Water Resources Data for Iowa

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT IA-80-1

WATER YEAR 1980

Prepared in cooperation with the Iowa Geological Survey and with other State and Federal agencies

CALENDAR FOR WATER YEAR 1980

1979

OCTOBER

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
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28	29	30	31			

NOVEMBER

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1980

JANUARY

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FEBRUARY

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APRIL

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MAY

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JUNE

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AUGUST

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31						

SEPTEMBER

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21	22	23	24	25	26	27
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Water Resources Data for Iowa

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WATER YEAR 1980

Prepared in cooperation with the Iowa Geological Survey and with other State and Federal agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

JAMES G. WATT, Secretary

GEOLOGICAL SURVEY

Doyle G. Frederick, Acting Director

For information on the water program in Iowa write to
District Chief, Water Resources Division
U.S. Geological Survey
P.O. Box 1230
Iowa City, Iowa 52244

1981

Preface

This report was prepared by personnel of the Iowa district of the Water Resources Division of the U.S. Geological Survey under the supervision of D. K. Leifeste, District Chief, and Alfred Clebsch, Jr., Regional Hydrologist, Central Region. It was done in cooperation with the State of Iowa and with other agencies.

This report is one of a series issued by Iowa. General direction for the series is by Philip Cohen, Jr., Chief Hydrologist, U. S. Geological Survey, and R. J. Dingman, Assistant Chief Hydrologist for Scientific Publications and Data Management.

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16. Abstracts

Water resources data for the 1980 water year for Iowa consists of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels in wells. This report contains discharge records for 117 gaging stations; stage and contents for 7 lakes and reservoirs; water quality for 25 gaging stations; and water levels for 34 observation wells. Also included are 126 crest-stage partial-record stations. Additional water data were collected at various sites, not part of the systematic data-collection program, and are published as miscellaneous measurements and analyses. The data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Iowa.

17. Key Words and Document Analysis. 17a. Descriptors

*Iowa, *Hydrologic data, *Surface water, *Ground water, *Water quality, Flow rates, Streamflow, Gaging stations, Lakes, Reservoirs, Chemical analyses, Sediments, Water temperature, Sampling sites, Water levels, Water analyses, Data collections, Water wells.

17b. Identifiers/Open-Ended Terms

17c. COSATI Field/Group

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ILLUSTRATIONS

[Letter after station name designates type of data:
(d) discharge, (c) chemical, (b) biological,
(m) microbiological, (t) water temperature, (s) sediment]

WATER RESOURCES DATA FOR IOWA, 1980

INTRODUCTION

Water resources data for the 1980 water year for Iowa consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water-levels of ground-water wells. This report contains records for water discharge at 117 gaging stations; stage or contents at 7 lakes and reservoirs; water quality at 25 gaging stations, and water levels at 34 observation wells. Also included are data for 126 crest-stage partial-record stations. Additional water data were collected at various sites, not involved in the systematic data-collection program and are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Iowa.

Records of discharge and stage of streams, and contents or stage of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled, "Surface Water Supply of the United States." Through September 30, 1960, these water-supply papers were in an annual series and then in a 5-year series for 1961-65 and 1966-70. Records of chemical quality, water temperatures, and suspended sediment were published from 1941 to 1970 in an annual series of water-supply papers entitled, "Quality of Surface Waters of the United States." Records of ground-water levels were published from 1935 to 1974 in a series of water-supply papers entitled, "Ground-Water Levels in the United States." Water-supply papers may be consulted in the libraries of the principal cities in the United States or may be purchased from Branch of Distribution, U.S. Geological Survey, 604 South Pickett Street, Alexandria, VA. 22304.

For water years 1961 through 1970, streamflow data were released by the Geological Survey in annual reports on a State-boundary basis. Water-quality records for water years 1964 through 1970 were similarly released either in separate reports of in conjunction with streamflow records.

Beginning with the 1971 water year, water data for streamflow, water quality, and ground water are published in official Survey reports on a State-boundary basis. These official Survey reports carry an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this report is identified as "U.S. Geological Survey Water-Data Report IA-80-1." These water-data reports are for sale, in paper copy or in microfiche, by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA. 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the district chief of the address given on the back of the title page or by telephone, (319) 337-4191.

COOPERATION

The U.S. Geological Survey and organizations in the State of Iowa have had cooperative agreements for the systematic collection of streamflow records since 1914, for ground water levels since 1935, and for water-quality records since 1943. Organizations that assisted in collecting data through cooperative agreement with the Survey in 1976 are:

Iowa Geological Survey, Donald L. Koch, director and state geologist

University of Iowa, Institute of Hydraulic Research, Robert G. Hering, dean of College of Engineering and John F. Kennedy, director

Iowa Department of Transportation, Highway Division, Donald E. McLean, Director, and Vernon J. Marks, research engineer

Iowa Natural Resources Council, James R. Webb, director

Iowa State University, Richard E. Hasbrook, contracts and grants officer, and Agricultural Experiment Station, Thamon Hazen, assistant director; Department of Agricultural Engineering, C. W. Bockhop, head; and Engineering Research Institute, Paul W. Peterson, director.

City of Cedar Rapids, Donald Canney, mayor

City of Des Moines, Leo L. Johnson, public works director

City of Fort Dodge, Vincent B. Gardner, general manager, department of municipal utilities

City of Harlan, D. D. Burger, mayor

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army, in collecting flow records for 64 gaging stations, and by the Environmental Protection Agency in collecting records for four water-quality stations published in this report. Assistance was also furnished by NOAA - National Weather Service, U.S. Department of Commerce.

The following organizations aided in collecting records:

Union Electric Co.; Des Moines Water Works; Hospers Rural Water System No. 1; Ottumwa Water Works; Waterloo Sewage Treatment Plant; University of Iowa; and cities of Ames, Charles City, Clear Lake, Denison, Iowa City, Marshalltown, Sioux City, and Waterloo.

Organizations that supplied data are acknowledged in station descriptions.

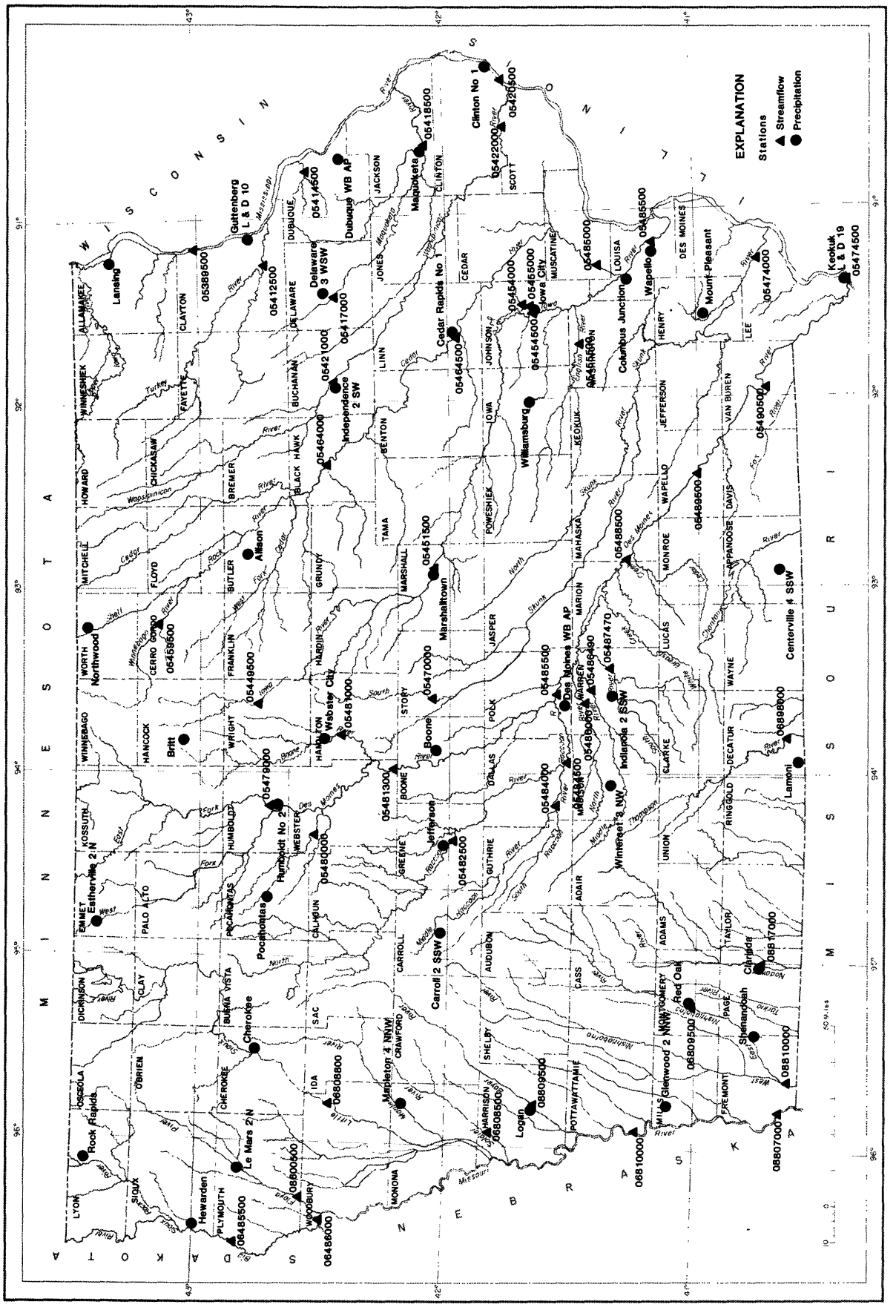

Figure 1.--Location of stations used in runoff and precipitation study.

ACKNOWLEDGMENT

Iowa district personnel who contributed significantly to the collection and preparation of the data in this report were: I. L. Burmeister, chief, hydrologic surveillance, assisted by V. L. Spiers, P. J. Soenksen, and W. J. Matthes.

RUNOFF AND PRECIPITATION STUDY, STANDARD PERIOD 1941-70

Streamflow data for 48 stations in Iowa (figure 1) with records available during the standard period 1941-70 were analyzed by computer program W4422 (daily values monthly and annual statistics. Mean values of monthly and annual discharges, in cubic feet per second, and runoff, in inches, are tabulated with the current year's data for these respective stations. The standard deviation of the runoff values are also included in each table.

Two additional studies were made regarding the monthly distribution of the mean runoff values for the standard period and the associated precipitation on the watershed of each streamflow station. First, the percent of annual runoff was determined for each month for each station. These values are tabulated as above. A regional analysis of these data was made which concluded that the distribution of runoff with respect to months for all of the stations throughout the State was quite similar. The average monthly runoff summaries are presented graphically in figures 2 and 3.

Normal monthly and annual precipitation data for Iowa was provided by Paul Waite, State Climatologist, Iowa Department of Agriculture. The monthly precipitation data are presented as percent of annual (figure 4) for comparison to that of the runoff distribution. The runoff characteristics vary from the precipitation characteristics during several months. Runoff for February and March increases at a greater rate than precipitation because of the melting of snow accumulated from the previous months. The declining rate of runoff for April and May reflects the losses from evapotranspiration and increases of infiltration to the ground water system. Runoff during the months of July through September decreases at a greater rate than precipitation because of the high evapotranspiration losses during the peak of the growing season. Runoff and precipitation distribution during the dormant fall and winter season compares very well.

The second study correlated, for the same standard period, the normal monthly and annual precipitation values at 40 stations (figure 1) of the National Weather Service with respect to the watershed of each streamflow station. A nearby precipitation station was paired with a streamflow station. The normal annual value of the paired precipitation station was areally weighted with other precipitation stations near the watershed of the paired streamflow station. This weighting coefficient was then applied to the normal monthly precipitation values of the paired station. The adjusted values represent the normal monthly and annual precipitation for the watershed and are tabulated for each station as above.

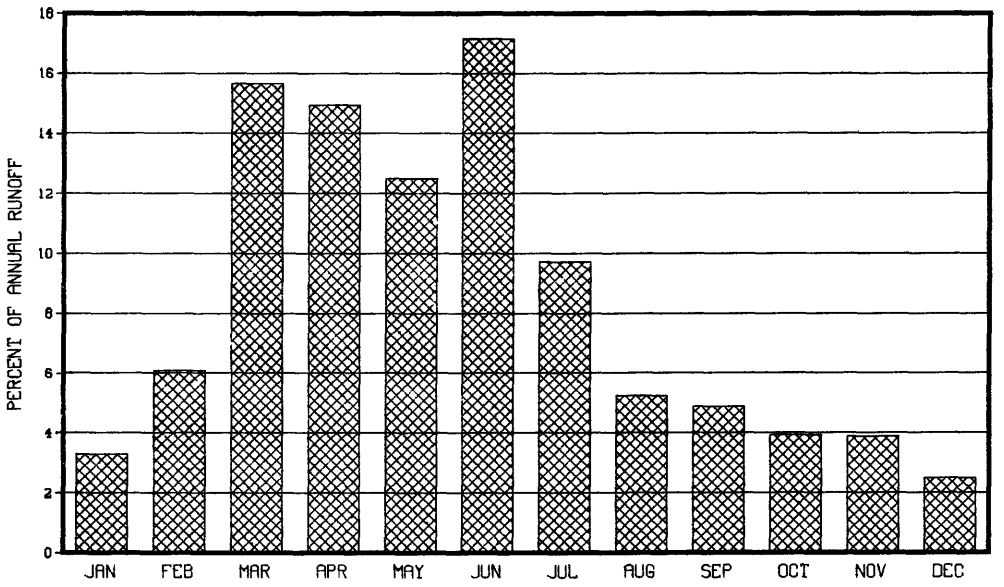

FIGURE 2.--RUNOFF DISTRIBUTION, IN PERCENT OF ANNUAL, BY MONTHS FOR IOWA STREAMS.

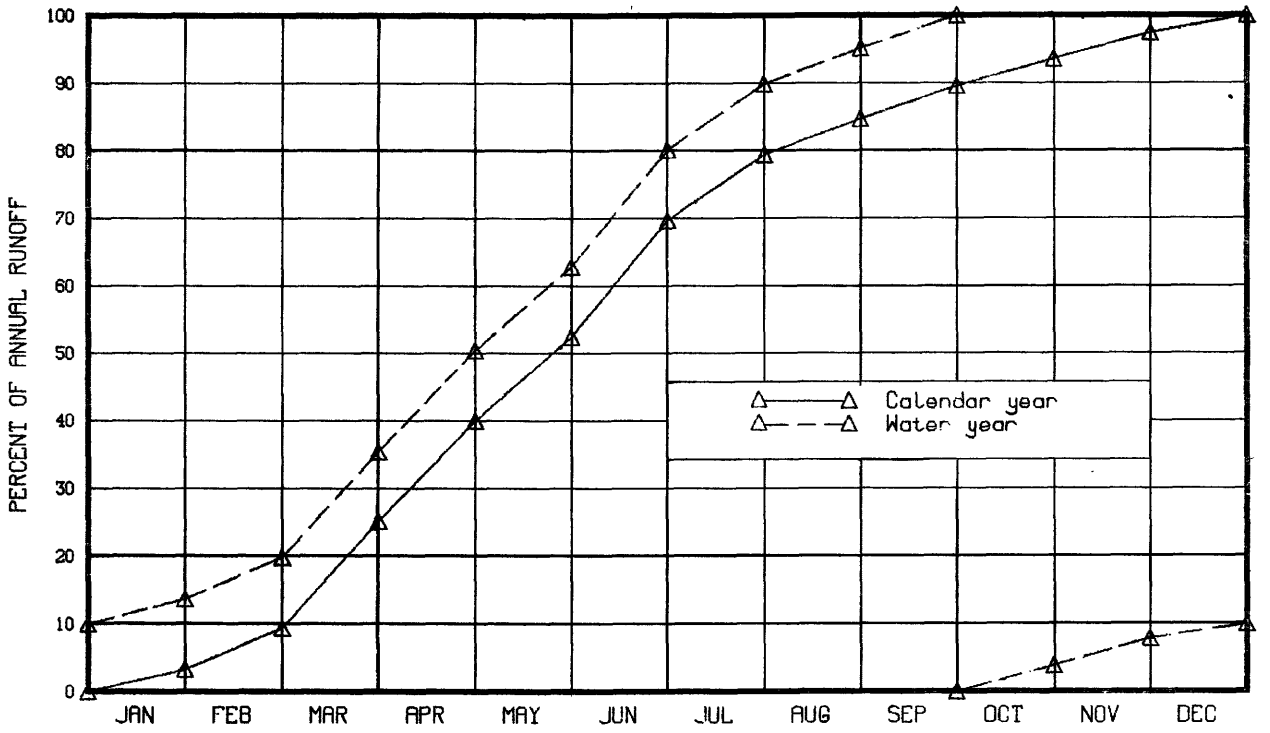

FIGURE 3.--ACCUMULATIVE RUNOFF, IN PERCENT OF ANNUAL, FOR CALENDAR AND WATER YEAR FOR IOWA STREAMS. (STANDARD PERIOD, 1941-70)

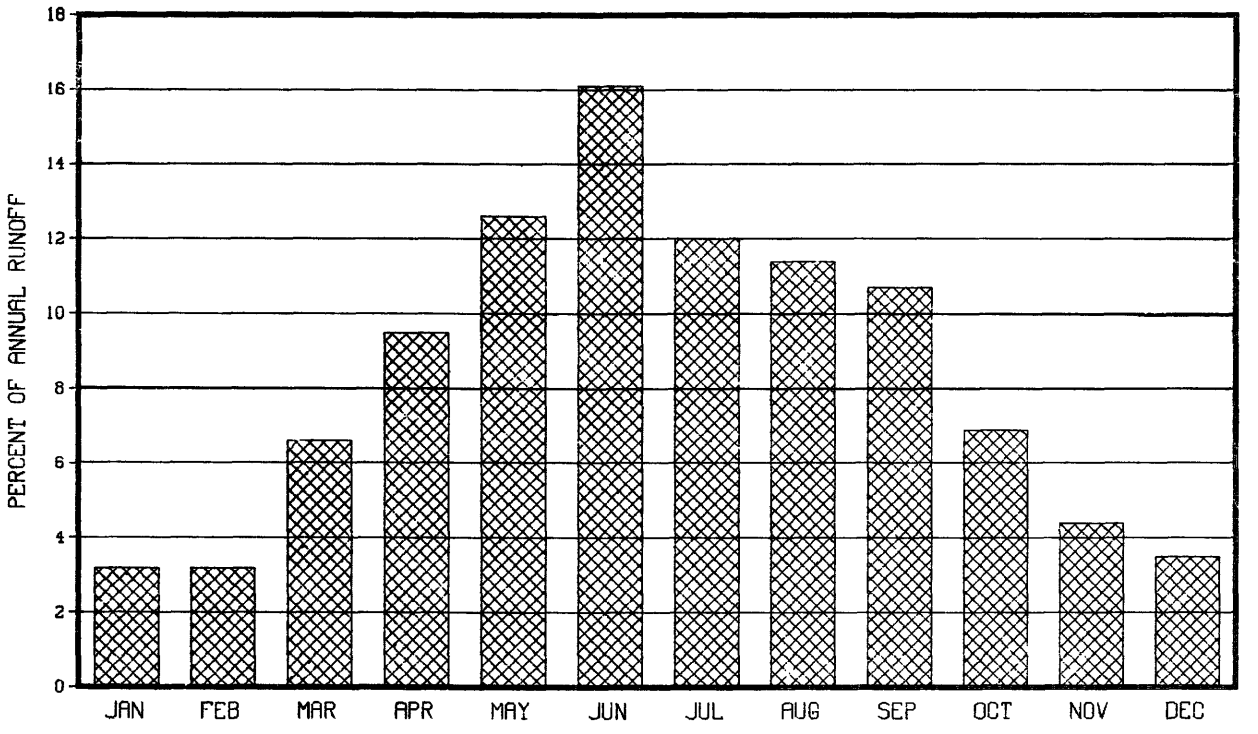

FIGURE 4.--PRECIPITATION DISTRIBUTION, IN PERCENT OF ANNUAL, BY MONTHS FOR IOWA. (STANDARD PERIOD, 1941-70)

HYDROLOGIC CONDITIONS

Annual runoff for the 1980 water year was above normal throughout the State. Normal runoff varies from 2 inches in the Northwest to 8 inches in the Southeast. This year, runoff varied erratically from 4 inches in the Southwest to 10 inches in the Northeast. Runoff of 12 to 15 inches was experienced in the Little Cedar River basin and the upper reach of the Wapsipinicon River basin (Bremer, Chickasaw, Howard and Mitchell Counties). Another area differing significantly from the general trend was in the Weldon and Chariton River basins where runoff values ranged from 8 to 9 inches.

The water year began with streamflow at or above normal. During October, 2 to 3 inches of rain and 5 inches of snow, which melted, caused excessive streamflow. This condition continued into February. Scattered rains and occasional snows during the mild winter continued to support the excessive flows. Streamflow receded to normal throughout the State in March and April despite a late 14-inch snow over most of the southern half of the State. Streams receded rapidly during May for all areas except the eastern third and soil moisture was quite low. Heavy rains in June caused streamflow to recover to normal. No serious flooding occurred except in the Weldon and Chariton River basins but no new maximums were recorded. The year ended with streamflow in the normal range in the Southwest and excessive over the rest of the State.

Shallow ground-water wells were normal to above average at the beginning of the year, increased to well above by January, then slowly receded to average by June. The year ended with water levels above average.

DEFINITION OF TERMS

Terms related to streamflow, water-quality and other hydrologic data, as used in this report, are defined below. See also table for converting English Units to International System (SI) Units on the inside of the back cover.

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Algae are mostly aquatic single-celled, colonial, or multi-celled plants, containing chlorophyll and lacking roots, stems, and leaves.

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Artesian means confined and is used to describe a well in which the water level stands above the top of the aquifer, tapped by the well. A flowing artesian well is one in which the water level is above the land surface.

Bacteria are microscopic unicellular organisms, typically spherical, rod-like, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory these bacteria are defined as the organisms which produce colonies within 24 hours when incubated at 35°C ± 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Fecal coliform bacteria are bacteria that are present in the intestine or feces of warmblooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms which produce blue colonies within 24 hours when incubated at 44.5°C ± 0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Fecal streptococcal bacteria are bacteria found also in intestines of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C ± 1.0°C on M-enterrococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Bed material is the unconsolidated material of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the mass per unit area or volume of habitat.

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter (g/m^3), and periphyton and benthic organisms in grams per square meter (g/m^2).

Dry mass refers to the mass of residue present after drying in an oven at 60°C for zooplankton and 105°C for periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry mass values are expressed in the same units as ash mass.

Organic mass or volatile mass of the living substance is the difference between the dry mass and the ash mass, and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash mass and dry mass.

Wet mass is the mass of living matter plus contained water.

Bottom material: See Bed material.

Cells/volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually milliliters (mL) or liters (L).

Cfs-day is the volume of water represented by flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-ft, about 646,000 gallons or 2,445 cubic meters.

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water, and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with natural water color or with carbonaceous organic pollution from sewage or industrial wastes.

Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common pigments in plants.

Color unit is produced by one milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Cubic feet per second per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Cubic foot per second (FT^3/S, ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Discharge is the volume of water (or more broadly, total fluid), plus suspended sediment that passes a given point within a given period of time.

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Dissolved refers to the amount of a substance present in true chemical solution. In practice, however, the term includes all forms of the substance that will pass through a 0.45-micrometer membrane filter, and thus may include some very small (colloidal) suspended particles. Analyses are performed on filtered samples.

Diversity index is a numerical expression of evenness of dis-tribution of aquatic organisms. The formula for diversity index is:

$$\bar{d} = -\sum_{i=1}^{s} \frac{n_i}{n} \log_2 \frac{n_i}{n}$$

Where n_i is the number of individuals per taxon, n is the total number of individuals, and s is the total number of taxa in the sample of the community. Diversity index values range from zero, when all the organisms in the sample are the same, to some positive number, when some or all of the organisms in the sample are different.

Drainage area of a stream at a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless other-wise noted.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used inter-changeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate ($CaCO_3$).

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an 8-digit number.

Methylene blue active substance (MBAS) is a measure of apparent detergents. This determination depends on the formation of a blue color when methylene blue dye reacts with synthetic detergent compounds.

Micrograms per gram (ug/g) is a unit expressing the concentration of a chemical element as mass (micrograms) of the element sorbed per unit mass (gram) of sediment.

Micrograms per liter (UG/L, ug/l) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (MG/L, mg/l) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represents the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/l, and is based on the mass of sediment per liter of water-sediment mixture.

National Geodetic Vertical Datum of 1929 (NGVD) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called "Sea Level Datum of 1929" or "mean sea level" in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

Organism is any living entity, such as an insect, phytolplankter, or zooplankter.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per area habitat, usually square meters (m^2), acres, or hectares. Periphyton, benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually milliliters (ml) or liters (l). Numbers of planktonic organisms can be expressed in these terms.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

Partial-record station is a particular site where limited streamflow and/or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle size is the diameter, in millimeters (mm), of suspended sediment or bed material determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with recommendations made by the American Geophysical Union Sub-committee on Sediment Terminology. The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay.....	0.00024 - 0.004	Sedimentation.
Silt.....	.004 - .062	Sedimentation.
Sand.....	.062 - 2.0	Sedimentation or sieve.
Gravel.....	2.0 - 64.0	Sieve.

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic material is removed and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native-water analysis.

Percent composition is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, mass or volume.

Periphyton is the assemblage of microorganisms attached to and growing upon solid surfaces. While primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms. Periphyton is a useful indicator of water quality.

Pesticides are chemical compounds used to control undesirable plants and animals. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides. Insecticides and herbicides, which control insects and plants respectively, are the two categories reported.

Picocurie (PC, pCi) is one trillionth (1×10^{-12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10} radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment, and are commonly known as algae.

Blue-green algae are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water.

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells per milliliter (cells/ml) of sample.

Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algal mats or floating "moss" in lakes. Their concentrations are expressed as number of cells per milliliter (cells/ml) of sample.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column, and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers.

Polychlorinated biphenyls (PCBs) are industrial chemicals that are mixtures of cholrinated biphenyl compounds having various percentages of chlorine. They are similar in structure to organochlorine insecticides.

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic and chemosynthetic activity of producer organisms (chiefly green plants). The rate of primary production is estimated by measureing the amount of oxygen released (oxygen method) or the amount of carbon assimilated by the plants (carbon method).

Milligrams of carbon per area or volume per unit time [mg C/)m^2.time) for periphyton and macrophytes and mg C/(m^2.time)] for periphyton and macrophytes and mg C/m^2.time)] for phytoplankton are units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon 14). The carbon 14 method is of greater sensitivity than the oxygen light and dark bottle method, and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

Milligrams of oxygen per area or volume per unit time [mg O_2/m^2.time) for periphyton and macrophytes and mg C/(mg O_2/(m^2.time)] for phytoplankton are the units for expressing primary productivity. They define production and respiration rates as estimated from changes in the measured dissolved oxygen concentration. The oxygen light and dark bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period.

Runoff in inches (IN, in) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/l).

Suspended-sediment discharge (tons/day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight, or by volume, that passes a section in a given time. It is computed by multiplying discharge times mg/l times 0.0027.

Suspended-sediment load is quantity of suspended sedi-ment passing a section in a specified period.

Total sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry weight or volume, that passes a section during a given time.

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Sodium adsorption ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions with soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in micromhos per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from stream to stream and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and volume of water per unit of time, flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lived.

Natural substrates refers to any naturally occurring emersed or submersed solid surface, such as a rock or tree, upon which an organism lived.

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multi-plate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton collection.

Surface area of a lake is that area outlined on the latest U.S.G.S. topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the areas are computed from the best maps available at the time planimetered. All areas shown are those for the stage when the planimetered map was made.

Surficial bed material is that part (0.1 to 0.2 ft) of the bed material that is sampled using U.S. Series Bed-Material Samplers.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of the total concentration in a water-sediment mixture. The water-sediment mixture is associated with (or sorbed on) that material retained on a 0.45 micrometer filter.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchial scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, Hexagenia limbata is the following:

Kingdom	Animal
Phylum	Arthropoda
Class	Insecta
Order	Ephemeroptera
Family	Ephemeridae
Genus	Hexagenia
Species	Hexagenia limbata

Thermograph is a thermometer that continuously and automatically records, on a chart, the water temperature of a stream. "Temperature recorder" is the term used to indicate the presence of a thermograph or a digital mechanism that automatically records water temperatures on paper tape.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of indi-vidual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the water year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acré-foot of water. It is computed by multiplying the concentration in milligrams per liter by 0.00136.

Tons per day is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour day.

Total (as used in tables of chemical analyses) refers to the amount of a substance that is present both in solution and in suspension. Analyses are performed on representative samples of water-suspended sediment mixtures.

Total load (tons) is the total quantity of any individual constituent, as measured by dry mass or volume, that is dissolved in a specific amount of water (discharge) during a given time. It is computed by multiplying the total discharge, times the mg/L of the constituent, times the factor 0.0027, times the number of days.

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

WRD is used as an abbreviation for "Water-Resources Data" in the REVISED RECORDS paragraph to refer to State annual basic-data reports published before 1975.

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports.

DOWNSTREAM ORDER AND STATION NUMBER

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a main-stream station are listed between stations on the main stream in the order in which those tributaries enter the main stream. Stations on tributaries entering above all main-stream stations are listed before the first main-stream station. Stations on tributaries to tributaries are listed in a similar manner. In the lists of gaging stations and water-quality stations in the front of this report the rank of tributaries is indicated by indention, each indention representing one rank.

As an added means of identification and each hydrologic station and partial-record station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete 8-digit number for each station, such as 05387500, which appears just to the left of the station name, includes the 2-digit part number "05" plus the 6-digit downstream order number "387500."

Downstream order station numbers are not assigned to miscellaneous sites where only random water-quality samples or discharge measurements are taken.

NUMBERING SYSTEM FOR WELLS

Each well is identified by means of (1) a 15-digit number that is based on the grid system of latitude and longitude, and (2) a local number that is provided for continuity with older reports and for other use as dictated by local needs. The former number serves not only to identify the well but also to locate it as a point on a map. For maximum utility, latitude and longitude code numbers are determined to seconds in order that each well may have a unique number. The first six digits represent degrees, minutes, and seconds of latitude; "N" refers to north latitude and is used to break the string of numbers; the next seven digits are degrees, minutes, and seconds of west longitude; and the number after the decimal point is a sequential number assigned in the order in which the wells are located in a 1-second quadrangle.

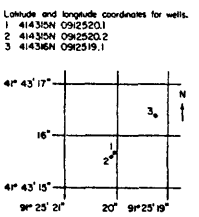

Figure 5. Latitude-longitude well number.

The local well numbers are in accordance with the Bureau of Land Management's system of land subdivision. Each well number is made up of three segments. The first segment indicates the township, the second the range, and the third the section in which the well is situated. The letters after the section number which are assigned in a counter-clockwise direction (beginning with "a" in the northeast quarter), represent subdivisions of the section. The first letter denotes the 160-acre tract, the second the 40-acre tract, and the third the 10-acre tract. Numbers are added as suffixes to distinguish wells in the same tract. Thus, the number 96-20-3cdbd1 designates the well in the SE1/4 NW1/4 SE1/4 SW1/4 sec.3, T.96 N., R.20 W.

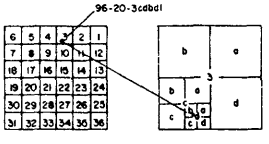

Figure 6. Local well numbering system for well 96-20-3cdbd1.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural conditions. Data collected at a bench-mark station may be used to separate effects of natural from manmade changes in other basins which have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped bench-mark basin.

National stream-quality accounting network (NASQAN) is a data collection network designed by the U.S. Geological Survey to meet many of the information demands of agencies or groups involved in national or regional water-quality planning and management. Both accounting and broad-scale monitoring objectives have been incorporated in the network design. Areal configuration of the network is based on river-basin accounting units (identified by 8-digit hydrologic-unit numbers) designated by the Office of Water Data Coordination in consultation with the Water Resources Council. Primary objectives of the network are (1) to depict areal variability of streamflow and water-quality conditions nationwide on a year-by-year basis and (2) to detect and assess long-term changes in stream quality.

Pesticide program is a network of regularly sampled water-quality stations where samples are collected to determine the concentration and distribution of pesticides in streams where potential contamination could result from the application of the commonly used insecticides and herbicides. Operation of the network is a Federal interagency activity.

Radiochemical program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Tritium network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nations's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

EXPLANATION OF STAGE AND WATER-DISCHARGE

Collection and computation of data

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and contents of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relation, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from either direct readings on a nonrecording gage or from a water-stage recorder that gives either a continuous graph of the fluctuations or a tape punched at selected time intervals. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey. These methods are described in standard text-books, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chapter A6.

For stream-gaging stations, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves. If extensions to the rating curves are necessary to express discharge greater than measured, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs), step-backwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean discharge are computed from the daily figures. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is computed by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is basically the shifting-control method.

At some stream-gaging stations the stage-discharge relation is affected by backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

At some northern stream-gaging stations the stage-discharge relation is affected by ice in the winter, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of the gage-height record and occasional winter discharge measurements. Consideration is given to the available information on temperature and precipitation, notes by gage observers and hydrologists, and comparable records of discharge for other stations in the same or nearby basins.

For a lake or reservoir station, capacity tables giving the contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly change in contents is computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys the computed contents may be increasingly in error due to the gradual accumulation of sediment.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records for other stations in the same or nearby basins. Likewise, daily contents may be estimated on the basis of operator's log, prior and subsequent records, inflow-outflow studies, and other information.

The data in this report generally comprise a description of the station and tabulations of daily and monthly figures. For gaging stations on streams or canals a table showing the daily discharge and monthly and yearly discharge is given. For gaging stations on lakes and reservoirs a monthly summary table of stage and contents or a table showing the daily contents is given. Tables of daily mean gage heights are included for some streamflow stations and for some reservoir stations. Records are published for the water year, which begins on October 1 and ends on September 30.

The description of the gaging stations gives the location, drainage area, period of record, notations of revisions of previously published records, type and history of gages, general remarks, average discharge, and extremes of discharge or contents. The location of the gaging station and the drainage area are obtained from the most accurate maps available. River mileage, given under "LOCATION" for some stations, is that determined and used by the Corps of Engineers or other agencies. Periods for which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD."

Previously published streamflow records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual or compilation reports. In order to make it easier to find such revised records, a paragraph headed "REVISED RECORDS" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1965 stands for the water year October 1, 1964, to September 30, 1965. If no daily, monthly, or annual figures of discharge are affected by the revision , the fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published in the annual series of reports.

The type of gage currently in use; the datum of the present gage referred to National Geodetic Vertical Datum; and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." National Geodetic Vertical Datum (NGVD) is explained in "DEFINITION OF TERMS" on page 4.

Information pertaining to the accuracy of the discharge records and to conditions which affect the natural flow of the gaging station is given under "REMARKS." For reservoir stations information on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir is given under "REMARKS."

The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE"; it is not given for stations having fewer than 5 complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. In addition, the median of yearly mean discharges is given for stream-gaging stations having 10 or more complete years of record if the median differs from the average by more than 10 percent. Under "EXTREMES" are given first, the extremes for the period of record, second, information available outside the period of record, and last, those for the current year. Unless otherwise qualified, the maximum discharge (or contents) is the instantaneous maximum corresponding to the crest stage obtained by use of a water-stage recorder (graphic or digital), a crest-stage gage, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur on the same day as the maximum discharge (or contents), it is given separately. Similarly, the minimum is the instantaneous minimum unless otherwise qualified. For some stations peak discharges are listed with EXTREMES FOR THE CURRENT YEAR; if they are, all independent peaks, including the maximum for the year, above the selected base with the time of occurrence and corresponding gage heights are published in tabular format. The base discharge, which is given in the table heading, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030, 1:30 p.m. is 1330. The minimums for these stations are published in a separate paragraph following the table of peaks.

The daily table for stream-gaging stations gives the mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also may be expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN."), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion, if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches. In the yearly summary below the monthly summary, the figures shown are the appropriate daily discharges for the calendar and water years.

Footnotes to the table of daily discharges are introduced by the word "NOTE." Footnotes are used to indicate periods for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Periods of backwater from an unusual source, of indefinite stage-discharge relation, or of any other unusual condition at the gage site are indicated only if they are a month or more in length and the accuracy of the records is affected. Days on which the stage-discharge relation is affected by ice are not indicated. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station and a monthly summary table of stage or contents. For some reservoirs a table showing daily contents is given. A skeleton table of capacity at given stages is published for most reservoirs.

Data collected at partial-record stations follow the information for continuous record sites. Data for partial-record discharge stations are presented as a table of annual maximum stage and discharge at crest-stage stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. Occasionally, a series of discharge measurements are made within a short time period to investigate the seepage gains or losses along a reach of a stream or to determine the low-flow characteristics of an area. Such measurements are also given in special tables following the tables of partial-record stations.

Accuracy of data

The accuracy of streamflow data depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretation of records.

The station description under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent; "good" within 10 percent; and "fair" within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Figures of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharges of less than 1 cfs; to tenths between 1.0 and 10 cfs; to whole numbers between 10 and 1,000 cfs; and to 3 significant figures above 1,000 cfs. The number of significant figures used is based solely on the magnitude of the figure. The same rounding rules apply to discharge figures listed for partial-record stations.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff in inches are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Other data available

Information of a more detailed nature than that published for most of the gaging stations, such as observations of water temperatures, discharge measurements, gage-height records, and rating tables, is on file in the district office. Also, most gaging-station records are available in computer-usable form and many statistical analyses have been made.

Information on the availability of unpublished data or statistical analyses may be obtained from the district office.

Records of discharge collected by agencies other than the Geological Survey

Records of discharge not published by the Geological Survey were collected during water year 1978 at several sites in Iowa by the Corps of Engineers, U.S. Army. The National Water Data Exchange, Water Resources Division, U.S. Geological Survey, National Center, Reston, Va. 22092, maintains an index of such sites. Information on records available at specific sites can be obtained upon request.

EXPLANATION OF WATER QUALITY RECORDS

Collection and examination of data

Surface water samples for analyses usually are collected at or near gaging stations. The quality-of-water records are given immediately following the discharge records at these stations.

The descriptive heading for water-quality records gives the period of record for all water-quality data; the period of daily record for parameters that are measured on a daily basis (specific conductance, pH, dissolved oxygen, water temperature, sediment discharge, etc.); extremes for the period of daily record; extremes for the current year; and general remarks.

Water analysis

Most methods for collecting and analyzing water samples are described in the U.S. Geological Survey Techniques of Water-Resources Investigations listed on the next page.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-qaulity conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the district office.

Water temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for water-discharge stations. Although these temperatures are measured on different days of the month, an analysis of these data for each month for a long period of record will indicate significant thermal characteristics of the stream. Data have been analyzed for the period of record through 1974 for gaging stations with 10 or more years of record. A summary on monthly maximum, minimum and mean temperatures were published in the 1974 water data report. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small daily temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharge.

At stations where recording instruments are used, either mean temperatures or maximum and minimum temperatures for each day are published.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided day method. For periods when no samples are collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples are collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observation, such data are useful in establishing seasonal relations between quality and streamflow in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of the quantities of suspended sediment, records of periodic measurements of the particle-size distribution of the suspended sediment and bed material are included.

EXPLANATION OF GROUND-WATER LEVEL RECORDS

Collection of the data

Only ground-water level data from a basic national network of observation wells are published herein. These water-level meas-urements are intended to provide a sampling and historical record of water-level changes in the nation's most important aquifers.

Each well is identified by means of (1) a 15-digit number that is based on latitude and longitude, and (2) a local number that is provided for local needs. See figures 1 and 2.

Measurements are made in many types of wells under varying conditions of access and of diffferent temperatures, hence neither the method of measurement nor the equipment can be standardized. At each observation well, however, the equipment and techniques used are those that will insure that measurements at each well are consistent.

Water-level measurements in this report are given in feet with reference to either mean sea level (msl) or land-surface datum (lsd). Mean sea level is the datum plane on which the national network of pprecise levels is based; land-surface datum is a datum plane that is approximately at land surface at each well. If known, the altitude of the land-surface datum above mean sea level is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (eom).

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of depth to water of several hundred feet, the error of derterminning the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water, the accuracy is greater. Accordingly, most measurements are reportted to a hundredth of a foot, but some are given only to a tenth of a foot or a larger unit.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

Thirty-four manuals by the U.S. Geological Survey have been published to date in the series on techniques describing procedures for planning and executing specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) is on surface water, The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises. The reports listed below are for sale by the U.S. Geological Survey, Branch of Distribution, 1200 South Eads Street, Arlington, VA 22202 (authorized agent of the Superintendent of Documents, Government Printing Office).

NOTE: When ordering any of these publications, please give the title, book number, chapter number and "U.S. Geological Survey Techniques of Water-Resources Investigations".

1-D1. Water temperature--influential factors, field measurements, and data presentation, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.
1-D2. Guidelines for collection and field analysis of ground-water samples for selected unstable constituents, by W. W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages.
2-D1. Application of surface geophysics to ground-water resources investigations, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages.
2-E1. Application of borehole geophysics to water-resources investigations, by W. S. Keys and L. M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.
3-A1. General field and office procedures for indirect discharge measurements, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages.
3-A2. Measurement of peak discharge by the slope-area method, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.
3-A3. Measurement of peak discharge at culverts by indirect methods, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.
3-A4. Measurement of peak discharge at width contractions by indirect methods, by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages.
3-A5. Measurement of peak discharge at dams by indirect methods, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages.
3-A6. General procedure for gaging streams, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.
3-A7. Stage measurements at gaging stations, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages.
3-A8. Discharge measurements at gaging stations, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages.
3-A11. Measurements of discharge by moving-boat method, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages.
3-B1. Aquifer-test design, observation, and data analysis, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages.
3-B2. Introduction to ground-water hydraulics, a programed text for self-instruction, by G. D. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 pages.
3-C1. Fluvial sediment concepts, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages.
3-C2. Field methods for measurement of fluvial sediment, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 pages.
3-C3. Computation of fluvial-sediment discharge, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages.
4-A1. Some statistical tools in hydrology, by H. C. Riggs: USGS--TWRI Book 4, Chapter A1. 1968. 39 pages.
4-A2. Frequency curves, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages.
4-B1. Low-flow investigations, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 pages.
4-B2. Storage analyses for water supply, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages.
4-B3. Regional analyses of streamflow characteristics, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages.
4-D1. Computation of rate and volume of stream depletion by wells, by C. T. Jenkins: USGS--TWRI Book 4, Chapter D1, 1970. 17 pages.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS (Continued)

5-A1. Methods for determination of inorganic substances in water and fluvial sediments, by M. W. Skougstad and others, editors: USGS--TWRI Book 5, Chapter A1. 1979, 626 pages.
5-A2. Determination of minor elements in water by emission spectroscopy, by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages.
5-A3. Methods for analysis or organic substances in water, by D. F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 pages.
5-A4. Methods for collection and analysis of aquatic biological and microbiological samples, edited by P. E. Greeson, T. A. Ehlke, G. A. Irwin, B. W. Lium, and K. V. Slack: USGS--TWRI Book 5, Chapter A4, 1977. 332 pages.
5-A5. Methods for determination of radioactive substances in water and fluvial sediments, by L. L. Thatcher, V. J. Janzer, and K. W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages.
5-C1. Laboratory theory and methods for sediment analysis, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages.
7-C1. Finite difference model for aquifer simulation in two dimensions with results of numerical experiments, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.
7-C2. Computer model of two-dimensional solute transport and dispersion in ground water, by L. F. Konikow and J. D. Bredenhoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.
8-A1. Methods of measuring water levels in deep wells, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages.
8-B2. Calibration and maintenance of vertical-axis type current meters, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages.

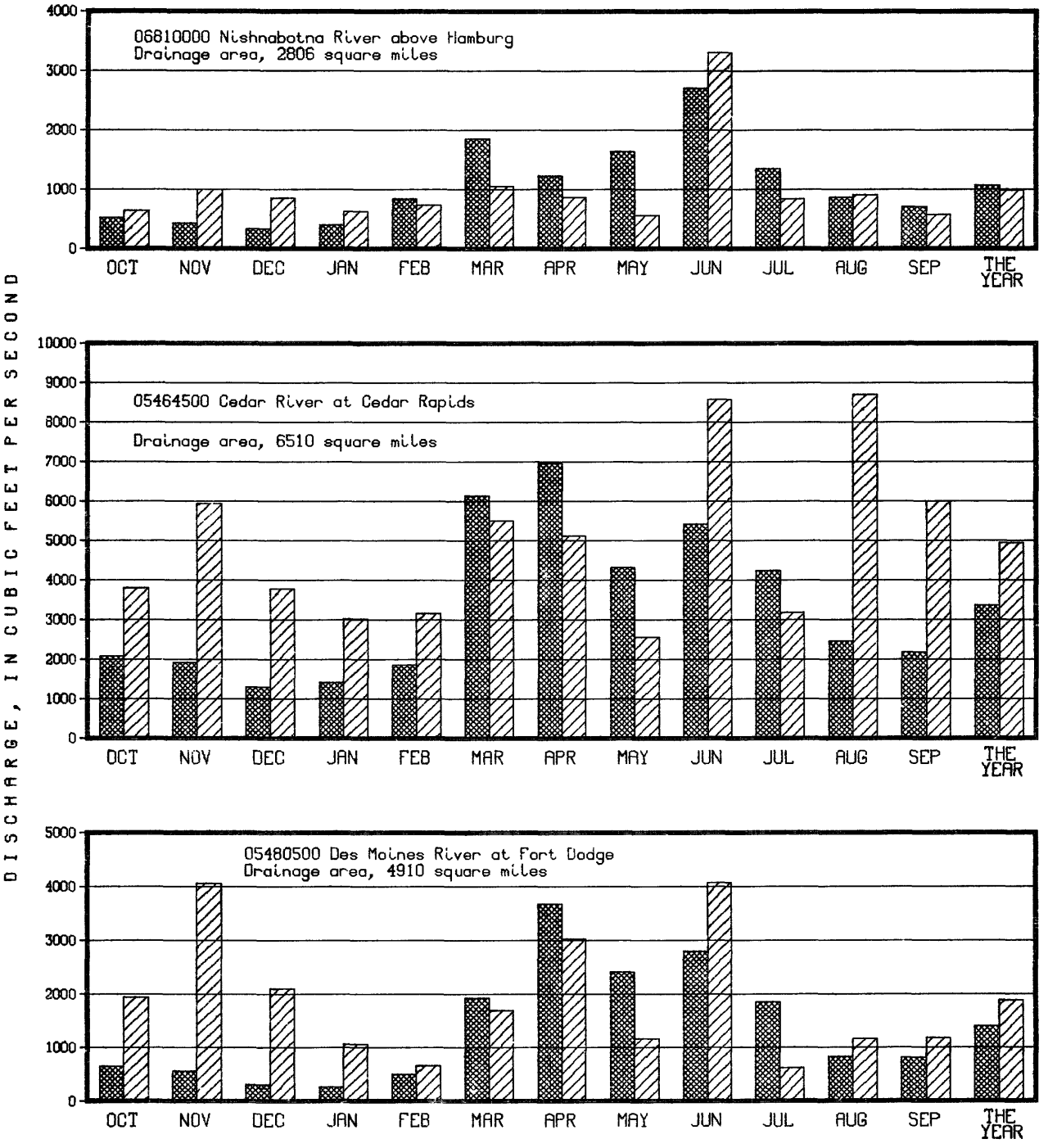

FIGURE 7.--RUNOFF DURING 1980 WATER YEAR COMPARED WITH MEAN RUNOFF FOR PERIOD 1941-70 FOR THREE REPRESENTATIVE GAGING STATIONS.

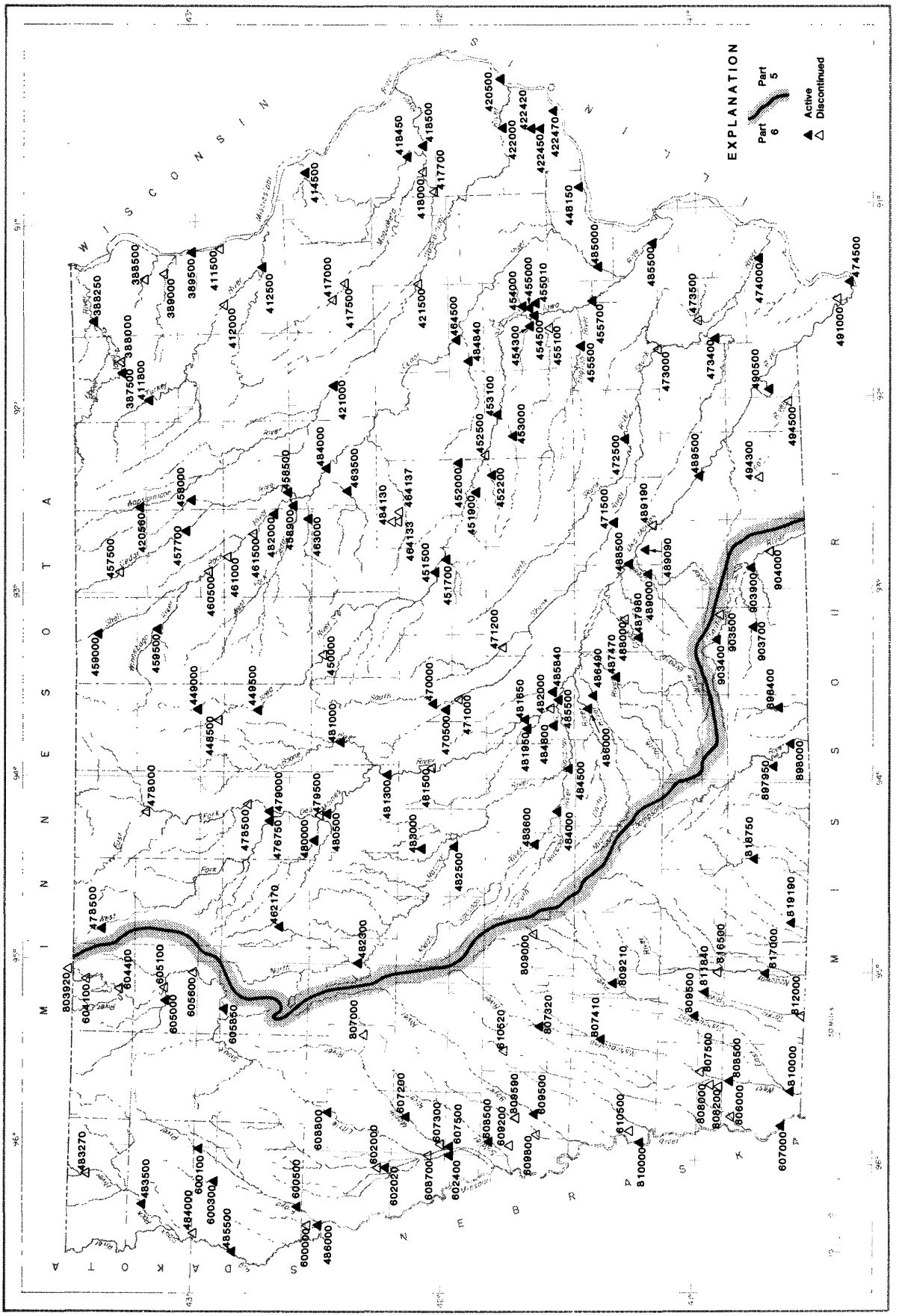

Figure 8.-Location of continuous-record gaging stations in Iowa.

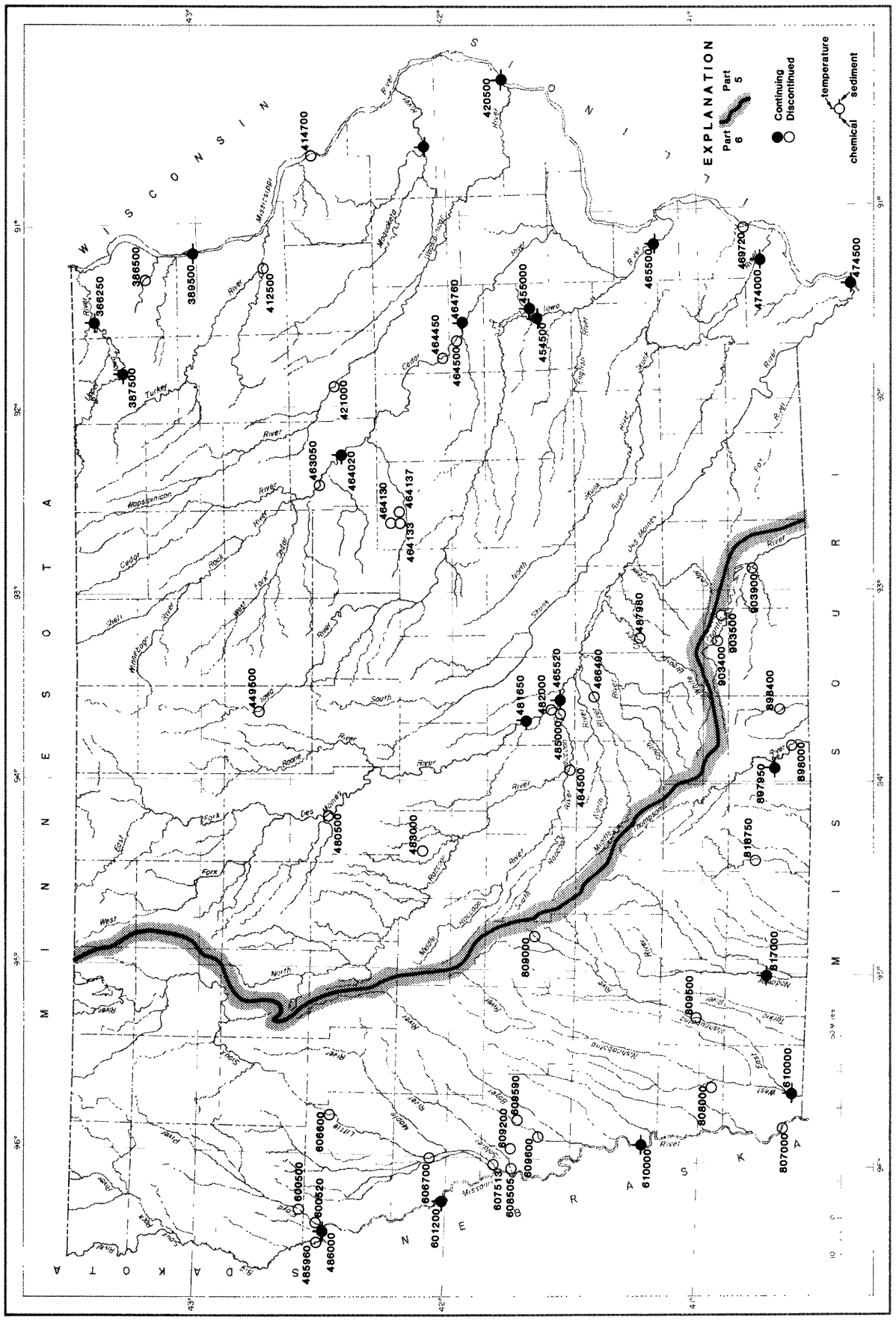

Figure 9.-Location of water-quality stations in Iowa.

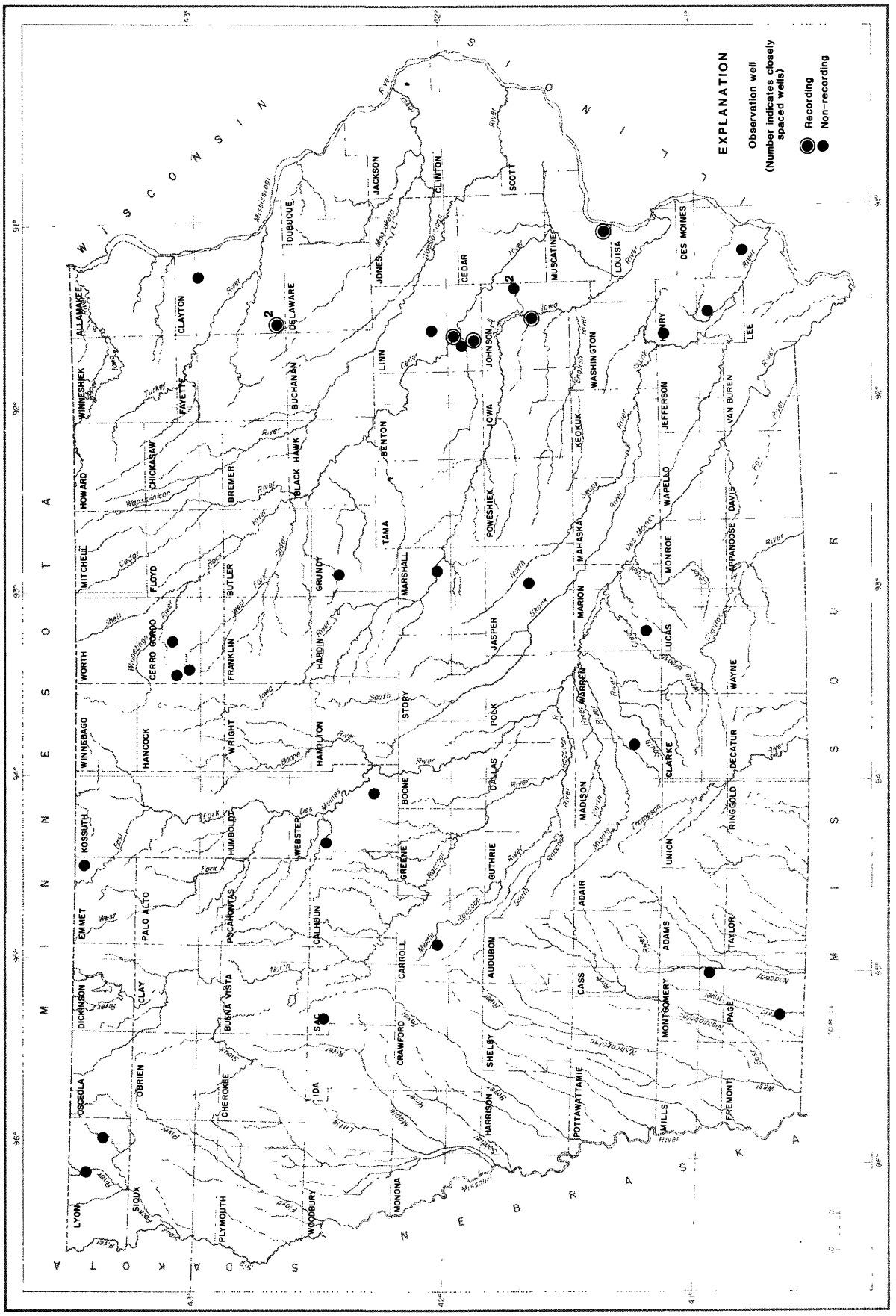

Figure 10.-Location of observation wells in Iowa.

DISCONTINUED GAGING STATIONS

The following stream-gaging stations have been discontinued in Iowa. Continuous daily streamflow records were collected and published for the period of record shown for each station.

Discontinued gaging stations

Station name	Station number	Drainage area (sq mi)	Period of record
Upper Iowa River near Decorah, Iowa.	05388000	568	1913-14; 1919-27; 1933-51.
Paint Creek at Waterville, Iowa.	05388500	42.8	1952-73.
Yellow River at Ion, Iowa.	05389000	221	1934-51.
Mississippi River at Clayton, Iowa.	05411500	9,200	1930-36.
Turkey River at Elkader, Iowa.	05412000	891	1932-42.
Maquoketa River near Manchester, Iowa.	05417000	305	1933-73.
Maquoketa River near Delhi, Iowa.	05417500	347	1933-40.
Bear Creek near Monmouth, Iowa.	05417700	61.3	1957-76.
Maquoketa River above North Fork Maquoketa River near Maquoketa, Iowa.	05418000	938	1913-14.
Wapsipinicon River at Stone City, Iowa.	05421500	1,324	1903-14.
West Branch (West Fork) Iowa River near Klemme, Iowa.	05448500	112	1948-58.
Iowa River near Iowa Falls, Iowa.	05450000	665	1911-14.
Upper Pine Lake at Eldora, Iowa.	05450500	14.9	1936-70.
Lower Pine Lake at Eldora, Iowa.	05451000	15.9	1936-70.
Iowa River near Belle Plaine, Iowa.	05452500	2,455	1939-59.
Lake Macbride near Solon, Iowa.	05453500	27.0	1936-71.
Old Mans Creek near Iowa City, Iowa.	05455100	201	1950-64.
Cedar River at Mitchell, Iowa.	05457500	826	1933-42.
Shell Rock River at Marble Rock (Greene), Iowa.	05460500	1,318	1933-53.
Shell Rock River at Greene, Iowa.	05461000	1,357	1933-42.
Shell Rock River near Clarksville, Iowa.	05461500	1,626	1915-27; 1932-34.
Fourmile Creek near Lincoln, Iowa.	05464130	13.78	1962-67; 1969-74; 1976-80.
Half Mile Creek near Gladbrook, Iowa.	05464133	1.33	1962-67; 1969-74; 1976-80.
South Skunk River below Squaw Creek near Ames, Iowa.	05471000	556	1952-79.
Indian Creek near Mingo, Iowa.	05471200	276	1958-75.
Lake Keomah near Oskaloosa, Iowa.	05472000	3.06	1936-71.
Skunk River at Coppock, Iowa.	05473000	2,916	1913-44.
Big Creek near Mount Pleasant, Iowa.	05473500	106	1955-79.
East Fork Des Moines River near Burt, Iowa.	05478000	462	1971-74.
East Fork Des Moines River near Hardy, Iowa.	05478500	1,268	1940-54.
Des Moines River near Fort Dodge, Iowa.	05479500	3,753	1911-13.
Des Moines River near Boone, Iowa.	05481500	5,511	1920-68.
Des Moines River at Des Moines, Iowa.	05482000	6,245	1905-06; 1915-61.
Storm Lake at Storm Lake, Iowa.	05482140	28.3	1970-75.
Springbrook Lake near Guthrie Center, Iowa.	05483500	5.18	1936-71.
Raccoon River at Des Moines, Iowa.	05485000	3,590	1902-03.
Lake Ahquabi near Indianola, Iowa.	05487000	4.93	1936-71.
White Breast Creek near Knoxville, Iowa.	05488000	380	1945-62.
Lake Wapello near Drakesville, Iowa.	05490000	7.75	1936-71.
Sugar Creek near Keokuk, Iowa.	05491000	105	1922-31; 1958-73.
Muchakinock Creek near Eddyville, Iowa.	05489190	70.2	1975-79.
Fox River at Bloomfield, Iowa.	05494300	87.7	1957-73.
Fox River at Cantril, Iowa.	05494500	161	1940-51.
Rock River at Rock Rapids, Iowa.	06483270	788	1959-74.
Dry Creek at Hawarden, Iowa.	06484000	48.4	1948-69.
Perry Creek at 38th Street, Sioux City, Iowa.	06600000	65.1	1945-69.
West Fork ditch at Holly Springs, Iowa.	06602000	399	1939-69.
Loon Creek near Orleans, Iowa.	06603920	31	1971-74.
Spirit Lake outlet at Orleans, Iowa.	06604100	75.6	1971-74.
Milford Creek at Milford, Iowa.	06604400	146	1971-74.
Little Sioux River at Spencer, Iowa.	06605100	990	1936-42.
Little Sioux River at Gillett Grove, Iowa.	06605600	1,334	1958-73.
Little Sioux River near Kennebeck, Iowa.	06606700	2,738	1939-69.
Odebolt Creek near Arthur, Iowa.	06607000	39.3	1957-75.
Maple River at Turin, Iowa.	06607300	725	1939-41.
Little Sioux River near Blencoe (Turin), Iowa.	06607510	4,470	1939-42.
Steer Creek near Magnolia, Iowa.	06609200	9.26	1963-69.
Thompson Creek near Woodbine, Iowa.	06609590	6.97	1963-69.
Willow Creek near Logan, Iowa.	06609600	129	1972-75.
Indian Creek at Council Bluffs, Iowa.	06610500	7.99	1954-76.
Mosquito Creek near Earling, Iowa.	06610520	33.0 (revised)	1965-79.
Waubonsie Creek near Bartlett, Iowa.	06806000	30.4	1946-69.
West Nishnabotna River at (near) White Cloud, Iowa.	06807500	967	1918-24.
Mule Creek near Malvern, Iowa.	06808000	10.6	1954-69.
Spring Valley Creek near Tabor, Iowa.	06808200	7.6	1955-64.
Davids Creek near Hamlin, Iowa.	06809000	26.0	1952-73.
Tarkio River (East Tarkio Creek) at Blanchard, Iowa.	06812000	200	1934-40.
West Nodaway River at Villisca, Iowa	06816500	342	1918-25.
Honey Creek near Russell, Iowa.	06903500	13.2	1952-62.
Chariton River near Centerville, Iowa.	06904000	708	1938-59.

DISCONTINUED WATER-QUALITY STATIONS

The following water-quality stations have been discontinued in Iowa. Continuous daily records of water temperature or sediment and monthly or periodic samples of chemical quality were collected and published for the period of record shown for each station. An asterisk (*) in the type of record column indicates that periodic data is available for that parameter subsequent to the period of daily record.

Discontinued water-quality stations

Station name	Station number	Drainage area (sq mi)	Type of Record	Period of record
Paint Creek at Waterville, Iowa.	05388500	42.8	Temp	1952-56
			Sed.	1952-57
Turkey River at Garber, Iowa.	05412500	1,545	Temp.	1957-62
			Sed.	1957-62
Mississippi River at Dubuque, Iowa.	05414700	1,600	Chem.	1969-73
Wapsipinicon River at Independence, Iowa.	05421000	1,048	Chem. *	1968-70
			Temp. *	1967-70
			Sed. *	1967-70
Iowa River near Rowan, Iowa.	05449500	429	Temp. *	1957-62
			Sed. *	1957-62
Cedar River at Cedar Falls, Iowa.	05463050	4,734	Chem.	1975-79
Fourmile Creek near Lincoln, Iowa.	05464130	13.78	Chem.	1969-74
			Temp.	1969-74
			Sed.	1969-74
Half Mile Creek near Gladbrook, Iowa.	05464133	1.33	Chem.	1969-74
			Temp.	1969-74
			Sed.	1969-74
Fourmile Creek near Traer, Iowa.	05464137	19.51	Chem.	1969-74
			Temp.	1969-74
			Sed.	1969-74
Cedar River near Palo, Iowa.	05464450	6,380	Chem.	1975-79
Cedar River at Cedar Rapids, Iowa.	05464500	6,640	Chem. *	1906-07; 1944-54
			Temp. *	1944-54
			Sed.	1943-54
Mississippi River at Burlington, Iowa.	05469720	4,000	Chem.	1969-73
Des Moines River at Fort Dodge, Iowa.	05480500	4,190	Chem.	1972-73
Des Moines River at Des Moines, Iowa.	05482000	6,245	Chem.	1954-55
			Temp.	1954-61
			Sed.	1954-61
E. Fork Hardin Creek near Churdan, Iowa.	05483000	24.0	Temp. *	1952-57
			Sed. *	1952-57
Raccoon River at Van Meter, Iowa.	05484500	3,441	Chem.	1969-73; 1974-79
Raccoon River at Des Moines, Iowa.	05485000	3,590	Chem.	1945-47
			Temp.	1945-47
Des Moines River below Raccoon River at Des Moines, Iowa.	05485500	9,770	Chem. *	1944-45
			Temp. *	1944-47
			Sed.	1944-47
Middle River near Indianola, Iowa.	05486490	503	Temp. *	1962-67
			Sed.	1962-67
White Breast Creek near Dallas, Iowa.	05487980	342	Chem.	1968-73
			Temp.	1967-73
			Sed.	1967-73
Big Sioux River at Sioux City, Iowa.	06485950	9,410	Chem.	1969-73
Floyd River at James, Iowa.	06600500	882	Temp.	1968-73
			Sed.	1968-73
FLoyd River at Sioux City, Iowa.	06600520	921	Chem.	1969-73
Little Sioux River at Correctionville, Iowa.	06606600	2,500	Chem. *	1954-55
			Temp. *	1951-62
			Sed.	1950-62
Little Sioux River near Kennebec, Iowa.	06606700	2,738	Temp.	1950-55
			Sed.	1950-57
Little Sioux River at River Sioux, Iowa.	06607513	3,600	Chem.	1969-73
Soldier River near Mondamin, Iowa.	06608505	440	Chem.	1970-73
Steer Creek near Magnolia, Iowa.	06609200	9.26	Temp.	1963-69
			Sed.	1963-69
Thompson Creek near Woodbine, Iowa.	06609590	6.97	Temp.	1963-69
			Sed.	1963-69
Willow Creek near Logan, Iowa.	06609600	129	Chem.	1972-75
			Temp.	1972-75
			Sed.	1971-75
Missouri River at Nebraska City, Nebraska.	06807000	410,000	Chem.	1951-77
			Temp.	1951-77
			Sed.	1971-76
Mule Creek near Malvern, Iowa.	06808000	10.6	Temp.	1958-69
			Sed.	1954-69
Davids Creek near Hamlin, Iowa.	06809000	26.0	Temp. *	1952-53; 1965-68
			Sed. *	1952-68
East Nishnabotna River at Red Oak, Iowa.	06809500	894	Temp.	1962-73
			Sed.	1962-73
Platte River near Diagonal, Iowa.	06818750	217	Chem.	1969-73
Thompson River at Davis City, Iowa.	06898000	701	Chem.	1967-73
			Temp.	1968-73
			Sed.	1968-73
Weldon River near Leon, Iowa.	06898400	104	Chem.	1968-73
Chariton River near Chariton, Iowa.	06903400	182	Temp.	1969-73
			Sed.	1969-73
Honey Creek near Russell, Iowa.	06903500	13.2	Sed.	1952-62
Chariton River near Rathbun, Iowa.	06903900	551	Temp. *	1962-69
			Sed. *	1962-69

Type of record: Chem. (chemical quality); Temp. (water temperature); Sed. (sediment).

05387500 UPPER IOWA RIVER AT DECORAH, IA

LOCATION.--Lat 43°18'19", long 91°47'48", in NE1/4 SW1/4 sec.16, T.98 N., R.8 W., Winneshiek County, Hydrologic Unit 07060002, on right bank 1,200 ft (366 m) upstream from bridge on U.S. Highway 52 (city route) in Decorah, 1,500 ft (457 m) downstream from Dry Run cutoff, and 3.0 mi (4.8 km) upstream from Trout Run.

DRAINAGE AREA.--511 mi² (1,323 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1951 to current year.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 850.00 ft (259.080 m) NGVD.

REMARKS.--Records good except those for winter period, which are fair.

AVERAGE DISCHARGE.--29 years, 305 ft³/s (8.638 m³/s), 8.11 in/yr (206 mm/yr), 221,000 acre-ft/yr (272 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,200 ft³/s (572 m³/s) Mar. 27, 1961, gage height, 13.08 ft (3.987 m); minimum daily, 22 ft³/s (0.62 m³/s) Feb. 2-7, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum flood known, probably since at least 1913, occurred May 29, 1941, at site of former gaging station near Decorah, 4 mi (6.4 km) downstream, discharge, 28,500 ft³/s (807 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 16	----	4,300	122	Ice jam		June 1	0630	*6,120	173	*9.33	2.844
Mar. 16	2145	4,690	133	8.46	2.579	June 6	1200	4,220	120	8.15	2.484
May 30	1215	4,520	128	8.35	2.545	Sep. 22	0830	4,700	133	8.47	2.582

Minimum daily discharge, 90 ft³/s (2.55 m³/s) Jan. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	202	330	290	180	130	195	280	234	3410	188	144	990
2	203	355	290	175	130	175	290	226	926	178	148	690
3	203	359	286	170	136	162	325	222	625	181	154	553
4	204	327	300	160	130	156	380	214	494	178	154	523
5	198	314	321	135	128	155	406	206	450	174	161	488
6	197	359	290	110	127	155	535	199	2300	171	151	477
7	195	759	273	90	128	150	529	192	1540	167	154	428
8	197	592	248	110	125	145	488	188	809	164	210	411
9	200	469	240	140	120	143	466	181	651	161	210	385
10	198	413	230	169	122	145	439	181	488	154	214	355
11	201	374	230	182	120	145	406	185	417	148	345	335
12	202	351	200	168	120	142	385	174	370	161	360	350
13	199	330	170	161	122	140	400	174	335	148	385	375
14	206	320	190	163	120	150	428	167	325	138	422	355
15	208	309	220	169	120	300	406	164	355	148	483	335
16	207	300	260	1900	115	3020	375	157	411	226	411	330
17	209	318	210	2100	115	2850	360	154	305	161	472	320
18	214	350	183	972	115	1490	355	151	272	154	704	310
19	214	349	213	527	115	1690	345	144	259	141	644	300
20	218	325	210	335	120	1290	340	138	242	444	683	395
21	226	317	208	250	141	670	335	132	238	277	1040	974
22	315	374	209	180	350	417	330	129	222	226	638	4050
23	437	695	320	149	494	340	315	125	210	192	547	2010
24	761	652	280	137	340	295	305	122	203	174	450	1230
25	711	508	255	200	260	268	295	119	196	171	400	982
26	555	442	228	180	230	263	281	113	192	164	365	816
27	468	406	211	160	215	263	268	113	188	157	375	725
28	422	370	200	150	210	259	259	113	196	154	677	664
29	378	340	188	145	205	268	250	113	188	148	990	613
30	350	300	177	140	---	277	242	1840	196	148	670	565
31	338	---	180	135	---	272	---	4310	---	148	644	---
TOTAL	9036	12007	7310	9942	4903	16390	10818	10880	17013	5544	13405	21334
MEAN	291	400	236	321	169	529	361	351	567	179	432	711
MAX	761	759	321	2100	494	3020	535	4310	3410	444	1040	4050
MIN	195	300	170	90	115	140	242	113	188	138	144	300
CFSM	.57	.78	.46	.63	.33	1.04	.71	.69	1.11	.35	.85	1.39
IN.	.66	.87	.53	.72	.36	1.19	.79	.79	1.24	.40	.98	1.55
AC-FT	17920	23820	14500	19720	9730	32510	21460	21580	33750	11000	26590	42320

CAL YR 1979 TOTAL 181179 MEAN 496 MAX 5010 MIN 54 CFSM .97 IN 13.19 AC-FT 359400
WTR YR 1980 TOTAL 138582 MEAN 379 MAX 4310 MIN 90 CFSM .74 IN 10.09 AC-FT 274900

05387500 UPPER IOWA RIVER AT DECORAH, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1963 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1962 to September 1964, October 1965 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1962 to December 1967.

INSTRUMENTATION.--Temperature recorder since Apr. 12, 1967.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 33.5°C July 5-6, 1977; minimum, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,700 mg/L May 26, 1965; minimum daily mean, 1 mg/L Oct. 21, 1965.
SEDIMENT LOADS: Maximum daily, 62,300 tons (56,500 tonnes) June 10, 1967; minimum daily, 0.1 ton (0.09 tonne) Oct. 21, 1965.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 32.0°C July 11, 12; minimum, 0.0°C on many days during winter period.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	16.0	13.0	10.0	6.5	.0	.0	.0	.0	0	0	.0	.0
2	14.0	11.5	6.5	4.5	.0	.0	.0	.0	0	0	.0	.0
3	14.5	12.0	5.0	4.0	.0	.0	.0	.0	0	0	.0	.0
4	13.0	10.5	5.0	3.5	.0	.0	.0	.0	0	0	.0	.0
5	11.5	9.5	5.0	5.0	.0	.0	.0	.0	0	0	.0	.0
6	11.5	10.0	5.0	4.0	.0	.5	.0	.0	0	0	.0	.0
7	12.0	9.0	4.0	3.0	2.0	.5	.0	.0	0	0	.5	.0
8	13.0	10.5	3.0	2.0	1.0	.0	.0	.0	0	0	.5	.0
9	11.5	9.0	3.0	2.0	.0	.0	.0	.0	0	0	.5	.0
10	10.0	9.0	1.5	.5	1.5	.0	.0	.0	0	0	.5	.0
11	11.0	8.5	1.0	.5	1.5	.5	.0	.0	0	0	.5	.0
12	10.0	8.0	1.5	1.0	.5	.0	.0	.0	0	0	1.0	.5
13	9.0	6.5	1.5	.5	.0	.0	.0	.0	0	0	.5	.5
14	9.5	8.0	1.5	.5	.0	.0	.0	.0	0	0	1.0	.0
15	11.0	8.5	3.0	1.5	.0	.0	.0	.0	0	0	1.0	.0
16	13.0	10.5	4.0	3.0	.0	.0	.0	.0	0	0	.0	.0
17	13.5	11.0	4.5	3.0	.5	.0	.5	.0	0	0	.5	.0
18	12.0	12.0	5.0	3.5	.0	.0	1.0	.0	0	0	1.5	.0
19	14.0	12.0	7.0	5.0	.0	.0	1.0	.5	0	0	3.5	1.5
20	16.0	14.0	6.5	5.0	.0	.0	.5	.0	0	0	3.5	2.0
21	16.0	13.5	4.5	4.5	.0	.0	.0	.0	0	0	4.5	2.0
22	13.5	9.0	4.5	4.0	.0	.0	.0	.0	0	0	3.5	3.0
23	9.0	6.5	4.5	3.0	.0	.0	.0	.0	0	0	3.0	2.0
24	7.0	5.5	3.0	2.0	.0	.0	.0	.0	0	0	3.5	2.0
25	6.5	5.0	2.0	1.0	.0	.0	.0	.0	0	0	5.5	2.0
26	5.5	4.5	2.0	1.5	.0	.0	.0	.0	0	0	6.5	3.5
27	6.5	5.5	2.0	1.5	.0	.0	.0	.0	0	0	6.0	4.5
28	8.0	5.5	1.5	.5	.0	.0	.0	.0	0	0	5.0	4.5
29	8.0	5.5	.5	.0	.0	.0	.0	.0	0	0	8.0	4.5
30	8.5	6.5	.0	.0	.0	.0	.0	.0	---	---	8.0	5.5
31	10.0	8.5	---	---	.0	.0	.0	.0	---	---	9.5	5.5
MONTH	16.0	4.5	10.0	.0	2.0	.0	1.0	.0	0	0	9.5	.0

05387500 UPPER IOWA RIVER AT DECORAH, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	8.5	6.5	19.5	14.0	19.5	18.5	26.5	21.5	30.0	23.5	20.0	19.0
2	11.0	6.5	20.5	15.0	19.5	18.0	26.0	21.0	27.0	23.5	20.0	18.0
3	9.5	5.5	22.0	16.5	20.5	17.0	25.0	21.0	28.5	22.0	21.0	18.0
4	9.5	5.0	23.0	16.5	21.0	18.5	26.0	21.0	26.5	22.0	21.5	20.0
5	10.5	6.5	22.0	17.0	20.5	19.0	29.0	23.5	26.5	20.0	20.0	18.0
6	9.5	9.5	19.5	16.0	20.5	19.5	28.5	23.5	28.5	21.5	20.0	18.5
7	11.0	9.0	15.5	13.0	21.0	20.5	31.0	24.5	28.0	24.5	21.0	18.0
8	11.0	8.0	16.0	11.0	20.5	18.5	30.0	25.5	25.5	23.5	23.5	20.0
9	8.0	5.0	18.5	11.5	20.0	16.0	28.0	24.5	23.5	21.5	23.0	19.5
10	6.5	4.5	16.5	15.0	20.5	18.0	30.5	24.0	25.0	21.0	19.5	16.5
11	6.5	4.5	16.5	13.5	20.5	17.0	32.0	25.5	24.0	21.5	18.5	16.5
12	9.5	5.0	18.5	13.5	21.0	18.0	32.0	27.0	23.5	19.0	20.0	16.5
13	9.0	5.5	16.0	14.0	22.0	19.0	31.0	25.0	22.0	20.0	20.0	19.0
14	5.5	4.5	15.5	11.5	24.5	20.0	30.0	26.0	21.5	20.0	19.0	16.5
15	9.0	4.5	19.5	13.0	24.0	20.0	30.5	25.5	21.0	19.0	16.5	15.5
16	11.0	6.5	16.0	14.5	22.0	18.5	29.0	24.5	21.0	15.5	16.0	14.5
17	13.5	9.5	14.5	13.5	22.0	19.0	30.0	23.5	17.0	15.0	15.0	12.0
18	15.5	11.0	14.0	13.5	22.0	19.0	28.5	25.0	19.5	16.0	16.0	13.0
19	16.5	12.0	19.5	13.5	22.0	19.0	29.0	23.5	23.5	19.0	16.5	13.5
20	18.5	13.5	22.0	15.5	23.5	18.5	27.0	23.0	24.5	21.5	18.0	16.0
21	19.5	14.5	24.5	17.0	25.0	20.0	25.5	21.0	23.5	20.0	18.0	16.5
22	21.0	16.0	25.5	19.0	25.5	22.0	25.5	21.5	21.0	19.0	17.0	16.0
23	19.0	15.0	24.5	19.5	26.5	22.0	26.0	21.0	21.0	19.0	16.0	14.5
24	16.0	11.5	26.5	20.5	26.5	23.5	27.0	21.0	20.0	18.5	14.5	13.5
25	14.5	12.0	28.0	21.0	28.5	23.5	25.5	23.0	22.0	19.0	14.0	13.5
26	15.0	11.0	26.5	21.0	30.0	24.5	25.0	21.0	23.5	21.0	13.5	11.5
27	17.0	12.0	28.0	20.0	29.0	25.5	26.5	20.5	23.0	19.0	14.0	12.0
28	16.0	13.0	29.5	22.0	28.5	24.0	26.5	21.0	19.5	18.0	14.5	13.0
29	14.0	13.0	26.5	22.0	26.5	22.0	29.0	22.0	21.5	19.0	14.5	13.0
30	16.5	13.0	24.5	18.0	25.5	20.0	27.0	23.5	21.0	20.0	15.0	14.5
31	---	---	19.0	16.5	---	---	29.5	23.5	20.5	19.5	---	---
MONTH	21.0	4.5	29.5	11.0	30.0	16.0	32.0	20.5	30.0	16.0	23.5	11.5
YEAR	32.0	.0										

05388250 UPPER IOWA RIVER NEAR DORCHESTER, IA

LOCATION.--Lat 43°25'16", long 91°30'31", in SW1/4 NW1/4 sec.1, T.99 N., R.6 W., Allamakee County, Hydrologic Unit 07060002, on right bank at upstream side of bridge on State Highway 76, 650 ft (198 m) upstream from Mineral Creek, 0.5 mi (0.8 km) upstream from Bear Creek, 3.5 mi (5.6 km) south of Dorchester, and 18.1 mi (29.1 km) upstream from mouth.

DRAINAGE AREA.--770 mi² (1,994 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1936 to June 1975 (gage heights and discharge measurements only), July 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 660.00 ft (201.168 m) NGVD. Prior to Jan. 6, 1938, nonrecording gage on old bridge at site 0.2 mi (0.3 km) upstream at datum 6.91 ft (1.801 m) higher. Jan. 6, 1938, to Apr. 26, 1948, nonrecording gage at datum 60.00 ft (18.288 m) lower. Apr. 27, 1948 to August 1963, nonrecording gage on old bridge and August 1963 to June 1975 nonrecording gage on new bridge at same datum.

REMARKS.--Records good except those for winter period, which are poor. Corps of Engineers gage-height telemeter at station.

AVERAGE DISCHARGE.--6 years, 438 ft³/s (12.40 m³/s), 7.72 in/yr (196 mm/yr), 317,300 acre-ft/yr (391 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,000 ft³/s (396 m³/s) Mar. 12, 1976, gage height, 17.67 ft (5.386 m); minimum daily, 79 ft³/s (2.24 m³/s) Dec. 31, 1976.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 30, 1941, reached a stage of 21.8 ft (6.64 m), from flood profile, discharge, 30,400 ft³/s (861 m³/s) on basis of slope-area determination of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 16	2230	*6,610	187	*13.70	4.176	June 6	2100	4,030	114	11.98	3.652
June 1	1530	6,100	173	13.53	4.124	Sep. 22	1730	5,240	148	12.62	3.847

Minimum daily discharge, 80 ft³/s (2.27 m³/s) Jan 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	274	362	410	270	190	300	372	324	4950	272	166	1030
2	278	346	370	210	200	240	367	316	1770	254	172	1060
3	279	385	350	170	200	230	370	302	1160	243	176	789
4	265	372	370	190	220	200	560	293	882	238	176	706
6	260	353	410	210	200	210	526	287	768	232	183	660
6	250	365	370	170	200	220	593	274	1700	221	181	622
7	247	524	350	80	200	210	658	266	2460	215	175	587
8	240	800	310	140	210	230	677	257	1440	209	185	539
9	236	604	290	170	200	250	634	255	1140	209	252	511
10	225	519	300	220	200	230	594	255	882	204	259	468
11	227	466	290	260	190	290	546	268	716	197	416	431
12	224	433	280	270	190	230	496	261	624	195	530	428
13	218	413	240	250	190	210	478	258	561	193	433	443
14	212	391	270	250	180	280	521	256	519	192	577	464
15	212	387	300	260	190	350	552	254	489	204	517	422
16	209	376	370	1500	180	3300	502	245	582	304	584	400
17	208	373	360	2300	170	4720	481	244	531	294	525	386
18	199	401	260	800	170	2730	457	244	443	210	667	373
19	198	436	300	540	180	2440	451	241	403	192	917	361
20	198	432	320	370	180	2250	446	228	379	269	866	394
21	199	414	330	300	180	1470	441	210	358	590	1570	568
22	264	420	370	270	500	979	440	204	352	321	1100	4300
23	383	590	360	175	630	735	440	197	327	270	819	3220
24	480	883	400	165	410	605	420	194	311	233	681	1830
25	722	743	320	180	370	520	410	190	296	213	578	1420
26	622	639	280	240	330	462	400	185	284	202	514	1190
27	527	579	290	220	320	430	384	180	274	194	474	1050
28	450	538	240	200	320	408	372	188	289	183	522	935
29	408	480	180	210	310	401	356	187	304	178	1090	865
30	376	440	200	220	---	394	340	816	275	175	1060	788
31	362	---	240	190	---	387	---	3320	---	174	836	---
TOTAL	9452	14463	9730	11000	7210	25911	14284	11199	25469	7280	17201	27240
MEAN	305	482	314	355	249	836	476	361	849	235	555	908
MAX	722	883	410	2300	630	4720	677	3320	4950	590	1570	4300
MIN	198	346	180	80	170	200	340	180	274	174	166	361
CFSM	.40	.63	.41	.46	.32	1.09	.62	.47	1.10	.31	.72	1.18
IN.	.46	.70	.47	.53	.35	1.25	.69	.54	1.23	.35	.83	1.32
AC-FT	18750	28690	19300	21820	14300	51390	28330	22210	50520	14440	34120	54030

CAL YR 1979 TOTAL 254103 MEAN 696 MAX 7750 MIN 95 CFSM .90 IN 12.28 AC-FT 504000
WTR YR 1980 TOTAL 180439 MEAN 493 MAX 4950 MIN 80 CFSM .64 IN 8.72 AC-FT 357900

05388250 UPPER IOWA RIVER NEAR DORCHESTER, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: July 1975 to current year.
WATER TEMPERATURES: October 1977 to current year.
SUSPENDED-SEDIMENT DISCHARGE: July 1975 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 635 micromhos Aug. 5, 1975; minimum daily, 205 micromhos July 21, 1977.
WATER TEMPERATURES: Maximum daily, 26.0°C Aug. 1,4,5,7, 1979, July 3, 6-9, 12, 13, 1980; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 10,000 mg/L July 17, 1978; minimum daily mean, 0 mg/L Jan. 28,29, 1979.
SEDIMENT LOADS: Maximum daily, 173,000 tons (157,000 tonnes) June 17, 1978; minimum daily, 0 tons (0 tonnes) Jan. 28, 29, 1979.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 610 micromhos Dec. 31, Jan. 3: minimum daily, 265 micromhos Mar. 18, May 31.
WATER TEMPERATURES: Maximum daily, 26.0°C July 3, 6-9, 12,13; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 5,990 mg/L May 31; minimum daily mean, 1 mg/L Jan. 25, Feb. 5, Mar. 5.
SEDIMENT LOADS: Maximum daily, 51,600 tons (46,800 tonnes) May 31; minimum daily, 0.49 tons (0.44 tonnes) Jan. 25.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	430	470	540	600	540	430	540	435	290	390	410	400
2	420	500	540	600	520	370	550	450	270	400	410	440
3	440	440	540	610	530	500	550	450	430	380	410	420
4	440	440	580	600	550	570	560	450	370	380	---	440
5	440	420	580	600	580	580	430	450	---	320	---	430
6	440	420	590	600	540	590	450	450	310	440	490	430
7	440	480	590	600	530	580	450	450	315	460	---	440
8	450	500	590	600	550	560	470	450	---	400	490	430
9	480	440	580	600	520	560	450	400	440	380	490	430
10	410	420	580	600	500	570	450	380	460	380	---	---
11	420	440	590	600	460	570	450	400	480	360	435	430
12	400	440	580	600	500	560	440	400	480	380	---	480
13	410	480	590	600	500	550	440	380	450	360	490	460
14	400	400	600	600	500	560	440	370	420	400	390	460
15	430	420	600	600	520	280	440	340	430	400	380	480
16	420	440	590	460	520	305	440	340	460	400	---	450
17	400	430	580	355	520	310	450	340	430	370	---	460
18	420	450	600	335	560	265	450	390	---	370	380	450
19	400	450	600	300	520	280	450	360	460	370	380	480
20	430	440	600	500	520	280	450	390	---	380	380	450
21	430	440	600	450	540	290	450	360	400	450	350	450
22	510	520	600	560	540	300	450	360	---	440	450	270
23	515	520	600	580	540	380	450	360	---	400	450	500
24	530	530	600	580	430	400	450	360	380	440	410	---
25	530	540	600	580	430	440	440	360	390	440	410	500
26	540	540	600	580	420	440	440	380	380	370	---	500
27	530	540	600	580	430	490	440	370	400	400	480	500
28	530	545	600	580	420	500	440	380	380	390	---	470
29	550	540	600	580	470	520	450	390	380	370	380	440
30	530	540	600	540	---	520	450	420	390	390	380	440
31	530	---	610	570	---	540	---	265	---	390	400	---

05388250 UPPER IOWA RIVER NEAR DORCHESTER, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.0	9.0	2.0	.0	.0	.0	8.0	12.0	17.0	24.0	24.0	20.0
2	14.0	9.0	1.0	.0	.0	.0	8.0	12.0	17.0	25.0	22.0	19.0
3	14.0	8.0	1.0	.0	.0	.0	8.0	12.0	17.0	26.0	23.0	---
4	14.0	8.0	.0	.0	.0	.0	8.0	12.0	17.0	25.0	23.0	18.0
5	14.0	8.0	.0	.0	.0	.0	8.0	12.0	---	---	24.0	20.0
6	14.0	8.0	.0	.0	.0	.0	9.0	12.0	19.0	26.0	24.0	19.0
7	14.0	8.0	.0	.0	.0	.0	9.0	12.0	20.5	26.0	24.0	19.0
8	15.0	8.0	.0	.0	.0	.0	10.0	12.0	---	26.0	24.0	19.0
9	14.0	8.0	.0	.0	.0	.0	9.0	13.0	18.0	26.0	25.0	19.0
10	14.0	8.0	.0	.0	.0	.0	5.0	13.0	22.0	25.0	24.0	18.0
11	13.0	9.0	.0	.0	.0	.0	9.0	13.0	23.0	25.0	24.0	17.0
12	13.0	8.0	.0	.0	.0	.0	10.0	13.0	---	25.0	23.0	17.0
13	13.0	8.0	.0	.0	.0	.0	10.0	13.0	23.0	26.0	23.0	17.0
14	13.0	7.0	.0	.0	.0	.0	10.0	14.0	23.0	26.0	23.0	17.0
15	13.0	8.0	.0	.0	.0	.0	10.0	15.0	25.0	24.0	22.0	17.0
16	12.0	7.0	.0	.0	.0	.0	10.0	15.0	23.0	22.0	22.0	16.0
17	12.0	8.0	.0	.5	.0	.0	10.0	15.0	24.0	22.0	22.0	17.0
18	12.0	9.0	.0	1.0	.0	1.5	10.0	21.0	---	22.0	21.0	18.0
19	13.0	9.0	.0	1.0	.0	2.0	10.0	21.0	23.0	24.0	21.0	18.0
20	12.0	8.0	.0	.0	.0	3.0	10.0	15.0	---	23.0	21.0	18.0
21	13.0	8.0	.0	.0	1.0	3.0	10.0	22.0	23.0	20.0	20.0	18.0
22	12.0	6.0	.0	.0	1.0	3.0	10.0	23.0	---	20.0	21.0	16.5
23	10.0	5.0	.0	.0	1.0	3.0	10.0	23.0	---	21.0	21.0	15.0
24	12.0	5.0	.0	.0	.0	3.0	11.0	24.0	23.0	22.0	21.0	---
25	10.0	5.0	.0	.0	.0	4.0	11.0	24.0	24.0	23.0	21.0	16.0
26	10.0	4.0	.0	.0	.0	5.0	11.0	24.0	24.0	25.0	22.0	15.0
27	12.0	4.0	.0	.0	.0	5.0	11.0	24.0	23.0	24.0	22.0	15.0
28	10.0	2.0	.0	.0	.0	5.0	11.0	20.0	23.0	20.0	22.0	16.0
29	9.0	2.0	.0	.0	.0	6.0	11.0	21.0	24.0	23.0	19.0	16.0
30	10.0	2.0	.0	.0	---	7.0	12.0	24.0	24.5	25.0	22.0	16.0
31	9.0	---	.0	.0	---	7.0	---	18.0	---	24.0	20.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	37	27	66	65	39	43	29	21	9	4.6	7	5.7
2	37	28	65	61	45	45	19	11	11	5.9	10	6.5
3	35	26	97	101	34	32	4	1.8	5	2.7	7	4.3
4	30	21	85	85	18	18	3	1.5	2	1.2	2	1.1
5	28	20	83	79	14	15	4	2.3	1	.54	1	.57
6	21	14	74	73	14	14	5	2.3	5	2.7	2	1.2
7	41	27	77	109	13	12	6	1.3	8	4.3	4	2.3
8	36	23	146	315	14	12	5	1.9	2	1.1	11	6.8
9	44	28	111	181	18	14	4	1.8	5	2.7	11	7.4
10	43	26	108	151	22	18	6	3.6	2	1.1	10	6.2
11	23	14	91	114	22	17	5	3.5	3	1.5	25	20
12	37	22	71	83	16	12	7	5.1	10	5.1	10	6.2
13	31	18	72	80	19	12	9	6.1	8	4.1	23	13
14	31	18	48	51	23	17	7	4.7	15	7.3	13	9.8
15	45	26	22	23	17	14	6	4.2	7	3.6	460	435
16	44	25	39	40	20	20	1950	7940	7	3.4	2680	23900
17	31	17	72	73	12	12	3410	21200	10	4.6	2610	33300
18	44	24	95	103	15	11	700	1510	7	3.2	1540	12100
19	40	21	142	167	15	12	158	230	10	4.9	1940	12800
20	34	18	130	152	12	10	73	73	11	5.3	1310	7960
21	23	12	87	97	12	11	36	29	23	11	710	2820
22	43	31	28	32	9	9.0	5	3.6	44	59	317	838
23	118	122	26	41	10	9.7	3	1.4	141	240	152	302
24	553	717	49	117	11	12	3	1.3	45	50	27	44
25	360	702	35	70	12	10	1	.49	33	33	30	42
26	255	428	35	60	9	6.8	3	1.9	24	21	27	34
27	197	280	31	48	8	6.3	5	3.0	20	17	17	20
28	157	191	20	29	6	3.9	5	2.7	16	14	27	30
29	127	140	25	32	6	2.9	19	11	9	7.5	19	21
30	86	87	31	37	15	8.1	10	5.9	---	---	14	15
31	53	52	---	---	17	11	6	3.1	---	---	18	19
TOTAL	---	3205	---	2669	---	450.7	---	31088.49	---	522.34	---	94771.07

05388250 UPPER IOWA RIVER NEAR DORCHESTER, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	28	28	17	15	1890	26300	52	38	33	15	1260	3500
2	25	25	8	6.8	312	1490	50	34	29	13	670	1920
3	9	9.0	7	5.7	135	423	51	33	22	10	154	328
4	58	88	16	13	73	174	44	28	26	12	60	114
5	72	102	7	5.4	63	131	28	18	50	25	79	141
6	111	178	6	4.4	2490	11400	15	9.0	99	48	53	89
7	113	201	5	3.6	2780	18500	29	17	105	50	53	84
8	108	197	7	4.9	490	1910	77	43	93	46	57	83
9	81	139	45	31	214	659	68	38	139	96	61	84
10	45	72	58	40	228	543	80	44	126	88	53	67
11	15	22	49	35	205	396	88	47	366	459	41	48
12	19	25	55	39	166	280	95	50	542	776	57	66
13	7	9.0	61	42	109	165	93	48	240	281	34	41
14	11	15	61	42	28	39	72	37	253	410	65	81
15	9	13	38	26	21	28	55	30	151	211	57	65
16	6	8.1	39	26	160	251	161	132	259	408	43	46
17	8	10	58	38	45	65	160	127	500	709	44	46
18	9	11	20	13	31	37	105	60	3050	5490	31	31
19	10	12	20	13	32	35	74	38	2880	7130	26	25
20	15	18	31	19	50	51	107	78	1800	4210	54	57
21	20	24	32	18	56	54	714	1220	3770	16000	186	410
22	24	29	31	17	59	56	340	295	420	1250	2560	31200
23	30	36	25	13	59	52	295	215	288	637	1560	14400
24	71	81	35	18	58	49	252	159	319	587	800	3950
25	73	81	6	3.1	87	70	190	109	260	406	370	1420
26	19	21	7	3.5	70	54	154	84	245	340	142	456
27	10	10	12	5.8	65	48	95	50	188	241	73	207
28	7	7.0	8	4.1	70	55	58	29	325	458	69	174
29	5	4.8	8	4.0	91	75	41	20	2050	6030	76	175
30	8	7.3	2430	13100	79	59	34	16	2120	6070	82	174
31	---	---	5990	51600	---	---	35	16	500	1130	---	---
TOTAL	---	1483.2	---	65209.3	---	63449	---	3162.0	---	53635	---	59482
YEAR		379127.10										

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	TEMPER-ATURE, WATER (DEG C) (00010)	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)
APR							
08...	1100	--	708	112	214	--	--
MAY							
20...	0900	15.0	234	33	21	--	--
JUN							
30...	1445	25.0	284	84	64	--	--
AUG							
11...	1630	24.5	553	541	808	37	40
SEP							
22...	1600	18.0	5320	3070	44100	47	51

DATE	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
APR							
08...	--	--	--	--	--	--	98
MAY							
20...	--	--	--	--	--	--	78
JUN							
30...	--	--	--	--	--	--	82
AUG							
11...	51	71	--	--	--	--	99
SEP							
22...	57	69	95	96	97	100	--

05388250 UPPER IOWA RIVER NEAR DORCHESTER, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	NUMBER OF SAM-PLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)
OCT							
23...	1300	402	8	5	7	14	39
APR							
08...	1115	710	8	1	1	12	64
MAY							
20...	0900	234	8	1	2	11	44
JUN							
30...	1445	284	7	1	2	11	59
AUG							
11...	1730	553	9	14	16	21	53

DATE	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
OCT						
23...	64	77	85	90	98	100
APR						
08...	82	88	91	95	97	100
MAY						
20...	61	71	78	87	100	--
JUN						
30...	78	91	96	98	100	--
AUG						
11...	74	88	93	97	98	100

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA

LOCATION.--Lat 43°01'29", long 91°10'21", in SE1/4 SE1/4 sec.22, T.95 N., R.3 W., Clayton County, Hydrologic Unit 07060001, on right bank in city park at east end of Main Street in McGregor, 2.6 mi (4.2 km) upstream from Wisconsin River, 4.3 mi (6.9 km) downstream from Yellow River, and at mile 633.4 (1,019.1 km) upstream from Ohio River.

