NW ¼ Sec. 5, T.86 N. R.34 W., at Bridge, 5 Miles NW of Lake City.	147	56	0.18 10-27-64	0.8	—
5-4824	N Raccoon R nr Lake City, Iowa	Lat 4216XX, Long 9450XX, near E ¼ Corner Sec. 17, T.86 N., R.34 W., at Bridge on State Highway 175, 4 Miles West of Lake City.	1003	343	10.1 10-21-58	13	—
5-4824.1	Lake Cr nr Rockwell City, Iowa	Lat 4224XX, Long 9436XX, in SW ¼ Sec. 29, T.88 N., R.32 W., at Bridge on U.S. Highway 20, 1 Mile East of Rockwell City.	71.5	27	0.10 10-27-64	0.4	—
5-4824.2	Lake Cr nr Lake City, Iowa	Lat 4216XX, Long 9447XX, in SW ¼ Sec. 14, T.86 N., R.34 W., at Bridge, 3 Miles West of Lake City.	128	48	0.23 10-27-64	*	—
5-4824.4	Purgatory Cr nr Lanesboro, Iowa	Lat 4210XX, Long 9438XX, in NE ¼ Sec. 24, T.85 N., R.33 W., at Bridge, 3 Miles SE of Lanesboro.	65.0	26	0.10 9-14-66	*	—

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		DES MOINES RIVER BASIN—Continued					
5-4824.6	E Cedar Cr nr Somers, Iowa	Lat 4222XX, Long 9427XX, in NW ¼ Sec. 10, T.87 N., R.31 W., at Bridge, 1 Mile SW of Somers.	62.4	24	0 9-13-66	*	—
5-4824.8	Cedar Cr nr Churdan, Iowa	Lat 4208XX, Long 9435XX, near S ¼ Corner Sec. 28, T.85 N., R.32 W., at Bridge, 5 Miles SW of Churdan.	151	62	0 9-14-66	*	—
5-4827	Hardin Cr nr Churdan, Iowa	Lat 4210XX, Long 9426XX, in SW ¼ Sec. 14, T.85 N., R.31 W., at Bridge, 2 Miles East of Churdan.	74.0	32	0.01 10-27-64	*	—
5-4830.5	Hardin Cr nr Jefferson, Iowa	Lat 4201XX, Long 9420XX, in NW ¼ Sec. 10, T.83 N., R.30 W., at Bridge, 2 Miles East of Jefferson.	161	72	1.13 9-14-66	0.5	*
5-4831	W Buttrick Cr nr Farnhamville, Iowa	Lat 4213XX, Long 9422XX, in NW ¼ Sec. 4, T.85 N., R.30 W., at Bridge, 5 Miles SE of Farnhamville.	80.1	35	0.16 10-27-64	*	—
5-4831.5	E Buttrick Cr nr Grand Junction, Iowa	Lat 4204XX, Long 9416XX, in NE ¼ Sec. 30, T.84 N., R.29 W., at Bridge, 2.5 Miles NW of Grand Junction.	79.6	36	0.48 10-27-64	0.5	*
5-4832	Buttrick Cr nr Grand Junction, Iowa	Lat 4202XX, Long 9417XX, at S ¼ Corner Sec. 36, T.84 N., R.30 W., at Bridge, 2.5 Miles West of Grand Junction.	202	93	0.96 9-14-66	0.4	*
5-4832.5	Green Brier Cr nr Jamaica, Iowa	Lat 4151XX, Long 9417XX, near Center of Sec. 1, T.81 N., R.30 W., at Bridge, 1.5 Miles NE of Jamaica.	65.8	27	0 9-13-66	*	—
5-4833	N Raccoon R nr Perry, Iowa	Lat 4150XX, Long 9408XX, near Center of Sec. 8, T.81 N., R.28 W., at Bridge on State Highway 141, 1 Mile West of Perry.	2169	845	48.6 9-13-66	42	16
5-4833.1	S Raccoon R nr Guthrie Center, Iowa	Lat 4141XX, Long 9432XX, in SW ¼ Sec. 36, T.80 N., R.32 W., at Bridge, 2 Miles NW of Guthrie Center.	77.2	32	6.74 9-25-57	5.0	—
5-4833.2	Brushy Ford Cr nr Dedham, Iowa	Lat 4147XX, Long 9454XX, in SE ¼ Sec. 22, T.82 N., R.34 W., at Bridge, 2 Miles SE of Dedham.	68.1	25	2.99 10-22-58	2.9	—
5-4833.3	Brushy Fork Cr nr Guthrie Center, Iowa	Lat 4139XX, Long 9427XX, near Center of Sec. 15, T.79 N., R.31 W., at Bridge, 3.5 Miles SE of Guthrie Center.	142	57	12.5 9-25-57	9.7	—

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		DES MOINES RIVER BASIN—Continued					
5-4833.4	S Raccoon R nr Monteith, Iowa	Lat 4138XX, Long 9425XX, in SE ¼ Sec. 23, T.79 N., R.31 W., at Bridge, 0.5 Mile East of Monteith.	267	109	23.2 9-25-57	18	—
5-4833.5	M Raccoon R nr Carroll, Iowa	Lat 4203XX, Long 9449XX, in SE ¼ Sec. 29, T.84 N., R.34 W., at Bridge, 2 Miles SE of Carroll.	74.3	25	2.01 10-22-58	1.6	—
5-4833.6	M Raccoon R nr Glidden, Iowa	Lat 4203XX, Long 9446XX, near Center of Sec. 35, T.84 N., R.34 W., at Bridge, 2.5 Miles SW of Glidden.	138	48	3.29 10-22-58	2.7	—
5-4833.8	Willow Cr nr Scranton, Iowa	Lat 4154XX, Long 9435XX, in SW ¼ Sec. 21, T.82 N., R.32 W., at Bridge, 9 Miles SW of Scranton.	51.8	19	0.83 9-12-66	0.3	*
5-4834	Willow Cr nr Bayard, Iowa	Lat 4149XX, Long 9433XX, in SE ¼ Sec. 15, T.81 N., R.32 W., at Bridge, 2 Miles South of Bayard.	112	43	2.73 9-12-66	1.1	—
5-4834.5	M Raccoon R nr Bayard, Iowa	Lat 4147XX, Long 9430XX, in SE ¼ Sec. 31, T.81 N., R.31 W., at Bridge on State Highway 25, 6 Miles SE of Bayard.	375	136	22.5 9-12-66	16	—
5-4836.2	Mosquito Cr nr Linden, Iowa	Lat 4143XX, Long 9415XX, near S ¼ Corner Sec. 20, T.80 N., R.29 W., at Bridge, 5 Miles NE of Linden.	67.4	27	0 9-13-66	*	—
5-4836.4	Mosquito Cr nr Redfield, Iowa	Lat 4138XX, Long 9413XX, in NE ¼ Sec. 27, T.79 N., R.29 W., at Bridge, 3 Miles North of Redfield.	110	45	0 9-13-66	*	—
5-4836.6	M Raccoon R at Redfield, Iowa	Lat 4136XX, Long 9413XX, near W ¼ Corner Sec. 4, T.78 N., R.29 W., at Bridge Near West City Limits of Redfield.	609	251	27.2 9-13-66	22	—
5-4842	Panther Cr nr Adel, Iowa	Lat 4136XX, Long 9406XX, near N ¼ Corner Sec. 5, T.78 N., R.28 W., at Bridge, 4 Miles SW of Adel.	56.0	25	0 9-26-57	*	—
5-4847	Walnut Cr at West Des Moines, Iowa	Lat 4136XX, Long 9343XX, in SE ¼ Sec. 35, T.79 N., R.25 W., at Bridge in West Des Moines.	64.0	29	0 1957, 66	*	—
5-4856	Fourmile Cr nr Ankeny, Iowa	Lat 4144XX, Long 9334XX, near S ¼ Corner Sec. 18, T.80 N., R.23 W., at Bridge, 1.5 Miles East of Ankeny.	59.8	27	0 9-19-57	0	0