DRAINAGE AREA.--67,500 mi² (174,800 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1936 to current year.

REVISED RECORDS.--WDR IA-75-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 604.84 ft (184.355 m) NGVD. Prior to June 1, 1937, and since June 2, 1939, auxiliary water-stage recorder; June 1, 1937 to June 1, 1939, auxiliary nonrecording gage 14.1 mi (22.7 km) upstream in tailwater of dam 9, at datum 5.30 ft (1.615 m) lower.

REMARKS.--Records good except those for winter period, which are fair. Stage-discharge relation affected by backwater from Wisconsin River and Lock and Dam No. 10. Minor flow regulation caused by navigation dams.

COOPERATION.--Auxiliary gage-height and discharge data at Lock and Dam No. 9 furnished by Corps of Engineers.

AVERAGE DISCHARGE.--44 years, 33,800 ft³/s (957.2 m³/s), 6.80 in/yr (173 mm/yr), 24,490,000 acre-ft/yr (30,200 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 276,000 ft³/s (7,820 m³/s) Apr. 24, 1965; maximum gage height, 25.38 ft (7.736 m) Apr. 24, 1965; minimum daily discharge, 6,200 ft³/s (176 m³/s) Dec. 9, 1936; minimum gage height, -0.86 ft (-0.262 m) Aug. 18, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1828, that of Apr. 24, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 87,400 ft³/s (2,480 m³/s) Sept. 26; maximum gage height, 14.05 ft (4.282 m) Sept. 29; minimum daily discharge, 11,300 ft³/s (320 m³/s) July 8; minimum gage height, 5.93 ft (1.807 m) July 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20700	38500	37700	22000	23000	25000	49100	37200	34900	17900	13800	43200
2	21800	35900	32900	22000	22500	24000	48900	36600	38700	20400	12700	37600
3	24700	35200	32000	22000	22000	23500	48800	36400	37600	25700	13200	30700
4	25600	35900	27500	22000	22000	23000	49700	34000	36500	28300	13700	29500
5	25300	36800	24500	24000	22000	22500	50500	29200	37900	28300	13500	34100
6	23800	38600	24000	26000	22500	22500	52000	26800	45400	23200	13500	38300
7	22200	40400	24000	27000	23000	22000	55600	25500	51500	15700	14000	46300
8	19300	41100	23500	26000	23500	22000	61900	24700	55000	11300	21600	52800
9	19200	42500	23000	23000	24000	22000	67900	23600	57300	12000	27100	51600
10	19500	45000	25000	18500	24000	22500	70300	20500	61800	16100	32600	49000
11	20100	47300	26500	15500	24000	23000	72300	19400	70700	20100	37900	43800
12	20300	47800	26000	14500	24000	24000	74900	20000	76200	19300	41500	41800
13	20300	47500	23500	15000	24000	25000	78800	21600	78400	20300	44600	42500
14	19200	46300	21000	16000	23500	26000	83900	24700	76900	19800	47000	45900
15	16800	45000	19000	16000	23500	27000	85700	27600	74600	18200	45500	48200
16	16700	43700	18500	18000	23500	30000	86700	28700	70400	17300	39300	49700
17	16500	40500	17000	24000	23000	36900	87100	28900	60900	14700	32400	52400
18	16600	36700	16000	33000	23000	44500	84200	28000	49700	14500	25700	55000
19	18400	36500	17000	39000	23000	52400	79500	24900	44800	15000	20100	58100
20	20500	37000	19500	41000	23500	60400	75200	19900	42300	21700	19600	58900
21	24100	38300	23000	39000	23500	66200	69100	18800	41100	23100	23300	58700
22	26200	38800	25000	36000	24000	69000	63500	19300	36600	20500	30500	66900
23	28700	39100	27000	34000	25000	72400	58800	21600	32800	16000	32000	71500
24	31300	37800	29000	31000	26000	75500	55100	25200	29800	14200	29400	75100
25	36200	38500	31000	29000	27000	73100	50100	27600	27700	13500	24200	83000
26	42000	39900	32500	27000	28000	68300	47100	24600	28500	13500	21100	87400
27	45400	40500	32000	26000	27000	65600	43800	18900	28900	16400	32800	84900
28	46900	41500	30000	25000	26000	60800	40400	14600	28700	19600	30900	81200
29	47100	41700	28000	24500	25500	54600	39200	11800	25600	19400	33800	78100
30	46600	40700	26000	24000	---	50000	37500	16000	20300	18500	40600	73100
31	43300	---	23500	23500	---	49200	---	26800	---	15600	43300	---
TOTAL	825300	1215000	785100	783500	695500	1282900	1867600	763400	1401500	570100	871200	1669300
MEAN	26620	40500	25330	25270	23980	41380	62250	24630	46720	18390	28100	55640
MAX	47100	47800	37700	41000	28000	75500	87100	37200	78400	28300	47000	87400
MIN	16500	35200	16000	14500	22000	22000	37500	11800	20300	11300	12700	29500
CFSM	.39	.60	.38	.37	.36	.61	.92	.37	.69	.27	.42	.82
IN.	.45	.67	.43	.43	.38	.71	1.03	.42	.77	.31	.48	.92
AC-FT	1637000	2410000	1557000	1554000	1380000	2545000	3704000	1514000	2780000	1131000	1728000	3311000

CAL YR 1979 TOTAL 17300200 MEAN 47400 MAX 133000 MIN 14400 CFSM .70 IN 9.53 AC-FT 34310000
WTR YR 1980 TOTAL 12730400 MEAN 34780 MAX 87400 MIN 11300 CFSM .52 IN 7.02 AC-FT 25250000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	22248	22990	18735	16979	17501	33958	72599	57377	49005	39227	24590	25410	335650
RUNOFF (INCHES)	0.41	0.38	0.32	0.29	0.27	0.58	1.20	0.98	0.81	0.67	0.42	0.42	6.75[1][2]
STD. DEVIATION	0.22	0.16	0.10	0.08	0.10	0.24	0.57	0.42	0.36	0.33	0.21	0.19	1.65
PERCENT OF ANNUAL	6.00	5.80	4.60	4.20	4.30	8.40	18.00	14.00	12.00	9.80	6.10	6.30	----
PRECIP. (INCHES)	1.88	1.54	1.20	1.04	0.89	2.21	2.77	3.54	4.61	3.95	3.16	3.22	30.00

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples collected at bridge on U.S. Highway 18, 1.2 mi (1.9 km) upstream from gage.

PERIOD OF RECORD.--Water years 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: July 1975 to current year.
WATER TEMPERATURES: July 1975 to current year.
SUSPENDED-SEDIMENT DISCHARGE: July 1975 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 707 mg/L Mar. 31, 1979; minimum daily mean, 1 mg/L Dec. 23-25, 1976, Dec. 20, 28, 1977.
SEDIMENT LOADS: Maximum daily, 166,000 tons (151,000 tonnes) Mar. 31, 1979; minimum daily, 31 tons (28 tonnes) Dec. 25, 1976.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 324 mg/L Mar. 14; minimum daily mean, 7 mg/L Feb. 7.
SEDIMENT LOADS: Maximum daily, 48,700 tons (44,200 tonnes) Sept. 24; minimum daily, 435 tons (395 tonnes) Feb. 7.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	555	---	---	---	340	420	410	---
2	510	360	---	565	---	500	---	320	---	---	---	---
3	---	---	500	---	---	---	400	---	---	430	410	---
4	---	390	---	---	560	---	---	300	---	---	---	---
5	500	---	---	---	---	---	---	---	---	---	---	320
6	---	---	500	575	---	500	---	---	320	---	---	---
7	500	410	---	---	---	---	370	---	---	440	---	300
8	---	---	---	605	560	---	---	---	330	---	415	---
9	---	---	490	---	---	495	330	310	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	540	---	---	320	---	---	400	270
12	500	---	---	545	---	---	---	---	290	430	400	---
13	---	---	---	---	---	490	---	---	---	---	---	---
14	500	430	---	460	---	---	290	---	---	---	380	260
15	---	---	---	---	550	---	---	---	---	410	---	---
16	---	445	---	---	---	---	---	320	270	---	---	---
17	---	---	---	---	---	445	---	---	---	---	---	290
18	---	470	---	440	540	---	---	330	---	420	---	---
19	420	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	310	---	360	400	300	---
21	415	---	---	555	540	355	---	330	---	---	---	250
22	---	490	---	---	---	---	---	---	380	---	---	---
23	---	---	---	---	---	---	---	340	---	---	320	---
24	430	---	---	---	---	360	340	---	---	---	---	260
25	---	500	---	565	500	---	---	---	---	410	330	255
26	480	---	---	---	---	---	---	340	400	---	---	---
27	---	---	545	---	---	375	---	---	---	420	---	---
28	---	---	---	550	---	---	---	---	---	---	---	---
29	480	500	---	---	500	---	---	---	410	---	340	190
30	---	---	560	---	---	---	---	360	---	---	---	---
31	---	---	---	---	---	395	---	---	---	---	350	---

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	.0	---	---	---	20.0	22.5	24.0	---
2	16.5	8.0	---	.0	---	.0	---	14.0	---	---	---	---
3	---	---	1.0	---	---	---	---	---	---	23.5	24.0	---
4	---	7.0	---	---	.0	---	---	18.0	---	---	---	---
5	10.0	---	---	---	---	---	---	---	---	---	---	20.0
6	---	---	3.0	.0	---	.0	---	---	22.0	---	---	---
7	12.0	6.0	---	---	---	---	---	---	---	25.0	---	22.5
8	---	---	---	.0	.0	---	---	---	20.0	---	24.0	---
9	---	---	2.0	---	---	.0	6.0	13.0	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	.0	---	---	14.0	---	---	24.0	20.0
12	10.0	---	---	3.0	---	---	---	---	18.0	28.0	26.0	---
13	---	---	---	---	---	.0	---	---	---	---	---	---
14	8.5	3.0	---	.0	---	---	5.0	---	---	---	23.0	20.0
15	---	---	---	---	.0	---	---	---	---	27.5	---	---
16	---	4.0	---	---	---	---	---	14.0	18.0	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	16.0
18	---	---	---	.0	.0	---	---	14.0	---	27.0	---	---
19	13.0	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	14.0	---	18.0	26.0	24.0	---
21	15.0	---	---	.0	.0	---	---	16.5	---	---	---	19.0
22	---	6.0	---	---	---	---	---	---	22.0	---	---	---
23	---	---	---	---	---	---	---	18.5	---	---	23.0	---
24	9.0	---	---	---	---	---	10.0	---	---	---	---	17.0
25	---	5.0	---	.0	.0	---	---	---	---	24.0	23.0	16.0
26	7.0	---	---	---	---	---	---	20.0	24.0	---	---	---
27	---	---	6.0	---	---	---	---	---	---	22.0	---	---
28	---	---	---	.0	---	---	---	---	---	---	---	---
29	10.0	2.0	---	---	.0	---	---	---	23.0	---	24.0	15.0
30	---	---	.0	---	---	---	---	22.0	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	23.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	38	2120	92	9560	37	3770	53	3150	18	1120	40	2700
2	31	1820	116	11200	29	2580	51	3030	14	850	30	1940
3	40	2670	89	8460	25	2160	52	3090	11	653	24	1520
4	70	4840	50	4850	82	5090	103	6120	8	475	18	1120
5	71	4850	54	5370	133	8800	168	10900	8	475	15	911
6	52	3340	66	6880	119	7710	207	14500	8	486	11	668
7	41	2460	74	8070	85	5510	210	15300	7	435	14	832
8	39	2030	73	8100	61	3870	180	12600	10	634	56	3330
9	37	1920	70	8030	48	2980	155	9630	31	2010	128	7600
10	36	1900	64	7780	45	3040	142	7090	74	4800	138	8380
11	31	1680	57	7280	43	3080	134	5610	108	7000	117	7270
12	37	2030	52	6710	41	2880	129	5050	103	5670	185	12000
13	59	3230	46	5900	40	2540	118	4780	84	5440	307	20700
14	76	3940	42	5250	39	2210	101	4360	69	4380	324	22700
15	72	3270	34	4130	39	2000	86	3720	52	3300	266	19400
16	66	2980	30	3540	38	1900	82	3990	58	3680	193	15600
17	62	2760	35	3830	37	1700	86	5510	54	3350	126	12600
18	56	2510	40	3960	37	1500	91	8110	50	3110	108	13000
19	63	3130	43	4240	34	1560	80	8420	46	2860	107	15100
20	68	3760	47	4700	42	2210	56	6200	42	2660	103	16800
21	60	3900	51	5270	52	3230	30	3160	37	2350	97	17300
22	75	5310	57	5970	56	3780	25	2430	38	2460	88	16400
23	111	8600	74	7810	57	4160	24	2200	57	3850	67	13100
24	149	12600	77	7860	60	4700	23	1930	53	3720	45	9170
25	153	15000	65	6760	61	5110	23	1800	30	2190	38	7500
26	135	15300	59	6360	54	4740	21	1530	24	1810	31	5720
27	108	13200	56	6120	37	3200	18	1260	22	1600	22	3900
28	79	10000	53	5940	34	2750	14	945	24	1680	22	3610
29	61	7760	50	5630	49	3700	14	926	49	3370	22	3240
30	63	7930	45	4950	57	4000	17	1100	---	---	22	2970
31	66	7720	---	---	55	3490	23	1460	---	---	22	2920
TOTAL	---	164560	---	190510	---	111050	---	159901	---	77418	---	270001

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	22	2920	86	8640	82	7730	57	2750	116	4320	253	29500
2	23	3040	74	7310	126	13200	82	4520	109	3740	242	24600
3	22	2900	63	6190	128	13000	221	15300	114	4060	206	17100
4	22	2950	51	4680	112	11000	252	19300	117	4330	160	12700
5	23	3140	49	3860	104	10600	210	16000	117	4260	130	12000
6	24	3370	55	3980	124	15200	149	9330	114	4160	155	16000
7	45	6760	66	4540	188	26100	101	4280	110	4160	199	24900
8	97	16200	78	5200	252	37400	67	2040	145	8460	215	30700
9	167	30600	93	5930	274	42400	55	1780	175	12800	208	29000
10	190	36100	88	4870	243	40500	80	3480	172	15100	158	20900
11	173	33800	67	3510	172	32800	104	5640	122	12500	108	12800
12	148	29900	58	3130	117	24100	80	4170	70	7840	94	10600
13	126	26800	61	3560	96	20300	77	4220	68	8190	87	9980
14	99	22400	69	4600	89	18500	73	3900	60	7610	86	10700
15	81	18700	80	5960	89	17900	65	3190	57	7000	76	9890
16	70	16400	89	6900	93	17700	56	2620	54	5730	63	8450
17	61	14300	81	6320	98	16100	48	1910	53	4640	58	8210
18	54	12300	70	5290	107	14400	42	1640	49	3400	63	9360
19	51	10900	56	3760	117	14200	49	1980	48	2600	68	10700
20	50	10200	44	2360	123	14000	75	4390	96	5080	71	11300
21	50	9330	35	1780	119	13200	135	8420	195	12300	82	13000
22	80	13700	46	2400	112	11100	128	7080	268	22100	105	19000
23	124	19700	63	3670	101	8940	110	4750	252	21800	210	40500
24	158	23500	80	5440	92	7400	90	3450	231	18300	240	48700
25	162	21900	102	7600	100	7480	72	2620	233	15200	115	25800
26	150	19100	100	6640	122	9390	87	3170	166	9460	78	18400
27	134	15800	86	4390	144	11200	125	5530	100	8860	64	14700
28	120	13100	69	2720	159	12300	151	7990	94	7840	55	12100
29	109	11500	49	1560	152	10500	164	8590	132	12000	52	11000
30	97	9820	44	1900	99	5430	152	7590	182	20000	64	12600
31	---	---	57	4120	---	---	134	5640	230	26900	---	---
TOTAL	---	461130	---	142810	---	504070	---	177270	---	304740	---	535190

TOTAL LOAD FOR YEAR: 3098650 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	NUMBER OF SAM-PLING POINTS (00063)	BED MAT. FALL DIAM. % FINER THAN .004 MM (80157)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)
OCT 24...	1000	28000	6	--	3	7	37
APR 09...	1030	56800	6	3	7	8	18
MAY 20...	1130	17500	6	--	3	6	42
JUL 01...	1100	17100	6	--	9	16	48
AUG 12...	1200	42200	6	--	5	12	43

DATE	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
OCT 24...	87	97	99	100	--	--	--
APR 09...	70	96	99	100	--	--	--
MAY 20...	91	97	99	100	--	--	--
JUL 01...	89	97	99	99	100	--	--
AUG 12...	79	86	88	91	95	98	100

05411600 TURKEY RIVER AT SPILLVILLE, IOWA

LOCATION.--Lat 43°12'28", long 91°56'56", in SW1/4 NE1/4 sec.19, T.97 N., R.9 W., Winneshiek County, on right bank 60 ft (18 m) downstream from bridge on county highway W14 at north edge of Spillville, 150 ft (46 m) downstream from old mill dam, 0.6 mi (1.0 km) upstream from Wonder Creek and at mile 98.5 (158.5 km).

DRAINAGE AREA.--177 mi² (458 km²).

PERIOD OF RECORD.--June 1956 to September 1973, October 1977 to current year. Monthly discharge only for some periods, published in WSP 1728.

GAGE.--Water-stage recorder. Datum of gage is 1,034.77 ft (315.40 m) NGVD.

REMARKS.--Records good. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--20 years, 112 ft³/s (3.172 m³/s), 8.59 in/yr (218 mm/yr), 81,140 acre-ft/yr (100 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,600 ft³/s (244 m³/s) July 12, 1972, gage height, 16.73 ft (5.099 m); minimum daily, 4.4 ft³/s (0.12 m³/s) Feb. 1-3, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.-- Flood in June 1947 reached a stage of 18.4 ft (5.61 m), from floodmark, discharge, about 10,000 ft³/s (283 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft³/s (34.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 16	----	2,200	62.3	Ice jam		Sep. 23	0700	1,900	53.8	9.82	2.993
Mar. 16	1430	*3,940	112	*12.55	3.825						

Minimum daily discharge, 29 ft³/s (0.82 m³/s) Jan. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	99	74	39	40	100	69	53	227	47	34	153
2	56	97	71	39	40	98	65	51	117	44	54	137
3	57	94	68	38	41	97	62	51	92	41	48	116
4	56	91	78	37	41	99	62	50	82	40	45	124
5	57	100	73	36	42	100	73	49	94	37	44	156
6	56	125	68	35	42	100	177	48	219	36	41	145
7	56	181	65	33	42	100	164	52	266	35	38	118
8	56	146	63	31	42	105	96	50	122	33	45	109
9	58	130	60	29	43	112	89	49	71	38	47	98
10	64	120	58	35	43	118	86	53	62	37	80	94
11	63	113	56	50	44	118	81	56	59	34	100	90
12	60	108	53	48	43	120	76	53	56	34	98	93
13	60	107	51	46	42	135	74	53	51	32	124	95
14	62	104	51	46	42	170	74	52	73	32	240	100
15	61	101	56	150	41	417	72	50	69	36	204	93
16	59	101	60	930	41	2020	69	50	50	37	151	92
17	59	110	58	888	40	1280	68	50	44	41	257	89
18	61	115	56	324	38	400	67	49	43	38	436	87
19	62	110	54	150	39	250	66	47	41	35	251	84
20	62	105	52	84	40	177	63	46	41	43	256	84
21	63	105	50	70	62	130	62	41	41	89	452	88
22	88	140	64	63	250	108	62	40	40	66	297	1040
23	150	245	60	56	460	99	61	38	40	50	190	1290
24	198	195	55	52	390	92	60	36	39	44	149	467
25	143	150	51	49	300	88	59	42	37	42	128	321
26	121	130	48	47	190	83	57	49	36	40	128	252
27	112	110	46	45	170	80	56	54	36	38	119	212
28	107	92	44	44	150	78	55	57	96	37	134	190
29	101	82	43	42	140	76	55	60	55	35	159	170
30	97	78	41	41	---	75	54	211	51	35	145	154
31	97	---	40	40	---	72	---	453	---	36	136	---
TOTAL	2458	3584	1767	3617	2938	7097	2234	2093	2350	1262	4630	6341
MEAN	79.3	119	57.0	117	101	229	74.5	67.5	78.3	40.7	149	211
MAX	198	245	78	930	460	2020	177	453	266	89	452	1290
MIN	56	78	40	29	38	72	54	36	36	32	34	84
CFSM	.45	.67	.32	.66	.57	1.29	.42	.38	.44	.23	.84	1.19
IN.	.52	.75	.37	.76	.62	1.49	.47	.44	.49	.27	.97	1.33
AC-FT	4880	7110	3500	7170	5830	14080	4430	4150	4660	2500	9180	12580

CAL YR 1979	TOTAL	62131	MEAN 170	MAX 3120	MIN 20	CFSM .96	IN 13.06	AC-FT	123200		
WTR YR 1980	TOTAL	40371	MEAN 110	MAX 2020	MIN 29	CFSM .62	IN 8.48	AC-FT	80080		

05412500 TURKEY RIVER AT GARBER, IA

LOCATION.--Lat 42°44'24", long 91°15'42", in SE1/4 NW1/4 sec.36, T.92 N., R.4 W., Clayton County, Hydrologic Unit 07060004, on left bank 10 ft (3 m) downstream from bridge on county highway C43, 800 ft (244 m) upstream from Wayman Creek, 1,000 ft (305 m) southeast of Garber, 2,000 ft (610 m) downstream from Elk Creek, 1 mi (1.6 km) downstream from Volga River, and 19.8 mi (31.9 km) upstream from mouth.

DRAINAGE AREA.--1,545 mi² (4,002 km²).

PERIOD OF RECORD.--August 1913 to November 1916, May 1919 to September 1927, April 1929 to September 1930, October 1932 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1922-25 (M), 1927 (M). WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 634.46 ft (193.383 m) NGVD. Prior to Feb. 7, 1935, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--60 years (1913-16, 1919-27, 1929-30, 1932-80), 911 ft³/s (25.80 m³/s), 8.01 in/yr (203 mm/yr), 660,000 acre-ft/yr (814 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,300 ft³/s (915 m³/s) Feb. 23, 1922, gage height, 28.06 ft 8.553 m), from floodmark; minimum daily, 49 ft³/s (1.39 m³/s) Jan. 28, 29, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1890, that of Feb. 23, 1922.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,000 ft³/s (227 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 16	----	*11,000	312	Ice	jam	Aug. 21	0300	8,730	247	15.86	4.834
Mar. 16	----	10,800	306	*a18.79	5.727						

Minimum daily discharge, 210 ft³/s (5.95 m³/s) Jan. 10.

a Ice jam

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	697	838	687	270	310	470	616	678	1220	738	220	1550
2	745	838	570	260	310	470	591	646	1450	584	234	1390
3	726	808	535	250	300	440	865	565	1290	502	415	1340
4	697	790	632	240	300	385	1740	547	1010	450	378	1310
5	672	760	700	230	310	375	1820	511	931	626	382	1270
6	658	754	680	220	310	370	1380	494	1070	557	322	1230
7	638	790	620	210	320	365	1340	478	1380	406	298	1190
8	625	856	560	250	320	370	1320	475	1250	366	282	1120
9	610	880	520	300	320	390	1320	456	1010	594	294	1020
10	592	892	520	360	330	400	1300	451	831	670	1070	922
11	588	814	520	440	320	410	1220	456	713	545	2420	850
12	587	772	410	450	340	430	1190	475	633	510	2650	844
13	573	754	350	410	360	450	1160	501	577	430	1820	838
14	557	742	360	420	340	470	1210	540	857	386	2350	802
15	547	712	340	440	320	1000	1190	528	1130	662	3200	790
16	545	706	300	6500	290	8000	1110	509	756	350	2350	760
17	551	700	280	4800	290	6430	1010	500	655	330	2240	724
18	522	694	260	3960	290	3480	983	500	588	318	2750	676
19	525	694	250	2660	380	2700	953	503	540	318	2900	664
20	540	700	270	1900	510	2140	963	487	501	306	2430	646
21	539	724	300	1460	880	1800	938	466	465	290	6180	1220
22	633	808	320	1250	2800	1330	908	443	440	282	5940	2440
23	1240	802	330	1080	2000	1030	871	420	420	307	3350	1710
24	1420	1050	310	940	1580	856	871	402	397	330	2390	3420
25	1350	1070	300	840	930	731	824	385	380	298	1920	2910
26	1230	934	300	720	800	657	795	374	358	310	1660	1930
27	1140	892	290	620	640	606	752	356	355	294	1490	1640
28	988	840	290	520	590	584	728	363	692	270	1330	1480
29	928	799	280	430	540	615	725	467	893	250	1230	1420
30	874	700	280	340	---	728	701	495	960	238	1430	1360
31	838	---	270	320	---	653	---	631	---	234	2470	---
TOTAL	23375	24113	12634	33090	17330	39135	31394	15102	23752	12751	58395	39466
MEAN	754	804	408	1067	598	1262	1046	487	792	411	1884	1316
MAX	1420	1070	700	6500	2800	8000	1820	678	1450	738	6180	3420
MIN	522	694	250	210	290	365	591	356	355	234	220	646
CFSM	.49	.52	.26	.69	.39	.82	.68	.32	.51	.27	1.22	.85
IN.	.56	.58	.30	.80	.42	.94	.76	.36	.57	.31	1.41	.95
AC-FT	46360	47830	25060	65630	34370	77620	62270	29950	47110	25290	115800	78280

CAL YR 1979 TOTAL 623833 MEAN 1709 MAX 24100 MIN 190 CFSM 1.11 IN 15.02 AC-FT 1237000
WTR YR 1980 TOTAL 330537 MEAN 903 MAX 8000 MIN 210 CFSM .58 IN 7.96 AC-FT 655600

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	482.4	498.5	348.4	469.0	682.5	2117.4	1564.8	1125.7	1426.3	978.3	696.9	512.4	911.7
RUNOFF (INCHES)	0.37	0.36	0.26	0.35	0.46	1.58	1.13	0.84	1.03	0.73	0.52	0.37	8.01
STD. DEVIATION	0.33	0.38	0.18	0.34	0.39	0.93	0.94	0.54	0.80	0.60	0.43	0.27	3.53
PERCENT OF ANNUAL	4.60	4.30	3.20	4.40	5.70	20.00	14.00	10.00	13.00	9.10	6.50	4.60	----
PRECIP. (INCHES)	2.25	1.77	1.31	0.97	0.89	2.05	3.17	3.90	5.01	4.31	3.31	3.37	32.30

05412500 TURKEY RIVER AT GARBER, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958-62, 1978 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1957 to September 1962.
SUSPENDED-SEDIMENT DISCHARGE: October 1957 to September 1962.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum daily, 28.0°C Aug. 19, 1958; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 19,500 mg/L May 20, 1959; minimum daily mean, 5 mg/L Feb. 13, 1962.
SEDIMENT LOADS: Maximum daily, 294,000 tons (267,000 tonnes) June 26, 1959; minimum daily, 3 tons (2.7 tonnes) Feb. 7, 1961.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	TEMPERATURE, WATER (DEG C) (00010)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)
AUG							
22...	1130	20.0	5710	1010	15600	35	39
SEP							
23...	1400	16.0	2450	1260	8340	49	54

DATE	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)
AUG						
22...	42	52	87	89	94	100
SEP						
23...	58	65	95	96	98	100

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	NUMBER OF SAMPLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)
AUG											
22...	1400	5710	6	0	3	40	82	91	94	97	100
SEP											
23...	1300	2060	3	0	4	37	89	97	98	100	

05414500 LITTLE MAQUOKETA RIVER NEAR DURANGO, IA

LOCATION.--Lat 42°33'18", long 90°44'46", in NW1/4 NE1/4 sec.5, T.89 N., R.2 E., Dubuque County, Hydrologic Unit 07060003, on left bank 10 ft (3 m) upstream from bridge on county highway, 300 ft (91 m) upstream from Cloie Branch, 1.7 mi (2.7 km) east of Durango, 5.6 mi (9.0 km) northwest of court house at Dubuque, and 6.4 mi (10.3 km) upstream from mouth.

DRAINAGE AREA.--130 mi² (337 km²).

PERIOD OF RECORD.--October 1934 to current year.

REVISED RECORDS.--WSP 1508: 1935-38, 1939 (M), 1940, 1943 (M), 1946, 1948. WDR IA-76-01: 1975.

GAGE.--Water-stage recorder. Datum of gage is 612.03 ft (186.547 m) NGVD. Prior to Jan. 5, 1939, nonrecording gage at same site and datum.

REMARKS.--Records excellent except those for winter period, which are good. Several observations of water temperature were made during the year.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--46 years, 85.1 ft³/s (2.410 m³/s), 8.89 in/yr (226 mm/yr), 61,650 acre-ft/yr (76.0 hm³/yr); median of yearly mean discharges, 73 ft³/s (2.07 m³/s), 7.6 in/yr (193 mm/yr), 52,900 acre-ft/yr (65.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,000 ft³/s (1,130 m³/s) Aug. 2, 1972, gage height, 23.13 ft (7.050 m) in gage well, 23.8 ft (7.25 m), from floodmarks, on basis of slope-area measurement of peak flow; minimum daily, 5 ft³/s (0.14 m³/s) July 12, 13, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 15, 1925, reached a stage of about 22.1 ft (6.74 m), discharge, about 29,000 ft³/s (821 m³/s), computed by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,900 ft³/s (139 m³/s) Jan. 16, gage height, 13.20 ft (4.023 m) time unknown, backwater from ice, no other peak above base of 3,000 ft³/s (85.0 m³/s); minimum daily, 19 ft³/s (0.54 m³/s) July 22-25 Aug. 7-9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	36	33	26	24	24	49	39	41	29	22	32
2	41	31	32	25	24	24	52	37	49	28	22	28
3	35	29	32	24	24	26	70	35	296	26	22	26
4	32	29	33	23	25	26	130	34	71	26	20	41
5	30	29	35	23	27	25	75	32	86	26	21	35
6	30	36	34	22	28	26	68	31	174	24	20	28
7	30	34	33	22	28	27	71	29	77	23	19	40
8	30	30	31	23	28	27	69	30	55	22	19	29
9	28	30	29	24	29	28	81	28	47	38	19	26
10	27	31	30	25	29	33	73	29	43	40	63	26
11	29	29	29	26	29	31	66	31	38	27	43	26
12	29	29	28	27	27	30	63	30	35	26	31	418
13	28	31	27	29	27	28	56	29	33	23	87	382
14	27	30	26	31	26	28	58	30	42	22	76	55
15	27	30	25	33	26	708	62	29	116	23	35	45
16	29	30	22	2250	25	1460	90	28	66	23	137	47
17	28	29	21	377	24	295	72	38	45	22	350	45
18	28	30	21	164	24	134	66	51	40	21	66	38
19	33	30	21	60	25	131	60	35	37	22	126	37
20	35	29	22	32	27	92	57	33	33	21	137	545
21	32	50	24	27	463	58	53	30	32	20	352	176
22	60	63	30	28	615	45	50	27	29	19	64	172
23	67	48	70	38	206	39	46	26	28	19	47	90
24	39	42	52	39	60	36	44	26	28	19	40	77
25	34	39	40	35	39	33	43	25	26	19	35	68
26	32	45	35	31	34	34	42	24	26	322	32	58
27	31	47	33	29	30	34	41	23	25	59	29	54
28	30	40	30	28	28	36	39	22	95	34	27	50
29	30	37	28	26	26	79	40	64	41	27	27	50
30	29	34	27	26	---	114	41	62	32	25	33	46
31	31	---	26	25	---	56	---	49	---	24	41	---
TOTAL	1021	1057	959	3598	2027	3767	1827	1036	1786	1099	2062	2790
MEAN	32.9	35.2	30.9	116	69.9	122	60.9	33.4	59.5	35.5	66.5	93.0
MAX	67	63	70	2250	615	1460	130	64	296	322	352	545
MIN	27	29	21	22	24	24	39	22	25	19	19	26
CFSM	.25	.27	.24	.89	.54	.94	.47	.26	.46	.27	.51	.72
IN.	.29	.30	.27	1.03	.58	1.08	.52	.30	.51	.31	.59	.80
AC-FT	2030	2100	1900	7140	4020	7470	3620	2050	3540	2180	4090	5530

CAL YR 1979	TOTAL	34572	MEAN 94.7	MAX 2960	MIN 18	CFSM .73	IN 9.89	AC-FT	68570
WTR YR 1980	TOTAL	23029	MEAN 62.9	MAX 2250	MIN 19	CFSM .48	IN 6.59	AC-FT	45680

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	55.3	57.1	33.8	62.0	92.4	172.5	110.7	101.5	135.2	72.2	45.1	45.4	81.0
RUNOFF (INCHES)	0.41	0.49	0.30	0.55	0.74	1.53	0.95	0.90	1.16	0.64	0.40	0.39	8.46
STD. DEVIATION	0.44	0.84	0.18	0.58	0.55	1.06	0.66	0.85	1.58	0.77	0.23	0.32	4.38
PERCENT OF ANNUAL	4.70	5.90	3.50	6.40	9.50	18.00	11.00	10.00	14.00	7.40	4.60	4.60	----
PRECIP. (INCHES)	2.46	1.93	1.55	1.36	1.05	2.34	3.62	3.97	5.33	3.60	3.93	3.94	35.10

05418450 NORTH FORK MAQUOKETA RIVER AT FULTON, IA

LOCATION.--Lat 42°08'48", long 90°40'33" in N1/4 sec.25, T.85 N., R.2 E, Jackson County, Hydrologic Unit 07060006, on right downstream bank at bridge on State Highway 61, 7.8 mi (12.6 km) upstream from mouth, and 5.5 mi (8.8 km) north of junction of State Highway 64 and 61 and 0.5 mi (0.8 km) south of Fulton.

DRAINAGE AREA.--516 mi² (1,329 km²).

PERIOD OF RECORD.--July 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 666.19 ft (203.055 m) NGVD. Nonrecording gage July 7 to September 22, 1977.

REMARKS.--Records are fair. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,100 ft³/s (286 m³/s) March 20, 1979, gage height, 16.50 ft (5.029 m); minimum daily, 70 ft³/s (1.982 m³/s) July 11, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 18, 1974 reached a stage of 16.0 ft. (4.88 m), from floodmark, discharge, 10,000 ft³/s (283.2 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft³/s (70.8 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 16	----	3,300	93.5	*a14.76	4.499	June 7	0515	3,690	105	9.43	2.874
Feb. 22	----	2,800	80.7	Ice	jam	June 15	1115	4,180	118	9.98	3.042
Mar. 16	----	*5,600	159	Ice	jam	Sep. 13	0230	4,850	137	10.62	3.237

Minimum daily discharge, 81 ft³/s (2.29 m³/s) Feb. 5.

a Ice jam

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	196	201	150	110	145	110	210	186	426	269	167	189
2	210	200	130	105	120	94	200	186	363	247	169	180
3	214	192	150	100	98	100	236	183	1340	234	167	166
4	206	185	170	98	88	105	265	180	866	221	165	184
5	198	185	190	96	81	95	345	179	490	219	162	200
6	200	191	200	94	83	82	286	175	455	214	160	180
7	197	191	180	93	84	90	254	171	2310	204	156	169
8	195	190	150	93	86	94	246	169	663	216	151	170
9	190	189	140	94	85	96	245	169	461	249	150	163
10	184	189	150	97	85	100	247	172	385	301	259	152
11	185	187	170	105	86	96	245	177	343	242	269	148
12	190	184	120	110	87	110	241	175	313	216	227	212
13	185	184	100	110	88	120	234	170	298	200	191	2180
14	179	184	96	120	90	170	224	166	334	198	186	464
15	179	184	100	130	91	938	231	168	1740	200	214	334
16	191	184	110	1800	90	4500	233	166	931	202	208	286
17	190	184	89	3700	89	2840	255	179	552	202	356	283
18	186	184	84	835	92	727	263	208	412	202	326	270
19	220	185	100	450	97	400	249	190	373	200	367	244
20	224	185	120	328	105	370	236	176	328	198	339	310
21	207	217	150	260	500	312	226	166	301	195	609	672
22	214	240	170	240	1900	257	217	158	289	193	411	520
23	259	243	185	230	1140	229	209	151	272	191	269	424
24	250	238	200	220	500	215	200	151	252	187	225	351
25	218	224	165	225	250	199	194	159	239	187	204	315
26	203	222	150	190	100	188	190	154	226	184	192	289
27	199	224	140	150	110	182	188	143	222	182	184	273
28	197	216	130	160	120	180	186	141	807	178	178	265
29	192	205	130	185	115	182	184	794	532	176	172	258
30	190	195	120	170	---	192	184	870	331	173	174	253
31	194	---	120	165	---	231	---	541	---	171	184	---
TOTAL	6242	5982	4359	10863	6605	13604	6923	6973	16854	6451	7191	10104
MEAN	201	199	141	350	228	439	231	225	562	208	232	337
MAX	259	243	200	3700	1900	4500	345	870	2310	301	609	2180
MIN	179	184	84	93	81	82	184	141	222	171	150	148
CFSM	.39	.39	.27	.68	.44	.85	.45	.44	1.09	.40	.45	.65
IN.	.45	.43	.31	.78	.48	.98	.50	.50	1.22	.47	.52	.73
AC-FT	12380	11870	8650	21550	13100	26980	13730	13830	33430	12800	14260	20040

CAL YR 1979	TOTAL	142102	MEAN 389	MAX 8640	MIN 74	CFSM .75	IN 10.24	AC-FT	281900	
WTR YR 1980	TOTAL	102151	MEAN 279	MAX 4500	MIN 81	CFSM .54	IN 7.36	AC-FT	202600	

05418500 MAQUOKETA RIVER NEAR MAQUOKETA, IA

LOCATION.--Lat 42°05'05", long 90°38'04", in SW1/4 NE1/4 sec.17, T.84 N., R.3 E., Jackson County, Hydrologic Unit 07060006, on right bank 500 ft (152 m) upstream from bridge on State Highway 62, 1,200 ft (366 m) upstream from Prairie Creek, 2.0 mi (3.2 km) northeast of Maquoketa, 2.2 mi (3.5 km) downstream from North Fork, and 26.7 mi (43.0 km) upstream from mouth.

DRAINAGE AREA.--1,553 mi² (4,022 km²).

PERIOD OF RECORD.--September 1913 to current year. Prior to October 1939, published as "below North Fork near Maquoketa". Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 405: 1914. WSP 1438: Drainage area. WSP 1508: 1914-17, 1919-25, 1926 (M), 1929, 1933-34 (M), 1943.

GAGE.--Water-stage recorder. Datum of gage is 625.96 ft (190.793 m) NGVD. Prior to July 14, 1924, nonrecording gage, and July 15, 1924 to Sept. 30, 1972, recording gage at same site at datum 10.00 ft (3.048 m) higher.

REMARKS.--Records good except those for winter period, which are poor. Diurnal fluctuation caused by powerplant 4 mi (6.4 km) above station. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--67 years, 1,009 ft³/s (28.57 m³/s), 8.82 in/yr (224 mm/yr), 731,000 acre-ft/yr (901 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 48,000 ft³/s (1,360 m³/s) June 27, 1944, gage height, 24.70 ft (7.529 m) at datum then in use; minimum daily, 105 ft³/s (2.97 m³/s) Feb. 11-20, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--A flood, probably in 1903, reached a stage of 23.5 ft (7.16 m), discharge, 43,000 ft³/s (1,220 m³/s), at datum in use prior to Oct. 1, 1972.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 7,500 ft³/s (212 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Jan. 17	0845	*13,900	394	*25.00	7.620	Sept. 13	0900	8,700	246	21.50	6.553
Mar. 17	0115	7,920	224	20.84	6.352						

Minimum daily discharge, 290 ft³/s (8.21 m³/s) Dec. 18, Jan. 6-8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	687	638	618	360	550	500	705	646	2070	1180	504	716
2	647	591	549	350	510	490	697	638	1760	1050	504	654
3	623	634	507	330	480	520	798	627	2660	983	488	611
4	588	572	540	320	440	540	812	614	3880	920	497	718
5	628	614	580	300	420	520	906	600	2420	857	537	707
6	609	606	640	290	410	460	983	581	1890	768	459	601
7	566	618	570	290	390	450	987	561	3750	717	470	650
8	574	614	460	290	380	470	920	537	2830	705	458	665
9	608	606	480	300	370	450	1070	497	1890	920	447	604
10	562	622	510	310	360	440	969	530	1600	965	768	570
11	566	610	470	320	350	450	1010	518	1320	776	825	540
12	572	579	410	330	350	460	985	518	1200	790	712	962
13	571	622	340	340	340	470	960	538	1110	759	952	6880
14	558	560	300	360	340	490	956	579	1290	693	785	2500
15	554	657	320	700	330	1200	1030	637	2590	626	751	1570
16	588	553	340	2500	320	5000	1000	598	2880	634	839	1300
17	562	602	300	6600	320	5910	1010	512	2290	530	1230	1140
18	559	610	290	3800	320	3500	1070	600	1750	539	1070	1030
19	652	579	320	2000	320	2110	1010	583	1740	550	1320	1020
20	656	622	350	1300	700	1500	984	569	1180	542	1340	1080
21	597	730	380	1000	1500	1260	921	528	1150	549	2460	1450
22	694	738	410	900	3100	1120	900	552	1120	569	1500	1800
23	874	755	440	840	3000	1030	859	524	1000	521	1470	1710
24	552	759	470	780	2100	965	785	472	940	501	1420	1070
25	645	717	450	730	1150	920	754	512	892	495	1070	1080
26	673	755	430	670	950	861	717	502	765	520	751	1260
27	641	738	410	590	750	816	672	471	734	546	518	968
28	614	689	400	610	600	781	691	454	1700	861	681	825
29	641	693	390	690	540	759	670	1550	1650	690	758	852
30	599	638	380	640	---	738	637	3250	1350	598	641	830
31	599	---	370	580	---	759	---	2380	---	548	654	---
TOTAL	19059	19321	13424	29420	21690	35939	26468	22678	53401	21902	26879	36363
MEAN	615	644	433	949	748	1159	882	732	1780	707	867	1212
MAX	874	759	640	6600	3100	5910	1070	3250	3880	1180	2460	6880
MIN	552	553	290	290	320	440	637	454	734	495	447	540
CFSM	.40	.42	.28	.61	.48	.75	.57	.47	1.15	.46	.56	.78
IN.	.46	.46	.32	.70	.52	.86	.63	.54	1.28	.52	.64	.87
AC-FT	37800	38320	26630	58350	43020	71280	52500	44980	105900	43440	53310	72130

CAL YR 1979 TOTAL 463194 MEAN 1269 MAX 20200 MIN 280 CFSM .82 IN 11.10 AC-FT 918700
WTR YR 1980 TOTAL 326544 MEAN 892 MAX 6880 MIN 290 CFSM .57 IN 7.82 AC-FT 647700

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	754.3	779.5	538.8	781.3	1088.7	1939.7	1280.6	1118.0	1531.1	1077.6	700.5	835.2	1028.50
RUNOFF (INCHES)	0.50	0.56	0.40	0.58	0.73	1.44	0.92	0.83	1.10	0.80	0.52	0.60	8.99
STD. DEVIATION	0.36	0.64	0.21	0.49	0.45	0.88	0.57	0.54	0.90	0.74	0.26	0.50	3.84
PERCENT OF ANNUAL	5.40	6.30	4.40	6.40	8.80	16.00	10.00	9.00	12.00	8.80	5.70	6.8	----
PRECIP. (INCHES)	2.48	1.94	1.69	1.50	1.12	2.31	3.32	3.82	5.22	3.48	3.37	3.81	34.10

05418500 MAQUOKETA RIVER NEAR MAQUOKETA, IA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples collected at bridge on Highway 62, 500 ft (152 m) downstream from gage.

PERIOD OF RECORD.--Water years 1978 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 1978 to current year.
WATER TEMPERATURES: April 1978 to current year.
SUSPENDED-SEDIMENT DISCHARGE: April 1978 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis. During winter periods samples are collected in open water channel or through ice cover.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 600 micromhos June 7, 1978; minimum daily, 210 micromhos Mar. 21, 1979.
WATER TEMPERATURES: Maximum daily, 27.5°C Aug. 7, 1979, July 13, 1980; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 7,170 mg/L May 14, 1978; minimum daily mean, 14 mg/L Jan. 7, 1980.
SEDIMENT LOADS: Maximum daily, 127,000 tons (115,000 tonnes) Mar. 20, 1979; minimum daily, 11 tons (10 tonnes) Jan. 7, 1980.

EXTREMES FOR CURRENT YEAR:
SPECIFIC CONDUCTANCE: Maximum daily, 580 micromhos Dec. 28, 29; minimum daily, 235 micromhos Sept. 13.
WATER TEMPERATURES: Maximum daily, 27.5°C July 13; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 6,290 mg/L Sept. 13; minimum daily mean, 14 mg/L Jan. 7.
SEDIMENT LOADS: Maximum daily, 122,000 tons (111,000 tonnes) Sept. 13; minimum daily, 11 tons (10 tonnes) Jan. 7.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	---	---
2	440	---	---	---	---	---	---	---	470	510	460	---
3	---	---	---	---	---	---	---	---	470	---	460	520
4	440	---	---	---	---	---	---	470	340	---	460	---
5	430	---	---	---	---	---	---	---	---	---	450	---
6	---	440	---	---	---	---	---	470	440	---	---	---
7	---	---	---	---	---	---	460	---	280	---	440	---
8	450	---	---	---	---	560	460	---	---	---	---	---
9	---	---	---	---	---	560	---	480	440	340	420	540
10	---	---	500	480	---	---	540	---	---	490	400	520
11	440	---	---	---	---	---	---	---	520	---	390	530
12	---	---	---	---	---	---	500	440	---	470	---	---
13	480	---	---	---	---	---	---	470	---	---	410	235
14	---	---	---	---	---	---	---	---	500	---	430	---
15	400	420	500	---	---	460	---	500	315	---	---	---
16	---	---	---	---	---	280	510	---	---	---	500	---
17	---	---	---	325	---	300	---	---	---	---	420	510
18	---	---	---	405	---	250	520	---	500	490	---	---
19	520	490	530	---	---	280	520	485	520	---	460	460
20	510	---	---	460	---	380	510	---	560	---	460	510
21	---	---	---	---	---	---	---	500	540	490	370	---
22	540	---	---	---	---	---	500	---	---	---	420	440
23	540	470	---	---	---	---	490	---	---	---	490	---
24	560	---	---	---	---	---	---	---	530	---	500	530
25	550	---	---	---	490	---	490	---	---	470	---	---
26	540	---	---	---	---	---	480	---	---	490	---	---
27	---	540	---	---	---	480	480	520	---	---	520	---
28	---	---	580	---	---	---	---	---	---	---	515	---
29	480	---	580	---	---	---	---	320	---	380	490	---
30	---	---	---	---	---	---	460	280	460	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---

05418500 MAQUOKETA RIVER NEAR MAQUOKETA, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---		---	---	---	---	---	---	---
2	14.0	---	---	---		---	---	---	19.0	23.0	25.5	---
3	---	---	---	---		---	---	---	---	---	25.0	24.0
4	12.0	---	---	---		---	---	17.0	18.0	---	25.0	---
5	14.5	---	---	---		---	---	---	---	---	25.0	---
6	---	---	---	---		---	---	12.0	22.0	---	---	---
7	---	---	---	---		---	12.0	---	---	---	26.0	---
8	14.5	---	---	---		2.0	9.0	---	---	---	---	---
9	---	---	---	---		2.5	---	15.5	21.0	---	25.0	23.5
10	---	---	3.0	1.0		---	5.0	---	---	27.0	---	21.0
11	---	---	---	---		---	---	---	19.5	---	---	24.0
12	---	---	---	---		---	---	18.0	---	---	---	---
13	---	---	---	---		---	---	17.5	---	27.5	25.0	20.5
14	---	---	---	---		---	---	---	---	---	22.5	---
15	12.0	4.0	---	---		4.0	---	18.0	18.0	---	---	---
16	---	---	---	---		1.0	9.0	---	---	---	---	---
17	---	---	.0	.0		1.0	---	---	20.5	---	---	---
18	---	---	---	.0		2.0	16.5	---	19.5	26.5	---	---
19	15.0	---	.0	---		4.0	14.0	16.5	20.5	---	25.0	---
20	15.0	---	---	.0		5.0	18.0	---	---	---	27.0	---
21	---	---	---	---		---	---	21.0	---	26.5	22.0	---
22	10.0	---	---	---		---	21.5	---	---	---	23.5	---
23	9.0	7.0	---	---		---	17.0	---	---	---	23.0	---
24	9.0	---	---	---		---	---	---	23.0	---	23.0	16.5
25	9.0	---	---	---		---	17.0	---	---	---	---	---
26	9.0	---	---	---		---	14.0	---	---	24.0	---	---
27	---	4.5	---	---		5.0	15.5	23.0	---	---	24.5	---
28	---	---	4.0	---		---	---	---	---	---	24.0	---
29	12.0	---	1.5	---		---	---	21.0	---	26.5	25.0	---
30	---	---	---	---		---	14.0	20.5	22.0	---	---	---
31	---	---	---	---		---	---	---	---	---	---	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	95	176	71	122	46	77	40	39	92	137	57	77
2	92	161	66	105	42	62	37	35	88	121	53	70
3	90	151	61	104	39	53	33	29	84	109	64	90
4	96	152	57	88	45	66	28	24	80	95	85	124
5	121	205	54	90	53	83	24	19	75	85	90	126
6	127	209	52	85	65	112	21	16	68	75	89	111
7	123	188	51	85	73	112	14	11	62	65	84	102
8	138	214	49	81	69	86	19	15	64	66	74	94
9	143	235	48	79	60	78	59	48	57	57	54	66
10	133	202	46	77	51	70	48	40	45	44	48	57
11	122	186	45	74	45	57	43	37	44	42	44	53
12	107	165	47	73	42	46	64	57	41	39	42	52
13	91	140	64	107	36	33	63	58	37	34	41	52
14	84	127	84	127	31	25	54	52	33	30	39	52
15	83	124	107	190	53	46	47	89	28	25	710	2300
16	102	162	117	175	79	73	1150	7760	25	22	5120	69100
17	92	140	120	195	52	42	4080	72700	22	19	4620	73700
18	89	134	131	216	74	58	1260	12900	20	17	1480	14000
19	158	278	162	253	91	79	580	3130	18	16	480	2730
20	170	301	182	306	78	74	275	965	17	32	480	1940
21	170	274	177	349	87	89	125	337	16	65	359	1220
22	1040	2220	160	319	104	115	76	185	15	126	220	665
23	2110	5900	114	232	111	132	57	129	22	178	175	487
24	470	700	79	162	105	135	47	99	80	454	148	386
25	147	256	67	130	94	114	44	87	93	289	126	313
26	106	193	60	122	79	92	41	74	83	213	109	253
27	124	215	52	104	63	70	39	62	80	162	101	223
28	106	176	50	93	54	58	37	61	72	117	98	207
29	91	157	49	92	44	46	57	106	65	95	94	193
30	82	133	48	83	45	46	94	162	---	---	90	179
31	75	121	---	---	43	43	101	158	---	---	84	172
TOTAL	---	13995	---	4318	---	2272	---	99484	---	2829	---	169194

05418500 MAQUOKETA RIVER NEAR MAQUOKETA, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	79	150	64	112	980	5480	399	1270	163	222	163	315
2	74	139	78	134	570	2710	291	825	145	197	122	215
3	80	172	82	139	890	6390	250	664	150	198	100	165
4	117	257	74	123	2590	27100	216	537	140	188	170	330
5	148	362	65	105	2000	13100	189	437	100	145	145	277
6	157	417	56	88	890	4540	173	359	84	104	147	239
7	138	368	49	74	6260	67600	158	306	93	118	159	279
8	112	278	49	71	2940	23800	143	272	98	121	142	255
9	84	243	52	70	680	3470	1010	2510	98	118	101	165
10	77	201	59	84	470	2030	758	1970	221	458	92	142
11	72	196	65	91	300	1070	178	373	239	532	117	171
12	69	184	72	101	260	842	292	623	184	354	3170	11400
13	69	179	80	116	220	659	294	602	306	787	6290	122000
14	72	186	81	127	370	1290	267	500	176	373	1470	9920
15	78	217	84	144	3070	30500	243	411	160	324	615	2610
16	92	248	94	152	2800	23200	220	377	100	227	300	1050
17	102	278	100	138	720	4450	193	276	173	575	184	566
18	106	306	100	162	460	2170	158	230	300	867	130	362
19	107	292	107	168	380	1790	128	190	1140	4400	94	259
20	104	276	138	212	325	1040	124	181	947	3620	176	513
21	98	244	142	202	290	900	260	385	2000	13800	358	1400
22	102	248	153	228	225	680	434	667	985	3990	608	2950
23	88	204	140	198	212	572	302	425	393	1560	449	2070
24	69	146	127	162	172	437	240	325	238	912	314	907
25	51	104	118	163	165	397	214	286	200	578	250	729
26	55	106	111	150	160	330	152	213	193	391	365	1240
27	60	109	107	136	158	313	115	170	187	262	285	745
28	47	88	94	115	970	4450	347	807	779	1710	137	305
29	48	87	2910	17900	945	4210	300	559	332	679	120	276
30	53	91	2170	19000	610	2220	243	392	162	280	112	251
31	---	---	1360	8740	---	---	197	291	110	194	---	---
TOTAL	---	6376	---	49405	---	237740	---	17433	---	38284	---	162106

TOTAL LOAD FOR YEAR: 803436 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	TEMPER-ATURE, WATER (DEG C) (00010)	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)
OCT							
25...	1230	8.0	719	123	239	--	--
NOV							
27...	1330	4.5	830	39	87	--	--
MAR							
16...	1340	1.0	7340	3970	78700	24	28
APR							
10...	1000	5.0	1070	72	208	--	--
MAY							
19...	1400	16.5	571	93	143	--	--
JUN							
15...	1915	18.0	2270	7140	43800	30	39
24...	1200	24.0	942	161	409	--	--
AUG							
13...	1000	25.0	843	157	357	--	--
SEP							
13...	2030	19.0	8620	7880	183000	40	46
24...	1015	16.5	932	225	566	--	--

DATE	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT							
25...	--	--	--	--	--	--	80
NOV							
27...	--	--	--	--	--	--	61
MAR							
16...	31	41	87	89	95	100	87
APR							
10...	--	--	--	--	--	--	67
MAY							
19...	--	--	--	--	--	--	96
JUN							
15...	47	65	97	98	100	--	--
24...	--	--	--	--	--	--	96
AUG							
13...	--	--	--	--	--	--	94
SEP							
13...	52	64	--	--	--	--	96
24...	--	--	--	--	--	--	96

05418500 MAQUOKETA RIVER NEAR MAQUOKETA, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	NUMBER OF SAM-PLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)
OCT							
25...	1230	719	9	1	2	7	47
NOV							
27...	1330	830	9	1	1	9	43
APR							
10...	1000	1070	9	--	0	4	42
MAY							
19...	1400	571	9	1	1	9	51
JUN							
24...	1200	942	8	0	1	10	55
SEP							
24...	1130	932	9	--	0	5	42

DATE	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
OCT						
25...	70	80	86	92	98	100
NOV						
27...	69	80	86	91	97	100
APR						
10...	78	90	96	98	100	--
MAY						
19...	78	87	92	96	100	--
JUN						
24...	81	91	96	100	--	--
SEP						
24...	87	93	96	99	100	--

05420500 MISSISSIPPI RIVER AT CLINTON, IA
(National stream-quality accounting network station)

LOCATION.--Lat 41°46'53", long 90°15'04", in NW1/4 sec.34, T.81 N., R.6 E., Clinton County, Hydrologic Unit 07080101, on right bank at foot of Seventh Avenue in Camanche, 5.0 mi (8.0 km) upstream from Wapsipinicon River, 6.4 mi (10.3 km) downstream from Clinton, 10.6 mi (17.1 km) downstream from dam 13, and at mile 511.8 (823.5 km) upstream from Ohio River. Prior to June 6, 1969, at site 400 ft (122 m) downstream.

DRAINAGE AREA.--85,600 mi² (221,700 km²), approximately, at Fulton-Lyons Bridge where discharge measurements are made.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June to August 1873 (fragmentary), October 1873 to current year (October 1932 to September 1939, published as "at Le Claire").

REVISED RECORDS.--WRD IA-75-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 562.68 ft (171.505 m) NGVD. Oct. 1, 1955, to June 5, 1969, water-stage recorder at site 400 ft (121 m) downstream at same datum. Auxiliary water-stage recorder at dam 13 since Oct. 1, 1958. See WSP 1728 for history of changes prior to Oct. 1, 1955.

REMARKS.--Records good except those for winter period, which are poor. Minor flow regulation caused by navigation dams.

COOPERATION.--Two discharge measurements and discharge data at Lock and Dam No.13 furnished by Corps of Engineers.

AVERAGE DISCHARGE.--107 years, 47,160 ft³/s (1,336 m³/s), 7.48 in/yr (190 mm/yr), 34,170,000 acre-ft/yr (42,130 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 307,000 ft³/s (8,690 m³/s) Apr. 28, 1965; maximum gage height, 24.65 ft (7.513 m) Apr. 28, 1965; minimum daily discharge, 6,500 ft³/s (184 m³/s) Dec. 25-27, 1933.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since at least 1828 that of Apr. 28, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 108,000 ft³/s (3,060 m³/s) Sept. 30; maximum gage height, 14.48 ft. (4.414 m) Sept. 30, minimum daily discharge, 16,000 ft³/s (453 m³/s) Dec. 17-18, Jan. 8-10, 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26300	56500	51400	31000	23500	27000	62700	49600	32500	35000	19000	55000
2	27900	55200	48000	30000	22000	25000	59600	46500	38900	32500	17000	58000
3	29700	50400	39100	27000	21500	24000	57500	43800	45600	31000	19000	56000
4	31100	45400	34300	25000	20500	23500	57500	42400	49100	32000	21000	55000
5	31800	44000	37000	24000	20000	23000	60400	41700	52600	34000	22000	54000
6	31900	46700	38000	22000	20500	21000	61900	40700	56000	35000	22000	54000
7	29700	47500	38000	17500	20000	20000	62200	35600	61000	31000	20000	56000
8	28100	49300	37000	16000	20500	19500	66400	31300	65000	24000	20000	58000
9	27600	50600	36000	16000	20500	19500	71400	29400	67000	19000	23000	62000
10	26000	51500	31500	16000	21000	19500	74200	27700	69000	18000	30000	67000
11	24700	53000	33000	16500	21000	20000	77000	25900	72000	19000	45000	67000
12	25200	53200	32000	16500	21000	19500	77800	25600	75000	21000	55000	69000
13	25500	54000	30500	16000	21500	21000	80200	25400	79000	25500	60000	76000
14	25200	56100	27000	16500	21500	23500	84400	26100	84000	25000	62000	81000
15	22600	57000	23000	17000	21500	25500	86800	28500	92000	24000	64000	73000
16	23400	56000	21000	23000	21000	33000	95200	32500	99000	24000	65000	71000
17	23000	53800	16000	39000	21000	51000	96800	36200	103000	21500	66000	71000
18	22200	50500	16000	51000	21000	55000	102000	38900	101000	17500	56000	71000
19	22900	48500	18500	50000	20500	56000	100000	37300	83000	16500	44000	73000
20	22600	45500	22000	49000	20500	58400	98900	29800	68000	16500	38000	75000
21	23200	45500	23000	45000	21000	66400	95200	28500	58000	24500	45000	74000
22	30300	47300	25000	44000	26500	74500	84900	23900	54000	30000	54000	77000
23	37500	47800	29500	41000	34500	78300	82600	22600	49000	31000	56000	81000
24	39400	47400	38000	37000	35500	78000	76700	24400	46000	23000	46000	82000
25	38500	47100	40000	38000	32500	79200	67300	28100	43500	20000	40000	82000
26	39100	49700	39500	33500	29500	78100	63300	30900	42000	19000	36000	82000
27	42800	48900	39000	29000	28500	75300	59600	28800	40000	20000	35000	85000
28	52500	50500	38000	27000	28500	73100	55700	24600	42000	21000	38000	94000
29	57200	51100	37000	25000	28000	71800	50800	22000	42000	24000	40000	103000
30	58300	52200	35000	23500	---	69000	49300	17000	40000	22000	41000	108000
31	57000	---	33000	23500	---	65700	---	23000	---	20000	43000	---
TOTAL	1003200	1512200	1006300	885500	685000	1394300	2218300	968700	1849200	756500	1242000	2170000
MEAN	32360	50410	32460	28560	23620	44980	73940	31250	61640	24400	40060	72330
MAX	58300	57000	51400	51000	35500	79200	102000	49600	103000	35000	66000	108000
MIN	22200	44000	16000	16000	20000	19500	49300	17000	32500	16500	17000	54000
CFSM	.38	.59	.38	.33	.28	.53	.86	.37	.72	.29	.47	.85
IN.	.44	.66	.44	.38	.30	.61	.96	.42	.80	.33	.54	.94
AC-FT	1990000	2999000	1996000	1756000	1359000	2766000	4400000	1921000	3668000	1501000	2464000	4304000

CAL YR 1979 TOTAL 22495000 MEAN 61630 MAX 153000 MIN 15400 CFSM .72 IN 9.78 AC-FT 44620000
WTR YR 1980 TOTAL 15691200 MEAN 42870 MAX 108000 MIN 16000 CFSM .50 IN 6.82 AC-FT 31120000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	32669	33758	26729	25986	27127	49746	93602	74990	62145	52716	34896	34525	460330
RUNOFF (INCHES)	0.47	0.44	0.36	0.35	0.33	0.67	1.22	1.01	0.81	0.71	0.47	0.45	7.30
STD. DEVIATION	0.23	0.18	0.11	0.11	0.11	0.22	0.49	0.43	0.34	0.33	0.23	0.18	1.79
PERCENT OF ANNUAL	6.30	6.20	4.90	4.70	4.90	9.00	17.00	14.00	11.00	9.60	6.30	6.30	----
PRECIP. (INCHES)	2.18	1.85	1.59	1.44	1.02	2.12	3.09	3.28	3.90	3.45	3.53	3.26	30.70

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Samples collected near bridge on State Highway 136 in Clinton, 6.4 mi (10.3 km) upstream from discharge station.

PERIOD OF RECORD.--Water years 1974 to current year.

PERIOD OF DAILY RECORD.--Water years 1974 to current year.
SPECIFIC CONDUCTANCE: October 1974 to September 1976; October 1978 to current year.
WATER TEMPERATURES: October 1974 to current year.

REMARKS.--Temperature data were collected at Dam 13 (Sta. 05420400).

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 560 micromhos Nov. 24 to Dec. 3, 1979; minimum daily, 220 micromhos Apr. 19-20, 1976.
WATER TEMPERATURES: Maximum, 30.5°C July 15, 1977; minumum, 0.0°C on many days during winter periods each year.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 560 micromhos Nov. 24 to Dec. 3; minimum daily, 240 micromhos June 22-30.
WATER TEMPERATURES: Maximum, 30.0°C July 12-19, 22; minimum, 0.0°C on many days during winter period.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	500	480	560	470	470	450	470	400	360	340	360	300
2	500	460	560	470	470	450	470	410	360	340	360	310
3	500	460	560	470	470	440	460	410	360	340	360	310
4	500	480	540	470	470	440	470	410	340	340	340	300
5	500	480	540	470	470	440	460	400	340	340	340	300
6	480	480	540	470	470	440	460	400	320	340	340	300
7	480	480	540	470	470	440	460	400	300	360	340	300
8	480	480	520	470	470	430	460	400	300	360	340	300
9	480	480	520	470	470	430	460	400	300	360	340	300
10	460	480	520	470	460	420	460	400	300	360	340	300
11	460	480	520	470	460	420	440	390	280	360	340	300
12	440	480	520	470	460	420	440	390	280	380	340	300
13	420	480	520	460	460	420	430	400	280	380	340	300
14	400	480	520	460	460	420	430	400	280	380	340	300
15	420	480	500	470	460	420	430	390	280	380	340	300
16	420	480	500	470	460	420	430	390	280	380	340	300
17	420	480	500	470	460	420	430	390	280	380	320	300
18	440	480	500	470	450	410	420	390	280	380	340	300
19	460	500	500	470	450	410	420	380	260	370	340	300
20	460	520	500	470	450	410	420	380	260	370	320	300
21	460	540	480	470	450	400	400	360	260	370	320	300
22	460	540	480	470	450	400	400	370	240	370	310	300
23	480	540	480	470	450	400	400	360	240	370	310	300
24	480	560	480	470	450	400	400	360	240	370	310	300
25	480	560	480	460	460	400	400	360	240	370	310	300
26	480	560	480	450	460	410	400	360	240	370	310	300
27	480	560	480	460	460	400	400	360	240	370	310	300
28	460	560	480	470	460	400	400	360	240	370	310	300
29	460	560	480	470	450	400	400	360	240	360	310	300
30	460	560	480	470	---	400	400	360	240	360	310	300
31	460	---	480	470	---	400	---	360	---	360	300	---

05420500 MISSISSIPPI RIVER AT CLINTON, IA.--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	18.5	16.5	---	---	.0	1.0	.5	.5	.0	0	.0	.0
2	16.5	15.0	---	---	.0	.5	.5	.5	.0	0	.0	.0
3	16.5	15.5	---	---	.0	.0	.0	.0	.0	0	.0	.0
4	15.5	14.0	---	---	.0	.0	.0	.0	.0	0	.0	.0
5	14.0	13.5	---	---	.0	.0	.0	.0	.0	0	.0	.0
6	13.5	12.5	7.0	5.0	.0	.0	.5	.0	.0	0	.0	.0
7	13.0	12.5	6.0	5.0	.5	1.5	.5	.0	.0	0	.0	.0
8	13.5	12.5	5.5	5.0	.0	.5	.0	.0	.0	0	.0	.0
9	13.5	12.0	5.5	4.0	.0	.5	.0	.0	.0	0	.0	.0
10	12.0	11.0	4.0	3.0	.0	1.5	.5	.0	.0	0	.0	.0
11	11.5	10.5	3.0	2.0	2.5	1.5	.5	.5	.0	0	.0	.0
12	11.0	9.5	2.0	1.5	2.0	.0	.5	.0	.0	0	.0	.0
13	9.5	8.5	2.0	1.5	.0	.0	.5	.5	.0	0	.0	.0
14	9.5	9.0	2.0	1.5	.0	.5	.5	.5	.0	0	.0	.0
15	10.0	9.0	3.0	2.0	.0	.5	.5	.5	.0	0	.0	.0
16	10.5	9.5	3.5	2.5	.0	.5	.5	.0	.0	0	.0	.0
17	11.5	10.0	4.0	2.5	.0	.0	.0	.0	.0	0	.0	.0
18	11.0	10.5	5.0	3.0	.0	.0	.0	.0	.0	0	.5	.0
19	12.0	11.0	6.0	4.5	.0	.0	.0	.0	.0	0	.0	.0
20	12.5	11.5	6.0	5.0	.0	.0	.5	.0	.0	0	.0	.0
21	14.0	12.5	6.0	5.5	.0	.0	.0	.0	.0	0	.5	.0
22	14.5	13.0	6.5	6.0	.0	.0	.5	.0	.0	0	.5	.0
23	13.5	10.0	6.0	4.0	.0	.0	.5	.0	.0	0	1.0	.5
24	10.5	9.5	4.5	3.5	.0	.0	.0	.0	.5	0	1.0	.5
25	10.0	9.0	5.5	5.0	.0	.0	.5	.0	.0	0	1.5	.0
26	9.0	7.5	5.5	5.0	.0	.0	.5	.0	.0	0	1.5	.5
27	8.5	7.5	5.0	4.5	.0	.0	.0	.0	.0	0	3.5	1.5
28	9.0	8.0	4.5	2.0	.0	.0	.5	.0	.0	0	4.0	3.0
29	9.0	8.0	2.0	1.0	.0	.0	.5	.0	.0	0	4.5	3.0
30	9.0	8.0	.0	1.0	.5	.5	.0	.0	---	---	4.0	3.5
31	10.0	9.0	---	---	.5	.5	.0	.0	---	---	5.5	3.0
MONTH	18.5	7.5	7.0	1.0	2.5	.0	.5	.0	.5	.0	5.5	.0

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	5.5	4.0	15.5	13.5	23.0	22.0	25.0	24.0	27.0	25.5	23.5	22.5
2	6.5	5.0	16.5	14.5	22.5	22.0	25.0	24.0	26.5	25.5	23.5	22.0
3	7.0	5.5	17.5	15.5	23.0	21.0	25.0	23.5	26.5	24.5	23.5	22.0
4	7.5	5.5	18.5	16.5	23.0	21.5	26.5	24.5	26.0	25.0	23.0	21.5
5	9.0	6.0	19.0	17.0	22.5	20.5	26.5	25.5	26.0	24.5	22.5	21.0
6	8.5	7.5	19.0	18.0	23.0	22.0	26.5	25.0	26.5	25.0	23.0	22.0
7	10.5	8.5	18.0	15.5	23.5	22.5	27.0	25.0	26.5	25.5	23.0	21.5
8	10.5	9.5	16.5	15.5	22.5	20.5	27.0	26.5	28.0	26.0	24.0	22.0
9	9.0	6.5	17.0	15.5	21.0	20.0	27.0	25.5	27.0	26.0	24.5	22.0
10	6.5	6.0	17.0	16.0	22.0	21.0	29.0	25.5	26.5	25.0	22.5	21.0
11	6.5	5.5	15.5	16.5	22.5	20.0	28.0	26.5	26.0	24.5	22.0	21.0
12	7.5	5.0	16.5	16.0	22.0	20.5	28.5	27.5	25.5	23.5	21.5	21.0
13	8.0	6.0	16.5	15.5	22.0	20.0	29.0	27.5	25.0	23.0	21.5	20.5
14	6.0	3.5	17.0	15.0	23.0	20.5	28.5	28.0	24.5	23.5	21.0	19.5
15	7.0	4.0	17.0	16.0	22.5	21.0	29.0	27.5	24.0	23.0	20.0	19.0
16	7.5	5.5	17.0	15.0	21.5	19.0	29.0	28.0	23.0	20.5	20.0	18.0
17	8.0	6.5	15.0	14.5	22.0	19.5	28.5	27.0	21.0	20.0	18.5	16.5
18	10.0	7.5	15.0	14.5	23.0	20.5	28.5	27.5	22.5	20.5	18.5	16.5
19	11.5	8.0	16.0	14.5	22.5	21.0	28.5	27.0	23.5	21.5	18.5	17.0
20	13.0	10.5	18.0	16.0	23.0	20.5	28.5	27.5	24.5	22.5	19.5	18.0
21	14.5	10.0	18.5	16.5	23.5	21.5	28.0	27.5	24.5	23.5	19.5	18.5
22	16.5	13.5	19.5	18.0	23.5	22.0	27.5	26.5	25.0	23.0	19.5	18.5
23	16.0	14.5	19.5	19.0	24.5	22.5	27.5	26.5	25.0	23.5	18.5	17.0
24	15.5	13.0	20.0	18.5	24.0	23.0	27.0	26.5	24.5	23.0	18.0	17.0
25	15.5	13.5	21.5	19.5	25.0	23.0	26.5	25.5	24.5	23.0	17.5	16.0
26	15.0	13.5	21.5	20.0	26.0	24.5	26.0	25.0	25.0	23.5	17.0	15.0
27	15.5	14.0	22.0	20.5	26.5	25.5	25.0	23.5	25.0	24.0	16.5	15.0
28	15.0	13.5	24.0	21.5	27.0	25.5	25.5	24.5	25.5	24.0	15.5	15.0
29	14.0	13.0	24.0	23.0	26.5	25.0	26.5	25.0	25.5	24.5	17.0	15.0
30	14.0	13.5	23.0	22.5	25.0	23.5	26.0	25.0	25.5	24.0	17.5	15.5
31	---	---	23.5	22.0	---	---	26.5	25.5	24.0	23.0	---	---
MONTH	16.5	3.5	24.0	13.5	27.0	19.0	29.0	23.5	28.0	20.0	24.5	15.0
YEAR	20.0	.0										

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS (MG/L AS CACO3) (00900)
OCT											
02...	1430	25300	495	8.5	16.5	47	7.8	80	K85	150	240
31...	1130	50600	405	8.8	9.0	33	10.7	94	K76	K36	180
NOV											
26...	1500	49000	425	8.5	5.8	12	12.6	99	110	K87	230
JAN											
04...	0930	37400	470	8.4	.5	3.6	15.3	107	K52	K48	230
24...	0930	55880	450	7.8	.0	12	12.8	89	1200	>20000	200
APR											
16...	1430	102600	300	8.2	8.0	30	12.1	103	K300	K170	130
MAY											
13...	1100	27890	305	9.0	16.0	17	8.1	84	K70	K20	140
JUN											
10...	1300	68020	290	7.7	22.0	64	4.7	55	K1830	--	140
JUL											
07...	1230	38800	360	8.1	29.0	31	5.5	72	K30	K70	170
AUG											
07...	1200	36500	365	8.4	26.0	15	6.8	85	67	K53	180
SEP											
04...	1500	52200	335	8.0	23.0	32	7.3	86	130	220	150

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM+ POTAS-SIUM DIS-SOLVED (MG/L AS NA) (00933)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY (MG/L AS CACO3) (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
OCT											
02...	56	58	22	8.3	7	.2	11	2.9	180	55	12
31...	24	44	18	8.7	9	.3	11	2.6	160	36	14
NOV											
26...	66	56	21	11	9	.3	14	2.8	160	37	15
JAN											
04...	60	56	22	9.1	12	.3	12	2.4	170	50	17
24...	51	49	19	9.8	9	.3	14	4.5	150	41	15
APR											
16...	31	32	12	7.1	10	.3	--	4.6	98	29	11
MAY											
13...	29	31	15	6.7	9	.2	--	3.1	110	27	16
JUN											
10...	40	33	14	6.4	9	.2	--	2.9	100	24	9.8
JUL											
07...	28	41	16	7.9	9	.3	--	2.9	140	34	13
AUG											
07...	47	41	18	7.8	9	.3	--	2.7	130	36	13
SEP											
04...	25	35	14	7.1	9	.3	--	2.5	120	21	11

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)
OCT											
02...	.2	7.5	288	284	.39	19700	2.3	.11	.13	1.4	1.5
31...	.1	2.7	247	225	.34	33700	.58	.11	.13	2.0	2.1
NOV											
26...	.2	9.7	261	259	.36	34500	2.2	.09	.11	1.2	1.3
JAN											
04...	.2	11	279	282	.38	28200	2.4	.02	.02	1.7	1.7
24...	.2	10	274	250	.37	41300	2.5	.33	.40	.87	1.2
APR											
16...	.2	9.1	194	170	.26	53700	1.2	.27	.33	1.5	1.8
MAY											
13...	.2	.1	168	166	.23	12700	.07	.20	.24	1.3	1.5
JUN											
10...	.0	6.0	172	161	.23	31600	1.1	.25	.30	1.5	1.7
JUL											
07...	.4	9.1	213	213	.29	22300	1.0	.09	.11	1.2	1.3
AUG											
07...	.3	7.3	229	205	.31	22600	.16	.03	.04	1.3	1.3
SEP											
04...	.2	9.8	209	175	.28	29500	.69	.02	.02	1.3	1.3

K Results based on colony count outside the acceptable range (non-ideal colony count).

05420500 MISSISSIPPI RIVER AT CLINTON IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	NITROGEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	PHOSPHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS, TOTAL (MG/L AS PO4) (71886)	PHORUS, DISSOLVED (MG/L AS P) (00666)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED (MG/L AS C) (00689)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)
OCT											
02...	.54	.96	3.8	17	.330	1.0	.100	--	13	.6	0
31...	1.4	.74	2.7	12	.260	.80	.030	26	--	--	--
NOV											
26...	.69	.71	3.5	16	.130	.40	.050	14	--	--	0
JAN											
04...	.50	1.2	4.1	18	.020	.06	.040	--	6.7	.7	0
24...	.20	1.0	3.7	16	.230	.71	.120	16	--	--	--
APR											
16...	.60	1.2	3.0	13	.240	.74	.100	--	9.6	2.3	3
MAY											
13...	.84	.66	1.6	7.0	.160	.49	.040	12	--	--	--
JUN											
10...	.70	1.0	2.8	12	.240	.74	.060	--	--	--	1
JUL											
07...	.20	1.1	2.3	10	.220	.67	.080	--	14	1.1	0
AUG											
07...	.51	.79	1.5	6.5	.230	.71	.110	9.7	--	--	--
SEP											
04	.20	1.1	2.0	8.8	.270	.83	.160	11			0

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	PHYTOPLANKTON, TOTAL (CELLS PER ML) (60050)	PERIPHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)	PERIPHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	CHLOR-A PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2) (70958)	BIOMASS CHLOROPHYLL RATIO PERIPHYTON (UNITS) (70950)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT										
02...	1430	8000	--	--	--	--	--	--	--	--
31...	1130	--	--	--	--	--	--	165	22500	100
NOV										
26...	1500	--	--	--	--	--	--	27	3570	100
JAN										
04...	0930	--	--	--	--	--	--	6	606	--
24...	0930	--	--	--	--	--	--	19	2870	--
APR										
16...	1430	13000	--	--	--	--	--	134	37100	68
MAY										
13...	1100	45000	--	--	--	--	--	52	3920	99
JUN										
10...	1300	10000	1.18	.709	4.62	2.18	102	142	26100	99
JUL										
07...	1230	37000	.394	.236	.730	.250	216	55	5760	100
AUG										
07...	1200	36000	4.65	2.52	12.2	6.94	175	--	--	--
SEP										
04...	1500	40000	--	--	--	--	--	47	5620	99

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA) (01006)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD) (01026)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR) (01031)
OCT											
02...	1430	3	2	100	0	100	0	0	<1	0	0
JAN											
04...	0930	2	1	200	200	50	1	0	1	0	0
APR											
16...	1430	3	2	200	100	100	0	--	<1	0	0
JUL											
07...	1230	3	2	100	40	60	1	--	<1	0	0

DATE	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO) (01036)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU) (01041)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE) (01044)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
OCT										
02...	0	1	0	<3	8	3	5	3300	--	<10
JAN										
04...	0	1	0	<3	11	10	1	370	310	60
APR										
16...	0	0	--	<3	6	0	7	3000	2900	130
JUL										
07...	0	0	--	<3	34	27	7	1300	--	<10

DATE	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB) (01050)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN) (01054)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG) (71895)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)
OCT										
02...	11	11	0	350	330	20	.1	.1	.0	6
JAN										
04...	11	8	3	50	20	30	.1	.0	.1	4
APR										
16...	7	7	0	200	170	30	.0	.0	.0	7
JUL										
07...	18	18	0	180	170	8	.2	.2	.0	10

DATE	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE) (01146)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG) (01076)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
OCT										
02...	6	0	1	0	1	0	0	20	10	9
JAN										
04...	1	3	1	0	1	0	0	--	--	6
APR										
16...	0	7	0	0	0	3	0	60	50	10
JUL										
07...	4	6	1	0	1	0	0	60	60	4

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, JUNE 1979 TO SEPTEMBER 1980

DATE	JUN 28,79	AUG 2,79	SEP 6,79	OCT 2,79	APR 16,80
TIME	1530	1400	1130	1430	1430
TOTAL CELLS/ML	9000	11000	9200	8000	13000
DIVERSITY: DIVISION	1.4	1.2	1.3	1.6	0.6
.CLASS	1.4	1.2	1.3	1.6	0.6
..ORDER	1.8	1.3	1.6	1.6	1.0
...FAMILY	2.0	1.7	1.9	2.0	1.1
....GENUS	2.3	2.4	2.4	2.5	1.9

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...COELASTRACEAE										
....COELASTRUM	--	-	170	2	300	3	--	-	--	-
...HYDRODICTYACEAE										
....PEDIASTRUM	--	-	--	-	200	2	1000	13	--	-
...MICRACTINIACEAE										
....GOLENKINIA	--	-	*	0	*	0	--	-	--	-
....MICRACTINIUM	--	-	85	1	--	-	--	-	300	2
...OOCYSTACEAE										
....ANKISTRODESMUS	260	3	85	1	--	-	--	-	900	7
....CHLORELLA	--	-	--	-	320	3	--	-	--	-
....CHODATELLA	--	-	110	1	--	-	--	-	--	-
....DICHOTOMOCOCCUS	--	-	530	5	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	190	2	100	1	--	-	--	-
....GLOEOACTINIUM	--	-	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	260	2	--	-	--	-	--	-
....OOCYSTIS	--	-	*	0	*	0	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	*	0	--	-	--	-
....TREUBARIA	--	-	*	0	--	-	--	-	--	-
....WESTELLA	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....CRUCIGENIA	--	-	85	1	--	-	--	-	--	-
....SCENEDESMUS	430	5	720	7	150	2	510	6	--	-
....TETRASTRUM	160	2	150	1	51	1	510	6	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	*	0	--	-	*	0	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	470	4	520	6	1000	13	7900°	60
....MELOSIRA	2300°	26	300	3	220	2	2400°	30	200	2
....STEPHANODISCUS	--	-	--	-	--	-	--	-	2600°	20
....THALASSIOSIRA	390	4	--	-	--	-	--	-	--	-
..PENNALES										
...FRAGILARIACEAE										
....ASTERIONELLA	230	3	--	-	--	-	--	-	400	3
....FRAGILARIA	--	-	*	0	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	51	1	--	-	300	2
...GOMPHONEMATACEAE										
....GOMPHONEMA	*	0	--	-	*	0	--	-	--	-
...NAVICULACEAE										
....NAVICULA	*	0	--	-	*	0	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	170	2	--	-	*	0	64	1	200	2
...SURIRELLACEAE										
....SURIRELLA	--	-	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	--	-	*	0	--	-	200	2
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	720	7	610	7	--	-	--	-
....ANACYSTIS	4500°	50	6500°	61	5200°	56	--	-	--	-
....COCCOCHLORIS	--	-	--	-	--	-	--	-	--	-
....GOMPHOSPHAERIA	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE										
....OSCILLATORIA	290	3	--	-	--	-	2300°	29	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	--	-	*	0	--	-	100	1
....EUTREPTIA	--	-	--	-	*	0	--	-	--	-
....TRACHELOMONAS	--	-	170	2	--	-	--	-	--	-

NOTE: ° - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, JUNE 1979 TO SEPTEMBER 1980

DATE	MAY 13,80	JUN 10,80	JUL 7,80	AUG 7,80	SEP 4,80
TIME	1100	1300	1230	1200	1500
TOTAL CELLS/ML	45000	10000	37000	36000	40000
DIVERSITY: DIVISION	1.6	1.5	0.8	0.9	1.3
.CLASS	1.6	1.5	0.8	0.9	1.3
..ORDER	1.9	2.1	1.0	1.3	2.1
...FAMILY	2.6	2.7	1.2	1.3	2.2
....GENUS	2.7	3.5	1.3	1.5	2.6

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...CHARACIACEAE										
....SCHROEDERIA	--	-	--	-	--	-	--	-	--	-
...CHLOROCOCCACEAE										
....CHLOROCOCCUM	--	-	--	-	--	-	--	-	--	-
...COELASTRACEAE										
....COELASTRUM	--	-	--	-	270	1	--	-	--	-
...HYDRODICTYACEAE										
....PEDIASTRUM	--	-	--	-	300	1	--	-	--	-
...MICRACTINIACEAE										
....GOLENKINIA	800	2	--	-	*	0	--	-	--	-
....MICRACTINIUM	8600°	19	410	4	--	-	--	-	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	800	2	150	1	*	0	--	-	--	-
....CHLORELLA	--	-	--	-	*	0	--	-	--	-
....CHODATELLA	--	-	--	-	--	-	*	0	--	-
....DICHOTOMOCOCCUS	--	-	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	440	1	--	-	1100	3
....GLOEOACTINIUM	--	-	--	-	--	-	--	-	1400	4
....KIRCHNERIELLA	--	-	--	-	--	-	*	0	3700	9
....OOCYSTIS	800	2	460	4	*	0	290	1	--	-
....SELENASTRUM	--	-	--	-	*	0	--	-	--	-
....TETRAEDRON	--	-	--	-	*	0	--	-	--	-
....TREUBARIA	--	-	--	-	--	-	--	-	--	-
....WESTELLA	--	-	--	-	*	0	--	-	--	-
...SCENEDESMACEAE										
....CRUCIGENIA	--	-	--	-	--	-	--	-	--	-
....SCENEDESMUS	540	1	1200	12	870	2	1300	3	880	2
....TETRASTRUM	540	1	200	2	400	1	230	1	--	-
..TETRASPORALES										
...PALMELLACEAE										
.... SPHAEROCYSTIS	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	100	1	*	0	*	0	350	1
...VOLVOCACEAE										
....VOLVOX	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	12000°	27	1600°	15	1400	4	750	2	3500	9
....MELOSIRA	*	0	2400°	24	2000	5	4100	11	3400	9
....STEPHANODISCUS	--	-	760	7	--	-	--	-	--	-
....THALASSIOSIRA	--	-	--	-	--	-	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....COCCONEIS	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
....ASTERIONELLA	2300	5	--	-	--	-	--	-	--	-
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	150	1	--	-	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE										
....NAVICULA	*	0	*	0	--	-	*	0	*	0
...NITZSCHIACEAE										
....NITZSCHIA	270	1	410	4	*	0	--	-	*	0
...SURIRELLACEAE										
....SURIRELLA	--	-	150	1	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	*	0	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	--	-	--	-	--	-	710	2
....ANACYSTIS	--	-	510	5	1100	3	26000°	71	13000°	33
....COCCOCHLORIS	400	1	--	-	--	-	--	-	--	-
....GOMPHOSPHAERIA	--	-	--	-	--	-	230	1	--	-
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	6400	14	810	8	--	-	--	-	--	-
...OSCILLATORIACEAE										
....OSCILLATORIA	11000°	24	610	6	30000°	80	3200	9	11000°	28
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	100	1	--	-	--	-	*	0
....EUTREPTIA	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	*	0	--	-	--	-	--	-	*	0

NOTE: ° - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

05420560 WAPSIPINICON RIVER NEAR ELMA, IA

LOCATION.--Lat 43°14'34", long 92°31'48", in NW1/4 NW1/4 sec.8, T.97 N., R.14 W., Howard County, Hydrologic Unit 07080102, on right bank 10 ft (3 m) downstream from bridge on county highway B17, 0.2 mi (0.3 km) downstream from small left-bank tributary, 4.8 mi (7.7 km) west of Elma, and at mile 217.9 (350.6 km).

DRAINAGE AREA.--95.2 mi² (247 km²).

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,130.05 ft (344.439 m) NGVD.

REMARKS.--Records good except those for periods of no gage-height record, Aug. 27 to Sept. 7, Sept. 12,13, 20-23, backwater from beaver dam, Oct. 1 to Nov. 26, which are fair, and backwater from beaver dam, Nov. 27 to Feb. 23 and winter period, which are poor.

AVERAGE DISCHARGE.--22 years, 60.7 ft³/s (1.719 m³/s), 8.66 in/yr (220 mm/yr), 43,980 acre-ft/yr (54.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,100 ft³/s (286 m³/s) June 4, 1974, gage height, 14.94 ft (4.554 m), from high-water mark in well; maximum gage height, 15.38 ft (4.688 m), from high-water mark in well, probably occurred Aug. 22, 1979 (backwater from vegetation); minimum daily discharge, 1.9 ft³/s (0.054 m³/s Feb. 4-8, 1959.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (17.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 17	----	1,200	35.1	ice jam	---
May 31	0700	5,420	153	*14.90	4.542
June 28	0130	1,470	41.6	13.22	4.029
Aug. 10	0900	2,370	67.1	13.73	4.185
Aug. 13	1500	1,150	32.6	12.67	3.862
Aug. 17	0200	1,140	32.3	12.42	3.786
Sep. 22	Unknown	*6,180	175	14.62	4.456

Minimum daily discharge, 8.0 ft³/s (0.23 m³/s) Feb. 17, 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	110	62	19	12	24	31	28	864	56	17	170
2	22	96	56	18	13	22	29	27	221	46	65	120
3	18	82	52	18	13	19	38	25	180	38	32	90
4	16	75	47	16	12	18	81	24	156	32	20	120
5	15	86	45	16	11	17	106	22	214	29	22	250
6	15	273	44	15	11	15	125	21	360	25	19	140
7	15	233	43	11	11	15	123	20	316	22	18	108
8	14	151	44	14	9.6	15	98	19	209	20	68	66
9	14	121	39	17	12	24	86	19	165	140	99	55
10	15	103	37	17	13	52	71	18	116	68	1540	46
11	18	91	40	17	12	50	66	18	92	35	282	40
12	23	87	38	18	11	47	68	19	76	27	139	80
13	26	82	34	17	10	43	77	19	66	22	662	50
14	28	80	29	16	10	38	73	19	61	20	426	39
15	34	82	28	17	10	130	63	19	59	19	140	36
16	33	98	26	80	9.6	520	57	19	56	19	300	35
17	33	108	23	210	8.0	930	55	19	51	19	916	32
18	33	109	24	140	8.0	300	53	19	46	19	287	29
19	36	100	24	64	9.6	260	53	19	44	18	275	28
20	36	90	24	47	10	256	53	17	43	191	191	49
21	37	103	24	37	22	123	53	16	41	88	168	759
22	135	261	24	32	64	79	53	15	39	37	112	3320
23	417	261	29	26	94	48	50	14	38	25	90	453
24	267	177	33	22	80	32	45	14	37	20	75	196
25	172	134	27	19	58	42	42	14	36	18	65	148
26	126	116	24	20	44	34	38	13	35	18	55	122
27	105	100	22	16	42	27	33	13	101	18	99	108
28	93	88	21	15	36	26	31	13	777	18	400	99
29	83	72	20	15	28	33	30	16	179	18	200	93
30	77	68	20	15	---	43	29	401	83	17	130	87
31	79	---	19	13	---	37	---	3290	---	17	350	---
TOTAL	2058	3637	1022	1017	683.8	3319	1810	4229	4761	1159	7262	6968
MEAN	66.4	121	33.0	32.8	23.6	107	60.3	136	159	37.4	234	232
MAX	417	273	62	210	94	930	125	3290	864	191	1540	3320
MIN	14	68	19	11	8.0	15	29	13	35	17	17	28
CFSM	.70	1.27	.35	.35	.25	1.12	.63	1.43	1.67	.39	2.46	2.44
IN.	.80	1.42	.40	.40	.27	1.30	.71	1.65	1.86	.45	2.84	2.72
AC-FT	4080	7210	2030	2020	1360	6580	3590	8390	9440	2300	14400	13820

CAL YR 1979 TOTAL 39973.1 MEAN 110 MAX 5180 MIN 5.4 CFSM 1.16 IN 15.62 AC-FT 79290
WTR YR 1980 TOTAL 37925.8 MEAN 104 MAX 3320 MIN 8.0 CFSM 1.09 IN 14.82 AC-FT 75230

05421000 WAPSIPINICON RIVER AT INDEPENDENCE, IA

LOCATION.--Lat 42°27'49", long 91°53'42", in SE1/4 sec.4, T.88 N., R.9 W., Buchanan County, Hydrologic Unit 07080102, on right bank at Sixth Street in Independence, 1,800 ft (549 m) downstream from dam at abandoned hydroelectric plant, 4.9 mi (7.9 km) downstream from Otter Creek, 9.7 mi (15.6 km) upstream from Pine Creek, and at mile 142.5 (229.3 km).

DRAINAGE AREA.--1,048 mi² (2,714 km²).

PERIOD OF RECORD.--July 1933 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1938-39, 1940 (M), 1947.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 882.85 ft (269.093 m) NGVD. Prior to May 24, 1941, nonrecording gage in tailrace of powerplant 1,800 ft (549 m) upstream at datum 80.00 ft (24.38 m) lower.

REMARKS.--Records excellent. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--47 years, 588 ft³/s (16.65 m³/s), 7.62 in/yr (194 mm/yr), 426,000 acre-ft/yr (525 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,800 ft³/s (759 m³/s) July 18, 1968, gage height, 21.11 ft (6.434 m); minimum daily, 7.0 ft³/s (0.20 m³/s) for several days in 1934 and 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1901, that of July 18, 1968.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,380 ft³/s (209 m³/s) Aug. 16, gage height, 10.76 ft (3.280 m) at 1615 hours, no other peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 98 ft³/s (2.78 m³/s) May 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	312	920	713	330	223	479	574	414	1740	1880	240	930
2	297	900	505	315	207	398	581	391	2080	1850	234	1040
3	303	850	471	290	194	340	664	368	3000	1730	227	1140
4	291	800	570	277	179	305	1160	345	2050	1600	214	1250
5	286	790	680	270	174	275	1470	323	1790	1140	227	1190
6	284	780	662	200	168	256	1510	309	1840	850	197	1100
7	273	771	580	160	168	231	1570	287	2860	762	254	1060
8	271	790	485	165	165	218	1590	273	2030	654	316	980
9	261	850	470	160	161	211	1520	260	1620	1060	323	890
10	249	900	460	170	155	215	1460	260	1430	1130	690	771
11	257	920	430	200	154	229	1400	254	1310	980	1730	690
12	255	900	378	190	149	258	1330	260	1150	860	2350	627
13	238	810	300	185	146	280	1280	280	960	780	3330	583
14	146	762	313	201	144	284	1240	294	950	699	5090	531
15	143	735	335	212	144	454	1160	309	1470	591	6860	514
16	222	708	300	382	139	1790	1070	302	1760	523	7210	497
17	225	708	270	1270	135	1750	990	309	1480	480	7080	472
18	218	699	250	1240	135	1560	920	316	1190	447	6200	455
19	254	699	275	1160	131	1500	870	309	1050	422	5210	422
20	268	690	310	990	135	1430	820	294	950	399	4180	627
21	260	717	314	910	167	1420	762	287	850	368	3590	1010
22	399	744	320	920	650	1620	726	260	753	375	3460	1140
23	1090	830	364	895	990	1760	681	240	672	338	3390	1090
24	1330	940	385	840	835	1640	627	227	609	391	3650	1170
25	1360	1010	400	780	731	946	583	214	557	407	3600	1280
26	1290	1060	398	583	620	695	548	208	506	438	2860	1360
27	1240	1070	405	472	580	591	514	141	472	375	2130	1500
28	1210	1030	370	379	530	531	480	98	1490	330	1460	1730
29	1160	930	340	321	500	519	455	717	1700	302	1090	1850
30	1030	839	360	276	---	543	430	1400	1720	273	930	1480
31	950	---	340	248	---	575	---	1570	---	260	870	---
TOTAL	16372	25152	12753	14991	8809	23303	28985	11519	42039	22694	79192	29379
MEAN	528	838	411	484	304	752	966	372	1401	732	2555	979
MAX	1360	1070	713	1270	990	1790	1590	1570	3000	1880	7210	1850
MIN	143	690	250	160	131	211	430	98	472	260	197	422
CFSM	.50	.80	.39	.46	.29	.72	.92	.36	1.34	.70	2.44	.93
IN.	.58	.89	.45	.53	.31	.83	1.03	.41	1.49	.81	2.81	1.04
AC-FT	32470	49890	25300	29730	17470	46220	57490	22850	83380	45010	157100	58270

CAL YR 1979 TOTAL 531803 MEAN 1457 MAX 14700 MIN 107 CFSM 1.39 IN 18.88 AC-FT 1055000
WTR YR 1980 TOTAL 315188 MEAN 861 MAX 7210 MIN 98 CFSM .82 IN 11.19 AC-FT 625200

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	300.0	310.0	190.9	209.1	291.9	1336.3	1249.3	745.4	901.7	754.5	345.5	272.4	579.00
RUNOFF (INCHES)	0.35	0.33	0.21	0.23	0.29	1.47	1.33	0.82	0.96	0.83	0.39	0.29	7.50
STD. DEVIATION	0.40	0.38	0.18	0.30	0.26	0.93	1.14	0.55	0.95	1.08	0.41	0.31	3.72
PERCENT OF ANNUAL	4.60	4.50	2.80	3.00	4.10	19.00	18.00	11.00	13.00	11.00	5.10	4.00	----
PRECIP. (INCHES)	2.16	1.51	1.15	0.93	0.84	2.08	2.83	3.94	5.18	3.69	3.47	3.83	31.60

05422000 WAPSIPINICON RIVER NEAR DE WITT, IA

LOCATION.--Lat 41°46'01", long 90°32'05", in SW1/4 NE1/4 sec.6, T.80 N., R.4 E., Clinton County, Hydrologic Unit 07080103, on left bank 5 ft (2 m) upstream from bridge on U.S. Highway 61, 0.9 mi (1.4 km) downstream from Silver Creek, 4.0 mi (6.4 km) south of water tower in De Witt, 6.2 mi (10.0 km) upstream from Brophy Creek, and 18.2 mi (29.3 km) upstream from mouth.

DRAINAGE AREA.--2,330 mi² (6,034 km²).

PERIOD OF RECORD.--June 1934 to current year.

REVISED RECORDS.--WSP 1308: 1937 (M). WSP 1438: Drainage area. WSP 1708: 1951.