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_3	7-day Q_{10}
		DES MOINES RIVER BASIN—Continued					
5-4856.5	Fourmile Cr at Des Moines, Iowa	Lat 4136XX, Long 9332XX, in NE ¼ Sec. 5, T.78 N., R.23 W., at Bridge on State Highway 163, at East City Limits of Des Moines.	95.9	44	0 9-19-57	*	—
5-4857	North R nr Earlham, Iowa	Lat 4124XX, Long 9411XX, in NE ¼ Sec. 9, T.76 N., R.29 W., at Bridge, 7 Miles SW of Earlham.	68.9	33	0 1957, 63	*	—
5-4858.5	NB North R nr Winterset, Iowa	Lat 4126XX, Long 9356XX, in NE ¼ Sec. 34, T.77 N., R.27 W., at Bridge, 7 Miles NE of Winterset.	74.7	37	0 1957, 63	*	—
5-4859	North R nr Winterset, Iowa	Lat 4126XX, Long 9355XX, in NW ¼ Sec. 36, T.77 N., R.27 W., at Bridge, 8 Miles NE of Winterset.	203	101	0 1957, 63	*	—
5-4861	Middle R nr Casey, Iowa	Lat 4130XX, Long 9429XX, in SW ¼ Sec. 36, T.78 N., R.32 W., at Bridge, 1.5 Miles East of Casey.	72.8	34	0.76 8-29-66	1.2	—
5-4861.5	Middle R at Middle River, Iowa	Lat 4120XX, Long 9414XX, near Center of Sec. 6, T.75 N., R.29 W., at Bridge Near South City Limits of Middle River.	164	80	1.67 10-29-63	2.5	—
5-4863	Clanton Cr at East Peru, Iowa	Lat 4114XX, Long 9355XX, in NE ¼ Sec. 11, T.74 N., R.27 W., at Bridge, near East Cit Limits of East Peru.	84.5	41	0 10-29-63	*	—
5-4863.5	Clanton Cr nr Martensdale, Iowa	Lat 4121XX, Long 9345XX, in NE ¼ Sec. 32, T.76 N., R.25 W., at Bridge, 2 Miles SW of Martensdale.	159	79	0.24 9-25-57	0.4	*
5-4864	Middle R at Martensdale, Iowa	Lat 4122XX, Long 9344XX, in SE ¼ Sec. 21, T.76 N., R.25 W., at Bridge on State Highway 92, 0.5 Mile SE of Martensdale.	451	234	2.50 9-25-57	5.7	—
5-4867	South R nr New Virginia, Iowa	Lat 4113XX, Long 9344XX, in NE ¼ Sec. 16, T.74 N., R.25 W., at Bridge, 2.5 Miles North of New Virginia.	65.4	31	0 1957, 58, 63	*	—
5-4869	Squaw Cr nr Jamison, Iowa	Lat 4108XX, Long 9344XX, in NE ¼ Sec. 16, T.73 N., R.25 W., at Bridge, 0.5 Mile NW of Jamison.	60.8	29	0 1957, 58, 63	0	0

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		DES MOINES RIVER BASIN—Continued					
5-4871	Squaw Cr nr Indianola, Iowa	Lat 4118XX, Long 9336XX, in NE ¼ Sec. 15, T.75 N., R.24 W., at Bridge, 4 Miles SW of Indianola.	134	66	0.13 9-25-57	0.6	—
5-4872	South R nr Indianola, Iowa	Lat 4120XX, Long 9335XX, in NE ¼ Sec. 2, T.75 N., R.24 W., at Bridge, 2 Miles SW of Indianola.	278	140	0.32 9-25-57	1.5	—
5-4874	Otter Cr nr Norwood, Iowa	Lat 4109XX, Long 9332XX, in SW ¼ Sec. 5, T.73 N., R.23 W., at Bridge, 3 Miles NW of Norwood.	102	50	0 1957, 58, 63	*	0
5-4874.5	Otter Cr nr Milo, Iowa	Lat 4117XX, Long 9329XX, in NE ¼ Sec. 22, T.75 N., R.23 W., at Bridge on State Highway 205, 2 Miles West of Milo.	155	79	0 10-29-58	0.3	*
5-4877	White Breast Cr nr Woodburn, Iowa	Lat 4059XX, Long 9335XX, in NW ¼ Sec. 2, T.71 N., R.24 W., at Bridge, 2 Miles South of Woodburn.	82.9	43	0 10-29-58	*	0
5-4878	White Breast Cr at Lucas, Iowa	Lat 4101XX, Long 9328XX, in NE ¼ Sec. 23, T.72 N., R.23 W., at Bridge on U.S. Highway 65, Near South City Limits of Lucas.	128	67	0 10-30-63	0.1	0
5-4879	White Breast Cr nr Newbern, Iowa	Lat 4110XX, Long 9321XX, in SE ¼ Sec. 35, T.74 N., R.22 W., at Bridge, 2 Miles West of Newbern.	243	127	0 10-29-58	0.4	*
5-4882	English Cr nr Knoxville, Iowa	Lat 4116XX, Long 9305XX, near Center of Sec. 30, T.75 N., R.19 W., at Bridge, 3 Miles South of Knoxville.	73.0	39	0 1958, 61, 63	*	0
5-4883	English Cr nr Harvey, Iowa	Lat 4120XX, Long 9257XX, near E ¼ Corner Sec. 5, T.75 N., R.18 W., at Bridge, 1.5 Miles NW of Harvey.	108	57	0 10-30-63	*	—
5-4885.5	Cedar Cr at Melrose, Iowa	Lat 4058XX, Long 9303XX, in SW ¼ Sec. 4, T.71 N., R.19 W., at Bridge near South City Limits of Melrose.	23.9	13	0 9-12-60	0	0
5-4886	Cedar Cr nr Albia, Iowa	Lat 4101XX, Long 9253XX, in NE ¼ Sec. 26, T.72 N., R.18 W., at Bridge on U.S. Highway 34, 4 Miles West of Albia.	102	57	0 10-15-64	*	—

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		DES MOINES RIVER BASIN—Continued					
5-4887	Cedar Cr nr Lovilia, Iowa	Lat 4107XX, Long 9256XX, near S ¼ Corner Sec. 16, T.73 N., R.18 W., at Bridge, 2 Miles SW of Lovilia.	211	120	0.26 1957, 63	0.6	*
5-4888	N Cedar Cr nr Lovilia, Iowa	Lat 4109XX, Long 9303XX, in NE ¼ Sec. 4, T.73 N., R.19 W., at Bridge, 7.5 Miles NW of Lovilia.	61.3	33	0 10-29-63	*	—
5-4889	N Cedar Cr nr Marysville, Iowa	Lat 4111XX, Long 9301XX, in SE ¼ Sec. 26, T.74 N., R.19 W., at Bridge, 3 Miles West of Marysville.	111	61	0.01 8-29-66	0.1	*
5-4893	N Avery Cr nr Chillicothe, Iowa	Lat 4106XX, Long 9233XX, in SE ¼ Sec. 26, T.73 N., R.15 W., at Bridge, 1 Mile NW of Chillicothe.	60.1	37	0 11-3-66	*	0
5-4894	S Avery Cr at Chillicothe, Iowa	Lat 4105XX, Long 9232XX, at E ¼ Corner Sec. 36, T.73 N., R.15 W., at Bridge, Near South City Limits of Chillicothe.	51.6	32	0 1958, 66, 68	0	0
5-4899	Soap Cr nr Ash Grove, Iowa	Lat 4051XX, Long 9236XX, in SW ¼ Sec. 21, T.70 N., R.15 W., at Bridge, 3 Miles SW of Ash Grove.	97.3	61	0 10-1-57	0.1	0
5-4901	Soap Cr nr Floris, Iowa	Lat 4054XX, Long 9216XX, near Center of Sec. 5, T.70 N., R.12 W., at Bridge, 4 Miles NE of Floris.	243	161	1.62 10-1-57	2.1	—
5-4902	Lick Cr at Kilbourn, Iowa	Lat 4048XX, Long 9158XX, in SW ¼ Sec. 1, T.69 N., R.10 W., at Bridge near East City Limits of Kilbourn.	82.7	61	0 1957, 63, 64, 66	0	0
5-4903	Chequest Cr nr Troy, Iowa	Lat 4047XX, Long 9211XX, in SE ¼ Sec. 12, T.69 N., R.12 W., at Bridge, 3 Miles NE of Troy.	85.0	60	0 1957, 64, 66	0	0
5-4904	Chequest Cr. nr Pittsburg, Iowa	Lat 4046XX, Long 9201XX, near Center of Sec. 21, T.69 N., R.10 W., at Bridge, 1.5 Miles NW of Pittsburg.	123	90	0 10-1-57	0.1	*
5-4907	Sugar Cr nr Charleston, Iowa	Lat 4034XX, Long 9134XX, in NW ¼ Sec. 33, T.67 N., R.6 W., at Bridge, 2 Miles SW of Charleston.	62.3	41	0 1957, 66	0	0
		FOX RIVER BASIN					
5-4945	Fox R at Cantril, Iowa	Lat 4039XX, Long 9203XX, in SW ¼ Sec. 30, T.68 N., R.10 W., at Bridge on State Highway 2, 1 Mile NE of Cantril	161	111	0.12 10-1-57	0.7	*

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		BIG SIOUX RIVER BASIN					
6-4831	Rock R nr Rock Rapids, Iowa	Lat 4330XX, Long 9611XX, in NE ¼ Sec. 8, T.100 N., R.45 W., at Bridge, 5 Miles North of Rock Rapids.	558	122	2.29 10-14-58	3.8	—
6-4832.6	Kanaranzi Cr nr Rock Rapids, Iowa	Lat 4328XX, Long 9609XX, in SW ¼ Sec. 22, T.100 N., R.45 W., at Bridge, 2 Miles North of Rock Rapids.	203	50	0.14 10-14-58	0.7	*
6-4832.8	Tom Cr at Rock Rapids, Iowa	Lat 4326XX, Long 9609XX, in SW ¼ Sec. 34, T.100 N., R.45 W., at Bridge in NE Corner of Rock Rapids.	61.9	16	0 1958, 66, 68	0	0
6-4833	Rock R Below Rock Rapids, Iowa	Lat 4324XX, Long 9609XX, near N ¼ Corner Sec. 15, T.99 N., R.45 W., at Bridge, 2 Miles South of Rock Rapids.	859	194	0.46 10-14-58	2.5	—
6-4833.2	Mud Cr at Lester, Iowa	Lat 4327XX, Long 9620XX, in NW ¼ Sec. 36, T.100 N., R.47 W., at Bridge near NW City Limits of Lester.	63.7	14	0 10-14-58	*	—
6-4833.3	Mud Cr nr Doon, Iowa	Lat 4317XX, Long 9615XX, in NE ¼ Sec. 27, T.98 N., R.46 W., at Bridge, 1.5 Miles NW of Doon.	138	29	0.07 9-11-68	0.4	*
6-4833.4	Rock R nr Doon, Iowa	Lat 4316XX, Long 9615XX, in NW ¼ Sec. 35, T.98 N., R.46 W., at Bridge, 1 Mile SW of Doon.	1050	247	1.0 10-13-58	6.6	—
6-4833.6	L Rock R nr little Rock, Iowa	Lat 4330XX, Long 9551XX, in N ½ Sec. 7, T.100 N., R.42 W., at Bridge, 4 Miles NE of Little Rock.	92.0	23	0 1958, 59, 68	0	0
6-4833.8	L Rock R at little Rock, Iowa	Lat 4326XX, Long 9554XX, in NE ¼ Sec. 3, T.99 N., R.43 W., at Bridge, 1 Mile SW of Little Rock.	134	33	0.10 8-13-59	0.2	*
6-4834	L Rock R nr George, Iowa	Lat 4319XX, Long 9602XX, in NE ¼ Sec. 15, T.98 N., R.44 W., at Bridge, 2 Miles SW of George.	199	53	1.1 1958, 68	1.1	—
6-4834.6	Otter Cr nr Ashton Iowa	Lat 4320XX, Long 9546XX, in SE ¼ Sec. 2, T.98 N., R.42 W., at Bridge, 2 Miles NE of Ashton.	88.0	25	0.60 10-14-58	0.4	*
6-4834.7	Otter Cr nr Matlock, Iowa	Lat 4316XX, Long 9556XX, near W ¼ Corner Sec. 34, T.98 N., R.43 W., at Bridge, 2 Miles NE of Matlock.	129	38	0.23 10-14-58	0.5	*

Table 2—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq. mi.)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		BIG SIOUX RIVER BASIN—Continued					
6-4834.8	Otter Cr nr George, Iowa	Lat 4317XX, Long 9603XX, in NW ¼ Sec. 28, T.98 N., R.44 W., at Bridge, 5 Miles SW of George.	208	60	0 10-14-58	1.3	—
6-4834.9	L Rock R nr Doon Iowa	Lat 4316XX, Long 9614XX, near W ¼ Corner Sec. 36, T.98 N., R.46 W., at Bridge, 1 Mile South of Doon.	474	135	0.48 10-13-58	3.2	—
6-4841	Sixmile Cr nr Hawarden, Iowa	Lat 4302XX, Long 9624XX, in NW ¼ Sec. 28, T.95 N., R.47 W., at Bridge, 5 Miles NE of Hawarden.	68.8	15	0.26 6-11-68	0.4	—
6-4841.5	Sixmile Cr nr Chatsworth, Iowa	Lat 4256XX, Long 9629XX, in SW ¼ Sec. 26, T.94 N., R.48 W., at Bridge, 1.5 Miles NE of Chatsworth.	104	22	0.25 10-13-58	0.6	—
6-4842	Indian Cr nr Chatsworth, Iowa	Lat 4253XX, Long 9630XX, in NW ¼ Sec. 10, T.93 N., R.48 W., at Bridge, 1.5 Miles South of Chatsworth.	62.2	14	0.06 8-11-59	0.1	—
6-4858	Broken Kettle Cr nr Adaville, Iowa	Lat 4243XX, Long 9628XX, in SE ¼ Sec. 2, T.91 N., R.48 W., at Bridge, 4 Miles SW of Adaville.	60.7	14	1.38 8-11-59	1.4	—
6-4859	Broken Kettle Cr nr Sioux City, Iowa	Lat 4238XX, Long 9630XX, in SW ¼ Sec. 3, T.90 N., R.48 W., at Bridge, 9 Miles NW of Sioux City.	97.4	22	1.72 8-11-59	1.8	—
		FLOYD RIVER BASIN					
6-6000.2	Floyd R nr Sheldon, Iowa	Lat 4312XX, Long 9549XX, in SW ¼ Sec. 21, T.97 N., R.42 W., at Bridge, 2 Miles NE of Sheldon.	64.0	19	0.32 9-11-68	0.5	—
6-6000.4	L Floyd R nr Sheldon, Iowa	Lat 4309XX, Long 9552XX, in SE ¼ Sec. 1, T.96 N., R.43 W., at Bridge, 2 Miles SW of Sheldon.	59.3	17	0 10-15-58	*	—
6-6000.6	Floyd R Below Sheldon, Iowa	Lat 4308XX, Long 9553XX, in N ½ Sec. 23, T.96 N., R.43 W., at Bridge, 4 Miles SW of Sheldon.	165	50	0 10-15-58	0.2	*
6-6001.2	Deep Cr nr Oyens, Iowa	Lat 4249XX, Long 9607XX, in SW ¼ Sec. 36, T.93 N. R.45 W. at Bridge, 3 Miles NW of Oyens.	82.7	23	0.01 10-15-58	0.7	—
6-6001.4	Willow Cr nr Oyens, Iowa	Lat 4250XX, Long 9607XX, near W ¼ Corner Sec. 36, T.93 N., R.45 W., at Bridge, 3 Miles NW of Oyens.	65.2	16	0 1958, 63, 68	0	0

Table 2—Average dis-harge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq. mi.)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		FLOYD RIVER BASIN—Continued					
6-6001.6	Deep Cr at LeMars, Iowa	Lat 4248XX, Long 9609XX, in NE ¼ Sec. 9, T.92 N., R.45 W., at Bridge near North City Limits of LeMars.	156	42	0 10-15-68	0.4	*
6-6001.8	Floyd R at LeMars, Iowa	Lat 4248XX, Long 9610XX, in NW ¼ Sec. 9, T.92 N., R.45 W., at Bridge near North City Limits of LeMars.	478	133	1.57 10-15-58	2.5	—
6-6002	Floyd R nr Merrill, Iowa	Lat 4245XX, Long 9612XX, in NW ¼ Sec. 31, T.92 N., R.45 W., at Bridge, 3 Miles NE of Merrill.	489	130	2.07 10-15-58	4.5	—
6-6002.5	WB Floyd R nr Middleburg, Iowa	Lat 4307XX, Long 9605XX, in NE ¼ Sec. 30, T.96 N., R.44 W., at Bridge, 1 Mile West of Middleburg.	59.7	14	0 1957, 58, 68	0	0
6-6004	WB Floyd R nr Merrill, Iowa	Lat 4245XX, Long 9614XX, in NE ¼ Sec. 35, T.92 N., R.46 W., at Bridge, 2 Miles North of Merrill.	232	54	0.92 10-15-58	2.2	—
		MONONA-HARRISON DITCH BASIN					
6-6015	Big Whiskey Slough nr Kingsley, Iowa	Lat 4240XX, Long 9552XX, near S ¼ Corner Sec. 25, T.91 N., R.43 W., at Bridge, 7 Miles NE of Kingsley.	55.3	15	0.42 10-2-58	0.6	—
6-6016	WF L Sioux R nr Fielding, Iowa	Lat 4239XX, Long 9552XX, in NW ¼ Sec. 1, T.90 N., R.43 W., at Bridge, 4 Miles SW of Fielding.	135	38	2.00 10-2-58	2.5	—
6-6017	WF L Sioux R nr Kingsley, Iowa	Lat 4235XX, Long 9600XX, in NW ¼ Sec. 25, T.90 N., R.44 W., at Bridge, 1 Mile West of Kingsley.	219	60	2.12 10-2-58	5.4	—
6-6018	Mud Cr at Moville, Iowa	Lat 4229XX, Long 9606XX, in SW ¼ Sec. 30, T.89 N., R.44 W., at Bridge, 1 Mile West of Moville.	68.7	16	0 10-2-58	*	—
6-6019	WF L Sioux R at Moville, Iowa	Lat 4228XX, Long 9605XX, in SE ¼ Sec. 31, T.89 N., R.44 W., at Bridge on U.S. Highway 20, near South City Limits of Moville.	344	94	3.25 10-2-58	6.0	—
6-6022	Elliot Cr nr Bronson, Iowa	Lat 4224XX, Long 9614XX, in NE ¼ Sec. 31, T.88 N., R.46 W., at Bridge, 1.5 Miles SW of Bronson.	58.6	13	0.39 1958, 59	0.4	—