GAGE.--Water-stage recorder. Datum of gage is 598.81 ft (182.517 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--46 years, 1,472 ft³/s (41.69 m³/s), 8.58 in/yr (218 mm/yr), 1,066,000 acre-ft/yr (1,314 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,900 ft³/s (847 m³/s) May 17, 1974, gage height, 13.07 ft (3.984 m); minimum daily, 46 ft³/s (1.30 m³/s) Jan. 22, 23, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft³/s (170 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Aug. 22	2300	*8,480	240	*11.17	3.405	Sept. 15	0930	7,470	212	10.99	3.350

Minimum daily discharge, 410 ft³/s (11.6 m³/s) Dec. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	680	1450	1390	914	1150	1350	1330	1240	3260	2310	579	2720
2	670	1400	1240	890	1100	1200	1320	1130	3340	2350	554	2400
3	656	1300	970	880	1050	1100	1460	1090	4820	2230	538	2070
4	630	1230	880	830	1000	1050	1690	1010	4070	2260	525	2000
5	613	1190	950	720	950	980	1650	976	4420	2300	636	2380
6	596	1160	1050	595	920	950	1700	928	4950	2180	560	2370
7	579	1120	1050	510	860	910	1960	888	4570	2020	502	2230
8	568	1100	1050	680	820	900	2200	832	3480	1750	471	2070
9	553	1080	1000	840	780	930	2290	822	3320	1710	478	1920
10	538	1050	950	1100	740	1050	2310	822	3490	1950	676	1810
11	525	1040	910	1150	700	1100	2420	795	3370	1500	816	1690
12	518	1040	840	1100	680	1050	2440	768	2730	1580	816	1640
13	505	1080	750	1050	660	900	2510	751	2400	1630	768	3160
14	490	1110	650	1000	630	860	2430	716	3040	1450	1500	6370
15	487	1120	600	1000	610	1300	2380	726	2860	1310	1940	6820
16	497	1100	480	1100	580	2000	2590	696	2600	1210	2430	3210
17	495	1050	410	2200	570	2300	2580	757	2600	1130	4190	2440
18	472	1020	460	2100	560	2500	2420	922	3000	1050	5020	2070
19	701	1000	490	1900	560	2810	2280	932	2980	969	5400	1800
20	688	984	560	1700	600	3550	2140	868	2600	900	5880	1630
21	582	1190	680	1600	1050	3060	1990	837	2260	854	6960	1520
22	574	1320	820	1500	2700	2740	1870	797	1990	806	7840	1460
23	731	1240	1200	1400	3300	2320	1740	775	1820	754	8240	1460
24	731	1190	1370	1200	2600	2200	1670	739	1650	708	8160	1660
25	681	1180	1510	1050	2300	2240	1550	711	1510	665	7350	1770
26	838	1220	1290	1300	2100	2320	1460	680	1390	653	5680	1800
27	1170	1310	1150	1400	1900	2280	1410	645	1280	636	4880	1760
28	1430	1350	1070	1350	1700	1860	1330	609	1600	615	4650	1790
29	1480	1390	1000	1300	1500	1580	1270	746	1670	631	4560	1830
30	1480	1410	951	1250	---	1470	1220	1290	1580	651	3880	1900
31	1470	---	943	1200	---	1400	---	2500	---	616	3180	---
TOTAL	22628	35424	28664	36809	34670	52260	57610	27998	84650	41378	99659	69750
MEAN	730	1181	925	1187	1196	1686	1920	903	2822	1335	3215	2325
MAX	1480	1450	1510	2200	3300	3550	2590	2500	4950	2350	8240	6820
MIN	472	984	410	510	560	860	1220	609	1280	615	471	1460
CFSM	.31	.51	.40	.51	.51	.72	.82	.39	1.21	.57	1.38	1.00
IN.	.36	.57	.46	.59	.55	.83	.92	.45	1.35	.66	1.59	1.11
AC-FT	44880	70260	56860	73010	68770	103700	114300	55530	167900	82070	197700	138300

CAL YR 1979	TOTAL	952718	MEAN	2610	MAX	19900	MIN 355	CFSM 1.12	IN 15.21	AC-FT	1890000	
WTR YR 1980	TOTAL	591500	MEAN	1616	MAX	8240	MIN 410	CFSM .69	IN 9.44	AC-FT	1173000	

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	949.9	981.5	606.3	848.8	1051.6	2647.5	2882.0	1940.2	2234.6	1637.0	889.2	814.5	1443.60
RUNOFF (INCHES)	0.39	0.47	0.30	0.42	0.47	1.31	1.38	0.96	1.07	0.81	0.44	0.39	8.41
STD. DEVIATION	0.38	0.59	0.22	0.44	0.29	0.76	1.01	0.65	0.93	0.84	0.37	0.36	3.93
PERCENT OF ANNUAL	4.60	5.60	3.50	4.90	6.00	15.00	17.00	11.00	13.00	9.40	5.10	4.70	----
PRECIP. (INCHES)	2.32	1.97	1.69	1.53	1.09	2.26	3.29	3.49	4.16	3.67	3.76	3.47	32.70

05422000 WAPSIPINICON RIVER NEAR DEWITT, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

WATER QUALITY DATA, OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	TEMPERATURE, WATER (DEG C) (00010)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
JUL										
02...	1200	26.0	2400	423	2740	38	49	61	74	95
AUG										
25...	1150	24.5	7350	196	3890	--	--	--	--	37

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	NUMBER OF SAMPLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)
JUL										
02...	1430	2320	8	0	6	40	84	95	98	100
AUG										
25...	1330	7350	7	0	3	49	89	96	99	100

05422420 CROW CREEK AT ELDRIDGE, IA

LOCATION. Lat 41°38'24", long 90°33'07", in SE1/4 SE1/4 sec. 13, T.79 N., R.3 E., Scott County, Hydrologic Unit 07080101, on left bank 10 ft (3 m) upstream from culvert on county highway 1.0 mi (1.6 km) south and 1.2 mi (1.9 km) east of Eldridge.

DRAINAGE AREA.--2.20 mi² (5.70 km²).

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 741.22 ft (225.924 m) NGVD.

REMARKS.--Records fair except those for winter period, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 531 ft³/s (15.0 m³/s) Aug. 20, 1979, gage height, 12.63 ft (3.850 m); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 56 ft³/s (1.59 m³/s) June 28, gage height, 8.29 ft (2.527 m), no peak above base of 100 ft³/s (2.83 m³/s); minimum daily, 0.03 ft³/s (0.001 m³/s) Nov. 20, July 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.06	.30	.64	2.0	.33	.40	2.6	1.2	2.2	1.9	.10	3.9
2	.13	.23	.56	1.6	.30	.42	2.3	1.1	4.6	.97	.34	1.8
3	.31	.23	.55	1.4	.28	.43	3.7	1.1	7.0	1.3	.13	1.1
4	.10	.23	.67	1.1	.27	.47	3.6	1.1	4.7	1.4	.82	3.4
5	.10	.23	.80	.92	.26	.48	3.1	1.1	3.8	1.2	.60	2.2
6	.10	.23	.64	.82	.26	.48	2.7	1.2	3.4	.97	.18	1.4
7	.10	.23	.45	.72	.25	.46	2.2	1.1	3.4	.87	.18	1.2
8	.09	.23	.30	.68	.25	.54	1.9	1.2	3.2	.74	.10	1.1
9	.09	.23	.34	.68	.25	1.4	1.8	1.1	2.8	8.0	.37	.80
10	.09	.23	.36	.70	.24	2.0	1.7	.99	2.3	3.2	11	.55
11	.09	.18	.33	.68	.24	1.2	2.2	.90	2.0	1.9	6.8	.55
12	.20	.18	.30	.64	.24	.80	4.1	.80	1.9	1.3	3.4	.80
13	.08	.10	.27	.60	.23	.62	4.1	.80	1.9	1.1	1.4	.80
14	.08	.10	.23	.56	.23	1.3	3.7	.69	7.6	.67	.45	.67
15	.08	.10	.22	.55	.23	4.5	4.9	.55	5.8	.70	.37	.55
16	.18	.10	.20	4.1	.24	8.0	6.3	.55	4.4	.63	7.9	.80
17	.12	.10	.17	3.0	.24	4.6	5.3	8.2	3.7	.45	8.6	.93
18	.13	.10	.20	1.9	.25	2.5	4.5	9.7	3.2	.53	3.6	.67
19	1.2	.06	.21	1.6	.26	2.4	3.8	6.6	2.8	.45	2.0	.55
20	.34	.03	.18	1.5	.28	2.0	3.4	5.2	2.4	.42	1.4	.67
21	.21	3.2	.18	1.4	.80	1.7	3.0	4.2	2.2	.30	1.6	.55
22	1.5	1.4	2.0	1.3	1.1	1.4	2.8	3.8	1.9	.30	.80	.55
23	1.4	.93	3.9	1.2	1.2	1.2	2.6	3.3	1.8	.22	.55	.55
24	.84	.67	5.6	1.2	1.1	1.5	2.2	3.0	1.5	.10	.37	.55
25	.64	.67	5.9	1.1	.69	1.3	2.0	2.6	1.2	.10	.37	.45
26	.67	2.0	4.4	.80	.60	1.2	2.0	2.3	1.1	.29	.30	.45
27	.65	1.6	3.6	.70	.50	1.2	2.0	2.2	1.2	.15	.30	.45
28	.54	1.2	3.0	.57	.45	1.1	1.4	2.0	10	.08	.30	.37
29	.45	.90	2.8	.48	.37	1.1	1.4	2.0	4.2	.05	.23	.37
30	.45	.76	2.6	.40	---	1.3	1.2	1.8	3.7	.03	.30	.42
31	.37	---	2.4	.35	---	3.0	---	1.6	---	.23	1.1	---
TOTAL	11.39	16.75	44.00	35.25	11.94	51.00	88.5	73.98	101.9	30.55	55.96	29.15
MEAN	.37	.56	1.42	1.14	.41	1.65	2.95	2.39	3.40	.99	1.81	.97
MAX	1.5	3.2	5.9	4.1	1.2	8.0	6.3	9.7	10	8.0	11	3.9
MIN	.06	.03	.17	.35	.23	.40	1.2	.55	1.1	.03	.10	.37
CFSM	.17	.26	.65	.52	.19	.75	1.34	1.09	1.55	.45	.82	.44
IN.	.19	.28	.74	.60	.20	.86	1.50	1.25	1.72	.52	.95	.49
AC-FT	23	33	87	70	24	101	176	147	202	61	111	58

CAL YR 1979 TOTAL 996.95 MEAN 2.73 MAX 108 MIN .00 CFSM 1.24 IN 16.85 AC-FT 1980
WTR YR 1980 TOTAL 550.37 MEAN 1.50 MAX 11 MIN .03 CFSM .68 IN 9.30 AC-FT 1090

05422450 CROW CREEK AT MT. JOY, IA

LOCATION.--Lat 41°36'54", long 90°32'57", in NW1/4 SW1/4 sec. 30, T.79 N., R.4 E., Scott County, Hydrologic Unit 07080101, on left bank 10 ft (3 m) downstream from bridge on county highway, 1.0 mi (1.6 km) east of Mt. Joy.

DRAINAGE AREA.--6.90 mi² (17.87 km²).

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 695.57 ft (212.010 m) NGVD.

REMARKS.--Records fair except those for winter period, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,150 ft³/s (60.9 m³/s) Aug. 20, 1979, gage height, 16.47 ft (5.020 m); minimum, 0.06 ft³/s (0.002 m³/s) Sept. 4, 8, 27, 1978.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft³/s (5.66 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
May 17	1115	*311	8.81	*10.76	3.280	Aug. 4	1915	292	8.27	10.54	3.213
June 28	0145	286	8.10	10.53	3.210	Aug. 16	1330	214	6.06	9.87	3.008

Minimum daily discharge, 0.06 ft³/s (0.019 m³/s) Feb. 14-15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	1.4	2.6	4.8	.89	1.4	5.7	3.8	9.3	4.4	1.6	15
2	2.2	1.4	2.3	4.4	.85	1.3	5.3	3.6	10	3.7	12	3.5
3	1.7	1.3	1.9	3.9	.83	1.5	12	3.4	16	3.5	2.8	2.9
4	1.4	1.2	1.8	3.4	.80	1.6	8.0	3.3	9.5	3.6	24	12
5	1.3	1.2	1.6	3.1	.78	1.5	6.6	3.4	7.6	4.9	4.9	4.3
6	1.3	1.2	1.5	2.8	.76	1.5	6.0	3.2	7.2	3.3	2.7	3.3
7	1.2	1.2	1.4	2.5	.75	1.4	5.4	3.2	8.2	3.2	2.3	2.7
8	1.3	1.3	1.3	2.2	.74	1.6	5.7	3.1	6.2	3.0	1.5	2.6
9	1.2	1.3	1.2	1.9	.73	3.1	5.6	3.0	5.6	29	4.0	3.2
10	1.2	1.2	1.2	2.0	.72	6.2	4.8	3.1	5.2	6.4	16	1.6
11	1.2	1.1	1.3	1.8	.71	3.7	10	2.9	4.9	4.6	19	1.6
12	1.3	1.1	1.3	1.9	.69	2.0	11	3.3	4.7	3.7	3.6	3.5
13	1.0	1.1	1.1	1.8	.67	1.8	9.6	3.0	11	3.3	3.3	3.4
14	1.1	1.2	1.1	1.7	.66	3.0	9.3	2.5	34	3.2	2.4	2.0
15	1.2	1.1	1.2	2.2	.66	7.8	15	2.9	16	3.2	2.0	1.9
16	2.0	1.2	1.2	1.8	.67	20	15	2.6	12	4.6	46	3.5
17	1.2	1.1	1.1	2.7	.71	9.4	13	48	9.5	2.8	18	2.6
18	1.1	1.2	1.0	3.4	.74	5.5	11	20	8.2	4.4	8.0	2.0
19	2.0	1.1	1.1	3.4	.78	5.0	9.3	13	7.1	2.5	5.6	1.8
20	1.6	3.4	1.3	2.8	.83	4.7	8.2	11	6.4	2.4	4.9	1.6
21	1.5	15	1.5	2.7	3.0	4.0	7.6	9.1	5.8	2.7	8.8	1.7
22	8.0	4.8	12	2.2	3.7	3.7	6.6	7.9	5.4	2.5	3.4	2.7
23	3.7	3.7	8.9	2.7	4.1	4.0	5.9	7.1	5.6	2.3	2.9	1.5
24	1.8	3.3	18	3.2	3.4	4.4	5.6	6.4	5.1	2.3	2.6	1.5
25	1.8	3.0	14	1.5	3.1	3.9	5.3	5.7	4.5	2.0	2.1	1.4
26	1.6	7.8	12	1.3	2.5	3.7	4.9	5.3	4.2	5.4	2.1	1.2
27	1.5	5.7	8.3	1.2	1.9	3.7	4.5	5.0	4.0	2.0	1.9	1.3
28	1.4	4.4	7.0	1.1	1.7	3.7	4.4	4.8	32	1.8	1.9	1.3
29	1.2	3.5	6.3	1.1	1.5	3.8	4.5	6.4	5.9	1.7	2.0	1.5
30	1.2	3.0	6.0	1.0	---	6.1	4.0	4.8	5.1	1.8	2.7	1.4
31	1.3	---	5.3	.94	---	7.3	---	4.2	---	1.6	9.1	---
TOTAL	53.9	80.5	127.8	73.44	39.87	132.3	229.7	209.0	276.2	125.8	224.1	90.5
MEAN	1.74	2.68	4.12	2.37	1.37	4.27	7.66	6.74	9.21	4.06	7.23	3.02
MAX	8.0	15	18	4.8	4.1	20	15	48	34	29	46	15
MIN	1.0	1.1	1.0	.94	.66	1.3	4.0	2.5	4.0	1.6	1.5	1.2
CFSM	.25	.39	.60	.34	.20	.62	1.11	.98	1.34	.59	1.05	.44
IN.	.29	.43	.69	.40	.21	.71	1.24	1.13	1.49	.68	1.21	.49
AC-FT	107	160	253	146	79	262	456	415	548	250	445	180

CAL YR 1979	TOTAL	2857.58	MEAN 7.83	MAX 350	MIN .10	CFSM 1.14	IN 15.40	AC-FT 5670			
WTR YR 1980	TOTAL	1663.11	MEAN 4.54	MAX 48	MIN .66	CFSM .66	IN 8.97	AC-FT 3300			

05422470 CROW CREEK AT BETTENDORF, IA

LOCATION.--Lat 41°33'03", long 90°27'15", in NW1/4 NW1/4 sec. 24, T.78 N., R.4 E., Scott County, Hydrologic Unit 07080101, on left bank 200 ft (61 m) upstream from bridge on Valley Road (old U.S. Highway 67), 3.5 mi (5.6 km) east of U.S. Highway 6, and 0.7 mi (1.1 km) upstream from mouth.

DRAINAGE AREA.--17.8 mi² (46.0 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 576.23 ft (175.635 m) NGVD.

REMARKS.--Records fair except those for winter period, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,460 ft³/s (69.7 m³/s) Aug. 20, 1979, gage height, 10.20 ft (3.109 m); minimum, 0.023 ft³/s (0.007 m³/s) Sept. 10, 11, 26-28, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 269 ft³/s (7.62 m³/s) Aug. 16, gage height, 5.16 ft (1.573 m) at 1715 hours, no other peak above base of 250 ft³/s (7.08 m³/s); minimum daily, 2.60 ft³/s (0.074 m³/s) Oct. 10-11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	3.6	5.6	13	4.6	4.9	14	11	20	10	3.1	63
2	5.3	3.3	5.3	12	4.4	5.0	13	10	18	8.9	12	14
3	3.3	3.3	5.2	10	4.3	5.1	26	10	32	8.3	9.2	7.8
4	3.3	3.1	5.3	9.4	4.3	4.9	19	9.2	19	8.6	28	32
5	2.9	3.1	6.2	8.8	4.3	4.8	16	8.7	15	10	29	14
6	2.8	3.1	5.6	8.4	4.3	4.9	15	8.3	15	6.7	5.9	9.3
7	2.8	3.4	5.2	8.1	4.2	4.7	13	7.8	18	6.7	4.3	7.8
8	2.8	3.3	4.6	7.9	4.2	5.0	18	7.8	13	6.4	4.5	6.5
9	2.8	3.3	4.5	7.8	4.3	5.6	13	7.4	11	41	14	6.9
10	2.6	3.3	4.6	7.9	4.3	6.2	14	7.9	10	16	42	5.6
11	2.6	3.1	4.9	8.1	4.3	5.8	23	6.9	9.3	9.9	45	5.0
12	2.8	3.1	4.4	7.8	4.3	5.4	32	6.4	8.8	8.0	9.9	7.4
13	2.8	3.3	4.2	7.4	4.2	5.5	25	7.1	24	6.9	6.5	8.3
14	2.9	3.1	4.1	7.2	4.3	15	22	6.1	63	6.2	5.6	5.9
15	3.3	3.1	4.5	6.9	4.3	30	37	6.6	37	6.1	4.8	5.0
16	5.3	3.1	4.1	35	4.3	66	43	6.2	24	8.9	81	6.5
17	3.3	3.1	3.9	27	4.3	24	35	80	20	5.7	91	11
18	3.1	3.4	3.8	18	4.3	12	30	53	17	8.7	30	5.6
19	12	3.4	3.8	13	4.4	11	24	35	15	6.0	16	6.2
20	4.3	3.6	4.0	9.3	4.8	11	22	26	13	5.3	12	4.9
21	3.6	30	4.5	9.6	11	11	19	23	12	5.5	35	5.0
22	11	8.8	21	9.5	14	10	17	19	11	4.8	9.3	5.3
23	8.8	6.2	30	10	9.6	10	16	16	9.8	4.0	6.9	4.4
24	4.8	5.6	43	9.9	8.8	11	14	15	8.9	3.6	6.2	4.1
25	4.5	5.0	40	8.3	9.7	9.3	14	13	8.4	3.5	8.6	3.7
26	4.5	12	28	7.4	7.5	8.3	13	11	9.1	10	5.0	3.5
27	4.0	8.8	22	6.6	5.0	8.5	12	11	8.9	4.7	4.8	3.6
28	3.4	7.2	19	6.2	5.0	8.9	12	10	46	3.7	4.0	3.5
29	3.4	6.6	17	5.6	4.9	9.3	12	16	13	3.5	4.0	3.6
30	3.4	6.0	16	5.1	---	9.8	12	11	11	3.4	4.3	3.6
31	5.0	---	14	4.8	---	21	---	9.1	---	3.3	*21	---
TOTAL	130.5	161.3	348.3	316.0	162.2	353.9	595	475.5	540.2	244.3	559.9	273.0
MEAN	4.21	5.38	11.2	10.2	5.59	11.4	19.8	15.3	18.0	7.88	18.1	9.10
MAX	12	30	43	35	14	66	43	80	63	41	91	63
MIN	2.6	3.1	3.8	4.8	4.2	4.7	12	6.1	8.4	3.3	3.1	3.5
CFSM	.24	.30	.63	.57	.31	.64	1.11	.86	1.01	.44	1.02	.51
IN.	.27	.34	.73	.66	.34	.74	1.24	.99	1.13	.51	1.17	.57
AC-FT	259	320	691	627	322	702	1180	943	1070	485	1110	541

CAL YR 1979 TOTAL 6892.5 MEAN 18.9 MAX 910 MIN 1.0 CFSM 1.06 IN 14.40 AC-FT 13670
WTR YR 1980 TOTAL 4160.1 MEAN 11.4 MAX 91 MIN 2.6 CFSM .64 IN 8.69 AC-FT 8250

05422470 CROW CREEK AT BENTENDORF, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 1978 to current year.
WATER TEMPERATURES: April 1978 to current year.
SUSPENDED-SEDIMENT DISCHARGE: April 1978 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 1,300 micromhos Feb. 26, 1979; minimum daily, 220 micromhos Aug. 27, 1979.
WATER TEMPERATURES: Maximum daily, 34.0°C Aug. 5, 1979; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 7,450 mg/L Aug. 20, 1979; minimum daily mean, 5 mg/L Apr. 30, 1978, May 23, 1979.
SEDIMENT LOADS: Maximum daily, 18,300 tons (16,600 tonnes) Aug. 20, 1979; minimum daily, 0.02 tons (0.019 tonnes) Aug. 7, Sept. 28-30, 1978.

EXTREMES FOR CURRENT PERIOD:
SPECIFIC CONDUCTANCE: Maximum daily, 700 micromhos Mar. 8; minimum daily, 260 micromhos Aug. 3.
WATER TEMPERATURES: Maximum daily, 32.0°C July 12; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,680 mg/L May 17; minimum daily mean, 7 mg/L May 8.
SEDIMENT LOADS: Maximum daily, 933 tons (846 tonnes) May 17; minimum daily, 0.15 tons (0.14 tonnes) May 8.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	530	600	530	540	560	550	600	520	560	480	450	440
2	580	450	540	520	560	530	620	500	590	480	450	580
3	540	520	540	530	550	540	640	510	580	480	260	530
4	540	50D	540	540	540	490	630	540	590	480	450	610
5	500	500	530	520	520	540	530	580	540	500	380	590
6	510	520	500	560	520	560	500	640	540	480	470	530
7	510	520	520	560	530	675	490	610	590	490	480	510
8	510	510	520	560	570	700	510	660	590	470	440	510
9	500	520	520	560	590	530	490	645	560	33D	440	540
10	510	510	520	540	560	510	510	630	520	510	380	530
11	510	520	530	530	580	400	---	660	530	480	---	500
12	520	520	520	580	580	450	560	610	520	480	600	540
13	520	520	520	570	525	580	560	---	---	470	570	560
14	520	510	540	560	460	600	260	440	580	480	540	520
15	540	500	520	560	480	400	560	470	580	470	540	540
16	520	500	530	520	470	410	510	480	560	510	330	540
17	530	500	530	580	550	460	540	360	520	500	320	570
18	550	500	540	540	560	550	510	580	520	520	510	520
19	480	500	540	540	500	510	490	565	540	540	500	530
20	480	500	530	540	520	510	480	520	520	480	530	520
21	510	320	510	540	640	490	490	580	470	500	420	530
22	600	570	500	530	320	490	480	510	480	480	500	540
23	440	580	240	550	400	490	490	500	480	480	520	630
24	570	540	560	560	550	490	500	520	480	470	500	580
25	660	600	600	560	560	490	500	520	470	470	480	440
26	620	510	580	560	570	490	510	510	470	---	490	460
27	580	440	560	560	520	490	500	500	470	470	510	460
28	570	620	540	570	640	490	480	490	570	460	490	460
29	560	540	540	580	570	610	480	600	520	510	490	480
30	540	540	540	540	---	610	470	590	510	510	480	480
31	590	---	530	550	---	610	---	530	---	450	440	---

05422470 CROW CREEK AT BETTENDORF, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.0	8.5	.5	2.0	.0	.0	10.0	16.0	19.0	20.0	30.0	22.0
2	17.0	6.5	.0	.0	.0	.0	8.5	20.0	18.0	24.5	25.0	25.0
3	12.0	4.5	.0	3.0	.0	.0	10.5	20.5	22.0	26.0	24.0	24.0
4	12.0	5.5	.0	2.0	.0	.0	5.5	22.0	18.0	27.5	27.0	22.5
5	14.0	5.5	.0	1.5	.0	.0	11.0	21.5	23.0	29.0	27.5	23.5
6	15.0	4.5	2.5	.0	.0	.0	12.0	18.5	22.0	29.5	23.0	22.0
7	15.0	4.0	3.0	.0	.0	.0	13.0	14.0	23.0	31.0	30.5	24.0
8	16.0	5.0	.0	.0	.0	.0	9.5	14.5	21.0	26.0	31.5	26.0
9	10.0	3.5	2.5	.0	.0	1.5	4.0	16.5	22.0	27.0	29.5	22.0
10	8.5	3.0	3.0	.0	.0	.0	3.0	17.0	22.0	29.0	24.5	22.0
11	14.0	2.5	5.5	.0	.0	1.0	---	17.0	22.0	28.0	---	17.5
12	11.0	3.5	.0	.0	.0	.0	6.0	17.5	20.0	32.0	26.0	24.0
13	10.0	4.0	.0	.0	.0	.0	7.0	---	---	30.0	26.0	25.0
14	9.5	3.0	.0	.0	.0	.0	5.0	19.0	19.0	29.0	25.0	18.0
15	14.0	4.5	.0	.0	.0	8.0	12.0	16.5	17.0	28.0	26.5	17.0
16	14.0	5.0	.0	2.5	.0	6.0	8.0	14.0	18.0	31.0	17.0	16.0
17	13.0	4.0	.0	1.5	.0	3.0	9.0	13.5	20.0	29.0	19.5	14.0
18	14.0	8.0	.0	2.0	.0	8.0	14.0	12.5	22.5	28.0	24.5	16.5
19	19.0	12.5	1.0	1.5	.0	4.0	14.5	16.0	17.0	30.5	28.0	16.0
20	20.0	5.5	.0	.0	.0	5.5	19.0	17.0	22.0	27.0	29.5	19.5
21	22.0	10.0	3.0	.0	1.0	3.5	16.0	19.0	17.0	28.0	26.0	24.0
22	16.5	7.0	3.5	.0	1.0	6.0	14.5	20.5	23.0	28.0	25.0	21.0
23	9.5	5.0	2.0	.0	1.0	---	13.0	16.0	20.0	28.5	24.0	14.0
24	11.0	5.0	4.0	.0	.0	3.0	8.0	17.0	23.0	22.0	25.0	12.5
25	9.0	5.0	3.0	.0	.0	8.0	10.0	24.0	22.5	26.0	20.0	14.5
26	8.5	5.0	3.0	.0	.0	2.0	12.0	25.5	28.0	---	28.5	14.0
27	11.0	3.5	2.0	.0	.0	8.5	13.0	18.0	29.0	26.0	27.0	13.0
28	14.0	1.5	.0	.0	.0	5.5	11.5	25.5	25.0	28.0	28.0	15.0
29	14.5	.0	4.0	.0	.0	4.5	9.5	22.0	24.0	29.0	26.0	17.0
30	9.0	.0	3.0	.0	---	4.0	10.0	23.0	19.0	28.0	25.0	19.0
31	13.5	---	2.0	.0	---	9.5	---	21.0	---	30.5	23.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	47	.39	52	.51	52	.79	75	2.6	49	.61	42	.56
2	50	.72	38	.34	31	.44	76	2.5	24	.29	39	.53
3	45	.40	55	.49	32	.45	84	2.3	23	.27	68	.94
4	34	.30	68	.57	42	.60	77	2.0	37	.43	55	.73
5	28	.22	68	.57	44	.74	67	1.6	26	.30	53	.69
6	23	.17	69	.58	52	.79	93	2.1	25	.29	43	.57
7	29	.22	84	.77	76	1.1	104	2.3	32	.36	49	.62
8	30	.23	78	.69	40	.50	87	1.9	47	.53	61	.82
9	41	.31	70	.62	43	.52	98	2.1	46	.53	52	.79
10	48	.34	65	.58	34	.42	73	1.6	34	.39	183	3.1
11	27	.19	58	.49	34	.45	63	1.4	47	.55	124	1.9
12	24	.18	50	.42	26	.31	67	1.4	44	.51	60	.87
13	58	.44	43	.38	31	.35	64	1.3	39	.44	35	.52
14	60	.47	35	.29	26	.29	48	.93	25	.29	180	7.3
15	62	.55	27	.23	14	.17	27	.50	31	.36	400	32
16	73	1.0	25	.21	22	.24	735	69	26	.30	1620	289
17	42	.37	25	.21	43	.45	180	13	41	.48	280	18
18	37	.31	24	.22	54	.55	48	2.3	28	.33	78	2.5
19	106	3.4	24	.22	72	.74	32	1.1	22	.26	70	2.1
20	56	.65	30	.29	42	.45	24	.60	80	1.0	62	1.8
21	24	.23	258	21	98	1.2	22	.57	282	8.4	44	1.3
22	113	3.4	100	2.4	143	8.1	33	.85	522	20	42	1.1
23	66	1.6	95	1.6	187	15	42	1.1	211	5.5	42	1.1
24	32	.41	90	1.4	413	48	28	.75	62	1.5	42	1.2
25	15	.18	84	1.1	174	19	37	.83	52	1.4	37	.93
26	29	.35	157	5.1	84	6.4	47	.94	54	1.1	52	1.2
27	47	.51	109	2.6	60	3.6	35	.62	25	.34	60	1.4
28	45	.41	59	1.1	92	4.7	50	.84	26	.35	62	1.5
29	39	.36	23	.41	104	4.8	30	.45	143	1.9	68	1.7
30	63	.58	34	.55	101	4.4	30	.41	---	---	83	2.2
31	72	.97	---	---	101	3.8	51	.66	---	---	95	5.4
TOTAL	---	19.86	---	45.94	---	129.35	---	120.55	---	49.01	---	384.37

05422470 CROW CREEK AT BETTENDORF, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	48	1.8	26	.77	108	5.8	106	2.9	44	.37	540	92
2	45	1.6	12	.32	245	12	97	2.3	102	3.3	162	6.1
3	159	11	8	.22	335	29	65	1.5	239	5.9	70	1.5
4	107	5.5	11	.27	192	9.8	80	1.9	330	25	1840	233
5	66	2.9	13	.31	168	6.8	134	3.6	705	55	430	16
6	76	3.1	10	.22	163	6.6	113	2.0	183	2.9	71	1.8
7	80	2.8	13	.27	163	7.9	103	1.9	115	1.3	64	1.3
8	87	4.2	7	.15	157	5.5	105	1.8	101	1.2	53	.93
9	69	2.4	12	.24	146	4.3	1450	231	248	9.4	75	1.4
10	56	2.1	16	.34	117	3.2	370	16	1260	143	40	.60
11	117	7.3	9	.17	108	2.7	164	4.4	1720	209	52	.70
12	89	7.7	18	.31	78	1.9	157	3.4	400	11	70	1.4
13	54	3.6	101	1.9	275	23	123	2.3	110	1.9	42	.94
14	86	5.1	63	1.0	405	82	120	2.0	132	2.0	62	.99
15	270	27	96	1.7	240	24	78	1.3	116	---	66	1.5
16	118	14	88	1.5	301	20	92	2.2	1220	538	104	1.8
17	63	6.0	2680	933	122	6.6	72	1.1	800	197	143	4.2
18	74	6.0	770	110	120	5.5	107	2.5	257	21	82	1.2
19	47	3.0	175	17	133	5.4	69	1.1	185	8.0	72	1.2
20	38	2.3	134	9.4	104	3.7	33	.47	159	5.2	65	.86
21	43	2.2	125	7.8	111	3.6	74	1.1	402	38	77	1.0
22	39	1.8	127	6.5	88	2.6	29	.38	133	3.3	134	1.9
23	40	1.7	106	4.6	127	3.4	23	.25	78	1.5	117	1.4
24	28	1.1	121	4.9	55	1.3	63	.61	72	1.2	75	.83
25	29	1.1	129	4.5	35	.79	38	.36	66	1.0	62	.62
26	38	1.3	108	3.2	61	1.5	143	3.9	54	.73	47	.44
27	39	1.3	92	2.7	76	1.8	62	.79	53	.69	41	.40
28	15	.49	62	1.7	1880	284	46	.46	44	.48	32	.30
29	22	.71	378	16	300	11	39	.37	40	.43	35	.34
30	28	.91	92	2.7	194	5.8	35	.32	62	.72	45	.44
31	---	---	91	2.2	---	---	28	.25	254	14	---	---
TOTAL	---	132.01	---	1135.89	---	581.49	---	294.46	---	1302.52	---	377.09

TOTAL LOAD FOR YEAR: 4572.54 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	TEMPER-ATURE, WATER (DEG C) (00010)	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
MAR										
16...	1729	6.0	54	2990	436	55	65	--	87	100
AUG										
16...	1908	17.0	165	2100	936	53	56	68	84	100

05448150 PINE CREEK NEAR MUSCATINE, IA

LOCATION.--Lat 41°28'03", long 90°52'04", in SE1/4 SE1/4 sec.17, T.77 N., R.1 E., Muscatine County, Hydrologic Unit 07080101, on right bank 4 ft (1 m) downstream of Old Pine Creek Mill at Wildcat Den State Park, 1.5 miles (2.4 km) upstream from mouth, and 9.8 miles (15.8 km) northeast of Muscatine.

DRAINAGE AREA.--38.9 sq mi (100.8 km²).

PERIOD OF RECORD.--October 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 551.84 ft (168.201 m) NGVD. Prior to July 28, 1978 at site 20 ft (6 m) upstream in pool of mill dam.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--5 years, 20.4 ft³/s (0.578 m³/s), 7.12 in/yr (181 mm/yr), 14,780 acre-ft/yr (18.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,550 ft³/s (129 m³/s) July 20, 1976, gage height, 16.22 ft (4.944 m), from rating curve extended above 218 ft³/s (6.17 m³/s), on basis of indirect measurement of peak flow over dam of 3,670 ft³/s (104 m³/s), gage height, 15.80 ft (4.816 m) Mar. 4, 1976; no flow Jan. 11-16, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 101 ft³/s (2.86 m³/s) Aug. 4, gage height, 4.85 ft (1.478 m); maximum gage height, 5.02 ft (1.530 m) Feb. 21, backwater from ice; minimum daily discharge, 1.3 ft³/s (0.037 m³/s) July 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	4.7	4.7	10	6.9	8.6	14	14	13	8.3	1.4	26
2	3.9	3.9	4.3	9.0	7.0	8.7	14	12	10	8.4	1.4	18
3	3.9	3.9	4.7	8.2	7.2	9.2	20	11	10	7.5	2.2	13
4	3.4	3.4	5.1	7.5	7.2	10	18	10	7.5	7.5	17	23
5	3.9	3.4	6.0	6.9	7.1	11	16	10	6.8	9.9	24	18
6	3.9	3.4	7.2	6.4	7.0	12	16	9.6	5.6	8.0	16	12
7	3.9	3.9	6.6	5.8	7.0	12	16	9.6	15	7.2	9.4	9.2
8	4.3	3.9	5.1	5.4	7.1	13	16	9.2	10	6.3	7.6	5.6
9	4.3	3.9	6.4	5.2	7.2	14	16	9.4	6.4	6.6	6.7	5.3
10	4.3	3.9	7.6	5.1	7.2	15	17	9.7	5.5	6.6	6.6	3.5
11	4.7	3.0	8.0	5.0	7.4	14	20	9.2	4.4	6.2	9.2	2.8
12	4.7	2.7	3.9	5.0	7.7	13	26	8.5	3.4	6.7	8.7	3.0
13	5.1	2.7	3.6	5.1	8.0	12	26	9.0	5.1	6.6	7.5	5.5
14	5.1	2.7	3.3	6.2	7.8	14	24	8.8	36	6.0	17	4.0
15	5.1	3.0	3.1	8.1	7.3	39	30	7.7	31	4.8	10	3.2
16	5.5	3.0	3.0	20	7.0	34	30	7.2	24	3.3	34	3.5
17	4.3	3.0	2.7	19	6.9	20	24	18	21	4.1	42	6.6
18	17	3.9	2.5	17	6.9	15	21	13	19	4.7	21	3.8
19	11	4.7	3.0	14	7.3	15	20	8.4	18	5.5	15	3.1
20	5.2	6.4	3.5	12	8.9	14	19	6.5	16	4.7	11	2.6
21	15	25	5.6	12	16	13	18	5.4	15	3.4	13	2.5
22	10	14	14	12	40	12	17	4.1	15	2.7	10	2.4
23	6.7	10	31	9.2	20	12	16	3.6	14	2.1	7.7	2.4
24	6.4	9.3	26	8.0	16	14	15	3.7	13	1.4	7.5	2.2
25	6.2	8.4	23	7.4	13	12	15	3.4	13	1.3	7.5	2.2
26	5.5	7.7	21	6.8	11	9.9	15	3.4	12	3.6	7.2	2.2
27	4.8	6.9	18	6.4	9.4	9.7	14	3.4	11	2.8	6.7	2.2
28	4.8	6.2	16	6.4	8.7	9.9	14	3.5	10	2.3	6.7	2.2
29	4.8	6.0	15	6.4	8.7	10	14	5.1	9.4	2.1	6.4	2.2
30	6.8	5.4	13	6.5	---	11	14	6.3	9.5	1.9	6.4	2.2
31	5.1	---	11	6.7	---	17	---	5.5	---	1.5	18	---
TOTAL	183.9	172.3	287.9	268.7	288.9	434.0	555	248.2	389.6	154.0	364.8	194.4
MEAN	5.93	5.74	9.29	8.67	9.96	14.0	18.5	8.01	13.0	4.97	11.8	6.48
MAX	17	25	31	20	40	39	30	18	36	9.9	42	26
MIN	3.4	2.7	2.5	5.0	6.9	8.6	14	3.4	3.4	1.3	1.4	2.2
CFSM	.15	.15	.24	.22	.26	.36	.48	.21	.33	.13	.30	.17
IN.	.18	.16	.28	.26	.28	.42	.53	.24	.37	.15	.35	.19
AC-FT	365	342	571	533	573	861	1100	492	773	305	724	386

CAL YR 1979 TOTAL 8551.8 MEAN 23.4 MAX 760 MIN 2.5 CFSM .60 IN 8.18 AC-FT 16960
WTR YR 1980 TOTAL 3541.7 MEAN 9.68 MAX 42 MIN 1.3 CFSM .25 IN 3.39 AC-FT 7020

05448285 EAGLE LAKE INLET NEAR BRITT, IA

LOCATION.--Lat 43°06'18", long 93°43'50", in NW1/4 SW1/4 sec.30, T.96 N., R.24 W., Hancock County, Hydrologic Unit 07080207, on left bank 30 ft (9 m) upstream from Highway 18, and 2.5 mi (4.0 km) east of Britt.

DRAINAGE AREA.--3.83 mi² (9.92 km²).

PERIOD OF RECORD.--October 1975 to September 1980 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 1,220 ft (372 m) from topographic map.

REMARKS.--Records fair above 1.0 ft³/s during period April-November of each water year, all others are poor. Several observations of water temperature were made during the period.

AVERAGE DISCHARGE.--5 years, 0.84 ft³/s (0.024 m³/s), 2.96 in/yr (75 mm/yr), 606 acre-ft/yr (747,000 m³/yr).

EXTREMES FOR CURRENT PERIOD.--Peak discharge and maximum gage height for each water year.

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
a	----	unknown		unknown		Aug. 21, 1979	1830	108	3.06	5.60	1.707
b	----	unknown		unknown		Nov. 6, 1979	1600	---	----	4.27	1.302
Mar. 21, 1978	0015	ice jam		4.59	1.399	Aug. 16, 1980	2130	25	.71	----	-----
June 15, 1978	1545	18	.51	4.46	1.359	Sep. 22, 1980	0745	25	.71	----	-----

a Sometime during period Mar. 30-31, 1976.
b Sometime during period June 30-July 1, 1977.

No flow many days each water year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976

MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	3.1	.47	.10	.05	.00	.00
2	.00	.00	.00	.00	.00	.00	2.0	.40	.09	.04	.00	.00
3	.00	.00	.00	.00	.00	.00	1.5	.33	.09	.04	.00	.00
4	.00	.00	.00	.00	.00	.00	1.2	.30	.09	.03	.00	.00
5	.00	.00	.00	.00	.00	.00	1.1	.28	.09	.03	.00	.00
6	.00	.00	.00	.00	.00	.00	1.0	.23	.09	.02	.00	.00
7	.00	.00	.00	.00	.00	.00	.90	.21	.09	.02	.00	.00
8	.00	.00	.00	.00	.00	.00	.81	.21	.08	.02	.00	.00
9	.00	.00	.00	.00	.00	.00	.81	.19	.08	.01	.00	.00
10	.00	.00	.00	.00	.00	.00	.73	.18	.12	.01	.00	.00
11	.00	.00	.00	.00	.00	.10	.66	.16	.10	.01	.00	.00
12	.00	.00	.00	.00	.00	.40	.60	.15	.08	.01	.00	.00
13	.00	.00	.00	.00	.00	1.2	.49	.14	.08	.01	.00	.00
14	.00	.00	.00	.00	.00	1.0	.44	.12	.07	.01	.00	.00
15	.00	.00	.00	.00	.00	.90	.43	.11	.13	.01	.00	.00
16	.00	.00	.00	.00	.00	.80	.31	.26	.09	.01	.00	.00
17	.00	.00	.00	.00	.00	.70	.30	.52	.08	.00	.00	.00
18	.00	.00	.00	.00	.00	.80	.77	.37	.08	.00	.00	.00
19	.00	.00	.00	.00	.00	.90	.74	.30	.08	.00	.00	.00
20	.00	.00	.00	.00	.00	1.0	.62	.24	.08	.00	.00	.00
21	.00	.00	.00	.00	.00	.60	.68	.21	.07	.00	.00	.00
22	.00	.00	.00	.00	.00	.50	.63	.19	.07	.00	.00	.00
23	.00	.00	.00	.00	.00	.40	.60	.27	.06	.00	.00	.00
24	.00	.00	.00	.00	.00	.40	.79	.28	.06	.00	.00	.00
25	.00	.00	.00	.00	.00	.35	2.6	.23	.06	.00	.00	.00
26	.00	.00	.00	.00	.00	.90	1.4	.20	.06	.00	.00	.00
27	.00	.00	.00	.00	.00	1.0	.94	.16	.06	.00	.00	.00
28	.00	.00	.00	.00	.00	.70	.75	.17	.05	.00	.00	.00
29	.00	.00	.00	.00	.00	.70	.63	.15	.05	.00	.00	.00
30	.00	.00	.00	.00	---	2.8	.56	.14	.05	.00	.00	.00
31	.00	---	.00	.00	---	4.9	---	.12	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	21.05	28.09	7.29	2.38	.33	.00	.00
MEAN	.000	.000	.000	.000	.000	.68	.94	.24	.079	.011	.000	.000
MAX	.00	.00	.00	.00	.00	4.9	3.1	.52	.13	.05	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.30	.11	.05	.00	.00	.00
CFSM	.000	.000	.000	.000	.000	.18	.25	.06	.02	.003	.000	.000
IN.	.00	.00	.00	.00	.00	.20	.27	.07	.02	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	42	56	14	4.7	.7	.00	.00

WTR YR 1976 TOTAL 59.14 MEAN .16 MAX 4.9 MIN .00 CFSM .04 IN .57 AC-FT 117

05448285 EAGLE LAKE INLET NEAR BRITT, IA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.0	.00	.00
2	.00	.00	.00	.00	.00	.00	.16	.00	.00	.80	.00	.00
3	.00	.00	.00	.00	.00	.00	.18	.00	.00	.20	.00	.00
4	.00	.00	.00	.00	.00	.00	.10	.00	.00	.08	.00	.00
5	.00	.00	.00	.00	.00	.00	.07	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.16	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.05	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.50	.14	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.96	.26	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.84	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.51	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.42	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.22	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.16	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.05	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.54	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	1.9	.00	.00	.00
30	.00	.00	.00	.00	---	.54	.00	.00	3.0	.00	.00	.00
31	.00	---	.00	.00	---	1.2	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	5.40	1.12	.00	5.44	3.08	.00	.00
MEAN	.000	.000	.000	.000	.000	.17	.037	.000	.18	.099	.000	.000
MAX	.00	.00	.00	.00	.00	1.2	.26	.00	3.0	2.0	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
CFSM	.000	.000	.000	.000	.000	.04	.01	.000	.05	.03	.000	.000
IN.	.00	.00	.00	.00	.00	.05	.01	.00	.05	.03	.00	.00
AC-FT	.00	.00	.00	.00	.00	11	2.2	.00	11	6.1	.00	.00

CAL YR 1976 TOTAL 59.14 MEAN .16 MAX 4.9 MIN .00 CFSM .04 IN .57 AC-FT 117
WTR YR 1977 TOTAL 15.04 MEAN .041 MAX 3.0 MIN .00 CFSM .01 IN .15 AC-FT 30

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	1.1	.19	.08	.02	.00	.00
2	.00	.00	.00	.00	.00	.00	.73	.17	.06	.02	.00	.00
3	.00	.00	.00	.00	.00	.00	.60	.15	.05	.02	.00	.00
4	.00	.00	.00	.00	.00	.00	.56	.14	.05	.01	.00	.00
5	.00	.00	.00	.00	.00	.00	.51	.13	.04	.01	.00	.00
6	.00	.00	.00	.00	.00	.00	.65	.10	.04	1.7	.00	.00
7	.00	.00	.00	.00	.00	.00	.73	.10	.03	2.8	.00	.00
8	.00	.00	.00	.00	.00	.00	.62	.14	.03	1.0	.00	.00
9	.00	.00	.00	.00	.00	.00	.53	.13	.02	.39	.00	.00
10	.00	.00	.00	.00	.00	.01	.50	.11	.02	.19	.00	.00
11	.00	.00	.00	.00	.00	.02	.48	.09	.02	.11	.00	.00
12	.00	.00	.00	.00	.00	.04	.43	.08	.01	.08	.00	.00
13	.00	.00	.00	.00	.00	.08	.36	.14	.01	.06	.00	.66
14	.00	.00	.00	.00	.00	.15	.38	.18	.01	.04	.00	2.5
15	.00	.00	.00	.00	.00	.30	.34	.17	12	.03	.00	1.4
16	.00	.00	.00	.00	.00	.30	.26	.15	10	.03	.00	.39
17	.00	.00	.02	.00	.00	.20	.21	.12	3.1	.01	.00	.13
18	.00	.00	.04	.00	.00	.40	.64	.10	.90	.00	.00	.06
19	.00	.00	.01	.00	.00	.90	1.0	.09	.39	.00	.00	.00
20	.00	.00	.01	.00	.00	1.7	.98	.08	.31	.01	.00	.01
21	.00	.00	.00	.00	.00	3.4	.56	.06	.26	.05	.00	.02
22	.00	.00	.00	.00	.00	6.3	.65	.06	.16	.12	.00	.02
23	.00	.00	.00	.00	.00	4.6	.60	.05	.10	.35	.00	.01
24	.00	.00	.00	.00	.00	3.2	.58	.05	.08	.25	.00	.00
25	.00	.00	.00	.00	.00	2.7	.44	.04	.07	.11	.00	.00
26	.00	.00	.00	.00	.00	2.3	.37	.03	.07	.06	.00	.00
27	.00	.00	.00	.00	.00	2.0	.35	.03	.04	.03	.00	.00
28	.00	.00	.00	.00	.00	1.6	.29	.05	.03	.02	.00	.00
29	.00	.00	.00	.00	---	1.3	.27	.12	.03	.00	.00	.00
30	.00	.00	.00	.00	---	1.0	.23	.12	.03	.00	.00	.00
31	.00	---	.00	.00	---	1.1	---	.09	---	.00	.00	---
TOTAL	.00	.00	.08	.00	.00	33.60	16.05	3.26	28.04	7.52	.00	5.20
MEAN	.000	.000	.003	.000	.000	1.08	.54	.11	.93	.24	.000	.17
MAX	.00	.00	.04	.00	.00	6.3	1.1	.19	12	2.8	.00	2.5
MIN	.00	.00	.00	.00	.00	.00	.21	.03	.01	.00	.00	.00
CFSM	.000	.000	.001	.000	.000	.28	.14	.03	.24	.06	.000	.04
IN.	.00	.00	.00	.00	.00	.33	.16	.03	.27	.07	.00	.05
AC-FT	.00	.00	.2	.00	.00	67	32	6.5	56	15	.00	10

CAL YR 1977 TOTAL 15.12 MEAN .041 MAX 3.0 MIN .00 CFSM .01 IN .15 AC-FT 30
WTR YR 1978 TOTAL 93.75 MEAN .26 MAX 12 MIN .00 CFSM .07 IN .91 AC-FT 186

05448285 EAGLE LAKE INLET NEAR BRITT, IA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	15	1.2	.52	1.2	2.8	8.4
2	.00	.00	.00	.00	.00	.00	9.1	1.5	.48	.66	1.2	6.0
3	.00	.00	.00	.00	.00	.00	7.3	2.1	.48	.43	.65	4.4
4	.00	.00	.00	.00	.00	.00	5.9	2.1	.46	.34	.67	3.1
5	.00	.00	.00	.00	.00	.00	5.5	1.9	.42	.24	.47	2.2
6	.00	.00	.00	.00	.00	.00	6.9	1.6	.38	.20	.26	2.8
7	.00	.00	.00	.00	.00	.00	3.3	1.3	.36	.17	.28	1.4
8	.00	.00	.00	.00	.00	.00	3.4	1.2	.33	.15	6.0	.81
9	.00	.00	.00	.00	.00	.00	2.5	1.1	.33	.13	8.7	.59
10	.00	.00	.00	.00	.00	.00	2.1	.97	.36	.12	5.3	.42
11	.00	.00	.00	.00	.00	.00	2.0	.91	.31	.12	3.3	.37
12	.00	.00	.00	.00	.00	.00	3.1	.84	.29	.12	1.6	.34
13	.00	.00	.00	.00	.00	.00	2.6	.91	.29	.12	.91	.33
14	.00	.00	.00	.00	.00	.00	2.2	.89	.26	.68	.58	.31
15	.00	.00	.00	.00	.00	.00	1.9	.79	.24	.67	.43	.27
16	.00	.00	.00	.00	.00	.01	1.9	.69	.23	.30	7.4	.21
17	.00	.00	.00	.00	.00	.03	1.9	.62	.22	.20	6.6	.16
18	.00	.00	.00	.00	.00	.10	1.8	.82	.32	.11	9.6	.12
19	.00	.00	.00	.00	.00	.16	1.7	1.5	.36	.09	17	.10
20	.00	.00	.00	.00	.00	.26	2.3	1.8	.42	.07	10	.09
21	.00	.00	.00	.00	.00	.40	3.5	1.4	.22	.09	65	.08
22	.00	.00	.00	.00	.00	.70	3.0	1.2	.18	.10	55	.07
23	.00	.00	.00	.00	.00	1.1	2.5	1.3	.16	.58	33	.06
24	.00	.00	.00	.00	.00	1.9	2.1	1.2	.15	1.7	25	.06
25	.00	.00	.00	.00	.00	2.9	1.9	1.0	.12	.80	21	.06
26	.00	.00	.00	.00	.00	4.9	2.0	.94	.13	.42	21	.05
27	.00	.00	.00	.00	.00	7.7	2.0	.87	8.1	.52	34	.05
28	.00	.00	.00	.00	.00	9.3	1.6	.70	6.2	.42	25	.04
29	.00	.00	.00	.00	---	20	1.5	.63	5.8	.48	19	.04
30	.00	.00	.00	.00	---	31	1.3	.59	3.4	3.8	14	.04
31	.00	---	.00	.00	---	25	---	.55	---	4.7	11	---
TOTAL	.00	.00	.00	.00	.00	105.46	103.8	35.12	31.52	19.73	406.75	32.97
MEAN	.000	.000	.000	.000	.000	3.40	3.46	1.13	1.05	.64	13.1	1.10
MAX	.00	.00	.00	.00	.00	31	15	2.1	8.1	4.7	65	8.4
MIN	.00	.00	.00	.00	.00	.00	1.3	.55	.12	.07	.26	.04
CFSM	.000	.000	.000	.000	.000	.89	.90	.30	.27	.17	3.42	.29
IN.	.00	.00	.00	.00	.00	1.02	1.01	.34	.31	.19	3.95	.32
AC-FT	.00	.00	.00	.00	.00	209	206	70	63	39	807	65

CAL YR 1978 TOTAL 93.67 MEAN .26 MAX 12 MIN .00 CFSM .07 IN .91 AC-FT 186
WTR YR 1979 TOTAL 735.35 MEAN 2.01 MAX 65 MIN .00 CFSM .53 IN 7.14 AC-FT 1460

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.03	1.7	3.1	1.1	.00	.00	1.0	.78	5.1	.35	1.4	.71
2	.04	1.2	2.8	1.1	.00	.00	1.2	.74	3.1	.35	1.5	.62
3	.03	.78	3.4	1.0	.00	.00	2.1	.72	2.2	.35	1.6	.54
4	.03	.63	2.5	.96	.00	.00	3.4	.71	1.6	.35	1.8	.70
5	.03	1.6	2.6	.90	.00	.00	2.6	.69	1.4	.36	3.4	.78
6	.03	7.0	2.6	.84	.00	.00	2.3	.66	1.1	.34	9.0	.70
7	.02	5.3	2.6	.80	.00	.00	2.2	.59	1.1	.31	16	.66
8	.02	3.9	2.5	.78	.00	.01	2.1	.58	.92	.25	16	.55
9	.02	2.7	2.1	.78	.00	.03	2.3	.52	.88	.93	17	.45
10	.02	2.6	2.0	.80	.00	.02	2.2	.60	.79	1.0	16	.39
11	.02	2.8	3.1	.90	.00	.01	2.1	.60	.67	.59	14	.36
12	.02	3.5	2.3	.95	.00	.01	2.0	.53	.67	.46	12	.35
13	.02	4.3	2.0	.90	.00	.00	1.9	.57	.54	.38	9.8	.34
14	.02	5.2	1.9	.76	.00	.01	1.8	.52	.57	.37	8.2	.31
15	.02	7.1	1.9	.56	.00	.04	1.6	.52	.59	.36	7.0	.29
16	.02	9.7	1.9	1.4	.00	.05	1.4	.52	.53	.44	11	.28
17	.02	12	1.9	1.6	.00	.05	1.4	.53	.50	.44	15	.28
18	.02	8.7	2.0	.78	.00	.04	1.4	.53	.46	.41	5.4	.27
19	.02	5.5	1.8	.21	.00	.04	1.5	.52	.56	.44	4.1	.25
20	.02	.86	1.6	.14	.00	.05	1.5	.52	.59	6.3	2.9	.34
21	.02	1.4	1.6	.11	.00	.05	1.6	.48	.56	3.5	2.2	.86
22	.45	4.2	1.6	.07	.00	.04	1.6	.37	.54	1.7	1.5	18
23	4.4	5.3	1.6	.05	.00	.03	1.4	.32	.49	1.1	1.2	10
24	4.3	4.8	1.5	.04	.00	.03	1.3	.33	.46	.82	.91	6.1
25	2.6	5.1	1.4	.03	.00	.03	1.2	.35	.42	.86	.75	4.3
26	1.2	4.9	1.3	.02	.00	.04	1.1	.30	.40	.89	.69	3.3
27	.77	4.2	1.2	.01	.00	.05	1.1	.28	.36	1.0	.75	2.9
28	.54	3.9	1.1	.01	.00	.10	.96	.28	.37	.95	.78	2.6
29	.43	3.6	1.1	.01	.00	.68	.90	.39	.37	.95	.75	2.3
30	.34	3.3	1.2	.00	---	1.1	.81	19	.37	1.2	.69	2.1
31	.68	---	1.1	.00	---	1.0	---	12	---	1.1	.72	---
TOTAL	16.20	127.77	61.3	17.61	.00	3.51	49.97	46.05	28.21	28.85	184.04	61.63
MEAN	.52	4.26	1.98	.57	.000	.11	1.67	1.49	.94	.93	5.94	2.05
MAX	4.4	12	3.4	1.6	.00	1.1	3.4	19	5.1	6.3	17	18
MIN	.02	.63	1.1	.00	.00	.00	.81	.28	.36	.25	.69	.25
CFSM	.14	1.11	.52	.15	.000	.03	.44	.39	.25	.24	1.55	.54
IN.	.16	1.24	.60	.17	.00	.03	.49	.45	.27	.28	1.79	.60
AC-FT	32	253	122	35	.00	7.0	99	91	56	57	365	122

CAL YR 1979 TOTAL 940.62 MEAN 2.58 MAX 65 MIN .00 CFSM .67 IN 9.13 AC-FT 1870
WTR YR 1980 TOTAL 625.14 MEAN 1.71 MAX 19 MIN .00 CFSM .45 IN 6.07 AC-FT 1240

05448290 EAGLE LAKE OUTLET NEAR BRITT, IA

LOCATION.--Lat 43°08'17", long 93°43'52", in NW1/4 NW1/4 sec.18, T.96 N., R.24 W., Hancock County, Hydrologic Unit 07080207, on dike just east of right overflow spillway at north end of Eagle Lake, 1.2 mi (1.9 km) upstream from West Branch Iowa River, and 4.5 mi (7.2 km) northeast of Britt.

DRAINAGE AREA.--11.3 mi² (29.3 km²).

PERIOD OF RECORD.--October 1975 to September 1980 (discontinued).

GAGE.--Water-stage recorder and stoplog control with concrete overflow spillways and five overflow tubes. Datum of gage is 1,210.27 ft (368.890 m) NGVD (Iowa Conservation Commission bench mark).

REMARKS.--Records poor. Some regulation of lake level at stoplog structure by Iowa Conservation Commission. Several observations of water temperature were made during the period.

COOPERATION.--Some outside gage readings furnished by Iowa Conservation Commission.

AVERAGE DISCHARGE.--5 years, 1.75 ft³/s (0.050 m³/s), 2.10 in/yr (53 mm/yr), 1,270 acre-ft/yr (1.57 hm³/yr).

EXTREMES FOR CURRENT PERIOD.--Maximum discharge and gage height for each water year.

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Apr. 16, 1976	1115	unknown		3.69	1.125	Aug. 22, 1979	1300	101	2.86	4.88	1.487
Apr. 25, 1977	----	a		b2.44	.744	Nov. 6, 1979	----	---	----	c4.39	1.338
July 23, 1978	----	a		b3.04	.927	Nov. 9, 1979	0900	d23	0.65	----	-----

a No flow entire water year
b Observed
c From graph based on gage readings
d Would have been higher Nov. 7 or 8 if stoplogs were removed earlier than Nov. 9.

No flow many days each water year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976

MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.53	1.7	1.9	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.98	1.1	1.7	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.98	.80	1.4	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.98	.60	1.3	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	1.5	.42	.98	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	1.9	.30	.79	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	2.2	.21	.61	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	2.0	.15	.40	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	1.9	.15	.25	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	1.7	.10	.40	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	1.6	.00	.45	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	1.5	.00	.45	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	1.4	.00	.40	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	1.4	.00	.45	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	1.5	.00	.88	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	2.8	.15	.45	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	2.4	.53	.61	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	3.3	.98	.25	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	3.1	1.9	.20	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	2.8	1.3	.20	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	2.6	.98	.05	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	2.8	.98	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	3.1	1.3	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	3.1	1.5	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	4.0	1.7	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	4.9	1.9	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	4.7	1.9	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	4.1	2.2	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	3.4	2.1	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	2.4	2.1	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	2.2	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	.00	71.57	29.25	14.12	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	.000	2.39	.94	.47	.000	.000	.000
MAX	.00	.00	.00	.00	.00	.00	4.9	2.2	1.9	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.53	.00	.00	.00	.00	.00
CFSM	.000	.000	.000	.000	.000	.000	.21	.08	.04	.000	.000	.000
IN.	.00	.00	.00	.00	.00	.00	.24	.10	.05	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	142	58	28	.00	.00	.00

WTR YR 1976 TOTAL 114.94 MEAN .31 MAX 4.9 MIN .00 CFSM .03 IN .38 AC-FT 228

05448290 EAGLE LAKE OUTLET NEAR BRITT, IA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
CFSM	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
IN.	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

CAL YR 1976 TOTAL 114.94 MEAN .31 MAX 4.9 MIN .00 CFSM .03 IN .38 AC-FT 228 WTR YR 1977 TOTAL 0.00 MEAN .000 MAX .00 MIN .00 CFSM .000 IN .00 AC-FT .00

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
CFSM	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
IN.	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

CAL YR 1977 TOTAL 0.00 MEAN .000 MAX .00 MIN .00 CFSM .000 IN .00 AC-FT .00 WTR YR 1978 TOTAL 0.00 MEAN .000 MAX .00 MIN .00 CFSM .000 IN .00 AC-FT .00

05448290 EAGLE LAKE OUTLET NEAR BRITT, IA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	37	.74	.10	.00	5.1	40
2	.00	.00	.00	.00	.00	.00	50	.98	.00	.15	5.2	29
3	.00	.00	.00	.00	.00	.00	57	.98	.00	.00	5.1	24
4	.00	.00	.00	.00	.00	.00	42	.98	.00	.00	5.1	22
5	.00	.00	.00	.00	.00	.00	28	.74	.00	.00	5.3	19
6	.00	.00	.00	.00	.00	.00	20	.35	.00	.00	5.0	20
7	.00	.00	.00	.00	.00	.00	14	.30	.00	.00	5.0	25
8	.00	.00	.00	.00	.00	.00	10	.40	.00	.00	5.2	25
9	.00	.00	.00	.00	.00	.00	21	.30	.00	.00	5.0	20
10	.00	.00	.00	.00	.00	.00	33	.25	.00	.00	6.6	16
11	.00	.00	.00	.00	.00	.00	31	.20	.00	.00	6.2	11
12	.00	.00	.00	.00	.00	.00	17	.40	.00	.00	5.4	6.7
13	.00	.00	.00	.00	.00	.00	3.7	.74	.00	.00	5.0	5.0
14	.00	.00	.00	.00	.00	.00	3.5	.84	.00	.00	4.9	5.3
15	.00	.00	.00	.00	.00	.00	2.3	.74	.00	.00	4.9	5.0
16	.00	.00	.00	.00	.00	.00	1.7	.40	.00	.15	5.9	4.5
17	.00	.00	.00	.00	.00	.00	1.4	.40	.00	.00	7.4	4.2
18	.00	.00	.00	.00	.00	.00	.85	.45	.00	.00	8.9	4.2
19	.00	.00	.00	.00	.00	.00	.45	.54	.00	.00	11	4.0
20	.00	.00	.00	.00	.00	.00	.85	.63	.00	.00	17	3.8
21	.00	.00	.00	.00	.00	.23	7.2	.85	.00	.10	44	3.2
22	.00	.00	.00	.00	.00	1.1	12	.85	.00	.40	94	2.4
23	.00	.00	.00	.00	.00	2.4	11	.85	.00	.98	99	1.8
24	.00	.00	.00	.00	.00	3.6	11	.74	.00	1.4	80	1.5
25	.00	.00	.00	.00	.00	5.3	10	.45	.00	1.7	56	1.1
26	.00	.00	.00	.00	.00	6.4	10	.40	.00	1.7	50	.88
27	.00	.00	.00	.00	.00	8.2	6.3	.40	.00	2.4	72	.88
28	.00	.00	.00	.00	.00	8.9	.35	.35	.00	2.5	69	.88
29	.00	.00	.00	.00	---	9.9	.35	.35	.00	2.6	58	.88
30	.00	.00	.00	.00	---	15	.45	.35	.00	2.5	46	.88
31	.00	---	.00	.00	---	25	---	.20	---	3.6	46	---
TOTAL	.00	.00	.00	.00	.00	86.03	443.40	17.15	.10	20.18	843.2	308.10
MEAN	.000	.000	.000	.000	.000	2.78	14.8	.55	.003	.65	27.2	10.3
MAX	.00	.00	.00	.00	.00	25	57	.98	.10	3.6	99	40
MIN	.00	.00	.00	.00	.00	.00	.35	.20	.00	.00	4.9	.88
CFSM	.000	.000	.000	.000	.000	.25	1.31	.05	.000	.06	2.41	.91
IN.	.00	.00	.00	.00	.00	.28	1.46	.06	.00	.07	2.78	1.01
AC-FT	.00	.00	.00	.00	.00	171	879	34	.2	40	1670	611

CAL YR 1978 TOTAL 0.00 MEAN .000 MAX .00 MIN .00 CFSM .000 IN .00 AC-FT .00
WTR YR 1979 TOTAL 1718.16 MEAN 4.71 MAX 99 MIN .00 CFSM .42 IN 5.66 AC-FT 3410

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	5.1	8.1	3.4	2.6	1.5	1.1	2.0	.80	.00	.00	4.7
2	.82	6.5	7.2	3.3	2.4	1.4	1.4	.00	.90	.00	.00	4.2
3	1.0	5.7	7.2	3.0	2.1	1.4	1.7	.00	1.0	.00	.00	4.2
4	.86	5.7	6.9	2.8	1.9	1.4	1.7	.00	1.4	.00	.00	4.4
5	.73	11	6.9	2.6	1.9	1.3	1.8	.00	1.3	.00	.00	7.9
6	.60	16	6.7	2.5	1.8	1.2	1.7	.00	1.1	.00	.00	14
7	.50	12	6.7	2.2	1.6	1.2	1.3	.00	.86	.00	.00	13
8	.44	17	6.4	1.9	1.5	1.2	12	.00	.56	.00	.00	12
9	.35	23	6.2	1.8	1.4	1.6	14	.00	.48	.00	.00	11
10	.25	22	6.0	1.7	1.4	2.5	14	.00	.40	.00	.00	13
11	.25	19	5.5	1.7	1.3	2.7	14	.00	.29	.00	.21	12
12	.15	17	5.3	1.7	1.1	2.7	13	.00	.15	.00	.37	12
13	.15	17	5.1	1.7	1.2	2.6	12	.00	.00	.00	1.4	11
14	.25	15	5.1	1.8	1.1	2.4	11	.00	.00	.00	2.1	10
15	.30	15	5.1	2.0	1.0	3.3	9.6	.00	.00	.00	2.4	5.8
16	.16	16	5.1	2.6	.89	5.5	6.8	.00	.00	.00	4.0	.91
17	.10	14	5.1	3.8	.88	6.5	6.6	.00	.00	.00	7.3	.88
18	.20	13	4.9	5.5	.88	6.6	6.1	.00	.00	.00	9.1	.82
19	.41	9.5	4.7	6.6	.88	9.7	5.7	.00	.00	.00	10	.76
20	.38	3.9	4.5	7.4	.81	15	5.3	.00	.00	.00	10	.73
21	.40	5.5	4.2	7.7	.72	14	5.1	.00	.00	.00	10	1.3
22	.83	7.6	4.1	7.2	1.1	13	4.5	.00	.00	.00	9.6	2.2
23	3.3	8.8	4.9	6.6	1.8	11	4.1	.00	.00	.00	8.3	3.0
24	3.6	10	4.9	6.3	2.4	9.7	3.9	.00	.00	.00	6.7	3.5
25	3.6	10	4.9	5.6	2.7	8.9	3.8	.00	.00	.00	6.0	3.3
26	3.7	10	5.1	5.1	2.4	5.5	3.6	.00	.00	.00	5.6	3.5
27	3.5	11	4.9	4.5	2.2	.11	3.5	.00	.00	.00	5.4	3.6
28	3.5	10	4.3	4.1	2.0	.26	3.1	.00	.00	.00	5.4	3.6
29	3.5	8.8	4.1	3.6	1.6	.47	3.2	.00	.00	.00	4.9	7.9
30	3.4	8.4	4.0	3.4	---	.74	3.0	.00	.00	.00	4.9	14
31	4.0	---	3.8	3.0	---	.89	---	.36	---	.00	5.1	---
TOTAL	42.23	353.5	167.9	117.1	45.56	136.27	178.6	2.36	9.24	.00	118.78	189.20
MEAN	1.36	11.8	5.42	3.78	1.57	4.40	5.95	.076	.31	.000	3.83	6.31
MAX	4.0	23	8.1	7.7	2.7	15	14	2.0	1.4	.00	10	14
MIN	.10	3.9	3.8	1.7	.72	.11	1.1	.00	.00	.00	.00	.73
CFSM	.12	1.04	.48	.34	.14	.39	.53	.007	.03	.000	.34	.56
IN.	.14	1.16	.55	.39	.15	.45	.59	.01	.03	.00	.39	.62
AC-FT	84	701	333	232	90	270	354	4.7	18	.00	236	375

CAL YR 1979 TOTAL 2281.79 MEAN 6.25 MAX 99 MIN .00 CFSM .55 IN 7.51 AC-FT 4530
WTR YR 1980 TOTAL 1360.74 MEAN 3.72 MAX 23 MIN .00 CFSM .33 IN 4.48 AC-FT 2700

05449000 EAST BRANCH IOWA RIVER NEAR KLEMME, IA

LOCATION.--Lat 43°00'31", long 93°37'42", in NE1/4 NW1/4 sec.36, T.95 N., R.24 W., Hancock County, Hydrologic Unit 07080207, on left bank 15 ft (5 m) downstream from bridge on county highway B55, 1.2 mi (1.9 km) west of Chicago, Rock Island and Pacific Railroad crossing in Klemme, 1.5 mi (2.4 km) upstream from Drainage ditch 9, 18.2 mi (29.3 km) upstream from confluence with West Branch Iowa River.

DRAINAGE AREA.--133 mi² (344 km²).

PERIOD OF RECORD.--April 1948 to September 1976, June 1977 to current year. Prior to October 1958, published as East Fork Iowa River near Klemme.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,179.33 ft (359.46 m) NGVD. Apr. 1, 1948, to Sept. 30, 1955, nonrecording gage at site 0.6 mi (1.0 km) upstream at datum 0.80 ft (0.24 m) higher. Oct. 1, 1955, to Sept. 30, 1969, at present site at datum 0.31 ft (0.09 m) lower.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--31 years, 58.9 ft³/s (1.668 m³/s), 6.01 in/yr (153 mm/yr), 42,670 acre-ft/yr (52.6 hm³/yr); median of yearly mean discharges, 44 ft³/s (1.25 m³/s), 4.5 in/yr (114 mm/yr), 31,900 acre-ft/yr (39.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,960 ft³/s (169 m³/s) June 19, 1954, gage height, 11.2 ft (3.41 m), from floodmark, site and datum then in use; maximum gage height, 10.67 ft (3.252 m) Sept. 6, 1965, backwater from ice; minimum daily discharge, 0.2 ft³/s (0.006 m³/s) Feb. 22-26, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1944 reached a stage of about 10 ft (3 m), from information by local residents, former site and datum.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 765 ft³/s (21.7 m³/s) May 31, gage height, 7.91 ft (2.41 m) at 1100 hours, no other peak above base of 700 ft³/s (19.8 m³/s); minimum daily, 8.4 ft³/s (0.24 m³/s) Aug. 1,2.

REVISIONS.--Revised figures of discharges for period June to September 1977 are given below. These figures supersede those published in the report for 1978.

June	24	3.1	July	7	5.8	July	20	3.4	Aug.	2	3.4	Aug.	15	5.2	Aug.	28	4.0	Sept.	10	3.0	Sept.	23	4.5
	25	2.6		8	5.2		21	9.9		3	2.4		16	23		29	3.6		11	2.2		24	8.2
	26	2.3		9	4.2		22	9.6		4	3.4		17	13		30	4.7		12	2.9		25	5.4
	27	2.6		10	3.7		23	5.3		5	4.1		18	6.7		31	4.8		13	3.8		26	4.4
	28	5.8		11	5.5		24	4.2		6	2.4		19	6.0	Sep.	1	3.7		14	2.4		27	3.8
	29	4.0		12	4.9		25	3.7		7	2.6		20	5.1		2	2.8		15	3.9		28	3.4
	30	30		13	4.0		26	3.9		8	9.5		21	4.5		3	2.5		16	2.7		29	5.9
July	1	19		14	4.1		27	3.0		9	6.6		22	3.7		4	2.8		17	2.9		30	7.7
	2	9.4		15	5.9		28	5.5		10	5.0		23	4.2		5	3.0		18	6.5			
	3	5.7		16	4.2		29	4.9		11	3.3		24	4.7		6	2.8		19	6.1			
	4	4.2		17	4.1		30	3.8		12	2.9		25	3.9		7	4.6		20	4.3			
	5	3.9		18	4.2		31	2.9		13	3.2		26	3.8		8	3.2		21	3.7			
	6	4.6		19	5.1	Aug.	1	2.6		14	2.9		27	4.1		9	2.9		22	3.4			

Month	Total	Mean	Max.	Min.	Cfsm	Inches	Acre-ft
July	167.8	5.41	19	2.9	0.04	0.05	333
August	159.3	5.14	23	2.4	.04	.04	316
September	119.4	3.98	8.2	2.2	.03	.03	237

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	126	88	45	18	26	48	47	561	19	8.4	88
2	42	118	83	44	19	25	57	45	384	19	8.4	76
3	41	107	87	40	19	28	98	43	257	17	8.7	64
4	39	102	91	25	20	37	162	42	178	16	11	80
5	40	132	93	17	20	34	125	41	149	15	10	83
6	37	320	83	15	20	31	109	38	123	14	11	73
7	36	312	81	13	20	28	103	37	101	13	20	71
8	36	239	70	12	20	34	100	36	82	13	15	61
9	34	194	70	12	20	60	109	34	75	43	13	49
10	32	156	71	13	21	110	106	39	68	27	160	42
11	34	138	72	13	21	90	100	39	59	20	335	40
12	33	128	65	14	21	67	96	35	55	18	246	38
13	29	118	72	15	21	60	91	37	54	15	216	34
14	28	112	74	16	21	56	86	35	56	14	345	30
15	31	112	74	17	21	84	80	36	53	22	270	30
16	30	116	61	30	22	162	71	36	48	17	195	29
17	28	125	62	42	22	146	72	37	45	14	364	26
18	28	123	70	34	23	100	72	38	43	14	393	26
19	32	115	74	28	24	86	78	37	42	13	277	24
20	32	104	64	24	25	68	80	42	36	38	199	35
21	30	114	60	23	31	60	82	40	34	30	151	144
22	77	179	56	22	70	48	84	35	32	21	113	366
23	282	207	57	21	102	42	76	31	32	16	89	461
24	321	185	49	20	81	37	72	30	30	14	73	376
25	250	160	45	19	48	35	67	27	26	13	62	245
26	195	146	45	19	39	35	61	25	30	12	54	164
27	165	129	44	18	35	33	58	24	25	11	86	135
28	137	117	44	18	31	33	55	23	22	10	131	117
29	125	106	45	18	28	37	54	31	20	9.7	112	104
30	118	104	47	18	---	58	50	376	18	9.2	91	94
31	121	---	45	18	---	53	---	733	---	8.8	87	---
TOTAL	2508	4444	2042	683	883	1803	2502	2149	2738	535.7	4154.5	3205
MEAN	80.9	148	65.9	22.0	30.4	58.2	83.4	69.3	91.3	17.3	134	107
MAX	321	320	93	45	102	162	162	733	561	43	393	461
MIN	28	102	44	12	18	25	48	23	18	8.8	8.4	24
CFSM	.61	1.11	.50	.17	.23	.44	.63	.52	.69	.13	1.01	.81
IN.	.70	1.24	.57	.19	.25	.50	.70	.60	.77	.15	1.16	.90
AC-FT	4970	8810	4050	1350	1750	3580	4960	4260	5430	1060	8240	6360

CAL YR 1979	TOTAL	54268.4	MEAN	149	MAX	2480	MIN	3.8	CFSM	1.12	IN	15.18	AC-FT	107600
WTR YR 1980	TOTAL	27647.2	MEAN	75.5	MAX	733	MIN	8.4	CFSM	.57	IN	7.73	AC-FT	54840

05449500 IOWA RIVER NEAR ROWAN, IA

LOCATION.--Lat 42°45'36", long 93°37'23", in NW1/4 NE1/4 sec.25, T.92 N., R.24 W., Wright County, Hydrologic Unit 07080207, on left bank 10 ft (3 m) downstream from bridge on county highway C38, 0.9 mi (1.4 km) downstream from Drainage ditch 123, 3.8 mi (6.1 km) northwest of Rowan, 10.7 mi (17.2 km) downstream from confluence of East and West Branches, and at mile 316.4 (509.1 km).

DRAINAGE AREA.--429 mi² (1,111 km²).

PERIOD OF RECORD.--October 1940 to September 1976, June 1977 to current year.

REVISED RECORDS.--WSP 1308: 1942-43 (M). WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,143.35 ft (348.49 m) NGVD. Prior to Oct. 14, 1948, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--39 years, 195 ft³/s (5.522 m³/s), 6.17 in/yr (157 mm/yr), 141,300 acre-ft/yr (174 hm³/yr); median of yearly mean discharges, 190 ft³/s (5.38 m³/s), 6.0 in/yr (152 mm/yr), 138,000 acre-ft/yr (170 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,460 ft³/s (240 m³/s) June 21, 1954, gage height, 14.88 ft (4.535 m); minimum daily, 2.9 ft³/s (0.082 m³/s) Jan. 21-23,1959.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,370 ft³/s (38.8 m³/s) June 2, gage height, 9.24 ft (2.816 m) at 1000 hours, no other peak above base of 1,200 ft³/s (34.0 m³/s); minimum daily, 36 ft³/s (1.02 m³/s) Aug. 3.

REVISIONS.--Revised figures of discharges for period June to September 1977 are given below. These figures supersede those published in the report for 1978.

June	29	12	July	11	13	July	23	13	Aug.	4	8.9	Aug.	16	86	Aug.	28	16	Sept.	9	12	Sept.	21	16
	30	14		12	12		24	16		5	9.6		17	102		29	14		10	12		22	14
July	1	21		13	13		25	16		6	9.0		18	59		30	14		11	11		23	14
	2	53		14	13		26	12		7	9.9		19	35		31	14		12	12		24	24
	3	30		15	14		27	11		8	13		20	24	Sept.	1	14		13	12		25	23
	4	20		16	15		28	11		9	12		21	21		2	14		14	11		26	21
	5	14		17	15		29	11		10	16		22	19		3	16		15	11		27	18
	6	13		18	13		30	10		11	15		23	17		4	15		16	11		28	15
	7	15		19	12		31	10		12	12		24	15		5	14		17	11		29	14
	8	14		20	11	Aug.	1	10		13	11		25	14		6	15		18	15		30	17
	9	14		21	12		2	10		14	9.6		26	17		7	13		19	13			
	10	13		22	12		3	9.5		15	13		27	16		8	13		20	14			

Month	Total	Mean	Max.	Min.	Cfsm	Inches	Acre-ft
July	472	15.2	53	10	0.04	0.04	936
August	651.5	21.0	102	8.9	.05	.06	1,290
September	435	14.5	24	11	.03	.04	863

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	127	397	330	153	78	128	172	152	1280	86	38	292
2	128	445	288	151	77	118	198	145	1340	82	37	395
3	125	412	306	124	75	112	230	139	1110	81	36	321
4	122	365	312	116	75	122	300	133	781	76	39	311
5	119	367	314	108	76	130	400	127	530	75	43	356
6	117	650	290	104	77	130	380	122	425	70	45	339
7	115	916	258	96	78	128	360	118	370	64	39	347
8	110	940	221	88	77	130	350	114	295	61	49	298
9	108	823	200	79	78	160	376	112	248	96	63	245
10	107	665	216	70	78	230	380	111	228	147	192	202
11	105	543	210	70	79	300	355	112	206	107	481	179
12	106	474	198	72	79	328	335	114	184	83	577	165
13	105	431	212	74	80	300	320	115	202	72	566	151
14	100	397	218	77	80	268	310	117	722	64	618	137
15	98	379	220	80	80	288	295	118	1080	70	695	129
16	98	374	186	100	78	380	283	118	1010	110	692	123
17	99	383	200	170	79	512	270	119	625	84	766	118
18	97	396	208	220	80	620	255	119	469	70	892	109
19	96	383	206	210	80	472	245	119	394	65	942	105
20	100	356	200	180	81	451	248	120	308	59	870	168
21	103	340	196	156	92	438	250	120	248	87	699	406
22	145	423	190	132	168	313	252	114	210	91	502	681
23	455	612	186	118	248	241	248	109	181	70	361	938
24	832	678	178	110	266	206	230	103	162	60	272	1030
25	892	616	172	102	242	177	212	100	145	52	219	967
26	774	541	164	97	208	163	200	94	132	52	183	801
27	612	477	165	93	176	156	188	94	123	48	174	571
28	499	419	159	89	155	153	178	110	110	43	273	435
29	414	359	154	86	140	156	170	133	100	42	338	371
30	370	360	156	83	---	163	161	570	92	40	319	331
31	357	---	156	80	---	172	---	1070	---	39	299	---
TOTAL	7635	14921	6669	3488	3260	7645	8151	5061	13310	2246	11319	11021
MEAN	246	497	215	113	112	247	272	163	444	72.5	365	367
MAX	892	940	330	220	266	620	400	1070	1340	147	942	1030
MIN	96	340	154	70	75	112	161	94	92	39	36	105
CFSM	.57	1.16	.50	.26	.26	.58	.63	.38	1.04	.17	.85	.86
IN.	.66	1.29	.58	.30	.28	.66	.71	.44	1.15	.19	.98	.96
AC-FT	15140	29600	13230	6920	6470	15160	16170	10040	26400	4450	22450	21860

CAL YR 1979 TOTAL 172144 MEAN 472 MAX 3810 MIN 16 CFSM 1.10 IN 14.93 AC-FT 341400
WTR YR 1980 TOTAL 94726 MEAN 259 MAX 1340 MIN 36 CFSM .60 IN 8.21 AC-FT 187900

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	74.4	76.9	52.1	40.9	74.2	327.5	415.3	241.9	376.8	253.0	96.7	126.9	181.70
RUNOFF (INCHES)	0.26	0.20	0.14	0.11	0.18	0.88	1.08	0.65	0.98	0.68	0.26	0.33	5.75
STD. DEVIATION	0.38	0.27	0.16	0.10	0.22	0.64	1.39	0.47	1.01	0.86	0.33	0.67	3.65
PERCENT OF ANNUAL	4.40	3.50	2.30	1.80	3.40	15.00	19.00	11.00	17.00	12.00	4.50	5.80	----
PRECIP. (INCHES)	1.75	1.19	1.36	1.00	1.03	2.07	2.62	4.21	5.04	3.97	3.07	3.09	30.40

05451500 IOWA RIVER AT MARSHALLTOWN, IA

LOCATION.--Lat 42°03'57", long 92°54'27", in SE1/4 SE1/4 sec.23, T.84 N., R.18 W., Marshall County, Hydrologic Unit 07080208, on right bank 10 ft (3 m) downstream from bridge on State Highway 14, 1,500 ft (457 km) upstream from Burnett Creek, 2.2 mi (3.5 km) upstream from Linn Creek and at mile 222.8 (358.5 km).

DRAINAGE AREA.--1,564 mi² (4,050 km²), including that of Burnett Creek.

PERIOD OF RECORD.--October 1902 to September 1903, October 1914 to September 1927, October 1932 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1915-18, 1919 (M), 1920, 1921-23 (M), 1924-27, 1933, 1934 (M), 1936, 1938, 1947 (M).

GAGE.--Water-stage recorder. Datum of gage is 853.10 ft (260.205 m) NGVD. See WSP 1728 for history of changes prior to Sept. 21, 1934.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--62 years (1902-3, 1914-27, 1932-80), 775 ft³/s (21.95 m³/s), 6.73 in/yr (171 mm/yr), 561,500 acre-ft/yr (692 hm³/yr); median of yearly mean discharges, 690 ft³/s (19.5 m³/s), 6.0 in/yr (152 mm/yr), 500,000 acre-ft/yr (616 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,000 ft³/s (1,190 m³/s) June 4, 1918, gage height, 17.74 ft (5.407 m), from floodmark, from rating curve extended above 19,000 ft³/s (538 m³/s) on basis of velocity-area study; maximum gage height, 19.77 ft (6.026 m) March 19, 1979; minimum daily discharge, 4.7 ft³/s (0.13 m³/s) Jan. 25, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,040 ft³/s (171 m³/s) June 14, gage height 15.85 ft (4.831 m) at 2330 hours, no other peak above base of 5,000 ft³/s (142 m³/s); minimum daily, 150 ft³/s (4.25 m³/s) Jan. 3, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	349	1310	1070	175	410	330	634	531	1090	662	187	458
2	355	1240	899	170	400	350	701	524	1230	599	180	448
3	350	1150	891	150	410	370	885	506	2590	579	174	423
4	352	1110	972	170	400	390	1570	479	2120	562	169	479
5	310	1120	1070	160	395	410	1730	461	1900	539	174	502
6	330	1390	1060	150	385	430	1580	442	1760	502	187	450
7	327	1820	992	160	375	410	1540	423	2220	474	185	474
8	321	1880	848	170	360	400	1440	410	2270	448	180	490
9	309	1830	700	180	350	430	1340	405	1820	394	188	499
10	305	1830	720	170	330	1150	1280	402	1330	377	191	496
11	306	1720	720	160	320	1200	1250	408	1030	373	222	456
12	310	1640	550	170	315	1000	1220	419	795	389	293	425
13	304	1470	300	160	310	820	1170	503	733	383	391	393
14	301	1310	350	160	300	760	1100	431	4280	350	469	367
15	303	1220	390	400	300	1400	1050	405	5180	329	522	345
16	301	1140	420	660	290	3100	984	393	5070	339	625	341
17	299	1090	380	1250	290	3340	920	404	4830	314	790	322
18	296	1060	360	960	280	1680	870	357	4120	313	766	304
19	326	1050	320	740	285	1510	824	405	3820	329	803	291
20	316	1010	290	620	290	1480	801	419	3330	309	859	292
21	303	1030	270	580	490	1590	774	417	2640	285	892	305
22	734	1260	240	560	900	1380	745	404	2060	268	927	313
23	2210	1500	290	410	460	1210	724	404	1550	255	996	401
24	2040	1510	250	350	290	1020	689	375	1310	250	960	511
25	1800	1490	210	360	260	869	671	380	1140	256	731	609
26	1660	1510	200	340	280	761	647	359	1020	245	561	701
27	1670	1490	180	310	290	676	618	343	909	240	471	788
28	1650	1370	170	340	310	644	591	354	821	230	410	829
29	1550	1280	165	380	320	636	568	383	745	224	395	818
30	1370	1150	180	390	---	635	554	1020	676	205	378	691
31	1280	---	180	410	---	632	---	1260	---	195	430	---
TOTAL	22637	40980	15637	11365	10395	31013	29470	14426	64389	11217	14706	14221
MEAN	730	1366	504	367	358	1000	982	465	2146	362	474	474
MAX	2210	1880	1070	1250	900	3340	1730	1260	5180	662	996	829
MIN	296	1010	165	150	260	330	554	343	676	195	169	291
CFSM	.47	.87	.32	.24	.23	.64	.63	.30	1.37	.23	.30	.30
IN.	.54	.97	.37	.27	.25	.74	.70	.34	1.53	.27	.35	.34
AC-FT	44900	81280	31020	22540	20620	61510	58450	28610	127700	22250	29170	28210

CAL YR 1979 TOTAL 526809 MEAN 1443 MAX 17900 MIN 155 CFSM .92 IN 12.53 AC-FT 1045000
WTR YR 1980 TOTAL 280456 MEAN 766 MAX 5180 MIN 150 CFSM .49 IN 6.67 AC-FT 556300

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	312.0	322.4	217.1	257.8	495.6	1478.7	1443.9	1098.8	1598.1	1044.6	420.5	420.5	765.00
RUNOFF (INCHES)	0.23	0.23	0.16	0.19	0.33	1.09	1.03	0.81	1.14	0.77	0.31	0.30	6.64
STD. DEVIATION	0.35	0.25	0.15	0.20	0.27	0.76	1.06	0.65	1.06	0.95	0.26	0.40	3.48
PERCENT OF ANNUAL	4.20	3.60	2.40	2.80	5.30	16.00	16.00	12.00	17.00	11.00	4.60	4.60	-----
PRECIP. (INCHES)	2.07	1.30	1.06	1.03	1.03	2.32	2.94	4.31	4.75	3.60	3.45	3.15	31.00

05451700 TIMBER CREEK NEAR MARSHALLTOWN, IA

LOCATION.--Lat 42°00'25", long 92°51'15", in SE1/4 SW1/4 sec.8, T.83 N., R.17 W., Marshall County, Hydrologic Unit 07080208, on left bank 20 ft (6 m) downstream from bridge on U.S. Highway 30, 3.5 mi (5.6 km) upstream from mouth, and 4.1 mi (6.5 km) southeast of court house in Marshalltown.

DRAINAGE AREA.--118 mi² (306 km²).

PERIOD OF RECORD.--October 1949 to current year.

REVISED RECORDS.--WSP 1708: 1950-55, 1957-59.

GAGE.--Water-stage recorder. Datum of gage is 849.44 ft (258.909 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--31 years, 68.3 ft³/s (1.934 m³/s), 7.85 in/yr (200 mm/yr), 49,480 acre-ft/yr (61.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s (340 m³/s) Aug. 16, 1977, gage height, 17.69 ft (5.392 m), no flow for a few days in 1956 and 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of 16.8 ft (5.12 m), discharge, 5,700 ft³/s (161 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,820 ft³/s (51.5 m³/s) June 14, gage height, 12.31 ft (3.752 m) at 0900 hours, no other peak above base of 1,000 ft³/s (28.3 m³/s); minimum daily, 5.5 ft³/s (0.156 m³/s) Sept.28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	56	32	15	27	21	30	23	46	40	13	9.8
2	20	44	31	14	28	22	38	23	66	40	13	8.1
3	19	43	32	10	28	23	46	22	110	41	12	6.4
4	19	41	34	14	27	24	51	22	65	41	12	68
5	18	40	35	16	30	22	44	21	65	41	13	26
6	18	50	30	12	30	22	44	21	53	38	12	11
7	18	46	29	13	28	22	43	20	48	32	11	9.6
8	18	44	33	12	28	22	40	20	41	30	9.5	8.7
9	17	42	32	15	27	65	42	19	36	30	12	7.5
10	17	40	31	19	28	270	40	20	35	43	13	7.0
11	19	38	30	25	27	100	39	22	33	31	36	6.5
12	18	38	21	31	26	72	39	20	31	30	18	6.7
13	17	38	27	26	28	55	37	20	31	28	11	19
14	19	38	27	25	27	100	36	20	1000	26	10	13
15	18	38	27	24	27	254	36	20	268	25	10	8.8
16	18	35	23	350	25	139	32	19	164	30	52	8.4
17	17	36	21	220	26	65	31	23	133	25	39	8.6
18	16	34	25	70	28	48	30	25	110	32	17	8.6
19	21	33	29	45	29	48	29	24	104	27	12	8.5
20	21	32	30	38	34	45	29	21	87	24	10	9.6
21	18	36	29	33	390	39	28	19	78	22	8.8	8.4
22	167	44	33	30	500	35	26	18	73	21	9.1	8.2
23	130	40	50	28	110	34	25	18	68	20	7.1	7.2
24	69	37	25	26	45	33	25	18	63	19	6.9	6.9
25	54	36	18	25	36	30	24	18	58	18	7.1	6.3
26	47	37	17	25	27	30	25	17	54	21	7.1	5.7
27	43	35	16	26	26	28	25	16	50	21	7.3	5.7
28	40	36	16	26	26	29	24	16	47	19	7.6	5.5
29	38	42	15	25	23	30	24	105	43	17	7.4	5.6
30	38	41	16	27	---	31	24	107	40	15	8.0	6.0
31	49	---	16	28	---	31	---	48	---	14	9.6	---
TOTAL	1062	1190	830	1293	1741	1789	1006	825	3100	861	421.5	325.3
MEAN	34.3	39.7	26.8	41.7	60.0	57.7	33.5	26.6	103	27.8	13.6	10.8
MAX	167	56	50	350	500	270	51	107	1000	43	52	68
MIN	16	32	15	10	23	21	24	16	31	14	6.9	5.5
CFSM	.29	.34	.23	.35	.51	.49	.28	.23	.87	.24	.12	.09
IN.	.33	.38	.26	.41	.55	.56	.32	.26	.98	.27	.13	.10
AC-FT	2110	2360	1650	2560	3450	3550	2000	1640	6150	1710	836	645

CAL YR 1979	TOTAL	44606.0	MEAN	122	MAX	2820	MIN	15	CFSM	1.03	IN	14.06	AC-FT	88480
WTR YR 1980	TOTAL	14443.8	MEAN	39.5	MAX	1000	MIN	5.5	CFSM	.34	IN	4.55	AC-FT	28650

05451900 RICHLAND CREEK NEAR HAVEN, IA

LOCATION.--Lat 41°53'58", long 92°28'27", in SE1/4 NE1/4 sec.21, T.82 N., R.14 W., Tama County, Hydrologic Unit 07080208, on right bank 5 ft (1 m) upstream from bridge on county highway, 0.6 mi (1.0 km) northeast of Haven, and 2.8 mi (4.5 km) upstream from mouth.

DRAINAGE AREA.--56.1 mi² (145 km²).

PERIOD OF RECORD.--October 1949 to current year.

REVISED RECORDS.--WSP 1708: 1950-55, 1956 (M), 1957, 1958 (M), 1959.

GAGE.--Water-stage recorder. Datum of gage is 788.69 ft (240.393 m) NGVD. Prior to Oct. 1, 1971, at datum 10 ft (3.05 m) higher.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year.

COOPERATION.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--31 years, 34.0 ft³/s (0.963 m³/s), 8.23 in/yr (209 mm/yr), 24,630 acre-ft/yr (30.4 hm³/yr); median of yearly mean discharges, 30 ft³/s (0.85 m³/s), 7.3 in/yr (185 mm/yr), 21,700 acre-ft/yr (26.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,000 ft³/s (198 m³/s) May 28, 1974, gage height, 24.00 ft (7.315 m); no flow Jan. 22 to Feb. 2, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1918 reached a stage of 24.3 ft (7.41 m), discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,870 ft³/s (53.0 m³/s) June 14, gage height, 18.94 ft (5.773 m) at 1245 hr, no other peak above base of 1,000 ft³/s (28.3 m³/s); minimum daily, 2.5 ft³/s (0.071 m³/s) Sept. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	21	17	6.8	11	9.5	12	9.8	16	20	5.3	3.5
2	11	19	26	6.8	11	9.6	15	9.2	19	18	5.0	3.0
3	9.9	18	28	6.4	12	10	20	8.6	20	18	4.9	3.0
4	9.5	18	24	7.4	12	11	20	8.6	19	17	4.5	15
5	9.4	19	18	6.8	13	14	18	8.2	18	17	5.1	5.9
6	9.6	19	16	6.4	15	13	18	7.9	15	16	4.9	3.4
7	9.5	19	15	7.8	13	13	18	7.7	14	16	4.5	3.2
8	9.4	19	15	8.2	13	13	16	7.8	13	15	4.3	2.8
9	9.1	20	18	13	12	44	17	7.4	12	17	4.4	2.7
10	9.5	19	14	18	13	56	17	7.7	11	35	4.8	2.5
11	10	18	14	21	13	26	16	8.2	11	16	8.2	2.6
12	10	18	14	24	13	17	16	7.5	10	15	5.1	16
13	10	18	16	18	13	15	15	7.4	11	13	3.9	84
14	10	18	12	16	13	34	16	7.0	846	13	3.8	16
15	11	17	11	15	13	58	16	6.7	134	12	3.8	12
16	11	17	11	210	12	38	14	6.7	73	14	17	11
17	11	17	11	37	12	23	13	8.2	56	11	19	11
18	11	17	12	21	12	19	13	8.3	49	13	9.4	9.7
19	15	16	14	19	12	19	13	8.2	76	12	6.6	9.2
20	13	16	16	17	14	18	12	7.5	42	11	5.7	8.8
21	12	17	15	15	130	16	12	6.9	37	9.9	4.9	8.2
22	128	20	15	14	84	15	11	6.2	35	9.0	4.2	7.9
23	61	19	22	13	23	15	11	5.9	33	8.2	3.8	8.1
24	36	18	10	12	12	14	11	5.9	31	7.9	3.8	7.1
25	29	18	8.2	11	11	13	11	5.6	28	7.5	3.8	6.7
26	25	18	8.2	10	9.6	13	11	4.9	27	7.4	3.6	5.9
27	22	17	7.4	10	11	13	10	4.9	25	7.4	3.3	5.6
28	20	17	7.4	10	9.7	13	9.8	4.9	24	6.8	3.2	5.2
29	18	19	7.4	10	9.6	13	10	22	22	5.7	3.2	4.9
30	18	20	7.4	11	---	13	10	21	20	5.3	3.2	4.2
31	20	---	6.8	11	---	13	---	15	---	4.9	3.3	---
TOTAL	598.9	546	436.8	612.6	551.9	611.1	421.8	261.8	1747	399.0	170.5	289.1
MEAN	19.3	18.2	14.1	19.8	19.0	19.7	14.1	8.45	58.2	12.9	5.50	9.64
MAX	128	21	28	210	130	58	20	22	846	35	19	84
MIN	9.1	16	6.8	6.4	9.6	9.5	9.8	4.9	10	4.9	3.2	2.5
CFSM	.34	.32	.25	.35	.34	.35	.25	.15	1.04	.23	.10	.17
IN.	.40	.36	.29	.41	.37	.41	.28	.17	1.16	.26	.11	.19
AC-FT	1190	1080	866	1220	1090	1210	837	519	3470	791	338	573

CAL YR 1979 TOTAL 22468.4 MEAN 61.6 MAX 1580 MIN 6.8 CFSM 1.10 IN 14.90 AC-FT 44570
WTR YR 1980 TOTAL 6646.5 MEAN 18.2 MAX 846 MIN 2.5 CFSM .32 IN 4.41 AC-FT 13180

05452000 SALT CREEK NEAR ELBERON, IA

LOCATION.--Lat 41°57'51", long 92°18'47", in NW1/4 NW1/4 sec.36, T.83 N., R.13 W., Tama County, Hydrologic Unit 07080208, near center of span on downstream side of bridge on U.S. Highway 30, 2.0 mi (3.2 km) upstream from Hog Run, 3.0 mi (4.8 km) south of Elberon, and 9.0 mi (14.5 km) upstream from mouth.

DRAINAGE AREA.--201 mi^2 (521 km^2).

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1946.

GAGE.--Water-stage recorder. Datum of gage is 781.58 ft (238.226 m) NGVD (Iowa Highway Commission bench mark). Prior to Oct. 15, 1945, and June 14, 1947, to Feb. 10, 1949, nonrecording gage on upstream side of bridge at present datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--35 years, 124 ft^3/s (3.512 m^3/s), 8.38 in/yr (213 mm/yr), 89,840 acre-ft/yr (111 hm^3/yr); median of yearly mean discharges, 110 ft^3/s (3.12 m^3/s), 7.4 in/yr (188 mm/yr), 79,700 acre-ft/yr (98.3 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 35,000 ft^3/s (991 m^3/s) June 13, 1947, gage height, 17.6 ft (5.36 m) from rating curve extended above 17,000 ft^3/s (481 m^3/s); maximum gage height, 17.78 ft (5.419 m) July 18, 1969; *minimum* daily discharge, 0.85 ft^3/s (0.024 m^3/s) Jan. 31, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 16, 1944, reached a stage of 19.9 ft (6.07 m), from floodmark at downstream side of bridge, discharge, about 30,000 ft^3/s (850 m^3/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft^3/s (42.5 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage (ft)	Height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage (ft)	Height (m)
Jan. 17	0845	2,200	62.3	*a15.58	4.749	May 29	2300	1,530	43.3	12.72	3.877
Feb. 22	----	1,900	53.8	ice jam	----	Sep. 13	0600	*2,480	70.2	14.12	4.304
Mar. 16	0215	2,230	63.2	13.86	4.224						

Minimum daily discharge, 17 ft^3/s (0.48 m^3/s) July 30 to Aug.4, Aug.28 to Sept.3.

a ice jam

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	73	50	42	42	38	54	44	122	47	17	17
2	44	62	49	39	42	38	66	43	112	45	17	17
3	42	60	48	36	42	39	96	43	280	43	17	17
4	41	58	50	37	41	40	132	41	148	42	17	44
5	40	58	56	38	43	40	114	41	126	42	18	38
6	41	61	49	33	43	41	104	41	112	39	36	28
7	39	57	51	30	44	41	101	38	106	37	31	51
8	39	59	34	28	43	42	93	41	91	35	19	28
9	37	57	42	32	43	90	88	39	75	33	20	27
10	37	54	53	38	43	380	85	40	71	33	24	27
11	39	53	48	60	42	165	82	42	67	31	38	23
12	38	53	34	74	41	98	80	41	65	31	28	53
13	36	52	45	61	41	70	75	40	63	30	20	1670
14	37	52	44	52	40	105	73	39	597	28	19	182
15	38	52	44	46	41	720	72	38	224	27	18	91
16	37	50	43	1350	40	851	67	38	165	27	35	66
17	37	50	35	1800	39	166	64	40	122	26	59	53
18	36	50	38	410	40	102	61	42	107	25	32	47
19	45	49	42	190	41	100	58	42	132	24	25	45
20	42	46	45	130	44	90	57	40	94	23	22	43
21	39	52	46	100	600	77	55	38	88	22	21	42
22	298	59	47	80	1600	68	53	37	85	20	21	39
23	312	56	158	60	350	65	51	37	81	19	21	38
24	131	54	83	57	86	61	49	36	77	18	20	36
25	99	52	59	54	56	56	48	36	73	18	19	34
26	84	53	52	51	39	56	47	33	70	21	19	32
27	78	50	49	49	40	55	46	37	67	22	18	30
28	71	44	46	47	43	55	45	136	63	20	17	29
29	66	38	45	43	41	55	45	545	54	18	17	28
30	63	53	44	42	---	57	44	423	48	17	17	27
31	67	---	43	43	---	57	---	176	---	17	17	---
TOTAL	2094	1617	1572	5152	3690	3918	2105	2347	3585	880	719	2902
MEAN	67.5	53.9	50.7	166	127	126	70.2	75.7	120	28.4	23.2	96.7
MAX	312	73	158	1800	1600	851	132	545	597	47	59	1670
MIN	36	38	34	28	39	38	44	33	48	17	17	17
CFSM	.34	.27	.25	.83	.63	.63	.35	.38	.60	.14	.12	.48
IN.	.39	.30	.29	.95	.68	.73	.39	.43	.66	.16	.13	.54
AC-FT	4150	3210	3120	10220	7320	7770	4180	4660	7110	1750	1430	5760

CAL YR 1979	TOTAL	78566	MEAN	215	MAX	3450	MIN 30	CFSM 1.07	IN 14.54	AC-FT	155800	
WTR YR 1980	TOTAL	30581	MEAN	83.6	MAX	1800	MIN 17	CFSM .42	IN 5.66	AC-FT	60660	

05452200 WALNUT CREEK NEAR HARTWICK, IA

LOCATION.--Lat 41°50'06", long 92°23'10", in SE1/4 SW1/4 sec.8, T.81 N, R.13 W., Poweshiek County, Hydrologic Unit 07080208, on left bank 5 ft (2 m) upstream from bridge on county highway V21, 1.2 mi (1.9 km) downstream from North Walnut Creek, 4.0 mi (6.4 km) northwest of Hartwick, and 6.5 mi (10.5 km) upstream from mouth.

DRAINAGE AREA.--70.9 mi² (184 km²).

PERIOD OF RECORD.--October 1949 to current year.

REVISED RECORDS.--WSP 1558: 1950 (P), 1951-57.

GAGE.--Water-stage recorder. Datum of gage is 786.59 ft (239.753 m) NGVD.

REMARKS.--Records fair except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--31 years, 42.3 ft³/s (1.198 m³/s), 8.10 in/yr (206 mm/yr), 30,650 acre-ft/yr (37.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,800 ft³/s (193 m³/s) Aug. 16, 1977, gage height, 16.30 ft (4.968 m), from rating curve extended above 2,600 ft³/s (73.6 m³/s) on basis of contracted-opening and flow-over-embankment measurement of peak flow; no flow at times for most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of 17.7 ft (5.39 m), from information by local residents, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,800 ft³/s (79.3 m³/s) June 14, gage height, 14.40 ft (4.389 m) at 0800 hours, no other peak above base of 1,000 ft³/s (28.3 m³/s); minimum daily, 1.7 ft³/s (0.048 m³/s) Sept. 10, 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.7	19	17	8.3	9.5	8.1	14	13	14	16	4.7	3.3
2	8.7	17	16	7.3	9.6	9.0	19	13	17	15	4.7	2.3
3	8.9	16	19	7.6	9.7	9.7	30	12	16	15	4.3	2.2
4	8.6	16	20	7.8	9.8	11	28	12	20	15	4.4	23
5	9.3	15	18	8.6	12	14	24	10	16	14	4.8	6.4
6	8.5	16	16	8.8	13	13	25	10	14	14	4.2	8.2
7	8.1	15	14	8.7	12	14	22	9.4	13	13	3.7	6.0
8	8.3	15	12	11	12	13	20	9.7	11	13	3.4	2.8
9	7.9	15	21	12	12	47	22	10	11	15	4.1	2.1
10	8.0	15	13	13	13	54	21	10	11	27	4.1	1.7
11	8.4	14	11	23	13	34	20	11	10	13	5.1	1.7
12	8.3	15	9.2	28	13	17	21	10	10	13	4.1	5.2
13	7.8	16	11	16	13	16	19	9.8	10	13	3.3	61
14	7.9	14	12	13	13	29	19	9.4	904	12	3.1	8.9
15	8.0	14	13	13	14	65	18	9.1	161	12	3.2	5.7
16	7.9	13	12	260	12	44	18	9.6	94	13	19	4.8
17	7.8	14	11	39	12	22	12	12	68	10	14	4.4
18	7.5	14	13	17	13	19	12	12	53	13	7.0	3.7
19	14	13	14	13	13	18	17	12	75	11	4.2	3.4
20	9.2	12	16	15	20	16	16	10	37	9.8	3.4	3.7
21	7.9	15	16	11	210	15	15	9.4	33	8.8	2.8	3.0
22	156	16	24	8.9	62	14	14	8.5	32	8.1	2.6	2.5
23	60	15	40	11	23	14	15	8.4	30	7.7	2.4	2.4
24	33	15	15	15	11	14	15	8.4	28	7.1	2.4	2.4
25	25	14	11	9.6	10	12	15	8.0	27	6.8	2.4	2.4
26	22	14	10	8.3	12	13	16	7.5	24	7.2	2.2	2.2
27	20	14	9.4	9.2	11	14	15	7.9	21	7.0	2.2	2.3
28	17	14	8.6	8.5	8.7	14	15	7.9	18	6.2	2.3	2.2
29	17	19	9.5	8.5	8.4	14	14	38	17	5.4	2.3	2.1
30	16	21	9.0	9.1	---	14	14	18	17	4.9	2.5	2.2
31	20	---	8.8	9.3	---	16	---	13	---	4.7	4.6	---
TOTAL	565.7	454	449.5	638.5	604.7	626.8	545	349.0	1812	350.7	137.5	184.2
MEAN	18.2	15.1	14.5	20.6	20.9	20.2	18.2	11.3	60.4	11.3	4.44	6.14
MAX	156	21	40	260	210	65	30	38	904	27	19	61
MIN	7.5	12	8.6	7.3	8.4	8.1	12	7.5	10	4.7	2.2	1.7
CFSM	.26	.21	.21	.29	.30	.29	.26	.16	.85	.16	.06	.09
IN.	.30	.24	.24	.34	.32	.33	.29	.18	.95	.18	.07	.10
AC-FT	1120	901	892	1270	1200	1240	1080	692	3590	696	273	365

CAL YR 1979 TOTAL 27075.3 MEAN 74.2 MAX 1800 MIN 7.5 CFSM 1.05 IN 14.21 AC-FT 53700
WTR YR 1980 TOTAL 6717.6 MEAN 18.4 MAX 904 MIN 1.7 CFSM .26 IN 3.52 AC-FT 13320

05453000 BIG BEAR CREEK AT LADORA, IA

LOCATION.--Lat 41°44'58", long 92°10'55", in SW1/4 SW1/4 sec.7, T.80 N., R.11 W., Iowa County, Hydrologic Unit 07080208, on left bank 10 ft (3 m) downstream from bridge on county highway V52, 0.4 mi (0.6 km) south of Ladora, 1.2 mi (1.9 km) downstream from Coats Creek, 2.8 mi (4.5 km) upstream from Little Bear Creek, and 8.1 mi (13.0 km) upstream from mouth.

DRAINAGE AREA.--189 mi² (490 km²).

PERIOD OF RECORD.--October 1945 to current year. Prior to October 1966, published as Bear Creek at Ladora.

REVISED RECORDS.--WSP 1308: 1947 (M). WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 754.94 ft (230.106 m) NGVD. Prior to June 26, 1946, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--35 years, 118 ft³/s (3.342 m³/s), 8.48 in/yr (215 mm/yr), 85,490 acre-ft/yr (105 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,500 ft³/s (297 m³/s) Mar. 30, 1960, gage height, 14.60 ft (4.450 m); maximum gage height, 15.32 ft (4.670 m) Sept. 18, 1977; no flow for several days in 1956 and 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,400 ft³/s (39.6 m³/s) Jan. 16, gage height, 9.80 ft (2.987 m) backwater from ice, no peak above base of 2,000 ft³/s (56.6 m³/s); minimum daily, 5.6 ft³/s (0.159 m³/s) Sept. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	51	31	14	26	34	35	38	31	30	10	17
2	24	39	29	13	26	32	49	36	35	29	9.2	11
3	23	38	29	12	27	30	70	32	42	29	9.0	8.8
4	22	36	31	12	27	29	84	33	35	31	9.2	52
5	22	36	32	12	29	30	68	31	42	36	10	61
6	21	37	29	13	31	33	68	28	28	30	9.3	18
7	20	35	27	13	32	29	67	28	26	28	7.8	14
8	20	36	29	14	31	28	60	27	20	25	7.1	11
9	20	35	32	13	31	82	61	27	17	25	6.9	8.2
10	19	33	27	14	30	200	60	29	15	44	9.1	7.4
11	19	33	25	15	31	69	56	32	15	41	14	6.7
12	20	34	17	19	30	70	62	27	14	27	18	7.1
13	19	33	20	21	30	65	54	25	14	23	11	43
14	19	34	19	35	31	70	56	24	525	20	8.4	48
15	18	35	19	24	32	120	70	23	244	19	8.4	18
16	18	31	20	700	32	131	68	21	174	26	24	15
17	17	30	17	300	31	72	60	28	115	20	79	14
18	17	29	18	140	31	54	59	31	92	26	34	12
19	22	28	19	56	32	54	56	29	106	36	19	10
20	29	27	26	50	35	52	53	26	75	21	14	10
21	19	43	25	46	230	46	52	22	66	33	11	8.7
22	123	41	30	42	250	38	48	20	61	20	10	8.0
23	241	39	41	39	78	40	42	18	60	16	8.7	7.2
24	87	36	40	36	40	36	41	19	53	16	8.2	7.1
25	60	35	27	34	46	33	42	17	48	13	7.4	7.0
26	48	36	23	32	35	33	41	15	44	17	6.4	6.9
27	45	34	19	31	45	34	40	14	40	17	6.4	6.5
28	43	29	17	30	37	34	38	14	38	15	6.4	6.1
29	39	32	19	29	36	35	37	32	33	13	6.4	5.6
30	37	33	17	28	---	34	38	32	30	12	9.3	6.3
31	41	---	16	27	---	40	---	27	---	11	18	---
TOTAL	1195	1048	770	1864	1402	1687	1635	805	2138	749	415.6	461.6
MEAN	38.5	34.9	24.8	60.1	48.3	54.4	54.5	26.0	71.3	24.2	13.4	15.4
MAX	241	51	41	700	250	200	84	38	525	44	79	61
MIN	17	27	16	12	26	28	35	14	14	11	6.4	5.6
CFSM	.20	.19	.13	.32	.26	.29	.29	.14	.38	.13	.07	.08
IN.	.24	.21	.15	.37	.28	.33	.32	.16	.42	.15	.08	.09
AC-FT	2370	2080	1530	3700	2780	3350	3240	1600	4240	1490	824	916

CAL YR 1979	TOTAL	71096.0	MEAN	195	MAX	4510	MIN	16	CFSM	1.03	IN	13.99	AC-FT	141000
WTR YR 1980	TOTAL	14170.2	MEAN	38.7	MAX	700	MIN	5.6	CFSM	.21	IN	2.79	AC-FT	28110

05453100 IOWA RIVER AT MARENGO, IA

LOCATION.-- Lat 41°48'48" long 92°03'51", in SE1/4 NE1/4 sec.24, T.81 N., R.11 W., Iowa County, Hydrologic Unit 07080208, on left bank 5 ft (2 m) upstream from bridge on State Highway 411, 1.0 mi (1.6 km) downstream from Big Bear Creek, 0.8 mi (1.3 km) north of Marengo, 4.5 mi (7.4 km) upstream from Hilton Creek, and at mile 139.1 (223.8 km).

DRAINAGE AREA.--2,794 mi² (7,236 km²).

PERIOD OF RECORD.--October 1956 to current year. Monthly discharge only for some periods, published in WSP 1728.

REVISED RECORDS.--WSP 1558: 1957.

COOPERATION.--Ten discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--24 years, 1,702 ft³/s (48.20 m³/s), 8.27 in/yr (210 mm/yr), 1,233,000 acre-ft/yr (1,520 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,800 ft³/s (872 m³/s) Mar. 31, 1960, gage height, 19.21 ft (5.855 m); maximum gage height, 19.79 ft (6.032 m) July 12, 1969; minimum daily discharge, 24 ft³/s (0.68 m³/s) Jan. 29 to Feb. 1, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft³/s (170 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage Height (ft)	Gage Height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage Height (ft)	Gage Height (m)
Feb. 24	-----	6,400	181	ice jam		Mar. 16	1145	*7,200	204	ice jam	
Mar. 13	1330	ice jam		*18.74	5.712						

Minimum daily discharge, 321 ft³/s (9.09 m³/s) Aug. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	766	1850	1590	750	860	2000	1170	926	1580	1360	397	546
2	732	1790	1520	660	840	2000	1200	892	1590	1250	370	492
3	705	1740	1450	610	840	2000	1300	854	1700	1150	355	552
4	699	1660	1300	560	820	2000	1490	818	2280	1070	338	668
5	689	1590	1250	560	800	1800	1680	798	2600	1010	330	736
6	681	1570	1400	560	780	1800	2090	769	2350	940	321	844
7	655	1610	1400	640	740	1700	2120	723	2200	882	326	733
8	650	1860	1200	730	720	1700	2040	674	2080	826	338	669
9	640	2110	1050	740	710	2100	1990	659	2440	798	328	614
10	627	2130	960	730	700	2200	1920	652	2220	764	324	616
11	621	2100	900	710	680	2400	1840	648	1950	769	346	607
12	617	2090	800	690	660	2700	1800	628	1620	718	366	617
13	608	2040	700	720	640	3200	1750	618	1410	671	371	1550
14	604	1960	660	750	630	2800	1720	612	3430	664	385	1530
15	598	1830	1200	740	630	3600	1710	658	4670	656	430	819
16	597	1710	1100	1800	630	4800	1660	622	4710	653	548	650
17	598	1630	1000	2600	620	3400	1570	601	4720	628	792	575
18	594	1560	1050	2400	620	3500	1480	602	4840	620	924	528
19	611	1500	1100	1800	620	3040	1410	612	5040	616	916	495
20	632	1460	1100	1500	630	2380	1340	589	5190	599	878	474
21	630	1500	1100	1500	1100	2200	1290	579	5190	601	880	449
22	780	1490	1200	1800	5400	2110	1230	582	4680	567	905	423
23	1740	1540	1250	2000	5900	2020	1180	565	3590	528	927	410
24	2210	1690	1250	1950	6200	1800	1110	553	2860	502	952	412
25	2550	1820	1150	2000	4300	1630	1090	543	2450	480	993	453
26	2380	1830	1050	1700	2500	1440	1060	522	2160	468	978	542
27	2200	1830	960	1350	2800	1310	1040	504	1930	471	843	633
28	2110	1820	920	1150	2600	1240	1020	537	1750	463	716	725
29	2080	1760	860	1000	2300	1210	990	685	1590	450	638	810
30	2020	1670	880	920	---	1190	954	1370	1460	432	592	869
31	1940	---	850	900	---	1180	---	1230	---	414	583	---
TOTAL	33564	52740	34200	36520	47270	68450	44244	21625	86280	22020	18390	20041
MEAN	1083	1758	1103	1178	1630	2208	1475	698	2876	710	593	668
MAX	2550	2130	1590	2600	6200	4800	2120	1370	5190	1360	993	1550
MIN	594	1460	660	560	620	1180	954	504	1410	414	321	410
CFSM	.39	.63	.40	.42	.58	.79	.53	.25	1.03	.25	.21	.24
IN.	.45	.70	.46	.49	.63	.91	.59	.29	1.15	.29	.24	.27
AC-FT	66570	104600	67840	72440	93760	135800	87760	42890	171100	43680	36480	39750

CAL YR 1979 TOTAL 985494 MEAN 2700 MAX 20700 MIN 400 CFSM .97 IN 13.12 AC-FT 1955000
WTR YR 1980 TOTAL 485344 MEAN 1326 MAX 6200 MIN 321 CFSM .48 IN 6.46 AC-FT 962700

05453510 CORALVILLE LAKE NEAR CORALVILLE, IA

LOCATION.--Lat 41°43'29", long 91°31'40", in SW1/4 NE1/4 sec.22, T.80 N., R.6 W., Johnson County, Hydrologic Unit 07080208, at outlet works at left end of Coralville Dam on Iowa River, 2.3 mi (3.7 km) upstream from Rapid Creek, 4.3 mi (6.9 km) northeast of Coralville Post Office and at mile 83.3 (134.0 km).

DRAINAGE AREA.--3,115 mi² (8,067 km²).

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is at NGVD (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam completed in 1957. Storage began in September 1958. Releases controlled by three gates, 8.33 ft (2.539 m) wide and 20 ft (6 m) high, into forechamber of 23-ft (7 m) diameter concrete conduit through dam. Inlet invert elevation at 646.0 ft (197 m). No dead storage. Maximum design discharge through gates is 20,000 ft³/s (566 m³/s). Ungated spillway is concrete overflow section 500 ft (152 m) in length at elevation 712 ft (217 m) NGVD, contents, 469,000 acre-ft (578 hm³), surface area, 24,800 acres (10,040 hm²). Reservoir is used for flood control, low-flow augmentation, conservation and recreation. Normal operation will maintain an elevation of 670 ft (204 m) Feb. 15 to June 15, surface area, 1,820 acres (737 hm²), 680 ft (207 m) June 15 to Sept. 25, surface area, 4,900 acres (1,983 hm²), 683 ft (208 m) Sep. 25 to Dec. 15, and 680 ft (207 m) December 15 to Feb. 1 with a minimum release of 150 ft³/s (4.25 m³/s) and maximum release of 10,000 ft³/s (283 m³/s) Dec. 15 to May 1 and 6,000 ft³/s (170 m³/s) May 1 to Dec. 15.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 472,000 acre-ft (582 hm³) July 21, 1969, elevation, 711.85 ft (216.972 m); minimum daily contents, 456 acre-ft (0.562 hm³) Jan. 15, 1975; minimum elevation, 658.77 ft (200.793 m) Mar. 10, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 75,900 acre-ft (93.6 hm³) June 23; maximum elevation, 683.92 ft (208.459 m) June 24; minimum daily contents, 20,300 acre-ft (25.0 hm³) Mar. 26; minimum elevation, 670.00 ft (204.216 m) Mar. 24.

Capacity table (elevation, in feet, and contents, in acre-ft)

655	5,000	683	55,000	700	232,000
670	10,600	685	69,000	705	327,000
675	21,000	690	108,000	710	427,000
680	40,300	695	162,000	712	469,000

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60000	60100	59000	46500	50500	22700	22600	24800	57000	58900	56400	58200
2	59500	59200	58600	46200	50800	22600	22800	24900	57100	57900	56200	58400
3	59600	58700	58100	46400	51000	22400	22700	24900	56900	57500	56200	58400
4	59500	58700	59000	46400	49100	22700	22100	24800	56500	57400	56300	58200
5	59600	58800	60100	46400	46100	22800	22400	24900	57200	57200	56400	58600
6	59500	58600	60800	46400	42300	22800	22200	24200	57600	57100	56400	58800
7	59600	58700	61300	46200	38900	22600	22200	26100	57600	57200	56300	59700
8	59900	59300	61200	46400	36000	22000	22200	27500	56800	57300	56300	60600
9	59900	60400	60800	46400	32900	22300	21800	29000	26500	57600	56200	61300
10	59800	61000	60600	47200	29800	23000	21700	30500	56900	57900	56200	62400
11	59900	61800	60500	48200	27900	23800	21800	32100	56800	58200	56300	64300
12	60000	62500	60300	49400	25800	23600	21700	33700	56400	58300	56300	67100
13	60000	62300	59700	49700	23900	23700	21700	35200	57400	58400	56300	69600
14	60000	61500	58800	49600	23200	23700	22300	36900	57200	58400	56400	70500
15	60200	60500	57100	50000	23400	24000	22400	38500	59800	58400	56500	71300
16	60100	59800	54900	49500	23300	24100	22400	40100	61600	58000	57100	70900
17	60100	59400	52400	49600	23300	24300	22500	41700	63400	57600	57100	71700
18	60200	59200	50300	51300	23000	25800	22700	43300	67000	57400	56800	72100
19	60200	59000	48900	52100	22800	25500	23500	44800	69100	57100	56400	72300
20	59800	59000	48000	51000	22700	22400	24300	46300	71200	56800	56300	72500
21	60100	59300	47900	49800	23900	21500	24300	47700	73200	56400	56100	72700
22	60700	59400	48300	49400	24500	21400	24300	49000	75000	56200	56100	72600
23	61400	59500	48300	49700	25900	20700	24400	50300	75900	56100	56500	72400
24	62000	59800	48100	50000	26500	20700	24700	51600	75300	56000	57200	72300
25	62800	60500	47900	50000	25800	20600	25100	52700	72500	56400	57600	72100
26	63200	60500	47600	49600	25300	20300	24900	53800	70000	56700	57700	72000
27	62500	60400	47000	49700	24300	20600	24900	54900	67800	56800	57700	71800
28	61200	60400	46900	49700	23100	21300	24800	56100	65600	56600	57300	71200
29	60100	60200	46800	49900	22700	21600	24900	57000	63200	56700	57000	71900
30	60000	59800	46700	50100	---	21800	24700	56900	60600	56600	57400	72100
31	60400	---	46600	50300	---	22300	---	56800	---	56500	58200	---
MAX	63200	62500	61300	52100	51000	25800	25100	57000	75900	58900	58200	72700
MIN	59500	58600	46600	46200	22700	20300	21700	24200	26500	56000	56100	58200

WTR YR 1980 MAX 75900 MIN 20300

05454000 RAPID CREEK NEAR IOWA CITY, IA

LOCATION.--Lat 41°41'19", long 91°29'15", in NE1/4 NE1/4 sec.36. T.80 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on left bank 80 ft (24 m) upstream from bridge on State Highway 1, 3.5 mi (5.6 km) northeast of Iowa City, and 4.7 mi (7.6 km) upstream from mouth.

DRAINAGE AREA.--25.3 mi² (65.5 km²).

PERIOD OF RECORD.--October 1937 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1558: 1941 (M), 1943 (P), 1944 (M); 1946. WSP 1708: 1951 (P), 1952, WDR IOWA 1967: Drainage area.

GAGE.--Water-stage recorder and concrete control with sharp-crested weir. Datum of gage is 673.72 ft (205.350 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--43 years, 15.4 ft³/s (0.436 m³/s), 8.27 in/yr (210 mm/yr), 11,160 acre-ft/yr (13.8 hm³/yr); median of yearly discharges, 14 ft³/s (0.396 m³/s), 7.5 in/yr (190 mm/yr), 10,100 acre-ft/yr (12.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,100 ft³/s (173 m³/s) May 23, 1965, gage height, 14.10 ft (4.298 m), from contracted-opening measurement of peak flow; maximum gage height, 14.93 ft (4.551 m) July 17, 1972; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 741 ft³/s (21.0 m³/s) June 3, gage height, 8.84 ft (2.694 m), no other peak above base of 600 ft³/s (17.0 m³/s); maximum gage height, 9.11 ft (2.777 m) Jan. 16, backwater from ice; minimum daily discharge, 0.16 ft³/s (0.005 m³/s) Aug. 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	4.9	4.9	3.6	3.6	6.5	8.3	7.7	30	5.8	.34	17
2	2.4	3.3	4.3	3.6	3.6	6.3	10	7.1	89	5.1	.29	6.6
3	1.9	2.9	4.3	2.8	3.4	6.2	18	6.5	153	4.7	.26	3.3
4	1.5	2.8	4.9	3.0	3.4	5.7	17	6.1	43	4.6	3.5	62
5	1.4	2.7	5.9	3.0	4.8	5.0	14	5.9	32	5.1	6.4	20
6	1.2	2.8	5.2	2.7	5.5	3.8	13	5.4	25	4.0	21	12
7	1.3	2.4	4.8	3.2	4.7	3.5	12	5.0	22	3.7	3.2	8.6
8	1.4	2.6	3.8	1.5	4.5	6.0	11	5.1	18	3.2	1.2	5.7
9	1.8	2.5	3.7	1.6	4.4	12	11	5.1	16	4.4	2.3	4.8
10	1.4	3.4	4.0	1.7	4.4	17	9.9	6.0	14	4.0	1.6	3.2
11	1.5	1.9	4.1	1.8	4.5	10	10	6.1	12	3.7	1.3	3.0
12	1.7	2.1	3.2	1.9	4.5	6.4	13	4.9	11	3.7	1.7	39
13	1.2	2.4	2.7	2.3	4.6	4.0	18	5.0	11	2.9	.58	164
14	1.0	2.3	2.6	2.6	4.5	20	18	4.5	105	2.1	.46	32
15	.84	2.3	2.9	3.0	4.2	45	25	4.6	43	2.0	.41	23
16	.76	2.3	2.4	100	3.7	25	34	4.4	29	3.3	8.1	18
17	1.0	2.1	1.6	45	3.6	15	27	8.1	24	2.1	11	16
18	.98	2.3	1.7	23	3.7	12	22	7.1	21	2.3	4.2	12
19	8.4	2.3	2.1	17	4.0	11	19	5.8	18	2.4	2.9	10
20	2.4	2.8	2.7	13	4.4	10	16	5.3	16	1.8	2.1	8.6
21	1.7	21	3.0	11	50	8.9	15	4.8	14	1.5	3.2	7.4
22	7.7	13	5.7	9.7	100	7.6	13	4.2	12	1.4	1.4	6.6
23	7.7	10	13	9.5	38	8.1	12	4.0	11	1.1	.71	5.9
24	5.1	8.7	7.3	9.8	15	8.9	11	4.3	11	.98	.44	5.6
25	3.8	7.9	4.9	11	11	7.7	9.9	3.8	9.7	.89	.32	5.3
26	3.2	7.7	4.4	6.2	8.0	7.2	9.4	3.2	8.9	.93	.28	4.6
27	2.9	6.7	4.0	5.2	7.6	7.2	8.8	2.8	8.1	1.1	.21	4.4
28	2.8	6.1	3.5	4.5	7.2	8.0	8.4	4.8	7.3	.93	.16	4.3
29	2.5	5.5	3.8	4.0	6.8	8.2	8.5	99	6.6	.84	.18	3.9
30	2.3	5.2	3.9	3.8	---	8.3	8.4	45	5.8	.56	12	3.8
31	3.5	---	3.7	3.6	---	9.7	---	24	---	.39	16	---
TOTAL	78.88	144.9	129.0	314.6	327.6	320.2	430.6	315.6	826.4	81.52	107.74	520.6
MEAN	2.54	4.83	4.16	10.1	11.3	10.3	14.4	10.2	27.5	2.63	3.48	17.4
MAX	8.4	21	13	100	100	45	34	99	153	5.8	21	164
MIN	.76	1.9	1.6	1.5	3.4	3.5	8.3	2.8	5.8	.39	.16	3.0
CFSM	.10	.19	.16	.40	.45	.41	.57	.40	1.09	.10	.14	.69
IN.	.12	.21	.19	.46	.48	.47	.63	.46	1.22	.12	.16	.77
AC-FT	156	287	256	624	650	635	854	626	1640	162	214	1030

CAL YR 1979	TOTAL	7523.48	MEAN 20.9	MAX 678	MIN .76	CFSM .83	IN 11.21	AC-FT 15120			
WTR YR 1980	TOTAL	3597.64	MEAN 9.83	MAX 164	MIN .16	CFSM .39	IN 5.29	AC-FT 7140			

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	8.3	8.6	4.8	10.3	23.6	29.0	20.4	23.3	23.4	15.4	5.5	7.5	14.70
RUNOFF (INCHES)	0.25	0.38	0.22	0.47	0.97	1.32	0.90	1.06	1.03	0.70	0.25	0.33	7.87
STD. DEVIATION	0.40	0.75	0.27	0.60	0.96	1.07	0.65	1.03	0.88	1.04	0.37	0.69	4.54
PERCENT OF ANNUAL	3.20	4.80	2.80	6.00	12.00	17.00	11.00	14.00	13.00	8.90	3.20	4.40	----
PRECIP. (INCHES)	2.50	1.87	1.36	1.23	1.04	2.26	3.39	3.78	4.79	4.41	2.83	3.54	33.00

05454300 CLEAR CREEK NEAR CORALVILLE, IA

LOCATION.--Lat 41°40'36", long 91°35'55", in NE1/4 SE1/4 sec.1, T.79 N., R.7 W., Johnson County, Hydrologic Unit 07080209, on left bank about 50 ft (15 m) upstream from bridge on county highway, 1.1 mi (1.8 km) west of post office in Coralville, 1.5 mi (2.4 km) downstream from Deer Creek and 2.7 mi (4.3 km) upstream from mouth.

DRAINAGE AREA.--98.1 mi^2 (254.1 km^2).

PERIOD OF RECORD.--October 1952 to current year. Monthly discharge only for some periods, published in WSP 1728.

GAGE.--Water-stage recorder. Datum of gage is 547.48 ft (197.352 m) NGVD (levels by Corps of Engineers). Prior to Jan. 7, 1957, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Eight discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--28 years, 63.5 ft^3/s (1.798 m^3/s), 8.79 in/yr (223 mm/yr), 46,010 acre-ft/yr (55.7 hm^3/yr); median of yearly mean discharges, 48 ft^3/s (1.36 m^3/s), 6.6 in/yr (168 mm/yr), 34,800 acre-ft/yr (42.9 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,630 ft^3/s (188 m^3/s) May 17, 1974, gage height, 13.93 ft (4.246 m); no flow Jan. 18 to Feb. 4, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 632 ft^3/s (17.9 m^3/s) July 14, gage height, 7.23 ft (2.204 m), no peak above base of 1,000 ft^3/s (28.3 m^3/s); maximum gage height, 9.24 ft (2.816 m) Jan. 16, backwater from ice; minimum daily discharge, 5.0 ft^3/s (0.14 m^3/s) Aug. 27,28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.9	17	10	13	15	34	25	22	49	20	6.3	87
2	9.0	14	11	13	15	31	25	19	97	18	6.6	28
3	8.1	11	12	12	18	28	44	17	218	17	8.5	14
4	6.6	11	10	11	20	27	51	15	74	16	124	183
5	6.6	10	10	11	23	25	38	14	52	15	21	80
6	6.6	11	11	11	25	24	34	14	44	17	31	43
7	6.3	9.4	12	10	27	23	32	13	38	17	16	263
8	6.6	9.4	12	6.0	26	22	28	12	33	16	11	65
9	6.0	9.9	13	6.4	25	30	29	12	26	16	8.9	39
10	5.6	9.4	14	6.8	25	60	29	13	23	15	8.0	26
11	6.9	8.6	14	7.2	25	50	28	17	20	14	7.8	22
12	6.6	9.0	12	7.8	25	43	34	13	18	13	7.7	42
13	6.3	9.4	11	9.2	26	35	34	12	16	13	7.3	89
14	6.0	9.0	12	11	24	32	34	12	496	12	6.6	79
15	7.2	9.0	12	34	23	70	44	11	265	11	6.0	39
16	6.6	9.0	9.0	200	23	94	82	10	80	11	18	32
17	6.9	8.5	6.4	304	23	50	65	14	71	11	48	30
18	6.3	8.6	7.4	98	24	31	52	16	64	11	24	25
19	17	8.1	9.0	69	25	29	45	14	58	11	13	22
20	12	9.0	11	56	31	27	39	12	50	10	11	20
21	8.1	45	15	45	90	25	35	11	43	9.9	10	18
22	24	35	25	42	300	22	32	10	41	9.0	7.2	17
23	35	25	70	40	170	21	28	9.3	40	9.4	6.3	17
24	20	21	52	43	80	23	26	9.0	41	8.6	6.6	15
25	14	18	33	35	56	21	25	8.6	37	8.1	5.8	15
26	12	17	21	30	50	19	24	7.6	32	7.6	6.4	14
27	11	15	18	25	44	19	22	6.8	29	8.1	6.0	13
28	11	13	16	23	40	20	22	18	26	8.1	6.0	13
29	9.9	11	13	20	37	22	22	252	24	7.2	6.1	13
30	9.9	10	14	18	---	22	22	156	22	7.2	23	12
31	11	---	13	16	---	29	---	44	---	6.6	38	---
TOTAL	315.0	410.1	508.8	1234.4	1334	1008	1051	814.2	2127	374.7	507.0	1375
MEAN	10.2	13.7	16.4	39.8	46.0	32.5	35.0	26.3	70.9	12.1	16.4	45.8
MAX	35	45	70	304	300	94	82	252	496	20	124	263
MIN	5.6	8.1	6.4	6.0	15	19	22	6.8	16	6.6	5.0	12
CFSM	.10	.14	.17	.41	.47	.33	.36	.27	.72	.12	.17	.47
IN.	.12	.16	.19	.47	.51	.38	.40	.31	.81	.14	.19	.52
AC-FT	625	813	1010	2450	2650	2000	2080	1610	4220	743	1010	2730

CAL YR 1979 TOTAL 29623.5 MEAN 81.2 MAX 2410 MIN 5.6 CFSM .83 IN 11.23 AC-FT 58750
WTR YR 1980 TOTAL 11059.2 MEAN 30.2 MAX 496 MIN 5.0 CFSM .31 IN 4.19 AC-FT 21940

05454500 IOWA RIVER AT IOWA CITY, IA

LOCATION.--Lat 41°39'24", long 91°32'27", in SE1/4 SE1/4 sec.9, T.79 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on right bank 25 ft (8 m) downstream from Hydraulics Laboratory of University of Iowa in Iowa City, 175 ft (53 m) downstream from University Dam, 0.8 mi (1.3 km) upstream from Ralston Creek, 3.6 mi (5.8 km) downstream from Clear Creek, and at mile 74.2 (119.4 km).

DRAINAGE AREA.--3,271 mi² (8,472 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1903 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 29.00 ft (8.839 m) above Iowa City datum, and 617.27 ft (188.144 m) NGVD. Oct. 1, 1934 to Sept. 30, 1972, at datum 10.00 ft (3.05 m) higher. See WSP 1708 for history of changes prior to Oct. 1, 1934.

REMARKS.--Records excellent. Slight fluctuation at low stages caused by powerplant above station. Flow regulated by Coralville Lake (station 05453510) 9.1 mi (14.6 km) upstream, since Sept. 17, 1958. Corps of Engineers gage height telemeter at station.

AVERAGE DISCHARGE.--77 years, 1,652 ft³/s (46.78 m³/s), 6.86 in/yr (174 mm/yr), 1,197,000 acre-ft/yr (1,480 hm³/yr); median of yearly mean discharges, 1,450 ft³/s (41.1 m³/s), 6.0 in/yr (152 mm/yr), 1,050,000 acre-ft/yr (1,290 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,500 ft³/s (1,204 m³/s) June 8, 1918, gage height, 19.6 ft (5.974 m) from graph based on gage readings, site and datum then in use; minimum daily, 29 ft³/s (0.82 m³/s) Oct. 21, 22, 1916, regulated.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 17, 1881, reached a stage of 21.1 ft (6.43 m), from floodmarks at site and datum in use 1913-21, from information by local resident, discharge, 51,000 ft³/s (1,440 m³/s). Maximum stage known since at least 1850, about 3 ft (1 m) higher than that of July 17, 1881, occurred in June 1851, discharge, 70,000 ft³/s (1,980 m³/s), estimated.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,650 ft³/s (160 m³/s) Mar. 19, gage height, 16.67 ft (5.081 m); minimum daily, 146 ft³/s (4.13 m³/s) May 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	931	2040	1930	1210	775	1700	1460	1090	1590	2220	416	1020
2	924	2230	1930	1200	765	1550	1280	1030	1920	1740	417	954
3	798	2140	1500	1050	792	1370	1620	1020	2350	1350	391	416
4	690	1700	910	903	1420	1240	1890	1020	2110	1160	561	752
5	696	1550	1030	910	2200	1200	1660	956	2400	1170	386	680
6	690	1720	1330	910	2100	1200	1950	799	2490	1060	438	400
7	630	1720	1610	896	1900	1190	2280	553	2590	966	350	612
8	558	1540	1730	870	1780	1190	2290	276	2430	923	343	403
9	552	1540	1720	786	1780	1050	2340	209	2290	785	341	381
10	552	1820	1600	338	1780	1110	2200	224	2280	713	339	347
11	546	1830	1390	207	1750	1240	2110	224	2280	706	349	326
12	546	1840	1270	195	1630	1840	2120	215	2060	700	337	421
13	540	2110	1270	516	1480	2140	2110	215	1690	700	336	892
14	540	2350	1270	800	1120	2210	1890	222	2840	698	333	1050
15	540	2340	1540	720	714	2390	1950	221	3270	698	332	1260
16	534	2160	1760	2260	740	2600	2090	221	3810	827	407	1250
17	540	1930	1780	3110	760	3020	1960	246	3970	851	848	1110
18	540	1750	1610	2560	762	3850	1930	239	3980	739	1170	669
19	732	1740	1350	3780	756	5090	1570	222	3970	726	1160	609
20	786	1700	1220	4070	744	4710	1320	201	3990	722	1050	425
21	672	1750	1090	3640	1040	3100	1680	199	4010	724	949	418
22	786	1690	1140	2610	2710	2360	1660	192	4040	665	803	456
23	1060	1660	1450	1850	2440	2470	1330	146	4060	567	633	525
24	1340	1660	1590	1550	2570	2260	1250	174	4060	465	582	474
25	1780	1650	1570	1690	3050	2020	1180	180	4040	381	754	471
26	2200	1960	1570	1660	3480	2000	1270	176	3610	342	930	464
27	2550	2120	1570	1420	3590	1620	1260	173	3240	372	927	459
28	2680	1950	1370	1200	3040	1320	1170	336	3030	426	925	459
29	2530	1940	1200	1070	2020	1330	1170	1160	2830	423	762	512
30	2050	1940	1210	792	---	1440	1170	1550	2610	419	674	691
31	1960	---	1200	785	---	1250	---	1540	---	418	753	---
TOTAL	32473	56070	44710	45558	49688	63060	51160	15229	89840	24656	18996	18916
MEAN	1048	1869	1442	1470	1713	2034	1705	491	2995	795	613	631
MAX	2680	2350	1930	4070	3590	5090	2340	1550	4060	2220	1170	1260
MIN	534	1540	910	195	714	1050	1170	146	1590	342	332	326
AC-FT	64410	111200	88680	90360	98560	125100	101500	30210	178200	48910	37680	37520

CAL YR 1979 TOTAL 1128652 MEAN 3092 MAX 10200 MIN 534 AC-FT 2239000
WTR YR 1980 TOTAL 510356 MEAN 1394 MAX 5090 MIN 146 AC-FT 1012000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	879.5	908.9	680.9	851.2	1350.7	3035.8	3049.1	2610.2	3312.9	22099.5	1163.3	938.2	1737.4
RUNOFF (INCHES)	0.28	0.31	0.24	0.30	0.43	1.07	1.04	0.92	1.13	0.74	0.41	0.32	7.21
STD. DEVIATION	0.31	0.36	0.27	0.35	0.23	0.71	0.84	0.73	1.07	0.65	0.42	0.29	3.74
PERCENT OF ANNUAL	4.20	4.20	2.60	3.90	5.40	16.00	15.00	13.00	16.00	11.00	4.70	4.70	----
PRECIP. (INCHES)	2.42	1.81	1.32	1.19	1.01	2.19	3.20	3.67	4.64	4.28	2.75	3.43	32.00

05454500 IOWA RIVER AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples collected at Benton Street bridge at Iowa City, 0.5 mi (0.8 km) downstream from gaging station.

PERIOD OF RECORD.--September 1906 to September 1907, water years 1944 to current year.

PERIOD OF DAILY RECORD.--
CHEMICAL ANALYSIS: September 1906 to September 1907, October 1943 to September 1954.
SPECIFIC CONDUCTANCE: October 1968 to current year.
WATER TEMPERATURES: January 1944 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1943 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at times of analysis. During periods of partial ice cover, sediment samples are collected in open water channel.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 750 micromhos Feb. 25, 1972, Mar. 2, 7, 1977; minimum daily, 150 micromhos May 17, 1974.
WATER TEMPERATURES: Maximum daily, 32.0°C July 19, 1957, Aug. 24, 25, 1959, June 27, 1971; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 7,800 mg/L June 13, 1953; minimum daily mean, 1 mg/L Feb. 4,1979.
SEDIMENT LOADS: Maximum daily, 177,000 tons (161,000 tonnes) May 23, 1944; minimum daily, 0.82 ton (0.74 tonne) Jan. 21, 22, 1977.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 720 micromhos Jan. 9; minimum daily, 275 micromhos Mar. 20.
WATER TEMPERATURES: Maximum daily, 31.5°C July 16; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 1840 mg/L Mar. 18; minimum daily mean, 4 mg/L Feb. 9, 10.
SEDIMENT LOADS: Maximum daily, 20,000 tons (18,100 tonnes) Mar. 18; minimum daily, 2.8 tons (2.5 tonnes) JAN. 11.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	510	560	---	---	520	---	510	560	---	530	---	---
2	520	580	---	---	---	---	530	540	450	520	---	450
3	540	---	580	---	---	450	510	---	380	510	---	470
4	550	---	570	680	580	480	490	---	450	---	520	450
5	520	560	610	---	---	---	---	500	460	---	420	---
6	---	580	---	---	630	500	---	510	460	---	490	---
7	---	610	580	650	---	---	500	510	---	---	520	---
8	---	640	---	---	680	---	520	520	---	500	---	460
9	520	680	---	720	---	---	530	---	460	480	---	---
10	---	---	580	680	---	550	520	---	480	510	---	520
11	530	---	---	---	620	560	---	---	500	500	---	540
12	530	---	---	---	---	580	---	520	505	---	520	540
13	---	640	580	---	---	580	---	---	540	---	510	---
14	---	620	600	700	---	550	---	540	---	500	510	---
15	520	580	---	---	560	---	520	530	---	510	510	545
16	560	---	---	640	---	---	520	---	580	500	---	560
17	---	---	---	680	---	380	520	---	580	520	---	---
18	560	---	580	700	---	390	540	---	540	---	480	560
19	530	---	620	---	580	300	---	540	460	---	470	---
20	---	---	600	---	620	275	---	520	400	---	---	---
21	---	580	600	520	700	320	530	---	---	480	460	---
22	560	---	---	---	540	---	530	530	---	500	480	590
23	---	---	---	430	---	---	520	530	440	500	---	570
24	---	---	---	430	---	430	530	---	470	540	---	---
25	600	---	---	420	---	450	540	---	450	520	470	---
26	570	---	610	---	370	480	---	---	470	---	460	570
27	---	---	620	---	340	---	---	510	490	---	470	---
28	---	---	560	460	350	500	520	500	---	520	---	---
29	620	640	---	470	---	---	540	460	---	500	460	---
30	500	---	---	---	---	---	570	415	520	---	---	---
31	580	---	660	500	---	520	---	---	---	540	---	---

05454500 IOWA RIVER AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.0	11.0	---	---	.0	---	4.0	16.0	---	28.0	---	---
2	20.0	11.0	---	---	---	---	9.0	17.0	23.0	26.0	---	26.0
3	19.5	---	5.0	---	---	3.0	9.0	---	23.0	27.0	---	26.0
4	14.0	---	4.0	4.0	.0	2.0	9.0	---	23.0	---	28.0	23.0
5	18.0	16.0	9.0	---	---	---	---	22.0	24.0	---	27.0	---
6	---	8.0	---	---	1.0	2.0	---	20.0	23.0	---	28.0	---
7	---	7.0	1.0	.0	---	---	13.0	18.0	---	---	29.0	---
8	---	7.0	---	---	.0	---	11.0	---	---	30.0	---	27.0
9	16.0	6.0	---	.0	---	---	9.5	---	24.0	28.0	---	---
10	15.5	---	5.0	.0	---	2.0	9.0	---	24.0	30.0	---	25.0
11	16.0	---	---	---	.0	2.0	---	---	24.0	29.5	---	25.0
12	14.0	---	---	---	---	2.0	---	13.0	21.6	---	29.0	25.0
13	---	5.0	2.0	---	---	2.0	---	---	24.0	---	28.0	---
14	---	6.0	2.0	4.0	---	5.0	---	18.0	---	30.0	27.0	---
15	15.0	6.0	---	---	---	---	8.0	21.0	---	29.0	26.0	21.5
16	16.0	---	---	4.0	---	---	9.0	---	23.0	31.5	---	20.5
17	---	---	---	---	---	2.5	11.0	---	23.0	29.0	---	---
18	16.0	---	3.0	2.0	---	5.0	13.0	---	24.0	---	26.0	23.0
19	16.0	---	4.0	---	1.0	4.0	---	---	23.0	---	27.0	---
20	---	---	3.0	---	2.0	2.5	---	---	23.0	---	---	---
21	---	8.0	4.0	.0	2.0	5.0	18.0	---	---	30.0	26.0	---
22	15.0	---	---	---	2.0	---	21.0	21.0	---	28.0	27.0	21.5
23	---	---	---	.0	---	---	19.0	---	24.0	29.0	---	19.0
24	---	---	---	2.0	---	5.5	18.0	---	24.0	30.0	---	---
25	13.0	---	---	.0	---	7.0	17.0	---	26.0	28.0	27.0	---
26	12.5	---	3.0	---	---	6.0	---	---	26.0	---	25.5	19.5
27	---	---	3.0	---	2.0	---	---	25.0	27.0	---	28.0	---
28	---	---	1.0	.0	2.0	7.5	17.0	25.0	---	28.0	28.0	---
29	13.5	4.6	---	.0	---	---	16.0	21.0	---	29.0	---	---
30	14.0	---	---	---	---	---	16.0	21.0	27.0	---	---	---
31	13.5	---	3.0	.0	---	10.0	---	---	---	30.0	---	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	52	131	44	242	25	130	15	49	41	86	95	436
2	64	160	42	253	25	130	12	39	20	41	76	318
3	66	142	39	225	28	113	12	34	19	41	59	218
4	69	129	35	161	57	140	12	29	18	69	43	144
5	90	169	32	134	52	145	11	27	15	89	34	110
6	111	207	30	139	44	158	11	27	12	68	29	94
7	116	197	27	125	21	91	12	29	9	46	25	80
8	114	172	23	96	15	70	10	23	7	34	22	71
9	110	164	23	96	22	102	8	17	4	19	19	54
10	100	149	26	123	24	104	6	6.5	4	19	38	114
11	102	150	26	128	26	98	5	2.8	31	146	31	104
12	102	150	27	134	22	75	7	3.7	35	154	26	129
13	89	130	34	194	21	72	7	9.8	74	296	22	127
14	72	105	26	165	20	69	6	13	63	191	38	227
15	56	82	54	341	27	112	7	14	38	73	38	245
16	54	78	59	344	54	257	420	2560	50	100	62	435
17	55	80	37	193	51	245	279	2340	53	109	105	856
18	74	108	27	128	48	209	49	339	46	95	1840	20000
19	89	176	26	117	45	164	128	1310	36	73	840	10800
20	64	136	26	119	43	142	135	1480	43	86	388	4930
21	58	105	98	463	38	112	108	1060	55	154	335	2800
22	53	112	110	502	64	197	100	705	329	2410	269	1710
23	56	160	74	332	109	427	119	594	232	1530	198	1320
24	65	235	50	224	72	309	117	490	250	1730	139	848
25	69	332	34	151	48	203	92	420	232	1910	100	545
26	60	356	37	196	36	153	79	354	212	1990	71	383
27	52	358	50	286	36	153	70	268	185	1790	63	276
28	48	347	39	205	26	96	61	198	142	1170	60	214
29	46	314	26	136	19	62	52	150	114	622	67	241
30	45	249	25	131	17	56	50	107	---	---	83	323
31	43	228	---	---	16	52	77	163	---	---	72	243
TOTAL	---	5611	---	6083	---	4446	---	12860.8	---	15141	---	48395

05454500 IOWA RIVER AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	79	311	88	259	196	841	102	611	45	51	109	300
2	68	235	78	217	193	1090	97	456	42	47	80	206
3	97	424	72	198	762	4980	98	357	46	49	66	74
4	137	699	65	179	319	1820	100	313	103	156	98	199
5	124	556	59	152	192	1240	99	313	97	101	106	195
6	132	695	55	119	200	1340	101	289	81	96	81	87
7	145	893	54	81	263	1840	102	266	67	63	120	198
8	132	816	42	31	252	1650	111	277	54	50	113	123
9	150	948	41	23	222	1370	137	290	43	40	96	99
10	122	725	40	24	201	1240	118	227	34	31	77	72
11	100	570	38	23	180	1110	120	229	51	48	68	60
12	93	532	37	21	122	679	127	240	54	49	71	81
13	85	484	37	21	109	497	124	234	60	54	147	354
14	76	388	36	22	528	4050	114	215	52	47	126	357
15	90	474	30	18	709	6260	111	209	49	44	98	333
16	111	626	28	17	537	5520	112	250	59	65	94	317
17	134	709	46	31	332	3560	90	207	120	275	85	255
18	134	698	55	35	273	2930	98	196	90	284	75	135
19	124	526	43	26	255	2730	101	198	76	238	73	120
20	129	460	36	20	258	2780	99	193	80	227	70	80
21	160	726	25	13	253	2740	114	223	74	190	67	76
22	158	708	24	12	235	2560	104	187	59	128	65	82
23	162	582	26	10	213	2330	97	148	51	87	77	109
24	149	503	32	15	199	2180	75	94	46	72	69	88
25	161	513	33	16	157	1710	80	82	56	114	57	72
26	179	614	33	16	113	1100	90	83	64	161	45	56
27	171	582	33	15	113	989	105	105	66	165	37	46
28	141	445	46	42	132	1080	105	121	66	165	31	38
29	76	240	199	623	128	978	73	83	62	128	39	54
30	102	322	446	1870	110	775	55	62	75	136	64	119
31	---	---	337	1400	---	---	47	53	98	199	---	---
TOTAL	---	17004	---	5549	---	63969	---	6811	---	3560	---	4385

TOTAL LOAD FOR YEAR: 193814.8 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	TEMPERATURE, WATER (DEG C) (00010)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 04...	1030	14.0	708	56	107	73
NOV 07...	1200	6.0	1710	26	120	99
DEC 05...	0945	9.0	910	48	118	57
APR 22...	1000	21.0	1790	97	469	95
MAY 15...	1330	21.0	222	32	19	98
JUN 12...	1000	21.5	2280	120	739	100
JUL 17...	1000	29.0	974	91	239	96
AUG 26...	1000	25.5	973	62	163	99
SEP 15...	1030	21.5	1270	94	322	99

0545400 IOWA RIVER AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	NUMBER OF SAM-PLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)
OCT							
04...	1030	708	10	0	1	7	51
NOV							
07...	1200	1710	7	--	0	4	51
DEC							
05...	0945	910	9	--	0	3	44
APR							
22...	1545	1520	10	--	0	5	47
MAY							
15...	1330	222	4	--	0	10	49
JUN							
12...	1000	2280	10	--	0	4	46
JUL							
17...	1000	974	9	--	0	6	51
AUG							
26...	1000	973	9	--	0	7	65
SEP							
15...	1030	1270	8	--	0	5	49

DATE	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
OCT						
04...	85	95	98	98	98	100
NOV						
07...	86	95	98	99	100	--
DEC						
05...	81	92	96	99	100	--
APR						
22...	82	95	99	100	--	--
MAY						
15...	77	88	92	95	97	100
JUN						
12...	79	92	95	97	100	--
JUL						
17...	77	91	96	99	100	--
AUG						
26...	88	93	96	98	100	--
SEP						
15...	83	96	99	100	--	--

05455000 RALSTON CREEK AT IOWA CITY, IA

LOCATION.--Lat 41°39'50", long 91°30'48", in SE1/4 NW1/4 sec.11, T.79 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on left bank 10 ft (3 m) upstream from bridge on Rochester Avenue, 1.0 mi (1.6 km) northeast of post office in Iowa City and 2.2 mi (3.5 km) upstream from mouth.

DRAINAGE AREA.--3.01 mi² (7.80 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1924 to current year.

REVISED RECORDS.--WSP 1508: 1933, 1935-37, 1940-41 (M); 1942, 1943 (M), 1948-51, 1952 (P), 1953, 1954 (M), 1955. WDR IOWA 1967: 1965-66.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 663.27 ft (202.165 m) NGVD (University of Iowa bench mark).

REMARKS.--Records good except those for winter period, which are poor.

AVERAGE DISCHARGE.--56 years, 1.70 ft³/s (0.048 m³/s), 7.67 in/yr (195 mm/yr), 1,230 acre-ft/yr (1.52 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,760 ft³/s (49.8 m³/s) July 17, 1972, gage height, 9.01 ft (2.746 m); maximum gage height, 9.06 ft (2.761 m) July 18, 1956; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 113 ft³/s (3.20 m³/s) June 2, gage height, 3.79 ft. (1.155 m), no peak above base of 200 ft³/s (5.66 m³/s); no flow July 24, 30-31, Aug. 1-3, 26-29.

REVISIONS.--The maximum discharge for the water year 1965 has been revised to 1,000 ft³/s (28.3 m³/s) Sept. 21, 1965, gage height, 6.90 ft (2.103 m) superseding figures published in the report for 1965 and 1967.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	.38	.20	.29	.22	.48	1.2	.70	3.0	.16	.00	3.3
2	.20	.32	.19	.24	.25	.45	1.7	.63	12.18	.00	.38	
3	.15	.19	.20	.26	.18	.56	3.9	.55	4.3	.14	.00	.15
4	.07	.24	.23	.24	.19	2.5	2.6	.48	2.0	.13	1.7	8.9
5	.10	.20	.40	.25	.21	1.8	2.2	.44	.92	.51	.37	.80
6	.08	.23	.28	.24	.23	.34	2.2	.38	.73	.11	5.6	1.3
7	.06	.19	.24	.16	.25	.28	2.0	.36	.62	.10	.14	.61
8	.11	.20	.18	.11	.27	.80	1.8	.31	.42	.11	.06	.27
9	.05	.21	.22	.10	.30	1.4	2.4	.32	.35	.15	.08	.37
10	.04	.21	.26	.13	.34	2.0	1.8	.86	.28	.12	.04	.16
11	.05	.20	.20	.14	.37	1.1	1.3	.52	.23	.09	.27	.15
12	.08	.21	.16	.15	.39	.70	2.7	.36	.22	.07	.03	3.9
13	.07	.22	.13	.17	.40	.47	2.4	.39	.27	.04	.02	10
14	.03	.21	.14	.18	.40	15	2.3	.33	17.06	.02	1.3	
15	.05	.22	.16	.30	.39	10	5.4	.36	2.6	.04	.01	.81
16	.05	.20	.13	12.39	2.4	4.2	.36	1.4	.12	2.8	.97	
17	.10	.22	.04	2.4	.38	1.2	2.9	1.6	1.0	.03	1.0	.77
18	.07	.22	.07	1.3	.37	.98	2.3	.69	.89	.51	.20	.42
19	2.6	.22	.13	1.0	.38	.98	1.9	.48	.70	.08	.10	.32
20	.54	.48	.18	.74	.41	.82	1.6	.56	.54	.05	.30	.28
21	.22	1.8	.22	.66	9.0	.74	1.4	.46	.47	.18	.43	.21
22	4.1	.34	1.8	.56	12.63	1.3	.39	.39	.02	.05	.21	
23	1.4	.28	1.4	.45	3.6	.87	1.1	.37	.38	.02	.02	.17
24	.51	.24	.82	.40	2.1	.87	.99	.45	.32	.00	.01	.19
25	.34	.24	.51	.35	1.3	.63	1.1	.36	.33	.02	.01	.19
26	.26	.23	.38	.25	.87	.60	.86	.22	.34	.02	.00	.17
27	.26	.23	.36	.20	.76	.70	.82	.19	.24	.02	.00	.19
28	.26	.21	.32	.14	.66	.92	.82	1.5	.25	.05	.00	.22
29	.21	.21	.33	.15	.60	.92	.82	6.6	.16	.02	.00	.13
30	.19	.20	.32	.17	---	1.1	.82	2.6	.15	.00	.55	.12
31	.74	---	.30	.21	---	1.4	---	.71	---	.00	3.2	---
TOTAL	13.06	8.75	10.50	23.94	37.21	53.64	58.83	24.53	52.50	3.15	17.01	36.96
MEAN	.42	.29	.34	.77	1.28	1.73	1.96	.79	1.75	.10	.55	1.23
MAX	4.1	1.8	1.8	12	12	15	5.4	6.6	17	.51	5.6	10
MIN	.03	.19	.04	.10	.18	.28	.82	.19	.15	.00	.00	.12
CFSM	.14	.10	.11	.26	.43	.58	.65	.26	.58	.03	.18	.41
IN.	.16	.11	.13	.30	.46	.66	.73	.30	.65	.04	.21	.46
AC-FT	26	17	21	47	74	106	117	49	104	6.2	34	73

CAL YR 1979 TOTAL 978.11 MEAN 2.68 MAX 82 MIN .03 CFSM .89 IN 12.08 AC-FT 1940
WTR YR 1980 TOTAL 340.08 MEAN .93 MAX 17 MIN .00 CFSM .31 IN 4.20 AC-FT 675

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	0.9	1.0	0.5	1.2	2.6	3.3	2.2	2.0	2.4	1.7	0.6	1.1	1.6
RUNOFF (INCHES)	0.26	0.36	0.20	0.45	0.91	1.26	0.83	0.78	0.89	0.67	0.22	0.39	7.23
STD. DEVIATION	0.42	0.79	0.25	0.57	0.91	1.17	0.62	0.61	0.80	0.92	0.30	0.78	4.09
PERCENT OF ANNUAL	3.50	5.10	2.80	6.10	14.00	17.00	12.00	10.00	12.00	9.00	2.90	5.40	----
PRECIP. (INCHES)	2.48	1.86	1.35	1.22	1.04	2.25	3.37	3.76	4.76	4.39	2.81	3.52	32.80

05455000 RALSTON CREEK AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1952 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 1968 to current year.
WATER TEMPERATURES: October 1960 to current year.
SUSPENDED-SEDIMENT DISCHARGE: April 1952 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 8,000 micromhos Dec. 24, 1973; minimum daily, 120 micromhos May 19, 20, 1977.
WATER TEMPERATURES: Maximum daily, 31.0°C July 21, 1968; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 9,300 mg/L Aug. 20, 1975; minimum daily mean, 0 mg/L on many days in 1953-59, 1963-68, 1971, 1975, 1976, 1977, 1980.
SEDIMENT LOADS: Maximum daily, 4,300 tons (3,900 tonnes) May 23, 1966; minimum daily, 0 ton (0 tonne) on many days most years.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 2,000 micromhos Jan. 24, 25; minimum daily, 200 micromhos Aug. 30.
WATER TEMPERATURES: Maximum daily, 28.0°C July 10, 11, Aug. 8; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,130 mg/L Jan. 16; minimum daily mean, 0 mg/L on July 24, 28, July 30 to Aug. 3, Aug. 26-29.
SEDIMENT LOADS: Maximum daily, 128 tons (116 tonnes) June 14; minimum daily, 0 ton (0 tonne) July 24-29, July 30 to Aug. 3, Aug. 10, 15, 23-30.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	500	610	500	560	500	600	470	430	410	---	---	400
2	510	620	520	540	480	600	460	440	480	---	---	600
3	520	580	520	520	570	580	520	470	360	490	---	650
4	520	600	520	540	480	640	470	390	460	520	230	430
5	550	560	500	520	480	700	450	390	450	510	400	560
6	510	560	480	520	480	470	450	400	450	490	290	320
7	500	590	500	530	490	470	440	390	440	490	440	480
8	500	550	500	540	540	500	480	390	440	480	480	580
9	500	560	520	560	470	420	440	440	420	480	500	590
10	500	540	500	580	480	410	450	390	430	510	580	550
11	490	520	500	580	540	450	440	450	420	480	560	580
12	500	500	520	560	500	500	550	410	410	470	570	420
13	500	540	540	560	490	480	490	400	420	500	---	500
14	490	520	540	500	470	710	450	410	300	500	540	510
15	490	520	520	500	460	650	420	420	460	520	520	530
16	500	500	560	370	470	520	440	410	460	300	240	510
17	500	500	560	620	780	480	440	300	440	480	550	580
18	520	500	540	650	800	470	430	420	420	300	610	530
19	420	500	520	540	600	440	430	440	420	540	660	520
20	560	500	540	510	940	470	430	440	420	560	670	520
21	530	440	520	510	700	460	430	430	420	480	630	510
22	410	560	520	510	340	470	440	420	420	580	590	520
23	590	560	540	510	500	480	440	420	---	560	560	510
24	620	520	580	2000	580	480	420	400	---	---	560	510
25	600	520	580	2000	600	470	420	400	---	---	540	540
26	580	520	540	560	640	450	430	440	---	520	---	520
27	570	520	540	520	680	450	440	440	---	540	---	500
28	630	520	540	520	710	460	420	410	---	---	---	500
29	600	500	560	520	730	470	580	480	---	540	---	490
30	580	500	520	510	---	470	460	380	---	---	200	500
31	540	---	560	540	---	460	---	490	---	---	380	---

05455000 RALSTON CREEK AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.0	3.0	.0	2.0	.0	.0	7.0	15.0	18.0	20.0	---	20.0
2	13.0	3.0	.0	2.0	.0	1.0	6.0	13.0	18.0	18.0	---	22.0
3	11.0	6.0	.0	1.0	1.0	1.0	7.0	15.0	16.0	19.0	---	22.0
4	11.0	7.0	.0	.0	.5	1.0	6.0	15.0	19.0	18.0	23.0	21.0
5	12.0	7.0	.0	1.0	1.0	.0	6.0	20.0	18.0	25.0	25.0	17.0
6	9.0	3.0	.0	1.0	1.0	1.0	8.0	16.0	21.0	20.0	23.0	21.5
7	10.0	3.0	.0	1.0	1.0	1.0	14.0	15.0	22.0	23.0	27.0	22.0
8	9.0	2.0	1.0	2.0	.5	.0	9.0	11.0	16.0	26.0	28.0	19.0
9	9.0	2.0	.0	.0	1.0	1.0	4.0	11.0	21.0	22.0	25.0	21.0
10	9.0	2.0	2.0	1.0	1.0	1.0	4.0	13.0	19.0	28.0	23.0	---
11	9.0	2.0	.0	1.0	1.0	.0	4.0	12.0	19.0	28.0	24.0	20.0
12	9.0	2.0	.0	1.5	1.0	.0	9.0	15.0	15.0	27.0	25.0	19.0
13	6.0	1.0	.0	1.5	1.0	.0	3.0	14.0	15.0	27.0	---	21.0
14	6.0	.0	.0	2.5	1.0	.0	2.0	14.0	18.0	27.0	23.0	17.0
15	12.0	1.0	.0	2.0	.0	2.0	7.0	14.0	16.0	24.0	22.0	17.0
16	12.0	.0	.0	2.0	.0	3.0	7.0	13.0	14.0	25.0	18.0	15.0
17	13.0	.0	.0	2.5	1.0	2.0	9.0	12.0	15.0	27.0	18.0	15.0
18	14.0	8.0	.0	2.0	1.0	2.0	11.0	13.0	20.0	23.0	23.0	12.0
19	15.0	9.0	.0	2.0	1.0	3.0	13.0	15.0	15.0	25.0	26.0	18.0
20	17.0	9.0	1.0	1.5	1.0	5.0	12.0	15.0	16.0	24.0	25.0	17.0
21	20.0	6.0	1.0	1.5	1.0	5.0	20.0	17.0	14.0	24.0	21.0	17.0
22	15.0	5.0	.0	1.0	1.5	5.0	14.0	20.0	17.0	22.5	19.0	18.0
23	11.0	3.0	.0	1.0	1.0	3.0	13.0	18.0	23.0	26.0	18.0	15.0
24	10.0	4.0	1.0	1.0	2.0	4.0	9.0	21.0	21.0	---	24.0	15.0
25	7.0	3.0	.0	1.0	1.0	6.0	11.0	18.0	19.0	---	20.0	15.0
26	8.0	2.0	.0	.0	1.0	7.0	11.0	23.0	20.0	22.0	---	14.0
27	7.0	3.0	1.0	.0	.0	8.0	11.0	17.0	20.0	20.0	---	11.0
28	10.0	2.0	.0	.5	.0	8.0	12.0	20.0	21.0	---	---	12.0
29	5.0	.0	.0	.5	.0	7.0	13.0	21.0	18.0	26.0	---	16.0
30	11.0	.0	.0	.5	---	7.0	13.0	21.0	16.0	---	22.0	17.0
31	11.0	---	.0	1.0	---	8.0	---	18.0	---	---	20.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	153	.03	119	.12	107	.06	64	.05	89	.05	30	.04
2	87	.05	127	.11	105	.05	62	.04	94	.06	45	.05
3	52	.02	91	.05	114	.06	60	.04	89	.04	54	.08
4	71	.01	71	.05	98	.06	102	.07	89	.05	22	.15
5	84	.02	93	.05	99	.11	64	.04	61	.03	13	.06
6	74	.02	94	.06	95	.07	87	.06	47	.03	52	.05
7	66	.01	71	.04	91	.06	95	.04	45	.03	46	.03
8	87	.03	84	.05	100	.05	129	.04	57	.04	180	.39
9	92	.01	105	.06	82	.05	122	.03	36	.03	196	.74
10	92	.01	117	.07	71	.05	126	.04	41	.04	216	1.2
11	97	.01	95	.05	61	.03	64	.02	54	.05	196	.58
12	88	.02	77	.04	79	.03	87	.04	40	.04	53	.10
13	86	.02	58	.03	105	.04	81	.04	41	.04	71	.09
14	93	.01	85	.05	119	.04	102	.05	50	.05	192	7.8
15	87	.01	104	.06	145	.06	150	.12	29	.03	154	4.2
16	64	.01	92	.05	191	.07	2130	69	33	.03	70	.45
17	86	.02	75	.04	158	.02	170	1.1	46	.05	44	.14
18	95	.02	56	.03	70	.01	58	.20	53	.05	42	.11
19	188	2.2	56	.03	72	.03	45	.12	33	.03	54	.14
20	40	.06	139	.34	112	.05	68	.14	36	.04	34	.08
21	16	.01	290	2.0	73	.04	61	.11	175	4.3	44	.09
22	608	11	52	.05	140	.68	32	.05	372	12	50	.09
23	57	.22	45	.03	86	.33	57	.07	89	.87	48	.11
24	38	.05	45	.03	40	.09	109	.12	39	.22	48	.11
25	88	.08	67	.04	59	.08	50	.05	22	.08	65	.11
26	90	.06	63	.04	67	.07	60	.04	23	.05	71	.12
27	85	.06	94	.06	78	.08	71	.04	15	.03	71	.13
28	92	.06	57	.03	84	.07	98	.04	11	.02	98	.24
29	102	.06	103	.06	63	.06	119	.05	19	.03	52	.13
30	77	.04	116	.06	54	.05	108	.05	---	---	38	.11
31	95	.19	---	---	69	.06	86	.05	---	---	47	.18
TOTAL	---	14.42	---	3.78	---	2.61	---	71.95	---	18.41	---	17.90

05455000 RALSTON CREEK AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	57	.18	51	.10	420	3.4	128	.06	0	.00	165	1.5
2	91	.42	54	.09	465	15	144	.07	0	.00	55	.06
3	168	1.8	53	.08	515	6.0	145	.05	0	.00	42	.02
4	52	.37	45	.06	200	1.1	100	.04	240	1.1	267	6.4
5	50	.30	63	.07	142	.35	104	.14	267	.27	56	.12
6	69	.41	75	.08	155	.31	102	.03	629	16	117	.41
7	78	.42	77	.07	140	.23	115	.03	159	.06	83	.14
8	89	.43	111	.09	185	.21	161	.05	86	.01	44	.03
9	86	.56	106	.09	138	.13	167	.07	54	.01	68	.07
10	49	.24	94	.22	155	.12	93	.03	36	.00	61	.03
11	70	.25	110	.15	170	.11	105	.03	60	.04	41	.02
12	159	1.2	99	.10	170	.10	131	.02	75	.01	135	1.4
13	75	.49	94	.10	192	.14	165	.02	97	.01	139	3.8
14	74	.45	114	.10	2020	128	169	.03	135	.01	120	.42
15	232	3.4	120	.12	402	2.8	155	.02	81	.00	135	.30
16	69	.78	143	.14	224	.85	136	.04	303	2.3	121	.32
17	58	.45	208	.90	156	.42	145	.01	264	.71	62	.13
18	58	.36	104	.19	113	.27	96	.13	87	.05	87	.10
19	46	.24	137	.18	124	.23	42	.01	46	.01	100	.09
20	53	.23	139	.21	111	.16	39	.01	89	.07	130	.10
21	42	.16	124	.15	148	.19	57	.03	100	.12	121	.07
22	57	.20	114	.12	206	.22	127	.01	87	.01	100	.06
23	92	.27	142	.14	175	.18	136	.01	65	.00	110	.05
24	68	.18	132	.16	120	.10	0	.00	44	.00	102	.05
25	62	.18	139	.14	105	.09	52	.00	37	.00	75	.04
26	57	.13	131	.08	90	.08	70	.00	0	.00	84	.04
27	64	.14	175	.09	116	.08	19	.00	0	.00	70	.04
28	60	.13	272	1.1	129	.09	0	.00	0	.00	90	.05
29	68	.15	550	9.8	137	.06	184	.01	0	.00	64	.02
30	59	.13	548	3.8	127	.05	0	.00	150	.22	70	.02
31	---	---	300	.58	---	---	0	.00	318	2.7	---	---
TOTAL	---	14.66	---	19.30	---	161.07	---	0.95	---	23.71	---	15.90

TOTAL LOAD FOR YEAR: 384.66 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	TEMPERATURE, WATER (DEG C) (00010)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
JUN 14...	1400	18.0	4.4	2000	24	100

05455010 SOUTH BRANCH RALSTON CREEK AT IOWA CITY, IA

LOCATION.--Lat 41°39'05", long 91°30'27", in SW1/4 NE1/4 sec. 14, T.79 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on right bank 60 ft (18 m) downstream from bridge on Muscatine Avenue in Iowa City, and 1.2 mi (1.9 km) upstream from mouth.

DRAINAGE AREA.--2.94 mi² (7.61 km²).

PERIOD OF RECORD.--October 1963 to current year.

REVISED RECORDS.--WDR IOWA 1966: Drainage area.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 678.03 ft (206.664 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--17 years, 2.45 ft³/s (0.069 m³/s), 11.32 in/yr (288 mm/yr), 1,780 acre-ft/yr (2.19 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,070 ft³/s (30.3 m³/s) July 17, 1972, gage height, 9.47 ft (2.886 m); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 14, 1962, reached a stage of 10.5 ft (3.20 m), from flood profile, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 152 ft³/s (4.30 m³/s) June 14, gage height, 4.28 ft (1.305 m), no peak above base of 200 ft³/s (5.66 m³/s); no flow July 24, 30-31, Aug. 2-3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.20	.29	.50	.32	.21	.33	3.2	.30	2.9	.30	.15	6.1
2	.13	.27	.47	.30	.23	.33	1.6	.47	14	.27	.00	.36
3	.10	.24	.49	.29	.26	.45	7.0	.47	6.7	.21	.00	.32
4	.08	.23	.46	.28	.28	.70	2.6	.32	5.1	.23	4.8	14
5	.10	.38	.45	.29	.35	.50	1.4	.27	2.4	2.4	.23	.79
6	.09	.40	.43	.29	.38	.35	1.2	.24	1.6	.23	10	3.2
7	.07	.32	.40	.28	.36	.31	1.0	.34	1.2	.21	.24	.71
8	.07	.34	.34	.20	.33	1.5	1.0	.30	.88	.17	.14	.47
9	.12	.36	.37	.20	.31	4.5	1.9	.29	.75	.68	.11	.55
10	.05	.29	.40	.22	.30	4.1	1.1	.84	.68	.15	.15	.30
11	.08	.27	.46	.23	.32	1.3	1.9	.26	.58	.13	1.6	.29
12	.24	.38	.31	.22	.35	.62	1.6	.17	.52	.10	.10	3.2
13	.06	.30	.30	.21	.38	.62	.61	.19	.58	.07	.05	1.4
14	.07	.26	.29	.22	.35	6.1	.68	.16	33	.07	.04	.13
15	.07	.27	.31	.25	.32	6.7	.88	.21	9.3	.07	.10	.08
16	.07	.26	.22	7.6	.26	2.2	.62	.26	4.1	.61	8.0	.23
17	.07	.27	.18	1.6	.28	1.1	.38	.75	2.4	.03	1.9	.38
18	.47	.16	.19	.84	.29	.84	.42	.30	1.9	1.6	.36	.32
19	5.4	.32	.25	.67	.56	.88	.47	.14	1.6	.04	.19	.29
20	.18	5.1	.30	.62	.84	.66	.40	.11	1.2	.02	1.9	.27
21	.16	4.1	.32	.56	26	.62	.38	.05	1.1	.19	.27	.24
22	11	1.0	.90	.49	14	.55	.36	.11	.88	.01	.13	.23
23	2.1	.84	.57	.47	1.7	1.1	.32	.10	.84	.01	.07	.20
24	.52	.75	.52	.43	.75	1.4	.30	.64	.71	.00	.08	.19
25	.38	.75	.38	.38	.44	.66	.30	.23	.61	.02	.06	.17
26	.30	.75	.35	.30	.49	.45	.30	.20	.50	.20	.04	.16
27	.29	.70	.33	.26	.50	.47	.34	.18	.45	.02	.03	.15
28	.23	.59	.33	.24	.45	.59	.30	.18	.42	.02	.03	.14
29	.23	.55	.34	.22	.35	.59	.30	2.9	.38	.01	.24	.12
30	.19	.55	.34	.21	---	3.5	.30	1.5	.36	.00	2.6	.11
31	2.6	---	.32	.20	---	1.5	---	.21	---	.00	7.4	---
TOTAL	25.72	21.29	11.82	18.89	51.64	45.52	33.06	12.69	97.64	8.07	41.01	35.10
MEAN	.83	.71	.38	.61	1.78	1.47	1.10	.41	3.26	.26	1.32	1.17
MAX	11	5.1	.90	7.6	26	6.7	7.0	2.9	33	2.4	10	14
MIN	.05	.16	.18	.20	.21	.31	.30	.05	.36	.00	.00	.08
CFSM	.28	.24	.13	.21	.61	.50	.37	.14	1.11	.09	.45	.40
IN.	.33	.27	.15	.24	.65	.58	.42	.16	1.24	.10	.52	.44
AC-FT	51	42	23	37	102	90	66	25	194	16	81	70

CAL YR 1979 TOTAL 763.22 MEAN 2.09 MAX 49 MIN .05 CFSM .71 IN 9.65 AC-FT 1510
WTR YR 1980 TOTAL 402.45 MEAN 1.10 MAX 33 MIN .00 CFSM .37 IN 5.09 AC-FT 798

05455500 ENGLISH RIVER AT KALONA, IA

LOCATION.--Lat 41°27'59", long 91°42'56", in SE1/4 SE1/4 sec.13, T.77 N., R.8 W., Washington County, Hydrologic Unit 07080209, on right bank 30 ft (9 m) upstream from bridge on State Highway 1, 0.8 mi (1.3 km) south of Kalona, 1.1 mi (1.8 km) upstream from Camp Creek, 4.5 mi (7.2 km) downstream from Smith Creek, and 14.5 mi (23.3 km) upstream from mouth.

DRAINAGE AREA.--573 mi² (1,484 km²).

PERIOD OF RECORD.--September 1939 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1940 (M), 1941, WSP 1708: 1956, 1957 (P), 1958 (P).

GAGE.--Water-stage recorder. Datum of gage is 633.45 ft (193.075 m) NGVD (levels by Corps of Engineers). Prior to Dec. 27, 1939, nonrecording gage 30 ft (9 m) downstream at same datum.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--41 years, 364 ft³/s (10.31 m³/s), 8.63 in/yr (219 mm/yr), 263,700 acre-ft/yr (325 hm³/yr); median of yearly mean discharges, 330 ft³/s (9.35 m³/s), 7.8 in/yr (198 mm/yr), 239,000 acre-ft/yr (295 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft³/s (566 m³/s) Sept. 21, 1965, gage height, 21.45 ft (6.538 m); minimum daily, 0.66 ft³/s (0.019 m³/s) Feb. 5-7, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1930 reached a stage of 19.9 ft (6.07 m) from floodmark, from information by local residents, discharge, 18,500 ft³/s (524 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,270 ft³/s (64.3 m³/s) Sept. 13, gage height, 9.45 ft (2.880 m) from graph based on gage readings, no peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 6.9 ft³/s (0.20 m³/s) Oct.11,15,17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	48	53	33	34	100	128	95	100	60	11	80
2	18	51	56	31	34	88	129	90	110	55	9.9	119
3	16	46	50	30	35	80	189	83	155	49	8.7	54
4	12	37	38	28	35	72	296	76	139	46	14	548
5	10	33	31	27	35	65	263	71	123	68	31	940
6	11	33	34	27	36	62	203	65	98	69	23	288
7	10	32	37	26	36	60	178	59	88	51	13	187
8	9.2	30	40	26	36	59	158	54	76	42	9.2	131
9	9.2	30	45	25	37	58	140	53	62	36	7.9	96
10	7.5	29	43	25	37	64	133	55	50	49	7.4	69
11	6.9	27	39	29	37	74	131	58	40	108	13	52
12	7.5	25	37	35	37	82	142	58	33	71	14	52
13	7.5	26	36	45	36	94	223	57	32	50	22	982
14	7.5	26	36	80	36	110	213	51	762	38	27	1060
15	6.9	26	35	138	36	211	225	48	789	34	20	332
16	8.4	27	33	240	37	240	409	46	442	31	57	207
17	6.9	28	33	400	38	316	357	51	259	28	173	167
18	15	28	33	280	39	171	278	64	188	36	228	143
19	91	26	32	140	39	157	235	68	156	48	122	119
20	46	27	32	70	40	143	205	59	126	47	68	100
21	32	98	39	54	90	125	181	49	104	36	49	83
22	67	158	45	48	540	106	163	42	91	35	31	69
23	155	110	80	45	470	93	143	37	344	33	22	59
24	176	79	110	42	350	95	127	34	322	23	17	52
25	90	63	98	40	250	90	116	32	158	19	13	50
26	60	55	74	38	290	77	111	30	126	21	11	50
27	45	50	52	37	210	75	107	25	108	19	10	43
28	38	47	43	36	150	77	103	22	95	18	8.9	40
29	35	48	40	36	125	82	98	49	80	17	8.1	35
30	31	51	37	35	---	87	97	127	67	14	9.4	35
31	34	---	34	35	---	110	---	63	---	12	33	---
TOTAL	1089.5	1394	1425	2181	3205	3323	5481	1771	5323	1263	1091.5	6242
MEAN	35.1	46.5	46.0	70.4	111	107	183	57.1	177	40.7	35.2	208
MAX	176	158	110	400	540	316	409	127	789	108	228	1060
MIN	6.9	25	31	25	34	58	97	22	32	12	7.4	35
CFSM	.06	.08	.08	.12	.19	.19	.32	.10	.31	.07	.06	.36
IN.	.07	.09	.09	.14	.21	.22	.36	.11	.35	.08	.07	.41
AC-FT	2160	2760	2830	4330	6360	6590	10870	3510	10560	2510	2160	12380

CAL YR 1979	TOTAL	185660.9	MEAN	509	MAX	11800	MIN	5.2	CFSM	.89	IN	12.05	AC-FT	368300
WTR YR 1980	TOTAL	33789.0	MEAN	92.3	MAX	1060	MIN	6.9	CFSM	.16	IN	2.19	AC-FT	67020

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	193.8	200.3	99.4	223.7	352.2	710.7	549.5	507.0	590.6	357.8	208.7	226.0	344.00
RUNOFF (INCHES)	0.22	0.39	0.20	0.45	0.64	1.43	1.07	1.02	1.15	0.72	0.42	0.44	8.15
STD. DEVIATION	0.29	0.77	0.25	0.73	0.46	1.13	0.99	0.93	0.99	0.88	0.70	1.20	4.90
PERCENT OF ANNUAL	2.70	4.80	2.50	5.50	7.90	18.00	13.00	12.00	14.00	8.80	5.20	5.40	----
PRECIP. (INCHES)	2.35	1.69	1.16	1.11	0.85	2.09	3.16	3.80	4.92	4.11	3.08	3.55	31.90

05455700 IOWA RIVER NEAR LONE TREE, IA

LOCATION.--Lat 41°25'15", long 91°28'25", in NW1/4 NE1/4 sec.6, T.76 N., R.5 W., Louisa County, Hydrologic Unit 07080209, on left bank 10 ft (3 m) downstream from bridge on county highway W66, 5 mi (8.0 km) southwest of Lone Tree, 6.2 mi (10.0 km) downstream from English River, and at mile 47.2 (75.9 km).

DRAINAGE AREA.--4,293 mi² (11,118 km²).

PERIOD OF RECORD.--October 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 588.16 ft (179.271 m) NGVD. Prior to Dec. 28, 1956, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are fair. Flow regulated by Coralville Lake (station 05453510) 36.1 mi (58.1 km) upstream since Sept. 17, 1958. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--24 years, 2,734 ft³/s (77.43 m³/s), 8.65 in/yr (220 mm/yr), 1,981,000 acre-ft/yr (2,440 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,700 ft³/s (110 m³/s) May 19, 1974, gage height, 18.97 ft (5.782 m); maximum gage height, 20.27 ft (6.178 m) Sept. 22, 1965; minimum daily discharge, 69 ft³/s (1.95 m³/s) Aug. 4, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 25, 1944, reached a stage of 19.94 ft (6.078 m), discharge not determined, from information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,640 ft³/s (160 m³/s) June 15, gage height, 9.44 ft (2.877 m); maximum gage height, 13.30 ft. (4.054 m), Feb. 23, backwater from ice; minium daily discharge, 310 ft³/s (8.78 m³/s) Jan. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

1	974	2040	1970	1220	850	3000	1590	1300	1620	2560	482	1050
2	984	2240	1930	1220	840	2700	1650	1260	1950	2180	483	1430
3	965	2290	1890	1190	930	2400	1680	1220	2730	1670	475	981
4	811	2050	1240	980	1300	2200	2250	1190	2330	1410	453	1620
5	767	1670	1010	946	2100	1910	2280	1140	2530	1370	970	2870
6	759	1640	1220	940	2400	1650	1960	1100	2550	1320	744	1400
7	746	1820	1470	890	2150	1900	2560	1000	2720	1180	641	1920
8	673	1660	1710	860	3000	2000	2510	725	2670	1070	522	1390
9	645	1610	1710	790	1900	1470	2580	503	2410	986	502	862
10	636	1700	1710	580	1900	1630	2540	485	2360	893	493	725
11	634	1850	1530	360	1900	1950	2350	491	2340	875	526	637
12	631	1860	1360	310	1800	1850	2360	498	2300	887	509	606
13	621	1890	1390	360	1600	2460	2480	492	1930	877	487	1510
14	618	2300	1410	540	1300	2210	2470	477	3720	857	535	2560
15	614	2360	1430	720	1100	2920	2180	471	5350	849	514	1970
16	612	2340	1680	1600	900	3110	2770	468	4820	862	597	1690
17	605	2050	1760	4000	820	3310	2700	476	4600	921	837	1600
18	603	1860	2000	3800	840	3640	2500	496	4400	930	1380	1220
19	1100	1770	1600	3580	860	4470	2360	509	4310	892	1420	947
20	926	1780	1240	4130	880	5310	1770	497	4240	870	1320	811
21	843	1970	1190	4010	960	3930	1810	466	4210	865	1160	665
22	836	1980	1050	3230	2500	2760	2170	454	4200	859	1070	627
23	1120	1890	1320	2370	4400	2470	1760	447	4210	804	860	678
24	1420	1800	1640	1800	3400	2780	1620	429	4470	727	762	665
25	1660	1750	1670	1750	3200	2150	1480	406	4270	649	698	638
26	2000	1760	1600	1700	3600	2250	1450	406	4110	588	948	628
27	2440	2200	1590	1700	4200	2010	1550	403	3490	552	1020	615
28	2710	2060	1550	1600	3600	1650	1430	397	3350	530	1020	608
29	2730	1970	1250	1300	3300	1450	1360	472	3020	503	1010	606
30	2340	1950	1220	1100	---	1690	1330	1650	2900	495	808	649
31	2080	---	1220	900	---	1540	---	1850	---	488	909	---
TOTAL	35103	58110	46560	50476	58540	76770	61500	22178	100110	30519	24155	34178
MEAN	1132	1937	1502	1628	2019	2476	2050	715	3337	984	779	1139
MAX	2730	2360	2000	4130	4400	5310	2770	1850	5350	2560	1420	2870
MIN	603	1610	1010	310	820	1450	1330	397	1620	488	453	606
AC-FT	69630	115300	92350	100100	116100	152300	122000	43990	198600	60530	47910	67790

CAL YR 1979 TOTAL 1423802 MEAN 3901 MAX 21300 MIN 603 AC-FT 2824000
WTR YR 1980 TOTAL 598199 MEAN 1634 MAX 5350 MIN 310 AC-FT 1187000

05457700 CEDAR RIVER AT CHARLES CITY, IA

LOCATION.--Lat 43°03'45", long 92°40'23", in SE1/4 NE1/4, sec.12, T.95 N., R.16 W., Floyd County, Hydrologic Unit 07080201, on right bank 800 ft (244 m) downstream from bridge on U.S. Highway 18 (Brantingham Street) in Charles City, 10.6 mi (17.1 km) upstream from Gizzard Creek, and at mile 252.9 (406.9 km) upstream from mouth of Iowa River.

DRAINAGE AREA.--1,054 mi² (2,730 km²).

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 973.02 ft (296.576 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Occasional minor regulation by dam 0.2 mi (0.3 km) above gage. Daily wire-weight gage readings available in district office for period Sept. 13, 1945, to June 30, 1954, at same site and datum. Discharge not published for this period because of extreme regulation of streamflow by power dam 0.2 mi (0.3 km) upstream. Several observations of water temperature were made during the year. National Weather Service gage height telemeters at station.

AVERAGE DISCHARGE.--16 years, 666 ft³/s (18.86 m³/s), 8.58 in/yr (218 mm/yr), 482,500 acre-ft/yr (595 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,000 ft³/s (595 m³/s) Apr. 7, 1965, gage height, 19.14 ft (5.834 m); maximum gage height, 21.64 ft (6.596 m) Mar. 2, 1965, backwater from ice; minimum daily discharge, 60 ft³/s (1.70 m³/s) Nov. 23, 1977, Jan. 7, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 27, 1961, reached a stage of 21.6 ft (6.58 m), from floodmarks, discharge, 29,200 ft³/s (827 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,600 ft³/s (102 m³/s) revised, and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage Height (ft)	Gage Height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage Height (ft)	Gage Height (m)
Mar. 17	1330	5,390	153	8.57	2.612	Aug. 10	2115	*11,800	334	*13.86	4.224
Mar. 19	1800	4,430	125	7.59	2.313	Aug. 14	0245	5,580	158	8.76	2.670
May 31	1145	9,790	277	12.38	3.773	Aug. 17	2100	6,260	177	9.40	2.865
June 28	2300	7,420	210	10.43	3.179	Sep. 22	1645	6,760	191	9.86	3.005

Minimum daily discharge, 185 ft³/s (5.24 m³/s) Feb. 19, 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	330	767	720	350	265	285	640	417	4560	1400	202	2420
2	334	784	604	350	260	255	600	401	2310	961	287	1930
3	333	799	687	325	258	255	650	388	1520	728	426	1510
4	324	761	729	290	256	240	710	377	1150	601	341	1570
5	314	731	849	280	255	255	890	361	1240	528	310	1630
6	312	1200	790	250	225	260	1020	346	2050	463	286	1380
7	302	1800	680	250	220	250	1730	334	1970	415	264	1210
8	301	1930	530	248	220	245	1940	325	1700	374	258	1080
9	295	1590	470	246	215	250	1610	314	1290	528	368	936
10	287	1280	530	290	210	385	1180	317	1060	733	7510	825
11	290	1130	530	340	205	498	943	316	852	526	8460	746
12	292	1010	340	360	200	462	843	313	713	412	3740	720
13	287	929	310	365	195	406	822	314	631	352	3770	761
14	282	857	290	340	195	366	837	305	592	319	5140	845
15	279	815	330	310	195	408	824	302	786	359	3300	789
16	274	798	415	440	195	2350	722	287	854	295	2450	731
17	274	812	310	900	190	4790	650	280	631	270	5200	678
18	274	829	295	1020	190	3860	614	278	528	256	4680	631
19	278	828	340	1000	185	3650	595	274	535	246	3160	592
20	281	799	375	860	185	4150	596	268	721	426	2580	586
21	292	788	375	650	205	3310	595	263	572	460	2400	1280
22	431	953	385	530	380	1850	595	260	492	361	1920	4870
23	894	1410	410	470	640	1130	581	253	443	310	1600	3670
24	1400	1640	415	380	750	880	555	243	412	279	1290	2230
25	1580	1470	415	380	660	720	530	240	390	260	1100	1680
26	1400	1240	400	365	540	640	508	232	368	252	958	1360
27	1220	1100	380	340	415	590	485	226	360	242	1230	1160
28	1050	1000	370	300	350	550	459	221	4780	230	2840	1050
29	913	908	360	300	315	560	443	241	5240	220	2590	949
30	815	817	360	280	---	630	433	2550	2280	209	2050	883
31	763	---	355	275	---	670	---	8600	---	206	2590	---
TOTAL	16701	31775	14349	13084	8574	35150	23600	19846	41030	13221	73300	40702
MEAN	539	1059	463	422	296	1134	787	640	1368	426	2365	1357
MAX	1580	1930	849	1020	750	4790	1940	8600	5240	1400	8460	4870
MIN	274	731	290	246	185	240	433	221	360	206	202	586
CFSM	.51	1.01	.44	.40	.28	1.08	.75	.61	1.30	.40	2.24	1.29
IN.	.59	1.12	.51	.46	.30	1.24	.83	.70	1.45	.47	2.59	1.44
AC-FT	33130	63030	28460	25950	17010	69720	46810	39360	81380	26220	145400	80730

CAL YR 1979 TOTAL 329267 MEAN 902 MAX 12500 MIN 110 CFSM .86 IN 11.62 AC-FT 653100
WTR YR 1980 TOTAL 331332 MEAN 905 MAX 8600 MIN 185 CFSM .86 IN 11.69 AC-FT 657200

05458000 LITTLE CEDAR RIVER NEAR IONIA, IA

LOCATION.--Lat 43°02'05", long 92°30'05", in SW1/4 NE1/4 sec.21, T.95 N., R.14 W., Chickasaw County, Hydrologic Unit 07080201, on left bank 12 ft (4 m) downstream from bridge on county highway B57, 2.4 mi (3.9 km) west of Ionia, 6.4 mi (10.3 km) upstream from mouth, and 7.6 mi (12.2 km) downstream from Beaver Creek.

DRAINAGE AREA.--306 mi² (793 km²).

PERIOD OF RECORD.--October 1954 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1708: 1959.

GAGE.--Water-stage recorder. Datum of gage is 973.35 ft (296.677 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--26 years, 159 ft³/s (4.503 m³/s), 7.06 in/yr (179 mm/yr), 115,200 acre-ft/yr (142 hm³/yr); median of yearly mean discharges, 140 ft³/s (3.96 m³/s), 6.2 in/yr (157 mm/yr), 101,400 acre-ft/yr (125 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s (306 m³/s) Mar. 27, 1961, gage height, 15.58 ft (4.749 m); minimum daily, 3.0 ft³/s (0.085 m³/s) Feb. 4-9, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 22, 1954, reached a stage of 11.37 ft (3.466 m), discharge, 4,600 ft³/s (130 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft³/s (34.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 17	1330	2,580	73.1	8.98	2.737	Aug. 13	1930	2,730	77.3	9.23	2.813
June 1	0500	*6,250	177	*12.73	3.880	Aug. 18	0645	2,540	71.9	8.96	2.731
June 7	1345	1,960	55.5	8.03	2.448	Aug. 21	0200	1,700	48.1	7.68	2.341
June 29	1215	2,630	74.5	9.04	2.755	Aug. 28	2315	1,530	43.3	7.40	2.256
Aug. 11	0700	5,840	165	12.39	3.776	Sep. 23	0645	4,120	117	10.84	3.304

Minimum daily discharge, 26 ft³/s (0.74 m³/s) Jan. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	241	209	103	60	93	110	102	4690	336	60	855
2	77	246	130	91	59	80	108	98	1250	260	76	522
3	77	238	130	52	57	74	259	94	606	221	187	392
4	73	217	210	61	54	70	408	90	440	193	116	422
5	73	218	197	75	52	63	332	86	688	163	101	641
6	71	414	186	58	51	61	312	84	1210	143	88	431
7	71	571	184	26	51	56	363	80	1700	126	80	353
8	70	500	137	54	50	56	305	75	871	111	88	312
9	69	368	133	56	50	82	254	73	547	165	177	273
10	67	306	173	55	50	158	221	74	355	402	3620	242
11	67	266	165	59	49	150	210	74	281	229	4720	220
12	66	250	71	54	49	155	203	73	242	158	1120	212
13	64	237	70	53	47	122	203	73	207	119	1810	214
14	63	222	124	56	46	100	197	70	192	104	2330	199
15	62	218	142	65	46	232	185	69	191	108	1210	191
16	62	235	96	343	46	638	169	69	232	96	891	183
17	63	257	90	591	46	1580	159	68	181	87	2050	172
18	62	263	104	632	44	1360	155	68	161	80	2060	163
19	63	259	104	383	44	651	155	66	152	74	1080	154
20	64	245	102	226	45	604	155	64	137	136	956	153
21	67	248	101	190	120	347	155	61	141	349	1150	466
22	199	491	103	188	315	220	153	57	123	172	634	1860
23	734	649	124	137	358	173	147	54	111	132	513	2870
24	793	602	128	150	402	159	139	51	105	105	384	703
25	573	458	120	138	287	138	127	49	98	91	316	470
26	438	369	111	108	176	126	125	47	94	82	275	369
27	347	322	105	98	153	122	120	46	128	77	269	314
28	295	300	102	84	134	120	114	46	1910	72	1100	282
29	260	255	92	76	107	118	110	76	2240	66	1090	257
30	230	216	97	70	---	122	106	506	619	63	575	236
31	220	---	103	66	---	119	---	2340	---	61	883	---
TOTAL	5515	9681	3943	4398	3048	8149	5759	4883	19902	4581	30009	14131
MEAN	178	323	127	142	105	263	192	158	663	148	968	471
MAX	793	649	210	632	402	1580	408	2340	4690	402	4720	2870
MIN	62	216	70	26	44	56	106	46	94	61	60	153
CFSM	.58	1.06	.42	.46	.34	.86	.63	.52	2.17	.48	3.16	1.54
IN.	.67	1.18	.48	.53	.37	.99	.70	.59	2.42	.56	3.65	1.72
AC-FT	10940	19200	7820	8720	6050	16160	11420	9690	39480	9090	59520	28030

CAL YR 1979 TOTAL 102975 MEAN 282 MAX 3560 MIN 10 CFSM .92 IN 12.52 AC-FT 204300
WTR YR 1980 TOTAL 113999 MEAN 311 MAX 4720 MIN 26 CFSM 1.02 IN 13.86 AC-FT 226100

05458500 CEDAR RIVER AT JANESVILLE, IA

LOCATION.--Lat 42°38'54", long 92°27'54", in NE1/4 SW1/4 sec.35, T.91 N., R.14 W., Bremer County, Hydrologic Unit 07080201, on left bank 300 ft (91 m) downstream from bridge on county highway at Janesville, 3.6 mi (5.8 km) upstream from West Fork Cedar River, and at mile 207.7 (334.2 km) upstream from mouth of Iowa River.

DRAINAGE AREA.--1,661 mi² (4,301 km²).

PERIOD OF RECORD.--October 1904 to Sept. 1906, October 1914 to September 1927, October 1932 to September 1942, October 1945 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as Red Cedar River at Janesville, 1905-6.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1906 (M), 1915-16 (M), 1917, 1918-19 (M), 1920-27, 1933-37 (M), 1940-42 (M).

GAGE.--Water-stage recorder. Datum of gage is 868.26 ft (264.646 m) NGVD. Prior to July 26, 1919, nonrecording gage at site 1,000 ft (305 m) downstream at datum 4.0 ft (1.2 m) lower. July 26, 1919, to Sept. 30, 1927, Nov. 14, 1932, to Sept. 30, 1942, and Apr. 26, 1946, to Nov. 10, 1949, nonrecording gage at county bridge 300 ft (91 m) upstream at same datum.