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		MONONA-HARRISON DITCH BASIN—Continued					
6-6022.5	Big Whiskey Cr nr Bronson, Iowa	Lat 4224XX, Long 9615XX, in NE ¼ Sec. 31, T.88 N., R.46 W., at Bridge, 1.5 Miles SW of Bronson.	62.4	14	0.06 1958, 59	0.3	—
6-6023	Wolf Cr nr Holly Springs, Iowa	Lat 4218XX, Long 9601XX, in SW ¼ Sec. 31, T.87 N., R.44 W., at Bridge, 4 Miles NE of Holly Springs.	99.2	22	1.11 10-2-58	1.5	—
		LITTLE SIOUX RIVER BASIN					
6-6036	L Sioux R nr Montgomery, Iowa	Lat 4326XX, Long 9515XX, in NE ¼ Sec. 6, T.99 N., R.37 W., at Bridge on State Highway 9, 2.5 Miles SW of Montgomery.	118	31	0 10-17-58	0.1	—
6-6037	WF L Sioux R nr Lake Park, Iowa	Lat 4329XX, Long 9517XX, near N ¼ Corner Sec. 13, T.100 N., R.38 W., at Bridge, 3 Miles NE of Lake Park.	116	29	0 1958, 59, 67	0	0
6-6038	WF L Sioux R nr Montgomery, Iowa	Lat 4325XX, Long 9516XX, in SW ¼ Sec. 6, T.99 N., R.37 W., at Bridge, 4 Miles SW of Montgomery.	173	45	0 10-17-58	*	—
6-6039	L Sioux R nr Milford, Iowa	Lat 4319XX, Long 9511XX, near Center of Sec. 11, T.98 N., R.37 W., at Bridge, 1.5 Miles SW of Milford.	333	90	0 10-17-58	*	—
6-6044	Okoboji Lake Outlet nr Milford, Iowa	Lat 4319XX, Long 9510XX, in SW ¼ Sec. 12, T.98 N., R.37 W., at Bridge, 1 Mile SW of Milford.	151	44	0.79 10-1-57	1.0	—
6-6045	Ocheyedan R nr Bigelow, Minn.	Lat 4327XX, Long 9537XX, in SE ¼ Sec. 24, T.100 N., R.41 W., at Bridge in Iowa, 4.5 Miles SE of Bigelow.	68.7	17	0 10-17-58	*	—
6-6046	L Ocheyedan R nr May City, Iowa	Lat 4317XX, Long 9528XX, in NE ¼ Sec. 29, T.98 N., R.39 W., at Bridge, 3 Miles South of May City.	54.2	15	0 10-17-58	*	—
6-6047	Ocheyedan R nr May City, Iowa	Lat 4316XX, Long 9527XX, near N ¼ Corner Sec. 34, T98 N., R.39 W., at Bridge, 4 Miles SE of May City.	226	66	2.63 10-17-58	3.7	—
6-6048	Stoney Cr nr Fostoria, Iowa	Lat 4314XX, Long 9520XX, In NW ¼ Sec. 10, T.97 N., R.38 W., at Bridge, 9 Miles West of Fostoria.	65.4	18	0.74 10-17-58	1.1	—

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		LITTLE SIOUX RIVER BASIN—Continued					
6-6049	Stoney Cr nr Everly, Iowa	Lat 4309XX, Long 9515XX, in NE ¼ Sec. 7, T.96 N., R. 37 W., at Bridge, 4 Miles SE of Everly.	81.6	23	0.02 10-17-58	1.2	—
6-6050	Ocheyedan R nr Spencer, Iowa	Lat 4308XX, Long 9513XX, in SW ¼ Sec. 15, T.96 N., R.37 W., at Bridge, 3 Miles SE of Spencer.	426	125	2.95 10-17-58	4.5	—
6-6051	L Sioux R at Spencer, Iowa	Lat 4308XX, Long 9508XX, in N ½ Sec. 18, T.96 N., R.36 W., at Bridge on U. S. Highway 18 and 71, in Spencer.	990	278	7.44 10-17-58	14	—
6-6052	Muddy Cr nr Langdon, Iowa	Lat 4312XX, Long 9504XX, in NW ¼ Sec. 26, T.97 N., R.36 W., at Bridge, 1.5 Miles SE of Langdon.	59.7	18	0.30 10-17-58	0.6	—
6-6053	Muddy Cr nr Spencer, Iowa	Lat 4308XX, Long 9505XX, in NW ¼ Sec. 15, T.96 N., R.36 W., at Bridge, 3 Miles East of Spencer.	102	31	0.36 10-17-58	1.1	—
6-6054	Pickerel Run nr Spencer, Iowa	Lat 4312XX, Long 9458XX, in NW ¼ Sec. 27, T.97 N., R.35 W., at Bridge, 9 Miles NE of Spencer.	75.7	23	0 1957, 58	0	0
6-6055	Lost Island Outlet nr Dickens, Iowa	Lat 4307XX, Long 9502XX, at W ¼ Corner Sec. 19, T.96 N., R.35 W., at Bridge, 1 Mile South of Dickens.	151	47	1.09 10-17-58	1.5	—
6-6057	Willow Cr nr Rossi, Iowa	Lat 4259XX, Long 9510XX, in SE ¼ Sec. 4, T.94 N., R.37 W., at Bridge, 2 Miles SE of Rossi.	62.6	20	0 1958, 67, 68	0	0
6-6058	Willow Cr nr Greenville, Iowa	Lat 4259XX, Long 9509XX, near Center of Sec. 7, T.94 N., R.36 W., at Bridge 3 Miles South of Greenville.	90.3	29	0 10-17-58	*	—
6-6059	Waterman Cr nr Hartley, Iowa	Lat 4305XX, Long 9527XX, in NE ¼ Sec. 4, T.95 N., R.39 W., at Bridge, 6.5 Miles SE of Hartley.	58.4	18	0.01 1958, 67	*	—
6-6060	Waterman Cr nr Sutherland, Iowa	Lat 4257XX, Long 9525XX, near Center of Sec. 23, T.94 N., R.39 W., at Bridge, 4.5 Miles SE of Sutherland.	139	45	0.15 10-16-58	0.4	*
6-6061	L Sioux R nr Sutherland, Iowa	Lat 4256XX, Long 9525XX, in NW ¼ Sec. 26, T.94 N., R.39 W., at Bridge, 5 Miles SE of Sutherland.	1803	566	1.83 10-16-58	25	—

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		LITTLE SIOUX RIVER BASIN—Continued					
6-6062	Mill Cr nr Paulina, Iowa	Lat 4302XX, Long 9543XX, near N ¼ Corner Sec. 29, T.95 N., R.41 W., at Bridge, 3 miles NW of Paulina.	61.6	19	0 1958, 67	*	—
6-6063	Mill Cr nr Cherokee, Iowa	Lat 4247XX, Long 9533XX, near Center of Sec. 15, T.92 N., R.40 W., at Bridge, on U. S. Highway 59, 2 Miles North of Cherokee.	292	93	0.89 10-16-58	28	—
6-6064	L Sioux R at Cherokee, Iowa	Lat 4245XX, Long 9532XX, in E ½ Sec. 26, T.92 N., R.40 W., at Bridge near East City Limits of Cherokee.	2173	679	3.63 10-16-58	33	—
6-6065	Pierson Cr nr Correctionville, Iowa.	Lat 4229XX, Long 9548XX, in NE ¼ Sec. 33, T.89 N., R.42 W., at Bridge, 1 Mile NW of Correctionville.	55.1	13	0.01 10-2-58	0.2	*
6-6068	Maple R nr Aurelia, Iowa	Lat 4243XX, Long 9529XX, in NW ¼ Sec. 8, T.91 N., R.39 W., at Bridge, 2 Miles NW of Aurelia.	85.2	27	0.03 10-16-58	*	—
6-6069	Maple R nr Ida Grove, Iowa	Lat 4222XX, Long 9527XX, in NW ¼ Sec. 12, T.87 N., R.40 W., at Bridge, 1 Mile NE of Ida Grove.	364	108	5.22 10-2-58	9.4	—
6-6071	Odebolt Cr at Ida Grove, Iowa	Lat 4221XX, Long 9528XX, near Center of Sec. 14, T.87 N., R.40 W., at Bridge in Ida Grove.	61.1	17	2.10 9-25-57	2.1	—
6-6074	Maple R nr Turin, Iowa	Lat 4201XX, Long 9558XX, in SW ¼ Sec. 10, T.83 N., R.44 W., at Bridge, 1 Mile SE of Turin.	741	214	16.2 9-30-58	25	6.4
		SOLDIER RIVER BASIN					
6-6083	Soldier R nr Ricketts, Iowa	Lat 4212XX, Long 9535XX, in SW ¼ Sec. 1, T.85 N., R.41 W., at Bridge, 5 Miles North of Ricketts.	90.5	25	1.89 10-2-58	3.2	—
6-6083.5	Soldier R nr Ute, Iowa	Lat 4203XX, Long 9543XX, in SE ¼ Sec. 34, T.84 N., R.42 W., at Bridge on State Highway 183, 1 Mile SW of Ute.	155	42	3.73 10-3-58	5.4	—
6-6084	E Soldier R nr Ute, Iowa	Lat 4203XX, Long 9542XX, in SW ¼ Sec. 35, T.84 N., R.42 W., at Bridge near SW City Limits of Ute.	97.8	28	3.05 10-3-58	3.4	—