REMARKS.--Records good except those for winter period, which are poor. Diurnal fluctuation during low water caused by powerplant at Waverly, 10 mi (16.1 km) upstream. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--60 years (1904-6, 1914-27, 1932-42, 1945-80), 800 ft³/s (22.66 m³/s), 6.54 in/yr (166 mm/yr), 579,600 acre-ft/yr (715 hm³/yr); median of yearly mean discharges, 710 ft³/s (20.1 m³/s), 5.8 in/yr (147 mm/yr) 514,000 acre-ft/yr (634 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,000 ft³/s (1,050 m³/s) Mar. 28, 1961, gage height, 16.33 ft (4.977 m); minimum daily, 28 ft³/s (0.79 m³/s) Oct. 21, 1922.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 17, 1945, reached a stage of 16.2 ft (4.94 m), from floodmark at site 300 ft (91 m) upstream, discharge, 34,300 ft³/s (971 m³/s). Flood of Mar. 16, 1929, reached a stage of about 16 ft (5 m), from information by City of Waterloo, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 19	0430	6,530	185	6.74	2.054	Aug. 15	0730	8,860	251	8.34	2.542
June 2	1115	10,700	303	9.29	2.832	Aug. 19	0945	8,880	251	8.35	2.545
June 8	1230	4,020	114	4.65	1.417	Aug. 30	0730	4,450	126	5.03	1.533
June 30	1830	7,600	215	7.53	2.295	Sep. 24	1100	7,600	215	7.53	2.295
Aug. 12	1330	*14,900	422	*11.14	3.395						

Minimum daily discharge, 269 ft³/s (7.62 m³/s) May 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	717	1470	1490	650	1100	540	830	790	6140	5340	437	3650
2	734	1430	1240	630	1050	450	855	760	10100	2900	435	4010
3	725	1360	1220	610	900	460	908	730	6290	1980	513	3340
4	561	1390	1180	570	820	400	1470	700	3380	1600	665	2820
5	407	1370	1190	520	760	380	1590	666	2480	1320	710	2590
6	521	1400	1310	500	760	550	1400	633	2400	1160	665	2780
7	703	1660	1310	290	710	530	1640	600	3050	995	578	2450
8	710	2350	1130	400	680	491	2090	576	3870	929	562	2120
9	638	2800	1160	560	620	567	2660	558	3190	1120	580	1880
10	623	2620	903	730	600	662	2510	554	2480	1120	1820	1700
11	609	2220	972	520	570	923	2030	572	1920	1300	8080	1520
12	608	1910	905	860	500	927	1740	578	1600	1160	14200	1400
13	585	1720	860	820	510	741	1580	589	1370	944	9840	1320
14	587	1580	838	470	490	683	1480	493	1400	819	7480	1290
15	608	1470	845	450	460	926	1460	448	2280	744	8750	1330
16	575	1400	849	800	390	2010	1400	444	1870	738	6960	1300
17	563	1370	870	1050	460	2250	1300	269	1410	689	5220	1230
18	568	1400	910	1900	450	4560	1210	398	1240	614	6840	1150
19	578	1410	930	1900	430	6150	1140	407	1250	589	8510	1080
20	571	1400	950	1700	400	4740	1110	464	1080	565	6260	1370
21	570	1380	930	1500	460	5010	1080	462	1150	636	5420	1290
22	848	1500	905	1200	1000	4540	1050	451	1040	1040	5410	1770
23	1410	1820	882	1000	1100	2980	1020	443	912	822	3970	4330
24	1970	2240	837	880	1300	1950	990	431	829	690	3230	7160
25	2440	2540	785	770	1600	1420	960	422	757	481	2650	4610
26	2650	2430	756	680	1400	1140	930	405	616	352	2230	3180
27	2490	2160	755	1000	1200	973	900	399	358	365	1950	2550
28	2190	1930	725	1150	700	888	880	430	1200	483	1940	2180
29	1910	1730	687	1100	620	849	850	598	3730	602	3440	1970
30	1670	1650	677	1000	---	845	820	1830	6990	356	4310	1800
31	1520	---	668	1100	---	842	---	2580	---	451	3560	---
TOTAL	31859	53110	29669	27310	22040	50377	39883	19680	76382	32904	127215	71170
MEAN	1028	1770	957	881	760	1625	1329	635	2546	1061	4104	2372
MAX	2650	2800	1490	1900	1600	6150	2660	2580	10100	5340	14200	7160
MIN	407	1360	668	290	390	380	820	269	358	352	435	1080
CFSM	.62	1.07	.58	.53	.46	.98	.80	.38	1.53	.64	2.47	1.43
IN.	.71	1.19	.66	.61	.49	1.13	.89	.44	1.71	.74	2.85	1.59
AC-FT	63190	105300	58850	54170	43720	99920	79110	39040	151500	65270	252300	141200

CAL YR 1979 TOTAL 633227 MEAN 1735 MAX 14200 MIN 200 CFSM 1.05 IN 14.18 AC-FT 1256000
WTR YR 1980 TOTAL 581599 MEAN 1589 MAX 14200 MIN 269 CFSM .96 IN 13.03 AC-FT 1154000

05458900 WEST FORK CEDAR RIVER AT FINCHFORD, IA

LOCATION.--Lat 42°37'50", long 92°32'24", in SW1/4 SE1/4 sec.6, T.90 N., R.14 W., Black Hawk County, Hydrologic Unit 07080204, on left bank 100 ft (30 m) downstream from bridge on county highway C55 at Finchford, 3.2 mi (5.1 km) upstream from Shell Rock River, and 5.0 mi (8.0 km) upstream from mouth.

DRAINAGE AREA.--846 mi² (2,191 km²).

PERIOD OF RECORD.--October 1945 to current year. Prior to October 1955, published as West Fork Shell Rock River at Finchford.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1946 (M), 1947.

GAGE.--Water-stage recorder. Datum of gage is 867.54 ft (264.426 m) NGVD. Prior to June 10, 1955, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. An authorized diversion is made into Big Marsh, 16 mi (25.7 km) upstream from gage, of 2,100 acre-ft each year between September 1 and November 15. Net effect on daily flows at gage is unknown. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--35 years, 462 ft³/s (13.08 m³/s), 7.42 in/yr (188 mm/yr), 334,700 acre-ft/yr (413 hm³/yr); median of yearly mean discharges, 360 ft³/s (10.2 m³/s), 5.8 in/yr (147 mm/yr), 261,000 acre-ft/yr (322 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,900 ft³/s (903 m³/s) June 27, 1951, gage height, 17.28 ft (5.267 m), from floodmarks; minimum daily, 5.9 ft³/s (0.17 m³/s) Feb. 26, 27, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1929 reached a stage of about 14 ft (4 m), from information by local resident, discharge, about 12,800 ft³/s (362 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,860 ft³/s (81.0 m³/s) June 15, gage height, 10.60 ft (3.231 m) at 2130 hours, no other peak above base of 2,500 ft³/s (70.8 m³/s); minimum daily, 125 ft³/s (3.54 m³/s) Aug. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	332	1080	830	400	360	340	506	412	1420	367	136	541
2	329	1130	750	390	330	330	515	400	1650	339	132	552
3	337	1090	670	370	300	330	631	387	1770	318	127	588
4	327	980	760	350	270	320	1000	373	1760	303	125	623
5	321	926	790	370	260	310	1430	361	1490	295	140	575
6	315	993	800	360	240	300	1610	345	1180	281	194	572
7	307	1270	700	360	230	290	1330	329	1040	266	166	538
8	304	1520	610	350	220	290	1130	316	932	249	150	517
9	294	1550	560	350	210	290	1060	306	850	373	153	505
10	286	1380	570	350	210	440	1010	307	743	435	278	458
11	286	1210	590	370	210	540	964	316	646	441	833	420
12	282	1090	530	390	210	710	911	329	570	369	1500	383
13	274	1020	460	410	210	720	868	330	531	310	1740	368
14	268	936	440	420	210	650	816	317	559	273	1690	347
15	264	890	460	430	200	750	775	315	1820	255	1730	327
16	251	869	400	540	210	1300	737	304	2250	249	1880	309
17	242	857	390	760	210	1400	696	296	2020	266	1980	298
18	237	852	440	900	200	1650	663	301	1820	291	1940	288
19	250	843	510	970	200	1590	649	308	1580	286	2000	277
20	255	814	520	910	200	1070	642	311	1390	263	2060	364
21	255	819	500	780	260	896	631	305	1160	241	2010	657
22	482	1010	470	700	540	786	613	298	888	218	1840	984
23	1040	1250	490	610	620	688	588	286	735	202	1810	1310
24	1460	1400	490	500	740	606	553	275	625	189	1500	1440
25	1850	1400	480	440	860	537	520	264	562	178	1110	1520
26	2020	1290	450	450	710	494	499	253	512	169	899	1620
27	1860	1180	440	410	470	467	481	243	477	165	760	1600
28	1530	1140	410	380	420	448	460	234	516	158	670	1230
29	1300	997	410	390	370	449	441	312	446	153	640	1020
30	1230	850	410	380	---	475	426	657	399	147	585	864
31	1130	---	400	370	---	497	---	963	---	141	533	---
TOTAL	19918	32636	16730	15160	9680	19963	23155	10753	32341	8190	31311	21095
MEAN	643	1088	540	489	334	644	772	347	1078	264	1010	703
MAX	2020	1550	830	970	860	1650	1610	963	2250	441	2060	1620
MIN	237	814	390	350	200	290	426	234	399	141	125	277
CFSM	.76	1.29	.64	.58	.40	.76	.91	.41	1.27	.31	1.19	.83
IN.	.88	1.44	.74	.67	.43	.88	1.02	.47	1.42	.36	1.38	.93
AC-FT	39510	64730	33180	30070	19200	39600	45930	21330	64150	16240	62110	41840

CAL YR 1979 TOTAL 363719 MEAN 996 MAX 9680 MIN 86 CFSM 1.18 IN 15.99 AC-FT 721400
WTR YR 1980 TOTAL 240932 MEAN 658 MAX 2250 MIN 125 CFSM .78 IN 10.59 AC-FT 477900

05459000 SHELL ROCK RIVER NEAR NORTHWOOD, IA

LOCATION.--Lat 43°24'51", long 93°13'14", in NW1/4 NW1/4 sec.9, T.99 N., R.20 W., Worth County, Hydrologic Unit 07080202, on right bank 50 ft (15 m) downstream from bridge on county highway A27, 1.3 mi (2.1 km) downstream from Drainage ditch 2, 2.0 mi (3.2 km) south of Northwood, 3.7 mi (6.0 km) upstream from Elk Creek, and 84.5 mi (136.0 km) upstream from mouth.

DRAINAGE AREA.--300 mi² (777 km²).

PERIOD OF RECORD.--October 1945 to current year. Prior to April 1948 monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1948 (M). WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,176.48 ft (358.591 m) NGVD. Prior to May 17, 1956, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--35 years, 143 ft³/s (4.050 m³/s), 6.47 in/yr (164 mm/yr), 103,600 acre-ft/yr (128 hm³/yr); median of yearly mean discharges, 140 ft³/s (3.96 m³/s), 6.3 in/yr (160 mm/yr), 101,000 acre-ft/yr (124 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,400 ft³/s (96.3 m³/s) Apr. 8, 1965, gage height, 12.07 ft (3.679 m), backwater from ice; no flow Jan. 14-19, 26-30, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft³/s (19.8 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 21	1930	793	22.5	7.00	2.134	Aug. 14	0230	738	20.9	6.85	2.088
May 31	1215	958	27.1	7.43	2.265	Aug. 17	0745	*1,030	29.2	*7.59	2.313
Aug. 10	1700	905	25.6	7.29	2.221	Aug. 28	1700	731	20.7	6.83	2.082

Minimum daily discharge, 40 ft³/s (1.13 m³/s) Aug. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	238	248	90	58	62	226	125	904	388	40	619
2	80	242	242	106	58	60	211	119	831	341	65	582
3	70	218	232	108	58	60	214	113	757	273	55	528
4	68	201	200	106	58	62	236	107	672	231	50	490
5	67	230	192	94	60	61	329	101	631	200	47	439
6	63	425	198	78	61	59	473	99	573	178	46	393
7	62	439	170	87	63	61	446	97	574	151	44	360
8	59	388	122	78	62	67	411	90	521	136	46	326
9	56	352	198	62	61	77	425	82	464	251	62	295
10	59	314	172	64	62	100	416	77	411	273	671	269
11	55	303	150	70	61	96	388	79	355	195	717	240
12	56	288	185	74	60	93	366	75	304	151	494	244
13	59	270	202	80	60	90	349	79	268	127	552	265
14	53	258	145	88	60	89	319	84	319	107	703	252
15	50	250	130	92	60	140	301	75	312	92	561	236
16	48	245	110	124	60	320	280	72	257	83	559	213
17	48	240	120	156	59	350	257	70	222	77	991	202
18	50	230	131	150	59	440	245	72	198	70	938	180
19	53	216	137	134	64	595	237	74	181	63	817	168
20	53	211	138	118	70	640	228	69	184	99	690	176
21	55	218	139	102	77	652	218	67	171	93	597	307
22	109	270	140	94	100	534	206	63	161	82	514	312
23	285	309	160	85	122	408	199	60	153	74	424	296
24	296	306	166	85	110	356	190	58	144	65	354	283
25	238	285	152	80	96	318	174	56	136	58	309	267
26	208	272	140	72	82	293	162	52	126	57	399	265
27	183	265	130	66	74	270	153	48	142	56	595	252
28	181	232	120	64	69	254	149	41	531	52	718	233
29	172	123	110	61	65	252	140	56	459	50	705	217
30	165	235	102	60	---	266	134	609	326	46	663	208
31	176	---	100	58	---	245	---	948	---	43	623	---
TOTAL	3236	8073	4881	2786	2009	7370	8082	3817	11287	4162	14049	9117
MEAN	104	269	157	89.9	69.3	238	269	123	376	134	453	304
MAX	296	439	248	156	122	652	473	948	904	388	991	619
MIN	48	123	100	58	58	59	134	41	126	43	40	168
CFSM	.35	.90	.52	.30	.23	.79	.90	.41	1.25	.45	1.51	1.01
IN.	.40	1.00	.61	.35	.25	.91	1.00	.47	1.40	.52	1.74	1.13
AC-FT	6420	16010	9680	5530	3980	14620	16030	7570	22390	8260	27870	18080

CAL YR 1979 TOTAL 73484 MEAN 201 MAX 1830 MIN 20 CFSM .67 IN 9.11 AC-FT 145800
WTR YR 1980 TOTAL 78869 MEAN 215 MAX 991 MIN 40 CFSM .72 IN 9.78 AC-FT 156400

05459500 WINNEBAGO RIVER AT MASON CITY, IA

LOCATION.--Lat 43°09'54", long 93°11'33", in NE1/4 NW1/4 sec.3, T.96 N., R.20 W., Cerro Gordo County, Hydrologic Unit 07080203, on right bank 650 ft (198 m) upstream from Thirteenth Street Bridge in Mason City, 0.1 mi (0.2 km) downstream from Calmus Creek, and 1.0 mi (1.6 km) upstream from Willow Creek.

DRAINAGE AREA.--526 mi² (1,362 km²).

PERIOD OF RECORD.--October 1932 to current year. Prior to December 1932, monthly discharge only, published in WSP 1308. Prior to October 1959, published as Lime Creek at Mason City.

REVISED RECORDS.--WSP 825: 1935-36, WSP 1438: Drainage area. WSP 1558: 1933-37, 1943 (M), 1945, 1948.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,069.59 ft (326.011 m) NGVD. Prior to Oct. 15, 1934, nonrecording gage at datum 6.47 ft (1.97 m) lower. Oct. 15 to Nov. 6, 1934, nonrecording gage at different datum, and Nov. 7, 1934, to Mar. 22, 1935, nonrecording gage at present datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--48 years, 241 ft³/s (6.825 m³/s), 6.22 in/yr (158 mm/yr), 174,600 acre-ft/yr (215 hm³/yr); median of yearly mean discharges, 210 ft³/s (5.95 m³/s), 5.4 in/yr (137 mm/yr), 152,000 acre-ft/yr (187 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s (306 m³/s) Mar. 30, 1933, gage height, 15.7 ft (4.79 m), present datum; minimum daily, 2.5 ft³/s (0.071 m³/s) Dec. 29-31, 1933, Aug. 5, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (56.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
May 30	1730	*6,250	177	*11.66	3.554	Aug. 13	1800	2,780	78.7	7.80	2.377
Aug. 10	1515	4,470	127	9.75	2.972	Aug. 17	0645	2,630	74.5	7.63	2.326

Minimum daily discharge, 38 ft³/s (1.08 m³/s) Aug. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	236	543	350	211	92	133	361	207	1690	159	38	1140
2	236	479	306	203	89	120	341	196	1410	150	58	1070
3	225	436	345	157	85	115	374	187	1260	136	71	972
4	218	406	375	144	82	140	478	178	1140	126	65	930
5	215	473	416	172	80	135	710	170	1400	117	59	844
6	215	996	371	155	78	124	687	166	1190	105	70	751
7	205	907	355	63	78	109	676	159	1040	98	87	696
8	198	785	271	106	77	108	644	154	904	88	74	623
9	190	700	264	147	78	199	627	148	788	108	85	556
10	180	618	339	139	79	646	589	153	699	94	3230	495
11	177	560	306	139	78	440	550	153	623	93	2520	443
12	174	529	224	143	78	333	536	140	539	107	1480	406
13	167	493	178	144	77	253	508	146	454	98	2180	374
14	161	468	264	138	74	226	481	155	407	86	2120	342
15	156	465	274	144	72	407	458	151	374	91	1510	323
16	158	476	157	345	71	1480	420	145	385	75	1510	309
17	155	476	185	611	74	763	394	142	384	64	2460	294
18	152	461	242	542	79	694	385	143	366	61	1890	276
19	158	445	232	395	78	762	376	141	403	70	1660	260
20	180	420	214	310	74	809	366	137	384	179	1440	270
21	167	446	211	277	96	604	357	133	326	151	1270	558
22	295	633	218	254	380	615	348	123	280	113	1080	687
23	910	732	242	226	626	565	323	116	243	97	938	600
24	917	678	248	214	451	435	299	109	214	83	820	516
25	761	621	232	207	319	363	285	102	194	73	721	460
26	649	583	227	165	245	320	265	94	177	67	664	416
27	576	538	223	148	207	292	248	97	164	60	1260	386
28	515	498	218	134	183	276	232	90	168	55	1230	360
29	468	433	214	118	155	281	225	123	184	51	987	341
30	426	351	214	106	---	367	216	4910	188	46	1050	324
31	468	---	214	98	---	381	---	2790	---	42	1230	---
TOTAL	9908	16649	8129	6355	4235	12495	12769	11858	17988	2953	33847	16022
MEAN	320	555	262	205	146	403	426	383	600	95.3	1092	534
MAX	917	996	416	611	626	1480	710	4910	1690	179	3230	1140
MIN	152	351	157	63	71	108	216	90	164	42	38	260
CFSM	.61	1.06	.50	.39	.28	.77	.81	.73	1.14	.18	2.08	1.02
IN.	.70	1.18	.57	.45	.30	.88	.90	.84	1.27	.21	2.39	1.13
AC-FT	19650	33020	16120	12610	8400	24780	25330	23520	35680	5860	67140	31780

CAL YR 1979 TOTAL 195999 MEAN 537 MAX 5820 MIN 17 CFSM 1.02 IN 13.86 AC-FT 388800
WTR YR 1980 TOTAL 153208 MEAN 419 MAX 4910 MIN 38 CFSM .80 IN 10.84 AC-FT 303900

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	123.2	127.3	77.6	54.7	96.0	451.7	603.5	342.2	433.7	296.6	173.4	160.3	247.60
RUNOFF (INCHES)	0.33	0.27	0.17	0.12	0.19	0.99	1.28	0.75	0.92	0.65	0.38	0.34	6.39
STD. DEVIATION	0.45	0.33	0.16	0.11	0.18	0.70	1.41	0.51	0.75	0.70	0.36	0.46	3.23
PRECIP. (INCHES)	1.73	1.18	1.34	0.99	1.02	2.04	2.58	4.15	4.98	3.92	3.03	3.05	30.00

05460000 CLEAR LAKE AT CLEAR LAKE, IA

LOCATION.--Lat 43°08'01", long 93°22'57", in SE1/4 NE1/4 sec.13, T.96 N., R.22 W., Cerro Gordo County, Hydrologic Unit 07080203, at the public bathing beach in the town of Clear Lake near dam across Clear Creek.

DRAINAGE AREA.--22.6 mi² (58.5 km²).

PERIOD OF RECORD.--May 1933 to current year. No winter records 1933-52. Record fragmentary November 1952 to June 1959.

GAGE.--Water-stage recorder. Datum of gage is 1,222.24 ft (372.539 m) NGVD, and 4.60 ft (1.402 m) below crest of spillway of dam at outlet. See WSP 1708 for history of changes prior to June 25, 1959.

REMARKS.--Lake is formed by concrete dam on Clear Creek with ungated overflow spillway 50 ft (15 m) long at elevation 1,226.84 ft (373.941 m) NGVD. Dam constructed in 1903. A previous outlet works had been constructed in 1887. Lake is used for conservation and recreation. Area of lake is approximately 3,600 acres (1,460 hm²).

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 5.94 ft (1.811 m) July 3, 1951; minimum observed, 1.16 ft (0.354 m) Dec. 20, 22-24, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 5.18 ft (1.579 m) Mar. 15; minimum, 4.10 ft (1.250 m) Aug. 2.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.70	4.86	4.86	4.76	---	---	4.81	4.65	4.86	4.43	4.12	4.87
2	4.65	4.81	4.86	4.75	---	---	4.80	4.64	4.83	4.40	4.15	4.84
3	4.70	4.77	4.86	4.75	---	---	4.82	4.64	4.85	4.39	4.16	4.88
4	4.65	4.78	4.85	4.75	4.79	---	4.83	4.63	4.83	4.40	4.18	4.87
5	4.65	4.79	4.85	4.75	4.80	---	4.83	4.63	4.85	4.39	4.20	4.83
6	4.63	4.87	4.84	4.78	4.81	---	4.90	4.61	4.85	4.35	4.17	4.82
7	4.59	4.91	4.83	4.79	4.82	4.75	4.94	4.59	4.87	4.36	4.16	4.84
8	4.56	4.87	4.82	4.78	4.82	4.77	4.93	4.56	4.84	4.30	4.15	4.83
9	4.56	4.86	4.82	4.78	4.82	4.78	4.92	4.54	4.81	4.36	4.16	4.77
10	4.55	4.86	4.82	4.78	4.82	4.78	4.89	4.53	4.75	4.35	4.48	4.75
11	4.53	4.86	4.81	4.80	4.81	4.80	4.87	4.52	4.74	4.36	4.53	4.75
12	4.53	4.85	4.80	4.78	4.81	4.80	4.85	4.51	4.73	4.33	4.52	4.73
13	4.49	4.87	4.80	4.78	4.79	4.79	4.84	4.50	4.70	4.30	4.62	4.74
14	4.49	4.85	4.80	4.77	4.77	4.80	4.84	4.50	4.70	4.30	4.65	4.72
15	4.46	4.86	4.79	4.79	4.77	4.99	4.83	4.50	4.68	4.33	4.63	4.72
16	4.46	4.87	4.78	4.87	4.77	5.02	4.82	4.49	4.68	4.34	4.65	4.68
17	4.45	4.86	4.78	4.89	4.77	4.87	4.82	4.49	4.68	4.30	4.76	4.67
18	4.45	4.87	4.78	4.87	4.77	4.83	4.81	4.49	4.67	4.31	4.74	4.66
19	4.50	4.89	4.77	4.86	4.76	4.86	4.81	4.49	4.62	4.25	4.79	4.64
20	4.51	4.83	4.76	4.86	4.76	4.89	4.80	4.50	4.63	4.35	4.80	4.65
21	4.47	4.90	4.76	4.86	4.81	4.88	4.80	4.50	4.61	4.34	4.79	4.76
22	4.62	4.98	4.77	4.85	4.90	4.84	4.80	4.49	4.60	4.30	4.73	4.89
23	4.73	---	4.78	4.84	4.83	4.84	4.78	4.47	4.57	4.28	4.73	4.88
24	4.71	---	4.78	4.83	4.79	4.85	4.75	4.45	4.56	4.28	4.71	4.89
25	4.70	4.90	4.78	4.83	4.77	4.83	4.73	4.45	4.55	4.24	4.70	4.88
26	4.71	4.92	4.77	4.83	4.77	4.83	4.71	4.43	4.55	4.22	4.69	4.85
27	4.73	4.93	4.77	4.83	4.77	4.83	4.71	4.43	4.53	4.20	4.81	4.85
28	4.73	4.95	4.77	4.83	4.71	4.82	4.69	4.42	4.53	4.19	4.86	4.82
29	4.74	4.91	4.76	4.82	4.77	4.82	4.68	4.45	4.50	4.17	4.86	4.84
30	4.72	4.87	4.76	4.81	---	4.81	4.66	4.74	4.45	4.15	4.87	4.80
31	4.78	---	4.76	4.81	---	4.81	---	4.84	---	4.13	4.86	---
MEAN	4.60	---	4.80	4.81	---	---	4.81	4.54	4.69	4.30	4.56	4.79
MAX	4.78	---	4.86	4.89	---	---	4.94	4.84	4.87	4.43	4.87	4.89
MIN	4.45	---	4.76	4.75	---	---	4.66	4.42	4.45	4.13	4.12	4.64

05462000 SHELL ROCK RIVER AT SHELL ROCK, IA

Location.--Lat 42°39'10", long 92°35'45", in NE1/4 NW1/4 sec.11, T.91 N., R.15 W., Butler County, Hydrologic Unit 07080202, on right bank 400 ft (122 m) upstream from bridge on county highway C45 in Shell Rock, 2.2 mi (3.5 km) downstream from Curry Creek, and 10.4 mi (16.7 km) upstream from mouth.

DRAINAGE AREA.--1,746 mi² (4,522 km²).

PERIOD OF RECORD.--June 1953 to current year. Prior to July 1953, monthly discharge only, published in WSP 1728.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Rockfill dam since Oct. 19, 1957. Datum of gage is 885.34 ft (269.852 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Diurnal fluctuation at low stages caused by power plant at Greene. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--27 years, 887 ft³/s (25.12 m³/s), 6.90 in/yr (175 mm/yr), 642,600 acre-ft/yr (792 hm³/yr); median of yearly mean discharges, 750 ft³/s (21.2 m³/s), 5.8 in/yr (147 mm/yr), 543,000 acre-ft/yr (670 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,500 ft³/s (949 m³/s) Mar. 28, 1961, gage height, 16.26 ft (4.956 m); minimum daily, 38 ft³/s (1.08 m³/s) Feb. 9, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1856 reached a stage of 17.7 ft (5.39 m) at bridge 400 ft (122 m) downstream, from information furnished by Corps of Engineers, discharge, about 45,000 ft³/s (1,270 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 1	0630	9,280	263	12.13	3.697
Aug. 12	0945	*12,900	365	*13.29	4.051
Aug. 15	0030	9,690	274	12.36	3.767
Aug. 18	1230	7,620	216	11.63	3.545
Aug. 28	1730	4,330	123	10.10	3.078
Sep. 23	0645	5,270	149	10.60	3.231

Minimum daily discharge, 289 ft³/s (8.18 m³/s) Jan. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	948	1770	1390	860	460	578	1140	801	8350	1330	322	3610
2	957	1950	1340	840	460	540	1130	767	5090	1200	317	3300
3	957	1830	1280	810	460	520	1230	732	4040	1150	395	2950
4	931	1690	1340	784	455	526	1790	701	3470	1030	502	2790
5	888	1630	1400	765	455	431	1760	673	3210	958	504	2720
6	888	1960	1450	747	455	460	1910	640	3490	863	452	2520
7	863	2900	1350	289	450	470	1990	614	3180	797	386	2300
8	855	2850	1250	411	450	472	2000	598	2740	731	416	2200
9	829	2540	1120	533	450	484	1950	581	2460	778	499	2000
10	803	2300	1170	590	450	1190	1910	583	2230	920	2300	1800
11	794	2070	1330	610	450	1600	1830	589	2010	955	8080	1660
12	786	1920	1120	623	440	1290	1750	578	1810	878	12200	1560
13	761	1830	879	648	440	1030	1670	566	1660	778	8170	1470
14	744	1730	857	676	430	839	1600	556	1580	700	8530	1410
15	744	1670	950	682	420	933	1530	562	1900	667	8530	1340
16	728	1650	936	971	418	2680	1440	559	1570	917	5570	1300
17	712	1670	613	1810	424	3490	1360	547	1400	691	5470	1230
18	696	1660	787	2010	427	2380	1300	541	1330	566	7390	1180
19	704	1630	1020	1710	439	2140	1270	543	1460	514	6490	1120
20	704	1560	1050	1380	451	2230	1260	538	1520	482	5550	1330
21	728	1560	1010	1200	694	2220	1240	521	1300	810	5310	1590
22	965	1900	986	1150	2060	1920	1210	509	1170	771	4690	2930
23	2090	2380	950	917	2350	1870	1160	490	1080	651	3650	4750
24	3150	2470	1020	900	2150	1580	1110	463	990	562	3020	3690
25	2960	2290	989	880	1400	1350	1060	437	922	508	2600	2770
26	2510	2120	962	850	990	1200	1000	403	866	481	2280	2270
27	2210	1980	939	727	906	1110	949	377	819	442	2130	1990
28	1990	1870	922	605	804	1040	901	369	893	409	3800	1820
29	1820	1750	902	596	620	1030	860	490	1580	383	3810	1680
30	1690	1520	893	528	---	1040	830	1570	1590	358	3220	1580
31	1620	---	880	467	---	1130	---	6190	---	342	3480	---
TOTAL	38025	58650	33085	26569	20857	39773	42140	24088	65710	22622	120063	64860
MEAN	1227	1955	1067	857	719	1283	1405	777	2190	730	3873	2162
MAX	3150	2900	1450	2010	2350	3490	2000	6190	8350	1330	12200	4750
MIN	696	1520	613	289	418	431	830	369	819	342	317	1120
CFSM	.70	1.12	.61	.49	.41	.74	.81	.45	1.25	.42	2.22	1.24
IN.	.81	1.25	.70	.57	.44	.85	.90	.51	1.40	.48	2.56	1.38
AC-FT	75420	116300	65620	52700	41370	78890	83580	47780	130300	44870	238100	128600

CAL YR 1979 TOTAL 663241 MEAN 1817 MAX 19800 MIN 183 CFSM 1.04 IN 14.13 AC-FT 1316000
WTR YR 1980 TOTAL 556442 MEAN 1520 MAX 12200 MIN 289 CFSM .87 IN 11.86 AC-FT 1104000

05463000 BEAVER CREEK AT NEW HARTFORD, IA

LOCATION.--Lat 42°30'50", long 92°37'55", in SE1/4 SE1/4 sec. 28, T.90 N., R.15 W., Butler County, Hydrologic Unit 07080205, on downstream side of center bridge pier of bridge on county highway T55, 0.2 mi (0.3 km) north of New Hartford, and 8 mi (12.9 km) upstream from mouth.

DRAINAGE AREA.--347 mi² (899 km²).

PERIOD OF RECORD.--October 1945 to current year. Prior to April 1948, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1948-49. WSP 1708: 1947 (M).

GAGE.--Water-stage recorder. Datum of gage is 882.44 ft (268.968 m) NGVD. Prior to July 14, 1959, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--35 years, 189 ft³/s (5.352 m³/s), 7.40 in/yr (188 mm/yr), 136,900 acre-ft/yr (169 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,000 ft³/s (510 m³/s) June 13, 1947, gage height, 13.5 ft (4.11 m), from graph based on gage readings, from rating curve extended above 14,000 ft³/s (396 m³/s); minimum daily, 2.3 ft³/s (0.065 m³/s) Jan. 20-24, 1956, Jan. 24, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,400 ft³/s (39.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 24	0300	1,510	42.8	8.19	2.496	June 17	0200	*3,460	98.0	*9.94	3.030
Mar. 17	0400	2,140	60.6	8.84	2.694						

Minimum daily discharge, 43 ft³/s (1.22 m³/s) Sept. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	102	405	190	77	91	140	173	131	593	156	49	53
2	100	378	165	76	89	130	199	126	383	146	47	53
3	99	328	150	71	86	120	301	122	615	138	47	50
4	97	299	140	72	84	110	732	119	477	134	46	60
5	94	288	125	74	83	105	661	116	319	130	51	66
6	93	400	115	87	81	105	472	111	280	120	60	57
7	90	523	110	100	80	98	437	106	461	112	61	65
8	89	460	98	93	79	98	394	104	406	105	54	87
9	86	399	96	72	78	110	381	102	282	230	53	68
10	84	351	110	77	78	290	367	102	237	218	83	59
11	85	314	100	85	78	420	343	108	209	153	119	55
12	85	297	92	93	78	290	320	105	190	133	110	53
13	82	284	120	95	78	250	294	106	177	119	88	51
14	80	272	130	95	78	220	274	104	510	108	77	49
15	80	267	125	97	78	420	260	101	1730	100	69	48
16	79	257	130	220	78	1200	241	97	3160	96	76	47
17	79	250	140	470	78	1270	226	97	2500	91	124	46
18	78	246	145	500	79	379	219	103	833	87	132	44
19	87	240	125	270	81	319	215	109	641	82	111	43
20	92	227	115	200	84	278	209	110	501	79	99	66
21	87	242	120	170	170	245	201	106	404	75	98	92
22	350	445	120	155	480	218	191	99	349	71	86	78
23	1200	526	135	140	940	200	177	94	307	67	77	68
24	1310	437	125	125	400	185	167	91	274	65	70	62
25	735	379	95	120	210	172	161	88	247	62	65	60
26	540	351	91	115	180	165	156	83	227	63	61	57
27	455	321	84	110	160	159	150	79	210	63	58	54
28	391	295	81	105	150	156	145	79	201	60	56	52
29	345	250	80	100	145	163	139	117	181	57	56	51
30	315	210	79	97	---	179	135	508	165	53	54	49
31	311	---	78	94	---	179	---	1030	---	51	53	---
TOTAL	7800	9941	3609	4255	4454	8373	8340	4553	17069	3224	2290	1743
MEAN	252	331	116	137	154	270	278	147	569	104	73.9	58.1
MAX	1310	526	190	500	940	1270	732	1030	3160	230	132	92
MIN	78	210	78	71	78	98	135	79	165	51	46	43
CFSM	.73	.95	.33	.40	.44	.78	.80	.42	1.64	.30	.21	.17
IN.	.84	1.07	.39	.46	.48	.90	.89	.49	1.83	.35	.25	.19
AC-FT	15470	19720	7160	8440	8830	16610	16540	9030	33860	6390	4540	3460

CAL YR 1979 TOTAL 143440 MEAN 393 MAX 7190 MIN 23 CFSM 1.13 IN 15.38 AC-FT 284500
WTR YR 1980 TOTAL 75651 MEAN 207 MAX 3160 MIN 43 CFSM .60 IN 8.11 AC-FT 150100

05463500 BLACK HAWK CREEK AT HUDSON, IA

LOCATION.--Lat 42°24'28", long 92°27'47", in SW1/4 NE1/4 sec.27, T.88 N., R.14 W., Black Hawk County, Hydrologic Unit 07080205, on left bank 35 ft (11 m) downstream from bridge on State Highway 58, 0.2 mi (0.3 km) northwest of Chicago Great Western Railway tracks at the west edge of Hudson, 4.5 mi (7.2 km) upstream from Prescotts Creek, and 9.6 mi (15.4 km) upstream from mouth.

DRAINAGE AREA.--303 mi² (785 km²).

PERIOD OF RECORD.--April 1952 to current year.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 865.03 ft (263.661 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--28 years, 163 ft³/s (4.616 m³/s), 7.31 in/yr (186 mm/yr), 118,100 acre-ft/yr (146 hm³/yr); median of yearly mean discharges, 150 ft³/s (4.25 m³/s), 6.7 in/yr (170 mm/yr), 109,000 acre-ft/yr (134 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,300 ft³/s (547 m³/s) July 9, 1969, gage height, 18.23 ft (5.567 m); minimum daily, 0.12 ft³/s (0.003 m³/s) Jan. 26, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft³/s (34.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 16	----	2,300	65.1	ice jam		June 3	1630	*2,820	79.9	*14.70	4.481
May 30	1815	2,360	66.8	14.12	4.304	June 16	1445	1,280	36.2	11.65	3.551

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 196 ft³/s (5.56 m³/s) Sept. 18, gage height, 6.60 ft (2.012 m), no peak above base of 1,200 ft³/s (34.0 m³/s); minimum daily, 0.12 ft³/s (0.003 m³/s) Jan. 26.

Minimum daily discharge, 24 ft³/s (0.68 m³/s) Sept. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	229	140	72	68	86	144	95	817	139	35	30
2	54	217	105	69	66	76	176	91	693	130	34	30
3	53	195	115	61	65	74	256	87	2370	122	33	29
4	51	179	125	70	64	70	515	84	1420	120	33	37
5	50	174	110	60	62	60	451	81	581	114	33	36
6	51	218	100	57	62	56	364	77	470	105	36	33
7	49	269	92	42	62	54	355	74	564	100	37	42
8	49	245	86	39	63	52	335	72	502	92	33	40
9	48	217	78	44	63	56	319	71	354	104	34	36
10	47	194	80	57	63	150	308	72	305	113	41	36
11	49	175	69	74	62	260	286	81	263	94	63	29
12	49	169	62	100	61	190	265	74	235	85	98	28
13	47	163	99	120	60	140	240	78	222	76	49	30
14	47	156	105	105	60	110	221	80	433	71	42	32
15	48	154	90	100	60	600	208	75	644	69	38	27
16	47	146	80	330	58	1700	185	70	1190	67	44	27
17	47	143	78	800	56	1540	173	72	638	62	85	26
18	48	141	80	700	57	446	165	79	448	59	67	25
19	66	137	83	340	59	392	158	85	424	57	50	24
20	65	126	85	290	60	315	150	92	434	55	43	36
21	59	134	83	260	150	250	142	88	327	52	39	48
22	261	197	86	200	720	209	134	81	289	48	36	40
23	918	224	125	170	1000	186	124	75	260	44	35	35
24	675	203	176	155	450	167	118	73	236	42	33	32
25	442	185	120	145	220	153	114	69	216	41	32	29
26	341	178	105	120	170	145	111	65	199	41	31	27
27	288	162	93	100	140	138	107	62	185	40	31	26
28	244	149	80	94	100	136	102	235	174	39	31	26
29	216	125	78	84	94	140	100	712	158	38	31	25
30	197	135	77	76	---	151	98	2030	146	37	31	25
31	194	---	74	72	---	153	---	2050	---	36	32	---
TOTAL	4850	5339	2958	5006	4275	8255	6424	7130	15197	2292	1290	946
MEAN	156	178	95.4	161	147	266	214	230	507	73.9	41.6	31.5
MAX	918	269	175	800	1000	1700	515	2050	2370	139	98	48
MIN	47	125	62	39	56	52	98	62	146	36	31	24
CFSM	.52	.59	.32	.53	.49	.88	.71	.76	1.67	.24	.14	.10
IN.	.60	.66	.36	.61	.52	1.01	.79	.88	1.87	.28	.16	.12
AC-FT	9620	10590	5870	9930	8480	16370	12740	14140	30140	4550	2560	1880

CAL YR 1979 TOTAL 116933 MEAN 320 MAX 6110 MIN 42 CFSM 1.06 IN 14.36 AC-FT 231900
WTR YR 1980 TOTAL 63962 MEAN 175 MAX 2370 MIN 24 CFSM .58 IN 7.85 AC-FT 126900

05464000 CEDAR RIVER AT WATERLOO, IA

LOCATION.--Lat 42°29'44", long 92°20'03", in NW1/4 NW1/4 sec.25, T.89 N., R.13 W., Black Hawk County, Hydrologic Unit 07080205, on left bank at foot of East Seventh Street, 0.3 mi (0.5 km) upstream from Eleventh Avenue bridge in Waterloo, 1.1 mi (1.8 km) downstream from Black Hawk Creek, and at mile 187.9 (302.3 km) above mouth of Iowa River.

DRAINAGE AREA.--5,146 mi² (13,328 km²).

PERIOD OF RECORD.--October 1940 to current year. Prior to April 1941, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1950.

GAGE.--Water-stage recorder. Datum of gage is 824.14 ft (251.198 m) NGVD.

REMARKS.--Records good except those for winter period, which are fair. Slight diurnal fluctuation during low flow caused by powerplant above station. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--40 years, 2,820 ft³/s (79.86 m³/s), 7.44 in/yr (189 mm/yr), 2,043,000 acre-ft/yr (2,520 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,700 ft³/s (2,170 m³/s) Mar. 29, 1961, gage height, 21.86 ft (6.663 m); minimum daily, 152 ft³/s (4.30 m³/s) Jan. 28, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 16, 1929, reached a stage of about 20 ft (6.1 m), determined by Corps of Engineers, from information by City of Waterloo, discharge, 65,000 ft³/s (1,840 m³/s). Flood of Apr. 2, 1933, reached a stage of about 19.5 ft (5.9 m), from information by City of Waterloo, discharge, 61,000 ft³/s (1,730 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 13,000 ft³/s (368 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 2	2330	20,000	566	11.22	3.420	Aug. 20	0100	18,100	513	10.63	3.240
Aug. 13	1245	*25,900	733	*12.98	3.956						

Minimum daily discharge, 1,140 ft³/s (32.3 m³/s) Aug. 2,3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2650	5410	4900	2630	2000	2020	3240	2440	13100	9240	1190	8260
2	2620	5600	4360	2600	1970	2020	3280	2370	18000	6120	1140	8570
3	2630	5520	3970	2470	1900	2020	3670	2260	18500	4610	1140	8050
4	2530	5280	4070	2340	1800	1940	5150	2160	14000	3980	1350	7430
5	2220	5090	4750	2250	1670	1590	6520	2080	9800	3530	1560	6630
6	2170	5120	4810	2190	1630	1470	6350	2000	8530	3130	1580	6560
7	2340	6270	4750	1170	1600	1620	6430	1890	8900	2860	1470	6240
8	2450	7480	4360	1910	1590	1590	6480	1830	9110	2390	1370	5730
9	2330	7870	3810	2140	1540	1570	6830	1780	8410	3190	1460	5330
10	2250	7570	3770	2200	1550	2210	6840	1810	7160	3300	2310	4850
11	2190	6810	3810	2120	1600	3620	6380	1790	5910	3290	8520	4300
12	2180	6180	3320	3640	1500	4260	5870	1820	5390	3260	16800	4060
13	2120	5680	2640	3020	1410	3650	5480	1890	4880	2790	24900	3830
14	2070	5470	2420	2270	1440	2940	5220	1810	5080	2500	19800	3580
15	2040	5230	2810	2050	1440	3710	5000	1620	8910	2270	18500	3480
16	2050	4930	2700	2840	1500	8180	4780	1630	10800	2230	19600	3390
17	1910	4930	2370	4890	1450	10700	4390	1470	9960	2320	15100	3240
18	1880	4930	2460	6200	1430	9840	4190	1420	8000	2070	13800	3060
19	2050	4930	2580	6280	1410	10700	4000	1630	6960	1860	16900	2720
20	2000	4900	3080	5390	1420	10100	3900	1570	6250	1760	17100	3320
21	1980	4840	3190	4850	1890	8980	3810	1620	5610	1730	14100	3690
22	3210	5170	3200	4330	5040	8920	3570	1560	4970	2250	13300	4810
23	5500	6180	3420	2950	7200	7350	3560	1500	4440	2200	11900	7840
24	7880	6970	3520	2780	8040	5640	3400	1430	4010	1890	9810	11500
25	8840	7300	3260	3050	6050	4690	3230	1380	3660	1690	8160	11500
26	8540	7130	3060	2780	4600	3690	3090	1300	3180	1420	6930	8680
27	8070	6680	2930	2210	3840	3450	2940	1250	2790	1300	6100	7180
28	7230	6210	2860	2150	3340	3190	2790	1410	3050	1290	6030	6140
29	6440	5780	2750	2100	2490	3090	2640	2550	5350	1440	7860	5240
30	5880	5230	2690	2020	---	3070	2530	5230	8350	1270	8870	4920
31	5560	---	2670	2000	---	3160	---	9300	---	1200	8320	---
TOTAL	113810	176690	105290	91820	74340	140980	135560	65800	233060	84380	286970	174130
MEAN	3671	5890	3396	2962	2563	4548	4519	2123	7769	2722	9257	5804
MAX	8840	7870	4900	6280	8040	10700	6840	9300	18500	9240	24900	11500
MIN	1880	4840	2370	1170	1410	1470	2530	1250	2790	1200	1140	2720
CFSM	.71	1.15	.66	.58	.50	.88	.88	.41	1.51	.53	1.80	1.13
IN.	.82	1.28	.76	.66	.54	1.02	.98	.48	1.68	.61	2.07	1.26
AC-FT	225700	350500	208800	182100	147500	279600	258900	130500	462300	167400	569200	345400

CAL YR 1979 TOTAL 2051997 MEAN 5622 MAX 31900 MIN 713 CFSM 1.09 IN 14.83 AC-FT 4070000
WTR YR 1980 TOTAL 1682830 MEAN 4598 MAX 24900 MIN 1140 CFSM .89 IN 12.17 AC-FT 3338000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	1294.4	1337.6	982.0	937.3	1383.7	5088.5	5396.4	3258.4	4197.2	3213.8	1874.7	1706.6	2593.00
RUNOFF (INCHES)	0.36	0.29	0.22	0.21	0.28	1.14	1.17	0.73	0.91	0.72	0.42	0.37	6.84
STD. DEVIATION	.36	.23	.14	.17	.21	.73	1.16	.45	.68	.78	.35	.35	3.28
PERCENT OF ANNUAL	5.20	4.40	3.20	3.10	4.40	16.00	17.00	11.00	14.00	10.00	6.10	5.50	----
PRECIP. (INCHES)	2.02	1.25	1.19	0.93	0.93	2.23	2.60	3.86	5.14	4.29	3.40	3.05	30.90

05464020 CEDAR RIVER NEAR GILBERTVILLE, IA

WATER-QUALITY RECORDS

LOCATION.--Lat 42°24'54", long 92°13'00", in SW1/4 SW1/4 sec.23, T.88 N., R.12 W., Black Hawk County, Hydrologic Unit 07080205, at bridge on county highway D38 at Gilbertville, 1.4 mi (2.2 km) upstream from Indian Creek, and at mile 176.5 (284.0 km) above mouth of Iowa River.

DRAINAGE AREA.--5,234 mi² (13,556 km²).

PERIOD OF RECORD.--Water years 1971, 1975 to current year.

REMARKS.--Water discharge estimated on basis of records at gaging station 11.4 mi (18.3 km) upatream at Waterloo. No significant inflow between gaging station and sampling site.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
MAR												
26...	1000	3970	490	8.0	3.0	12.2	92	26	200	289	.39	3100
APR												
24...	1200	3400	615	8.9	16.0	--	--	26	K50	330	.45	3030
MAY												
28...	1200	1440	450	8.5	23.0	9.4	110	43	K440	292	.40	1140
JUN												
25...	1200	3680	615	8.6	25.0	7.4	90	22	600	377	.51	3760
JUL												
23...	1145	2270	520	8.6	26.0	8.0	144	24	630	338	.46	2070
AUG												
18...	1500	13900	495	7.9	20.0	7.3	81	30	3200	302	.41	11300
SEP												
10...	1300	4840	610	8.8	22.0	9.2	107	49	420	410	.56	5360

DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, TOTAL (MG/L AS NO3) (71887)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	CYANIDE TOTAL (MG/L AS CN) (00720)
MAR												
26...	31	3.2	1.2	.80	2.0	5.2	23	.420	3	0	20	.01
APR												
24...	69	4.8	.00	2.1	2.1	6.9	31	.180	3	0	40	.00
MAY												
28...	52	1.9	.03	1.9	1.9	3.8	17	.300	4	0	20	.00
JUN												
25...	100	6.7	.02	1.7	1.7	8.4	37	.100	9	0	40	.00
JUL												
23...	48	3.0	.01	1.8	1.8	4.8	21	.320	5	9	30	.00
AUG												
18...	94	7.4	.07	1.5	1.6	9.0	40	.310	5	0	30	.00
SEP												
10...	45	5.4	.00	1.7	1.7	7.1	31	.250	9	0	40	.01

05464130 FOURMILE CREEK NEAR LINCOLN, IA

LOCATION.--Lat 42°13'32", long 92°36'39", in SW1/4 SW1/4 sec.28, T.86 N., R.15 W., Tama County, Hydrologic Unit 07080205, on left bank 10 ft (3 m) downstream from bridge on county highway, 1.0 mi (1.6 km) upstream from Half Mile Creek and 4.7 mi (7.6 km) southeast of Lincoln.

DRAINAGE AREA.--13.78 mi² (35.7 km²).

PERIOD OF RECORD.--October 1962 to September 1967, October 1969 to September 1974, June 1976 to September 1980 (discontinued).

REVISED RECORDS.--WDR IA-78-1:1963-74.

GAGE.--Water-stage recorder and concrete control with V-notch sharp-crested weir. Datum of gage is 931.26 ft (283.848 m) NGVD.

REMARKS.--Records good except those for winter period which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--14 years, (1963-67, 1970-74, 76-80), 8.98 ft³/s (0.254 m³/s), 8.85 in/yr (225 mm/yr), 6,510 acre-ft/yr (8.03 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,450 ft³/s (41.1 m³/s) June 22, 1974, gage height, 13.98 ft (4.261 m); no flow Dec. 4 to Feb. 23, July 4, 5, 13, 14, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 350 ft³/s (9.91 m³/s) and maximum (*):

		Discharge		Gage height				Discharge		Gage height	
Date	Time	(ft³/s)	(m³/s)	(ft)	(m)	Date	Time	(ft³/s)	(m³/s)	(ft)	(m)
Feb. 21	1600	551	15.6	12.27	3.740	May 29	1215	877	24.8	13.10	3.993
Mar. 15	2030	540	15.3	12.23	3.728	June 2	2000	*928	26.3	*13.20	4.023

Minimum daily discharge, 0.50 ft³/s (0.014 m³/s) Jan. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	7.4	5.0	3.4	2.7	4.0	4.2	3.3	21	5.6	.68	.82
2	1.9	6.6	5.1	3.2	2.6	4.6	6.4	3.2	168	5.3	.63	.77
3	1.3	6.0	5.2	3.0	2.5	3.9	11	3.1	50	5.2	.56	1.3
4	1.1	5.7	5.1	3.1	2.4	3.6	13	3.1	26	4.9	.55	2.5
5	1.2	6.0	5.0	3.1	2.3	2.5	9.5	3.0	20	4.8	.56	1.5
6	1.2	7.7	4.8	1.6	2.3	2.7	8.8	3.0	17	4.5	21	2.3
7	1.1	7.4	4.6	.50	2.3	3.0	8.5	2.9	30	4.3	1.1	2.1
8	1.2	7.0	4.1	1.0	2.3	3.5	8.4	2.9	15	4.0	.89	1.9
9	1.1	6.7	4.2	1.6	2.3	42	8.1	2.9	13	3.8	1.1	1.4
10	1.1	5.7	4.3	3.0	2.3	114	7.5	3.1	12	3.6	2.2	.89
11	1.3	5.6	4.0	6.0	2.2	51	7.2	2.8	11	3.5	18	.80
12	1.2	5.6	3.9	7.6	2.2	18	7.4	2.7	10	3.2	3.0	1.6
13	1.0	5.3	3.9	4.4	2.2	4.9	6.3	2.7	11	3.0	1.9	1.0
14	1.3	5.2	3.8	4.1	2.1	72	6.2	2.6	21	2.9	1.5	.89
15	1.3	5.3	4.2	4.5	2.0	199	5.8	2.5	39	2.9	1.2	.92
16	1.3	5.0	2.6	120	2.0	45	5.3	2.6	15	3.7	13	.89
17	1.1	5.0	2.9	32	2.1	9.3	4.6	2.8	13	2.6	6.9	.85
18	1.1	5.0	3.2	11	2.1	7.8	4.5	3.0	12	2.6	4.0	.80
19	3.9	4.7	3.5	7.0	2.3	7.5	9.8	2.9	11	2.5	5.1	.77
20	2.4	4.5	3.7	6.0	3.6	6.3	6.9	2.7	9.2	2.4	2.8	1.1
21	1.9	6.0	3.7	5.5	190	5.1	4.2	2.6	8.6	2.2	2.1	.82
22	55	9.2	3.8	4.5	59	4.7	4.0	2.5	8.3	2.2	1.7	.92
23	29	7.7	3.9	4.0	14	4.5	3.9	2.6	8.1	2.0	1.4	.85
24	18	7.0	3.7	3.7	6.2	3.9	3.9	2.4	7.8	1.8	1.2	.92
25	13	6.9	3.4	3.5	1.5	3.6	3.8	2.2	7.5	1.5	1.0	1.1
26	11	6.6	3.3	3.4	1.6	3.8	3.7	2.2	7.2	1.3	.92	1.7
27	9.1	5.9	3.2	3.3	4.5	3.7	3.6	14	7.0	1.4	.89	1.5
28	7.3	5.8	3.2	3.2	4.2	3.8	3.5	7.1	6.6	1.4	1.1	1.2
29	6.7	5.6	3.4	3.1	4.1	4.1	3.5	172	6.1	1.0	.92	.96
30	6.2	5.6	3.5	3.0	---	4.3	3.4	67	5.8	.80	.89	.85
31	7.3	---	3.4	2.8	---	4.0	---	29	---	.70	.92	---
TOTAL	193.7	183.7	121.6	266.10	331.9	650.1	186.9	361.4	597.2	91.60	99.71	35.92
MEAN	6.25	6.12	3.92	8.58	11.4	21.0	6.23	11.7	19.9	2.95	3.22	1.20
MAX	55	9.2	5.2	120	190	199	13	172	168	5.6	21	2.5
MIN	1.0	4.5	2.6	.50	1.5	2.5	3.4	2.2	5.8	.70	.55	.77
CFSM	.45	.44	.28	.62	.83	1.52	.45	.85	1.44	.21	.23	.09
IN.	.52	.50	.33	.72	.90	1.75	.50	.98	1.61	.25	.27	.10
AC-FT	384	364	241	528	658	1290	371	717	1180	182	198	71

CAL YR 1979 TOTAL 5866.20 MEAN 16.1 MAX 600 MIN 1.0 CFSM 1.17 IN 15.84 AC-FT 11640
WTR YR 1980 TOTAL 3119.83 MEAN 8.52 MAX 199 MIN .50 CFSM .62 IN 8.42 AC-FT 6190

05464133 HALF MILE CREEK NEAR GLADBROOK, IA

LOCATION.--Lat 42°12'40", long 92°36'39", in SW1/4, SW1/4 sec.33, T.86 N., R.15 W., Tama County, Hydrologic Unit 07080205, on right bank 10 ft (3 m) downstream from bridge on county highway, 0.8 mi (1.3 km) upstream from mouth, and 5.3 mi (8.5 km) northeast of Gladbrook.

DRAINAGE AREA.--1.33 mi² (3.44 km²).

PERIOD OF RECORD.--October 1962 to September 1967, October 1969 to September 1974, June 1976 to September 1980 (discontinued).

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 948.16 ft (288.999 m) NGVD.

REMARKS.--Records fair except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--14 years (1963-67, 1970-74, 76-80) 0.81 ft³/s (0.023 m³/s), 8.27 in/yr (210 mm/yr), 587 acre-ft/yr (0.724 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 611 ft³/s (17.3 m³/s) June 12, 1979, gage height, 9.57 ft (2.917 m); no flow on several days in 1964-67, 1971-72, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 90 ft³/s (2.55 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
May 29	----	170	4.81	--	--	June 2	----	186	5.27	7.50	2.286

Minimum daily discharge, 0.02 ft³/s (<0.001 m³/s) Aug. 1-5.

REVISIONS.--Revised daily discharges for water year 1979 are given below. These figures supersede those published in the 1979 report.

Mar. 15..... 2.5
16..... 11
Mar. 17..... 11
18..... 33
Mar. 19..... 6.1
20..... 1.9
June 12..... 19

Month	Total	Mean	Max	Min	Cfsm	Inches	Acre-ft
March	134.18	4.33	33	0.23	3.26	3.75	266
June	65.65	2.19	19	.68	1.65	1.83	130
Wtr. yr.	542.32	1.49	33	.08	1.12	15.21	1,080

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.10	.29	.30	.25	.23	.27	.37	.25	1.5	.31	.02	.10
2	.09	.27	.30	.23	.23	.27	.49	.24	12	.28	.02	.08
3	.14	.26	.32	.22	.24	.28	1.3	.24	3.6	.29	.02	.06
4	.09	.28	.34	.23	.25	.27	1.1	.22	2.0	.28	.02	.68
5	.09	.34	.35	.23	.25	.25	.76	.22	1.5	.24	.02	.20
6	.08	.36	.32	.13	.26	.24	.72	.21	1.3	.22	6.8	.61
7	.08	.35	.31	.10	.26	.24	.64	.21	2.0	.20	.23	.28
8	.07	.33	.30	.15	.26	.26	.59	.21	1.1	.18	.15	.20
9	.06	.32	.30	.16	.26	4.2	.58	.21	.95	.19	.21	.17
10	.08	.27	.33	.25	.26	5.3	.55	.22	.87	.16	1.3	.17
11	.08	.29	.28	.40	.26	1.8	.52	.21	.80	.15	2.9	.17
12	.08	.30	.23	.70	.25	.49	.48	.20	.74	.12	.55	.23
13	.08	.27	.24	.52	.22	.30	.45	.20	.80	.11	.34	.29
14	.08	.27	.25	.33	.22	3.1	.44	.19	1.5	.10	.26	.22
15	.08	.27	.26	.55	.21	3.6	.40	.18	2.8	.11	.21	.21
16	.08	.26	.27	16	.20	2.1	.36	.19	.89	.41	3.3	.20
17	.07	.26	.30	2.5	.20	1.6	.36	.20	.84	.11	1.3	.18
18	.08	.27	.29	.86	.20	1.1	.35	.21	1.2	.12	.74	.16
19	.14	.25	.27	.59	.22	1.0	.35	.20	.78	.10	1.2	.13
20	.09	.25	.25	.53	.79	.88	.34	.19	.67	.09	.48	.18
21	.09	.44	.27	.50	14	.74	.32	.19	.61	.08	.34	.14
22	3.1	.58	.32	.46	4.7	.55	.30	.18	.56	.07	.26	.16
23	1.0	.49	.34	.39	1.0	.42	.28	.19	.54	.06	.22	.14
24	.60	.44	.29	.37	.51	.36	.28	.18	.51	.05	.18	.16
25	.45	.44	.26	.35	.24	.30	.27	.16	.48	.04	.15	.19
26	.39	.41	.25	.33	.29	.26	.26	.16	.46	.06	.13	.27
27	.36	.37	.24	.30	.33	.26	.25	1.0	.43	.05	.13	.22
28	.37	.35	.24	.30	.31	.28	.25	.52	.39	.03	.13	.18
29	.37	.33	.25	.28	.27	.30	.27	12	.34	.03	.10	.16
30	.33	.33	.26	.20	---	.30	.26	5.0	.33	.04	.11	.14
31	.36	---	.25	.22	---	.27	---	2.0	---	.03	.11	---
TOTAL	9.16	9.94	8.78	28.63	26.92	31.59	13.89	25.78	42.49	4.31	21.93	6.28
MEAN	.30	.33	.28	.92	.93	1.02	.46	.83	1.42	.14	.71	.21
MAX	3.1	.58	.35	16	14	5.3	1.3	12	12	.41	6.8	.68
MIN	.06	.25	.23	.10	.20	.24	.25	.16	.33	.03	.02	.06
CFSM	.23	.25	.21	.69	.70	.77	.35	.62	1.07	.11	.53	.16
IN.	.26	.28	.25	.80	.75	.88	.39	.72	1.19	.12	.61	.18
AC-FT	18	20	17	57	53	63	28	51	84	8.5	43	12

CAL YR 1979 TOTAL 497.81 MEAN 1.36 MAX 33 MIN .06 CFSM 1.02 IN 13.91 AC-FT 987
WTR YR 1980 TOTAL 229.70 MEAN .63 MAX 16 MIN .02 CFSM .47 IN 6.42 AC-FT 456

05464137 FOURMILE CREEK NEAR TRAER, IA

LOCATION.--Lat 42°12'07", long 92°33'44", NW1/4 SE1/4 sec.2, T.85 N., R.15 W., Tama County, Hydrologic Unit 07080205, on left bank 10 ft (3 m) downstream from bridge on county highway T69, 2.0 mi (3.2 km) upstream from mouth, and 5.0 mi (8.0 km) northwest of Traer.

DRAINAGE AREA.--19.51 mi² (50.53 km²).

PERIOD OF RECORD.--July 1962 to September 1974, October 1975 to current year.

REVISED RECORDS.--WDR IA-78-1:1963-74.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 905.87 ft (276.109 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--17 years (water years 1963-74, 76-80), 11.9 ft³/s (0.337 m³/s), 8.28 in/yr (210 mm/yr), 8,620 acre-ft/yr (10.63 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,460 ft³/s (41.1 m³/s) Mar. 18, 1979, gage height, 11.93 ft (3.636 m); maximum gage height, 13.41 ft (4.087 m) Feb. 19, 1971, backwater from ice; no flow for many days in 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 400 ft³/s (11.3 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Feb. 21	1615	453	12.8	9.51	2.899	June 2	----	*1,300	36.8	unknown	
Mar. 15	1745	602	17.0	9.97	3.039	Aug. 6	0245	783	22.2	10.51	3.203
May 29	----	1,200	34.0	unknown							

Minimum daily discharge, 0.69 ft³/s (0.020 m³/s) Aug 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	11	6.3	4.8	3.9	5.6	5.6	4.8	30	5.7	.86	1.6
2	2.6	9.4	6.6	4.7	3.8	6.5	8.7	4.7	240	5.5	.88	1.5
3	2.5	8.8	7.0	4.2	3.7	5.7	16	4.5	78	5.2	.80	2.2
4	2.4	8.4	6.8	4.5	3.5	5.1	21	4.5	40	5.0	.72	4.5
5	2.4	8.6	7.1	4.6	3.4	3.4	15	4.3	29	4.7	.69	2.4
6	2.4	11	6.4	3.4	3.4	3.8	13	4.2	25	4.4	141	3.9
7	2.3	11	6.3	.75	3.4	4.1	12	4.1	43	4.3	18	3.7
8	2.2	10	5.4	1.0	3.4	4.1	11	4.1	22	4.0	14	3.5
9	2.2	9.1	6.2	2.7	3.4	16	11	4.0	19	3.9	12	3.0
10	2.2	8.1	6.2	4.5	3.3	89	11	4.2	17	3.7	9.6	1.7
11	2.4	7.8	6.0	8.6	3.3	31	9.3	4.1	16	3.6	28	1.6
12	2.4	7.8	4.8	11	3.2	14	9.0	3.8	15	3.5	5.8	3.3
13	2.2	7.4	5.3	6.4	3.2	7.5	10	3.9	16	3.4	3.5	2.4
14	2.2	7.2	5.1	6.0	3.2	50	8.6	3.7	30	3.2	2.3	2.0
15	2.3	7.2	5.7	6.4	3.3	253	7.9	3.7	50	2.9	1.8	1.9
16	2.2	6.9	3.7	178	3.3	69	6.9	3.5	16	4.6	19	1.9
17	3.8	7.0	3.9	60	3.3	18	6.7	4.0	14	2.8	9.6	1.8
18	2.3	6.7	4.6	16	3.3	13	6.6	4.2	13	2.9	5.6	1.5
19	5.3	6.5	5.4	10	3.5	12	5.7	4.1	13	2.8	7.5	1.5
20	3.7	6.2	5.3	8.7	4.7	11	6.9	3.8	10	2.7	4.0	2.5
21	2.8	7.7	5.4	8.2	194	8.9	6.0	3.7	9.5	2.5	3.1	1.8
22	66	13	5.8	6.6	114	8.0	5.7	3.6	9.0	2.3	2.6	2.5
23	40	11	6.0	5.7	27	8.0	5.5	3.7	8.6	2.1	2.4	1.6
24	26	9.5	5.6	5.2	9.1	7.9	5.4	3.4	8.1	1.9	2.2	1.6
25	19	9.0	5.0	5.0	2.2	6.6	5.4	3.2	7.5	1.7	2.1	1.5
26	15	8.7	5.0	4.7	2.3	5.3	5.3	3.1	7.0	2.0	2.1	1.4
27	13	7.9	4.8	4.7	6.4	5.3	5.1	21	7.0	1.9	2.0	1.4
28	11	7.3	4.7	4.6	5.9	5.4	5.0	10	6.6	1.7	1.9	1.5
29	9.7	6.9	4.8	4.4	6.0	5.8	5.1	250	6.0	1.4	1.9	1.4
30	9.0	6.6	5.0	4.2	---	5.9	4.9	120	5.9	1.1	1.8	1.5
31	10	---	4.8	4.0	---	5.6	---	50	---	.95	1.7	---
TOTAL	274.1	253.7	171.0	403.55	436.4	694.5	255.3	553.9	811.2	98.35	309.45	64.6
MEAN	8.84	8.46	5.52	13.0	15.0	22.4	8.51	17.9	27.0	3.17	9.98	2.15
MAX	66	13	7.1	178	194	253	21	250	240	5.7	141	4.5
MIN	2.2	6.2	3.7	.75	2.2	3.4	4.9	3.1	5.9	.95	.69	1.4
CFSM	.45	.43	.28	.67	.77	1.15	.44	.92	1.38	.16	.51	.11
IN.	.52	.48	.33	.77	.83	1.32	.49	1.06	1.55	.19	.59	.12
AC-FT	544	503	339	800	866	1380	506	1100	1610	195	614	128

CAL YR 1979	TOTAL	8672.90	MEAN	23.8	MAX	1030	MIN	2.2	CFSM	1.22	IN	16.54	AC-FT	17200
WTR YR 1980	TOTAL	4326.05	MEAN	11.8	MAX	253	MIN	.69	CFSM	.61	IN	8.25	AC-FT	8580

05464500 CEDAR RIVER AT CEDAR RAPIDS, IA

LOCATION.--Lat 41°58'14", long 91°40'01", in SE1/4 NW1/4 sec.28, T.83 N., R.7 W., Linn County, Hydrologic Unit 07080205, on right bank 400 ft (122 m) upstream from bridge on Eighth Avenue in Cedar Rapids, 2.7 mi (4.3 km) upstream from Prairie Creek, and at mile 112.7 (181.3 km) upstream from mouth of Iowa River.

DRAINAGE AREA.--6,510 mi² (16,861 km²).

PERIOD OF RECORD.--October 1902 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 955: 1924. WSP 1308: 1904, 1906-13, 1915, 1917, 1919-24, 1928, 1930. WSP 1438: Drainage area. WSP 1558: 1915-18 (M), 1920 (M), 1922 (M), 1929, 1933, 1943.

GAGE.--Water-stage recorder. Datum of gage is 700.47 ft (213.503 m) NGVD. Prior to Aug. 20, 1920, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--78 years, 3,301 ft³/s (93.48 m³/s), 6.89 in/yr (175 mm/yr), 2,392,000 acre-ft/yr (2,950 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 73,000 ft³/s (2,070 m³/s) Mar. 31, 1961, gage height, 19.66 ft (5.992 m); maximum gage height, 20.0 ft (6.10 m) Mar. 18, 1929; minimum discharge, 53 ft³/s (1.50 m³/s) Jan. 6, 1950, caused by construction operations upstream; minimum daily, 212 ft³/s (6.00 m³/s) Dec. 10, 1949.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1851 reached a stage of about 20 ft (6 m), discharge, 65,000 ft³/s (1,840 m³/s), estimated.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 12,000 ft³/s (340 m³/s) and maximum (*):

		Discharge		Gage height				Discharge		Gage height	
Date	Time	(ft³/s)	(m³/s)	(ft)	(m)	Date	Time	(ft³/s)	(m³/s)	(ft)	(m)
Mar. 18	1815	20,600	583	8.50	2.591	June 17	1645	12,500	354	6.57	2.003
June 5	1630	21,800	617	8.76	2.670	Aug. 16	1315	*21,800	617	*8.90	2.713

Minimum daily discharge, 828 ft³/s (23.4 m³/s) Jan. 9

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2910	5970	5360	3090	2200	3770	3700	3120	8220	6180	1490	8300
2	2860	5560	4620	3010	2300	3040	3850	3020	9890	8390	1280	7800
3	2890	5560	4090	2880	2400	2850	4170	2920	12300	7430	1390	8050
4	2800	5620	3940	2770	2320	2750	4510	2820	16400	5080	1340	8830
5	2780	5410	4930	2740	2280	2770	5470	2720	21000	4330	1350	8070
6	2650	5230	5450	2580	2200	2450	6730	2620	19100	3800	1620	7000
7	2480	5140	5170	1280	2170	2280	7160	2550	13100	3500	2100	6460
8	2430	5560	4870	1030	2190	2320	7240	2450	10400	3250	2340	6340
9	2540	5870	4600	828	2290	2480	7370	2310	10200	3140	1870	5700
10	2550	7630	4180	880	2330	2680	7450	2350	9820	3210	1890	5350
11	2500	7870	4090	1100	2300	3030	7500	2320	8350	3430	2300	4940
12	2460	7400	3910	1300	2200	3350	7260	2330	6900	3380	4640	4710
13	2400	6660	3350	1600	2100	4000	6550	2290	5800	3380	8510	5710
14	2380	6000	2840	2000	1950	4440	6150	2330	5790	3090	11300	4150
15	2330	5680	2830	2470	2000	4630	5810	2340	5820	2870	15900	4070
16	2300	5310	3300	3640	2300	6700	5560	2240	7670	2750	20400	3910
17	2240	5080	2180	5270	2100	8710	5190	2190	11000	2540	19400	3780
18	2250	4930	1510	5070	1850	13200	5010	2160	11600	2580	19400	3620
19	2280	4910	1610	5540	1690	12000	4690	2070	10300	2490	18300	3370
20	2320	4890	2450	5960	1840	10800	4520	2060	8100	2330	15200	3370
21	2300	4930	3120	5820	1990	10600	4270	2110	6910	2160	15600	3430
22	2530	4850	3690	5480	4540	10400	4250	2090	6030	2060	17000	3920
23	3280	5000	4200	4690	5130	9660	4110	2020	5360	2100	15700	4140
24	5260	5730	4430	3650	5970	8880	3930	2030	4670	2380	13800	5760
25	6950	6510	4520	3370	7260	6880	3870	1960	4370	2240	12200	8380
26	8320	7260	4300	3330	7840	5460	3740	1880	3930	2090	9620	10200
27	8880	7280	3870	3200	6370	4680	3610	1820	3710	1990	7420	10400
28	8640	6990	3640	2610	4940	4130	3340	1850	3330	1770	6230	7910
29	8020	6360	3420	2100	4710	3950	3320	2390	3340	1480	5530	6790
30	7050	5960	3300	2000	---	3720	3220	5260	4100	1560	6470	5670
31	6340	---	3220	2100	---	3690	---	6790	---	1620	7910	---
TOTAL	117920	178150	116990	93388	91760	170300	153550	79410	257510	98600	269500	180130
MEAN	3804	5938	3774	3013	3164	5494	5118	2562	8584	3181	8694	6004
MAX	8880	7870	5450	5960	7840	13200	7500	6790	21000	8390	20400	10400
MIN	2240	4850	1510	828	1690	2280	3220	1820	3330	1480	1280	3370
CFSM	.58	.91	.58	.46	.49	.84	.79	.39	1.32	.49	1.34	.92
IN.	.67	1.02	.67	.53	.52	.97	.88	.45	1.47	.56	1.54	1.03
AC-FT	233900	353400	232000	185200	182000	337800	304600	157500	510800	195600	534600	357300

CAL YR 1979 TOTAL 2572230 MEAN 7047 MAX 35400 MIN 680 CFSM 1.08 IN 14.70 AC-FT 5102000
WTR YR 1980 TOTAL 1807208 MEAN 4938 MAX 21000 MIN 828 CFSM .76 IN 10.33 AC-FT 3585000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	1863.4	1925.5	1298.7	1411.7	1875.5	6154.9	6943.5	4347.9	5426.4	4235.0	2428.1	2158.9	3366.7
RUNOFF (INCHES)	0.37	0.33	0.23	0.25	0.30	1.09	1.19	0.77	0.93	0.75	0.43	0.37	7.02
STD. DEVIATION	0.35	0.27	0.15	0.23	0.20	0.67	1.04	0.45	0.74	0.86	0.36	0.30	3.26
PERCENT OF ANNUAL	5.20	4.80	3.20	3.50	4.60	15.00	17.00	11.00	13.00	11.00	6.10	5.40	----
PRECIP. (INCHES)	2.28	1.62	1.31	1.22	0.94	2.25	3.18	3.72	4.84	3.48	2.95	3.51	31.30

05464640 PRAIRIE CREEK AT FAIRFAX, IA

LOCATION.--Lat 41°55'22", long 91°47'02", in SE1/4 SW1/4 sec.9, T.82 N., R.8 W., Linn County, Hydrologic Unit 07080205, on right bank 12 ft (4 m) upstream from bridge on State Highway 149 at west side of Fairfax, and 10.7 mi (17.2 km) upstream from mouth.

DRAINAGE AREA.--178 mi² (461 km²).

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 737.00 ft (224.638 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--14 years, 134 ft³/s (3.795 m³/s), 10.22 in/yr (260 mm/yr), 97,080 acre-ft/yr (120 hm³/yr); median of yearly mean discharges, 110 ft³/s (3.12 m³/s), 8.4 in/yr (213 mm/yr), 79,700 acre-ft/yr (98.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,140 ft³/s (231 m³/s) Mar. 19, 1979, gage height, 14.63 ft (4.459 m); no flow July 10-15, 30, Aug. 1, 3, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--An outstanding flood occurred in June 1944, stage and discharge unknown.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,110 ft³/s (31.4 m³/s) Sept. 13, gage height, 6.31 ft (1.923 m), no peak above base of 1,200 ft³/s (34.0 m³/s); maximum gage height, 7.32 ft (2.231 m) Feb. 21, backwater from ice; minimum daily discharge, 11 ft³/s (0.31 m³/s) Aug. 23, 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	51	35	17	24	36	40	50	84	45	14	19
2	30	44	36	16	25	37	53	48	75	44	14	16
3	29	40	38	17	26	38	82	46	91	41	14	16
4	27	37	41	18	26	39	119	47	74	40	14	33
5	28	38	44	16	27	37	101	47	70	40	14	48
6	29	41	45	13	28	35	89	45	65	35	13	23
7	26	37	49	15	28	32	85	44	60	33	12	105
8	26	39	33	16	27	34	76	43	51	30	12	43
9	25	39	33	17	29	60	73	44	46	34	14	23
10	23	36	36	17	30	120	69	47	44	37	14	22
11	29	33	31	17	31	100	66	48	41	30	15	22
12	28	36	27	18	31	86	69	43	37	28	17	26
13	25	34	25	20	30	74	65	40	38	24	14	716
14	25	35	22	18	31	66	65	37	357	22	12	393
15	26	36	20	22	31	150	74	37	281	21	12	177
16	27	34	20	300	30	250	117	33	201	26	16	113
17	25	34	20	500	29	113	106	40	150	24	25	81
18	23	34	19	200	29	78	90	41	125	22	31	61
19	31	34	19	140	31	69	83	39	107	22	17	50
20	32	30	18	110	35	66	75	35	92	20	15	48
21	26	49	20	94	100	59	71	33	82	22	14	45
22	39	61	24	74	600	52	68	30	78	19	12	38
23	132	58	37	62	300	51	58	28	75	18	11	33
24	79	51	40	52	110	46	56	29	70	18	11	29
25	57	47	33	45	76	42	54	27	67	17	12	28
26	46	49	27	38	54	40	52	26	62	18	12	26
27	44	45	22	34	40	39	53	24	58	18	12	24
28	41	38	20	29	38	39	51	30	55	18	12	23
29	38	31	19	27	36	40	51	72	50	16	14	23
30	35	33	21	25	---	42	51	209	46	15	14	23
31	41	---	19	24	---	45	---	106	---	15	20	---
TOTAL	1120	1204	893	2011	1932	2015	2162	1468	2732	812	453	2327
MEAN	36.1	40.1	28.8	64.9	66.6	65.0	72.1	47.4	91.1	26.2	14.6	77.6
MAX	132	61	49	500	600	250	119	209	357	45	31	716
MIN	23	30	18	13	24	32	40	24	37	15	11	16
CFSM	.20	.23	.16	.37	.37	.37	.41	.27	.51	.15	.08	.44
IN.	.23	.25	.19	.42	.40	.42	.45	.31	.57	.17	.09	.49
AC-FT	2220	2390	1770	3990	3830	4000	4290	2910	5420	1610	899	4620

CAL YR 1979 TOTAL 78425 MEAN 215 MAX 7230 MIN 18 CFSM 1.21 IN 16.39 AC-FT 155600
WTR YR 1980 TOTAL 19129 MEAN 52.3 MAX 716 MIN 11 CFSM .29 IN 4.00 AC-FT 37940

IOWA RIVER BASIN

05464760 CEDAR RIVER NEAR BERTRAM, IA

WATER-QUALITY RECORDS

LOCATION.--Lat 41°56'02", long 91°32'54", in SE1/4 NW1/4 sec.9, T.82 N., R.6 W., Linn County, Hydrologic Unit 07080206, at bridge on U.S. Highway 30, 0.2 mi (0.3 km) downstream from Big Creek, 1.7 mi (2.7 km) southwest of Bertram, and at mile 103.1 (165.9 km) above mouth of Iowa River.

DRAINAGE AREA.--6,955 mi² (18,013 km²).

PERIOD OF RECORD.--Water years 1975 to current year.

REMARKS.--Water discharge estimated on basis of records at gaging station 9.6 mi (15.4 km) upstream at Cedar Rapids. No significant inflow between gaging station and sampling site.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
MAR												
26...	1330	5460	380	8.4	5.0	11.2	90	45	42000	268	.36	3950
APR												
24...	0830	3930	540	8.8	14.0	--	--	35	100	311	.42	3300
MAY												
28...	0830	1820	420	7.9	24.0	5.0	60	41	K19000	239	.33	1170
JUN												
25...	0800	4420	600	8.2	25.0	7.1	86	18	K2700	367	.50	4380
JUL												
23...	0900	2030	435	8.6	27.0	8.8	111	49	1070	273	.37	1500
AUG												
18...	1130	19400	375	7.5	22.0	4.4	51	29	1000	245	.33	12800
SEP												
10...	1000	5380	600	8.0	22.5	8.6	100	57	1000	419	.57	6090

DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, TOTAL (MG/L AS NO3) (71887)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	CYANIDE TOTAL (MG/L AS CN) (00720)
MAR												
26...	49	2.7	1.6	1.0	2.6	5.3	23	.450	7	0	20	.01
APR												
24...	48	5.0	.15	2.3	2.4	7.4	33	.190	5	0	20	.00
MAY												
28...	37	.88	1.9	1.4	3.3	4.2	19	.290	3	0	50	.00
JUN												
25...	93	6.6	.29	1.3	1.6	8.2	36	.130	8	0	40	.00
JUL												
23...	33	2.0	.69	2.0	2.7	4.7	21	.100	6	1	70	.00
AUG												
18...	77	4.2	.15	1.8	1.9	6.1	27	.370	4	3	30	.00
SEP												
10...	43	5.0	.03	2.1	2.1	7.1	31	.320	7	0	30	.01

05465000 CEDAR RIVER NEAR CONESVILLE, IA

LOCATION.--Lat 41°24'36", long 91°17'06", in SW1/4 SW1/4 sec.2, T.76 N., R.4 W., Muscatine County, Hydrologic Unit 07080206, on right bank 10 ft (3 m) downstream from bridge on county highway G28, 3.4 mi (5.5 km) northeast of Conesville, 5.2 mi (8.4 km) downstream from Wapsinonoc Creek, 10.7 mi (17.2 km) upstream from mouth, and at mile 39.8 (64.0 km) upstream from mouth of Iowa River.

DRAINAGE AREA.--7,785 mi² (20,163 km²).

PERIOD OF RECORD.--September 1939 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1708: 1956.

GAGE.--Water-stage recorder. Datum of gage is 581.95 ft (177.378 m) NGVD. Prior to Feb. 2, 1940, and Apr. 11, 1952, to July 1, 1954, nonrecording gage, Feb. 2, 1940, to Apr. 10, 1952, and July 2, 1954, to Sept. 16, 1963, water-stage recorder, at site 150 ft (46 m) downstream on left bank at same datum.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

COOPERATION.-- Three discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--41 years, 4,465 ft³/s (126.4 m³/s), 7.79 in/yr (198 mm/yr), 3,235,000 acre-ft/yr (3,990 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 70,800 ft³/s (2,010 m³/s) Apr. 2, 1961, gage height, 16.62 ft (5.066 m); maximum gage height, 16.85 ft (5.136 m) Apr. 12, 1965; minimum daily discharge, 250 ft³/s (7.08 m³/s) Nov. 28, 1955, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1929 reached a stage of 15.8 ft (4.82 m), from information by local residents to Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 12,000 ft³/s (340 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 20	1930	15,600	442	11.84	3.609	June 19	1430	12,200	346	10.79	3.289
June 7	1845	19,500	552	12.71	3.874	Aug. 19	0630	*19,900	564	*12.78	3.895

Minimum daily discharge, 1,000 ft³/s (28.3 m³/s) Jan. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3520	7120	6280	3320	2050	6000	4240	3900	6830	4030	1980	8660
2	3490	6580	5800	3210	2200	4500	4210	3750	8130	5620	1980	9100
4	3370	5960	4240	3040	2500	3500	4790	3530	12800	8130	1760	8980
5	3280	6020	3990	2850	2700	3600	5110	3410	14400	6290	2020	10600
6	3190	5910	4560	2800	2600	3550	5720	3310	16800	5220	1980	9360
7	3120	5710	5270	2200	2500	3450	6910	3190	18900	4610	2130	8260
8	2930	5530	5530	1610	2400	3300	7610	3090	17700	4180	2070	7420
9	2800	5650	4940	1200	2350	3200	7700	3000	12200	3930	2450	7190
10	2800	6670	4680	1050	2350	3500	7720	2920	10900	3900	2540	6640
11	2850	7530	4380	1000	2500	3900	7850	2860	10300	3690	2470	6100
12	2820	7890	4140	1100	2600	4600	8150	2840	9140	3820	2420	5810
13	2750	7680	4020	1350	2600	5560	8270	2820	7950	3810	2930	7160
14	2680	7030	3560	1600	2450	5600	7850	2800	9070	3710	6570	10900
15	2620	6390	3030	2000	2300	6000	7340	2760	8900	3650	9380	7770
16	2600	6040	2840	2450	2200	6580	7300	2780	7830	3390	12700	5980
17	2550	5690	1910	3100	2300	7610	7040	2830	8150	3280	16400	5410
18	2520	5390	1600	4000	2500	8510	6640	2860	10800	3180	19000	5020
19	3100	5230	1700	5100	2200	11500	6270	2760	12100	3080	19800	4710
20	2980	5170	1800	5950	2000	14900	5830	2660	11300	3020	19700	4400
21	2690	5500	2110	6250	2000	13300	5530	2560	9290	3000	18800	4230
22	2850	5770	2890	6610	2150	11900	5240	2540	8020	2870	16600	4160
23	3250	5470	3750	5950	3000	11400	5020	2530	7060	2710	16600	4350
24	3430	5370	4360	5410	4700	10300	4860	2520	6370	2580	17000	4590
25	4770	5760	4420	4720	6600	9680	4640	2450	5640	2460	15400	5470
26	6550	6620	4580	4010	7400	7990	4540	2420	5180	2390	13600	7580
27	8060	7290	4470	3320	8000	6530	4410	2370	4760	2350	11300	9490
28	8850	7490	4060	2570	9600	5580	4290	2300	4370	2400	8910	10400
29	8860	7260	3730	2250	7800	4900	4130	2770	4030	2300	7540	8790
30	8430	6700	3600	2050	---	4610	3940	3510	3740	2120	6730	7400
31	7680	---	3470	2000	---	4430	---	4880	---	1920	7210	---
TOTAL	124800	188620	120700	97170	98900	203680	177560	92540	284550	115380	271840	214470
MEAN	4026	6287	3894	3135	3410	6570	5919	2985	9485	3722	8769	7149
MAX	8860	7890	6280	6610	9600	14900	8270	4880	18900	8130	19800	10900
MIN	2520	5170	1600	1000	2000	3200	3940	2300	3740	1920	1760	4160
CFSM	.52	.81	.50	.40	.44	.84	.76	.38	1.22	.48	1.13	.92
IN.	.60	.90	.58	.46	.47	.97	.85	.44	1.36	.55	1.30	1.02
AC-FT	247500	374100	239400	192700	196200	404000	352200	183600	564400	228900	539200	425400

CAL YR 1979	TOTAL	3116180	MEAN	8537	MAX	37300	MIN	1500	CFSM	1.10	IN	14.89	AC-FT	6181000
WTR YR 1980	TOTAL	1990220	MEAN	5438	MAX	19800	MIN	1000	CFSM	.70	IN	9.51	AC-FT	3948000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	2430.9	2512.0	1688.1	2025.8	2691.4	7225.3	8652.3	5537.1	6698.6	5334.5	3038.7	2721.3	4221.00
RUNOFF (INCHES)	0.38	0.36	0.25	0.30	0.36	1.07	1.24	0.82	0.96	0.79	0.45	0.39	7.36
STD. DEVIATION	0.34	0.31	0.17	0.26	0.20	0.62	0.97	0.47	0.69	0.87	0.33	0.29	3.24
PERCENT OF ANNUAL	5.00	5.00	3.30	4.00	5.20	14.00	17.00	11.00	13.00	11.00	6.00	5.30	----
PRECIP. (INCHES)	2.63	1.68	1.55	1.31	0.97	2.10	3.36	3.68	4.31	3.62	3.02	3.37	31.60

05465500 IOWA RIVER AT WAPELLO, IA
(National stream-quality accounting network station)

LOCATION.--Lat 41°10'48", long 91°10'57", in NW1/4 SE1/4 sec.27, T.74 N., R.3 W., Louisa County, Hydrologic Unit 07080209, on right bank 30 ft (9 m) downstream from bridge on State Highway 99 at east edge of Wapello, 13.0 mi (20.9 km) downstream from Cedar River, and at mile 16.0 (25.7 km).

DRAINAGE AREA.--12,499 mi² (32,372 km²).

PERIOD OF RECORD.--October 1914 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1917, 1923-30, 1932. WSP 1438: Drainage area. WSP 1558: 1918, 1923-25 (M), 1929. WSP 1708: 1955(P), 1956.

GAGE.--Water-stage recorder. Datum of gage is 538.17 ft (164.034 m) NGVD; Oct. 1, 1914 to Apr. 15, 1934, non recording gage and Apr. 16, 1934 to Sept. 30, 1972, water-stage recorder at datum 10 ft (3.05 m) higher.

REMARKS.--Records good except those for winter period, which are fair. Flow regulated by Coralville Lake (station 05453510) 67.3 mi (108.3 km) upstream, since Sept. 17, 1958. Several observations of water temperature were made during the year.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--66 years, 6,729 ft³/s (190.6 m³/s), 7.31 in/yr (186 mm/yr), 4,875,000 acre-ft/yr (6,010 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 94,000 ft³/s (2,660 m³/s) June 18, 1947, gage height, 16.14 ft (4.919 m), datum then in use; maximum gage height, 28.63 ft (8.726 m) Apr. 22, 1973; minimum daily discharge, 300 ft³/s (8.50 m³/s) Nov. 28, 1955, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 21,300 ft³/s (603 m³/s) June 8, gage height, 18.17 ft (5.538 m); minimum daily, 2,000 ft³/s (56.6 m³/s) Jan.11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4710	9020	8220	4780	3300	11500	6450	5540	8240	7320	2560	10200
2	4680	8630	7800	4670	3350	9200	6490	5370	9920	7610	2630	10800
3	4620	8470	7370	4570	3900	7400	6480	5150	12100	8980	2600	10300
4	4470	8130	6350	4400	4500	6200	7040	5010	15100	9980	2460	10700
5	4320	7760	5310	4150	5200	6100	7800	4860	15300	9170	2690	13500
6	4160	7480	5350	4050	5000	6000	7930	4720	17000	7540	3040	12300
7	4140	7460	6370	3700	4900	5600	8800	4430	19100	6680	2870	11000
8	3970	7300	7050	3000	4800	5200	10000	4170	20900	6010	2720	10200
9	3730	7110	6770	2400	4700	5000	10200	3810	18000	5660	2770	8900
10	3620	7570	6550	2100	4750	5600	10200	3600	14200	5270	3100	8170
11	3590	8720	6240	2000	4800	6200	10100	3460	13500	5070	3170	7390
12	3640	9230	5750	2400	4900	6800	10300	3450	12800	4950	3060	7000
13	3630	9300	5390	3000	4750	7600	10500	3390	11600	5040	3070	6930
14	3590	9090	5380	3700	4400	8500	10500	3360	11700	4890	5620	11900
15	3440	8800	4910	4500	3850	9400	9880	3290	15400	4800	9190	11400
16	3480	8440	4890	5400	3700	10000	10000	3290	14000	4670	11900	8650
17	3440	8020	5000	7800	3650	11200	10300	3410	13300	4440	15200	7710
18	3390	7490	5200	11000	3900	12200	9690	3490	14600	4530	17200	7120
19	3750	7120	4500	9750	3750	14200	9080	3410	16100	4220	19300	6310
20	4540	6990	3900	9770	3300	17800	8460	3270	16200	4060	20200	5850
21	3960	7400	3500	9950	3200	18900	7700	3120	14800	3960	20300	5350
22	3940	7820	4300	9980	3300	15400	7600	3010	13500	3770	19000	5190
23	4210	7590	6000	8900	3900	14300	7410	2990	12700	3580	17300	5110
24	4710	7280	6200	7800	6600	13400	6870	2960	12100	3360	17200	5470
25	5410	7270	6200	7050	10000	12700	6570	2860	11500	3210	17100	5710
26	7320	7860	6280	6350	12000	11300	6280	2820	10500	3440	15600	7190
27	9070	8680	6250	5700	13000	9820	6180	2740	10000	3420	14100	9180
28	10400	9330	5960	5000	14000	8430	6100	2650	9180	3120	11500	10500
29	10900	9060	5470	4200	13000	7360	5840	2670	8610	3030	9500	10100
30	10700	8670	5030	3500	---	6750	5630	4390	7810	2880	8300	8580
31	9820	---	4940	3300	---	6820	---	5890	---	2680	7940	---
TOTAL	159350	243090	178430	168970	164400	296890	246380	116590	399760	157340	293190	258710
MEAN	5140	8103	5756	5451	5669	9577	8213	3761	13330	5075	9458	8624
MAX	10900	9330	8220	11000	14000	18900	10500	5890	20900	9980	20300	13500
MIN	3390	6990	3500	2000	3200	5000	5630	2650	7810	2680	2460	5110
AC-FT	316100	482200	353900	335200	326100	588900	488700	231300	792900	312100	581500	513200

CAL YR 1979 TOTAL 4475220 MEAN 12260 MAX 62400 MIN 2500 AC-FT 8877000
WTR YR 1980 TOTAL 2683100 MEAN 7331 MAX 20900 MIN 2000 AC-FT 5322000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	3794.5	3921.0	2710.4	3469.3	4801.2	11817.2	13443.4	9323.6	11314.8	8456.3	4661.8	4257.1	6823.00
RUNOFF (INCHES)	0.34	0.35	0.25	0.32	0.40	1.09	1.20	0.86	1.01	0.78	0.43	0.38	7.41
STD. DEVIATION	0.30	0.33	0.20	0.32	0.21	0.66	0.92	0.54	0.78	0.77	0.29	0.31	3.38
PERCENT OF ANNUAL	4.60	4.70	3.40	4.30	5.40	15.00	16.00	12.00	14.00	10.00	5.80	5.10	----
PRECIP. (INCHES)	2.48	1.63	1.52	1.32	1.05	2.27	3.64	3.36	4.17	4.13	3.02	3.21	31.80

05465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: January 1978 to current year.
WATER TEMPERATURES: January 1978 to current year.
SUSPENDED-SEDIMENT DISCHARGE: April 1978 to current year.

REMARKS.--During periods of ice effect samples are collected in open water channel or through ice cover. Values of specific conductance Dec. 1-13 were obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 810 micromhos Jan 23, 1978; minimum daily, 250 micromhos Sept. 18, 1978.
WATER TEMPERATURES: Maximum daily, 32.0°C July 15, 1980; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,920 mg/L June 28, 1978; minimum daily mean, 3 mg/L Jan. 30,31, Feb. 2-7, 11-13, 16, 1979.
SEDIMENT LOADS: Maximum daily, 183,000 tons (166,000 tonnes) June 29,1978; minimum daily, 21 tons (19 tonnes) Jan. 30, 31, 1979.

EXTREMES FOR CURRENT YEAR:
SPECIFIC CONDUCTANCE: Maximum daily, 710 micromhos Feb. 16; minimum daily, 260 micromhos Aug. 16.
WATER TEMPERATURES: Maximum daily, 32.0°C July 15; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,370 mg/L Sept. 14; minimum daily mean, 12 mg/L Feb. 12.
SEDIMENT LOADS: Maximum daily, 79,600 tons (72,200 tonnes) Sept. 14; minimum daily, 86 tons (78 tonnes) Jan. 11.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	520	---	620	660	---	---	530	---	---	---	---	490
3	520	---	---	660	---	---	---	430	---	---	---	---
4	520	590	---	650	---	450	560	420	---	410	---	460
5	---	580	660	650	---	450	570	420	440	420	---	---
6	---	---	660	---	---	460	570	420	430	---	380	470
7	530	570	660	---	---	480	550	---	440	---	390	470
8	530	570	660	---	---	500	540	---	440	---	390	480
9	530	640	670	---	---	---	540	---	---	---	390	500
10	530	---	670	---	---	---	550	---	---	---	380	500
11	530	640	660	---	---	---	---	---	---	---	380	540
12	520	---	660	---	---	---	560	400	---	---	380	---
13	520	660	690	---	---	510	570	380	---	380	380	---
14	520	---	---	---	660	510	580	380	460	380	370	360
15	520	680	---	---	---	520	580	---	460	380	300	460
16	510	680	---	---	710	380	580	---	460	---	260	480
17	490	620	670	530	660	380	580	420	---	---	290	---
18	---	680	---	530	660	340	590	430	---	---	360	530
19	---	680	---	530	660	340	600	---	---	---	380	540
20	---	670	660	---	680	340	600	---	---	---	---	560
21	---	670	650	---	---	340	---	---	460	---	---	---
22	---	660	680	---	390	340	540	---	460	---	---	540
23	---	670	670	---	400	360	520	---	460	---	480	530
24	---	640	650	---	400	380	520	---	---	---	480	---
25	---	620	600	---	400	380	520	---	---	---	480	550
26	---	610	680	---	420	430	520	---	---	410	480	560
27	---	620	670	---	---	440	520	350	---	420	500	520
28	580	670	670	---	---	---	490	---	---	---	520	500
29	580	610	650	---	---	---	470	---	---	---	540	500
30	---	610	650	---	---	500	380	---	540	---	520	560
31	---	---	660	---	---	500	---	---	---	---	520	---

05465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18.0	---	---	2.0	---	---	8.0	---	---	---	---	25.0
2	16.0	10.0	---	2.0	---	1.0	8.0	---	---	---	---	25.0
3	15.0	---	---	1.0	---	---	---	20.0	---	---	---	---
4	14.0	9.0	---	1.0	---	1.0	9.0	21.0	---	29.0	---	24.0
5	---	9.0	---	1.0	---	1.0	11.0	21.5	25.0	29.0	---	---
6	---	---	---	---	---	1.0	11.0	21.0	25.0	---	28.0	24.0
7	13.0	7.0	---	---	---	1.0	11.0	---	24.0	---	30.0	24.0
8	13.0	7.0	---	---	---	1.0	10.0	---	23.0	---	30.0	26.0
9	13.0	6.5	---	---	---	---	8.0	---	---	---	31.0	25.0
10	13.0	---	---	---	---	---	9.5	---	---	---	30.0	23.0
11	13.5	4.5	4.0	---	---	---	---	---	---	---	28.0	23.0
12	13.0	---	---	---	---	---	8.0	19.0	---	---	28.0	---
13	12.0	4.0	---	---	---	1.0	8.0	19.0	---	30.0	28.0	---
14	12.0	4.0	---	---	.0	1.0	8.0	19.0	22.0	31.0	27.0	21.0
15	13.0	5.0	---	---	---	2.0	9.0	---	22.0	32.0	25.5	20.0
16	15.0	5.0	---	1.0	.0	4.0	11.0	---	23.0	---	23.5	19.0
17	16.0	6.0	1.0	1.0	.0	4.0	11.0	18.0	---	---	22.5	---
18	---	8.0	---	1.0	.0	5.0	13.0	17.5	---	---	24.0	19.0
19	---	10.0	---	1.0	1.0	5.0	15.0	---	---	---	25.0	21.0
20	---	9.0	2.0	---	1.0	5.0	18.0	---	---	---	---	23.0
21	---	9.0	3.0	---	---	5.0	---	---	24.0	---	---	---
22	---	8.0	3.0	---	1.0	5.0	19.0	---	24.0	---	---	20.0
23	---	8.0	3.0	---	1.0	6.0	18.0	---	24.0	---	25.0	20.0
24	---	6.0	3.0	---	1.0	5.0	17.0	---	---	---	25.5	---
25	---	6.0	3.0	---	1.0	5.0	17.0	---	---	---	26.0	18.0
26	---	6.0	3.0	---	1.0	5.0	16.0	---	---	26.0	26.0	17.0
27	---	4.0	3.0	---	---	6.0	16.0	26.0	---	25.0	27.0	17.0
28	11.0	---	3.0	---	---	---	15.0	---	---	---	27.0	17.0
29	11.0	---	3.0	---	---	---	15.0	---	---	---	27.5	17.0
30	---	---	3.0	---	---	8.0	16.0	---	27.0	---	26.0	19.0
31	---	---	2.0	---	---	9.0	---	---	---	---	26.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	115	1460	127	3090	61	1350	24	310	83	740	90	2790
2	101	1280	81	1890	72	1520	24	303	66	597	80	1990
3	102	1270	65	1490	75	1490	20	247	47	495	65	1300
4	103	1240	68	1490	58	994	19	226	31	377	48	804
5	95	1110	68	1420	47	674	20	224	22	309	43	708
6	84	943	64	1290	37	534	19	208	19	256	41	664
7	74	827	58	1170	42	722	18	180	18	238	36	544
8	70	750	53	1040	50	952	17	138	18	233	31	435
9	71	715	49	941	47	859	17	110	17	216	29	391
10	75	733	57	1170	45	796	17	96	16	205	29	438
11	79	766	67	1580	40	674	16	86	13	168	28	469
12	72	708	76	1890	37	574	14	91	12	159	26	477
13	69	676	89	2230	42	611	13	105	16	205	39	800
14	66	640	78	1910	31	450	24	240	18	214	159	3650
15	69	641	48	1140	31	411	74	899	18	187	561	14200
16	76	714	43	980	61	805	125	1820	18	180	479	12900
17	82	762	48	1040	113	1530	551	11600	17	168	403	12200
18	79	723	50	1010	150	2110	588	17500	16	168	350	11500
19	107	1080	51	980	156	1900	518	13600	30	304	307	11800
20	165	2020	45	849	127	1340	404	10700	21	187	277	13300
21	134	1430	51	1020	115	1090	261	7010	14	121	257	13100
22	121	1290	65	1370	104	1210	171	4610	240	2140	251	10400
23	145	1650	56	1150	97	1570	133	3200	320	3370	249	9610
24	204	2590	47	924	174	2910	113	2380	327	5830	178	6440
25	259	3780	50	981	155	2590	98	1870	327	8830	160	5490
26	300	5930	71	1510	147	2490	87	1490	195	6320	132	4030
27	290	7100	84	1970	102	1720	75	1150	135	4740	112	2970
28	251	7050	68	1710	36	579	64	864	120	4540	101	2300
29	238	7000	51	1250	19	281	58	658	104	3650	89	1770
30	223	6440	58	1360	21	285	102	991	---	---	78	1420
31	182	4830	---	---	22	293	104	927	---	---	78	1440
TOTAL	---	58148	---	41845	---	35314	---	83833	---	45147	---	150330

05465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	86	1500	161	2410	543	12100	256	5060	126	871	320	8810
2	91	1590	160	2320	675	18100	308	6330	154	1090	343	10000
3	95	1660	159	2210	562	18400	443	10700	162	1140	221	6150
4	246	4680	176	2380	483	19700	442	11900	160	1060	467	14100
5	294	6190	193	2530	526	21700	383	9480	170	1230	712	26000
6	305	6530	172	2190	380	17400	327	6660	258	2120	485	16100
7	364	8650	108	1290	415	21400	268	4830	217	1680	519	15400
8	422	11400	120	1350	536	30200	210	3410	217	1590	468	12900
9	482	13300	127	1310	521	25300	168	2570	212	1590	293	7040
10	410	11300	118	1150	482	18500	147	2090	268	2240	247	5450
11	365	9950	118	1100	437	15900	136	1860	296	2530	865	17300
12	362	10100	118	1100	398	13800	164	2190	495	4090	937	17700
13	337	9550	119	1090	513	16100	229	3120	652	5400	520	9730
14	333	9440	124	1120	1390	43900	266	3510	671	10200	2370	79600
15	359	9580	114	1010	1260	52400	285	3690	542	13400	1220	39600
16	376	10200	108	959	1130	42700	282	3560	540	17400	300	7010
17	381	10600	118	1090	1070	38400	278	3330	560	23000	282	5870
18	385	10100	115	1080	1140	44900	285	3490	400	18600	432	8300
19	349	8560	188	1730	1080	46900	267	3040	263	13700	314	5350
20	326	7450	174	1540	742	32500	248	2720	218	11900	248	3920
21	313	6510	166	1400	466	18600	233	2490	218	11900	234	3380
22	321	6590	169	1370	428	15600	218	2220	235	12100	219	3070
23	281	5620	162	1310	423	14500	205	1980	210	9810	227	3130
24	260	4820	140	1120	418	13700	192	1740	248	11500	300	4430
25	270	4790	106	819	405	12600	177	1530	240	11100	319	4920
26	274	4650	82	624	392	11100	195	1810	232	9770	332	6450
27	268	4470	76	562	375	10100	190	1750	200	7610	308	7630
28	263	4330	73	522	354	8770	163	1370	286	8880	268	7600
29	247	3890	78	562	322	7490	159	1300	335	8590	220	6000
30	177	2690	177	2100	289	6090	153	1190	308	6900	169	3920
31	---	---	360	5730	---	---	132	955	299	6410	---	---
TOTAL	---	210590	---	47078	---	668850	---	111875	---	239401	---	366860

TOTAL LOAD FOR YEAR: 2069371 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	TEMPER-ATURE, WATER (DEG C) (00010)	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT										
18...	1330	14.5	3310	79	706	--	--	--	--	98
NOV										
19...	1430	7.0	7230	52	1020	--	--	--	--	84
JAN										
22...	1015	.0	10700	172	4970	--	--	--	--	82
APR										
03...	1130	9.0	6480	74	1300	--	--	--	--	91
MAY										
07...	1230	17.0	4500	101	1230	--	--	--	--	97
JUN										
02...	1430	23.0	9870	720	19200	39	47	56	68	92
JUL										
11...	1000	29.0	5150	149	2070	--	--	--	--	97
AUG										
05...	1030	26.5	2690	164	1190	--	--	--	--	99
SEP										
03...	1100	23.0	11400	198	6090	--	--	--	--	79

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	NUMBER OF SAM-PLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)
OCT												
18...	1030	3310	10	1	2	6	47	82	94	97	99	100
NOV												
19...	1530	7230	9	--	0	6	48	88	98	100	--	--
MAY												
07...	1230	4500	7	--	0	2	34	78	94	99	100	--
JUN												
02...	1430	9870	8	3	5	12	44	76	90	97	100	--
JUL												
11...	1000	5150	10	1	1	8	47	83	94	98	100	--
AUG												
05...	1030	2690	8	2	3	9	43	75	91	98	100	--
21...	1215	20300	9	--	0	4	43	83	95	99	100	--
SEP												
03...	1100	11400	7	--	0	5	34	70	87	95	98	100

05465500 IOWA RIVER AT WAPELLO IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS (MG/L AS CACO3) (00900)
OCT											
18...	1330	3310	540	9.0	14.5	17	10.1	144	K53	--	230
NOV											
19...	1430	7230	500	8.3	7.0	14	12.0	100	353	190	330
DEC											
11...	1230	6100	660	8.4	4.0	7.4	12.9	100	270	520	340
JAN											
22...	1015	10700	540	8.2	.0	38	12.9	90	4600	K13000	270
FEB											
12...	1030	10200	700	7.9	.0	4.3	12.0	84	K40	96	360
APR											
03...	1130	6480	525	8.3	9.0	25	10.3	90	279	580	230
MAY											
07...	1230	4500	440	8.4	17.0	21	10.3	110	K35	--	180
JUN											
02...	1430	9870	365	7.8	23.0	160	5.4	64	3000	2800	170
JUL											
11...	1000	5150	490	8.8	29.0	22	7.6	91	100	K47	250
AUG											
05...	1030	2690	375	8.8	26.5	40	9.7	121	2400	2000	170
SEP											
03...	1100	11400	445	8.0	23.0	44	7.0	82	1000	560	220

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM+ POTAS-SIUM DIS-SOLVED (MG/L AS NA) (00933)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY (MG/L AS CACO3) (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
OCT											
18...	65	54	22	15	19	.4	18	2.9	160	52	29
NOV											
19...	93	89	27	12	10	.3	15	2.5	240	52	28
DEC											
11...	91	92	27	13	11	.3	16	2.5	250	68	28
JAN											
22...	75	70	22	12	9	.3	17	4.5	190	40	23
FEB											
12...	120	96	28	15	8	.3	19	4.4	240	57	36
APR											
03...	43	62	19	11	9	.3	--	4.0	190	45	19
MAY											
07...	65	36	23	15	15	.5	--	2.2	120	48	27
JUN											
02...	66	40	16	9.0	10	.3	--	3.4	100	33	18
JUL											
11...	69	65	21	11	9	.3	--	2.6	180	39	24
AUG											
05...	38	36	19	15	16	.5	--	2.8	130	42	28
SEP											
03...	44	60	18	8.8	8	.3	--	3.4	180	29	21

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)
OCT											
18...	.2	3.5	252	287	.34	2250	2.6	.30	.36	2.3	2.6
NOV											
19...	.2	15	432	410	.59	8430	9.6	.19	.23	.91	1.1
DEC											
11...	.3	14	424	435	.58	6980	9.0	.19	.23	3.4	3.6
JAN											
22...	.2	12	331	326	.45	9560	6.3	.45	.54	1.2	1.6
FEB											
12...	.3	15	416	423	.57	11500	6.2	.83	1.0	.57	1.4
APR											
03...	.2	11	324	303	.44	5670	4.1	.43	.52	1.2	1.6
MAY											
07...	.2	<.0	247	157	.34	3000	2.2	.17	.21	2.8	3.0
JUN											
02...	.2	6.3	221	211	.30	5890	5.9	.04	.05	3.0	3.0
JUL											
11...	.4	5.4	320	296	.44	4450	4.2	.04	.05	1.8	1.8
AUG											
05...	.3	.4	226	223	.31	1640	.16	.00	.00	3.4	3.4
SEP											
03...	.3	13	382	281	.52	11800	4.6	.12	.15	1.7	1.8

K Results based on colony count outside the acceptable range (non-ideal colony count).

05465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	NITROGEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS, TOTAL (MG/L AS PO4) (71886)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED (MG/L AS C) (00689)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)
OCT											
18...	1.0	1.6	5.2	23	.220	.67	.020	13	--	--	--
NOV											
19...	.26	.84	11	47	.240	.74	.140	8.5	--	--	--
DEC											
11...	2.3	1.3	13	56	.240	.74	.200	14	--	--	0
JAN											
22...	.50	1.1	7.9	35	.420	1.3	.220	--	17	1.2	0
FEB											
12...	.30	1.1	7.6	34	.290	.89	.230	9.0	--	--	0
APR											
03...	.40	1.2	5.7	25	.350	1.1	.220	--	12	--	0
MAY											
07...	1.8	1.2	5.2	23	.230	.71	.010	26	--	--	--
JUN											
02...	2.2	.77	8.9	39	.600	1.8	.140	22	--	--	0
JUL											
11...	.81	.99	6.0	27	.150	.46	.110	14	--	--	--
AUG											
05...	2.4	1.0	3.6	16	.430	1.3	.210	--	7.2	6.6	0
SEP											
03...	.30	1.5	6.4	28	.430	1.3	.240	14	--	--	0

DATE	TIME	PHYTOPLANKTON, TOTAL (CELLS PER ML) (60050)	PERIPHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)	PERIPHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	CHLOR-A PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2) (70958)	BIOMASS CHLOROPHYLL RATIO PERIPHYTON (UNITS) (70950)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT										
18...	1330	300000	--	--	--	--	--	79	706	98
NOV										
19...	1430	--	--	--	--	--	--	52	1020	84
DEC										
11...	1230	--	--	--	--	--	--	45	741	--
JAN										
22...	1015	--	--	--	--	--	--	172	4970	82
FEB										
12...	1030	--	--	--	--	--	--	10	275	--
APR										
03...	1130	6500	--	--	--	--	--	74	1300	91
MAY										
07...	1230	250000	4.02	3.62	2.35	.160	170	101	1230	97
JUN										
02...	1430	41000	1.58	1.10	.020	.000	24000	720	19200	92
JUL										
11...	1000	320000	--	--	--	--	--	149	2070	97
AUG										
05...	1030	29000	1.34	1.18	.450	.060	356	164	1190	99
SEP										
03...	1100	110000	41.3	38.0	1.37	.000	2409	198	6090	79

05465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA) (01006)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD) (01026)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR) (01031)
JAN											
22...	1015	3	2	200	100	100	0	0	<1	10	10
APR											
03...	1130	4	3	200	100	100	1	0	1	0	0
AUG											
05...	1030	7	4	200	100	100	0	--	<1	20	20

DATE	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO) (01036)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU) (01041)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE) (01044)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
JAN										
22...	0	2	0	<3	11	11	0	320	280	40
APR										
03...	0	3	0	<3	4	1	3	2000	2000	20
AUG										
05...	0	4	--	<3	35	31	4	3200	3100	70

DATE	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB) (01050)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN) (01054)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG) (71895)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)
JAN										
22...	8	4	4	170	160	7	.1	.0	.2	8
APR										
03...	6	6	0	100	90	10	.1	.0	.1	8
AUG										
05...	22	22	0	460	450	10	.1	.1	.0	8

DATE	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE) (01146)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG) (01076)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
JAN										
22...	5	3	1	0	1	0	0	40	40	3
APR										
03...	5	3	1	0	1	0	0	20	0	20
AUG										
05...	8	0	1	0	1	0	0	70	70	4

05465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, JUNE 1979 TO SEPTEMBER 1980

DATE	JUN 13,79	JUL 17,79	AUG 29,79	SEP 18,79	OCT 18,79	APR 1,80
TIME	1330	1500	1200	1400	1330	1200
TOTAL CELLS/ML	7500	2300	8900	130000	300000	6500
DIVERSITY: DIVISION	0.5	1.5	0.6	1.5	1.0	0.8
.CLASS	0.5	1.5	0.6	1.5	1.0	0.8
..ORDER	0.6	2.2	1.0	1.8	1.1	1.0
...FAMILY	1.3	2.9	1.1	2.0	1.4	1.1
....GENUS	1.8	2.9	0.0	2.6	2.4	1.2

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...CHARACIACEAE												
....SCHROEDERIA	*	0	--	-	--	-	--	-	--	-	--	-
...CHLOROCOCCACEAE												
....CHLOROCOCCUM	72	1	--	-	48	1	--	-	*	0	--	-
...COELASTRACEAE												
....COELASTRUM	220	3	--	-	*	0	--	-	12000	4	--	-
...HYDRODICTYACEAE												
....PEDIASTRUM	220	3	--	-	--	-	--	-	--	-	--	-
...MICRACTINIACEAE												
....GOLENKINIA	--	-	--	-	--	-	--	-	--	-	--	-
....MICRACTINIUM	--	-	--	-	--	-	3400	3	4400	1	--	-
...OOCYSTACEAE												
....ANKISTRODESMUS	250	3	83	4	*	0	690	1	4400	1	340	5
....CHLORELLA	--	-	--	-	--	-	--	-	15000	5	340	5
....CHODATELLA	*	0	--	-	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	72	1	--	-	--	-	--	-	--	-	--	-
....GLOEOACTINIUM	--	-	--	-	--	-	--	-	11000	4	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	*	0	--	-
....NEPHROCYTIUM	--	-	--	-	--	-	--	-	--	-	--	-
....OOCYSTIS	*	0	--	-	--	-	--	-	*	0	--	-
...SCENEDESMACEAE												
....ACTINASTRUM	200	3	--	-	--	-	27000°	21	1900	1	--	-
....CRUCIGENIA	--	-	--	-	--	-	2700	2	--	-	--	-
....SCENEDESMUS	5300°	70	420°	18	210	2	1400	1	3900	1	110	2
....TETRASTRUM	290	4	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	*	0	14	1	--	-	2100	2	*	0	630	10
....PLATYMONAS	--	-	--	-	*	0	--	-	--	-	--	-
...PHACOTACEAE												
....PTEROMONAS	--	-	--	-	--	-	690	1	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	--	-	70	3	170	2	21000°	16	120000°	41	5000°	77
....MELOSIRA	--	-	14	1	390	4	48000°	37	--	-	--	-
....SKELETONEMA	--	-	--	-	--	-	--	-	100000°	34	--	-
....STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-	--	-
....THALASSIOSIRA	*	0	--	-	--	-	--	-	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	14	1	--	-	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	*	0	--	-	--	-	--	-
...FRAGILARIACEAE												
....SYNEDRA	--	-	70	3	*	0	--	-	--	-	--	-
...NAVICULACEAE												
....GYROSIGMA	--	-	28	1	--	-	--	-	--	-	--	-
....NAVICULA	--	-	83	4	*	0	--	-	--	-	--	-
....PLEUROSIGMA	--	-	--	-	*	0	--	-	--	-	--	-
...NITZSCHIACEAE												
....NITZSCHIA	--	-	240	10	56	1	690	1	4900	2	--	-
...SURIRELLACEAE												
....SURIRELLA	--	-	28	1	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOMONADACEAE												
....CRYPTOMONAS	--	-	--	-	--	-	690	1	--	-	57	1
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....AGMENELLUM	--	-	450°	19	480	5	--	-	--	-	--	-
....ANACYSTIS	--	-	--	-	--	-	14000	10	--	-	--	-
....GOMPHOSPHAERIA	--	-	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES												
...NOSTOCACEAE												
....ANABAENA	--	-	--	-	--	-	--	-	--	-	--	-
....ANABAENOPSIS	--	-	--	-	48	1	--	-	--	-	--	-
....APHANIZOMENON	--	-	--	-	--	-	--	-	--	-	--	-
....CYLINDROSPERMUM	--	-	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE												
....OSCILLATORIA	830	11	700°	30	5800°	66	8200	6	15000	5	--	-
....SCHIZOTHRIX	--	-	--	-	1500°	17	--	-	--	-	--	-
...RIVULARIACEAE												
....RAPHIDIOPSIS	--	-	70	3	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE	--	-	--	-	*	0	--	-	--	-	--	-
....EUGLENA	--	-	--	-	--	-	--	-	*	0	--	-
....TRACHELOMONAS	*	0	28	1	--	-	690	1	*	0	--	-

NOTE: ° - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

05465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, JUNE 1979 TO SEPTEMBER 1980

DATE	MAY 7,80	JUN 2,80	JUL 11,80	AUG 5,80	SEP 3,80
TIME	1230	1430	1000	1030	1100
TOTAL CELLS/ML	250000	41000	320000	29000	110000
DIVERSITY: DIVISION	1.5	1.3	1.6	1.3	1.1
.CLASS	1.5	1.3	1.6	1.3	1.1
..ORDER	1.6	1.6	1.7	2.1	1.9
...FAMILY	2.4	1.9	1.9	2.5	2.4
....GENUS	3.1	2.4	2.9	3.4	2.7

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...COELASTRACEAE										
....COELASTRUM	--	-	--	-	--	-	520	2	4200	4
...MICRACTINIACEAE										
....GOLENKINIA	7500	3	--	-	--	-	--	-	*	0
....MICRACTINIUM	15000	6	*	0	4800	1	--	-	600	1
...OOCYSTACEAE										
....ANKISTRODESMUS	7500	3	210	1	*	0	*	0	740	1
....CHLORELLA	*	0	--	-	--	-	--	-	--	-
....CHODATELLA	*	0	*	0	--	-	--	-	--	-
....DICTYOSPHAERIUM	17000	7	410	1	--	-	--	-	1200	1
....FRANCEIA	--	-	--	-	--	-	*	0	--	-
....GLOEOACTINIUM	--	-	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	340	1	68000°	21	570	2	*	0
....NEPHROCYTIUM	--	-	1200	3	--	-	--	-	--	-
....OOCYSTIS	3700	1	410	1	7200	2	380	1	--	-
....SELENASTRUM	*	0	--	-	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-	*	0	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	15000	6	1800	4	--	-	--	-	1800	2
....CRUCIGENIA	--	-	--	-	4800	1	--	-	600	1
....SCENEDESMUS	51000°	20	6000	15	2400	1	1500	5	6000	6
....TETRASTRUM	15000	6	--	-	4800	1	750	3	--	-
..TETRASPORALES										
...PALMELLACEAE										
....GLOEOCYSTIS	--	-	--	-	--	-	*	0	--	-
....SPHAEROCYSTIS	--	-	--	-	--	-	750	3	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	*	0	*	0	--	-	*	0	740	1
....PLATYMONAS	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....COSCINODISCUS	--	-	--	-	*	0	--	-	--	-
....CYCLOTELLA	56000°	22	1900	5	69000°	21	2200	8	4000	4
....MELOSIRA	--	-	480	1	42000	13	3200	11	5100	5
....SKELETONEMA	--	-	--	-	--	-	--	-	--	-
....STEPHANODISCUS	--	-	480	1	--	-	*	0	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	*	0	--	-	--	-	--	-
....COCCONEIS	--	-	--	-	--	-	--	-	--	-
...FRAGILARIACEAE										
....SYNEDRA	--	-	*	0	--	-	*	0	--	-
...NITZSCHIACEAE										
....NITZSCHIA	4700	2	960	2	7200	2	*	0	1800	2
...SURIRELLACEAE										
....SURIRELLA	--	-	*	0	--	-	--	-	*	0
.XANTHOPHYCEAE										
..HETEROCOCCALES										
...CENTRITRACTACEAE										
....CENTRITRACTUS	--	-	--	-	--	-	--	-	*	0
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOMONADACEAE										
....CRYPTOMONAS	*	0	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	1100	3	19000	5	2600	9	--	-
....ANACYSTIS	56000°	22	23000°	56	67000°	21	7200°	25	45000°	42
....GOMPHOSPHAERIA	--	-	--	-	24000	7	1900	7	--	-
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	--	-	--	-	660	2	--	-
....ANABAENOPSIS	--	-	--	-	--	-	--	-	--	-
....APHANIZOMENON	--	-	--	-	--	-	1300	4	--	-
....CYLINDROSPERMUM	--	-	--	-	--	-	--	-	3400	3
...OSCILLATORIACEAE										
....OSCILLATORIA	--	-	2100	5	--	-	4900°	17	28000°	26
....SCHIZOTHRIX	--	-	--	-	--	-	--	-	--	-
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	2200	2
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE	--	-	--	-	--	-	--	-	--	-
....EUGLENA	*	0	--	-	--	-	--	-	--	-
....TRACHELOMONAS	--	-	*	0	--	-	*	0	--	-

NOTE: ° - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

05470000 SOUTH SKUNK RIVER NEAR AMES, IA

LOCATION.--Lat 42°04'05", long 93°37'02", in NW1/4 SW1/4 sec.23, T.84 N., R.24 W., Story County, Hydrologic Unit 07080105, on left bank 2.5 mi (4.0 km) north of Ames, 3.5 mi (5.6 km) downstream from Keigley Branch, 5.2 mi (8.4 km) upstream from Squaw Creek, and at mile 228.1 (367.0 km) upstream from mouth of Skunk River.

DRAINAGE AREA.--315 mi² (816 km²).

PERIOD OF RECORD.--July 1920 to September 1927, October 1932 to current year. Monthly discharge only for some periods, published in WSP 1308. Prior to October 1966, published as Skunk River near Ames.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1308: 1921, 1925-26, 1934-35 (M), 1937 (M), 1939 (M), 1947-50 (M), WDR Iowa. 1967: 1965, 1974: 1973 (P).

GAGE.--Water-stage recorder. Concrete control since July 21, 1934. Datum of gage is 893.61 ft (272.372 m) NGVD (Iowa Highway Commission benchmark). Prior to Aug. 25, 1921, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several diversions for irrigation above station. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--55 years, 152 ft³/s (4.305 m³/s), 6.55 in/yr (166 mm/yr), 110,100 acre-ft/yr (136 hm³/yr); median of yearly mean discharges, 120 ft³/s (3.40 m³/s) 5.2 in/yr (132 mm/yr), 86,900 acre-ft/yr (107 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,630 ft³/s (244 m³/s) June 10, 1954, gage height, 13.66 ft (4.164 m); maximum gage height, 13.90 ft (4.237 m) May 20, 1944; no flow at times in 1934, 1937, 1953-57, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s (42.5 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 14	1330	*2,720	77.0	*6.54	1.993	June 19	0215	1,560	44.2	5.29	1.612

Minimum daily discharge, 1.5 ft³/s (0.042 m³/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	160	145	84	53	54	124	78	192	125	12	11
2	31	141	110	80	50	50	150	75	189	114	11	9.4
3	32	131	117	73	49	53	234	72	470	104	10	8.0
4	30	124	122	73	45	54	390	70	357	98	10	26
5	29	157	130	79	46	47	355	67	298	86	11	17
6	28	415	112	60	45	46	303	64	243	64	9.3	13
7	27	440	110	31	43	46	277	59	232	64	8.2	12
8	26	353	88	28	41	47	252	56	282	58	7.4	9.1
9	24	296	105	27	39	106	249	56	212	49	11	8.4
10	24	246	110	34	36	444	265	60	174	48	12	7.0
11	24	213	104	41	36	412	256	60	146	45	40	6.5
12	26	199	50	48	38	246	235	55	126	39	59	5.8
13	24	184	77	53	36	151	212	56	124	34	28	5.6
14	24	172	84	61	35	146	197	51	2070	31	18	5.5
15	21	168	88	71	33	331	185	49	2280	28	15	5.8
16	22	159	59	170	30	738	164	47	1930	37	45	5.7
17	23	152	60	350	29	413	150	53	1280	32	69	5.2
18	24	148	76	280	29	281	141	58	1010	38	56	4.8
19	40	142	78	200	31	274	134	60	1320	31	37	4.4
20	35	132	80	170	39	267	127	57	881	30	27	4.9
21	35	163	81	145	134	242	119	55	632	24	22	3.8
22	386	289	83	132	414	208	112	51	495	21	17	3.3
23	656	329	113	120	367	186	105	48	400	19	14	2.8
24	491	305	112	109	161	162	99	49	326	17	12	2.5
25	343	268	93	122	82	140	96	47	273	15	9.9	2.3
26	272	244	82	90	64	125	93	42	234	48	8.0	2.1
27	234	221	86	80	67	119	89	39	202	41	6.9	2.0
28	200	199	82	73	63	116	86	39	177	24	7.3	1.8
29	179	180	81	66	55	118	86	41	153	18	6.8	1.6
30	163	165	86	60	---	126	85	154	135	15	6.4	1.5
31	166	---	86	56	---	129	---	203	---	14	10	---
TOTAL	3671	6495	2890	3066	2190	5877	5370	1971	16843	1411	616.2	198.8
MEAN	118	217	93.2	98.9	75.5	190	179	63.6	561	45.5	19.9	6.63
MAX	656	440	145	350	414	738	390	203	2280	125	69	26
MIN	21	124	50	27	29	46	85	39	124	14	6.4	1.5
CFSM	.38	.69	.30	.31	.24	.60	.57	.20	1.78	.14	.06	.02
IN.	.43	.77	.34	.36	.26	.69	.63	.23	1.99	.17	.07	.02
AC-FT	7280	12880	5730	6080	4340	11660	10650	3910	33410	2800	1220	394

CAL YR 1979 TOTAL 111994.0 MEAN 307 MAX 4450 MIN 17 CFSM .98 IN 13.23 AC-FT 222100
WTR YR 1980 TOTAL 50599.0 MEAN 138 MAX 2280 MIN 1.5 CFSM .44 IN 5.98 AC-FT 100400

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	57.4	59.3	41.0	43.7	84.7	289.6	251.3	265.0	392.4	204.9	73.8	67.8	152.90
RUNOFF (INCHES)	0.22	0.21	0.15	0.16	0.28	1.06	0.89	0.97	1.39	0.75	0.27	0.24	6.59
STD. DEVIATION	0.30	0.30	0.19	0.20	0.23	0.87	0.95	0.88	1.41	1.06	0.35	0.43	3.86
PERCENT OF ANNUAL	3.30	3.30	2.30	2.30	4.60	16.00	14.00	14.00	21.00	11.00	4.00	3.70	----
PRECIP. (INCHES)	2.03	1.14	0.95	0.77	0.94	1.94	2.84	4.16	4.92	4.07	3.43	2.71	30.00

05470500 SQUAW CREEK AT AMES, IA

LOCATION.--Lat 42°01'21", long 93°37'45", in NE1/4 NW1/4 sec.10, T.83 N., R.24 W., Story County, Hydrological Unit 07080105, on left bank 65 ft (20 m) downstream from Lincoln Way Bridge in Ames, 0.1 mi (0.2 km) downstream from College Creek, and 1.8 mi (2.9 km) upstream from mouth.

DRAINAGE AREA.--204 mi² (528 km²).

PERIOD OF RECORD.--May 1919 to April 1927, May 1965 to current year. Monthly discharge only for some periods, publisned in WSP 1308.

REVISED RECORDS.--WSP 1308: Drainage area, 1920-22 (M), 1923, 1924-25 (M), 1926, 1927 (M), WDR Iowa. 1966: 1965, WDR Iowa. 1971: 1970 (M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 881.00 ft (268.529 m) NGVD (levels by Iowa State University). Prior to Mar. 11, 1925, nonrecording gage at site 0.6 mi (1.0 km) upstream at different datum. Mar. 11, 1925, to Apr. 30, 1927, nonrecording gage at site 65 ft (20 m) upstream at datum about 4 ft (1 m) higher.

REMARKS.--Records good except those for February, March, September, which are fair and December, January, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--23 years, 120 ft³/s (3.398 m³/s), 7.99 in/yr (203 mm/yr), 86,940 acre-ft/yr (107 hm³/yr); median of yearly mean discharges, 95 ft³/s (2.69 m³/s), 6.3 in/yr (160 mm/yr), 68,800 acre-ft/yr (84.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,300 ft³/s (320 m³/s) June 27, 1975, gage height, 14.00 ft (4.267 m); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 4, 1918, reached a stage of 14.5 ft (4.42 m), from flood marks, site and datum used 1919-25, discharge, 6,900 ft³/s (195 m³/s). Flood of Mar. 1, 1965, reached a stage of 10.7 ft (3.26 m), from graph based on gage readings, at present site and datum, discharge, 4,200 ft³/s (119 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,250 ft³/s (35.4 m³/s) May 30, gage height, 4.69 ft (1.430 m), no peak above base of 1,600 ft³/s (45.3 m³/s); minimum daily, 0.32 ft³/s (0.009 m³/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	72	69	48	53	46	81	45	334	66	5.0	2.5
2	19	67	64	43	53	33	90	44	281	60	4.0	2.3
3	18	67	67	30	49	35	165	42	547	55	3.6	2.3
4	18	69	71	41	44	36	256	39	458	56	6.6	34
5	18	108	76	44	39	32	217	36	358	53	4.5	26
6	16	225	74	31	36	33	183	38	252	58	16	11
7	15	225	71	26	32	30	162	32	199	50	2.2	5.3
8	14	190	41	24	31	34	144	30	156	40	18	3.4
9	12	157	51	22	28	106	142	30	136	35	7.2	6.2
10	12	134	64	25	28	556	135	38	122	28	9.9	2.3
11	12	115	55	29	29	296	126	36	104	26	44	1.7
12	12	110	29	33	28	152	109	30	93	23	30	2.2
13	12	103	38	37	24	83	101	32	91	21	16	1.9
14	11	99	46	41	23	97	95	29	810	19	9.2	1.5
15	10	96	49	48	22	418	94	28	867	20	41	1.4
16	9.2	89	34	178	22	529	81	29	811	20	73	1.3
17	9.2	86	36	331	22	219	77	44	546	19	57	1.1
18	23	82	38	150	21	147	74	43	416	22	29	1.3
19	35	77	40	100	23	149	71	42	370	21	25	1.1
20	19	71	42	80	33	149	69	42	275	16	20	2.1
21	37	94	45	86	145	135	66	40	213	13	15	1.4
22	435	160	53	90	370	107	63	38	180	11	11	2.6
23	400	182	74	82	179	96	58	35	159	9.2	7.8	1.4
24	233	160	71	72	89	84	56	33	135	7.2	6.6	1.3
25	167	142	53	140	58	71	65	32	101	6.6	5.5	.91
26	138	126	47	115	46	65	53	27	106	47	3.7	.49
27	124	110	49	84	46	63	51	103	97	38	3.2	.44
28	104	100	46	67	47	61	48	52	90	19	2.7	.81
29	94	85	45	55	52	70	48	50	76	12	2.6	.40
30	85	78	49	48	---	75	47	757	69	7.2	2.5	.32
31	95	---	50	49	---	79	---	458	---	6.0	7.8	---
TOTAL	2225.4	3479	1637	2249	1672	4086	3007	2354	8452	884.2	489.6	120.97
MEAN	71.8	116	52.8	72.5	57.7	132	100	75.9	282	28.5	15.8	4.03
MAX	435	225	76	331	370	556	256	757	867	66	73	34
MIN	9.2	67	29	22	21	30	47	27	69	6.0	2.2	.32
CFSM	.35	.57	.26	.36	.28	.65	.49	.37	1.38	.14	.08	.02
IN.	.41	.63	.30	.41	.30	.75	.55	.43	1.54	.16	.09	.02
AC-FT	4410	6900	3250	4460	3320	8100	5960	4670	16760	1750	971	240

CAL YR 1979	TOTAL	76544.40	MEAN	210	MAX	4110	MIN	9.2	CFSM	1.03	IN	13.96	AC-FT	151800
WTR YR 1980	TOTAL	30656.17	MEAN	83.8	MAX	867	MIN	.32	CFSM	.41	IN	5.59	AC-FT	60810

05471500 SOUTH SKUNK RIVER NEAR OSKALOOSA, IA

LOCATION.--Lat 41°21'19", long 92°39'31", in NW1/4 SW1/4 sec.25, T.76 N., R.16 W., Mahaska County, Hydrologic Unit 07080105, on right bank 400 ft (122 m) upstream from bridge on U.S. Highway 63, 0.3 mi (0.5 km) downstream from Painter Creek, 4.0 mi (6.4 km) north of Oskaloosa, 53.7 mi (86.4 km) upstream from confluence with North Skunk River, and at mile 147.3 (237.0 km) upstream from mouth of Skunk River.

DRAINAGE AREA.--1,635 mi^2 (4,234 km^2).

PERIOD OF RECORD.--October 1945 to current year. Prior to October 1966, published as Skunk River near Oskaloosa. Prior to October 1948, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 685.50 ft (208.940 m) NGVD. Prior to Nov. 21, 1947, nonrecording gage at site 400 ft (122 m) downstream at same datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--35 years, 885 ft^3/s (25.05 m^3/s), 7.35 in/yr (187 mm/yr), 641,200 acre-ft/yr (791 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft^3/s (566 m^3/s) June 15, 1947, gage height, 21.26 ft (6.480 m), from floodmarks; maximum gage height, 22.52 ft (6.864 m) Feb. 3, 1973, backwater from ice; minimum daily discharge, 1.8 ft^3/s (0.051 m^3/s) Oct. 11-13, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1944 reached a stage of 25.8 ft (7.86 m), from floodmarks, discharge, 37,000 ft^3/s (1,050 m^3/s), from rating curve extended above 18,000 ft^3/s (510 m^3/s) on basis of velocity-area study.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,070 ft^3/s (115 m^3/s) June 16, gage height, 14.34 ft (4.371 m), no peak above base of 5,000 ft^3/s (142 m^3/s); minimum daily, 70 ft^3/s (1.98 m^3/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	214	758	656	260	380	250	493	350	837	651	128	135
2	201	705	660	270	370	260	495	338	824	605	123	112
3	194	660	620	240	360	260	548	328	859	568	117	91
4	187	621	600	200	340	260	610	319	1170	538	113	112
5	182	596	560	210	330	270	709	306	1450	541	121	145
6	180	614	540	220	320	260	840	295	1380	494	114	159
7	175	778	520	240	300	260	828	283	1160	464	112	134
8	173	1020	500	260	280	260	780	271	946	445	106	112
9	167	992	485	230	270	400	749	263	822	411	100	95
10	162	901	461	240	260	660	734	261	767	376	106	84
11	158	817	511	230	250	1000	714	259	689	377	144	80
12	156	754	490	230	250	900	728	264	626	345	177	77
13	154	725	370	220	250	860	708	264	582	310	121	668
14	152	697	300	230	240	860	673	257	643	280	127	584
15	148	665	250	240	240	900	648	252	1470	259	141	191
16	148	641	245	700	230	1000	616	244	3910	243	187	141
17	148	625	240	1300	230	1200	580	245	3380	230	499	125
18	160	601	235	1150	230	1130	548	268	2630	252	421	111
19	196	588	230	1000	220	837	519	274	2340	264	285	106
20	209	573	230	800	220	772	492	286	3060	214	226	100
21	206	570	230	660	240	746	472	276	2420	201	186	92
22	366	574	230	580	400	711	458	257	1910	184	158	87
23	1240	628	240	520	330	671	436	242	1750	173	143	82
24	2040	744	250	480	320	636	417	238	1310	164	131	79
25	1600	799	250	450	300	598	403	234	1150	156	120	78
26	1240	791	250	420	290	560	391	223	1020	155	111	77
27	1030	768	250	410	280	527	380	215	934	163	105	76
28	911	743	240	400	290	507	377	208	854	148	99	74
29	824	716	240	380	290	495	367	208	781	166	89	72
30	750	685	240	390	---	487	359	247	713	153	88	70
31	719	---	250	400	---	495	---	247	---	138	120	---
TOTAL	14390	21349	11373	13560	8310	19042	17072	8222	42387	9669	4818	4149
MEAN	464	712	367	437	287	614	569	265	1413	312	155	138
MAX	2040	1020	660	1300	400	1200	840	350	3910	651	499	668
MIN	148	570	230	200	220	260	359	208	582	138	88	70
CFSM	.28	.44	.22	.27	.18	.38	.35	.16	.86	.19	.10	.08
IN.	.33	.49	.26	.31	.19	.43	.39	.19	.96	.22	.11	.09
AC-FT	28540	42350	22560	26900	16480	37770	33860	16310	84070	19180	9560	8230

CAL YR 1979 TOTAL 514602 MEAN 1410 MAX 10800 MIN 148 CFSM .86 IN 11.71 AC-FT 1021000
WTR YR 1980 TOTAL 174341 MEAN 476 MAX 3910 MIN 70 CFSM .29 IN 3.97 AC-FT 345800

05472500 NORTH SKUNK RIVER NEAR SIGOURNEY, IA

LOCATION.--Lat 41°18'03", long 92°12'16", in NE1/4 SE1/4 sec.14, T.75 N., R.12 W., Keokuk County, Hydrologic Unit 07080106, on right bank 20 ft (6 m) downstream from bridge on State Highway 149, 1.2 mi (1.9 km) downstream from Cedar Creek, 2.2 mi (3.5 km) south of Sigourney, 4.0 mi (6.4 km) upstream from Bridge Creek, and 16.2 mi (26.1 km) upstream from confluence with South Skunk River

DRAINAGE AREA.--730 mi² (1,890 km²).

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1946-47 (M).

GAGE.--Water-stage recorder. Datum of gage is 651.53 ft (198.586 m) NGVD. Prior to June 10, 1953, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--36 years, 428 ft³/s (12.12 m³/s), 7.96 in/yr (202 mm/yr), 310,100 acre-ft/yr (382 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,500 ft³/s (779 m³/s) Mar. 31, 1960, gage height, 25.33 ft (7.721 m); minimum daily, 0.1 ft³/s (0.003 m³/s) Oct. 7 to Nov. 15, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1944 reached a stage of 22.8 ft (6.95 m), from floodmark, discharge, 14,500 ft³/s (411 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,000 ft³/s (28.3 m³/s) June 23, gage height, 8.34 ft (2.542 m), no peak above base of 3,800 ft³/s (108 m³/s); maximum gage height, 12.21 ft. (3.722 m) Feb. 23, backwater from ice; minimum daily discharge, 17 ft³/s (0.48 m³/s) Aug. 27,28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	120	84	91	120	260	173	113	136	74	33	185
2	48	143	69	85	110	235	171	113	135	70	35	86
3	48	153	75	81	100	215	232	108	134	67	34	55
4	47	130	91	73	97	205	314	103	171	64	32	152
5	47	122	91	69	96	200	292	100	197	221	67	121
6	48	119	94	65	95	185	251	96	169	129	56	100
7	47	114	104	51	93	175	219	92	161	86	37	103
8	45	125	106	52	93	170	201	86	139	71	31	72
9	45	126	87	49	94	260	194	83	124	64	30	60
10	43	123	97	49	94	375	185	84	106	473	28	40
11	43	117	91	45	92	404	187	87	93	222	39	37
12	41	110	89	44	92	490	223	86	85	117	37	33
13	40	107	65	45	90	425	322	88	79	95	41	120
14	41	105	82	51	90	330	279	85	143	73	58	252
15	47	106	83	60	89	335	288	81	208	61	48	449
16	44	105	58	315	90	350	321	78	246	54	136	136
17	43	105	52	910	91	460	269	80	231	50	243	94
18	44	103	50	1050	91	383	217	84	168	80	210	75
19	120	101	51	1000	89	240	199	87	139	88	166	62
20	62	105	47	522	88	200	183	94	125	70	97	52
21	59	190	45	470	270	182	169	89	114	59	69	45
22	225	154	90	415	620	161	156	86	113	60	50	39
23	264	140	300	375	515	147	146	78	689	90	39	34
24	696	145	285	340	450	141	136	74	294	53	32	30
25	367	131	260	270	390	135	127	71	165	39	27	28
26	233	122	240	221	350	131	123	67	129	37	23	25
27	179	117	154	205	320	122	120	64	111	35	17	25
28	150	114	102	190	290	121	118	62	100	35	17	25
29	134	105	89	170	275	124	117	67	89	41	18	24
30	122	96	92	150	---	132	114	68	80	37	40	23
31	116	---	91	135	---	169	---	78	---	34	70	---
TOTAL	3539	3653	3314	7648	5374	7462	6046	2632	4873	2749	1860	2572
MEAN	114	122	107	247	185	241	202	84.9	162	88.7	60.0	85.7
MAX	696	190	300	1050	620	490	322	113	689	473	243	449
MIN	40	96	45	44	88	121	114	62	79	34	17	23
CFSM	.16	.17	.15	.34	.25	.33	.28	.12	.22	.12	.08	.12
IN.	.18	.19	.17	.39	.27	.38	.31	.13	.25	.14	.09	.13
AC-FT	7020	7250	6570	15170	10660	14800	11990	5220	9670	5450	3690	5100

CAL YR 1979	TOTAL	227985	MEAN 625	MAX 11100	MIN 40	CFSM .86	IN 11.62	AC-FT	452200	
WTR YR 1980	TOTAL	51722	MEAN 141	MAX 1050	MIN 17	CFSM .19	IN 2.64	AC-FT	102600	

05473400 CEDAR CREEK NEAR OAKLAND MILLS, IA

LOCATION.--Lat. 40°55'20", long 91°40'10", in SE1/4 NW1/4 sec. 28, T.71 N., R.7 W., Henry County, Hydrologic Unit 07080107 on left bank 30 ft. (9.1 m) upstream from bridge on county highway H46, 3.0 mi. (4.8 km) west of Oakland Mills, 2.9 mi. (4.7 km) upstream from Wolf Creek, and 4.3 mi. (6.9 km) upstream from mouth.

DRAINAGE AREA.--530 mi² (1,373 km²).

PERIOD OF RECORD.--July 1977 to current year. Occasional low-flow measurements, water years 1957 to 1977.

GAGE.--Water-stage recorder. Datum of gage is 565.07 (172.233 m) NGVD.

REMARKS.--Records good except for winter period, which are fair. Occasional high water measurements were made by Corps of Engineers in 1965, 1966, 1970 and 1974 and by U.S. Geological Survey in 1966 and 1967. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,010 ft³/s (199 m³/s) June 3, 1980, gage height, 18.26 ft (5.566 m); minimum daily, 1.0 ft³/s (0.028 m³/s) July 9, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of April 22, 1973 reached a stage of 24.09 ft (7.343 m), discharge not determined. Flood of June 1905 reached a stage approximately 2 feet higher from information by local resident.

EXTREMES FOR CURRENT PERIOD.--Peak discharges above base of 3,000 ft³/s (85.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 3	0745	*7,010	199	*18.26	5.566	Sep. 1	2015	5,360	152	16.37	4.990
June 15	1515	4,950	140	15.77	4.807	Sep. 4	2345	5,740	163	16.86	5.139
Aug. 18	1045	6,510	184	17.76	5.413						

Minimum daily discharge, 2.5 ft³/s (0.071 m³/s) Oct. 11-14, 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
2	3.6	50	31	43	15	80	223	73	4590	50	15	3620
3	3.6	41	30	31	16	76	261	67	6480	47	13	535
4	4.8	34	28	24	17	72	529	63	3140	44	79	3710
5	3.2	28	33	18	18	73	312	61	841	56	412	3350
6	3.3	22	33	14	19	70	206	58	481	80	121	592
7	5.2	19	32	10	20	70	174	60	302	82	49	250
8	3.0	21	32	7.8	21	72	155	53	232	50	29	145
9	3.4	44	33	7.9	22	130	135	48	180	43	19	99
10	2.6	42	32	7.1	24	510	131	46	138	178	14	74
11	2.5	40	30	6.8	25	450	136	45	122	139	16	59
12	2.5	38	22	6.2	26	330	223	47	108	80	16	82
13	2.5	36	21	5.9	27	270	383	51	112	49	15	126
14	2.5	34	20	6.4	27	250	471	49	358	37	58	114
15	2.7	33	19	7.0	28	375	392	48	3900	32	97	69
16	4.2	31	18	15	29	790	939	44	4100	32	820	130
17	4.4	30	12	100	30	563	569	79	2130	28	5300	478
18	2.5	37	11	89	32	329	307	123	481	36	5320	237
19	4.6	45	10	47	34	225	223	116	331	41	476	107
20	6.4	55	11	35	35	188	185	82	296	118	185	75
21	31	51	11	32	47	153	161	65	172	347	125	58
22	97	48	21	29	160	118	141	56	132	85	79	48
23	169	44	80	32	800	89	126	49	119	39	58	41
24	171	42	90	35	500	109	114	45	175	26	46	35
25	85	42	105	38	250	187	103	42	180	26	39	33
26	54	38	95	36	180	155	96	40	112	103	34	29
27	39	34	74	33	140	122	91	37	91	150	30	27
28	31	31	62	23	100	108	87	32	78	60	26	26
29	24	28	56	20	94	103	83	29	67	39	24	23
30	19	31	49	16	---	115	78	30	60	26	22	22
31	20	---	45	14	---	272	---	34	---	19	2430	---
TOTAL	810.7	1101	1179	833.1	2750	6542	7359	1747	30728	2195	15984	19064
MEAN	26.2	36.7	38.0	26.9	94.8	211	245	56.4	1024	70.8	516	635
MAX	171	55	105	100	800	790	939	123	6480	347	5320	4870
MIN	2.5	19	10	5.9	14	70	78	24	60	19	13	22
CFSM	.05	.07	.07	.05	.18	.40	.47	.11	1.96	.14	.93	1.22
IN.	.06	.08	.08	.06	.20	.47	.52	.12	2.19	.16	1.14	1.36
AC-FT	1610	2180	2740	1650	5450	12980	14600	3470	60950	4350	31700	37810

CAL YR 1979	TOTAL	112020.7	MEAN	307	MAX	5290	MIN	2.5	CFSM	.59	IN	7.98	AC-FT	222200
WTR YR 1980	TOTAL	90292.8	MEAN	247	MAX	6480	MIN	2.5	CFSM	.47	IN	6.43	AC-FT	179100

05474000 SKUNK RIVER AT AUGUSTA, IA
(National stream-quality accounting network station)

LOCATION.--Lat 40°45'13", long 91°16'40", in NE1/4 NE1/4 sec.26, T.69 N., R.4 W., Des Moines County, Hydrologic Unit 07080107, on left bank 300 ft (91 m) upstream from bridge on State Highway 394 at Augusta, 2.0 mi (3.2 km) upstream from Long Creek, and at mile 12.5 (20.1 km).

DRAINAGE AREA.--4,303 mi² (11,144 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September to November 1913, October 1914 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1915 (M), 1919-27 (M), 1932-34 (M), 1936, 1937-38 (M), 1942 (M). WSP 1438: Drainage area. WDR Iowa 1971: 1966 (M).

GAGE.--Water-stage recorder. Datum of gage is 521.24 ft (158.874 m) NGVD. Prior to Nov. 15, 1913, nonrecording gage at site 400 ft (122 m) upstream at datum about 0.7 ft (0.2) higher. May 27, 1915, to Jan. 14, 1935, nonrecording gage at site 400 ft (122 m) upstream at present datum.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--66 years (1914-80), 2,359 ft³/s (66.81 m³/s), 7.44 in/yr (189 mm/yr), 1,709,000 acre-ft/yr (2,110 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 66,800 ft³/s (1,892 m³/s) Apr. 23, 1973, gage height, 27.05 ft (8.245 m); minimum daily, 7 ft³/s (0.20 m³/s) Aug. 27 to Sept. 1, 1934.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1, 1903, reached a stage of about 21 ft (6 m), discharge, about 45,000 ft³/s (1,270 m³/s). Stage and discharge for flood of April 1973 are believed to be the greatest since 1851.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 15,000 ft³/s (425 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 2	2045	18,000	510	14.13	4.307	Aug. 17	2045	*19,800	561	*14.97	4.563
June 15	1730	17,300	490	13.79	4.203	Sep. 5	0330	19,600	555	14.91	4.545

Minimum daily discharge, 238 ft³/s (6.74 m³/s) Aug. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	454	1220	1070	761	660	800	1880	930	2830	1280	304	12800
2	399	1150	820	740	600	750	1880	910	12400	1160	292	10400
3	368	1100	910	730	600	720	1850	873	14400	1070	276	4530
4	347	1080	980	690	650	690	2270	840	9810	985	329	10000
5	329	1060	898	630	640	660	2550	795	4880	1060	1290	16200
6	320	984	880	520	600	640	2190	744	3390	1260	1350	6120
7	307	900	834	350	570	660	2000	699	2920	1100	749	3890
8	300	866	1000	265	540	680	2000	666	2680	1090	463	2990
9	294	876	940	270	510	760	1960	629	2370	868	365	1960
10	280	1090	937	310	470	1500	1860	597	2000	1040	269	1390
11	276	1330	926	330	440	2600	1800	584	1720	1710	238	1080
12	272	1300	819	330	420	2900	1930	576	1540	1350	262	1060
13	258	1210	620	330	400	2300	2300	592	1420	1170	442	986
14	246	1100	380	360	390	2250	2920	588	2300	822	1050	939
15	239	1040	370	380	400	2700	2920	568	12900	681	866	867
16	243	980	350	450	385	2900	3940	548	11700	614	2030	1590
17	245	950	320	700	365	3000	4250	682	7330	615	13100	2360
18	245	919	330	2730	345	2780	3180	868	5180	595	13700	1900
19	277	897	340	2850	330	2820	2450	882	4610	635	5960	1330
20	308	882	385	3200	320	2790	2050	813	4130	566	2950	1010
21	601	1150	450	3000	355	2170	1780	718	3400	1360	2430	818
22	705	1700	560	2700	1600	1800	1610	657	3440	1080	1380	688
23	881	1750	780	2500	2000	1620	1460	638	3350	618	969	583
24	1250	1350	1100	2000	2700	1650	1340	607	3040	472	755	503
25	1400	1150	1470	1500	2300	1740	1240	565	3680	404	590	451
26	2330	1190	1370	1200	2000	1670	1150	529	2660	483	476	412
27	2370	1270	1250	1000	1650	1510	1080	496	2090	962	404	377
28	1940	1270	1170	900	1400	1400	1020	470	1790	952	347	350
29	1630	1210	994	840	1100	1310	978	445	1580	573	303	331
30	1400	1140	834	780	---	1310	952	421	1410	420	274	317
31	1290	---	750	720	---	1580	---	470	---	343	4930	---
TOTAL	21805	34134	24837	34055	24740	52670	60790	20400	136950	27338	59143	88232
MEAN	703	1138	801	1099	853	1699	2026	658	4565	882	1908	2941
MAX	2370	1760	1470	3200	2700	3000	4250	930	14400	1710	13700	16200
MIN	239	866	320	265	320	640	952	421	1410	343	238	317
CFSM	.16	.26	.19	.26	.20	.40	.47	.15	1.06	.21	.44	.68
IN.	.19	.30	.21	.29	.21	.45	.53	.18	1.18	.24	.51	.76
AC-FT	43250	67700	49260	67570	49070	104500	120600	40460	271600	54220	117300	175000

CAL YR 1979	TOTAL	1352117	MEAN	3704	MAX	28800	MIN	239	CFSM	.86	IN	11.69	AC-FT	2682000
WTR YR 1980	TOTAL	585105	MEAN	1599	MAX	16200	MIN	238	CFSM	.37	IN	5.06	AC-FT	1161000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	1119.7	1157.0	671.8	1381.0	2520.7	4254.9	4088.2	3545.7	4435.3	2575.3	1530.3	1388.4	2374.30
RUNOFF (INCHES)	0.25	0.30	0.18	0.37	0.61	1.14	1.06	0.95	1.15	0.69	0.41	0.36	7.49
STD. DEVIATION	0.30	0.51	0.19	0.55	0.39	0.85	0.90	0.79	1.03	0.69	0.49	0.76	4.07
PERCENT OF ANNUAL	3.30	4.10	2.40	4.90	8.80	15.00	14.00	12.00	16.00	9.10	5.30	4.90	----
PRECIP. (INCHES)	2.66	1.59	1.60	1.45	1.12	2.34	3.53	3.32	4.47	3.53	3.55	3.65	32.80

05474000 SKUNK RIVER AT AUGUSTA, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Samples collected at bridge on State Highway 394, 300 ft (91 m) downstream from gage.

PERIOD OF RECORD.--Water years 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1975 to current year.
WATER TEMPERATURES: October 1975 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1975 to current year.

REMARKS.--During periods of ice effect, sediment samples are collected in open water channel.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 950 micromhos Dec. 20, 1979, Feb. 12, 1980; minimum daily, 190 micromhos Aug. 10, 1977.
WATER TEMPERATURES: Maximum daily, 34.0°C July 20, 1980; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 7,010 mg/L July 21, 1976; minimum daily mean, 1 mg/L Mar. 8, 9, 12, 1978.
SEDIMENT LOADS: Maximum daily, 499,000 tons (453,000 tonnes) Mar. 21, 1978; minimum daily, 1.5 tons (1.4 tonnes) Feb. 8, 1977.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 950 micromhos Dec. 20, Feb. 12; minimum daily, 210 micromhos Sept. 5.
WATER TEMPERATURES: Maximum daily, 34.0°C July 20; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 6,510 mg/L June 2; minimum daily mean, 5 mg/L Jan. 14.
SEDIMENT LOADS: Maximum daily, 229,000 tons (208,000 tonnes) June 2; minimum daily, 4.9 tons (4.4 tonnes) Jan. 14.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	770	810	750	750	480	650	560	460	700	520	240
2	490	770	800	750	780	520	650	520	240	700	560	260
3	520	800	850	725	850	540	670	500	300	725	580	350
4	510	800	900	750	825	520	650	500	380	650	600	260
5	510	800	900	800	825	500	600	480	450	600	560	210
6	520	790	900	800	825	560	625	480	540	540	310	340
7	460	800	850	875	825	580	650	465	600	520	370	390
8	480	800	850	825	900	570	670	480	650	500	460	430
9	500	750	850	815	900	600	700	480	650	520	440	500
10	500	780	850	850	925	500	750	500	675	560	520	510
11	530	780	770	800	900	440	750	490	700	460	540	510
12	540	790	770	850	950	440	700	500	750	430	560	500
13	520	820	800	860	925	440	700	510	750	520	580	460
14	550	825	850	860	870	420	650	500	710	410	350	520
15	625	825	860	825	870	460	625	510	320	450	330	530
16	560	875	800	800	800	440	550	520	290	500	280	480
17	580	900	870	825	850	360	560	520	330	520	220	540
18	560	900	900	650	850	380	580	560	400	520	220	420
19	580	820	900	540	825	440	650	580	560	500	300	400
20	650	850	950	520	825	480	675	580	490	480	320	460
21	650	850	850	480	775	500	675	560	600	350	360	520
22	600	700	875	480	580	470	700	540	700	350	420	520
23	700	700	850	560	380	520	700	540	600	410	460	540
24	550	720	850	560	370	560	675	540	600	440	420	560
25	580	700	850	580	360	600	700	520	625	480	380	540
26	580	740	800	625	440	650	700	530	530	520	370	470
27	520	800	750	650	450	700	675	540	600	520	420	440
28	625	800	700	650	410	700	650	540	650	370	460	460
29	710	800	700	675	420	670	625	520	725	390	430	480
30	750	800	700	700	---	700	625	540	675	460	460	480
31	770	---	720	725	---	700	---	580	---	500	220	---

05474000 SKUNK RIVER AT AUGUSTA, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	10.0	1.0	1.0	.0	1.0	10.0	17.0	23.0	30.0	32.0	22.0
2	19.0	10.0	.0	.0	.0	.0	9.0	19.0	22.0	26.0	28.0	23.0
3	19.0	8.0	.0	2.0	.0	.0	10.0	20.0	19.0	27.0	30.0	24.0
4	14.0	8.0	.0	1.0	.0	2.0	11.0	22.0	22.0	30.0	30.0	22.0
5	14.0	8.0	2.0	1.0	.0	.0	14.0	22.0	26.0	30.0	29.0	23.0
6	15.0	7.0	2.0	.0	.0	2.0	12.0	20.0	26.0	29.0	29.0	23.0
7	14.0	6.0	2.0	.0	.0	2.0	15.0	20.0	26.0	32.0	31.0	24.0
8	16.0	7.0	.0	.0	.0	2.0	11.0	18.0	24.0	33.0	31.0	26.0
9	15.0	7.0	2.0	.0	.0	3.0	8.0	20.0	25.0	33.0	33.0	25.0
10	14.0	4.0	5.0	2.0	.0	1.0	11.0	20.0	25.0	33.0	30.0	24.0
11	12.0	4.0	3.0	.0	.0	1.0	7.0	20.0	25.0	29.0	29.0	23.0
12	15.0	3.0	.0	1.0	1.0	1.0	10.0	19.0	24.0	31.0	29.0	25.0
13	12.0	4.0	.0	2.0	1.0	1.0	10.0	17.0	25.0	31.0	29.0	26.0
14	12.0	4.0	.0	3.0	1.0	3.0	6.0	20.0	27.0	33.0	25.0	22.0
15	11.0	5.0	.0	3.0	.0	4.0	10.0	22.0	21.0	33.0	25.0	22.0
16	13.0	5.0	.0	3.0	.0	4.0	11.0	17.0	20.0	32.0	21.0	19.0
17	16.0	7.0	.0	1.0	.0	2.0	12.0	18.0	22.0	33.0	21.0	20.0
18	17.0	8.0	.0	5.0	1.0	7.0	14.0	18.0	22.0	33.0	24.0	20.0
19	17.0	10.0	.0	1.0	2.0	7.0	17.0	19.0	23.0	33.0	27.0	22.0
20	22.0	7.0	1.0	1.0	2.0	5.0	19.0	21.0	22.0	34.0	28.0	23.0
21	22.0	7.0	1.0	1.0	2.0	5.0	21.0	23.0	23.0	28.0	27.0	25.0
22	16.0	7.0	1.0	1.0	3.0	9.0	22.0	24.0	24.0	28.0	29.0	23.0
23	11.0	7.0	1.0	1.0	3.0	8.0	20.0	21.0	25.0	29.0	27.0	21.0
24	12.0	6.0	1.0	3.0	3.0	5.0	19.0	25.0	25.0	30.0	28.0	20.0
25	11.0	6.0	1.0	2.0	.0	7.0	17.0	27.0	26.0	30.0	29.0	19.0
26	10.0	5.0	1.0	1.0	1.0	6.0	17.0	28.0	28.0	27.0	29.0	19.0
27	10.0	5.0	1.0	.0	1.0	8.0	16.0	28.0	30.0	25.0	30.0	18.0
28	11.0	2.0	1.0	.0	2.0	8.0	16.0	29.0	30.0	26.0	30.0	20.0
29	11.0	2.0	1.0	.0	2.0	9.0	15.0	28.0	27.0	29.0	29.0	21.0
30	11.0	1.0	1.0	.0	---	7.0	16.0	28.0	28.0	30.0	27.0	22.0
31	12.0	---	1.0	.0	---	10.0	---	27.0	---	32.0	23.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	76	93	120	395	37	107	11	23	53	94	82	177
2	78	84	105	326	55	122	9	18	26	42	54	109
3	92	91	73	217	41	101	8	16	31	50	52	101
4	92	86	63	184	29	77	10	19	32	56	50	93
5	72	64	68	195	46	112	12	20	24	41	44	78
6	61	53	76	202	36	86	13	18	24	39	38	66
7	65	54	68	165	38	86	11	10	15	23	29	52
8	73	59	47	110	42	113	9	6.4	16	23	50	92
9	71	56	42	99	39	99	14	10	19	26	47	96
10	66	50	52	153	43	109	8	6.7	20	25	256	1040
11	66	49	58	208	36	90	7	6.2	30	36	537	3770
12	64	47	57	200	18	40	8	7.1	50	57	461	3610
13	41	29	49	160	12	20	7	6.2	79	85	410	2550
14	35	23	44	131	11	11	5	4.9	78	82	538	3270
15	55	35	38	107	10	10	6	6.2	62	67	599	4370
16	60	39	34	90	10	9.5	50	61	47	49	1000	7830
17	50	33	34	87	14	12	81	153	46	45	1590	12900
18	57	38	40	99	11	9.8	1240	9140	65	61	838	6290
19	62	46	66	160	8	7.3	992	7630	50	45	499	3800
20	64	53	92	219	11	11	1210	10500	21	18	690	5200
21	94	153	160	497	11	13	815	6600	52	50	660	3870
22	130	248	264	1210	40	60	450	3280	203	877	411	2000
23	191	454	278	1320	92	194	142	958	888	4800	286	1250
24	276	931	136	496	92	273	64	346	780	5690	214	959
25	263	994	74	232	166	659	52	211	322	2000	170	799
26	457	2870	52	167	91	337	50	162	170	918	145	654
27	479	3070	40	137	70	236	30	81	158	704	120	489
28	306	1600	35	120	55	174	28	68	158	597	97	367
29	208	915	37	121	37	99	34	77	98	291	102	361
30	150	567	46	142	23	52	56	118	---	---	106	375
31	139	484	---	---	15	30	81	157	---	---	136	580
TOTAL	---	13368	---	7949	---	3359.6	---	39719.7	---	16891	---	67198

05474000 SKUNK RIVER AT AUGUSTA, IA-Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	212	1080	99	249	2640	27100	254	878	55	45	2160	76300
2	218	1110	97	238	6510	229000	213	667	58	46	1390	39000
3	192	959	83	196	4720	192000	172	497	42	31	600	7340
4	322	1970	83	188	2050	54300	206	848	59	52	1470	55500
5	605	4170	80	172	1400	18400	407	1160	400	1390	1830	85800
6	427	2520	72	145	935	8560	449	1530	685	2500	715	11800
7	323	1740	66	125	615	4850	276	820	374	756	500	5250
8	275	1490	61	110	585	4230	135	397	128	160	364	2940
9	226	1200	57	97	528	3380	78	183	69	68	180	953
10	177	889	50	81	420	2270	282	792	55	40	86	323
11	146	710	60	95	340	1580	638	2950	59	38	71	207
12	151	787	74	115	270	1120	462	1680	62	44	112	321
13	212	1320	93	149	230	882	322	1020	60	72	120	319
14	394	3110	89	141	563	4180	244	542	1220	4050	99	251
15	454	3580	72	110	5210	209000	225	414	715	1670	78	183
16	965	10300	85	126	4140	131000	161	267	1370	11700	761	4010
17	1140	13100	173	319	3080	61000	147	244	6270	224000	625	3980
18	780	6700	270	633	2130	29800	132	212	2380	96600	255	1310
19	423	2800	281	669	1930	24000	137	235	850	13700	170	610
20	262	1450	280	615	1940	21600	150	229	510	4060	93	254
21	194	932	216	419	1500	13800	1240	4550	370	2430	69	152
22	159	691	142	252	1150	10700	800	2330	245	913	78	145
23	156	615	118	203	970	8770	280	4910	144	377	81	128
24	143	517	134	220	1040	8540	157	200	64	130	64	87
25	117	392	145	221	1590	15800	94	103	28	45	63	77
26	99	307	153	219	1370	9840	121	158	15	19	65	72
27	93	271	150	201	800	4510	277	719	15	16	46	47
28	90	248	148	188	440	2130	344	884	17	16	34	32
29	100	264	171	205	350	1540	228	353	29	24	39	35
30	99	254	125	142	285	1080	90	102	40	30	36	31
31	---	---	131	166	---	---	57	53	2360	38700	---	---
TOTAL	---	55476	---	7009	---	1104962	---	29627	---	403722	---	297457

TOTAL LOAD FOR YEAR: 2056738.3 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	TEMPER-ATURE, WATER (DEG C) (00010)	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)
OCT							
19...	0915	14.0	269	59	43	--	--
NOV							
20...	1030	7.0	844	83	189	--	--
DEC							
10...	1400	2.0	926	52	130	--	--
JAN							
22...	1500	.0	4530	420	5140	--	--
FEB							
12...	1400	.0	1160	46	144	--	--
APR							
02...	1230	8.0	1900	197	1010	--	--
MAY							
06...	1730	21.0	703	75	142	--	--
JUN							
02...	1815	22.0	16900	7330	334000	38	47
03...	1400	21.0	14400	3300	128000	48	55
JUL							
10...	1000	29.0	835	148	334	--	--
AUG							
04...	1430	29.0	251	63	43	--	--
19...	1145	20.5	5540	703	10500	52	57
SEP							
02...	1830	22.0	9340	833	21000	48	54

05474000 SKUNK RIVER AT AUGUSTA, IA-Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT							
19...	--	--	--	--	--	--	98
NOV							
20...	--	--	--	--	--	--	92
DEC							
10...	--	--	--	--	--	--	83
JAN							
22...	--	--	--	--	--	--	99
FEB							
12...	--	--	--	--	--	--	100
APR							
02...	--	--	--	--	--	--	99
MAY							
06...	--	--	--	--	--	--	99
JUN							
02...	54	73	--	--	--	--	96
03...	67	77	97	98	100	--	--
JUL							
10...	--	--	--	--	--	--	99
AUG							
04...	--	--	--	--	--	--	100
19...	59	73	--	--	--	--	97
SEP							
02...	56	73	96	98	99	100	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	NUMBER OF SAM-PLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)
JUN												
03...	1400	14400	7	1	5	36	82	95	97	98	99	100
AUG												
19...	1430	4560	8	0	3	28	79	93	96	98	100	--
SEP												
02...	1830	9340	3	--	0	16	77	94	98	99	100	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS (MG/L AS CACO3) (00900)
OCT											
19...	0915	269	600	8.4	14.0	20	10.1	81	K130	--	250
NOV											
20...	1030	844	740	8.3	7.0	22	11.4	95	250	210	380
DEC											
10...	1400	926	750	8.2	2.0	7.1	13.9	101	K40	210	380
JAN											
22...	1500	4530	490	7.7	.0	40	13.2	92	3900	K14500	230
FEB											
12...	1400	1160	780	7.8	.0	4.9	10.7	75	130	210	390
APR											
02...	1230	1900	565	8.4	8.0	66	11.4	97	700	760	250
MAY											
06...	1730	703	380	8.1	21.0	14	--	--	K20	K60	170
JUN											
03...	1400	14400	300	7.5	21.0	190	4.2	48	K26600	K33800	130
JUL											
10...	1000	835	536	8.3	29.0	28	7.6	83	294	140	270
AUG											
04...	1430	251	550	8.5	29.0	26	9.2	121	K180	K40	260
SEP											
02...	1830	9340	225	7.6	22.0	260	5.3	62	K7200	26000	84

K Results based on colony count outside the acceptable range (non-ideal colony count).

05474000 SKUNK RIVER AT AUGUSTA, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM ADSORPTION RATIO (00931)	SODIUM+POTASSIUM DISSOLVED (MG/L AS NA) (00933)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY (MG/L AS CACO3) (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)
OCT 19...	54	59	26	17	20	.5	20	3.2	200	69	22
NOV 20...	87	100	31	13	10	.3	15	2.3	290	58	24
DEC 10...	82	100	32	17	13	.4	20	2.6	300	61	26
JAN 22...	38	55	22	12	10	.3	15	3.4	190	48	19
FEB 12...	110	100	33	19	10	.4	23	3.8	280	74	29
APR 02...	71	66	21	14	11	.4	--	3.9	180	71	16
MAY 06...	49	28	24	16	17	.5	--	2.4	120	61	22
JUN 03...	33	31	12	6.7	10	.3	--	2.9	94	24	13
JUL 10...	77	69	23	11	8	.3	--	3.5	190	43	19
AUG 04...	43	64	25	16	11	.4	--	4.4	220	53	20
SEP 02...	18	23	6.5	5.0	11	.2	--	5.8	66	19	8.2

DATE	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)
OCT 19...	.3	4.8	332	322	.45	241	.03	.06	.07	1.0	1.1
NOV 20...	.3	19	472	466	.64	1080	9.6	.08	.10	.91	.99
DEC 10...	.3	19	495	479	.67	1240	9.2	.23	.28	1.2	1.4
JAN 22	.2	9.5	299	299	.41	3660	3.4	.38	.46	.92	1.3
FEB 12...	.3	18	469	472	.64	1470	6.2	.44	.53	.66	1.1
APR 02...	.2	11	348	325	.47	1790	3.1	.11	.13	1.4	1.5
MAY 06	.2	.1	228	229	.31	443	.62	.28	.34	3.5	3.8
JUN 03...	.1	4.3	165	160	.22	6420	2.1	.31	.38	2.3	2.6
JUL 10...	.5	12	321	313	.44	724	3.6	.00	.00	1.7	1.7
AUG 04...	.4	7.8	329	323	.45	223	.03	.00	.00	1.3	1.3
SEP 02...	.2	11	174	124	.24	4390	1.7	.16	.19	3.0	3.2

DATE	NITROGEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS, TOTAL (MG/L AS PO4) (71886)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED (MG/L AS C) (00689)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)
OCT 19...	.00	1.1	1.1	5.0	.140	.43	.010	9.5	--	--	--
NOV 20...	.20	.79	11	47	.290	.89	.180	16	--	--	--
DEC 10...	.00	1.7	11	47	.270	.83	.250	12	--	--	0
JAN 22...	.35	.95	4.7	21	.340	1.0	.160	--	13	.5	0
FEB 12...	.36	.74	7.3	32	.240	.74	.210	7.2	--	--	--
APR 02...	.50	1.0	4.6	20	.370	1.1	.150	16	--	--	0
MAY 06...	3.3	.47	4.4	20	.180	.55	.020	--	11	5.4	0
JUN 03...	1.5	1.1	4.7	21	.470	1.4	.100	17	--	--	--
JUL 10...	.94	.76	5.3	23	.290	.89	.160	12	--	--	--
AUG 04...	.56	.74	1.3	5.9	.200	.61	.170	15	--	--	0
SEP 02...	2.0	1.2	4.9	22	.780	2.4	.180	--	12	7.1	0

05474000 SKUNK RIVER AT AUGUSTA, IA-Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	PHYTOPLANKTON, TOTAL (CELLS PER ML) (50050)	PERIPHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)	PERIPHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	CHLOR-A PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2) (70958)	BIOMASS CHLOROPHYLL RATIO PERIPHYTON (UNITS) (70950)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)
OCT											
19...	0915	89000	--	--	--	--	--	59	43	98	--
NOV											
20...	1030	--	--	--	--	--	--	83	189	92	--
DEC											
10...	1400	--	--	--	--	--	--	52	130	83	--
JAN											
22...	1500	--	--	--	--	--	--	420	5140	99	--
FEB											
12...	1400	--	--	--	--	--	--	46	144	100	--
APR											
02...	1230	25000	--	--	--	--	--	197	1010	99	--
MAY											
06...	1730	220000	2.99	2.76	1.96	.660	117	75	142	99	--
JUN											
03...	1400	3300	--	--	--	--	--	3300	128000	--	97
JUL											
10...	1000	79000	--	--	--	--	--	148	334	99	--
AUG											
04...	1430	91000	--	--	--	--	--	63	43	100	--
SEP											
02...	1830	3800	--	--	--	--	--	833	21000	--	96

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA) (01007)	BARIUM, SUSPENDED RECOVERABLE (UG/L AS BA) (01006)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD) (01027)	CADMIUM SUSPENDED RECOVERABLE (UG/L AS CD) (01026)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	CHROMIUM, SUSPENDED RECOV. (UG/L AS CR) (01031)
JAN											
22...	1500	2	1	200	0	200	1	0	<1	10	0
MAY											
06...	1730	2	2	200	100	70	0	--	<1	0	0
SEP											
02...	1830	4	2	200	0	200	1	--	<1	10	10

DATE	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOVERABLE (UG/L AS CO) (01037)	COBALT, SUSPENDED RECOVERABLE (UG/L AS CO) (01036)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	COPPER, SUSPENDED RECOVERABLE (UG/L AS CU) (01041)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, SUSPENDED RECOVERABLE (UG/L AS FE) (01044)	IRON, DISSOLVED (UG/L AS FE) (01046)
JAN										
22...	10	2	0	<3	11	10	1	2800	2800	50
MAY										
06...	0	2	--	<3	5	2	3	1100	1100	20
SEP										
02...	0	11	--	<3	40	34	6	15000	15000	270

DATE	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	LEAD, SUSPENDED RECOVERABLE (UG/L AS PB) (01050)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, SUSPENDED RECOV. (UG/L AS MN) (01054)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	MERCURY SUSPENDED RECOVERABLE (UG/L AS HG) (71895)	MERCURY DISSOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)
JAN										
22...	7	4	3	110	100	8	.3	.1	.2	9
MAY										
06...	5	4	1	150	150	3	.0	.0	.0	6
SEP										
02...	48	47	1	890	880	10	.1	.1	.0	26

DATE	NICKEL, SUSPENDED RECOVERABLE (UG/L AS NI) (01066)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	SELENIUM, TOTAL (UG/L AS SE) (01147)	SELENIUM, SUSPENDED TOTAL (UG/L AS SE) (01146)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SILVER, SUSPENDED RECOVERABLE (UG/L AS AG) (01076)	SILVER, DISSOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, SUSPENDED RECOVERABLE (UG/L AS ZN) (01091)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
JAN										
22...	6	3	1	0	1	0	0	30	10	20
MAY										
06...	3	3	1	0	1	0	0	50	50	3
SEP										
02...	19	7	1	1	0	0	0	130	70	60

054740000 SKUNK RIVER AT AUGUSTA, IA--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, JUNE 1979 TO SEPTEMBER 1980

DATE	JUN 6,79	JUL 18,79	AUG 23,79	OCT 19,79	APR 1,80
TIME	1500	1100	1130	0915	1200
TOTAL CELLS/ML	2500	5100	2100	89000	25000
DIVERSITY: DIVISION	1.5	0.9	1.0	1.1	0.4
.CLASS	1.5	0.9	1.0	1.1	0.4
..ORDER	1.6	1.0	1.4	1.1	0.5
...FAMILY	2.4	1.1	1.8	1.8	0.5
....GENUS	2.7	1.2	1.8	2.7	0.5

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...CHARACIACEAE										
....SCHROEDERIA	24	1	--	-	--	-	--	-	--	-
...CHLOROCOCCACEAE										
....CHLOROCOCCUM	370	14	--	-	--	-	--	-	--	-
...MICRACTINIACEAE										
....MICRACTINIUM	--	-	--	-	--	-	1400	2	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	190	8	110	2	--	-	3200	4	440	2
....DICTYOSPHAERIUM	--	-	--	-	--	-	10000	11	--	-
....KIRCHNERIELLA	--	-	110	2	620#	30	7800	9	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	1800	2	--	-
....TREUBARIA	--	-	--	-	--	-	920	1	--	-
....WESTELLA	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	230	9	--	-	--	-	5500	6	--	-
....SCENEDESMUS	620#	25	--	-	410#	20	21000#	24	--	-
....TETRASTRUM	--	-	--	-	--	-	2800	3	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CARTERIA	--	-	--	-	--	-	--	-	--	-
....CHLAMYDOMONAS	24	1	110	2	210	10	--	-	220	1
...VOLVOCACEAE										
....GONIUM	--	-	460	9	--	-	--	-	--	-
....PANDORINA	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	--	-	820#	40	31000#	35	--	-
....MELOSIRA	--	-	230	5	--	-	--	-	--	-
....STEPHANODISCUS	--	-	--	-	--	-	--	-	--	-
..PENNALES										
...FRAGILARIACEAE										
....SYNEDRA	--	-	--	-	--	-	--	-	220	1
...NAVICULACEAE										
....GYROSIGMA	--	-	--	-	--	-	--	-	--	-
....NAVICULA	--	-	--	-	--	-	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	350	14	--	-	--	-	--	-	220	1
...SURIRELLACEAE										
....SURIRELLA	--	-	--	-	--	-	--	-	220	1
.CHRYSOPHYCEAE										
..CHRYSOMONADALES										
...OCHROMONADACEAE										
....OCHROMONAS	--	-	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOCHRYSIDACEAE										
....CHROOMONAS	--	-	--	-	--	-	--	-	--	-
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	520#	25	--	-	--	-	--	-	--	-
....ANACYSTIS	--	-	--	-	--	-	3200	4	--	-
....COCCOCHLORIS	--	-	--	-	--	-	--	-	--	-
....GOMPHOSPHAERIA	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES										
...OSCILLATORIACEAE										
....OSCILLATORIA	--	-	4000#	80	--	-	--	-	23000#	94
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	24	1	--	-	--	-	--	-	220	1
....TRACHELOMONAS	73	3	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

054740000 SKUNK RIVER AT AUGUSTA, IA--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, JUNE 1979 TO SEPTEMBER 1980

DATE	MAY 6,80	JUN 3,80	JUL 10,80	AUG 4,80	SEP 2,80
TIME	1730	1400	1000	1430	1830
TOTAL CELLS/ML	220000	3300	79000	91000	3800
DIVERSITY: DIVISION	1.5	0.9	1.0	1.4	1.2
.CLASS	1.5	0.9	1.1	1.4	1.2
..ORDER	1.6	1.5	1.2	1.6	1.8
...FAMILY	2.1	1.7	1.3	1.9	2.1
....GENUS	2.4	2.2	2.2	2.9	2.4

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...CHARACIACEAE										
....SCHROEDERIA	--	-	--	-	460	1	--	-	--	-
...CHLOROCOCCACEAE										
....CHLOROCOCCUM	--	-	--	-	--	-	--	-	--	-
...MICRACTINIACEAE										
....MICRACTINIUM	4000	2	--	-	--	-	--	-	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	460	1	2600	3	--	-
....DICTYOSPHAERIUM	30000	14	--	-	--	-	3900	4	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	1300	1	--	-
....OOCYSTIS	--	-	--	-	--	-	*	0	--	-
....SELENASTRUM	--	-	--	-	--	-	*	0	--	-
....TREUBARIA	--	-	--	-	--	-	*	0	--	-
....WESTELLA	--	-	--	-	--	-	2100	2	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	48000#	22	--	-	--	-	4300	5	--	-
....SCENEDESMUS	6100	3	1100#	35	1900	2	8100	9	--	-
....TETRASTRUM	--	-	--	-	--	-	860	1	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CARTERIA	*	0	--	-	--	-	--	-	--	-
....CHLAMYDOMONAS	*	0	--	-	930	1	640	1	--	-
...VOLVOCACEAE										
....GONIUM	--	-	--	-	--	-	--	-	--	-
....PANDORINA	--	-	--	-	3700	5	--	-	1100#	29
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	91000#	41	--	-	26000#	34	6400	7	1400#	36
....MELOSIRA	--	-	860#	26	34000#	43	*	0	--	-
....STEPHANODISCUS	--	-	570#	17	1400	2	--	-	140	4
..PENNALES										
...FRAGILARIACEAE										
....SYNEDRA	--	-	--	-	--	-	*	0	--	-
...NAVICULACEAE										
....GYROSIGMA	--	-	--	-	--	-	--	-	140	4
....NAVICULA	--	-	--	-	--	-	*	0	410	11
...NITZSCHIACEAE										
....NITZSCHIA	*	0	430	13	--	-	1100	1	410	11
...SURIRELLACEAE										
....SURIRELLA	--	-	290	9	--	-	--	-	--	-
.CHRYSOPHYCEAE										
..CHRYSOMONADALES										
...OCHROMONADACEAE										
....OCHROMONAS	--	-	--	-	460	1	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOCHRYSIDACEAE										
....CHROOMONAS	*	0	--	-	--	-	--	-	--	-
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	--	-	--	-	1100	1	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	--	-	7400	9	45000#	50	--	-
....ANACYSTIS	17000	8	--	-	--	-	5100	6	--	-
....COCCOCHLORIS	--	-	--	-	--	-	3000	3	270	7
....GOMPHOSPHAERIA	20000	9	--	-	--	-	--	-	--	-
..HORMOGONALES										
...OSCILLATORIACEAE										
....OSCILLATORIA	--	-	--	-	--	-	2400	3	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	--	-	1400	2	*	0	--	-
....TRACHELOMONAS	--	-	--	-	460	1	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

05474500 MISSISSIPPI RIVER AT KEOKUK, IA
(National stream-quality accounting network station)

LOCATION.--Lat 40°23'37", long 91°22'27", in SE1/4 SW1/4 sec.30, T.65 N., R.4 W., Lee County, Hydrologic Unit 07080104, near right bank in tailwater of dam and powerplant of Union Electric Co. at Keokuk, 0.2 mi (0.3 km) upstream from bridge on U.S. Highway 136, 2.7 mi (4.3 km) upstream from Des Moines River, and at mile 364.2 (586.0 km) upstream from Ohio River.

DRAINAGE AREA.--119,000 mi² (308,000 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1878 to current year.

GAGE.--Water-stage recorder. Datum of gage is 477.41 ft (145.515 m) NGVD (levels by Corps of Engineers); Jan. 1, 1878, to May 1913, nonrecording gage at Galland (formerly Nashville), 8 mi (12.9 km) upstream; zero of gage was set to low-water mark of 1864, or 496.52 ft (151.339 m) NGVD.

REMARKS.--Discharge computed from records of operation of turbines in powerplant and spillway gates in dam. Minor flow regulation caused by powerplant since 1913 and navigation dams. Records for May 1913 to September 1937 adjusted for change in contents in Keokuk Reservoir, those after September 1937 unadjusted.

COOPERATION.--Records furnished by Union Electric Co.

AVERAGE DISCHARGE.--102 years, 62,620 ft³/s (1,773 m³/s), 7.15 in/yr (182 mm/yr), 45,370,000 acre-ft/yr (55,940 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 344,000 ft³/s (9,740 m³/s) Apr. 24, 1973; maximum gage height, 23.35 ft (7.117 m) Apr. 24, 1973; minimum daily discharge, 5,000 ft³/s (142 m³/s) Dec. 27, 1933.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 6, 1851, reached a stage of 21.0 ft (6.40 m), present site and datum, estimated as 13.5 ft (4.11 m) at Galland, discharge, 360,000 ft³/s (10,200 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 141,000 ft³/s (3,990 m³/s) June 16; minimum daily, 22,000 ft³/s (623 m³/s) July 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31400	78200	72500	55100	42100	56600	90900	69000	52200	54600	24800	105000
2	30300	74300	71100	53500	42500	53300	84300	67200	118000	57400	23000	109000
3	38600	72200	62900	50900	41800	51400	80700	69000	113000	46400	22900	94600
4	43700	67600	57400	52300	40000	47700	79000	60300	90700	43600	22100	93300
5	42000	62400	48700	48000	39400	48800	78100	60100	95600	46200	27500	103000
6	42600	60000	49300	44100	39900	47400	84000	57800	91500	53100	33000	91200
7	42100	59900	55100	34500	38800	45200	83400	56800	92500	48700	35800	85700
8	36300	62700	59600	24600	40100	44600	89300	50700	94700	48800	31800	79900
9	33300	66800	57100	23900	39200	41900	97400	48200	100000	46900	24900	79300
10	36200	65600	57300	31100	39200	44200	99800	42100	102000	32500	30900	81100
11	33800	69200	53800	31500	39900	45900	105000	39600	98100	28500	48800	85200
12	32800	71200	50700	31600	39500	46300	107000	36900	97500	29200	56300	89700
13	31700	71200	54200	33400	39400	46500	113000	37000	99400	38600	67100	94800
14	33000	70400	48200	31100	39000	44300	112000	37400	105000	37800	71700	89700
15	33200	72100	39500	36200	38500	45500	121000	39600	137000	36900	77400	108000
16	32400	75300	37100	38900	39800	54900	126000	40700	141000	34500	84400	117000
17	31900	74900	31300	50800	38300	71000	126000	46800	134000	31500	106000	110000
18	30400	72300	25200	59700	37300	81500	129000	56100	131000	29600	125000	101000
19	29700	66900	29900	84100	36300	92500	130000	55900	133000	29500	110000	98100
20	31800	65100	36900	84500	37500	94200	132000	55300	133000	23600	90800	96100
21	31500	62500	37200	81800	37900	92800	130000	47600	122000	22600	84400	97600
22	34000	64000	39900	74800	40000	104000	128000	42000	97400	36100	76700	99900
23	41800	64500	46600	57500	51800	107000	120000	37700	81300	43200	85200	105000
24	49800	65200	56100	58900	66700	114000	113000	34300	73000	40800	87600	107000
25	54100	65900	60300	59300	73400	113000	106000	36300	69900	33500	83000	108000
26	55000	63700	66500	61700	72300	113000	93800	41100	65500	22000	74400	109000
27	56300	68300	68600	48800	66800	108000	85000	42300	60200	28600	63500	110000
28	58200	68000	67100	45700	60500	104000	85200	43900	59400	28400	60300	114000
29	72600	69200	66000	41700	60500	99200	73600	39700	59000	28000	60100	116000
30	79800	71600	61000	43200	---	97100	72700	39400	57000	36500	60100	121000
31	78500	---	59000	43200	---	93000	---	30700	---	34100	79300	---
TOTAL	1308800	2041200	1626100	1516400	1318400	2248800	3075200	1461500	2903900	1150700	1928800	2999200
MEAN	42220	68040	52450	48920	45460	72540	102500	47150	96800	37120	62220	99970
MAX	79800	78200	72500	84500	73400	114000	132000	69000	141000	57400	125000	121000
MIN	29700	59900	25200	23900	36300	41900	72700	30700	52200	22000	22100	79300
CFSM	.36	.57	.44	.41	.38	.61	.86	.40	.81	.31	.52	.84
IN.	.41	.64	.51	.47	.41	.70	.96	.46	.91	.36	.60	.94
AC-FT	2596000	4049000	3225000	3008000	2615000	4460000	6100000	2899000	5760000	2282000	3826000	5949000

CAL YR 1979 TOTAL 33799000 MEAN 92600 MAX 257000 MIN 25200 CFSM .78 IN 10.57 AC-FT 67040000
WTR YR 1980 TOTAL 23579000 MEAN 64420 MAX 141000 MIN 22000 CFSM .54 IN 7.37 AC-FT 46770000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	43351.8	44796.9	36126	38190.9	42282.8	78446	123724	102186	89593.8	71220.8	43351.8	43730	63118.9
RUNOFF (INCHES)	0.42	0.42	0.35	0.37	0.37	0.76	1.16	0.99	0.84	0.69	0.42	0.41	7.20
STD. DEVIATION	0.24	0.21	0.12	0.17	0.12	0.29	0.44	0.42	0.36	0.33	0.18	0.18	1.89
PERCENT OF ANNUAL	5.80	5.80	4.90	5.10	5.10	11.00	16.00	14.00	12.00	9.60	5.80	5.70	----
PRECIP. (INCHES)	2.71	1.44	1.41	1.50	1.19	2.40	3.30	3.17	4.09	3.96	2.85	3.48	31.50

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Samples collected near bridge on U.S. Highway 136, 0.2 mi (0.3 km) downstream from discharge station.

PERIOD OF RECORD.--Water years 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: December 1977 to current year.
WATER TEMPERATURES: December 1977 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 612 micromhos Jan. 21, 1980; minimum daily, 312 micromhos Mar. 26, 1979.
WATER TEMPERATURES: Maximum daily, 28.0°C July 13-23, 1980; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 612 micromhos Jan. 21; minumum daily, 320 micromhos Aug. 19.
WATER TEMPERATURES: Maximum daily, 28.0°C July 13-23; minumum daily, 0.0°C on many days during winter period.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	427	496	500	561	491	427	366	392	405	448	432	362
2	532	473	500	558	495	421	391	394	407	432	430	341
3	540	466	500	543	499	438	396	400	415	443	420	349
4	544	486	500	569	492	435	404	385	418	450	424	355
5	510	490	500	563	511	408	406	386	418	449	430	349
6	513	502	542	574	508	401	414	378	416	466	428	372
7	543	516	526	568	506	436	420	367	400	478	426	365
8	544	518	554	564	509	441	430	362	410	460	424	394
9	550	508	565	580	539	422	431	358	405	452	429	407
10	447	506	562	567	538	439	438	354	410	447	428	410
11	429	498	574	594	540	442	436	351	414	448	422	410
12	531	502	532	578	536	444	429	374	414	442	424	410
13	521	500	579	604	552	463	433	368	410	440	430	408
14	535	502	581	599	561	446	423	395	390	458	429	410
15	542	502	583	598	497	449	426	393	405	459	428	410
16	543	502	591	592	539	469	439	378	403	460	412	390
17	531	503	597	580	546	481	424	386	360	453	400	395
18	528	503	561	566	555	462	408	384	401	445	396	410
19	519	502	560	609	551	470	429	395	362	442	320	412
20	518	506	583	610	562	446	408	387	370	440	334	410
21	538	504	580	612	572	415	412	394	382	444	368	411
22	528	502	585	579	567	402	382	409	372	447	360	410
23	531	502	581	566	564	371	384	393	373	423	390	390
24	516	507	600	498	538	382	384	399	380	441	407	390
25	498	505	566	496	521	367	382	392	378	440	405	392
26	509	505	553	495	482	351	382	417	382	442	407	392
27	521	504	589	468	464	366	382	422	445	440	414	390
28	500	504	582	471	508	363	386	445	443	439	409	388
29	499	502	578	477	423	367	385	439	434	442	406	361
30	493	502	570	479	---	365	390	407	437	449	408	360
31	497	---	586	477	---	387	---	405	---	441	411	---

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.0	13.0	4.0	1.0	.0	.0	4.0	14.0	23.0	25.0	25.0	24.0
2	20.0	11.0	4.0	1.0	.0	.0	5.0	14.0	23.0	25.0	26.0	24.0
3	19.0	12.0	4.0	1.0	.0	.0	6.0	14.0	23.0	25.0	26.0	24.0
4	18.0	9.0	4.0	1.0	.0	.0	6.0	17.0	23.0	24.0	26.0	25.0
5	18.0	10.0	4.0	1.0	.0	.0	6.0	17.0	22.0	25.0	26.0	25.0
6	18.0	10.0	4.0	1.0	.0	.0	6.0	18.0	22.0	25.0	26.0	24.0
7	15.0	7.0	4.0	1.0	.0	.0	6.0	18.0	22.0	25.0	26.0	25.0
8	16.0	7.0	3.0	1.0	.0	.0	9.0	18.0	22.0	25.0	26.0	26.0
9	15.0	7.0	2.0	.0	.0	.0	9.0	18.0	22.0	26.0	27.0	26.0
10	15.0	6.0	2.0	.0	.0	.0	7.0	18.0	22.0	26.0	27.0	24.0
11	15.0	5.0	2.0	1.0	.0	1.0	8.0	18.0	22.0	27.0	26.0	24.0
12	15.0	5.0	2.0	1.0	.0	1.0	9.0	16.0	22.0	27.0	26.0	24.0
13	14.0	5.0	1.0	.0	.0	1.0	9.0	17.0	22.0	28.0	26.0	24.0
14	13.0	5.0	.0	1.0	.0	.0	8.0	16.0	22.0	28.0	26.0	24.0
15	12.0	5.0	1.0	1.0	.0	1.0	6.0	17.0	22.0	28.0	26.0	24.0
16	13.0	5.0	1.0	1.0	.0	1.0	6.0	18.0	22.0	28.0	26.0	23.0
17	13.0	5.0	.0	1.0	.0	1.0	7.0	18.0	21.0	28.0	25.0	23.0
18	13.0	5.0	.0	1.0	.0	1.0	9.0	18.0	20.0	28.0	25.0	24.0
19	15.0	5.0	.0	.0	.0	2.0	9.0	16.0	20.0	28.0	25.0	24.0
20	15.0	5.0	1.0	.0	.0	4.0	10.0	18.0	21.0	28.0	25.0	24.0
21	15.0	5.0	1.0	.0	.0	4.0	10.0	18.0	21.0	28.0	24.0	24.0
22	17.0	5.0	1.0	.0	.0	3.0	12.0	18.0	21.0	28.0	24.0	24.0
23	13.0	5.0	1.0	.0	.0	4.0	13.0	19.0	22.0	28.0	25.0	22.0
24	13.0	5.0	1.0	1.0	1.0	4.0	13.0	19.0	23.0	27.0	25.0	22.0
25	13.0	5.0	1.0	1.0	1.0	4.0	13.0	19.0	23.0	26.0	25.0	23.0
26	13.0	5.0	1.0	1.0	.0	4.0	13.0	18.0	23.0	26.0	24.0	22.0
27	12.0	5.0	1.0	1.0	.0	3.0	13.0	18.0	22.0	25.0	24.0	23.0
28	12.0	5.0	1.0	1.0	.0	4.0	14.0	18.0	24.0	25.0	25.0	23.0
29	12.0	5.0	1.0	.0	.0	4.0	14.0	19.0	25.0	25.0	25.0	22.0
30	12.0	5.0	1.0	.0	---	4.0	14.0	23.0	25.0	24.0	26.0	19.0
31	13.0	---	1.0	.0	---	4.0	---	23.0	---	25.0	26.0	---

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS (MG/L AS CACO3) (00900)
OCT											
01...	1230	37000	475	8.3	19.5	20	7.8	84	K25	K5	230
NOV											
13...	1300	71600	440	8.1	3.0	20	12.1	92	190	K45	190
DEC											
10...	0930	55000	500	8.3	1.0	7.1	13.9	106	K30	K110	250
JAN											
23...	1030	60000	400	8.0	.0	160	14.0	97	2300	>10000	170
FEB											
13...	1030	48000	560	8.2	.0	3.9	12.9	90	440	380	270
APR											
01...	1200	90000	320	8.0	5.0	26	11.8	96	K50	K170	150
MAY											
06...	1100	56000	335	8.8	18.0	12	10.8	116	300	K60	160
JUN											
04...	0945	92000	240	7.7	22.0	960	3.5	41	K2900	4800	98
JUL											
09...	1030	52000	370	7.8	28.0	26	7.7	61	K60	150	170
AUG											
04...	1000	38000	405	8.2	27.5	10	6.0	75	K43	K20	180
SEP											
02...	1100	37000	315	7.4	24.5	92	5.5	66	2200	3300	160

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM+ POTAS-SIUM DIS-SOLVED (MG/L AS NA) (00933)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY (MG/L AS CACO3) (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
OCT											
01...	53	57	22	9.6	8	.3	13	3.1	180	52	15
NOV											
13...	29	46	18	9.4	15	.3	12	2.6	160	34	16
DEC											
10...	72	63	23	12	14	.3	18	6.2	180	50	18
JAN											
23...	45	43	14	8.9	10	.3	16	7.5	120	34	19
FEB											
13...	76	67	24	13	9	.3	18	4.7	190	51	20
APR											
01...	26	37	13	9.0	11	.3	--	5.8	120	28	12
MAY											
06...	42	37	17	9.2	11	.3	--	3.3	120	33	15
JUN											
04...	32	27	7.4	5.1	10	.2	--	3.1	66	18	8.2
JUL											
09...	35	42	17	9.5	10	.3	--	2.6	140	36	17
AUG											
04...	42	40	20	11	11	.4	--	3.1	140	37	17
SEP											
02...	35	39	14	7.0	9	.2	--	3.7	120	23	12

K Results based on colony count outside the acceptable range (non-ideal colony count).