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		ALLEN DITCH BASIN					
6-6092.2	Allen Ditch nr Loveland, Iowa	Lat 4129XX, Long 9555XX, in NE ¼ Sec. 17, T.77 N., R.44 W., at Bridge, 2 Miles SW of Loveland.	92.1	31	0 10-1-58	0.5	—
		BOYER RIVER BASIN					
6-6092.6	Boyer R nr Early, Iowa	Lat 4228XX, Long 9511XX, in NE ¼ Sec. 6, T.88 N., R.37 W., at Bridge on U. S. Highway 20, 2 Miles NW of Early.	67.5	20	0.37 10-1-58	0.8	—
6-6093	E Boyer R at Vail, Iowa	Lat 4204XX, Long 9512XX, in E ½ Sec. 30, T.84 N., R.37 W., at Bridge near East City Limits of Vail.	65.4	20	1.07 5-24-67	3.3	—
6-6093.5	E Boyer R at Denison, Iowa	Lat 4201XX, Long 9522XX, in SE ¼ Sec. 10, T.83 N., R.39 W., at Bridge on U.S. Highway 30, near West City Limits of Denison.	130	41	3.05 5-24-67	5.2	—
6-6094	Boyer R nr Denison, Iowa	Lat 4200XX, Long 9523XX, in NE ¼ sec. 16, T.83 N., R.39 W., at Bridge, 2 Miles SW of Denison.	517	164	7.79 10-1-58	15	—
6-6095.5	Boyer R nr Missouri Valley, Iowa	Lat 4131XX, Long 9554XX, in SE ¼ Sec. 28, T.78 N., R.44 W., at Bridge, 2 Miles South of Missouri Valley.	1081	346	26.2 5-25-67	37	—
6-6095.8	Willow Cr nr Woodbine, Iowa	Lat 4148XX, Long 9545XX, in NE ¼ Sec. 29, T.81 N., R.42 W., at Bridge, 5.5 Miles NW of Woodbine.	67.0	21	1.26 9-24-57	2.3	—
6-6096	Willow Cr nr Logan, Iowa	Lat 4138XX, Long 9553XX, in NE ¼ Sec. 30, T.79 N., R.43 W., at Bridge, 5 Miles West of Logan.	129	42	3.94 9-24-57	5.0	—
6-6096.2	Willow Cr nr Missouri Valley, Iowa	Lat 4131XX, Long 9554XX, in SE ¼ Sec. 28, T.78 N., R.44 W., at Bridge, 2 Miles South of Missouri Valley.	146	48	4.63 9-24-57	5.7	—
6-6096.7	Boyer R nr Loveland, Iowa	Lat 4128XX, Long 9555XX, in Center of Sec. 4, T.77 N., R.44 W., at Bridge, 1 Mile West of Loveland.	1084	346	35.9 10-1-58	40	—

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		PIGEON CREEK BASIN					
6-6099	Pigeon Cr East of Loveland, Iowa	Lat 4129XX, Long 9542XX, in SW ¼ Sec. 8, T.77 N., R.42 W., at Bridge, 10 Miles SE of Loveland.	66.6	23	0.72 6-18-68	2.7	—
6-6099.5	Pigeon Cr nr Crescent, Iowa	Lat 4120XX, Long 9553XX, in NE ¼ Sec. 3, T.75 N., R.44 W., at Bridge, 3 Miles SW of Crescent.	163	59	4.22 6-18-68	5.6	—
		MOSQUITO CREEK BASIN					
6-6105.5	Mosquito Cr at Portsmouth, Iowa	Lat 4139XX, Long 9531XX, in SW ¼ Sec. 16, T.79 N., R.40 W., at Bridge on State Highway 64, near East City Limits of Portsmouth.	68.9	21	0.99 5-23-67	2.8	—
6-6106	Mosquito Cr at Neola, Iowa	Lat 4127XX, Long 9537XX, in NE ¼ Sec. 25, T.77 N., R.42 W., at Bridge on County Road S, 0.5 Mile South of Neola.	131	45	3.53 6-18-68	6.3	—
6-6106.5	Mosquito Cr nr Council Bluffs, Iowa	Lat 4116XX, Long 9548XX, in E ½ Sec. 29, T.75 N., R.43 W., at Bridge, 3 Miles East of Council Bluffs.	211	80	2.13 10-4-56	9.7	—
		KEG CREEK BASIN					
6-8057	Keg Cr at Minden, Iowa	Lat 4113XX, Long 9532XX, in SW ¼ Sec. 14, T.77 N., R.41 W., at Bridge, at East City Limits of Minden.	59.6	22	1.32 6-19-68	2.7	—
6-8058	Keg Cr nr Dumfries, Iowa	Lat 4111XX, Long 9541XX, in NW ¼ Sec. 28, T.74 N., R.42 W., at Bridge, 3 Miles NE of Dumfries.	131	54	6.80 5-23-67	7.0	—
6-8059	Keg Cr Nr Glenwood, Iowa	Lat 4101XX, Long 9546XX, in NE ¼ Sec. 27, T.72 N., R.43 W., at Bridge, 2 Miles SW of Glenwood.	190	83	6.96 9-24-57	9.7	—
		NISHNABOTNA RIVER BASIN					
6-8072.6	W Nishnabotna R nr Manning, Iowa	Lat 4153XX, Long 9505XX, in NW ¼ Sec. 31, T.52 N., R.26 W., at Bridge, 3 Miles SW of Manning.	58.6	22	0.28 5-23-67	0.3	*
6-8072.8	WF W Nishnabotna R nr Manilla, Iowa	Lat 4152XX, Long 9515XX, near W ¼ Corner Sec. 35, T.82 N., R.38 W., at Bridge, 1 Mile South of Manilla.	64.2	23	1.13 5-23-67	1.4	*

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		NISHNABOTNA RIVER BASIN—Continued					
6-8073	WF W Nishnabotna R at Harlan, Iowa	Lat 4140XX, Long 9518XX, in NE ¼ Sec. 7, T.79 N., R.38 W., at Bridge near NE City Limits of Harlan.	146	50	3.61 6-18-68	5.0	—
6-8073.2	W Nishnabotna R at Harlan, Iowa	Lat 4138XX, Long 9518XX, in NE ¼ Sec. 19, T.79 N., R.38 W., at Bridge on State Highway 64, near East City Limits of Harlan.	316	115	8.67 6-18-68	13	—
6-8073.4	W Nishnabotna R at Avoca, Iowa	Lat 4128XX, Long 9521XX, in NE ¼ Sec. 17, T.77 N., R.39 W., at Bridge on State Highway 83, near West City Limits of Avoca.	357	146	8.57 5- 9-57	15	—
6-8073.6	EB W Nishnabotna R Nr Red Line, Iowa	Lat 4144XX, Long 9506XX, in NE ¼ Sec. 13, T.80 N., R.37 W., at Bridge on State Highway 64, 3 miles NE of Red Line.	70.3	30	0.80 5-23-67	1.5	—
6-8073.8	EB W Nishnabotna R nr Jacksonville, Iowa	Lat 4139XX, Long 9514XX, in NE ¼ Sec 23, T.79 N., R.38 W., at Bridge, 4 Miles West of Jacksonville.	151	63	2.05 6-18-68	4.3	—
6-8074	EB W Nishnabotna R at Avoca, Iowa	Lat 4129XX, Long 9520XX, in NE ¼ Sec. 16, T.77 N., R.39 W., at Bridge on State Highway 83 in Avoca.	223	88	2.36 6-19-68	6.2	—
6-8074.2	Graybill Cr nr Macedonia, Iowa	Lat 4111XX, Long 9523XX, in SE ¼ Sec. 25, T.74, N., R. 40 W., at Bridge, 2 Miles SE of Macedonia.	52.1	22	1.54 6-18-68	2.7	—
6-8074.4	Farm Cr nr Macedonia, Iowa	Lat 4110XX, Long 9523XX, in SE ¼ Sec. 36, T.74 N., R.40 W., at Bridge, 3 Miles SE of Macedonia.	104	45	4.11 9-26-57	4.8	—
6-8074.8	Indian Cr nr Hastings, Iowa	Lat 4102XX, Long 9530XX, in SE ¼ Sec. 13, T.72 N., R.41 W., at Bridge, 0.5 Mile North of Hastings.	67.9	29	0.97 9-24-57	3.8	—
6-8075	W Nishnabotna R at White Cloud, Iowa	Lat 4059XX, Long 9532XX, in NW ¼ Sec. 2, T.71 N., R.41 W., at Bridge, 0.5 Mile NW of White Cloud.	967	405	29.7 9-24-57	53	—
6-8075.5	W Nishnabotna R nr Malvern, Iowa	Lat 4058XX, Long 9533XX, in NW ¼ Sec. 15, T.71 N., R. 41 W., at Bridge, 3.5 Miles SE of Malvern.	974	409	30.4 9-24-57	50	—

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		NISHNABOTNA RIVER BASIN—Continued					
6-8076	Silver Cr nr Avoca, Iowa	Lat 4125XX, Long 9527XX, in NE ¼ Sec. 4, T.76 N., R.40 W., at Bridge, 7 Miles SW of Avoca.	59.2	22	0.82 5-23-67	1.8	—
6-8076.5	Silver Cr nr Treynor, Iowa	Lat 4111XX, Long 9534XX, in SW ¼ Sec. 28, T.74 N., R.41 W., at Bridge, 4 Miles SE of Treynor.	115	48	4.75 6-18-68	7.0	—
6-8078	M Silver Cr nr Treynor, Iowa	Lat 4111XX, Long 9536XX, in SE ¼ Sec. 30, T.74 N., R.41 W., at Bridge, 4 Miles South of Treynor.	74.3	32	2.66 9-23-57	3.6	—
6-8079	Silver Cr nr Malvern, Iowa	Lat 4057XX, Long 9534XX in SW ¼ Sec. 16, T.71 N., R.41 W., at Bridge, 4 Miles South of Malvern.	282	126	12.6 9-24-57	17	—
6-8086	Walnut Cr nr Griswold, Iowa	Lat 4117XX, Long 9513XX, in NW ¼ Sec. 22, T.74 N., R.38 W., at Bridge, 5 Miles NW of Griswold.	61.3	24	0.68 11-6-63	1.2	—
6-8087	Walnut Cr nr Hawthorne, Iowa	Lat 4058XX, Long 9522XX, in NW ¼ Sec. 17, T.71 N., R.39 W., at Bridge, 3 Miles SW of Hawthorne.	140	58	2.53 5-23-67	2.6	—
6-8088	Walnut Cr nr Randolph, Iowa	Lat 4048XX, Long 9534XX, near E ¼ Corner Sec. 9, T.69 N., R.41 W., at Bridge, 5.5 Miles South of Randolph.	222	94	5.17 6-18-68	4.3	—
6-8088.5	E Nishnabotna R nr Audubon, Iowa	Lat 4147XX, Long 9451XX, in NW ¼ Sec. 6, T.80 N., R.34 W., at Bridge, 5 Miles NE of Audubon.	66.7	28	0.87 5-23-67	0.9	—
6-8089	E Nishnabotna R at Exira, Iowa	Lat 4135XX, Long 9454XX, in NW ¼ Sec. 4, T.78 N., R.35 W., at Bridge at West City Limits of Exira.	195	91	2.38 5-23-67	2.9	—
6-8090.5	Davids Cr at Exira, Iowa	Lat 4135XX, Long 9453XX, in NE ¼ Sec. 4, T.78 N., R.35 W., at Bridge near East City Limits of Exira.	56.7	26	0.82 6-18-68	2.0	—
6-8091	Troublesome Cr nr Wiota, Iowa	Lat 4130XX, Long 9451XX, in NW ¼ Sec. 2, T.77 N., R.35 W., at Bridge, 7.5 Miles NE of Wiota.	68.4	32	0.35 5-23-67	0.5	*
6-8091.5	Troublesome Cr nr Atlantic, Iowa	Lat 4125XX, Long 9458XX, in NE ¼ Sec. 3, T.76 N., R.36 W., at Bridge, 2 Miles NE of Atlantic.	128	61	2.56 6-18-68	2.9	—