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)
OCT											
01...	.2	7.1	304	275	.41	30400	.00	.15	.18	.95	1.1
NOV											
13...	.2	6.6	249	238	.34	48100	2.1	.25	.30	.60	.85
DEC											
10...	.2	9.9	320	307	.44	47500	3.7	.02	.02	2.4	2.4
JAN											
23...	.2	10	218	236	.30	35300	6.2	.86	1.0	1.8	2.7
FEB											
13...	.2	12	326	323	.44	42300	3.7	.56	.68	1.0	1.6
APR											
01...	.1	8.7	202	192	.27	49100	1.3	1.1	1.3	1.5	2.6
MAY											
06...	.1	.1	207	190	.28	31300	.91	.13	.16	1.7	1.8
JUN											
04...	.1	8.8	156	143	.21	38800	5.9	.42	.51	11	11
JUL											
09...	.3	7.9	251	228	.34	35200	2.8	.10	.12	.86	.96
AUG											
04...	.3	.7	230	215	.31	23600	.35	.04	.05	1.5	1.5
SEP											
02...	.4	14	198	194	.27	19800	1.8	.04	.05	1.8	1.8

DATE	NITROGEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS, TOTAL (MG/L AS PO4) (71886)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED (MG/L AS C) (00689)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)
OCT											
01...	.10	1.0	1.1	4.9	.200	.61	.130	--	15	1.3	0
NOV											
13...	.60	.25	3.0	13	.190	.58	.070	20	--	--	--
DEC											
10...	1.3	1.1	6.1	27	.210	.64	.120	16	--	--	0
JAN											
23...	1.2	1.5	8.9	39	.700	2.1	.170	--	25	.7	0
FEB											
13...	.30	1.3	5.3	23	.290	.89	.240	10	--	--	--
APR											
01...	.80	1.8	3.9	17	.330	1.0	.170	13	--	--	0
MAY											
06...	1.0	.79	2.7	12	.150	.46	.040	--	15	2.7	0
JUN											
04...	9.5	1.5	17	75	1.400	4.3	.090	32	--	--	--
JUL											
09...	.00	1.0	3.8	17	.220	.67	.170	13	--	--	--
AUG											
04...	.58	.92	1.9	8.2	.100	.31	.100	14	--	--	0
SEP											
02...	.70	1.1	3.6	16	.400	1.2	.230	--	14	2.0	0

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	PHYTOPLANKTON, TOTAL (CELLS PER ML) (60050)	PERIPHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)	PERIPHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	CHLOR-A PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2) (70958)	BIOMASS CHLOROPHYLL RATIO PERIPHYTON (UNITS) (70950)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT										
01...	1230	6400	--	--	--	--	--	31	3100	100
NOV										
13...	1300	--	--	--	--	--	--	44	8510	100
DEC										
10...	0930	--	--	--	--	--	--	24	3560	99
JAN										
23...	1030	--	--	--	--	--	--	40	6480	96
FEB										
13...	1030	--	--	--	--	--	--	8	1040	--
APR										
01...	1200	28000	--	--	--	--	--	--	--	--
MAY										
06...	1100	59000	--	--	--	--	--	34	5140	97
JUN										
04...	0945	6100	.787	.551	1.07	.090	221	424	105000	100
JUL										
09...	1030	2400	--	--	--	--	--	46	6460	100
AUG										
04...	1000	280000	12.7	8.74	55.4	10.4	71.5	--	--	--
SEP										
02...	1100	43000	--	--	26.2	5.24	--	201	20100	99

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA) (01006)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD) (01026)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR) (01031)
OCT											
01...	1230	4	4	100	0	100	0	0	<1	10	0
JAN											
23...	1030	4	1	200	0	200	1	0	<1	10	10
MAY											
06...	1100	2	2	100	60	40	0	--	<1	0	0
SEP											
02...	1100	5	2	200	100	100	1	0	1	10	10

DATE	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO) (01036)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU) (01041)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE) (01044)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
OCT										
01...	10	0	0	<3	11	6	5	970	--	10
JAN										
23...	0	6	3	<3	21	18	3	960	870	90
MAY										
06...	0	2	--	<3	6	2	4	780	770	10
SEP										
02...	0	3	--	<3	27	21	6	5900	4000	1900

DATE	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB) (01050)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN) (01054)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG) (71895)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)
OCT										
01...	8	8	0	120	120	3	.2	.0	.3	7
JAN										
23...	19	16	3	390	380	7	.3	.2	.1	22
MAY										
06...	5	3	2	160	160	2	.1	.0	.1	5
SEP										
02...	24	8	16	290	90	200	.2	.2	.0	12

DATE	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE) (01146)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG) (01076)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
OCT										
01...	7	0	1	0	1	0	0	10	3	7
JAN										
23...	17	5	1	0	1	0	0	80	50	30
MAY										
06...	1	4	0	0	0	0	0	40	--	<3
SEP										
02...	2	10	0	0	0	0	0	90	70	20

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, JUNE 1979 TO SEPTEMBER 1980

DATE	JUN 7,79	JUL 25,79	AUG 23,79	OCT 1,79	APR 1,80
TIME	1000	0000	0930	1230	1200
TOTAL CELLS/ML	3100	6300	1200	5400	28000
DIVERSITY: DIVISION	0.9	1.3	1.3	1.6	1.5
.CLASS	0.9	1.3	1.3	1.6	1.5
..ORDER	0.9	1.5	1.3	1.6	1.8
...FAMILY	1.7	2.0	1.3	2.1	2.1
....GENUS	2.6	3.1	1.9	2.8	2.3

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...CHLOROCOCCACEAE										
....CHLOROCOCCUM	49	2	--	-	--	-	60	1	--	-
...COELASTRACEAE										
....COELASTRUM	--	-	110	2	--	-	--	-	1000	4
...MICRACTINIACEAE										
....GOLENKINIA	29	1	--	-	--	-	--	-	--	-
....MICRACTINIUM	--	-	170	3	--	-	--	-	250	1
...OOCYSTACEAE										
....ANKISTRODESMUS	360	12	--	-	--	-	240	4	4200	15
....CHLORELLA	--	-	--	-	--	-	210	3	--	-
....CHODATELLA	--	-	--	-	--	-	90	1	--	-
....DICTYOSPHAERIUM	140	4	300	5	--	-	--	-	--	-
....FRANCEIA	--	-	*	0	--	-	--	-	--	-
....GLOEOACTINIUM	--	-	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	39	1	240	4	--	-	600	9	--	-
....OOCYSTIS	--	-	160	2	--	-	--	-	--	-
....TETRAEDRON	*	0	--	-	--	-	--	-	--	-
....TREUBARIA	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	290	10	--	-	--	-	--	-	--	-
....CRUCIGENIA	--	-	57	1	--	-	--	-	--	-
....SCENEDESMUS	1100°	37	470	7	--	-	1100°	16	1000	4
....TETRASTRUM	78	3	340	5	--	-	720	11	--	-
..TETRASPORALES										
...PALMELLACEAE										
....SPHAEROCYSTIS	--	-	--	-	620°	53	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	--	-	--	-	1000	4
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	29	1	240	4	230°	20	1100°	17	5200°	18
....MELOSIRA	800°	26	270	4	150	13	120	2	630	2
....STEPHANODISCUS	--	-	--	-	77	7	--	-	510	2
....THALASSIOSIRA	98	3	--	-	--	-	--	-	--	-
..PENNALES										
...FRAGILARIACEAE										
....ASTERIONELLA	*	0	--	-	--	-	--	-	--	-
....FRAGILARIA	--	-	--	-	--	-	--	-	250	1
....SYNEDRA	--	-	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	--	-	--	-	--	-	--	-
...NAVICULACEAE										
....NAVICULA	--	-	--	-	--	-	--	-	*	0
...NITZSCHIACEAE										
....NITZSCHIA	--	-	--	-	--	-	--	-	250	1
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	--	-	--	-	90	1	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	390	6	--	-	--	-	--	-
....ANACYSTIS	--	-	2700°	42	--	-	2100°	33	--	-
....COCCOCHLORIS	--	-	--	-	--	-	--	-	--	-
....GOMPHOSPHAERIA	--	-	530	8	--	-	--	-	--	-
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	290	5	--	-	--	-	--	-
....APHANIZOMENON	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE										
....OSCILLATORIA	--	-	--	-	--	-	--	-	14000°	49
....PHORMIDIUM	--	-	--	-	--	-	--	-	--	-
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	--	-	77	7	--	-	--	-
....TRACHELOMONAS	--	-	43	1	--	-	*	0	--	-

NOTE: ° - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, JUNE 1979 TO SEPTEMBER 1980

DATE	MAY 6,80	JUN 4,80	JUL 9,80	AUG 4,80	SEP 2,80
TIME	1100	0945	1030	1000	1100
TOTAL CELLS/ML	59000	6100	2400	280000	43000
DIVERSITY: DIVISION	1.4	1.1	1.4	1.1	0.9
.CLASS	1.4	1.1	1.4	1.1	0.9
..ORDER	1.6	1.2	1.9	1.9	1.3
...FAMILY	2.0	1.4	2.2	2.4	1.6
....GENUS	2.1	2.2	3.2	3.3	1.7

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...CHLOROCOCCACEAE										
....CHLOROCOCCUM	--	-	--	-	--	-	--	-	--	-
...COELASTRACEAE										
....COELASTRUM	--	-	--	-	--	-	--	-	1100	3
...MICRACTINIACEAE										
....GOLENKINIA	--	-	41	1	--	-	--	-	--	-
....MICRACTINIUM	3200	5	*	0	--	-	4800	2	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	5300	9	69	1	--	-	*	0	240	1
....CHLORELLA	--	-	--	-	--	-	--	-	--	-
....CHODATELLA	--	-	*	0	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	330	5	250	10	2400	1	380	1
....FRANCEIA	--	-	--	-	--	-	--	-	--	-
....GLOEOACTINIUM	--	-	--	-	--	-	--	-	570	1
....KIRCHNERIELLA	--	-	*	0	--	-	18000	6	--	-
....OOCYSTIS	--	-	83	1	--	-	4800	2	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-
....TREUBARIA	*	0	--	-	--	-	*	0	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	2100	4	--	-	--	-	--	-	*	0
....CRUCIGENIA	--	-	--	-	110	5	--	-	--	-
....SCENEDESMUS	1100	2	410	7	140	6	12000	4	2100	5
....TETRASTRUM	--	-	110	2	160	7	--	-	--	-
..TETRASPORALES										
...PALMELLACEAE										
....SPHAEROCYSTIS	--	-	--	-	--	-	--	-	*	0
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	82	3	1800	1	*	0
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	31000°	52	150	2	690°	29	29000	10	1900	4
....MELOSIRA	1100	2	96	2	410°	17	*	0	1200	3
....STEPHANODISCUS	--	-	340	6	140	6	--	-	290	1
....THALASSIOSIRA	--	-	--	-	--	-	--	-	--	-
..PENNALES										
...FRAGILARIACEAE										
....ASTERIONELLA	1100	2	--	-	--	-	--	-	--	-
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	120	5	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	--	-	--	-	--	-	*	0
...NAVICULACEAE										
....NAVICULA	--	-	*	0	@c	1	--	-	*	0
...NITZSCHIACEAE										
....NITZSCHIA	790	1	--	-	27	1	2400	1	290	1
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOMONADACEAE										
....CRYPTOMONAS	*	0	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	--	-	--	-	11000	4	--	-
....ANACYSTIS	13000°	22	55	1	190	8	71000°	25	31000°	73
....COCCOCHLORIS	--	-	--	-	--	-	12000	4	--	-
....GOMPHOSPHAERIA	--	-	--	-	--	-	20000	7	--	-
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	--	-	--	-	30000	11	--	-
....APHANIZOMENON	--	-	--	-	--	-	7800	3	380	1
...OSCILLATORIACEAE										
....OSCILLATORIA	--	-	3800°	62	--	-	51000°	18	2500	6
....PHORMIDIUM	--	-	560	9	--	-	--	-	--	-
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	--	-	--	-	--	-	*	0
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	--	-	14	1	--	-	--	-
....TRACHELOMONAS	--	-	--	-	41	2	--	-	--	-

NOTE: ° - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

05476500 DES MOINES RIVER AT ESTHERVILLE, IA

LOCATION.--Lat 43°23'51", long 94°50'38", in SW1/4 SE1/4 sec.10, T.99 N., R.34 W., Emmet County, Hydrologic Unit 07100002, on right bank in city park, 1,200 ft (366 m) downstream from bridge on State Highway 9 at Estherville, 0.1 mi (0.2 km) upstream from School Creek, 2.3 mi (3.7 km) upstream from Brown Creek, and at mile 404.2 (650.4 km).

DRAINAGE AREA.--1,372 mi² (3,553 km²).

PERIOD OF RECORD.--October 1951 to current year. Prior to November 1951, monthly discharge only, published in WSP 1728.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,247.55 ft (380.253 m) NGVD.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--29 years, 310 ft³/s (8.779 m³/s), 3.07 in/yr (78 mm/yr), 224,600 acre-ft/yr (277 hm³/yr); median of yearly mean discharges, 220 ft³/s (6.23 m³/s), 2.2 in/yr (56 mm/yr), 159,000 acre-ft/yr (196 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,000 ft³/s (453 m³/s) Apr. 12, 1969, gage height, 17.68 ft (5.389 m), from floodmark; no flow Jan. 16-18, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s (42.5 m³/s) and maximum (*):

		Discharge		Gage height				Discharge		Gage height	
Date	Time	(ft³/s)	(m³/s)	(ft)	(m)	Date	Time	(ft³/s)	(m³/s)	(ft)	(m)
Nov. 9	1215	*2,920	82.7	*9.21	2.807	June 1	1230	2,060	58.3	7.33	2.234
Apr. 6	1445	1,640	46.4	6.39	1.948	June 14	1115	1,860	52.7	6.82	2.079

Minimum daily discharge, 36 ft³/s (1.02 m³/s) Sept. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	740	1370	836	520	210	142	634	534	2000	408	63	122
2	700	1600	792	510	205	144	631	512	1690	380	56	106
3	669	1690	864	510	200	150	676	485	1380	340	54	102
4	638	1750	1030	430	195	160	756	458	1270	328	67	126
5	606	1920	1150	380	190	148	1060	436	1380	316	66	126
6	574	2220	1220	315	190	140	1540	416	1540	306	58	112
7	546	2540	1220	290	188	130	1380	384	1610	264	51	104
8	525	2810	1040	210	184	138	1240	360	1510	192	48	91
9	494	2900	960	195	180	210	1190	336	1480	223	56	79
10	471	2860	1000	275	178	275	1130	328	1520	187	77	73
11	458	2730	1000	290	178	240	1060	313	1570	187	69	67
12	432	2570	832	310	176	210	1010	288	1640	169	60	64
13	408	2450	712	320	170	190	972	292	1740	157	125	61
14	388	2320	680	340	168	188	940	281	1840	145	157	53
15	376	2200	640	380	165	250	892	274	1760	136	125	47
16	364	2070	550	410	162	640	848	260	1600	125	122	44
17	348	1960	530	380	160	780	812	267	1410	116	155	40
18	332	1830	520	350	160	844	780	281	1230	113	153	38
19	582	1740	570	330	160	669	760	292	1100	105	271	36
20	700	1630	620	310	162	732	744	295	984	107	309	49
21	676	1610	640	295	170	844	720	281	884	96	278	83
22	676	1650	610	290	209	952	708	267	824	93	214	96
23	712	1610	590	280	198	1080	692	250	784	87	177	89
24	696	1560	585	270	178	1030	662	238	728	82	153	80
25	673	1510	680	265	164	804	645	226	673	80	143	70
26	648	1460	560	255	160	708	634	214	634	78	229	61
27	627	1420	540	245	158	631	620	203	594	75	226	57
28	606	1360	540	233	150	610	594	203	554	72	206	52
29	582	1280	520	225	140	606	574	206	512	70	177	47
30	590	972	520	220	---	659	554	620	458	67	153	47
31	968	---	520	215	---	662	---	1550	---	66	133	---
TOTAL	17805	57592	22971	9848	5108	14966	25458	11350	36899	5170	4231	2222
MEAN	574	1920	741	318	176	483	849	366	1230	167	136	74.1
MAX	968	2900	1220	520	210	1080	1540	1550	2000	408	309	126
MIN	332	972	520	195	140	130	554	203	458	66	48	36
CFSM	.42	1.40	.54	.23	.13	.35	.62	.27	.90	.12	.10	.05
IN.	.48	1.56	.62	.27	.14	.41	.69	.31	1.00	.14	.11	.06
AC-FT	35320	114200	45560	19530	10130	29690	50500	22510	73190	10250	8390	4410

CAL YR 1979 TOTAL 405608.4 MEAN 1111 MAX 3930 MIN 2.8 CFSM .81 IN 11.00 AC-FT 804500
WTR YR 1980 TOTAL 213620.0 MEAN 584 MAX 2900 MIN 36 CFSM .43 IN 5.79 AC-FT 423700

05476750 DES MOINES RIVER AT HUMBOLDT, IA

LOCATION.--Lat 42°43'12", long 94°13'06", in SE1/4 SW1/4 sec.1, T.91 N., R.29 W., Humboldt County, Hydrologic Unit 07100002, on left bank 5 ft (2 m) downstream from First Avenue bridge in city of Humboldt, about 700 ft (213 m) below dam, 3.2 mi (5.1 km) upstream from Indian Creek, 3.9 mi (6.3 km) upstream from East Fork Des Moines River, and at mile 334.3 (537.9 km).

DRAINAGE AREA.--2,256 mi² (5,843 km²).

PERIOD OF RECORD.--October 1964 to current year. Prior to October 1970, published as West Fork Des Moines River at Humboldt.

GAGE.--Water-stage recorder. Datum of gage is 1,053.54 ft (321.119 m) NGVD. Prior to Oct. 3, 1966, nonrecording gage at same site and datum.

REMARKS.--Records fair except those for winter period, which are poor. Daily nonrecording gage readings available in district office for period Mar. 7, 1940, to Sept. 30, 1964. Discharge not published for this period because of extreme regulation at dam 700 ft (213 m) upstream from gage. Power generation and streamflow regulation discontinued August 1964. Low flow discharges occasionally affected by minor regulation. Several observations of water temperature were made during the year.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--16 years, 774 ft³/s (21.92 m³/s), 4.66 in/yr (118 mm/yr), 560,800 acre-ft/yr (691 hm³/yr); median of yearly mean discharges, 540 ft³/s (18.1 m³/s) 3.8 in/yr (97 mm/yr), 464,000 acre-ft/yr (572 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,000 ft³/s (510 m³/s) Apr. 14, 1969, gage height, 15.40 ft (4.694 m); minimum daily, 13 ft³/s (0.37 m³/s) Nov. 12, 1976, Jan. 12 to Feb. 2, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 23, 1947, reached a stage of 12.2 ft (3.72 m), discharge, 11,000 ft³/s (312 m³/s) at present site and datum.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,800 ft³/s (79.3 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 13	1930	3,350	94.9	7.12	2.170	June 7	0300	3,230	91.5	7.02	2.140
Nov. 24	1245	2,990	84.7	6.79	2.070	June 15	1000	*4,550	129	*8.16	2.487
Nov. 30	1245	2,870	81.3	6.67	2.033						

Minimum daily discharge, 179 ft³/s (5.07 m³/s) Aug. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1340	1360	2000	870	365	375	1220	916	1880	664	190	489
2	1250	1730	1430	840	365	345	1220	867	2260	601	220	447
3	1230	1940	1520	770	350	355	1390	853	2440	594	179	398
4	1130	2080	1610	710	340	330	1880	832	2430	566	193	398
5	1070	2200	1730	680	330	320	2040	790	2590	538	190	422
6	1020	2360	1680	650	322	325	2240	776	2860	503	196	410
7	960	2570	1700	460	315	330	2460	699	3100	482	212	372
8	900	2720	1500	330	310	340	2640	664	2820	447	193	370
9	860	2880	1510	310	305	422	2630	664	2610	410	190	335
10	840	3060	1520	460	300	601	2450	636	2390	440	236	300
11	804	3220	1460	489	294	766	2300	622	2210	468	295	280
12	790	3320	1170	559	288	657	2140	594	2110	404	264	276
13	741	3330	1120	559	282	573	2000	587	2150	375	236	264
14	699	3290	940	587	276	503	1900	573	3000	350	228	252
15	678	3230	920	643	272	601	1830	559	4120	345	260	240
16	664	3150	860	788	270	1030	1720	538	3670	345	350	232
17	643	3020	840	754	270	1400	1640	545	3250	310	874	220
18	629	2890	780	705	275	1420	1570	545	2780	285	1090	212
19	622	2780	760	666	280	1480	1500	566	2360	276	863	208
20	650	2600	820	657	300	1730	1480	601	1990	300	744	248
21	702	2510	940	622	365	1520	1430	594	1750	335	826	475
22	1100	2590	1020	615	601	1420	1380	594	1550	310	771	496
23	1460	2820	1100	570	707	1460	1320	601	1420	276	636	846
24	1740	2970	1070	535	723	1490	1260	580	1300	260	524	706
25	1740	2870	1040	520	538	1500	1200	559	1180	248	454	601
26	1610	2730	960	495	454	1340	1130	538	1080	248	428	502
27	1490	2600	920	470	428	1200	1100	482	1000	232	615	443
28	1400	2460	910	440	416	1100	1050	475	923	224	686	398
29	1320	2220	900	410	416	1050	1000	447	859	212	655	360
30	1260	2170	880	380	---	1050	986	538	727	208	594	340
31	1260	---	880	370	---	1180	---	1140	---	200	538	---
TOTAL	32602	79670	36490	17914	10757	28213	50106	19975	54809	11456	13930	11540
MEAN	1052	2656	1177	578	371	910	1670	644	2160	370	449	385
MAX	1740	3330	2000	870	723	1730	2640	1140	4120	664	1090	846
MIN	622	1360	760	310	270	320	986	447	727	200	179	208
CFSM	.47	1.18	.52	.26	.16	.40	.74	.29	.96	.16	.20	.17
IN.	.54	1.31	.60	.30	.18	.47	.83	.33	1.07	.19	.23	.19
AC-FT	64670	158000	72380	35530	21340	55960	99390	39620	128500	22720	27630	22890

CAL YR 1979 TOTAL 712290 MEAN 1951 MAX 7390 MIN 45 CFSM .87 IN 11.75 AC-FT 1413000
WTR YR 1980 TOTAL 377462 MEAN 1031 MAX 4120 MIN 179 CFSM .45 IN 6.22 AC-FT 748700

05479000 EAST FORK DES MOINES RIVER AT DAKOTA CITY, IA

LOCATION.--Lat 42°43'26", long 94°11'30", in NW1/4 SE1/4 sec.6, T.91 N., R.28 W., Humboldt County, Hydrologic Unit 07100003, on right bank 50 ft (15 m) upstream from old mill dam, in city park at east edge of Dakota City, 500 ft (152 m) upstream from bridge on county highway P56, 0.6 mi (1.0 km) downstream from bridge on State Highway 3, 3.4 mi (5.5 km) upstream from confluence with Des Moines River, and at mile 333.8 (537.1 km) upstream from mouth of Des Moines River.

DRAINAGE AREA.--1,308 mi² (3,387 km²).

PERIOD OF RECORD.--March 1940 to current year. Prior to October 1954, published as "near Hardy".

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1944, 1945-47 (M).

GAGE.--Water-stage recorder. Datum of gage is 1,038.71 ft (316.599 m) NGVD. Prior to Oct. 1, 1954, nonrecording gage at site 8 mi (12.9 km) upstream at different datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather service gage-height telemeter at station.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--40 years, 490 ft³/s (13.88 m³/s), 5.09 in/yr (129 mm/yr), 355,000 acre-ft/yr (438 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,800 ft³/s (532 m³/s) June 21, 1954, gage height, 16.95 ft (5.166 m), from floodmark, site and datum then in use; minimum daily, 4.8 ft³/s (0.14 m³/s) Jan. 11-14, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1954, reached a stage of 24.02 ft (7.321 m), discharge, 17,400 ft³/s (493 m³/s) at present site. Flood of September 1938 reached a stage of 17.4 ft (5.30 m), discharge, about 22,000 ft³/s (623 m³/s) site and datum in use during the period 1940-54.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s (42.5 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Apr. 10	1515	1,550	43.9	10.63	3.240	June 15	Unknown	*3,060	86.7	*12.80	3.901
June 7	----	2,000	56.6	Unknown							

Minimum daily discharge, 64 ft³/s (1.81 m³/s) Aug. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1070	1030	1120	325	142	225	461	557	1090	289	72	1000
2	1020	950	980	310	135	195	545	512	1280	256	66	1150
3	956	908	1020	240	125	172	752	465	1450	232	64	1300
4	908	896	1020	280	118	180	1220	413	1700	225	74	1450
5	839	926	958	330	118	200	1310	400	1770	222	74	1490
6	787	1090	955	260	112	187	1380	389	1830	200	72	1420
7	738	1260	944	130	109	172	1420	374	1990	186	66	1240
8	692	1270	905	120	106	184	1450	357	1830	171	74	1020
9	644	1270	836	110	105	250	1490	345	1740	162	94	829
10	601	1290	717	277	104	450	1550	337	1550	211	136	687
11	565	1290	736	290	106	705	1530	334	1420	244	171	586
12	533	1270	577	265	107	820	1480	314	1310	241	252	510
13	504	1230	528	270	106	760	1410	304	1240	225	332	460
14	482	1150	618	255	104	840	1350	297	2110	194	278	414
15	462	1090	797	270	102	708	1260	296	2880	181	329	369
16	449	1030	780	440	106	975	1160	295	2820	174	462	331
17	433	1000	700	610	105	1040	1050	312	1870	142	806	294
18	414	986	650	505	104	1290	974	326	1510	133	1240	247
19	400	962	605	450	100	1180	926	356	1270	122	1320	232
20	395	920	575	400	99	920	896	422	1030	130	1310	258
21	392	914	560	365	120	944	878	479	860	200	1310	291
22	482	1030	540	340	330	913	849	498	734	214	1310	468
23	920	1230	510	310	600	924	822	483	648	178	1260	909
24	1150	1300	460	270	590	856	788	456	575	147	1150	969
25	1200	1350	430	280	470	671	744	424	515	127	924	878
26	1230	1390	400	260	350	504	712	392	465	111	672	780
27	1260	1400	395	230	330	402	668	362	422	103	574	682
28	1260	1390	370	205	270	356	630	343	380	96	578	607
29	1240	1330	350	190	255	345	597	340	337	87	705	547
30	1170	1230	340	172	---	361	577	395	314	80	812	506
31	1090	---	335	152	---	402	---	777	---	76	884	---
TOTAL	24286	34382	20711	8911	5528	18131	30879	12354	38940	5359	17471	21924
MEAN	783	1146	668	287	191	585	1029	399	1298	173	564	731
MAX	1260	1400	1120	610	600	1290	1550	777	2880	289	1320	1490
MIN	392	896	335	110	99	172	461	295	314	76	64	232
CFSM	.60	.88	.51	.22	.15	.45	.79	.31	.99	.13	.43	.56
IN.	.69	.98	.59	.25	.16	.52	.88	.35	1.11	.15	.50	.62
AC-FT	48170	68200	41080	17670	10960	35960	61250	24500	77240	10630	34650	43490

CAL YR 1979	TOTAL	489121	MEAN	1340	MAX	13000	MIN 25	CFSM 1.02	IN 13.91	AC-FT	970200	
WTR YR 1980	TOTAL	238876	MEAN	653	MAX	2880	MIN 64	CFSM .50	IN 6.79	AC-FT	473800	

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	204.2	211.0	113.5	79.4	163.3	692.1	1184.1	760.1	973.1	692.1	272.3	293.1	475.00
RUNOFF (INCHES)	0.21	0.18	0.10	0.07	0.13	0.61	1.01	0.67	0.83	0.61	0.24	0.25	4.93
STD. DEVIATION	0.30	0.33	0.13	0.09	0.14	0.47	1.23	0.49	0.69	0.70	0.29	0.41	3.06
PERCENT OF ANNUAL	4.20	3.70	2.10	1.40	2.90	12.00	21.00	13.00	17.00	12.00	4.80	5.10	----
PRECIP. (INCHES)	1.66	1.14	0.87	0.73	0.92	1.87	2.73	3.99	4.94	3.70	3.31	2.84	28.70

05480000 LIZARD CREEK NEAR CLARE, IA

LOCATION.--Lat 42°32'35", long 94°20'45", in NE1/4 NE1/4 sec.11, T.89 N., R.30 W., Webster County, Hydrologic Unit 07100004, on right bank 20 ft (6 m) downstream from bridge on county highway, 2.3 mi (3.7 km) downstream from Drainage ditch 3, 3.0 mi (4.8 km) south of Clare, and 8.2 mi (13.2 km) upstream from South Lizard Creek.

DRAINAGE AREA.--257 mi² (666 km²).

PERIOD OF RECORD.--March 1940 to current year. Prior to April 1940, monthly discharge only, published in WSP 1308. Prior to October 1954, published as North Lizard Creek near Clare.

REVISED RECORDS.--.--WSP 1508: 1940, 1942, 1944-46 (M), 1947-48.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,079.30 ft (328.971 m) NGVD. Prior to May 6, 1953, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--40 years, 97.5 ft³/s (2.761 m³/s), 5.15 in/yr (131 mm/yr) 70,640 acre-ft/yr (87.1 hm³/yr); median of yearly mean discharges, 82 ft³/s (2.32 m³/s); 4.3 in/yr (109 mm/yr), 59,400 acre-ft/yr (73.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,000 ft³/s (283 m³/s) June 23, 1947, gage height, 16.0 ft (4.88 m), from floodmark, from rating curve extended above 5,300 ft³/s (150 m³/s); no flow on a few days in 1943, 1956, and 1968 and many days in 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,230 ft³/s (34.8 m³/s) June 16, gage-height, 6.52 ft (1.987 m) at 0630 hours; no other peak above base of 800 ft³/s (22.7 m³/s); minimum daily, 7.3 ft³/s (0.21 m³/s) Aug. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74	158	126	61	49	42	123	87	160	53	11	54
2	68	146	118	55	48	44	142	84	153	48	9.2	52
3	66	136	116	38	47	48	282	81	123	44	7.3	46
4	64	127	120	39	45	54	626	78	116	43	15	45
5	60	136	126	40	44	52	529	75	114	42	14	42
6	56	182	112	38	42	60	438	72	118	40	26	44
7	55	234	90	31	41	92	383	69	140	36	11	44
8	53	232	80	29	40	118	337	66	124	34	8.6	38
9	51	213	100	29	38	150	318	64	112	31	23	33
10	47	186	116	32	37	280	305	66	102	31	35	27
11	47	164	106	37	36	390	283	67	92	27	42	23
12	48	155	98	44	36	225	256	59	82	24	34	21
13	43	142	106	52	35	160	232	61	76	21	26	20
14	41	135	120	52	34	152	214	61	145	22	21	19
15	42	132	122	53	33	190	196	56	580	23	20	16
16	43	127	102	120	32	390	173	53	1090	24	42	15
17	41	126	100	150	34	520	159	56	604	23	99	14
18	39	129	115	110	37	410	149	60	393	18	146	13
19	42	125	102	100	40	300	144	60	298	15	105	12
20	48	113	92	86	47	230	140	62	217	15	76	20
21	45	120	84	74	83	210	135	60	173	18	67	25
22	80	213	84	66	198	188	130	57	149	21	60	32
23	245	312	92	62	230	162	124	55	136	16	47	143
24	331	291	83	62	210	145	116	51	115	20	38	134
25	274	253	72	78	120	123	111	48	106	17	31	97
26	225	231	69	69	86	112	105	45	95	23	26	76
27	203	204	64	65	70	108	99	53	83	18	48	64
28	177	180	64	62	62	106	95	48	73	13	73	57
29	159	140	62	58	56	112	92	45	64	12	64	51
30	148	132	64	52	---	121	89	70	57	15	53	48
31	149	---	65	50	---	127	---	143	---	15	51	---
TOTAL	3064	5174	2970	1894	1910	5421	6525	2012	5890	802	1329.1	1325
MEAN	98.8	172	95.8	61.1	65.9	175	218	64.9	196	25.9	42.9	44.2
MAX	331	312	126	150	230	520	626	143	1090	53	146	143
MIN	39	113	62	29	32	42	89	45	57	12	7.3	12
CFSM	.38	.67	.37	.24	.26	.68	.85	.25	.76	.10	.17	.17
IN.	.44	.75	.43	.27	.28	.78	.94	.29	.85	.12	.19	.19
AC-FT	6080	10260	5890	3760	3790	10750	12940	3990	11680	1590	2640	2630

CAL YR 1979 TOTAL 94776.2 MEAN 260 MAX 3120 MIN 5.4 CFSM 1.01 IN 13.72 AC-FT 188000
WTR YR 1980 TOTAL 38316.1 MEAN 105 MAX 1090 MIN 7.3 CFSM .41 IN 5.55 AC-FT 76000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	29.0	29.9	20.1	13.4	49.4	173.9	168.2	156.0	239.6	98.1	42.4	50.7	89.90
RUNOFF (INCHES)	0.16	0.13	0.09	0.06	0.20	0.78	0.73	0.70	1.04	0.44	0.19	0.22	4.75
STD. DEVIATION	0.27	0.27	0.14	0.10	0.29	0.65	0.78	0.62	1.12	0.48	0.27	0.57	2.96
PERCENT OF ANNUAL	3.30	2.80	1.80	1.30	4.60	16.00	16.00	15.00	22.00	9.10	3.80	4.70	----
PRECIP. (INCHES)	1.86	1.09	0.89	0.64	0.91	1.78	2.85	4.02	5.08	3.67	3.33	2.80	28.90

05480500 DES MOINES RIVER AT FORT DODGE, IA

LOCATION.--Lat 42°30'22", long 94°12'04", in NW1/4 SW1/4 sec.19, T.89 N., R.28 W., Webster County, Hydrologic Unit 07100004, on right bank 400 ft (122 m) upstream from Soldier Creek, 1,800 ft (549 m) downstream from Illinois Central Railroad bridge in Fort Dodge, 2,000 ft (610 m) downstream from Lizard Creek, and at mile 314.6 (506.2 km).

DRAINAGE AREA.--4,190 mi² (10,852 km²).

PERIOD OF RECORD.--April 1905 to July 1906 (no winter records), October 1913 to September 1927 (published as "at Kalo"), October 1946 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1308: 1924, 1925 (M).

GAGE.--Water-stage recorder. Datum of gage is 969.38 ft (295.467 m) NGVD. See WSP 1728 for history of changes prior to Dec. 8, 1949.

REMARKS.--Records good except those for winter period, which are poor. Occasional minor regulation caused by dam 0.8 mi (1.3 km) upstream from gage. Several observations of water temperature were made during the year. Corps of Engineers rain-gage and gage-height telemeters at station.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--48 years (1913-27, 1946-80), 1,385 ft³/s (39.22 m³/s), 4.49 in/yr (114 mm/yr), 1,003,000 acre-ft/yr (1,237 hm³/yr); median of yearly mean discharges, 1,170 ft³/s (33.1 m³/s), 3.8 in/yr (97 mm/yr), 848,000 acre-ft/yr (1,050 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,600 ft³/s (1,010 m³/s) Apr. 8, 1965, gage height, 17.79 ft (5.422 m); maximum gage height, 19.62 ft (5.980 m), from floodmark, June 23, 1947, present site and datum; minimum daily discharge, 14 ft³/s (0.40 m³/s) Nov. 3, 1955.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft³/s (170 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 7	1200	6,230	176	6.62	2.108	June 15	Unknown	*12,920	366	*9.32	2.841

Minimum daily discharge, 254 ft³/s (7.19 m³/s) Aug. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2340	2540	3260	1420	640	630	1780	1630	3240	1140	281	1570
2	2220	2770	2620	1360	620	580	1920	1540	3780	1040	266	1670
3	2120	2970	2960	1220	600	580	2650	1470	4070	949	254	1740
4	2000	3090	2840	1140	580	520	4220	1360	4270	903	348	1930
5	1890	3350	2940	1100	570	510	4390	1320	4830	887	342	1970
6	1780	3810	2940	1000	560	510	4290	1270	5550	815	555	1950
7	1660	4240	2940	800	550	520	4440	1220	6120	762	413	1760
8	1580	4400	2710	640	540	520	4560	1150	5320	711	356	1500
9	1460	4500	2420	560	530	800	4600	1110	4650	663	521	1220
10	1390	4580	2500	800	520	1500	4480	1100	4210	685	648	1070
11	1340	4670	2490	910	510	1700	4270	1080	3840	779	704	895
12	1290	4780	2080	840	490	1500	4010	1020	3620	717	671	797
13	1210	4760	1700	1100	470	1120	3740	1010	3480	668	693	735
14	1130	4660	1800	1080	450	1000	3550	976	5590	615	629	678
15	1100	4520	1820	1200	430	1300	3370	956	9480	576	605	718
16	1080	4350	1810	1740	410	2800	3140	926	9510	582	1090	575
17	1080	4210	1800	2000	390	3600	2910	990	6770	512	1900	543
18	1030	4060	1790	1600	380	3300	2710	1010	5340	462	2720	495
19	994	3910	1760	1280	380	3000	2600	1050	4440	434	2600	458
20	1080	3700	1760	1200	390	3200	2500	1150	3710	432	2330	517
21	1240	3670	1770	1120	520	2920	2460	1230	3150	518	2350	569
22	1760	3910	1790	1080	960	2650	2380	1210	2750	561	2320	731
23	2840	4550	1840	1020	1700	2640	2280	1200	2610	506	2100	1750
24	3570	4780	1860	990	1740	2570	2190	1140	2250	445	1850	1960
25	3470	4690	1790	950	1240	2400	2090	1080	1970	407	1560	1730
26	3260	4540	1690	880	990	2050	2000	1000	1830	600	1110	1490
27	3100	4330	1600	830	730	1730	1910	945	1660	401	1190	1300
28	2940	4110	1520	790	700	1550	1810	942	1510	357	1350	1160
29	2800	3800	1480	740	670	1490	1770	893	1350	329	1460	1040
30	2650	3530	1470	690	---	1520	1700	1120	1220	307	1580	968
31	2550	---	1450	660	---	1680	---	1940	---	296	1420	---
TOTAL	59954	121780	65200	32740	19260	52390	90720	36038	122120	19059	36216	35489
MEAN	1934	4059	2103	1056	664	1690	3024	1163	4071	615	1168	1183
MAX	3570	4780	3260	2000	1740	3600	4600	1940	9510	1140	2720	1970
MIN	994	2540	1450	560	380	510	1700	893	1220	296	254	458
CFSM	.46	.97	.50	.25	.16	.40	.72	.28	.97	.15	.28	.28
IN.	.53	1.08	.58	.29	.17	.47	.81	.32	1.08	.17	.32	.32
AC-FT	118900	241600	129300	64940	38200	103900	179900	71480	242200	37800	71830	70390

CAL YR 1979	TOTAL	1430451	MEAN	3919	MAX	22000	MIN	114	CFSM	.94	IN	12.70	AC-FT	2837000
WTR YR 1980	TOTAL	690966	MEAN	1888	MAX	9510	MIN	254	CFSM	.45	IN	6.13	AC-FT	1371000

054B1000 BOONE RIVER NEAR WEBSTER CITY, IA

LOCATION.--Lat 42°26'01", long 93°48'12", in NW1/4 SE1/4 sec.18, T.88 N., R.25 W., Hamilton County, Hydrologic Unit 07100005, on right bank 100 ft (30 m) upstream from bridge on State Highway 17, 2.5 mi (4.0 km) south of Webster City, and 3.2 mi (5.1 km) downstream from Brewers Creek.

DRAINAGE AREA.--844 mi² (2,185 km²).

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1308: 1940 (M), WSP 1708: 1956.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 989.57 ft (301.621 m) NGVD. Prior to June 26, 1940, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor; and periods of no gage height record, Nov. 2-5, Sep. 22, 25-26, which are fair. Several observations of water temperature were made during the year. Corps of Engineers rain gage and gage height telemeters at station.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--40 years, 376 ft³/s (10.65 m³/s), 6.05 in/yr (154 mm/yr), 272,400 acre-ft/yr (336 hm³/yr); median of yearly mean discharges, 300 ft³/s (8.50 m³/s), 4.8 in/yr (122 mm/yr), 217,000 acre-ft/yr (268 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,300 ft³/s (575 m³/s) June 22, 1954, gage height, 18.55 ft (5.654 m); no flow Feb. 7, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1895, 19.1 ft (5.82 m) about June 10, 1918, from flood-marks, from information by local resident, discharge, 21,500 ft³/s (609 m³/s). Flood of June 18, 1932, reached a stage of 16.0 ft (4.88 m), discharge, 15,000 ft³/s (425 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,530 ft³/s (128 m³/s) June 16, gage height, 8.14 ft (2.481 m) at 1415 hours, no other peak above base of 2,200 ft³/s (62.3 m³/s); minimum daily, 44 ft³/s (1.25 m³/s) Aug. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	155	591	690	182	131	220	279	299	908	208	56	161
2	150	560	651	170	127	205	320	285	920	187	49	149
3	149	530	551	154	124	210	463	270	789	172	44	190
4	144	500	637	143	120	235	926	263	625	163	50	223
5	140	480	611	153	115	240	1150	253	520	155	63	221
6	132	1170	520	153	107	245	1120	246	505	148	82	252
7	128	1460	491	122	98	250	1030	233	1200	136	64	263
8	128	1440	422	106	95	270	908	216	1210	120	54	289
9	121	1310	419	94	90	420	872	210	739	110	87	247
10	117	1100	440	130	83	800	908	207	540	142	119	199
11	117	920	456	145	83	810	908	229	437	137	304	167
12	119	812	271	175	83	710	849	223	370	135	311	150
13	118	732	243	184	81	570	763	223	368	112	257	138
14	112	671	335	180	79	550	705	201	1820	100	266	125
15	109	635	450	180	78	693	656	194	3700	94	259	115
16	110	605	340	350	82	697	593	185	4280	102	302	105
17	113	598	260	580	83	631	541	201	3410	93	573	102
18	115	603	370	640	85	624	502	213	2170	94	664	99
19	112	599	345	360	96	667	490	213	1670	79	658	91
20	114	564	330	360	110	759	485	223	1190	71	647	110
21	118	576	280	290	210	678	482	233	901	67	622	197
22	235	777	265	235	540	539	472	233	734	73	459	374
23	591	1100	250	210	630	446	457	226	638	139	335	585
24	1260	1230	235	185	540	358	431	216	549	105	258	794
25	1380	1190	216	190	450	285	404	210	466	84	205	812
26	1210	1070	204	170	390	245	379	197	401	124	171	740
27	980	931	192	154	330	235	352	185	350	245	144	589
28	818	820	190	146	285	221	331	176	303	129	137	480
29	711	729	188	141	265	228	321	174	260	92	204	414
30	631	664	186	138	---	247	311	270	230	73	209	368
31	602	---	185	135	---	267	---	620	---	63	183	---
TOTAL	11039	24967	11223	6555	5590	13555	18408	7327	32203	3752	7836	8749
MEAN	356	832	362	211	193	437	614	236	1073	121	253	292
MAX	1380	1460	690	640	630	810	1150	620	4280	245	664	812
MIN	109	480	185	94	78	205	279	174	230	63	44	91
CFSM	.42	.99	.43	.25	.23	.52	.73	.28	1.27	.14	.30	.35
IN.	.49	1.10	.49	.29	.25	.60	.81	.32	1.42	.17	.35	.39
AC-FT	21900	49520	22260	13000	11090	26890	36510	14530	63870	7440	15540	17350

CAL YR 1979 TOTAL 298749 MEAN 818 MAX 8590 MIN 17 CFSM .97 IN 13.17 AC-FT 592600
WTR YR 1980 TOTAL 151204 MEAN 413 MAX 4280 MIN 44 CFSM .49 IN 6.66 AC-FT 299900

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	109.8	113.5	73.2	58.6	178.3	658.9	756.5	563.7	877.5	446.6	161.1	196.7	353.80
RUNOFF (INCHES)	0.22	0.15	0.10	0.08	0.22	0.90	1.00	0.77	1.16	0.61	0.22	0.26	5.69
STD. DEVIATION	0.38	0.21	0.11	0.11	0.27	0.72	1.25	0.64	1.12	0.70	0.29	0.65	3.67
PERCENT OF ANNUAL	3.90	2.60	1.80	1.40	3.90	16.00	18.00	14.00	20.00	11.00	3.90	4.60	----
PRECIP. (INCHES)	2.01	1.13	0.94	0.77	0.93	1.92	2.81	4.11	4.97	4.03	3.40	2.68	29.70

05481300 DES MOINES RIVER NEAR STRATFORD, IA

LOCATION.--Lat 42°15'04", long 93°59'52", in NW1/4 NE1/4 sec.21, T.86 N., R.27 W., Webster County, Hydrologic Unit 07100004, on right bank 6 ft (2 m) downstream from bridge on State Highway 175, 0.1 mi (0.2 km) downstream from Skillet Creek, 4.0 mi (6.4 km) southwest of Stratford, 7.3 mi (11.7 km) downstream from Boone River and at mile 276.7 (445.2 km).

DRAINAGE AREA.--5,452 mi² (14,120 km²).

PERIOD OF RECORD.--April 1920 to current year in reports of Geological Survey. Published as "near Boone" 1920-67. Monthly discharge only for some periods, published in WSP 1308. December 1904 to April 1920 (fragmentary gage heights during high-water periods only) in reports of U.S. Weather Bureau.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1925-27, 1934. WSP 1708: 1955.

GAGE.--Water-stage recorder. Datum of gage is 894.00 ft (272.491 m) NGVD. Prior to May 1, 1920, nonrecording gage 16.6 mi (26.7 km) downstream at datum 23.49 ft (7.16 m) lower. Oct. 9, 1924, to Jan. 10, 1933, nonrecording gage 17.6 mi (28.3 km) downstream at datum 28.53 ft (8.70 m) lower. Jan. 11, 1933, to Sept. 30, 1934, nonrecording gage 17.9 mi (28.8 km) downstream at datum 22.25 ft (6.78 m) lower. Oct. 1, 1934 to Feb. 6, 1935, nonrecording gage and Feb. 7, 1935 to Sept. 30, 1967, water-stage recorder 17.9 mi (28.8 km) downstream at datum 21.84 ft (6.66 m) lower.

REMARKS.--Records good except those for winter period, which are poor. Occasional minor regulation caused by dam at Fort Dodge. Several observations of water temperature were made during the year. Corps of Engineers rain gage and gage height telemeters at station.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--60 years, 1,785 ft³/s (50.55 m³/s), 4.45 in/yr (113 mm/yr), 1,293,000 acre-ft/yr (1,590 hm³/yr); median of yearly mean discharges, 1,590 ft³/s (45.0 m³/s), 4.0 in/yr (102 mm/yr), 1,152,000 acre-ft/yr (1,420 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,400 ft³/s (1,630 m³/s) June 22, 1954, gage height, 25.35 ft (7.727 m), from graph based on hourly gage readings, site and datum then in use; no flow for a short time on Jan. 9, 25, 1938, caused by manipulation of gates in control dam, site then in use; minimum unregulated daily discharge, 13 ft³/s (0.37 m³/s) Jan. 23, 24, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 30, 1903, reached a stage of 25.4 ft (7.74 m), from high-water mark, site and datum then in use, discharge, 43,600 ft³/s (1,230 m³/s). Flood of June 22, 1954, reached a stage of 29.7 ft (9.05 m), from floodmark, present site and datum, discharge, 54,200 ft³/s (1,530 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 7,000 ft³/s (198 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 8	0445	7,630	216	12.04	3.670	June 16	2030	*14,500	411	*16.36	4.987

Minimum daily discharge, 309 ft³/s (8.75 m³/s) Aug. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2640	3270	4330	1550	770	1050	2140	2210	3280	1700	368	1600
2	2510	3270	3810	1500	760	1000	2290	2130	4370	1570	343	1700
3	2390	3500	2920	1380	760	940	2820	2040	4790	1440	320	1800
4	2280	3610	3430	1400	750	960	4650	1950	4910	1340	309	2050
5	2160	3790	3790	1320	720	1040	6150	1850	4990	1270	406	2100
6	2040	4880	3650	1300	700	1040	6020	1790	5570	1210	431	2170
7	1940	6140	3620	890	690	1020	6030	1730	6420	1130	620	2110
8	1850	6080	3380	700	680	1020	6020	1650	7370	1050	469	1960
9	1750	6010	3040	770	680	1100	6090	1590	6000	967	471	1710
10	1650	5890	3040	840	670	1900	6060	1560	5180	928	734	1420
11	1570	5750	3130	1050	640	2300	5910	1550	4720	957	1000	1270
12	1530	5740	2630	1200	640	2400	5600	1520	4340	1010	1070	1100
13	1470	5680	1940	1160	620	2200	5240	1500	4080	931	977	998
14	1390	5540	2000	1300	620	1850	4920	1470	7200	874	946	921
15	1330	5380	2170	1420	620	2200	4660	1410	11000	819	893	861
16	1290	5190	2540	1700	600	3200	4370	1370	14000	820	1010	861
17	1260	5030	2600	2400	580	3700	4060	1380	12900	776	1820	711
18	1230	4910	2450	2650	580	3800	3830	1460	9300	719	2930	682
19	1200	4770	2300	2500	590	4100	3530	1470	7670	666	3380	634
20	1180	4560	2280	2000	590	4360	3460	1490	6170	599	3140	615
21	1180	4450	2250	1840	660	4130	3340	1580	5080	552	2940	692
22	1610	4780	2270	1660	1030	3610	3260	1630	4330	615	2870	797
23	2590	5590	2300	1450	1900	3310	3130	1640	4330	663	2600	1360
24	4220	6280	2350	1420	2100	3150	2990	1610	3790	652	2300	2520
25	4950	6310	2150	1400	1950	2930	2870	1550	3230	565	1990	2640
26	4740	6050	1980	1300	1550	2640	2740	1490	2810	568	1670	2400
27	4380	5740	1980	1140	1350	2290	2600	1410	2580	771	1260	2080
28	4050	5410	1820	1060	1250	2060	2480	1360	2320	639	1380	1800
29	3770	5000	1680	1000	1150	1940	2350	1340	2070	498	1520	1600
30	3540	4500	1600	900	---	1920	2310	1590	1850	432	1670	1450
31	3390	---	1550	800	---	1970	---	1940	---	394	1770	---
TOTAL	73080	153100	80980	43000	26200	71130	121920	50260	166650	27125	43507	44612
MEAN	2357	5103	2612	1387	903	2295	4064	1621	5555	875	1407	1487
MAX	4950	6310	4330	2650	2100	4360	6150	2210	14000	1700	3380	2640
MIN	1180	3270	1550	700	580	940	2140	1340	1850	394	309	615
CFSM	.43	.94	.48	.25	.17	.42	.75	.30	1.02	.16	.26	.27
IN.	.50	1.04	.55	.29	.18	.49	.83	.34	1.14	.19	.30	.30
AC-FT	145000	303700	160600	85290	51970	141100	241800	99690	330600	53800	86490	88490

CAL YR 1979	TOTAL	1817423	MEAN	4979	MAX	29300	MIN	133	CFSM	.91	IN	12.40	AC-FT	3605000
WTR YR 1980	TOTAL	901664	MEAN	2464	MAX	14000	MIN	309	CFSM	.45	IN	6.15	AC-FT	1788000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	756.6	781.9	472.9	378.3	680.6	2884.7	4886.6	3310.3	4202.5	2742.8	1135.0	1123.9	1960.00
RUNOFF (INCHES)	0.20	0.16	0.10	0.8	0.13	0.61	1.00	0.70	0.86	0.58	0.24	0.23	4.88
STD. DEVIATION	0.25	0.22	0.09	0.08	0.14	0.45	1.10	0.51	0.66	0.61	0.22	0.32	2.97
PERCENT OF ANNUAL	4.00	3.30	2.00	1.50	2.90	12.00	21.00	14.00	18.00	12.00	4.90	4.80	----
PRECIP. (INCHES)	1.88	1.03	0.96	0.91	0.93	1.91	2.67	3.85	4.98	3.30	3.06	2.81	28.30

05481630 SAYLORVILLE LAKE NEAR SAYLORVILLE, IA

LOCATION.--Lat 41°42'13", long 93°41'21", in SE 1/4, SW 1/4 sec. 30, T.80 N., R.24 W., Polk County, Hydrologic Unit 07100004, in control tower of Saylorville Dam, 3.2 mi (5.1 km) northwest of Saylorville, 4.2 mi (6.8 m) upstream from Beaver Creek, and at mile 213.4 (343.4 km).

DRAINAGE AREA.--5,823 mi² (15,082 km²).

PERIOD OF RECORD.--April 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is at NGVD (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam completed in 1976. Storage began in April 1977. Release controlled at intake structure to forechamber of 22 ft (6.71 m) diameter concrete conduit through dam. Ungated chute spillway 430 ft (131 m) in length at right end of dam at elevation 884 ft (269 m), contents, 570,000 acre- ft (703 hm³). Conservation pool at elevation 833 ft (254 m), contents, 74,000 acre-ft (91 hm³), surface area, 5,400 acres (2,185 hm²). Flood pool elevation at 890 ft (271 m), contents, 676,000 acre-ft (834 hm³), surface area, 16,700 acres (6,758 hm²). Reservoir is used for flood control, low-flow augmentation, conservation and recreation.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 561,000 acre-ft (692 hm³) Apr. 6,7, 1979; maximum elevation, 883.81 ft (269.385 m) Apr. 5, 1979; minimum daily contents, 66,900 acre-ft (82.5 hm³) Oct. 13,19-21, 1979; minimum elevation, 832.61 ft (253.780 m) Jan. 19, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 100,000 acre-ft (123 hm³) June 18; maximum elevation, 838.49 ft (255.572 m) June 18; minimum daily contents, 66,900 acre-ft (82.5 hm³) Oct. 13, 19-21; minimum elevation, 832.98 ft (253.892 m) Dec. 3.

Capacity table (elevation, in feet, and contents, in acre-feet)

805	360	833	74,000	884	570,000
810	2,300	840	116,000	890	676,000
815	7,700	850	190,000	900	938,000
820	19,000	860	278,000	910	1,320,000
830	58,600	880	511,000	915	1,530,000

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	91200	68400	68400	69700	68600	70000	69200	70200	73300	68900	75500	74900
2	88800	68200	67600	69500	68500	70200	69600	70200	74200	68900	74900	75100
3	86200	68300	67800	69400	68500	69900	70200	70100	74200	69000	74700	75900
4	83300	68800	68500	69200	68800	69800	71300	70400	73700	68900	74500	77100
5	80700	69900	70100	69000	69000	69700	72800	70700	72700	68800	74400	77600
6	78100	70000	70400	69000	69100	69600	74000	71000	71300	68900	74500	78400
7	75900	71400	70000	69100	69100	69400	73800	71300	71400	69200	74900	79000
8	73900	72000	69300	69100	69200	69400	73500	71500	71500	69200	75600	79400
9	71900	71100	68400	68900	69200	69400	72900	71600	73400	69100	76200	79400
10	70000	69100	68400	69000	69200	69600	71800	72000	72000	68900	76300	79000
11	68700	68300	68900	69000	69000	70500	71700	72500	71100	68700	76000	78800
12	67300	68400	68400	69300	68900	70600	71500	72800	70500	68500	75700	79700
13	66900	68400	67600	69500	69000	70000	70800	73000	70000	68300	76900	80600
14	67000	68400	68600	70100	69200	69800	70800	73100	70400	68800	77600	81300
15	67100	68500	70000	71000	69300	70100	71500	73000	78200	68900	77400	81600
16	67200	68700	70700	70600	69300	71200	70600	72700	88300	69100	77400	81000
17	67200	68600	70900	69800	69200	71800	70200	72700	97700	68900	76900	80800
18	67200	68300	70200	69900	69200	72500	70900	72800	100000	68900	76200	81100
19	66900	68400	70400	70600	69000	72800	71600	72800	93500	68200	76100	81500
20	66900	68300	72300	70400	69000	72200	72200	72600	85900	68900	76100	82000
21	66900	68100	73000	69700	69300	70200	72500	72300	81000	68600	76100	82600
22	67400	68800	72500	69400	69100	70100	72700	72000	78400	74500	76000	82800
23	68200	69300	72200	69500	69300	69800	72400	71700	75700	74700	76200	83000
24	69400	69300	71900	69600	71100	69800	72100	71300	73700	75100	76100	84000
25	70500	69600	71600	69900	72000	69400	71900	71200	71000	75700	75600	85200
26	70000	69700	71100	70200	71600	69300	71500	71200	68900	75900	75100	84900
27	68800	69500	70400	70400	70300	69100	70900	71300	68200	76100	74700	84200
28	67400	68900	70200	70300	69400	68800	70600	71300	68100	76500	74500	83000
29	67600	68200	69900	69700	69500	68800	70400	71800	68300	76300	74700	82300
30	68700	68500	69800	69000	---	68600	70100	73100	68600	76200	75100	82000
31	69100	---	69600	68700	---	68500	---	73100	---	78500	75200	---
MAX	91200	72000	73000	71000	72000	72800	74000	73100	100000	76500	77600	85200
MIN	66900	68100	67600	68700	68500	68500	69200	70100	68100	68200	74400	74900

WTR YR 1980 MAX 100000 MIN 66900

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA

LOCATION.--Lat 41°40'50", long 93°40'07", near center of sec.5, T.79 N., R.24 W., Polk County, Hydrologic Unit 07100004, near center of span on downstream side of bridge on county highway F42, 2.0 mi (3.2 km) west of Saylorville, 2.1 mi (3.4 km) downstream from Rock Creek, 2.4 mi (3.9 km) upstream from Beaver Creek, and at mile 211.6 (340.5 km).

DRAINAGE AREA.--5,841 mi² (15,128 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 787.42 ft (240.006 m) NGVD (levels by Corps of Engineers). Prior to Aug. 6, 1970, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are fair. Flow regulated by Saylorville Lake (Station 05481650) 2.1 mi (3.4 km) upstream since Apr. 12, 1977. Corps of Engineers gage height telemeter at station.

COOPERATION.--Twenty-four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--19 years, 2,498 ft³/s (70.74 m³/s), 5.81 in/yr (148 mm/yr), 1,810,000 acre-ft/yr (2,230 hm³/yr); median of yearly mean discharges, 2,150 ft³/s (60.9 m³/s) 5.0 in/yr (127 mm/yr), 1,560,000 acre-ft/yr (1,920 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,400 ft³/s (1,340 m³/s) Apr. 10, 1965, gage height, 24.02 ft (7.321 m); minimum daily, 13 ft³/s (0.37 m³/s) Jan. 25, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1893, 24.5 ft (7.47 m), present gage datum, June 24, 1954, from floodmarks, discharge, 60,000 ft³/s (1,700 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,000 ft³/s (340 m³/s) June 19, gage height, 15.56 ft (4.743 m); minimum daily, 264 ft³/s (7.48 m³/s) Aug. 7,8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4190	4120	4500	2530	1040	908	2080	2460	2720	1890	576	1940
2	4450	3890	4130	2530	1040	1060	2250	2300	3700	1740	575	1840
3	4210	3590	3220	2410	948	1180	2750	2260	4890	1590	473	1570
4	4150	3740	2660	2330	828	1110	3410	1960	5730	1580	391	1650
5	3870	4000	3320	2170	783	974	4490	1770	6430	1510	391	2080
6	3700	4220	4330	1980	780	974	5410	1750	6430	1250	343	1850
7	3490	4820	4720	1560	780	974	6030	1750	6350	1150	264	1860
8	3330	5820	4320	1130	780	970	6240	1740	6270	1140	264	1870
9	3280	6720	4000	1130	771	967	6340	1710	6280	1130	426	1860
10	3130	7300	3470	934	756	1030	6430	1590	6300	1120	656	1770
11	2870	6770	3020	785	755	1370	6140	1500	5800	1110	961	1560
12	2560	6170	3340	787	741	2190	5910	1500	4850	1100	1120	1020
13	1970	6050	3190	1020	697	2630	5900	1500	4660	937	391	701
14	1670	6050	2160	1230	686	2190	5240	1500	4440	826	570	676
15	1610	5900	1260	1520	668	2010	4460	1500	4510	817	1120	672
16	1600	5670	1460	2310	657	2200	4670	1480	6000	819	1510	1030
17	1600	5530	1460	2680	661	2840	4580	1480	8400	813	1970	980
18	1600	5520	1450	2490	661	3710	3850	1480	10500	729	2460	643
19	1600	5320	1240	2480	659	4220	3380	1570	11700	659	3090	559
20	1600	5170	1090	2730	654	5660	3370	1640	10300	654	3290	489
21	1590	5170	2020	2790	700	5700	3370	1730	8450	648	3120	489
22	2180	4730	3040	2390	1110	4420	3370	1780	6320	644	2870	611
23	2770	4890	3060	2060	1360	4030	3340	1780	5820	628	2600	696
24	3080	6060	3070	1960	1360	3690	3300	1780	5780	534	2580	868
25	3810	6390	3070	1840	1760	3420	3270	1700	5320	508	2580	1710
26	5550	6420	3070	1640	2280	3250	3160	1650	4460	505	2270	2510
27	5930	6410	3080	1640	2450	3030	3150	1570	3540	536	1880	2630
28	5680	6240	2870	1640	2050	2740	2970	1500	2830	573	1540	2630
29	4830	5840	2700	1620	1450	2460	2690	1500	2320	553	1390	2190
30	3910	5080	2690	1600	---	2370	2690	1670	2020	591	1470	1740
31	4150	---	2600	1250	---	2200	---	2130	---	584	1690	---
TOTAL	99960	163600	89610	57166	29865	76477	124240	53230	173120	28868	44831	42694
MEAN	3225	5453	2891	1844	1030	2467	4141	1717	5771	931	1446	1423
MAX	5930	7300	4720	2790	2450	5700	6430	2460	11700	1890	3290	2630
MIN	1590	3590	1090	785	654	908	2080	1480	2020	505	264	489
AC-FT	198300	324500	177700	113400	59240	151700	246400	105600	343400	57260	88920	84680

CAL YR 1979 TOTAL 1987628 MEAN 5446 MAX 18500 MIN 207 AC-FT 3942000
WTR YR 1980 TOTAL 983661 MEAN 2688 MAX 11700 MIN 264 AC-FT 1951000

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD: Water years 1962 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: December 1967 to September 1971, October 1971 to current year (partial record station).
WATER TEMPERATURES: October 1961 to September 1971, October 1971 to current year (partial record station).
SUSPENDED-SEDIMENT DISCHARGE: October 1961 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis. During periods of partial ice cover, sediment samples are collected in open water channel.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (1967-71, 1977-80): Maximum daily, 1,400 micromhos Feb. 18, 1977; minimum daily, 90 micromhos Feb. 19, 1971.
WATER TEMPERATURES (1967-71, 1977-80): Maximum daily, 36.0°C June 29, 1971; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 5,400 mg/L May 14, 1970; minimum daily mean, 1 mg/L Jan. 8, 1968.
SEDIMENT LOADS: Maximum daily, 148,000 tons (134,000 tonnes) June 12, 1966; minimum daily, 1 ton (0.91 tonne) Jan. 8, 1965, Feb. 8-12, 23, 1967.

EXTREMES FOR CURRENT YEAR:
SEDIMENT CONCENTRATIONS: Maximum daily mean, 167 mg/L June 19; minimum daily mean, 5 mg/L Feb. 2.
SEDIMENT LOADS: Maximum daily, 5,280 tons (4,790 tonnes) June 19; minimum daily, 14 tons (13 tonnes) Feb. 2.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	940	---	---	600	---	---	610	---
2	480	580	---	750	---	---	---	---	---	---	---	600
3	---	560	---	---	---	---	---	---	630	---	---	---
4	---	---	---	---	740	---	---	600	---	---	600	---
5	---	---	---	---	---	---	645	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	620	---	---	---	---
8	500	---	---	---	---	---	630	---	---	---	640	670
9	---	---	---	---	---	---	---	---	---	---	---	---
10	500	---	---	---	---	---	---	620	---	---	640	---
11	540	---	---	---	---	---	570	---	---	---	660	---
12	---	---	---	---	815	---	---	640	---	---	---	---
13	---	---	---	---	820	---	---	---	---	---	660	---
14	560	---	---	760	---	---	---	---	---	---	---	---
15	560	---	---	---	---	---	---	---	---	---	640	---
16	---	670	---	860	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	560	---	660	---	630
18	600	---	---	---	---	---	---	---	---	---	620	---
19	---	---	800	---	---	---	---	---	---	---	630	---
20	580	---	---	---	---	---	---	---	---	---	---	---
21	600	640	---	---	---	570	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	580	---	---	---	---	---	590	---	---	---	---	---
24	---	---	---	---	---	---	620	---	---	---	---	---
25	580	---	---	---	---	---	---	---	---	570	---	---
26	---	640	---	---	---	---	600	---	---	580	605	---
27	---	---	---	---	---	---	---	---	---	650	---	---
28	---	---	---	---	---	---	660	---	---	630	---	---
29	580	---	---	---	---	---	---	---	---	650	---	---
30	580	---	---	---	---	---	620	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	17.0	---	---	---	---
2	19.0	12.0	---	.0	---	---	---	---	23.5	23.5	---	---
3	---	9.5	---	---	---	---	---	---	21.5	---	---	---
4	---	---	---	---	2.0	---	---	18.0	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	16.5	---	---	21.0	---
8	26.5	15.0	---	---	---	---	---	---	---	---	29.5	27.5
9	---	---	---	---	---	---	---	---	---	---	---	---
10	14.5	---	---	---	---	---	---	17.0	---	---	27.5	---
11	15.0	---	---	---	---	---	6.5	---	---	26.5	27.0	---
12	---	---	---	---	4.0	---	---	17.0	---	---	---	---
13	---	---	---	---	2.0	---	---	---	---	---	29.0	---
14	12.5	---	---	2.0	---	---	---	---	---	---	23.0	---
15	13.5	8.0	---	---	---	---	---	---	---	---	25.0	---
16	---	5.0	---	4.5	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	15.5	---	31.0	---	22.5
18	14.0	---	---	---	---	---	---	---	---	---	26.0	---
19	---	---	1.0	---	---	---	---	---	---	---	---	---
20	15.0	---	---	---	---	---	---	---	---	---	---	---
21	14.5	5.5	---	---	---	3.0	---	22.0	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	11.0	---	---	---	---	---	15.0	---	---	---	---	10.0
24	21.5	---	---	---	---	---	15.0	---	21.0	---	---	---
25	12.5	---	---	---	---	---	---	---	---	26.5	---	---
26	---	5.5	---	---	---	---	15.0	---	---	27.0	26.0	---
27	---	---	---	---	---	4.0	---	---	---	28.0	---	---
28	---	---	---	---	---	---	16.0	---	---	27.0	---	---
29	11.0	2.0	---	---	.5	---	---	---	---	27.0	---	---
30	11.5	---	---	---	---	---	12.5	---	---	---	---	---
31	---	---	---	---	---	---	---	19.0	---	21.0	---	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	50	566	61	679	71	853	50	342	6	17	96	235
2	64	769	66	693	69	769	44	301	5	14	90	258
3	69	784	73	708	70	609	48	312	20	51	85	271
4	58	650	70	707	69	496	48	302	53	118	87	261
5	67	700	71	767	83	744	45	254	59	125	114	300
6	69	689	80	912	115	1340	48	257	41	85	99	250
7	74	697	93	1210	104	1330	54	227	32	67	87	229
8	76	683	105	1650	101	1180	56	171	22	46	77	202
9	70	620	102	1850	99	1070	52	159	14	29	68	178
10	71	600	97	1910	99	928	47	119	14	29	58	189
11	76	589	94	1720	94	766	44	93	15	31	86	318
12	85	588	108	1800	72	649	41	87	34	68	120	710
13	93	495	103	1680	70	603	38	105	45	85	142	1010
14	86	388	87	1420	75	437	35	116	38	70	120	710
15	76	330	79	1260	75	255	49	201	34	61	82	445
16	73	315	80	1220	70	276	70	437	30	53	60	356
17	71	307	75	1120	61	240	59	427	27	48	57	437
18	70	302	68	1010	53	207	55	370	19	34	52	521
19	70	302	73	1050	47	157	43	288	11	20	67	763
20	71	307	86	1200	46	135	40	295	8	14	83	1270
21	70	301	79	1100	72	393	44	331	12	23	51	785
22	157	924	85	1090	90	739	38	245	57	171	48	573
23	88	658	103	1360	70	578	30	167	65	239	43	468
24	74	615	116	1900	69	572	28	148	50	184	45	448
25	77	792	109	1880	64	530	24	119	55	261	47	434
26	73	1090	90	1560	50	414	23	102	93	573	50	439
27	68	1090	72	1250	45	374	19	84	116	767	52	425
28	63	966	69	1160	55	426	16	71	106	587	54	399
29	64	835	80	1260	57	416	12	52	106	415	55	365
30	72	760	80	1100	50	363	8	35	---	---	53	339
31	63	706	---	---	50	351	7	24	---	---	55	327
TOTAL	---	19418	---	38226	---	18210	---	6251	---	4286	---	13925

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	APRIL MEAN CONCEN-TRATION (MG/L)	APRIL LOADS (T/DAY)	MAY MEAN CONCEN-TRATION (MG/L)	MAY LOADS (T/DAY)	JUNE MEAN CONCEN-TRATION (MG/L)	JUNE LOADS (T/DAY)	JULY MEAN CONCEN-TRATION (MG/L)	JULY LOADS (T/DAY)	AUGUST MEAN CONCEN-TRATION (MG/L)	AUGUST LOADS (T/DAY)	SEPTEMBER MEAN CONCEN-TRATION (MG/L)	SEPTEMBER LOADS (T/DAY)
1	54	303	35	232	45	330	19	97	17	26	38	199
2	47	286	39	242	35	350	20	94	17	26	31	154
3	44	327	36	220	30	396	18	77	27	34	40	170
4	34	313	46	243	50	774	17	73	32	34	62	276
5	32	388	52	249	84	1460	17	69	25	26	68	382
6	46	572	44	208	81	1410	17	57	26	24	65	325
7	65	1060	34	161	75	1290	15	47	31	22	52	261
8	62	1040	29	136	59	999	15	46	21	15	37	187
9	81	1390	28	129	44	746	17	52	30	35	27	136
10	104	1810	45	193	28	476	15	45	31	55	33	158
11	125	2070	50	202	24	376	13	39	21	54	40	168
12	131	2090	36	146	21	275	12	36	19	57	54	149
13	114	1820	34	138	20	252	17	43	17	18	59	112
14	108	1530	32	130	19	228	15	33	24	37	47	86
15	102	1230	34	138	19	231	15	33	26	79	39	71
16	98	1240	49	196	77	1250	15	33	24	98	50	139
17	125	1550	69	276	127	2880	12	26	30	160	59	156
18	103	1070	74	296	158	4480	17	33	35	232	57	99
19	91	830	74	314	167	5280	21	37	33	275	48	72
20	77	701	72	319	128	3560	20	35	21	187	45	59
21	72	655	65	304	93	2120	20	35	24	202	30	40
22	70	637	65	312	54	921	19	33	27	209	30	49
23	68	613	56	269	37	581	22	37	46	323	31	58
24	76	677	47	226	27	421	30	43	44	307	33	77
25	85	750	56	257	27	388	25	34	41	286	63	291
26	82	700	60	267	25	301	19	26	48	294	97	657
27	70	595	64	271	23	220	15	22	55	279	91	646
28	69	553	67	271	25	191	21	32	45	187	60	426
29	69	501	56	227	21	132	22	33	37	139	47	278
30	42	305	54	243	19	104	18	29	30	119	31	146
31	---	---	55	316	---	---	17	27	34	155	---	---
TOTAL	---	27706	---	7131	---	32422	---	1356	---	3994	---	6027

TOTAL LOAD FOR YEAR: 178952 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	TEMPER-ATURE, WATER (DEG C) (00010)	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 16...	0730	6.0	5560	79	1190	90
MAR 21...	1115	3.0	5560	47	706	57
APR 24...	1800	15.5	3460	50	467	76
JUN 03...	1000	21.0	4900	45	595	51
JUL 17...	1200	31.0	832	12	27	76
AUG 26...	0900	26.0	2350	37	235	81

05481650 DES MOINES RIVER AT SAYLORVILLE, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	NUMBER OF SAM-PLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)
NOV							
16...	0730	5560	7	0	1	7	31
MAR							
21...	1115	5660	4	1	4	9	53
APR							
24...	1800	3460	5	0	1	5	43
JUN							
03...	1000	4900	9	2	6	20	43
JUL							
17...	1200	832	8	0	1	5	38
AUG							
26...	0900	2350	7	1	2	8	49

DATE	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
NOV						
16...	63	79	86	92	97	100
MAR						
21...	78	90	95	99	100	--
APR						
24...	73	83	92	100	--	--
JUN						
03...	75	88	95	98	100	--
JUL						
17...	70	85	91	98	100	--
AUG						
26...	81	90	95	98	100	--

05481950 BEAVER CREEK NEAR GRIMES, IA

LOCATION.--Lat 41°41'18", long 93°44'08", in SW1/4 SW1/4 sec.35, T.80 N., R.25 W., Polk County, Hydrologic Unit 07100004, on right bank 6 ft (2 m) upstream from bridge on Northwest 70th Avenue, 0.5 mi (0.8 km) downstream from Little Beaver Creek, 2.8 mi (4.0 km) east of Grimes and 6 mi (9.7 km) upstream from mouth.

DRAINAGE AREA.--358 mi² (927 km²).

PERIOD OF RECORD.--April 1960 to current year.

REVISED RECORDS.--WDR IA-77-1: 1974 (P).

GAGE.--Water-stage recorder and concrete and steel sheeting broad-crested control. Datum of gage is 806.98 ft (245.968 m) NGVD. Prior to Aug. 31, 1966, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period and periods of no gage-height record Apr 17-23, 25-28, June 13-26, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

COOPERATION.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--20 years, 197 ft³/s (5.579 m³/s), 7.47 in/yr (190 mm/yr), 142,700 acre-ft/yr (176 hm³/yr); median of yearly mean discharges, 180 ft³/s (5.10 m³/s) 6.8 in/yr (173 mm/yr), 130,000 acre-ft/yr (160 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,340 ft³/s (208 m³/s) May 19, 1974, gage height, 14.69 ft (4.478 m); no flow for several days in 1970 and 1971 and many days in 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s (42.5 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 4	0645	*1,730	48.9	*9.02	2.749	June 5	1330	1,660	47.0	8.87	2.704

Minimum daily discharge, 0.17 ft³/s (0.004 m³/s) Sept. 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	116	105	62	46	66	95	69	759	89	4.0	3.0
2	25	102	105	61	45	62	98	67	770	82	3.4	1.8
3	25	95	120	54	47	65	140	64	778	74	2.6	1.3
4	25	89	200	47	48	63	200	61	1250	69	2.6	1.7
5	23	92	270	48	50	62	272	60	1600	66	4.4	1.4
6	22	147	193	48	44	62	263	60	1320	61	2.9	1.2
7	21	222	155	47	43	63	234	56	886	53	1.7	1.4
8	21	249	118	45	40	65	211	54	554	50	1.6	.89
9	19	222	109	43	38	72	201	53	422	59	9.3	.80
10	18	188	163	42	38	90	185	54	361	50	8.3	.72
11	17	157	196	42	39	122	180	55	318	42	12	.51
12	18	141	103	43	38	265	168	55	287	39	17	.47
13	17	131	101	46	37	214	153	51	280	35	8.5	.45
14	17	128	109	51	37	128	133	49	350	32	5.6	.57
15	17	123	114	75	37	141	132	48	1000	29	4.4	.45
16	17	120	74	113	35	243	131	45	860	28	44	.38
17	17	113	58	130	35	338	124	53	600	28	65	.36
18	18	111	59	130	36	224	114	61	470	26	42	.36
19	32	109	64	120	41	161	104	63	380	23	27	.31
20	40	99	76	102	51	141	96	64	300	20	18	.24
21	34	99	74	89	86	143	93	65	230	18	14	.20
22	119	120	72	71	129	137	90	65	190	15	9.3	.22
23	449	152	71	68	220	120	85	63	220	13	7.3	.23
24	382	180	68	56	239	110	80	63	190	11	5.5	.23
25	296	181	63	61	140	101	78	62	170	9.4	4.4	.23
26	237	172	63	59	105	95	76	59	155	9.9	3.1	.23
27	203	157	58	55	88	91	75	56	147	9.3	2.3	.22
28	168	140	54	52	76	82	73	64	137	9.3	1.6	.20
29	144	125	53	48	72	86	71	89	122	8.2	1.7	.17
30	129	113	53	47	---	92	69	356	100	6.6	1.7	.17
31	123	---	61	47	---	96	---	994	---	5.0	3.1	---
TOTAL	2721	4193	3182	2002	1980	3800	4024	3078	15206	1069.7	338.3	20.41
MEAN	87.8	140	103	64.6	68.3	123	134	99.3	507	34.5	10.9	.68
MAX	449	249	270	130	239	338	272	994	1600	89	65	3.0
MIN	17	89	53	42	35	62	69	45	100	5.0	1.6	.17
CFSM	.25	.39	.29	.18	.19	.34	.37	.28	1.42	.10	.03	.002
IN.	.28	.44	.33	.21	.21	.39	.42	.32	1.58	.11	.04	.00
AC-FT	5400	8320	6310	3970	3930	7540	7980	6110	30160	2120	671	40

CAL YR 1979 TOTAL 108838.00 MEAN 298 MAX 4500 MIN 17 CFSM .83 IN 11.31 AC-FT 215900
WTR YR 1980 TOTAL 41614.41 MEAN 114 MAX 1600 MIN .17 CFSM .32 IN 4.32 AC-FT 82540

05482170 BIG CEDAR CREEK NEAR VARINA, IA

LOCATION.--Lat 42°41'16", long 94°47'52", in NE1/4 NE1/4 sec.24, T.91 N., R.34 W., Pocahontas County, Hydrologic Unit 07100006, on left bank 5 ft (2 m) downstream from bridge on county highway N33, 2.0 mi (3.2 km) downstream from Drainage ditch 21, 3.5 mi (5.6 km) upstream from Drainage ditch 74, and 5.5 mi (8.8 km) northeast of Varina.

DRAINAGE AREA.--80.0 mi^2 (207 km^2).

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,225.12 ft (373.417 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--21 years, 36.4 ft^3/s (1.031 m^3/s), 6.18 in/yr (157 mm/yr), 26,370 acre-ft/yr (32.5 hm^3/yr); median of yearly mean discharges, 32 ft^3/s (0.906 m^3/s), 5.4 in/yr (137 mm/yr), 23,200 acre-ft/yr (28.6 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,080 ft^3/s (58.9 m^3/s) Aug. 31, 1962, gage height, 13.68 ft (4.170 m); maximum gage height, 16.29 ft (4.965 m) Mar. 24, 1979, backwater from ice; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 385 ft^3/s (10.9 m^3/s) Apr. 3, gage height, 6.59 ft (2.009 m), no peak above base of 400 ft^3/s (11.3 m^3/s); maximum gage height, 8.44 ft (2.573 m) Mar. 15, backwater from ice; minimum daily discharge, 1.6 ft^3/s (0.045 m^3/s) Aug. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	92	58	14	12	15	39	27	31	12	2.7	57
2	23	79	56	13	12	14	59	27	32	11	1.6	43
3	23	69	54	12	11	14	140	26	32	10	1.8	33
4	21	63	51	12	11	14	252	25	32	12	4.3	32
5	21	70	53	11	11	15	172	24	32	10	4.5	41
6	20	139	44	11	10	18	128	22	34	8.8	2.3	32
7	19	133	37	11	10	24	106	20	35	8.2	1.8	26
8	19	118	33	10	10	30	94	19	35	7.1	2.0	22
9	17	102	39	9.8	9.8	41	94	19	34	6.5	3.6	14
10	18	83	38	9.8	9.4	76	88	21	34	6.2	14	12
11	19	74	36	11	9.2	68	79	17	32	5.7	11	12
12	17	67	35	12	9.0	58	69	17	31	5.0	6.2	11
13	15	62	35	12	8.8	56	62	19	30	4.5	4.8	9.6
14	15	59	34	13	8.6	70	59	16	36	5.7	3.8	9.0
15	16	59	33	16	8.4	150	54	16	137	9.5	3.0	8.8
16	16	57	33	20	8.3	200	47	15	161	7.1	48	8.6
17	15	59	33	28	8.2	78	45	17	92	5.5	125	7.8
18	15	57	32	25	8.4	69	42	18	62	4.8	51	7.6
19	18	52	30	21	8.8	82	41	18	51	4.5	32	7.4
20	16	47	28	19	10	85	39	18	40	8.9	26	12
21	16	69	27	17	14	73	36	18	35	7.9	28	46
22	34	191	25	16	44	62	35	17	32	6.2	20	231
23	100	158	23	15	48	50	32	16	28	5.2	14	227
24	90	122	22	15	40	39	31	16	26	5.0	12	120
25	76	104	20	14	24	32	30	16	22	4.0	10	81
26	62	98	19	14	18	30	30	16	20	4.3	43	62
27	54	82	18	14	18	31	28	15	18	3.8	68	54
28	46	74	17	13	17	32	28	15	16	3.2	44	48
29	60	67	16	13	17	36	28	15	14	3.0	44	43
30	80	66	15	13	---	44	27	18	13	2.7	69	40
31	98	---	14	13	---	42	---	28	---	2.7	80	---
TOTAL	1084	2572	1008	447.6	433.9	1648	2014	591	1227	201.0	781.4	1357.8
MEAN	35.0	85.7	32.5	14.4	15.0	53.2	67.1	19.1	40.9	6.48	25.2	45.3
MAX	100	191	58	28	48	200	252	28	161	12	125	231
MIN	15	47	14	9.8	8.2	14	27	15	13	2.7	1.6	7.4
CFSM	.44	1.07	.41	.18	.19	.67	.84	.24	.51	.08	.32	.57
IN.	.50	1.20	.47	.21	.20	.77	.94	.27	.57	.09	.36	.63
AC-FT	2150	5100	2000	888	861	3270	3990	1170	2430	399	1550	2690

CAL YR 1979	TOTAL	41057.02	MEAN	112	MAX	2010	MIN	.00	CFSM	1.40	IN	19.09	AC-FT	81440
WTR YR 1980	TOTAL	13365.70	MEAN	36.5	MAX	252	MIN	1.6	CFSM	.46	IN	6.21	AC-FT	26510

05482300 NORTH RACCOON RIVER NEAR SAC CITY, IA

LOCATION.--Lat 42°20'28", long 94°59'05", in NE1/4 NW1/4 sec.24, T.87 N., R.36 W., Sac County, Hydrologic Unit 07100006, on right bank 15 ft (5 m) downstream from bridge on county highway, 0.2 mi (0.3 km) upstream from Indian Creek, 0.9 mi (1.4 km) downstream from Drainage ditch 73, 5.6 mi (9.0 km) south of Sac City, and at mile 365.9 (588.7 km) upstream from mouth of Des Moines River.

DRAINAGE AREA.--713 mi² (1,846 km²).

PERIOD OF RECORD.--June 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,144.60 ft (348.874 m) NGVD (levels by Iowa Natural Resources Council).

REMARKS.--Records good except those for the months of March, April, June, Aug., Sept., which are fair; and those for winter period and month of July, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--22 years, 295 ft³/s (8.354 m³/s), 5.62 in/yr (143 mm/yr), 213,700 acre-ft/yr (263 hm³/yr); median of yearly mean discharges, 270 ft³/s (7.65 m³/s), 5.1 in/yr (130 mm/yr), 196,000 acre-ft/yr (242 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 13,100 ft³/s (371 m³/s) Mar. 23, 1979, gage height, 18.02 ft (5.492 m); maximum gage height, 18.12 ft (5.523 m) Sept. 1, 1962; no flow Jan. 30 to Feb. 4, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1954, reached a stage of 15.61 ft (4.758 m), from floodmark, discharge, 7,000 ft³/s (198 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,720 ft³/s (48.7 m³/s) Apr. 4, gage height, 8.90 ft (2.713 m), no peak above base of 2,000 ft³/s (56.6 m³/s); minimum daily, 18 ft³/s (0.51 m³/s) Aug. 3,8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	145	960	470	195	125	158	295	200	425	90	20	112
2	141	814	450	190	125	148	339	196	374	85	19	101
3	134	653	440	160	122	146	634	190	400	80	18	79
4	131	575	420	170	120	144	1580	186	445	80	21	80
5	128	545	395	175	120	148	1320	182	512	83	23	84
6	131	740	370	150	118	154	1070	176	500	100	25	84
7	127	935	350	115	115	170	948	171	450	132	21	67
8	123	873	330	125	112	200	827	167	680	105	18	58
9	118	786	320	130	112	260	753	165	512	82	33	52
10	110	681	300	135	110	450	670	172	396	76	47	46
11	112	598	295	145	110	560	620	174	329	62	74	41
12	116	552	290	150	108	620	560	159	282	53	54	38
13	112	510	285	158	105	580	520	160	273	48	37	35
14	103	488	280	160	105	540	470	157	261	45	30	33
15	106	470	275	170	104	720	430	148	548	44	27	32
16	110	450	270	298	102	870	390	145	975	42	47	30
17	111	442	280	282	100	830	386	167	749	46	516	29
18	107	442	290	230	98	811	372	189	530	40	513	27
19	96	422	310	200	98	602	340	192	428	37	267	27
20	158	388	285	180	102	498	310	195	342	35	179	32
21	137	400	265	175	140	462	300	179	278	31	151	64
22	216	836	245	180	300	370	286	168	238	28	131	119
23	752	1140	230	165	345	310	270	162	238	26	106	583
24	971	954	225	160	300	260	268	162	202	25	83	340
25	768	811	205	170	240	226	254	157	162	26	70	300
26	620	730	195	165	200	216	252	146	142	27	59	212
27	545	640	200	152	172	210	250	149	132	28	91	174
28	470	540	200	146	168	218	242	150	120	24	145	158
29	418	500	195	140	162	238	228	147	104	22	116	142
30	408	490	195	135	---	271	208	311	96	20	119	134
31	625	---	200	130	---	307	---	457	---	20	128	---
TOTAL	8349	19365	9060	5236	4238	11697	15392	5679	11123	1642	3188	3313
MEAN	269	646	292	169	146	377	513	183	371	53.0	103	110
MAX	971	1140	470	298	345	870	1580	457	975	132	516	583
MIN	96	388	195	115	98	144	208	145	96	20	18	27
CFSM	.38	.91	.41	.24	.21	.53	.72	.26	.52	.07	.14	.15
IN.	.44	1.01	.47	.27	.22	.61	.80	.30	.58	.09	.17	.17
AC-FT	16560	38410	17970	10390	8410	23200	30530	11260	22060	3260	6320	6570

CAL YR 1979 TOTAL 264176 MEAN 724 MAX 12400 MIN 36 CFSM 1.02 IN 13.78 AC-FT 524000
WTR YR 1980 TOTAL 98282 MEAN 269 MAX 1580 MIN 18 CFSM .38 IN 5.13 AC-FT 194900

05482315 BLACKHAWK LAKE AT LAKE VIEW, IA

LOCATION.--Lat 42°18'15", long 95°02'30", in NW1/4 SE1/4 sec. 33, T.87 N., R.36 W., Sac County, Hydrologic Unit 07100006, on south shore across from swimming beach at Lake View and 2 mi (3.2 km) upstream from lake outlet.

DRAINAGE AREA.--23.3 mi² (60.3 km²).

PERIOD OF RECORD.--April 1970 to September 1975, April 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,218.50 ft (371.399 m) NGVD and 2.00 ft (0.610 m) below crest of spillway of dam at outlet. Prior to June 25, 1970, non-recording gage at lake outlet.

REMARKS.--Lake is formed by concrete dam with ungated overflow spillway at elevation 1,200.50 ft (372.008 m) NGVD. Lake is used for conservation and recreation. Area of lake is approximately 957 acres (390 hm²).

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 4.08 ft (1.244 m) Mar. 20, 1979; minimum, 0.05 ft (0.015 m) June 20, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 2.48 ft (0.756 m) June 2, affected by seiche; minimum, 1.29 ft (0.393 m) Sept. 20, affected by seiche.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.12	2.23	2.31	2.26	2.26	2.27	2.34	2.17	2.27	2.07	1.56	1.91
2	2.13	2.23	2.30	2.25	2.26	2.26	2.36	2.17	2.29	2.06	1.53	1.91
3	2.09	2.26	2.29	2.25	2.25	2.23	2.40	2.17	2.29	2.04	1.54	1.91
4	2.10	2.26	2.29	2.25	2.25	2.24	2.41	2.15	2.29	2.07	1.53	1.90
5	2.07	2.29	2.30	2.25	2.26	2.24	2.43	2.14	2.28	2.06	1.55	1.89
6	2.05	2.30	2.30	2.25	2.25	2.24	2.43	2.12	2.27	2.07	1.55	1.89
7	2.04	2.32	2.30	2.24	2.25	2.23	2.38	2.08	2.24	2.03	1.52	1.86
8	2.03	2.32	2.29	2.25	2.25	2.23	2.38	2.05	2.21	2.00	1.50	1.85
9	2.01	2.30	2.29	2.25	2.24	2.24	2.35	2.04	2.17	1.97	1.75	1.81
10	2.00	2.32	2.28	2.25	2.24	2.25	2.38	2.03	2.17	1.97	1.82	1.81
11	2.00	2.32	2.26	2.24	2.23	2.28	2.37	2.01	2.17	1.94	1.83	1.80
12	1.98	2.33	2.27	2.24	2.23	2.30	2.35	2.01	2.16	1.92	1.83	1.78
13	1.97	2.33	2.27	2.23	2.23	2.32	2.35	1.99	2.19	1.91	1.82	1.75
14	1.97	2.34	2.26	2.23	2.22	2.32	2.33	2.00	2.20	1.88	1.80	1.75
15	1.97	2.33	2.25	2.25	2.22	2.33	2.33	2.02	2.25	1.86	1.81	1.75
16	1.96	2.32	2.25	2.32	2.22	2.39	2.33	2.04	2.24	1.84	1.94	1.70
17	1.96	2.32	2.25	2.33	2.22	2.42	2.32	2.07	2.24	1.82	1.95	1.70
18	1.97	2.32	2.24	2.34	2.22	2.42	2.32	2.09	2.26	1.81	1.97	1.68
19	1.97	2.30	2.24	2.34	2.21	2.41	2.29	2.11	2.27	1.79	2.01	1.68
20	1.96	2.31	2.24	2.34	2.21	2.39	2.30	2.13	2.24	1.76	2.02	1.70
21	1.97	2.35	2.26	2.33	2.22	2.38	2.28	2.14	2.23	1.74	2.00	1.70
22	2.07	2.35	2.26	2.32	2.25	2.37	2.24	2.14	2.22	1.70	2.01	1.68
23	2.13	2.35	2.26	2.32	2.30	2.35	2.23	2.14	2.23	1.69	2.01	1.69
24	2.15	2.35	2.26	2.30	2.32	2.34	2.21	2.14	2.23	1.67	1.98	1.65
25	2.16	2.35	2.26	2.30	2.34	2.32	2.20	2.13	2.22	1.64	1.96	1.63
26	2.18	2.33	2.26	2.29	2.33	2.32	2.20	2.13	2.21	1.65	1.96	1.64
27	2.15	2.31	2.26	2.28	2.32	2.32	2.19	2.13	2.21	1.64	1.95	1.62
28	2.16	2.27	2.26	2.28	2.30	2.34	2.18	2.12	2.16	1.62	1.94	1.62
29	2.17	2.32	2.26	2.27	2.28	2.34	2.17	2.13	2.13	1.60	1.95	1.60
30	2.21	2.31	2.26	2.27	---	2.33	2.17	2.23	2.12	1.58	1.92	1.59
31	2.28	---	2.26	2.27	---	2.33	---	2.26	---	1.58	1.93	---
MEAN	2.06	2.31	2.27	2.28	2.25	2.31	2.31	2.11	2.22	1.84	1.82	1.75
MAX	2.28	2.35	2.31	2.34	2.34	2.42	2.43	2.26	2.29	2.07	2.02	1.91
MIN	1.96	2.23	2.24	2.23	2.21	2.23	2.17	1.99	2.12	1.58	1.50	1.59

WTR YR 1980 MEAN 2.13 MAX 2.43 MIN 1.50

05482500 NORTH RACCOON RIVER NEAR JEFFERSON, IA

LOCATION.--Lat 41°59'17", long 94°22'36", in SW1/4 NW1/4 sec.20, T.83 N., R.30 W., Greene County, Hydrologic Unit 07100005, on right bank 5 ft (2 m) downstream from bridge on State Highway 4, 0.1 mi (0.2 km) downstream from Drainage ditch 33 and 40, 1.9 mi (3.1 km) south of Jefferson, 4.2 mi (6.8 km) upstream from Hardin Creek, and at mile 292.5 (470.6 km) upstream from mouth of Des Moines River.

DRAINAGE AREA.--1,619 mi² (4,193 km²).

PERIOD OF RECORD.--March 1940 to current year. Prior to April 1940, monthly discharge only, published in WSP 1308. Prior to October 1955, published as Raccoon River near Jefferson.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1940 (M), 1950-51.

GAGE.--Water-stage recorder. Datum of gage is 967.09 ft (294.769 m) NGVD. Prior to Apr. 22, 1946, nonrecording gage at site 4 mi (6.4 km) upstream at different datum. Apr. 22 to June 25, 1946, nonrecording gage, June 26, 1946 to Sept. 30, 1955, water-stage recorder, Oct. 1, 1955 to Apr. 30, 1958, nonrecording gage, at present site and datum.

REMARKS.--Records fair except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--40 years, 669 ft³/s (18.95 m³/s), 5.61 in/yr (142 mm/yr), 484,700 acre-ft/yr (598 hm³/yr); median of yearly mean discharges, 580 ft³/s (16.4 m³/s), 4.9 in/yr (124 mm/yr), 420,000 acre-ft/yr (518 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 29,100 ft³/s (824 m³/s) June 23, 1947, gage height, 22.3 ft (6.80 m); minimum daily, 0.6 ft³/s (0.017 m³/s) Oct. 5, 1956.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,550 ft³/s (72.2 m³/s) Apr. 5, gage height, 8.93 ft (2.722 m),no peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 68 ft³/s (1.93 m³/s) Sept. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	335	922	993	360	298	380	584	468	990	318	77	163
2	326	1220	947	330	288	340	606	455	865	297	73	176
3	308	1250	836	310	280	330	684	448	882	282	70	170
4	299	1100	873	290	275	330	1100	437	907	271	69	155
5	293	1020	967	280	275	340	2380	429	1150	264	72	139
6	287	1090	933	270	270	360	2220	417	980	264	70	127
7	275	1420	842	265	265	390	1800	405	861	268	72	124
8	275	1640	745	260	252	420	1580	393	832	347	76	119
9	260	1550	640	260	256	490	1430	377	840	362	139	112
10	251	1390	610	270	252	580	1380	374	878	297	144	100
11	248	1240	610	270	250	1040	1330	377	735	252	231	96
12	242	1130	620	280	245	1300	1210	377	647	227	249	92
13	245	1050	620	290	240	1370	1110	376	593	208	237	86
14	240	988	520	310	236	1160	1020	370	567	189	190	80
15	235	960	550	330	232	1280	965	364	558	178	149	78
16	228	933	540	385	230	1510	824	351	771	184	162	76
17	225	905	540	480	223	1550	816	358	1110	208	211	75
18	225	878	550	560	222	1520	750	368	1100	209	367	72
19	225	871	600	590	224	1310	727	383	908	167	693	69
20	220	845	690	680	230	992	702	397	792	148	572	69
21	242	825	600	610	288	983	686	405	732	134	413	69
22	344	950	550	540	370	920	671	410	642	123	332	68
23	532	1380	530	490	600	826	630	400	603	114	277	75
24	1190	1890	500	455	642	735	603	390	573	109	242	119
25	1750	1710	480	420	640	650	570	382	516	104	201	349
26	1510	1520	470	390	580	582	549	371	472	100	169	350
27	1270	1370	450	350	510	546	535	354	432	106	148	291
28	1110	1250	430	330	470	528	511	344	399	110	134	249
29	1000	1110	415	320	440	524	494	343	368	101	139	223
30	929	984	395	310	---	526	489	357	341	101	185	214
31	894	---	380	300	---	552	---	816	---	83	173	---
TOTAL	16013	35391	19426	11685	9583	24364	28956	12496	22044	6125	6336	4185
MEAN	517	1180	627	377	330	786	965	403	735	198	204	140
MAX	1750	1890	993	690	642	1550	2380	816	1150	362	693	350
MIN	220	825	380	260	222	330	489	343	341	83	69	68
CFSM	.32	.73	.39	.23	.20	.49	.60	.25	.45	.12	.13	.09
IN.	.37	.81	.45	.27	.22	.56	.67	.29	.51	.14	.15	.10
AC-FT	31760	70200	38530	23180	19010	48330	57430	24790	43720	12150	12570	8300

CAL YR 1979 TOTAL 544482 MEAN 1492 MAX 14300 MIN 100 CFSM .92 IN 12.51 AC-FT 1080000
WTR YR 1980 TOTAL 196604 MEAN 537 MAX 2380 MIN 68 CFSM .33 IN 4.52 AC-FT 390000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	196.6	203.2	140.4	126.4	279.9	1067.3	1160.9	997.0	1654.3	744.3	407.2	319.2	616.60
RUNOFF (INCHES)	0.19	0.14	0.10	0.09	0.18	0.76	0.80	0.71	1.14	0.53	0.29	0.22	5.17
STD. DEVIATION	0.31	0.15	0.09	0.10	0.22	0.63	0.79	0.58	0.98	0.52	0.45	0.42	3.22
PERCENT OF ANNUAL	3.70	2.70	1.90	1.70	3.50	15.00	16.00	14.00	22.00	10.00	5.60	4.30	----
PRECIP. (INCHES)	1.88	1.06	0.31	0.91	0.94	2.03	2.80	3.85	4.95	3.38	3.62	2.71	29.00

05483000 EAST FORK HARDIN CREEK NEAR CHURDAN, IA

LOCATION.--Lat 42°06'27", long 94°22'12", in SE1/4 SW1/4 sec.5, T.84 N., R.30 W., Greene County, Hydrologic Unit 07100006, on left bank 35 ft (11 m) upstream from bridge on county highway E26, 1.6 mi (2.6 km) upstream from small left-bank tributary, 4.4 mi (7.1 km) upstream from mouth, and 6.5 mi (10.5 km) southeast of Churdan.

DRAINAGE AREA.--24.0 mi² (62.2 km²).

PERIOD OF RECORD.--July 1952 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1708: 1954-65, 1957 (M).

GAGE.--Water-stage recorder. Datum of gage is 1,050.90 ft (320.314 m) NGVD.

REMARKS.--Records good except those below 2.0 ft³/s (0.057 m³/s), which are fair, and those for winter period which are poor. Small diversion for irrigation above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--28 years, 9.46 ft³/s (0.268 m³/s), 5.35 in/yr (136 mm/yr), 6,850 acre-ft/yr (8.45 hm³/yr); median of yearly mean discharges, 7.4 ft³/s (0.210 m³/s), 4.2 in/yr (107 mm/yr), 5,400 acre-ft/yr (6.66 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 413 ft³/s (11.7 m³/s) May 5, 1960, gage height, 8.92 ft (2.719 m), from rating curve extended above 330 ft³/s (9.35 m³/s); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 179 ft³/s (5.07 m³/s) June 4, gage height, 5.62 ft (1.713 m), no other peak above base of 150 ft³/s (4.25 m³/s); no flow on many days.

DISCHARGE, IN CUSIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.95	8.3	9.7	3.6	3.2	1.9	6.5	5.4	16	5.6	.41	.09
2	1.1	7.8	9.0	3.2	3.3	2.3	9.3	5.2	36	4.7	.45	.03
3	1.1	7.3	9.7	2.9	2.7	2.9	29	5.0	57	4.4	.39	.00
4	.99	7.2	9.1	3.3	2.9	3.1	35	5.1	138	4.3	.45	.06
5	.99	12	9.6	3.2	3.0	2.8	24	8.2	96	4.1	.47	.05
6	1.0	23	8.4	3.2	2.4	2.6	22	4.9	52	4.9	.44	.00
7	.95	20	7.2	3.1	2.2	2.4	18	4.5	34	5.8	.35	.00
8	.90	18	5.5	3.0	2.0	2.9	16	4.5	24	4.4	.28	.00
9	.85	15	7.2	3.0	2.3	3.3	15	5.0	21	3.7	1.1	.00
10	.81	13	7.8	3.2	2.4	4.2	15	5.9	18	3.3	.57	.00
11	.94	12	6.4	3.5	2.1	4.6	14	4.5	15	3.0	.55	.00
12	.92	11	6.9	3.4	2.1	3.7	12	4.4	14	2.5	.34	.00
13	.79	10	5.3	3.5	2.5	2.7	12	4.4	13	1.8	.26	.00
14	.76	9.7	5.4	3.6	1.7	7.0	12	3.9	11	2.1	.23	.00
15	.82	9.7	6.3	3.8	1.6	9.0	10	4.0	12	1.9	.18	.00
16	.88	8.8	9.8	8.0	1.5	15	9.4	4.3	13	2.1	.80	.00
17	.92	9.4	6.1	6.5	1.9	11	9.1	4.8	13	2.3	1.1	.00
18	.92	9.1	7.1	5.0	2.4	11	8.8	4.9	13	1.9	.50	.00
19	1.0	8.5	4.8	3.9	2.8	13	9.0	5.6	11	1.5	.38	.00
20	1.0	7.3	4.2	3.7	3.4	11	8.5	6.6	9.5	1.4	.24	.00
21	1.1	11	4.5	3.7	3.7	6.2	8.3	6.6	9.3	1.2	.16	.00
22	6.3	23	4.6	3.7	3.5	7.2	8.1	6.6	9.1	1.1	.08	.00
23	27	21	4.1	3.6	3.0	6.1	7.1	6.8	9.6	.97	.06	.00
24	20	18	3.4	4.8	2.6	5.0	7.1	6.5	9.0	.83	.03	.00
25	15	17	3.3	3.5	2.7	4.5	6.7	5.9	8.3	.74	.00	.00
26	13	15	3.6	3.5	4.4	4.5	6.3	5.3	7.9	.68	.00	.00
27	12	13	3.1	3.4	3.0	4.3	6.0	4.9	7.8	.59	.03	.00
28	10	12	3.0	3.3	2.3	4.7	6.1	5.7	6.7	.53	.05	.00
29	9.3	11	3.5	3.2	1.9	5.4	6.0	7.2	5.8	.46	.05	.00
30	9.3	11	3.8	3.1	---	6.4	5.7	19	5.8	.38	.05	.00
31	9.9	---	3.6	3.0	---	6.0	---	12	---	.38	.08	---
TOTAL	151.49	379.1	186.3	115.4	75.4	178.7	362.0	184.5	695.8	73.56	10.08	.23
MEAN	4.89	12.6	6.01	3.72	2.60	5.76	12.1	5.95	23.2	2.37	.33	.008
MAX	27	23	9.8	6.0	4.4	15	35	19	136	5.8	1.1	.09
MIN	.76	7.2	3.0	2.9	1.5	1.9	5.7	3.9	5.8	.38	.00	.00
CFSM	.20	.53	.25	.16	.11	.24	.50	.25	.97	.10	.01	.000
IN.	.23	.59	.29	.18	.12	.28	.56	.29	1.08	.11	.02	.00
AC-FT	300	752	370	229	150	354	718	366	1380	146	20	.5

CAL YR 1979 TOTAL 5666.97 MEAN 15.5 MAX 327 MIN .00 CFSM .65 IN 8.78 AC-FT 11240
WTR YR 1980 TOTAL 2412.56 MEAN 6.59 MAX 138 MIN .00 CFSM .28 IN 3.74 AC-FT 4790

05483450 MIDDLE RACCOON RIVER NEAR BAYARD, IA

LOCATION.--Lat 41°46'43", long 94°29'33", in SW1/4 SW1/4 sec.32, T.81 N., R.31 W., Guthrie County, Hydrologic Unit 07100007, on left bank 50 ft (15 m), downstream from bridge on State Highway 25, 0.2 mi (0.3 km) downstream from Battle Run Creek, 1.6 mi (2.9 km) upstream from Springbook Creek, 5.8 mi (9.3 km) southeast of Bayard, 10.4 mi (16.7 km) upstream from dam at Lake Panorama, and at mile 279.2 (449.2 km) upstream from mouth of Des Moines River.

DRAINAGE AREA.--375 mi² (971 km²).