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		NISHNABOTNA RIVER BASIN—Continued					
6-8092	E Nishnabotna R at Atlantic, Iowa	Lat 4124XX, Long 9502XX, in SE ¼ Sec. 6, T.76 N., R.36 W., at Bridge on State Highway 83, near West City Limits of Atlantic.	382	184	10.8 6-18-68	12	—
6-8092.5	Trukey Cr East of Atlantic, Iowa	Lat 4123XX, Long 9455XX, in SE ¼ Sec. 7, T.76 N., R.35 W., at Bridge, 5 Miles SE of Atlantic.	69.5	32	0.67 6-18-68	0.6	—
6-8093	Turkey Cr nr Atlantic, Iowa	Lat 4119XX, Long 9404XX, near Center of Sec. 2, T.75 N., R.37 W., at Bridge, 6 Miles SW of Atlantic.	133	60	1.37 6-19-68	1.4	—
6-8093.3	E Nishnabotna R nr Lewis, Iowa	Lat 4119XX, Long 9505XX, in NE ¼ Sec. 10, T.75 N., R.37 W., at Bridge on U.S., Highway 6, 1 Mile North of Lewis.	574	277	12.7 6-19-68	14	—
6-8093.5	Indian Cr nr Elkhorn, Iowa	Lat 4133XX, Long 9508XX, in N ½ Sec. 20, T.78 N., R.37 W., at Bridge, 5 Miles SW of Elkhorn.	67.4	28	0.66 6-18-68	0.6	—
6-8094	Indian Cr nr Lewis, Iowa	Lat 4118XX, Long 9508XX, in SW ¼ Sec. 8, T.75 N., R.37 W., at Bridge, 2 Miles West of Lewis.	183	77	2.60 6-19-68	3.1	—
6-8094.5	E Nishnabotna R nr Griswold, Iowa	Lat 4117XX, Long 9508XX, in SE ¼ Sec. 18, T.75 N., R.37 W., at Bridge on State Highway 48, 4 Miles North of Griswold.	778	377	15.7 6-19-68	17	—
6-8098	E Nishnabotna R nr Farragut, Iowa	Lat 4045XX, Long 9529XX, in SE ¼ Sec. 30, T.69 N., R.40 W., at Bridge on State Highway 174, 1.5 Miles North of Farragut.	1082	540	51.7 6-18-68	47	—
		TARKIO RIVER BASIN					
6-8118.6	Tarkio R nr Coburg, Iowa	Lat 4054XX, Long 9508XX, in NW ¼ Sec. 5, T.70 N., R.37 W., at Bridge, 6 Miles SE of Coburg.	66.6	26	0.50 9-24-57	0.4	*
6-8118.8	E Tarkio Cr nr Yorktown, Iowa	Lat 4043XX, Long 9512XX, in SW ¼ Sec. 10, T.68 N., R.38 W., at Bridge, 2.5 Miles SW of Yorktown.	58.0	25	0.62 12-13-67	0.8	*

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		TARKIO RIVER BASIN—Continued					
6-8119	Tarkio R nr Yorktown, Iowa	Lat 4043XX, Long 9513XX, in N ½ Sec. 16, T.68 N., R.38 W., at Bridge, 3 Miles SW of Yorktown.	155	64	1.18 9-25-57	1.0	*
6-8120	Tarkio R at Blanchard, Iowa	Lat 4036XX, Long 9514XX, in NE ¼ Sec. 29, T.67 N., R.38 W., at Bridge, 1 Mile North of Blanchard.	200	88	2.02 9-24-57	5.4	—
6-8123	W Tarkio Cr nr Coin, Iowa	Lat 4041XX, Long 9518XX, near S ½ Corner Sec. 22, T.68 N., R.39 W., at Bridge, 4 Miles NW of Coin.	66.9	30	0.68 9-25-57	0.2	*
6-8124	W Tarkio Cr nr Northboro, Iowa	Lat 4035XX, Long 9521XX, in SW ¼ Sec. 29, T.67 N., R.39 W., at Bridge, 3.5 Miles SW of Northboro.	87.7	40	2.57 9-25-57	0.4	*
		NODAWAY RIVER BASIN					
6-8163	W Nodaway R nr Cumberland, Iowa	Lat 4112XX, Long 9452XX, in SW ¼ Sec. 15, T.74 N., R.35 W., at Bridge, 4 Miles South of Cumberland.	65.1	27	0.25 9-24-57	0.2	*
6-8163.5	Sevenmile Cr nr Lyman, Iowa	Lat 4115XX, Long 9459XX, in SE ¼ Sec. 33, T.75 N., R.36 W., at Bridge on U. S. Highway 71, 1.5 Miles North of Lyman.	60.8	25	1.21 10-31-63	0.7	—
6-8164	Sevenmile Cr nr Morton Mill, Iowa	Lat 4106XX, Long 9500XX, in NW ¼ Sec. 33, T.73 N., R.36 W., at Bridge, 1 Mile NW of Morton Mill.	124	50	6.48 3-12-68	6.5	—
6-8165.5	W Nodaway R nr Villisca, Iowa	Lat 4055XX, Long 9500XX, near Center of Sec. 28, T.71 N., R.36 W., at Bridge Near West City Limits of Villisca.	344	132	14.2 3-12-68	10	—
6-8166	M Nodaway R nr Bridgewater, Iowa	Lat 4110XX, Long 9439XX, in NE ¼ Sec. 33, T.74 N., R.33 W., at Bridge, 5 Miles SE of Bridgewater.	89.3	41	0 9-26-57	*	—
6-8167	WF M Nodaway R nr Fontanelle, Iowa	Lat 4119XX, Long 9439XX, near Center of Sec. 4, T.75 N., R.33 W., at Bridge, 5 Miles NW of Fontanelle.	67.9	31	0.40 9-26-57	0.3	*
6-8168	WF M Nodaway R nr Bridgewater, Iowa	Lat 4111XX, Long 9439XX, near Center of Sec. 28, T.74 N., R.33 W., at Bridge, 4.5 Miles South of Bridgewater.	128	58	0.94 9-26-57	0.6	*

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		NODAWAY RIVER BASIN—Continued					
6-8169	M Nodaway R nr Villisca, Iowa	Lat 4055XX, Long 9459XX, in NW ¼ Sec. 34, T.71 N., R.36 W., at Bridge on U. S. Highway 71, 1 Mile South of Villisca.	341	132	2.74 9-24-57	1.4	—
6-8170.5	E Nodaway R nr Williamson, Iowa	Lat 4106XX, Long 9433XX, in NW ¼ Sec. 28, T.73 N., R.32 W., at Bridge, 3 Miles SE of Williamson.	54.2	25	0 9-27-57	*	—
6-8171	E Nodaway R nr Shambaugh, Iowa	Lat 4038XX, Long 9501XX, in NE ¼ Sec. 6, T.67 N., R.36 W., at Bridge, 2 Miles SE of Shambaugh.	333	120	1.75 9-24-57	4.2	—
6-8172	Nodaway R nr Braddyville, Iowa	Lat 4037XX, Long 9501XX, near Center of Sec. 18, T.67 N., R.36 W., at Bridge, 3 Miles North of Braddyville.	1135	484	23.5 9-24-57	21	6.8
		PLATTE RIVER BASIN					
6-8186	Platte R nr Kent, Iowa	Lat 4057XX, Long 9429XX, in SW ¼ Sec. 13, T.71 N., R.32 W., at Bridge, 2 Miles West of Kent.	77.9	31	0.60 9-27-57	0.6	*
6-8186.5	E Platte R nr Knowlton, Iowa	Lat 4054XX, Long 9426XX, in NW ¼ Sec. 4, T.70 N., R.31 W., at Bridge, 7 Miles NW of Knowlton.	66.8	30	0 9-27-57	*	—
6-8187	Platte R nr Knowlton, Iowa	Lat 4052XX, Long 9426XX, In NW ¼ Sec. 16, T.70 N., R.31 W., at Bridge, 6 Miles NW of Knowlton.	179	73	1.59 10-31-63	0.9	*
6-8191	WB 102 R nr Gravity, Iowa	Lat 4049XX, Long 9449XX, in SE ¼ Sec. 31, T.70 N., R.34 W., at Bridge, 5 Miles NW of Gravity.	52.2	23	0 9-27-57	*	—
6-8191.2	WB 102 R below MB nr Gravity, Iowa	Lat 4048XX, Long 9449XX, in NW ¼ Sec. 7, T.69 N., R.34 W., at Bridge, 4.5 Miles NW of Gravity.	106	48	0 9-27-57	*	—
6-8191.4	WB 102 R nr New Market, Iowa	Lat 4044XX, Long 9451XX, in SW ¼ Sec. 35, T.69 N., R.35 W., at Bridge, 2.75 Miles East of New Market.	123	60	0.08 9-27-57	0.1	*
6-8191.5	WF 102 R nr New Market, Iowa	Lat 4043XX, Long 9451XX, in NW ¼ Sec. 10, T.68 N., R.35 W., at Bridge, 3 Miles SE of New Market.	183	90	0.16 9-27-57	0.1	*

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		PLATTE RIVER BASIN—Continued					
6-8191.8	EF 102 R nr Bedford, Iowa	Lat 4044XX, Long 9439XX, in NE ¼ Sec. 4, T.68 N., R.33 W., at Bridge, 5 Miles NE of Bedford.	60.4	31	0 9-27-57	*	—
6-8191.95	MF 102 R nr Bedford, Iowa	Lat 4035XX, Long 9449XX, in NE ¼ Sec. 26, T.67 N., R.35 W., at Bridge, 7 Miles SW of Bedford.	59.8	36	0 9-27-57	*	—
		GRAND RIVER BASIN					
6-8961	Grand R at Knowlton, Iowa	Lat 4050XX, Long 9420XX, in SE ¼ Sec. 29, T.70 N., R.30 W., at Bridge near East City Limits of Knowlton.	67.5	33	0 9-26-57	0.2	*
6-8961.5	Grand R nr Blockton, Iowa	Lat 4034XX, Long 9427XX, in SW ¼ Sec. 29, T.67 N., R.31 W., at Bridge, 3 Miles SE of Blockton.	207	141	0.87 9-26-57	2.0	—
6-8962	EF Grand R nr Mt. Ayr, Iowa	Lat 4043XX, Long 9410XX, in SE ¼ Sec. 3, T.68 N., R.29 W., at Bridge on State Highway 2, 3 Miles East of Mt. Ayr.	64.7	35	0 9-26-57	0.1	—
6-8962.5	EF Grand R South of Mt. Ayr, Iowa	Lat 4035XX, Long 9414XX, in SW ¼ Sec. 19, T.67 N., R.29 W., at Bridge 9 Miles South of Mt. Ayr.	95.9	54	0 9-26-57	0.2	*
6-8977.7	Thompson R nr Hebron, Iowa	Lat 4114XX, Long 9416XX, in SW ¼ Sec. 1, T.74 N., R.30 W., at Bridge, 2 Miles SE of Hebron.	80.0	33	0.11 9-26-57	0.4	*
6-8978	Threemile Cr nr Afton, Iowa	Lat 4102XX, Long 9408XX, near Center of Sec. 13, T.72 N., R.29 W., at Bridge 3 Miles East of Afton.	54.8	25	0 9-26-57	0.3	*
6-8978.2	Thompson R nr Afton, Iowa	Lat 4102XX, Long 9406XX, in SW ¼ Sec. 17, T.72 N., R.28 W., at Bridge on U. S. Highway 34 and 169, 5 Miles East of Afton.	231	111	0 9-26-57	1.5	—
6-8978.8	Twelvemile Cr nr Arispe, Iowa	Lat 4056XX, Long 9406XX, in SE ¼ Sec. 17, T.71 N., R.28 W., at Bridge, 6 Miles East of Arispe.	68.0	31	0 9-26-57	0.5	*
6-8979	Thompson R nr Grand River, Iowa	Lat 4052XX, Long 9358XX, in NE ¼ Sec. 16, T.70 N., R.27 W., at Bridge, 3.5 Miles North of Grand River.	401	196	0.83 9-26-57	3.1	—

Table 2.—Average discharge and low-flow data for partial-record stations—Continued

Station No.	Station Name	Location	Drainage area (sq mi)	Computed average discharge (cfs)	Lowest measured discharge in cfs and date	Computed low-flow in cfs	
						7-day Q_2	7-day Q_{10}
		GRAND RIVER BASIN—Continued					
6-8979.4	Long Cr nr Van Wert, Iowa	Lat 4049XX, Long 9352XX, in NE ¼ Sec. 32,T.70 N., R.26 W., at Bridge, 5 Miles SE of Van Wert.	117	61	0 9-26-57	0.2	*
6-8983	Weldon R East of Leon, Iowa	Lat 4045XX, Long 9338XX, in SE ¼ Sec. 20, T.69 N., R.26 W., at Bridge on State Highway 2, 6 Miles East of Leon.	72.4	40	0.06 9-26-57	0.2	*
6-8984.5	Weldon R nr Pleasanton, Iowa	Lat 4036XX, Long 9336XX, in NW ¼ Sec. 22, T.67 N., R.24 W., at Bridge, 7 Miles East of Pleasanton.	228	135	0 9-26-57	1.0	*
6-8984.7	Little R nr Leon, Iowa	Lat 4040XX, Long 9345XX, in SE ¼ Sec. 29, T.68 N., R.25 W., at Bridge, 6 Miles South of Leon.	69.2	40	0.15 10-31-63	0.1	—
		CHARITON RIVER BASIN					
6-9033	Chariton R nr Derby, Iowa	Lat 4057XX, Long 9328XX, in NW ¼ Sec. 13, T.71 N., R.23 W., at Bridge, 1.5 Miles North of Derby.	71.0	37	0 10-30-63	*	—
6-9033.5	Wolf Cr nr Chariton, Iowa	Lat 4056XX, Long 9316XX, in SE ¼ Sec. 16, T.71 N., R.21 W., at Bridge, 5 Miles SE of Chariton.	65.0	35	0 1960, 61, 63	*	—
6-9036	SF Chariton R nr Cambria, Iowa	Lat 4049XX, Long 9323XX, in NW ¼ Sec. 3, T.69 N., R.22 W., at Bridge, 2 Miles South of Cambria.	53.0	34	0 10-30-63	*	—
6-9036.5	SF Chariton R nr Corydon, Iowa	Lat 4049XX, Long 9319XX, in NW ¼ Sec. 6, T.69 N., R.21 W., at Bridge on State Highway 14, 4 Miles North of Corydon.	68.1	39	0 9-26-57	*	—
6-9038	SF Chariton R at Griffinsville, Iowa	Lat 4051XX, Long 9301XX, in SW ¼ Sec. 23, T.70 N., R.19 W., at Bridge in Griffinsville.	234	138	0.06 9-27-57	0.4	*
6-9041.5	Shoal Cr nr Cincinnati, Iowa	Lat 4037XX, Long 9252XX, in SW ¼ Sec. 6, T.67 N., R.17 W., at Bridge, 3 Miles East of Cincinnati.	56.6	34	0 8-30-66	*	—

* Less than 0.1 cfs.

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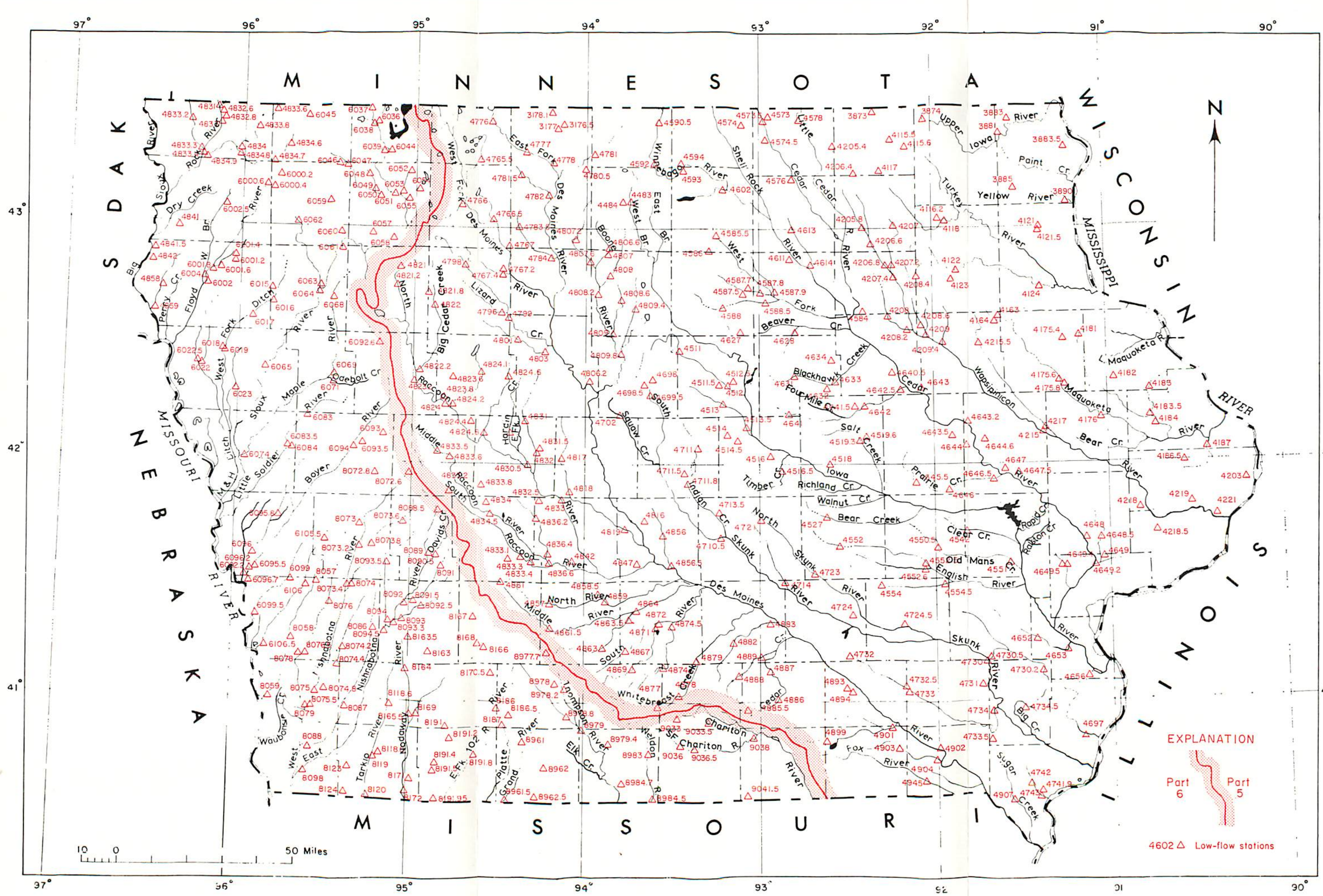
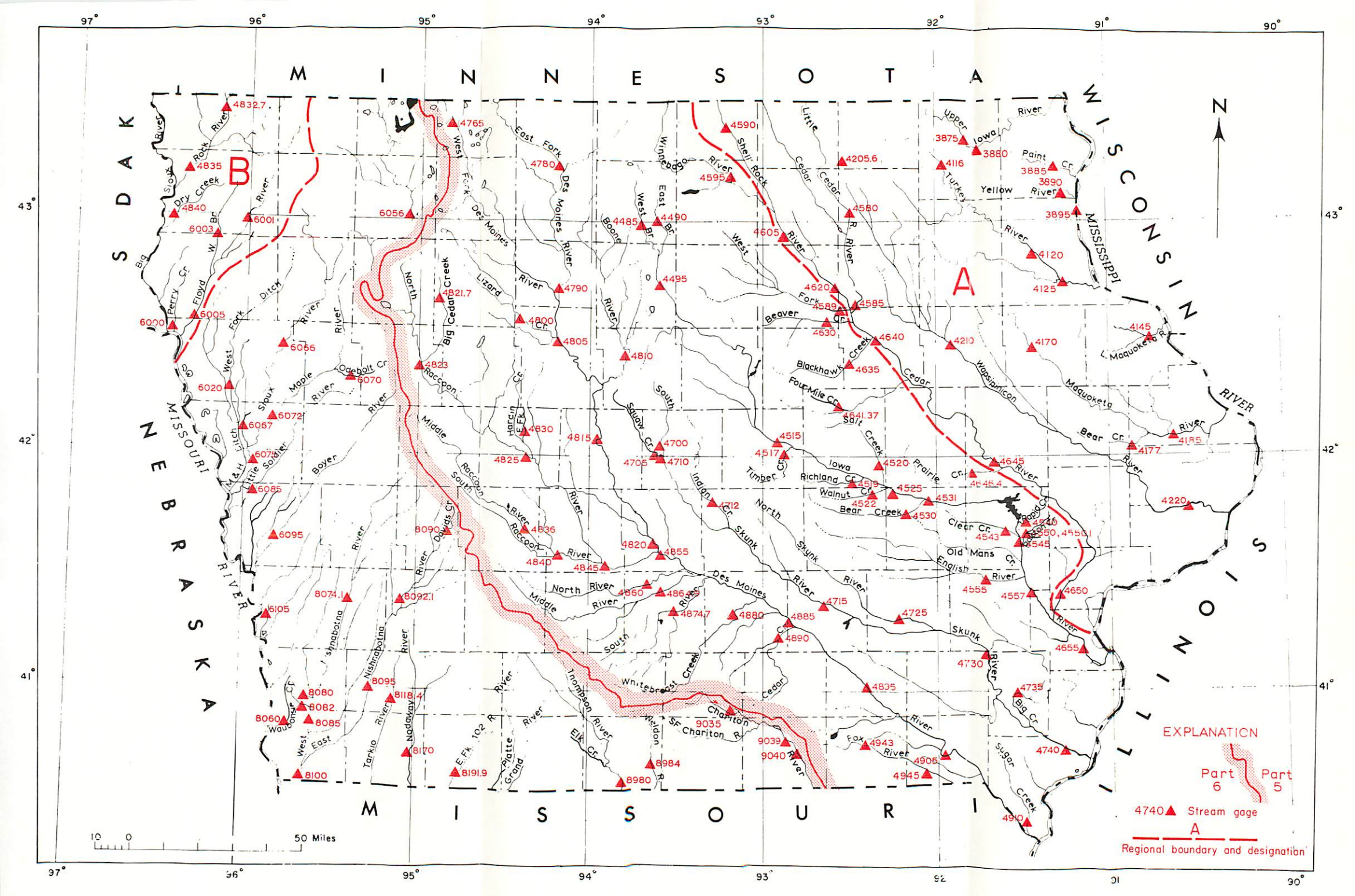
Gaging Stations



M I N N E S O T A
M I S S O U R I
S DAK
NEBRASKA
WISCONSIN
ILLINOIS
MISSOURI RIVER
MISSISSIPPI RIVER
N
97°
96°
95°
94°
93°
92°
91°
90°
43°
42°
41°
Big Sioux River
Rock River
Dry Creek
Floyd River
Perry Cr.
West Fork Ditch
Little Sioux River
Maple River
Odebolt Cr.
Soldier River
Little Soldier
Boyer River
Willow Cr.
Pigeon Cr.
Keg Cr.
Mosquito Cr.
Waubonsie Cr.
West Nishnabotna
East Nishnabotna
Tarkio River
Nodaway River
East Fork 102 R.
Platte River
Grand River
West Fork Des Moines
East Fork Des Moines
Des Moines River
Boone River
Lizard Cr.
North Raccoon
Middle Raccoon
South Raccoon
Raccoon River
Big Cedar Creek
North River
Middle River
South River
Whitebreast Creek
Thompson River
Weldon R.
Elk Cr.
Chariton River
SF Chariton R.
Cedar Cr.
Fox River
Winnebago River
Shell Rock River
West Fork Cedar River
Cedar River
Little Cedar River
Beaver Cr.
Blackhawk Creek
Four Mile Cr.
Iowa River
Salt Creek
Richland Cr.
Walnut Cr.
Timber Cr.
Indian Cr.
Squaw Cr.
North Skunk River
South Skunk River
Skunk River
Big Cr.
Sugar Creek
Bear Creek
Clear Cr.
Old Mans Cr.
English River
Rapid Cr.
Ralston Cr.
Upper Iowa River
Yellow River
Paint Cr.
Turkey River
Wapsipinicon River
Maquoketa River
L. Maquoketa R.
Bear Cr.
EXPLANATION
Part 6
Part 5
4602 △ Low-flow stations
10 0 50 Miles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Rock River
4835
Dry Creek
4840
Big Sioux River
6003
6001
6005
6000
Perry Cr.
Floyd River
West Fork Ditch
6056
6020
West Sioux River
Maple River
6072
6067
M&H Ditch
6076
Little Sioux River
6085
Boyer River
6095
8074.1
6105
Ishnabotna River
8080
8082
8085
8060
Waubonsie Cr.
West Nishnabotna
East Nishnabotna
8100
8095
8118.4
Tarkio River
8170
Nodaway R.
8191.9
E. Fk. 102 R.
Platte River
Grand River
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West Fork Des Moines River
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East Fork Des Moines River
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4823
Raccoon River
6070
Odebolt Cr.
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Lizard Creek
4800
4805
4830
Harcun Cr.
4825
4836
Middle Raccoon River
South Raccoon River
8090
Davids Cr.
8092.1
4820
4840
4845
4855
North River
Middle River
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4865
4874.7
4880
4885
Des Moines River
4890
Whitebreast Creek
Thompson River
South River
9035
S.F. Chariton R.
Chariton River
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Elk Cr.
4485
West Br. Boone River
East Br. Boone River
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South Squaw Cr.
4712
Indian Cr.
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4725
4835
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Shell Rock River
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West Fork Cedar River
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4585
Beaver Cr.
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Blackhawk Creek
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Four Mile Cr.
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Salt Creek
4515
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Timber Cr.
4520
Richland Cr.
4519
Walnut Cr.
4522
Bear Creek
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4531
Prairie Cr.
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Iowa River
Cedar River
4205.6
4580
Little Cedar River
3875
Upper Iowa River
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4116
Turkey River
Yellow River
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Paint Cr.
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L. Maquoketa R.
Maquoketa River
Wapsipinicon River
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Rapid Cr.
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Clear Cr.
Old Mans Cr.
English River
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4735
Skunk River
Big Cr.
4740
Sugar Creek
4910
Fox River
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9039
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10 0 50 Miles
EXPLANATION
Part 6
Part 5
4740▲ Stream gage
A
Regional boundary and designation