PERIOD OF RECORD.--March 1979 to current year. Occasional low-flow measurements, water years 1976,77. Contracted opening measurement of July 3, 1973 flood.

GAGE.--Water-stage recorder. Datum of gage is 1,040.00 ft. (316.992 m) NGVD. Prior to June 23, 1979 non-recording gage on downstream side of State Highway 25 bridge.

REMARKS.--Records good except those for period of limited gage readings, May 13 - June 22, which are fair, and winter periods which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,460 ft³/s (98.0 m³/s) Mar. 23, 1979, gage height, 17.68 ft (5.389 m); minimum daily, 15 ft³/s (0.42 m³/s), Sept. 29, 1980.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 3, 1973 reached a stage of 21.63 ft (6.593 m) from contracted opening measurement, discharge, 14,600 ft³/s (413 m³/s).

EXTREMES FOR CURRENT PERIOD.--March 1979 to September 1980: Peak discharges above base of 1,200 ft³/s (34.0 m³/s) and maximum for water year (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 23, 1979	1630	*3,460	98.0	*a17.68	5.389	July 23, 1979	1730	2,770	78.4	a16.63	5.069
Mar. 30, 1979	1300	2,520	71.4	a14.74	4.493	July 24, 1979	1900	1,440	40.8	13.36	4.072
May 3, 1979	0900	1,220	34.6	b12.73	3.880	July 30, 1979	1800	1,240	35.1	12.79	3.898
June 28, 1979	0630	3,410	96.6	a17.65	5.380	Mar. 16, 1980	0630	*c859	24.3	*11.51	3.508

a Observed
b From graph based on gage readings
c No peak above base

Minimum daily discharge.--March to September 1979: 39 ft³/s (1.10 m³/s) Sept. 30.
Water year 1980: 15 ft³/s (0.42 m³/a) Sept. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						---	716	368	179	579	294	82
2						---	616	426	174	441	232	84
3						---	580	1020	172	359	200	79
4						---	559	703	170	328	172	71
5						---	557	550	163	288	153	69
6						---	493	464	156	238	134	114
7						---	434	400	153	219	122	81
8						---	396	356	182	201	111	65
9						---	356	328	151	190	103	59
10						---	330	309	138	174	100	56
11						---	324	289	174	203	94	55
12						---	351	269	172	180	85	53
13						---	351	259	153	151	82	53
14						---	320	247	142	141	82	53
15						---	345	238	133	130	81	53
16						---	298	230	125	115	80	51
17						---	257	222	118	104	80	49
18						---	254	242	111	99	81	48
19						---	240	364	115	96	223	46
20						---	491	402	133	93	172	46
21						---	921	343	141	87	111	45
22						---	611	302	132	84	209	44
23						3050	468	275	125	1280	176	43
24						1860	405	252	120	1230	130	42
25						1090	458	235	116	734	109	42
26						890	602	230	114	384	96	42
27						713	493	256	1500	289	91	42
28						643	374	228	2850	234	105	41
29						558	350	203	1380	209	163	40
30						1550	330	192	778	599	98	39
31						1100	---	185	---	527	86	---
TOTAL						---	13290	10387	10270	9986	4055	1687
MEAN						---	443	335	342	322	131	56.2
MAX						---	921	1020	2850	1280	294	114
MIN						---	240	185	111	84	80	39
CFSM						---	1.18	.89	.91	.86	.35	.15
IN.						---	1.32	1.03	1.02	.99	.40	.17
AC-FT						---	26360	20600	20370	19810	8040	3350

05483450 MIDDLE RACCOON RIVER NEAR BAYARD, IA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	90	85	69	55	50	84	71	74	71	17	26
2	39	81	84	62	54	48	103	71	97	66	21	27
3	39	72	94	52	53	47	163	68	274	64	17	23
4	39	68	110	51	54	46	307	66	266	63	17	31
5	39	80	134	50	55	46	268	63	193	65	22	27
6	38	141	134	50	53	47	222	61	158	58	24	25
7	38	166	102	49	52	48	196	58	168	54	17	20
8	38	139	70	48	52	52	176	56	125	48	14	19
9	37	120	91	46	51	100	166	56	107	47	44	17
10	38	106	119	47	51	450	153	58	100	48	143	17
11	38	94	102	47	50	300	141	59	90	48	164	18
12	38	92	55	48	50	200	129	54	85	43	59	18
13	38	86	64	48	49	150	124	55	173	38	39	17
14	38	81	72	49	49	130	122	56	102	36	31	17
15	38	79	63	54	48	350	120	52	119	35	28	17
16	38	77	56	80	47	700	113	51	132	35	100	16
17	38	72	58	112	46	274	105	66	108	38	157	18
18	37	72	56	122	47	154	97	81	102	35	124	18
19	44	71	60	110	47	140	92	70	99	34	67	17
20	40	69	62	100	50	128	90	67	88	34	53	16
21	36	82	70	92	90	106	87	64	81	29	45	16
22	98	204	80	84	250	90	81	60	78	29	36	16
23	238	222	86	77	470	84	79	59	189	27	32	17
24	147	186	80	75	300	80	76	59	177	25	29	16
25	116	163	70	76	150	74	76	61	133	28	27	16
26	93	149	66	74	100	70	75	56	116	29	26	16
27	83	133	65	69	74	70	73	54	104	26	26	17
28	76	114	64	64	62	72	70	52	94	29	27	16
29	70	97	64	62	54	78	71	55	83	24	27	15
30	71	90	66	60	---	85	70	56	74	22	28	16
31	89	---	70	57	---	83	---	56	---	19	28	---
TOTAL	1888	3296	2452	2084	2563	4352	3729	1871	3789	1247	1489	565
MEAN	60.9	110	79.1	67.2	88.4	140	124	60.4	126	40.2	48.0	18.8
MAX	238	222	134	122	470	700	307	81	274	71	164	31
MIN	36	68	55	46	46	46	70	51	74	19	14	15
CFSM	.16	.29	.21	.18	.24	.37	.33	.16	.34	.11	.13	.05
IN.	.19	.33	.24	.21	.25	.43	.37	.19	.38	.12	.15	.06
AC-FT	3740	6540	4860	4130	5080	8630	7400	3710	7520	2470	2950	1120

WTR YR 1980 TOTAL 29325 MEAN 80.1 MAX 700 MIN 14 CFSM .21 IN 2.91 AC-FT 58170

05483450 MIDDLE RACCOON RIVER NEAR BAYARD--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 1979 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: March 1979 to current year.
WATER TEMPERATURES: March 1979 to current year.
SUSPENDED-SEDIMENT DISCHARGE: March 1979 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 800 micromhos Oct. 26, 1979; minimum daily, 290 micromhos Mar. 11, 1980.
WATER TEMPERATURES: Maximum daily, 32.0°C Aug. 5, 1979; minimum daily, 0.0°C many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 9,440 mg/L June 27, 1979; minimum daily mean, 14 mg/L July 31, 1980.
SEDIMENT LOADS: Maximum daily, 56,500 tons (51,300 tonnes) June 27, 1979; minimum daily, 0.72 tons (0.65 tonnes) July 31, 1980.

EXTREMES FOR CURRENT PERIOD: March to September 1979.
SPECIFIC CONDUCTANCE: Maximum daily, 700 micromhos April 6, May 19, Aug. 22; minimum daily, 355 micromhos June 28.
WATER TEMPERATURES: Maximum daily, 32.0°C Aug. 5; minimum daily, 0.0°C Mar.14, 24.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 9,440 mg/L June 27; minimum daily mean, 50 mg/L Sept. 19.
SEDIMENT LOADS: Maximum daily, 56,500 tons (51,300 tonnes) June 27; minimum daily, 6.2 tons (5.6 tonnes) Sept. 19.

Water year 1980:
SPECIFIC CONDUCTANCE: Maximum daily, 800 micromhos Oct. 26; minimum daily, 290 micromhos Mar. 11.
WATER TEMPERATURES: Maximum daily, 31.0°C Aug. 1; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 4,820 mg/L June 13; minimum daily mean, 14 mg/L July 31.
SEDIMENT LOADS: Maximum daily, 5,070 tons (4,600 tonnes) Mar. 16; minimum daily, 0.72 tons (0.65 tonnes) July 31.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						---	640	580	---	640	640	650
2						---	660	610	---	620	---	---
3						---	655	605	---	---	---	620
4						---	685	650	600	610	---	---
5						---	690	620	---	---	590	---
6						---	700	620	---	---	---	620
7						---	650	600	620	580	---	---
8						---	---	660	---	---	---	---
9						---	605	640	620	580	570	---
10						---	610	660	---	---	---	---
11						---	605	600	640	560	600	---
12						---	650	580	---	600	---	---
13						---	695	---	560	590	---	---
14						---	660	---	---	---	560	---
15						---	---	580	580	---	---	610
16						---	610	---	---	550	535	---
17						---	610	640	---	---	580	620
18						---	600	---	570	540	---	---
19						---	600	700	---	---	---	---
20						---	560	---	585	---	540	---
21						---	600	660	---	540	655	---
22						---	690	---	660	---	700	610
23						370	630	---	---	415	---	---
24						485	625	600	---	360	---	---
25						---	590	---	560	455	---	---
26						595	660	---	---	630	---	---
27						620	670	---	445	600	630	660
28						640	605	---	355	---	---	---
29						635	580	600	490	---	510	---
30						525	590	---	610	505	---	---
31						505	---	620	---	460	640	---

05483450 MIDDLE RACCOON RIVER NEAR BAYARD--Continued

WATER-QUALITY RECORDS

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	660	680	---	---	620	---	---	---	---	---	490	---
2	---	700	---	740	---	---	570	490	630	510	---	630
3	---	---	640	---	---	550	---	---	600	---	---	560
4	630	---	740	660	610	---	700	---	550	---	550	---
5	640	700	620	---	---	---	---	510	---	---	---	560
6	710	750	---	---	500	550	---	---	---	---	---	---
7	530	760	---	650	---	520	600	490	---	640	---	---
8	570	---	---	---	590	---	---	---	---	---	---	---
9	590	740	---	630	---	---	570	---	---	---	---	610
10	550	---	680	---	---	450	---	---	520	---	---	610
11	640	---	680	630	540	290	---	---	---	640	320	---
12	620	720	---	---	---	---	---	---	---	---	490	---
13	590	655	640	---	---	---	---	---	445	---	---	---
14	610	490	---	700	605	440	---	490	570	620	600	---
15	600	---	---	---	---	---	590	---	---	560	---	---
15	620	570	650	520	---	---	---	490	---	620	450	---
17	560	---	680	590	---	400	590	---	550	---	---	---
18	640	---	---	---	700	---	---	---	---	570	---	---
19	640	640	720	---	---	520	---	---	610	---	540	---
20	620	590	---	---	---	680	---	520	---	---	---	---
21	---	460	760	710	570	580	---	---	---	550	---	---
22	600	580	---	---	470	---	570	---	---	---	560	---
23	620	---	---	670	---	---	590	---	490	---	---	525
24	700	---	700	---	---	570	620	500	690	---	---	---
25	790	---	---	550	---	---	---	510	---	---	680	---
26	800	400	---	---	---	---	---	---	---	570	---	---
27	---	660	680	---	620	530	---	---	---	---	550	---
28	---	---	720	650	650	---	---	520	610	570	600	---
29	550	640	---	---	---	---	---	---	---	---	---	---
30	630	720	---	680	---	---	520	520	580	520	---	---
31	680	---	730	---	---	540	---	570	---	---	---	---

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						---	3.5	---	---	21.0	21.0	22.0
2						---	3.5	---	---	25.0	---	---
3						---	5.0	10.0	---	---	---	21.0
4						---	---	---	17.0	23.0	---	---
5						---	5.0	11.0	---	---	32.0	---
6						---	4.0	13.0	---	---	---	22.0
7						---	8.0	15.0	---	20.0	---	---
8						---	---	18.0	---	---	---	---
9						---	4.0	18.0	15.0	26.0	26.0	---
10						---	4.0	12.0	---	---	---	---
11						---	5.0	12.0	15.0	22.0	20.0	---
12						---	8.0	14.0	---	24.0	---	---
13						---	8.0	---	20.0	26.0	---	---
14						.0	6.0	---	---	---	20.0	---
15						---	---	13.0	23.0	---	---	20.0
16						---	8.5	---	---	23.0	19.0	---
17						---	10.0	20.0	---	---	21.0	23.0
18						---	16.0	---	19.0	22.0	---	---
19						---	12.0	14.0	---	---	---	---
20						---	12.5	---	18.5	---	23.0	---
21						---	11.0	13.0	---	25.0	23.0	---
22						---	11.5	---	22.0	---	21.0	16.0
23						2.0	13.0	---	---	23.0	---	---
24						.0	13.0	12.0	---	23.0	---	---
25						---	12.0	---	26.0	23.5	---	---
26						3.0	14.0	---	---	24.5	---	---
27						3.5	---	---	21.5	27.0	20.0	16.0
28						7.0	---	---	22.0	---	---	---
29						6.0	---	19.0	20.0	---	21.0	---
30						6.0	---	---	21.0	24.0	---	---
31						5.0	---	17.0	---	22.0	24.0	---

05483450 MIDDLE RACCOON RIVER NEAR BAYARD--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.0	7.0	---	---	2.0	---	---	---	---	---	31.0	---
2	---	8.0	---	3.0	---	---	8.0	18.0	19.0	22.0	---	18.0
3	---	---	4.0	3.0	---	3.0	---	---	18.0	---	---	24.0
4	12.0	---	7.0	3.0	2.0	---	11.0	---	21.5	---	21.0	---
5	14.0	8.0	4.0	---	---	---	---	20.0	---	---	---	21.0
6	14.0	5.0	---	---	3.0	3.0	---	---	---	---	---	---
7	16.0	3.0	---	3.0	---	3.0	10.0	18.0	---	27.0	---	---
8	15.0	---	---	---	2.0	---	---	---	---	---	---	---
9	14.0	4.0	---	3.0	---	---	---	---	---	---	---	20.0
10	12.0	---	4.0	---	---	4.0	---	---	19.0	---	---	19.0
11	16.0	---	4.0	3.0	3.0	4.0	---	---	---	---	23.0	---
12	12.0	4.0	---	---	---	---	8.0	---	---	---	23.0	---
13	8.0	6.5	3.0	---	---	---	---	---	21.0	26.0	---	---
14	13.0	7.0	.0	4.0	2.5	4.0	---	11.0	---	25.0	23.0	---
15	9.0	---	---	---	---	---	10.0	---	---	30.0	---	---
16	13.0	7.0	---	3.0	---	---	---	11.0	---	28.0	22.0	---
17	10.0	---	4.0	.0	---	5.0	11.0	---	20.0	---	---	---
18	15.0	---	---	---	4.0	---	---	---	---	24.0	---	---
19	17.0	10.0	4.0	---	---	9.0	---	---	21.0	---	24.0	---
20	16.0	6.0	---	---	---	6.0	---	20.0	---	---	---	---
21	---	7.0	5.0	4.0	3.0	7.0	---	---	---	25.0	---	---
22	8.0	7.0	---	---	4.0	---	16.0	---	---	---	24.0	---
23	5.0	---	---	7.0	---	---	15.5	---	21.0	---	---	19.0
24	9.0	---	4.0	---	---	5.0	11.0	19.0	21.0	---	---	---
25	10.5	---	---	4.0	---	---	---	19.0	---	---	25.0	---
26	12.0	4.0	---	---	---	---	---	---	---	25.0	---	---
27	13.0	4.0	3.0	---	3.0	7.0	---	---	---	---	23.0	---
28	11.0	---	4.0	3.0	3.0	---	---	25.0	26.0	21.0	22.0	---
29	---	1.0	---	---	---	---	---	---	---	---	---	---
30	---	2.0	---	3.0	---	---	17.0	19.0	20.0	24.0	---	---
31	12.0	---	4.0	---	---	7.0	---	20.0	---	---	---	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1											---	---
2											---	---
3											---	---
4											---	---
5											---	---
6											---	---
7											---	---
8											---	---
9											---	---
10											---	---
11											---	---
12											---	---
13											---	---
14											---	---
15											---	---
16											---	---
17											---	---
18											---	---
19											---	---
20											---	---
21											---	---
22											---	---
23											---	---
24											1680	8440
25											1170	3440
26											774	1860
27											549	1060
28											452	785
29											553	982
30											5430	31900
31											3040	10000
TOTAL											---	58467

05483450 MIDDLE RACCOON RIVER NEAR BAYARD--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	APRIL MEAN CONCEN-TRATION (MG/L)	APRIL LOADS (T/DAY)	MAY MEAN CONCEN-TRATION (MG/L)	MAY LOADS (T/DAY)	JUNE MEAN CONCEN-TRATION (MG/L)	JUNE LOADS (T/DAY)	JULY MEAN CONCEN-TRATION (MG/L)	JULY LOADS (T/DAY)	AUGUST MEAN CONCEN-TRATION (MG/L)	AUGUST LOADS (T/DAY)	SEPTEMBER MEAN CONCEN-TRATION (MG/L)	SEPTEMBER LOADS (T/DAY)
1	1040	2010	475	472	336	162	622	972	605	480	224	50
2	695	1160	625	719	322	151	515	613	449	281	217	49
3	560	877	1780	5090	302	140	490	475	362	195	207	44
4	480	724	772	1470	282	129	505	447	289	134	198	38
5	447	672	590	876	261	115	470	365	230	95	188	35
6	387	515	407	510	240	101	400	257	180	65	682	210
7	335	393	430	464	224	93	340	201	241	79	315	69
8	330	353	423	407	236	116	300	163	119	36	95	17
9	290	279	348	308	265	108	295	151	103	29	83	13
10	227	202	290	242	279	104	325	153	88	24	81	12
11	232	203	240	187	279	131	590	323	65	16	80	12
12	335	317	235	171	284	132	655	318	65	15	78	11
13	422	400	240	168	296	122	350	143	79	17	75	11
14	231	200	244	163	295	113	295	112	95	21	70	10
15	201	187	247	159	267	96	250	88	90	20	68	9.7
16	193	155	257	160	216	73	193	60	72	16	62	8.5
17	228	158	274	164	123	39	156	44	85	18	58	7.7
18	217	149	399	261	72	22	131	35	80	17	52	6.7
19	440	285	535	526	77	24	110	29	1700	1130	50	6.2
20	2450	3250	500	543	273	98	95	24	542	252	55	6.8
21	2050	5100	440	407	282	107	82	19	370	111	80	9.7
22	620	1020	400	326	278	99	76	17	285	161	115	14
23	455	575	347	258	273	92	3630	19900	1040	494	132	15
24	378	413	297	202	270	87	4960	16400	925	325	141	16
25	725	897	250	159	265	83	1520	3010	515	152	144	16
26	760	1240	212	132	261	80	642	566	305	79	138	16
27	435	579	193	133	9440	56500	400	312	160	39	121	14
28	314	317	180	111	3500	28900	203	128	340	96	110	12
29	263	256	180	99	1080	4020	490	277	1190	524	99	11
30	289	257	260	135	735	1540	3410	7280	430	114	89	9.4
31	---	---	336	168	---	---	1810	2960	242	56	---	---
TOTAL	---	23143	---	15190	---	93577	---	55942	---	5091	---	759.7

TOTAL LOAD FOR YEAR: 252169.7 TONS.

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	OCTOBER MEAN CONCEN-TRATION (MG/L)	OCTOBER LOADS (T/DAY)	NOVEMBER MEAN CONCEN-TRATION (MG/L)	NOVEMBER LOADS (T/DAY)	DECEMBER MEAN CONCEN-TRATION (MG/L)	DECEMBER LOADS (T/DAY)	JANUARY MEAN CONCEN-TRATION (MG/L)	JANUARY LOADS (T/DAY)	FEBRUARY MEAN CONCEN-TRATION (MG/L)	FEBRUARY LOADS (T/DAY)	MARCH MEAN CONCEN-TRATION (MG/L)	MARCH LOADS (T/DAY)
1	72	7.6	110	27	114	26	24	4.5	83	12	204	28
2	68	7.2	66	14	125	28	25	4.2	61	8.9	137	18
3	63	6.6	54	10	114	29	26	3.7	45	6.4	109	14
4	59	6.2	54	9.9	92	27	25	3.4	43	6.3	186	23
5	56	5.9	73	16	119	43	24	3.2	42	6.2	292	36
6	53	5.4	154	59	115	42	22	3.0	41	5.9	90	11
7	45	4.6	158	71	55	15	21	2.8	57	8.0	54	7.0
8	54	5.5	113	42	41	7.7	41	5.3	73	10	51	7.2
9	40	4.0	81	26	58	14	121	15	58	8.0	94	25
10	29	3.0	69	20	82	26	123	16	49	6.7	1420	1730
11	45	4.6	64	16	71	20	84	11	45	6.1	1180	956
12	57	5.8	66	16	49	7.3	62	8.0	43	5.8	620	335
13	67	6.9	80	19	50	8.6	54	7.0	40	5.3	400	162
14	53	5.4	91	20	119	23	50	6.6	37	4.9	280	98
15	65	6.7	141	30	105	18	52	7.6	37	4.8	2160	2040
16	51	5.2	177	37	80	12	288	62	36	4.6	2680	5070
17	66	6.8	186	36	56	8.8	181	55	34	4.2	1640	1210
18	48	4.8	184	36	34	5.1	276	91	32	4.1	710	295
19	74	8.8	176	34	21	3.4	175	52	38	4.8	252	95
20	78	8.4	160	30	18	3.0	114	31	72	9.7	244	84
21	75	7.3	136	30	17	3.2	84	21	179	43	231	66
22	240	80	343	189	17	3.7	71	16	478	323	229	56
23	590	381	348	209	23	5.3	65	14	265	336	220	50
24	328	131	282	142	29	6.3	62	13	163	132	218	47
25	139	44	246	108	29	5.5	63	13	95	38	212	42
26	75	19	206	83	28	5.0	64	13	48	13	210	40
27	65	15	133	48	27	4.7	65	12	36	7.2	208	39
28	65	13	81	25	23	4.0	66	11	45	7.5	207	40
29	64	12	59	15	24	4.1	68	11	250	36	202	43
30	126	24	86	21	24	4.3	69	11	---	---	201	46
31	170	41	---	---	24	4.5	79	12	---	---	198	44
TOTAL	---	886.7	---	1438.9	---	417.5	---	539.3	---	1068.4	---	12757.2

05483450 MIDDLE RACCOON RIVER NEAR BAYARD--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	179	41	57	11	700	140	84	16	29	1.3	50	3.5
2	170	47	41	7.9	838	219	58	10	143	8.1	59	4.3
3	520	229	39	7.2	2220	2240	66	11	205	9.4	62	3.9
4	1210	1000	38	6.8	2230	1760	94	16	163	7.5	78	6.5
5	912	660	39	6.6	1020	532	168	29	128	7.6	65	4.7
6	635	381	53	8.7	855	365	197	31	135	8.7	64	4.3
7	490	259	50	7.8	872	396	184	27	114	5.2	64	3.5
8	343	163	46	7.0	665	224	165	21	81	3.1	68	3.5
9	247	111	57	8.6	460	133	147	19	550	67	67	3.1
10	209	86	75	12	365	99	128	17	1750	676	34	1.6
11	188	72	82	13	340	83	133	17	1690	748	30	1.5
12	173	60	74	11	325	75	160	19	480	76	29	1.4
13	164	55	77	11	4820	2830	147	15	280	29	28	1.3
14	161	53	80	12	955	263	125	12	88	7.4	29	1.3
15	160	52	69	9.7	740	238	71	6.7	50	3.8	31	1.4
16	174	53	69	9.5	755	269	36	3.4	540	146	32	1.4
17	188	53	93	17	291	85	45	4.6	810	343	32	1.6
18	187	49	125	27	266	73	39	3.7	582	195	32	1.6
19	185	46	117	22	368	98	49	4.5	288	52	31	1.4
20	184	45	105	19	325	77	68	6.2	225	32	30	1.3
21	183	43	100	17	251	55	60	4.7	157	19	29	1.3
22	180	39	118	19	209	44	53	4.1	83	8.1	29	1.3
23	173	37	174	28	2240	1200	45	3.3	47	4.1	29	1.3
24	149	31	243	39	650	315	36	2.4	31	2.4	29	1.3
25	133	27	244	40	550	198	61	4.6	25	1.8	30	1.3
26	122	25	188	28	500	157	89	7.0	36	2.5	29	1.3
27	110	22	143	21	460	129	79	5.5	45	3.2	28	1.3
28	99	19	116	16	389	99	105	8.2	33	2.4	27	1.2
29	88	17	178	26	277	62	75	4.9	30	2.2	26	1.1
30	75	14	330	50	148	30	26	1.5	31	2.3	26	1.1
31	---	---	555	84	---	---	14	.72	40	3.0	---	---
TOTAL	---	3789	---	602.8	---	12488	---	336.02	---	2477.1	---	65.6

TOTAL LOAD FOR YEAR: 36865.53 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	TEMPER-ATURE, WATER (DEG C) (00010)	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)
APR							
12...	1300	8.0	347	350	328	34	41
MAY							
03...	1240	10.0	1170	2830	8940	37	44
03...	1350	10.0	1140	1600	4930	35	43
JUN							
20...	1055	19.5	212	254	145	39	49
27...	1940	22.0	2950	11200	89200	53	58
JUL							
13...	1215	26.0	148	301	120	--	--

DATE	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
APR							
12...	--	70	94	98	98	100	--
MAY							
03...	52	64	94	96	99	100	--
03...	50	61	91	95	98	100	--
JUN							
20...	--	74	91	95	97	100	--
27...	71	85	98	99	100	--	--
JUL							
13...	--	--	--	--	--	--	94

05483450 MIDDLE RACCOON RIVER NEAR BAYARD--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	TEMPERATURE, WATER (DEG C) (00010)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT										
25...	1345	8.0	121	124	41	--	--	--	--	94
NOV										
13...	1230	12.0	89	101	24	--	--	--	--	65
MAR										
20...	0830	6.0	127	251	86	--	--	--	--	85
JUN										
04...	1600	23.0	224	1190	720	57	67	75	85	98
JUL										
15...	1615	28.0	36	67	6.6	--	--	--	--	93
AUG										
11...	1025	23.0	254	2440	1870	58	59	73	82	97
27...	1200	23.0	24	45	3.0	--	--	--	--	82

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	NUMBER OF SAMPLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)
APR							
12...	1300	347	7	1	2	17	40
MAY							
03...	1350	1140	8	9	18	31	84
JUN							
20...	1055	212	6	1	1	5	39
JUL							
13...	1215	148	6	2	4	20	69
AUG							
16...	1000	81	7	1	1	10	53

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
APR						
12...	64	70	73	77	95	100
MAY						
03...	97	99	100	--	--	--
JUN						
20...	76	87	91	94	97	100
JUL						
13...	93	98	99	100	--	--
AUG						
16...	88	96	99	100	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	NUMBER OF SAMPLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)
OCT												
25...	1345	121	9	2	4	16	57	87	96	99	100	--
NOV												
13...	1230	89	5	1	1	15	57	91	98	99	100	--
MAR												
20...	1000	174	8	2	4	13	47	79	92	97	99	100
APR												
23...	1130	85	6	2	3	13	56	85	93	97	99	100
JUN												
04...	1600	224	7	2	4	23	56	82	91	95	97	100
JUL												
15...	1615	36	8	2	4	24	71	92	97	99	100	--
AUG												
27...	1200	24	6	1	2	13	58	92	97	99	100	--

054B3470 LAKE PANORAMA AT PANORA, IOWA

LOCATION.--Lat 41°41'44", long 94°22'53", in SW1/4 NE1/4 sec.31, T.80 N., R.30 W., Guthrie County, Hydrologic Unit 07100007, in gage control building of dam on Middle Raccoon River, 0.5 mi (0.8 km) upstream from State Highway 44, 1.0 mi (1.6 km) west of Panora, 4.4 mi (7.1 km) upstream from Bay Branch, and at mile 268.8 upstream from mouth of Des Moines River.

DRAINAGE AREA.--433 mi² (1,121 km²).

PERIOD OF RECORD.--May 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,000.00 ft (304.800 m) NGVD.

REMARKS.--Lake is formed by earthfill dam with 100 ft (30.5 m) bascule gate and concrete chute spillway, and 300 ft (91.4 m) earthen emergency spillway. Low-flow outlet is 30 in (0.762 m) conduit and gate valve through dam. Dam was completed in August 1970 and began filling April 27, 1971. Total storage, 60,000 acre-ft (74.0 hm³), surface area, 2,900 acres (1,170 hm²), at top of dam, elevation 1,068 ft (325.5 m). Storage unknown at top of spillway, elevation 1,048 ft (319.4 m). Normal storage, 19,700 acre-ft (24.3 hm³), surface area, 1,270 acres (514 hm²) with bascule gate closed, elevation 1,045 ft (318.5 m). Dead storage unknown with bascule gate open, elevation 1,036 ft (315.8 m). Present lake classification is utility (industrial) but is also used for recreation.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 45.99 ft (14.018 m) Jan. 18, 19, 1980; minimum, 44.30 ft (13.503 m) Aug. 17, 1979.

EXTREMES FOR CURRENT PERIOD.--May to September 1979; maximum gage height, 45.96 ft (14.009 m) June 27; minimum, 44.30 ft (13.503 m) Aug. 17.

Water year 1980: Maximum gage height, 45.99 ft (14.018 m) Jan. 18,19; minimum, 44.90 ft (13.686 m) Sept. 29, 30.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1								---	45.34	45.25	45.41	45.52
2								---	45.32	45.27	45.27	45.49
3								---	45.30	45.45	45.22	45.44
4								---	45.26	45.54	45.40	45.40
5								---	45.26	45.52	45.52	45.34
6								---	45.38	45.45	45.57	45.32
7								---	45.50	45.40	45.57	45.32
8								---	45.44	45.43	45.57	45.32
9								---	45.15	45.44	45.56	45.32
10								---	45.01	45.51	45.49	45.32
11								---	44.93	45.77	45.44	45.31
12								---	45.10	45.68	45.42	45.26
13								---	45.35	45.60	45.42	45.26
14								---	45.49	45.58	45.43	45.26
15								---	45.58	45.56	45.29	45.26
16								---	---	45.54	44.87	45.25
17								44.54	---	45.53	44.38	45.23
17												
18								44.88	---	45.53	44.43	45.20
19								45.40	---	45.54	44.73	45.17
20								45.19	---	45.54	45.16	45.17
21								44.96	45.41	45.53	45.41	45.17
22								44.93	45.40	45.52	45.39	45.17
23								45.27	45.38	45.45	45.57	45.17
24								45.44	45.37	44.85	45.61	45.17
25								45.46	45.35	44.66	45.60	45.17
26								45.46	45.33	44.70	45.56	45.17
27								45.46	45.70	45.07	45.54	45.17
28								45.45	45.63	45.43	45.52	45.17
29								45.42	44.89	45.63	45.74	45.17
30								45.38	45.05	45.67	45.69	45.17
31								45.37	---	45.34	45.58	---
MEAN								---	---	45.42	45.37	45.26
MAX								---	---	45.77	45.74	45.52
MIN								---	---	44.66	44.38	45.17

05483470 LAKE PANORAMA AT PANORA, IOWA--Continued

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45.17	45.60	45.70	45.53	---	---	45.39	45.38	45.49	45.28	45.25	
2	45.17	45.60	45.70	45.54	---	---	45.47	45.40	45.50	45.28	45.25	
3	45.17	45.60	45.69	45.50	---	---	45.52	45.47	45.50	45.25	45.22	
4	45.15	45.60	---	45.48	---	---	45.55	45.54	45.50	45.23	45.25	
5	---	45.60	---	45.48	---	---	45.58	45.50	45.51	45.23	45.24	
6	---	45.62	---	45.49	---	---	45.58	45.49	45.51	45.23	45.24	
7	---	45.69	---	45.44	---	---	45.57	45.51	45.51	45.23	45.23	
8	---	45.75	---	45.44	---	---	45.55	45.48	45.50	45.22	45.23	
9	---	45.73	---	45.43	---	---	45.54	45.48	45.51	45.35	---	
10	---	45.71	---	45.43	---	---	45.55	45.47	45.51	45.46	---	
11	---	45.68	---	---	---	---	45.57	45.47	---	45.64	---	
12	---	45.65	---	---	---	---	45.55	45.47	---	45.47	---	
13	---	45.62	---	---	---	---	45.58	45.52	---	45.46	---	
14	---	45.57	---	---	45.46	---	45.56	45.51	---	45.44	---	
15	---	45.57	---	---	---	---	45.56	45.52	45.38	45.41	45.13	
16	---	45.57	---	---	---	---	45.56	45.50	45.41	45.53	45.12	
17	---	45.57	---	45.89	---	---	45.64	45.49	45.40	45.44	45.08	
18	---	45.57	---	45.96	---	---	45.68	45.49	45.47	45.48	45.06	
19	45.25	45.57	---	45.97	---	---	45.61	45.49	45.46	45.45	45.05	
20	45.27	45.57	45.51	45.87	---	---	45.46	45.48	45.44	45.38	45.06	
21	45.30	45.57	45.52	45.82	---	---	45.45	45.48	45.42	45.32	45.07	
22	45.44	45.60	45.54	45.79	---	---	45.45	45.49	45.38	45.26	45.09	
23	45.59	45.76	45.57	45.74	---	45.63	45.44	45.50	45.36	45.20	45.10	
24	45.73	45.83	45.58	45.73	---	---	45.45	45.50	45.34	45.15	45.04	
25	45.73	45.84	45.55	45.74	---	---	45.45	45.52	45.32	45.13	45.02	
26	45.73	45.84	45.54	---	---	---	45.45	45.52	45.37	45.13	44.99	
27	45.72	45.84	45.54	---	---	---	45.45	45.52	45.35	45.13	44.95	
28	45.69	45.84	45.53	---	---	---	45.44	45.51	45.34	45.13	44.93	
29	45.65	45.78	45.53	---	---	45.38	45.35	45.50	45.34	45.14	44.92	
30	45.61	45.70	45.53	---	---	45.36	45.39	45.49	45.31	45.17	44.92	
31	45.60	---	45.53	---	---	---	45.31	---	45.29	45.22	---	
MEAN	---	45.67	---	---	---	---	45.51	45.49	---	45.30	---	
MAX	---	45.84	---	---	---	---	45.68	45.54	---	45.64	---	
MIN	---	45.57	---	---	---	---	45.31	45.38	---	45.13	---	

05483600 MIDDLE RACCOON RIVER AT PANORA, IA

LOCATION.--Lat 41°41'14", long 94°22'15", in NE1/4 NW1/4 sec.5, T.79 N., R.30 W., Guthrie County, Hydrologic Unit 07100007, on left bank 15 ft (5 m) downstream from bridge on county highway, 0.2 mi (0.3 km) southwest of Panora, 1.5 mi (2.4 km) upstream from Andy's Branch, 1.6 mi (2.6 km) downstream from Lake Panorama, 18.2 mi (29.3 km) upstream from mouth, and at mile 267.2 (429.9 km) upstream from mouth of Des Moines River.

DRAINAGE AREA.--440 mi² (1,139 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1958 to current year.

REVISED RECORDS.--WDR IOWA 1974: 1973 (P).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 991.20 ft (302.118 m) NGVD.

REMARKS.--Records good except those for February, which are fair. City of Panora diverts approximately 100 acre-ft/yr (0.123 hm³/yr) above station. Flow regulated by dam on Lake Panorama since August 1970.

AVERAGE DISCHARGE.--22 years, 208 ft³/s (5.891 m³/s), 6.42 in/yr (163 mm/yr), 150,700 acre-ft/yr (186 hm³/yr); median of yearly mean discharges, 170 ft³/s (4.81 m³/s), 5.2 in/yr (132 mm/yr), 123,000 acre-ft/yr (152 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,000 ft³/s (396 m³/s) May 19, 1974, gage height, 14.80 ft (4.511 m), from rating curve extended above 5,200 ft³/s (147 m³/s) by step-backwater analysis; no flow June 9, 10, 1977, result of gate operation at Lake Panorama; minimum daily discharge excluding regulation at Lake Panorama, 3.0 ft³/s (0.085 m³/s) Jul. 9, 14, 22-23, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 10, 1953, reached a stage of 14.3 ft (4.36 m), from floodmark, discharge, about 14,000 ft³/s (396 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,350 ft³/s (94.9 m³/s) June 4, gage height, 8.30 ft (2.530 m) result of gate operation at Lake Panorama; maximum discharge excluding regulation at Lake Panorama, 854 ft³/s (24.2 m³/s) Aug. 11, gage height, 5.81 ft (1.771 m); minimum daily discharge 17 ft³/s (0.48 m³/s) Aug 28, 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	96	105	80	64	38	101	37	116	68	22	20
2	39	90	104	81	62	46	108	45	117	49	23	20
3	40	86	102	73	61	51	141	50	133	54	21	19
4	39	83	106	70	62	60	176	56	357	62	21	19
5	35	95	116	71	64	59	372	61	193	62	20	19
6	28	113	118	73	61	58	347	61	171	68	19	19
7	27	132	120	64	60	59	271	59	191	52	19	19
8	28	142	100	61	59	60	227	56	107	43	18	19
9	29	145	85	61	58	72	123	54	110	42	27	23
10	28	131	133	61	58	154	56	58	102	47	40	20
11	28	121	99	62	56	335	83	61	92	39	269	19
12	30	118	80	63	55	280	103	58	108	35	66	18
13	28	112	71	63	53	205	109	64	205	28	43	20
14	29	106	74	63	50	172	114	58	149	29	40	19
15	29	102	79	66	51	293	108	53	232	32	37	19
16	31	98	76	119	51	534	103	49	132	38	204	19
17	33	96	69	144	51	461	103	64	110	37	161	20
18	34	94	68	163	51	298	103	74	107	35	111	21
19	43	93	69	166	51	216	101	202	99	35	103	20
20	45	90	73	135	53	181	96	87	80	35	80	20
21	47	98	76	122	91	155	94	75	78	34	66	21
22	83	123	81	112	339	129	95	73	90	31	53	18
23	116	165	88	98	538	124	96	67	148	28	44	18
24	147	176	92	95	374	112	101	66	170	25	38	18
25	136	172	86	97	246	97	103	62	124	25	28	18
26	121	164	81	94	161	91	101	66	110	29	19	18
27	113	155	80	86	133	91	102	60	97	30	18	19
28	101	148	80	79	76	88	101	81	82	28	17	19
29	91	127	80	75	36	94	99	98	74	25	17	19
30	87	105	80	72	---	99	69	117	50	24	18	19
31	95	---	80	67	---	99	---	89	---	23	18	---
TOTAL	1806	3576	2751	2736	3125	4811	3906	2161	3934	1192	1680	579
MEAN	58.3	119	88.7	88.3	108	155	130	69.7	131	38.5	54.2	19.3
MAX	147	176	133	166	538	534	372	202	357	68	269	23
MIN	27	83	68	61	36	38	56	37	50	23	17	18
CFSM	.13	.27	.20	.20	.25	.35	.30	.16	.30	.09	.12	.04
IN.	.15	.30	.23	.23	.26	.41	.33	.18	.33	.10	.14	.05
AC-FT	3580	7090	5460	5430	6200	9540	7750	4290	7800	2360	3330	1150

CAL YR 1979	TOTAL	106491	MEAN	292	MAX	9450	MIN 24	CFSM .66	IN 9.00	AC-FT	211200	
WTR YR 1980	TOTAL	32257	MEAN	88.1	MAX	538	MIN 17	CFSM .20	IN 2.73	AC-FT	63980	

05483600 MIDDLE RACCOON RIVER AT PANORA, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 1979 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: March 1979 to current year.
WATER TEMPERATURES: March 1979 to current year.
SUSPENDED SEDIMENT DISCHARGE: March 1979 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 800 micromhos Oct. 29, 1979; minimum daily, 370 micromhos Mar. 23, 24, 26 1979.
WATER TEMPERATURES: Maximum daily, 32.0°C July 15, 1979; minimum daily, 1.0°C on Mar. 24, Nov. 29, 1979.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,690 mg/L April 20, 1979; minimum daily mean, 4 mg/L Dec. 31, 1979, Jan. 1, 1980.
SEDIMENT LOADS: Maximum daily, 4,050 tons (3,670 tonnes) April 20, 1979; minimum daily, 0.68 ton (0.62 tonnes) Aug. 30, 1980.

EXTREMES FOR CURRENT PERIOD: March to September 1979.
SPECIFIC CONDUCTANCE: Maximum daily, 615 micromhos Apr. 12, 19; minimum daily, 370 micromhos Mar. 23, 24, 26.
WATER TEMPERATURES: Maximum daily, 29.0°C Aug. 5; minimum daily, 1.0°C Mar. 24.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,690 mg/L April 20; minimum daily mean, 18 mg/L July 9.
SEDIMENT LOADS: Maximum daily, 4,050 tons (3,670 tonnes) April 20; minimum daily, 3.1 tons (2.8 tonnes) Aug. 18.

Water year 1980:
SPECIFIC CONDUCTANCE: Maximum daily, 800 micromhos Oct. 29; minimum daily, 420 micromhos May 24, 25, 28, June 2-4, 10, 14.
WATER TEMPERATURES: Maximum daily, 32.0°C July 15; minimum daily, 1.0°C Nov. 29.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 244 mg/L June 4; minimum daily mean, 4 mg/L Dec. 31, Jan. 1.
SEDIMENT LOADS: Maximum daily, 369 tons (335 tonnes) June 4; minimum daily, 0.68 tons (0.62 tonnes) AUG. 30, 1980.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						---	535	570	---	490	540	480
2						---	540	580	---	490	---	---
3						---	510	610	---	---	---	470
4						---	515	600	560	500	---	---
5						---	520	580	---	---	520	---
6						---	530	580	---	---	---	470
7						---	540	540	580	500	---	---
8						---	---	580	---	---	---	---
9						---	565	600	560	520	470	---
10						---	590	600	---	---	---	---
11						---	590	560	560	520	480	---
12						---	615	600	---	520	---	---
13						---	610	---	510	550	---	---
14						---	600	---	---	---	480	---
15						---	---	560	510	---	---	500
16						---	595	---	---	560	460	---
17						---	610	540	---	---	510	470
18						---	610	---	520	550	---	---
19						---	615	550	550	---	---	---
20						---	545	---	500	---	500	---
21						---	605	560	---	500	510	---
22						---	585	---	500	---	480	470
23						370	610	---	---	520	---	---
24						370	580	560	---	515	---	---
25						---	570	---	500	500	---	---
26						370	590	---	---	515	---	---
27						400	585	---	510	480	500	530
28						440	580	---	515	---	---	---
29						450	600	560	550	---	480	---
30						480	560	---	510	515	---	---
31						520	---	580	---	540	470	---

05483600 MIDDLE RACCOON RIVER AT PANORA, IA--Continued

WATER-QUALITY RECORDS

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	530	740	---	---	550	---	---	---	---	---	490	---
2	---	520	---	560	---	---	500	430	420	520	---	500
3	---	---	500	---	---	550	---	---	420	---	---	520
4	500	---	---	540	520	---	500	---	420	---	500	---
5	500	500	---	---	---	---	---	430	---	---	---	510
6	510	500	---	---	550	540	---	---	---	---	---	---
7	500	500	---	560	---	540	500	440	---	490	---	---
8	500	540	---	---	560	---	---	---	---	---	---	---
9	480	500	---	540	---	---	500	---	---	---	---	520
10	500	---	500	---	---	540	---	---	420	---	---	520
11	480	---	500	530	580	540	---	---	---	500	500	---
12	480	500	600	---	---	---	---	---	---	---	540	---
13	480	490	540	---	---	---	---	---	435	---	---	---
14	480	---	580	530	580	560	---	440	420	510	530	---
15	480	480	---	---	---	---	500	---	---	430	---	---
16	480	480	---	560	---	---	---	460	---	480	520	---
17	500	---	590	570	---	520	500	---	430	---	---	---
18	500	---	---	---	560	---	---	---	---	480	---	---
19	480	460	570	---	---	590	---	---	480	---	520	---
20	500	540	---	---	---	---	---	430	---	---	---	---
21	---	610	580	540	610	520	---	---	---	480	---	---
22	500	---	---	---	620	---	520	---	---	---	500	---
23	490	---	---	530	---	---	545	---	480	---	---	---
24	500	---	560	---	---	520	540	420	510	---	---	---
25	500	---	---	540	---	---	---	420	---	---	520	---
26	500	---	560	---	---	---	---	---	---	590	---	---
27	---	520	---	---	620	530	---	---	---	---	480	---
28	---	510	560	565	---	---	---	420	520	490	530	---
29	800	500	---	---	640	---	---	---	---	---	---	---
30	540	500	---	---	---	---	450	470	510	480	---	---
31	520	---	640	---	---	510	---	430	---	---	---	---

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						---	3.0	8.0	---	22.0	24.0	22.0
2						---	4.0	11.0	---	21.0	---	---
3						---	4.0	10.0	---	---	---	23.0
4						---	4.0	10.0	18.0	24.0	---	---
5						---	4.0	10.0	---	---	29.0	---
6						---	4.0	11.0	---	---	---	23.0
7						---	8.0	14.0	19.0	21.0	---	---
8						---	---	16.0	---	---	---	---
9						---	4.0	16.0	19.0	21.0	26.0	---
10						---	4.5	14.0	---	---	---	---
11						---	4.5	13.5	17.0	22.0	22.0	---
12						---	5.5	16.0	---	24.0	---	---
13						---	5.5	---	20.0	24.0	---	---
14						---	6.0	---	---	---	22.0	---
15						---	---	14.0	21.0	---	---	24.0
16						---	8.5	---	---	25.0	23.5	---
17						---	9.0	19.0	---	---	23.0	18.0
18						---	11.0	---	21.0	23.0	---	---
19						---	9.0	14.0	23.0	---	---	18.0
20						---	10.0	---	20.0	---	23.0	---
21						---	11.5	16.0	---	27.0	23.0	---
22						---	10.0	---	22.0	---	23.0	18.0
23						2.5	12.5	---	---	25.5	---	---
24						1.0	13.5	15.0	---	26.0	---	---
25						---	13.0	---	25.0	26.0	---	---
26						2.5	12.5	---	---	27.0	---	---
27						2.0	11.0	---	23.0	28.0	22.0	18.0
28						5.0	11.5	---	22.5	---	---	---
29						3.0	10.0	17.0	22.0	---	22.0	---
30						4.0	10.5	---	21.0	25.5	---	---
31						4.0	---	18.0	---	25.0	23.0	---

05483600 MIDDLE RACCOON RIVER AT PANORA, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.0	8.0	---	---	2.0	---	---	---	---	---	24.0	---
2	---	9.0	---	4.0	---	---	8.0	18.0	19.0	22.0	---	19.0
3	---	---	7.0	---	---	3.0	---	---	19.0	---	---	24.0
4	15.0	---	---	4.0	2.0	---	10.0	---	21.0	---	24.0	---
5	16.0	9.0	---	---	---	---	---	19.0	---	---	---	21.0
6	16.0	7.0	---	---	3.0	3.0	---	---	---	---	---	---
7	16.0	8.0	---	3.0	---	3.0	10.0	18.0	---	30.0	---	---
8	15.0	9.0	---	---	4.0	---	---	---	---	---	---	---
9	14.0	7.0	---	3.0	---	---	11.0	---	---	---	---	20.0
10	14.0	---	5.0	---	---	5.0	---	---	21.0	---	---	20.0
11	16.0	---	4.0	3.0	3.0	4.0	---	---	---	---	23.0	---
12	14.0	6.0	3.0	---	---	---	---	---	---	---	21.0	---
13	13.0	6.0	4.0	---	2.5	---	---	---	21.0	---	---	---
14	12.0	---	3.0	7.0	---	7.0	---	11.0	24.0	26.0	24.0	---
15	12.0	6.0	---	---	---	---	11.0	---	---	32.0	---	---
16	14.0	7.0	---	5.0	---	---	---	11.0	---	29.0	21.0	---
17	9.0	---	4.0	2.5	---	5.0	11.0	---	20.0	---	---	---
18	15.0	---	---	---	4.0	---	---	---	---	25.0	---	---
19	14.0	8.0	5.0	---	2.0	7.0	---	---	21.0	---	24.0	---
20	17.0	6.0	---	---	---	---	---	18.0	---	---	---	---
21	---	7.0	6.0	5.0	5.0	7.0	---	---	---	25.0	---	---
22	10.0	---	---	---	5.0	---	12.0	---	---	---	23.0	---
23	8.5	---	---	7.0	---	---	15.5	---	21.0	---	---	---
24	8.0	---	2.0	---	---	5.0	11.0	19.0	22.0	---	---	---
25	13.0	---	---	7.0	---	---	---	19.0	---	---	26.0	---
26	9.0	---	2.0	---	---	---	---	---	---	24.0	---	---
27	---	5.0	---	---	3.0	7.0	---	---	---	---	23.0	---
28	---	3.0	3.0	3.0	---	---	---	22.0	26.0	23.0	22.0	---
29	12.0	1.0	---	---	3.0	---	---	---	---	---	---	---
30	12.0	6.0	---	---	---	---	16.0	19.0	22.0	24.0	---	---
31	12.0	---	5.0	---	---	7.0	---	19.0	---	---	---	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1											---	---
2											---	---
3											---	---
4											---	---
5											---	---
6											---	---
7											---	---
8											---	---
9											---	---
10											---	---
11											---	---
12											---	---
13											---	---
14											---	---
15											---	---
16											---	---
17											---	---
18											---	---
19											---	---
20											---	---
21											---	---
22											---	---
23											---	---
24											372	2020
25											235	419
26											243	449
27											225	395
28											189	300
29											146	237
30											128	422
31											86	360
TOTAL											---	4602

05483600 MIDDLE RACCOON RIVER AT PANORA, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DAY	APRIL MEAN CONCEN-TRATION (MG/L)	APRIL LOADS (T/DAY)	MAY MEAN CONCEN-TRATION (MG/L)	MAY LOADS (T/DAY)	JUNE MEAN CONCEN-TRATION (MG/L)	JUNE LOADS (T/DAY)	JULY MEAN CONCEN-TRATION (MG/L)	JULY LOADS (T/DAY)	AUGUST MEAN CONCEN-TRATION (MG/L)	AUGUST LOADS (T/DAY)	SEPTEMBER MEAN CONCEN-TRATION (MG/L)	SEPTEMBER LOADS (T/DAY)
1	89	166	71	34	20	9.8	75	99	29	26	61	21
2	119	210	115	73	20	9.6	70	62	27	22	65	21
3	105	167	120	304	21	9.9	74	55	24	8.3	65	19
4	115	152	109	170	21	9.7	53	45	22	4.4	59	16
5	75	70	94	108	21	5.4	44	36	20	5.4	64	15
6	49	63	66	74	24	5.6	35	26	44	13	109	24
7	78	97	107	124	26	7.9	27	15	49	15	102	21
8	55	67	85	119	28	25	25	13	46	14	88	18
9	36	29	89	102	28	22	18	8.6	38	11	77	15
10	31	30	63	59	30	18	54	42	61	38	66	13
11	52	50	59	26	31	7.7	167	132	36	7.6	63	12
12	73	78	65	25	39	3.4	65	43	37	7.8	60	11
13	56	59	69	38	54	8.7	36	18	39	8.3	54	9.5
14	31	31	75	47	43	9.8	24	11	45	9.6	47	7.9
15	27	24	86	55	38	14	23	9.7	79	59	43	6.8
16	38	23	95	215	67	33	21	7.3	47	45	41	6.2
17	158	113	87	29	54	23	22	6.2	50	28	39	5.6
18	101	75	95	8.2	47	19	37	9.9	48	3.1	47	6.3
19	76	58	122	134	49	18	43	12	47	3.3	80	9.9
20	1690	4050	118	189	57	22	46	13	47	4.6	78	9.5
21	111	300	100	118	50	20	50	13	70	33	62	7.5
22	53	94	83	35	42	17	46	12	105	57	48	5.6
23	46	70	66	22	38	15	129	441	74	20	44	5.0
24	55	65	56	38	37	14	75	330	82	25	41	4.5
25	123	163	51	38	33	13	67	146	74	22	37	4.2
26	73	126	47	34	31	11	55	45	58	17	37	4.2
27	106	177	42	29	804	2180	54	5.1	47	14	36	4.0
28	109	82	37	24	236	2060	85	17	49	15	46	5.2
29	57	40	30	18	90	345	94	44	56	18	46	5.1
30	57	25	26	15	87	144	101	187	61	21	45	5.0
31	---	---	21	12	---	---	47	72	58	22	---	---
TOTAL	---	6754	---	2316.2	---	5100.5	---	1975.8	---	597.4	---	318.0

TOTAL LOAD FOR YEAR: 21663.9 TONS.

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	OCTOBER MEAN CONCEN-TRATION (MG/L)	OCTOBER LOADS (T/DAY)	NOVEMBER MEAN CONCEN-TRATION (MG/L)	NOVEMBER LOADS (T/DAY)	DECEMBER MEAN CONCEN-TRATION (MG/L)	DECEMBER LOADS (T/DAY)	JANUARY MEAN CONCEN-TRATION (MG/L)	JANUARY LOADS (T/DAY)	FEBRUARY MEAN CONCEN-TRATION (MG/L)	FEBRUARY LOADS (T/DAY)	MARCH MEAN CONCEN-TRATION (MG/L)	MARCH LOADS (T/DAY)
1	43	5.3	98	25	30	8.5	4	.86	30	5.2	68	7.0
2	41	4.3	42	10	27	7.6	9	2.0	26	4.4	52	6.5
3	43	4.6	32	7.4	21	5.8	7	1.4	21	3.5	39	5.4
4	31	3.3	30	6.7	27	7.7	5	.95	18	3.0	38	6.2
5	22	2.1	47	12	34	11	13	2.5	29	5.0	37	5.9
6	24	1.8	52	16	38	12	22	4.3	47	7.7	34	5.3
7	20	1.5	42	15	41	13	21	3.6	47	7.6	27	4.3
8	26	2.0	37	14	38	10	18	3.0	43	6.8	27	4.4
9	27	2.1	42	16	34	7.8	27	4.4	43	6.7	25	4.9
10	26	2.0	44	16	89	32	44	7.2	42	6.6	33	14
11	26	2.0	39	13	97	26	60	10	42	6.4	72	65
12	25	2.0	50	16	66	14	61	10	38	5.6	70	53
13	19	1.4	40	12	36	6.9	59	10	31	4.4	54	30
14	27	2.1	39	11	19	3.8	58	9.9	28	3.8	39	18
15	22	1.7	38	10	28	6.0	57	10	27	3.7	88	70
16	43	3.6	34	9.0	41	8.4	70	22	26	3.6	202	291
17	38	3.4	31	8.0	34	6.3	31	12	25	3.4	214	266
18	47	4.3	28	7.1	31	5.7	35	15	24	3.3	125	101
19	48	5.6	25	6.3	35	6.5	49	22	22	3.0	39	23
20	38	4.6	23	5.6	32	6.3	46	17	21	3.0	30	15
21	31	3.9	24	6.4	29	6.0	43	14	30	7.4	48	20
22	51	11	40	13	24	5.2	33	10	24	22	42	15
23	44	14	48	21	18	4.3	19	5.0	20	29	37	12
24	48	19	46	22	14	3.5	14	3.6	21	21	32	9.7
25	44	16	43	20	24	5.6	12	3.1	17	11	29	7.6
26	37	12	38	17	40	8.7	9	2.3	30	13	26	6.4
27	36	11	34	14	28	6.0	9	2.1	41	15	24	5.9
28	38	10	36	14	12	2.6	34	7.3	49	10	21	5.0
29	61	15	41	14	9	1.9	37	7.5	65	6.3	21	5.3
30	52	12	26	7.4	7	1.5	32	6.2	---	---	24	6.4
31	39	10	---	---	4	.86	30	5.4	---	---	26	6.9
TOTAL	---	193.6	---	384.9	---	251.46	---	234.61	---	231.4	---	1096.1

05483600 MIDDLE RACCOON RIVER AT PANORA, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	27	7.4	43	4.3	169	53	64	12	23	1.4	21	1.1
2	26	7.6	42	5.1	123	39	45	6.0	27	1.7	23	1.2
3	24	9.1	42	5.7	99	36	39	5.7	28	1.6	15	.77
4	29	14	42	6.4	244	369	45	7.5	28	1.6	22	1.1
5	49	49	43	7.1	140	73	44	7.4	25	1.4	21	1.1
6	46	43	48	7.9	102	47	62	11	20	1.0	21	1.1
7	33	24	52	8.3	103	53	60	8.4	16	.82	22	1.1
8	37	23	56	8.5	77	22	57	6.6	15	.73	22	1.1
9	42	14	58	8.5	70	21	55	6.2	20	1.5	38	2.4
10	41	6.2	59	9.2	62	17	63	8.0	22	2.4	36	1.9
11	40	9.0	61	10	54	13	57	6.0	82	60	34	1.7
12	49	14	62	9.7	97	28	55	5.2	33	5.9	32	1.6
13	53	16	63	11	135	75	55	4.2	32	3.7	30	1.6
14	48	15	63	9.9	80	32	52	4.1	32	3.5	29	1.5
15	44	13	55	7.9	126	79	42	3.6	29	2.9	28	1.4
16	52	14	46	6.1	86	31	37	3.8	70	39	27	1.4
17	56	16	44	7.6	77	23	35	3.5	50	22	25	1.4
18	55	15	46	9.2	73	21	55	5.2	40	12	24	1.4
19	53	14	66	36	85	23	59	5.6	37	10	24	1.3
20	52	13	48	11	73	16	47	4.4	37	8.0	22	1.2
21	51	13	51	10	70	15	39	3.6	37	6.6	20	1.1
22	46	12	58	11	84	20	38	3.2	36	5.2	19	.92
23	42	11	64	12	83	33	36	2.7	36	4.3	17	.83
24	52	14	69	12	50	23	32	2.2	35	3.6	17	.83
25	54	15	73	12	37	12	33	2.2	40	3.0	19	.92
26	56	15	71	13	32	9.5	70	5.5	42	2.2	20	.97
27	58	16	65	11	43	11	50	4.1	33	1.6	19	.97
28	56	15	66	14	68	15	24	1.8	15	.69	19	.97
29	56	15	94	25	58	12	18	1.2	15	.69	19	.97
30	46	8.6	195	62	53	7.2	14	.91	14	.68	18	.92
31	---	---	124	30	---	---	18	1.1	21	1.0	---	---
TOTAL	---	470.9	---	401.4	---	1228.7	---	152.91	---	210.71	---	36.77

TOTAL LOAD FOR YEAR: 4893.46 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	TEMPER-ATURE, WATER (DEG C) (00010)	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
APR									
12...	1550	6.0	390	60	63	--	--	--	96
JUN									
19...	1445	23.0	138	39	15	--	--	--	93
27...	0645	21.0	258	1590	1110	64	71	89	99
JUL									
13...	0940	23.5	184	36	18	--	--	--	98
AUG									
16...	0900	23.5	107	42	12	--	--	--	98

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	TEMPER-ATURE, WATER (DEG C) (00010)	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT						
23...	1300	5.5	94	30	7.6	95
NOV						
13...	1545	6.0	110	39	12	87
APR						
23...	1615	15.5	95	38	9.7	99
JUN						
04...	1215	21.0	1060	442	1270	90
JUL						
15...	1200	32.0	33	36	3.2	95
AUG						
27...	0940	23.0	19	32	1.6	90

05483600 MIDDLE RACCOON RIVER AT PANORA, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	NUMBER OF SAM-PLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)
APR							
12...	1550	390	8	5	8	15	54
MAY							
11...	1120	68	8	5	7	16	45
JUN							
19...	1445	138	6	1	1	6	36
JUL							
13...	0940	184	6	1	2	11	33
AUG							
16...	0900	107	7	1	2	13	50

DATE	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
APR						
12...	81	93	99	100	--	--
MAY						
11...	60	64	69	74	83	100
JUN						
19...	58	66	74	85	91	100
JUL						
13...	58	74	82	90	97	100
AUG						
16...	68	73	76	81	93	100

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	NUMBER OF SAM-PLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)
OCT							
23...	1300	94	7	1	2	15	43
NOV							
13...	1545	110	5	2	3	13	45
MAR							
19...	1515	206	7	3	5	25	67
APR							
23...	1615	95	5	3	3	15	37
JUN							
04...	1215	1060	7	14	17	26	49
JUL							
15...	1200	33	7	2	3	12	47
AUG							
27...	0940	19	7	1	1	5	29

DATE	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
OCT						
23...	59	67	73	79	85	100
NOV						
13...	74	84	88	93	96	100
MAR						
19...	86	89	91	93	95	100
APR						
23...	51	59	66	73	88	100
JUN						
04...	80	93	98	100	--	--
JUL						
15...	71	75	78	81	85	100
AUG						
27...	69	78	83	89	95	100

05484000 SOUTH RACCOON RIVER AT REDFIELD, IA

LOCATION.--Lat 41°34'48", long 94°10'58", in SW1/4 SW1/4 sec.3, T.78 N., R.29 W., Dallas County, Hydrologic Unit 07100007, on left bank 15 ft (5 m) downstream from bridge on county highway at Redfield, 0.8 mi (1.3 km) downstream from bridge on U.S. Highway 6, 1.0 mi (1.6 km) downstream from Middle Raccoon River, 16.4 mi (26.4 km) upstream from mouth, and at mile 248.0 (399.0 km) upstream from mouth of Des Moines River.

DRAINAGE AREA.--988 mi² (2,558 km²).

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1608: 1940.

GAGE.--Water-stage recorder. Datum of gage is 896.43 ft (273.232 m) NGVD. Prior to June 12, 1946, nonrecording gage, and June 12, 1946, to Sept. 30, 1966, water-stage recorder at site 20 ft (6 m) upstream at same datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--40 years, 443 ft³/s (12.55 m³/s), 6.09 in/yr (155 mm/yr), 321,000 acre-ft/yr (396 hm³/yr); median of yearly mean discharges, 390 ft³/s (11.0 m³/s), 5.4 in/yr (137 mm/yr), 283,000 acre-ft/yr (349 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,000 ft³/s (991 m³/s) July 2, 1958, gage height, 29.04 ft (8.851 m), from floodmark; minimum daily, 17 ft³/s (0.48 m³/s) Aug. 4, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,700 ft³/s (76.5 m³/s) June 15, gage height, 7.47 ft (2.277 m), no peak above base of 5,000 ft³/s (142 m³/s); minimum daily, 49 ft³/s (1.39 m³/s) Sept. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	99	241	251	182	140	88	193	118	490	164	63	216
2	102	220	255	180	136	98	218	109	538	161	63	107
3	105	210	279	168	134	112	298	113	547	148	63	81
4	105	201	288	165	134	135	409	117	763	145	65	72
5	102	230	270	165	139	133	490	120	527	148	70	68
6	99	287	275	155	139	131	596	117	482	151	68	68
7	90	305	283	140	130	132	475	111	454	148	63	63
8	90	306	222	125	126	136	402	103	347	142	57	61
9	90	300	227	118	120	165	361	100	287	132	58	60
10	90	284	285	115	120	280	197	102	256	117	91	58
11	90	263	284	128	116	511	196	113	231	114	247	55
12	93	256	223	132	110	453	216	107	216	99	439	58
13	90	251	180	136	114	355	222	108	471	84	156	93
14	90	237	175	130	110	307	220	111	543	72	129	80
15	90	234	180	130	113	860	224	108	1830	78	113	60
16	99	230	165	260	108	976	213	105	654	96	418	58
17	105	223	145	330	112	807	205	141	427	96	666	57
18	102	219	146	370	118	630	205	180	340	93	304	56
19	148	219	147	370	118	629	205	219	322	90	253	56
20	138	217	151	310	120	518	199	300	258	87	201	55
21	132	224	160	270	220	295	194	168	245	87	169	54
22	267	280	175	245	420	250	188	160	237	75	142	53
23	405	326	190	225	1070	230	185	151	340	72	120	51
24	369	330	205	210	691	217	181	145	441	66	105	49
25	323	330	195	215	447	194	185	135	346	66	93	54
26	287	324	185	205	294	184	189	126	279	79	75	55
27	266	308	182	190	276	177	186	132	252	84	63	53
28	245	285	185	175	170	178	184	109	220	76	64	51
29	217	238	183	163	115	187	176	190	195	71	67	51
30	210	234	182	153	---	199	179	425	167	66	71	52
31	227	---	182	146	---	203	---	294	---	63	188	---
TOTAL	4965	7812	6455	6006	6160	9770	7591	4637	12705	3170	4744	2005
MEAN	160	260	208	194	212	315	253	150	424	102	153	66.8
MAX	405	330	288	370	1070	976	596	425	1830	164	666	216
MIN	90	201	145	115	108	88	176	100	167	63	57	49
CFSM	.16	.26	.21	.20	.22	.32	.26	.15	.43	.10	.16	.07
IN.	.19	.29	.24	.23	.23	.37	.29	.17	.48	.12	.18	.08
AC-FT	9850	15500	12800	11910	12220	19380	15060	9200	25200	6290	9410	3980

CAL YR 1979	TOTAL	239382	MEAN 656	MAX 15800	MIN 67	CFSM .66	IN 9.01	AC-FT	474800	
WTR YR 1980	TOTAL	76020	MEAN 208	MAX 1830	MIN 49	CFSM .21	IN 2.86	AC-FT	150800	

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	137.1	141.7	111.4	128.5	313.1	831.3	593.3	677.0	983.0	454.2	299.9	221.4	410.5
RUNOFF (INCHES)	0.20	0.16	0.13	0.15	0.33	0.97	0.67	0.79	1.11	0.53	0.35	0.25	5.64
STD. DEVIATION	0.19	0.11	0.08	0.12	0.24	0.83	0.53	0.66	1.11	0.57	0.31	0.24	2.70
PERCENT OF ANNUAL	3.50	3.00	2.20	2.60	6.40	17.00	12.00	14.00	20.00	9.20	6.20	4.40	----
PRECIP. (INCHES)	1.75	1.20	0.84	0.81	1.00	1.99	2.77	3.92	5.87	3.37	3.58	2.80	29.90

05484500 RACCOON RIVER AT VAN METER, IA

LOCATION.--Lat 41°32'02", long 93°56'59", in SW1/4 SW1/4 sec.22, T.78 N., R.27 W., Dallas County, Hydrologic Unit 07100007, on right bank 10 ft (3.0 m) downstream from bridge on county highway R16, 0.3 mi (0.5 km) northeast of Van Meter, 0.7 mi (1.1 km) upstream from small left bank tributary, 1.1 mi (1.8 km) downstream from confluence of North and South Raccoon River, 29.0 mi (46.7 km) upstream from mouth, and at mile 230.5 (370.9 km) upstream from mouth of Des Moines River.

DRAINAGE AREA.--3,441 mi² (8,912 km²).

PERIOD OF RECORD.--April 1915 to current year. Prior to October 1934, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1927 (M). WSP 1438: Drainage area. WSP 1508: 1915 (M), 1916-17, 1918-23 (M), 1925 (M), 1926, 1933 (M), 1939 (M), 1947 (M), 1949 (M).

GAGE.--Water-stage recorder. Datum of gage is 841.16 ft (256.386 m) NGVD. See WSP 1308 for history of changes prior to Aug. 8, 1934.

REMARKS.--Records good except those for winter period, which are poor. Corps of Engineers rain gage and gage height telemeters at station.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--65 years, 1,298 ft³/s (36.76 m³/s), 5.12 in/yr (130 mm/yr), 940,400 acre-ft/yr (1,160 hm³/yr); median of yearly mean discharges, 1,120 ft³/s (31.7 m³/s), 4.4 in/yr (112 mm/yr), 811,000 acre-ft/yr (1,000 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,200 ft³/s (1,170 m³/s) June 13, 1947, gage height, 21.37 ft (6.514 m), from floodmark; maximum gage height, 21.77 ft (6.635 m) July 3, 1958; minimum daily discharge, 10 ft³/s (0.28 m³/s) Jan. 22-31, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,870 ft³/s (138 m³/s) June 15, gage height, 7.76 ft (2.365 m), no peak above base of 8,500 ft³/s (241 m³/s); minimum daily, 121 ft³/s (3.43 m³/s) Aug. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	526	1430	1490	670	620	720	1160	934	2010	753	164	546
2	491	1380	1320	650	610	670	1240	879	2530	714	156	365
3	474	1600	1260	630	600	650	1390	863	2560	652	147	295
4	456	1730	1350	610	580	660	1660	830	3250	637	159	294
5	434	1670	1650	580	580	680	2310	830	3960	640	158	286
6	426	1720	1750	560	570	680	3630	808	3440	616	151	264
7	407	1870	1670	540	560	710	3450	785	3040	587	137	245
8	398	2280	1520	530	550	760	2960	755	2400	552	124	231
9	388	2490	1320	520	550	870	2690	740	2050	586	121	220
10	375	2360	1290	520	540	1220	2410	726	1890	638	180	215
11	369	2140	1280	530	520	1600	2260	726	1850	595	391	206
12	367	1980	1140	550	500	2100	2220	719	1600	506	731	207
13	357	1810	960	560	470	2400	2100	712	1660	457	531	278
14	357	1670	800	590	470	2390	1950	705	1680	399	470	229
15	357	1580	820	720	460	2450	1840	698	3780	375	399	186
16	357	1510	790	840	460	2500	1740	684	1990	357	953	164
17	357	1470	760	960	470	3070	1640	712	1720	357	1110	157
18	360	1440	920	1310	470	2990	1540	770	2010	359	722	155
19	421	1410	1000	1400	480	2750	1460	285	2030	363	661	149
20	430	1390	1080	1380	510	2470	1410	920	1760	326	835	149
21	399	1390	1090	1260	620	2090	1360	815	1540	301	959	140
22	719	1440	1060	1140	1000	1860	1310	800	1430	268	777	134
23	1120	1660	1000	1020	1420	1720	1250	792	1450	246	618	127
24	1330	2080	940	950	1600	1570	1190	778	1760	231	511	124
25	1820	2670	900	870	1500	1430	1170	762	1470	219	433	135
26	2390	2600	870	810	1300	1320	1140	755	1280	247	372	181
27	2210	2350	840	750	960	1200	1100	748	1140	239	309	396
28	1960	2130	810	700	850	1140	1120	719	1030	218	280	400
29	1710	1910	780	680	800	1120	992	928	917	209	270	338
30	1520	1680	750	650	---	1130	960	1160	828	205	261	304
31	1420	---	720	630	---	1150	---	1430	---	181	501	---
TOTAL	24705	54840	33930	24110	20620	48070	52652	24768	60055	13033	13591	7120
MEAN	797	1828	1095	778	711	1551	1755	799	2002	420	438	237
MAX	2390	2670	1750	1400	1600	3070	3630	1430	3960	753	1110	546
MIN	357	1380	720	520	460	650	960	285	828	181	121	124
CFSM	.23	.53	.32	.23	.21	.45	.51	.23	.58	.12	.13	.07
IN.	.27	.59	.37	.26	.22	.52	.57	.27	.65	.14	.15	.08
AC-FT	49000	108800	67300	47820	40900	95350	104400	49130	119100	25850	26960	14120

CAL YR 1979 TOTAL 1014795 MEAN 2780 MAX 27600 MIN 250 CFSM .81 IN 10.97 AC-FT 2013000
WTR YR 1980 TOTAL 377494 MEAN 1031 MAX 3960 MIN 121 CFSM .30 IN 4.08 AC-FT 748800

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	477.5	493.5	328.3	358.2	760.0	2447.4	2529.0	2357.9	3577.6	1731.1	952.2	709.4	1404.30
RUNOFF (INCHES)	0.21	0.16	0.11	0.12	0.23	0.82	0.82	0.79	1.16	0.58	0.31	0.23	5.54
STD. DEVIATION	0.26	0.14	0.09	0.12	0.18	0.64	0.76	0.64	0.94	0.53	0.35	0.26	2.93
PERCENT OF ANNUAL	3.70	2.90	1.90	2.20	4.50	15.00	15.00	14.00	21.00	10.00	5.50	4.20	----
PRECIP. (INCHES)	2.03	1.28	0.89	1.02	0.90	1.96	2.79	3.78	4.84	3.14	3.84	3.24	29.70

05484800 WALNUT CREEK AT DES MOINES, IA

LOCATION.--Lat 41°35'14", long 93°42'11", in SW1/4 SE1/4 sec.2, T.78 N., R.25 W., Polk County, Hydrologic Unit 07100006, on left bank, 25 ft (8 m) downstream from bridge on 63rd Street in Des Moines, and 2.2 mi (3.5 km) upstream from Raccoon River.

DRAINAGE AREA.--78.4 mi² (203 km²).

PERIOD OF RECORD.--October 1971 to current year.

REVISED RECORDS.--WDR Iowa 1973: 1972; WDR Iowa 1975: 1973-74.

GAGE.--Water-stage recorder. Datum of gage is 804.04 ft (244.157 m) NGVD (levels by Iowa Natural Resources Council).

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--9 years, 63.7 ft³/s (1.804 m³/s), 10.69 in/yr (272 mm/yr), 46,150 acre-ft/yr (56.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,000 ft³/s (255 m³/s) July 1, 1973, gage height, 17.72 ft (5.401 m); no flow for many days in 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 600 ft³/s (17.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 1	0300	674	19.1	8.60	2.621	Aug. 16	0700	*954	27.0	*9.80	2.987
June 4	1245	827	23.4	9.28	2.828						

Minimum daily discharge, 0.01 ft³/s (<0.001 m³/s) Sept. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	23	18	6.8	37	11	19	13	232	14	1.0	7.9
2	10	22	17	6.8	39	12	20	14	177	11	.72	3.8
3	9.8	20	16	6.8	40	14	39	12	133	9.4	.50	2.8
4	9.2	19	15	6.6	41	16	28	14	486	9.4	42	7.3
5	9.0	45	14	6.4	43	19	27	13	207	11	9.3	.85
6	9.4	31	13	6.2	45	18	30	14	162	13	7.3	.68
7	9.2	29	12	5.8	51	20	26	12	141	9.6	7.3	.68
8	9.0	29	11	5.6	54	24	25	11	80	9.0	7.3	.51
9	9.0	27	10	5.4	45	34	31	12	67	8.0	6.7	2.8
10	8.8	24	9.6	5.6	42	45	26	17	59	7.2	6.2	.51
11	9.0	23	9.2	6.0	42	38	28	14	49	5.4	36	.51
12	9.3	24	9.0	6.4	42	33	25	10	50	4.0	11	.85
13	9.0	22	8.8	8.0	43	30	23	8.8	87	3.6	14	20
14	9.2	22	8.6	10	45	32	24	8.8	52	2.8	21	2.8
15	9.6	23	8.6	30	47	33	25	7.9	99	2.2	8.8	2.8
16	9.6	17	8.8	99	50	26	24	10	55	2.0	302	2.0
17	11	18	9.0	80	54	17	24	40	45	1.6	79	1.8
18	16	17	9.2	40	57	12	23	21	42	2.6	26	1.4
19	19	17	10	33	60	11	22	16	36	2.2	12	1.4
20	5.2	16	11	31	64	9.6	22	13	31	2.2	7.3	1.1
21	36	37	12	30	68	8.0	24	12	27	2.0	2.0	.04
22	221	28	11	29	50	7.5	24	11	41	1.8	.85	.64
23	137	25	11	28	32	7.3	21	11	54	1.6	.34	.02
24	79	24	9.0	28	22	7.9	21	11	28	1.4	.17	.01
25	55	23	8.4	28	20	10	20	9.8	31	1.4	.17	4.7
26	43	25	7.6	28	17	13	21	8.4	32	1.8	.17	.80
27	36	23	8.0	28	14	14	18	7.9	26	2.2	.34	.02
28	30	23	7.8	28	12	14	14	14	23	3.0	.34	.02
29	28	19	7.6	29	12	19	12	17	20	2.6	.17	.02
30	26	19	7.6	32	---	20	13	79	16	2.0	11	.02
31	31	---	7.4	35	---	18	---	36	---	1.0	54	---
TOTAL	922.3	714	325.2	728.4	1188	593.3	700	498.6	2588	151.0	674.97	68.78
MEAN	29.8	23.8	10.5	23.5	41.0	19.1	23.3	16.1	86.3	4.87	21.8	2.29
MAX	221	45	18	99	68	45	39	79	486	14	302	20
MIN	5.2	16	7.4	5.4	12	7.3	12	7.9	16	1.0	.17	.01
CFSM	.38	.30	.13	.30	.52	.24	.30	.21	1.10	.06	.28	.03
IN.	.44	.34	.15	.35	.56	.28	.33	.24	1.23	.07	.32	.03
AC-FT	1830	1420	645	1440	2360	1180	1390	989	5130	300	1340	136

CAL YR 1979 TOTAL 22852.40 MEAN 62.6 MAX 490 MIN 5.2 CFSM .80 IN 10.84 AC-FT 45330
WTR YR 1980 TOTAL 9152.55 MEAN 25.0 MAX 486 MIN .01 CFSM .32 IN 4.34 AC-FT 18150

05485500 DES MOINES RIVER BELOW RACCOON RIVER AT DES MOINES, IA

LOCATION.--Lat 41°34'30", long 93°35'48", in NE1/4 SE1/4 sec.10, T.78 N., R.24 W., Polk County, Hydrologic Unit 07100008, on right bank 10 ft (3 m) downstream from bridge on Southeast 14th Street at Des Moines, 0.8 mi (1.3 km) downstream from Raccoon River and Scott Street Dam, and at mile 200.7 (322.9 km).

DRAINAGE AREA.--9,879 mi² (25,586 km²).

PERIOD OF RECORD.--April 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1943 (P).

GAGE.--Water-stage recorder. Datum of gage is 762.52 ft (232.42 m) NGVD. Prior to Oct. 1, 1951, and Oct. 1, 1953, to Sept. 30, 1959, water-stage recorder above Scott Street Dam, 0.8 mi (1.3 km) upstream at datum 11.16 ft (3.40 m) higher. Oct. 1, 1951, to Sept. 30, 1953, and Oct. 1, 1959 to Sept. 30, 1961, nonrecording gage at present site and datum.

REMARKS.--Records good except those for winter period, which are poor. Des Moines municipal water supply is taken from infiltration galleries on Raccoon River, 3.5 mi (5.6 km) above station. Average daily pumpage was about 55 ft³/s (1.56 m³/s). At times, water is pumped from Raccoon River into recharge basins, or into Waterworks Reservoir, capacity, 4,800 acre-ft (5.92 hm³). Effluent from sewage treatment plant enters the river 2.3 mi (3.7 km) below station. Net effect of diversions not known. Several observations of water temperature were made during the year. Flow regulated by Saylorville Lake (station 05481630) 13.0 mi (20.9 km) upstream, since Apr. 12, 1977. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Ten discharge measurements furnished by Corps of Engineers. Average monthly pumpage from galleries furnished by Des Moines Water Works.

AVERAGE DISCHARGE.--40 years, 4,074 ft³/s (115 m³/s), 5.60 in/yr (142 mm/yr), 2,952,000 acre-ft/yr (3,640 hm³/yr); median of yearly mean discharges, 3,530 ft³/s (100 m³/s), 4.8 in/yr (122 mm/yr), 2,560,000 acre-ft/yr (3,156 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 77,000 ft³/s (2,180 m³/s) June 26, 1947, gage height, 20.8 ft (6.34 m) in gage well, 21.6 ft (6.58 m) from outside floodmark, site and datum then in use; minimum daily, 26 ft³/s (0.74 m³/s) Jan. 16-29, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1893, that of June 26, 1947, site and datum then in use. Flood of May 31, 1903, reached a stage of 20.9 ft (6.37 m), from flood profile, at Scott Street site and datum, by office of Des Moines City Engineer.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,900 ft³/s (422 m³/s) June 19, gage height, 18.17 ft (5.538 m); minimum daily, 641 ft³/s (18.2 m³/s) Aug. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4930	5150	5480	3150	2100	1840	3330	3640	5080	2880	1020	2580
2	4690	4950	5170	3120	2070	1780	3500	3370	6680	2750	998	2480
3	4380	4650	4170	2970	2000	1950	4120	3320	8100	2570	939	2140
4	4330	4930	3640	2900	1860	1900	4920	3100	9780	2530	892	2050
5	4140	5320	4220	2770	1770	1660	6320	2810	11900	2520	858	2600
6	3870	5360	5510	2520	1720	1610	8620	2780	11400	2250	790	2340
7	3710	6250	6040	2030	1720	1640	10100	2740	10800	2070	662	2340
8	3490	7990	5480	1900	1750	1650	9840	2700	9670	2010	641	2310
9	3440	8840	4790	1820	1690	1690	9570	2680	9030	1850	723	2290
10	3330	9710	4490	1700	1700	1800	9360	2620	8710	1980	982	2210
11	3060	9040	3970	1510	1660	2290	8800	2480	8260	1980	1370	2000
12	2900	8010	4170	1750	1640	3130	8420	2470	6990	1940	1630	1650
13	2450	7610	3810	1780	1520	3910	8350	2450	6690	1780	1420	1380
14	2060	7470	2600	2100	1480	3520	7620	2430	6530	1540	1020	1280
15	1980	7250	2500	2270	1490	3590	6470	2420	7800	1480	1620	1230
16	1960	6930	2600	3190	1480	4740	6430	2420	8640	1450	2750	1340
17	1910	6680	2400	3670	1450	5310	6400	2550	10100	1390	3050	1510
18	1980	6650	2200	3600	1400	6540	5590	2500	12600	1370	3230	1130
19	2050	6450	1920	3620	1390	6530	4890	2550	14700	1250	3520	1010
20	2020	6180	1870	3810	1390	7870	4820	2640	13600	1220	3790	905
21	2080	6230	2480	4160	1420	7940	4750	2760	11400	1220	3830	884
22	3150	5940	3780	3730	1880	6280	4730	2750	8380	1190	3550	955
23	3890	5850	3890	3200	2640	5630	4630	2720	7590	1160	3130	1080
24	4080	7610	3800	3080	2920	5270	4560	2720	7640	1060	3010	1120
25	5270	8730	3710	2900	3150	4830	4550	2640	7250	1020	2910	1650
26	7130	9010	3660	2730	3490	4590	4470	2530	6160	1120	2690	2540
27	7800	8750	3670	2530	3470	4270	4420	2430	5010	1070	2260	2750
28	7350	8370	3480	2520	3130	4000	4330	2350	4130	1070	1920	2900
29	6350	7660	3260	2500	2480	3680	3910	2400	3530	1050	1740	2620
30	5060	6650	3260	2520	---	3590	3820	2840	3120	1050	1810	2120
31	5260	---	3230	2380	---	3480	---	4100	---	1040	2350	---
TOTAL	120100	210220	115250	84430	57860	118510	181640	84910	251270	50860	61105	55394
MEAN	3874	7007	3718	2724	1995	3823	6055	2739	8376	1641	1971	1846
MAX	7800	9710	6040	4160	3490	7940	10100	4100	14700	2880	3830	2900
MIN	1910	4650	1870	1510	1390	1610	3330	2350	3120	1020	641	884
AC-FT	238200	417000	228600	167500	114800	235100	360300	168400	498400	100900	121200	109900

CAL YR 1979 TOTAL 3087560 MEAN 8459 MAX 34800 MIN 540 AC-FT 6124000
WTR YR 1980 TOTAL 1391549 MEAN 3802 MAX 14700 MIN 641 AC-FT 2760000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	1371.0	1416.7	942.6	856.9	1612.8	5741.2	8411.8	6426.7	8766.0	5055.6	2399.3	2036.5	3798.9
RUNOFF (INCHES)	0.21	0.16	0.11	0.10	0.17	0.67	0.95	0.75	0.99	0.59	0.28	0.23	5.22
STD. DEVIATION	0.24	0.19	0.09	0.11	0.15	0.47	0.94	0.57	0.76	0.54	0.26	0.25	2.86
PERCENT OF ANNUAL	3.90	3.20	2.00	2.00	3.60	13.00	19.00	14.00	19.00	11.00	5.30	4.40	----
PRECIP. (INCHES)	2.02	1.34	1.03	1.08	0.99	2.18	2.77	3.97	4.62	3.09	3.11	2.90	29.10

05485520 DES MOINES RIVER BELOW DES MOINES, IA

WATER-QUALITY RECORDS

LOCATION.--Lat 41°33'03", long 93°31'29", in NE1/4 NE1/4 sec.20, T.78 N., R.23 W., Polk County, Hydrologic Unit 07100008, at bridge on State Highway 5 near east edge of Des Moines, 0.2 mi (0.3 km) downstream from unnamed stream, 1.4 mi (2.3 km) upstream from Fourmile Creek, and at mile 195.9 (318.2 km).

DRAINAGE AREA.--9,901 mi² (25,644 km²).

PERIOD OF RECORD.--Water years 1971, 1975 to current year.

REMARKS.--Water discharge estimated on basis of records at gaging station 4.8 mi (7.7 km) upstream at SE 14th Street, Des Moines. No significant inflow between gaging station and sampling site.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
MAR												
27...	0930	4110	640	8.0	3.5	12.8	98	22	98	404	.55	4480
APR												
30...	1100	3730	600	8.4	15.0	10.6	106	31	1160	469	.64	4720
MAY												
29...	1100	2270	650	7.7	21.0	9.0	102	34	3900	382	.52	2340
JUN												
26...	0945	5800	713	7.9	24.0	8.1	94	21	2600	472	.64	8670
JUL												
22...	1200	1400	600	8.2	25.0	6.5	81	38	2400	411	.56	1550
AUG												
14...	1200	1000	510	8.2	23.5	7.6	92	40	21000	337	.46	910
SEP												
11...	1130	1480	635	7.9	22.0	8.4	93	110	3900	454	.62	1810

DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, TOTAL (MG/L AS NO3) (71887)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	CYANIDE TOTAL (MG/L AS CN) (00720)
MAR												
27...	53	5.0	.56	1.3	1.9	6.9	31	.400	11	1	40	.00
APR												
30...	61	7.9	.00	1.9	1.9	9.8	43	.220	6	0	50	.00
MAY												
29...	79	4.8	.33	.21	.54	5.3	24	.230	6	0	40	.00
JUN												
26...	114	9.6	.24	2.3	2.5	12	54	.300	8	0	150	.00
JUL												
22...	48	3.8	.55	1.7	2.2	6.0	27	.040	5	0	30	.00
AUG												
14...	88	1.9	.95	1.8	2.7	4.6	20	.710	7	0	60	.00
SEP												
11...	64	4.9	.13	1.8	1.9	6.8	30	.320	8	0	30	.01

05485640 FOURMILE CREEK AT DES MOINES, IA

LOCATION.--Lat 41°36'50", long 93°32'43", in NE1/4 NE1/4 sec.32, T.79 N., R.23 W., Polk County, Hydrologic Unit 07100008, on right bank 20 ft (6 m) downstream from bridge on Easton Blvd., 4.4 mi (7.1 km) downstream from Muchikinock Creek and 5.0 mi (8.0 km) upstream from Des Moines River.

DRAINAGE AREA.--92.7 mi² (240 km²).

PERIOD OF RECORD.--October 1971 to current year.

REVISED RECORDS.--WDR IA-75-1: 1974 (P).

GAGE.--Water-stage recorder. Datum of gage is 795.87 ft (242.581 m) NGVD.

REMARKS.--Records fair except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--9 years, 69.9 ft³/s (1.980 m³/s), 10.2 in/yr (259 mm/yr), 50,640 acre-ft/yr (62.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,340 ft³/s (151 m³/s) June 9, 1974, gage height, 14.84 ft (4.523 m); no flow for many days in 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge and gage height unknown, probably occurred June 17, no peak above base of 500 ft³/s (14.2 m³/s); minimum daily discharge, 0.75 ft³/s (0.021 m³/s) Oct. 3, 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	28	23	6.8	15	11	19	20	65	19	.81	14
2	1.1	24	21	7.4	15	10	21	20	97	17	.95	7.6
3	.75	23	20	8.0	15	11	32	20	112	15	.90	3.3
4	.75	23	19	8.6	16	13	40	20	129	15	4.2	8.9
5	.90	32	18	8.0	17	11	38	22	127	17	4.6	5.8
6	1.2	40	17	7.2	18	32	38	22	103	13	2.8	4.0
7	1.1	40	16	6.6	19	30	38	18	85	11	2.5	2.9
8	1.2	40	14	6.0	19	30	33	14	67	10	2.3	2.2
9	1.2	38	13	6.0	19	35	40	14	59	9.7	18	2.6
10	1.2	33	12	6.6	15	40	35	15	55	7.9	11	1.4
11	2.5	31	11	8.0	14	37	38	16	48	8.0	16	1.3
12	1.4	29	10	7.6	13	34	33	13	45	7.1	8.1	1.9
13	1.4	27	10	7.6	13	30	31	13	53	5.9	6.6	13
14	1.7	26	9.8	8.0	14	33	33	12	56	5.1	6.5	4.8
15	2.7	25	9.8	9.0	14	39	31	11	80	3.7	4.0	3.8
16	3.8	24	10	94	14	29	25	12	217	3.4	117	2.9
17	3.5	24	10	64	15	18	26	22	90	3.0	64	2.2
18	3.8	24	11	25	16	14	25	33	66	3.4	33	1.7
19	8.1	24	12	12	17	14	25	25	44	2.8	23	1.5
20	4.8	23	12	14	20	14	27	22	23	2.8	17	1.5
21	5.4	28	14	15	23	14	24	22	21	2.4	14	1.3
22	146	37	13	13	21	14	24	22	35	2.0	12	2.3
23	139	35	12	12	19	14	22	20	47	1.8	7.4	1.4
24	77	33	11	11	16	13	22	22	43	1.6	9.0	1.1
25	54	32	9.0	8.8	14	14	20	19	30	1.6	9.8	1.6
26	44	32	8.4	9.6	13	13	19	19	27	1.8	9.0	1.5
27	40	29	9.6	12	12	13	19	20	29	2.4	9.6	.79
28	33	27	7.6	11	12	13	19	21	24	2.8	9.8	.95
29	30	26	7.6	10	11	15	19	24	21	2.0	8.6	.99
30	27	24	8.2	14	---	16	19	38	18	1.2	11	1.0
31	32	---	7.6	14	---	20	---	35	---	.78	22	---
TOTAL	671.60	881	386.6	450.8	459	644	835	626	1916	200.18	465.46	100.23
MEAN	21.7	29.4	12.5	14.5	15.8	20.8	27.8	20.2	63.9	6.46	15.0	3.34
MAX	146	40	23	94	23	40	40	38	217	19	117	14
MIN	.75	23	7.6	6.0	11	10	19	11	18	.78	.81	.79
CFSM	.23	.32	.14	.16	.17	.22	.30	.22	.69	.07	.16	.04
IN.	.27	.35	.16	.18	.18	.26	.34	.25	.77	.08	.19	.04
AC-FT	1330	1750	767	894	910	1280	1660	1240	3800	397	923	199

CAL YR 1979 TOTAL 25724.30 MEAN 70.5 MAX 893 MIN .75 CFSM .76 IN 10.32 AC-FT 51020
WTR YR 1980 TOTAL 7635.87 MEAN 20.9 MAX 217 MIN .75 CFSM .23 IN 3.06 AC-FT 15150

05486000 NORTH RIVER NEAR NORWALK, IA

LOCATION.--Lat 41°27'25", long 93°39'10", in NW1/4 SW1/4 sec.20, T.77 N., R.24 W., Warren County, Hydrologic Unit 07100008, on left bank 10 ft (3 m) downstream from bridge on county highway R57, 1.7 mi (2.7 km) southeast of Norwalk, 5.2 mi (8.4 km) upstream from Middle Creek, and 6.2 mi (10.0 km) downstream from Badger Creek.

DRAINAGE AREA.--349 mi² (904 km²).

PERIOD OF RECORD.--February 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1946. WDR IA-76-1: 1975 (P).

GAGE.--Water-stage recorder. Datum of gage is 788.45 ft (240.320 m) NGVD (levels by Corps of Engineers). Prior to June 12, 1946, nonrecording gage at same site and datum. Jan. 7 to Oct. 11, 1960, nonrecording gage at site 2.1 mi (3.4 km) upstream at different datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

COOPERATION.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--40 years, 176 ft³/s (4.984 m³/s), 6.85 in/yr (174 mm/yr), 127,500 acre-ft/yr (157 hm³/s/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,000 ft³/s (906 m³/s) June 13, 1947, gage height, 25.3 ft (7.71 m), from floodmark, from rating curve extended above 9,100 ft³/s (258 m³/s) on basis of velocity-area studies; no flow at times during period 1954-58.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,650 ft³/s (46.7 m³/s) June 16 , gage height, 19.12 ft (5.828 m), no peak above base of 1,700 ft³/s (48.1 m³/s); minimum daily, 0.09 ft³/s (0.002 m³/s) May 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.58	.58	5.1	7.6	2.2	19	41	6.8	122	24	5.1	43
2	2.3	5.1	4.5	8.0	1.3	18	40	6.2	716	22	4.0	50
3	2.9	2.9	2.3	7.6	1.2	18	46	6.7	617	20	3.5	35
4	2.9	1.1	1.8	7.0	1.4	18	65	4.8	458	21	4.0	20
5	2.9	2.9	3.5	6.8	1.8	18	73	3.3	451	27	5.6	14
6	2.3	11	7.4	6.6	1.8	17	66	3.5	208	45	23	11
7	2.3	15	10	5.6	2.0	16	52	2.6	742	35	9.2	10
8	4.0	22	9.0	4.5	1.7	16	42	1.3	991	34	4.5	10
9	3.5	21	9.0	3.3	1.8	16	39	.39	238	26	3.5	8.0
10	2.9	19	7.0	3.0	2.9	19	38	.09	122	19	4.0	7.4
11	2.3	15	10	4.0	4.5	23	36	.74	84	15	7.4	5.6
12	5.1	13	6.0	3.5	5.0	30	39	1.7	62	13	32	4.5
13	3.5	13	9.0	4.0	4.5	80	44	5.2	60	11	42	7.4
14	1.8	10	7.0	4.5	4.0	66	42	6.6	102	10	17	13
15	.58	9.8	5.8	7.9	4.0	58	38	6.8	731	9.2	11	23
16	2.3	8.6	5.0	41	4.0	90	35	7.2	1490	9.2	195	14
17	4.0	8.6	4.0	70	4.0	225	30	8.1	389	8.0	948	11
18	5.6	8.0	3.8	90	4.2	181	27	10	210	11	650	9.8
19	6.2	6.8	3.8	100	4.1	74	24	12	183	11	160	9.2
20	9.2	6.8	4.2	70	8.0	58	23	13	108	10	82	8.0
21	14	7.4	5.0	45	11	44	21	14	84	10	47	6.8
22	89	14	6.6	35	22	35	19	14	69	9.2	30	5.6
23	138	23	7.0	26	40	30	17	15	95	7.4	21	5.1
24	98	23	7.6	25	33	27	14	16	86	6.2	16	5.1
25	59	20	8.0	20	23	24	12	15	66	5.6	13	4.5
26	32	18	9.0	16	22	22	10	14	54	6.8	11	4.5
27	21	15	8.4	13	21	21	9.0	12	45	7.4	9.8	4.5
28	15	13	7.6	11	20	21	8.6	11	39	12	8.6	4.0
29	8.6	10	7.0	8.0	20	23	7.6	10	32	11	8.0	3.5
30	1.1	7.4	7.0	4.0	---	25	7.3	10	27	11	8.6	3.5
31	1.1	---	7.6	1.8	---	36	---	16	---	8.0	14	---
TOTAL	543.96	350.98	199.0	659.7	276.4	1368	965.5	254.02	8681	475.0	2397.8	361.0
MEAN	17.5	11.7	6.42	21.3	9.53	44.1	32.2	8.19	289	15.3	77.3	12.0
MAX	138	23	10	100	40	225	73	16	1490	45	948	50
MIN	.58	.58	1.8	1.8	1.2	16	7.3	.09	27	5.6	3.5	3.5
CFSM	.05	.03	.02	.06	.03	.13	.09	.02	.83	.04	.22	.03
IN.	.06	.04	.02	.07	.03	.15	.10	.03	.93	.05	.26	.04
AC-FT	1080	696	395	1310	548	2710	1920	504	17220	942	4760	716

CAL YR 1979	TOTAL	55264.69	MEAN	151	MAX	3000	MIN	.30	CFSM .43	IN 5.89	AC-FT	109600
WTR YR 1980	TOTAL	16532.36	MEAN	45.2	MAX	1490	MIN	.09	CFSM .13	IN 1.76	AC-FT	32790

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	60.5	62.6	36.3	66.6	130.7	342.1	240.9	284.6	372.2	157.4	81.7	65.7	158.40
RUNOFF (INCHES)	0.20	0.20	0.12	0.22	0.39	1.13	0.77	0.94	1.19	0.52	0.27	0.21	6.16
STD. DEVIATION	0.42	0.39	0.18	0.38	0.35	0.98	0.82	0.99	1.86	0.66	0.42	0.28	4.51
PERCENT OF ANNUAL	3.10	3.30	1.80	3.50	6.80	18.00	13.00	15.00	20.00	8.30	4.40	3.40	----
PRECIP. (INCHES)	2.16	1.37	0.95	1.08	0.96	2.09	2.97	4.02	5.14	3.34	4.08	3.45	31.60

05486490 MIDDLE RIVER NEAR INDIANOLA, IA

LOCATION.--Lat 41°25'27", long 93°35'09", in SW1/4 SE1/4 sec.35, T.77 N., R.24 W., Warren County, Hydrologic Unit 07100008, on right bank 10 ft (3 m) downstream from bridge on county highway, 0.4 mi (0.6 km) upstream from Cavitt Creek, 1.5 mi (2.4 km) upstream from bridge on U.S. Highway 69, and 4.6 mi (7.4 km) northwest of Indianola.

DRAINAGE AREA.--503 mi² (1,302 km²).

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1940 (M), 1941, 1944, 1946, 1949 (M).

GAGE.--Water-stage recorder. Datum of gage is 776.15 ft (236.571 m) NGVD (Corps of Engineers bench mark). Prior to June 11, 1946, June 9, 1947, to Nov. 23, 1948, and Sept. 8, 1951, to Oct. 30, 1952, nonrecording gage and June 11, 1946, to June 8, 1947 (destroyed by flood), Nov. 24, 1948, to Sept. 7, 1951, Sept. 1, 1952, to Sept. 30, 1962, water-stage recorder at site 1.6 mi (2.6 km) downstream at datum 2.81 ft (0.856 m) lower.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--40 years, 251 ft³/s (7.108 m³/s) 6.78 in/yr (172 mm/yr), 181,800 acre-ft/yr (224 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,000 ft³/s (963 m³/s) June 13, 1947, gage heights: 26.40 ft (8.047 m), from floodmark, former site and datum; 28.27 ft (8.617 m), from floodmark, present site and datum; minimum daily, 0.11 ft³/s (0.003 m³/s) July 2, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,260 ft³/s (121 m³/s) June 15, gage height, 16.08 ft (4.901 m), no peak above base of 4,500 ft³/s (127 m³/s); minimum daily, 5.4 ft³/s (0.15 m³/s) May 31, Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	19	14	9.2	17	33	88	36	156	53	19	30
2	8.1	21	15	9.0	16	32	81	27	263	52	19	32
3	7.7	20	15	8.0	16	31	91	24	361	49	19	52
4	7.3	19	14	8.4	15	30	147	24	614	48	16	41
5	8.1	22	14	8.8	15	29	127	24	599	62	18	30
6	9.5	23	12	8.4	16	28	115	23	608	101	23	26
7	9.5	24	13	10	15	27	90	22	2320	173	20	24
8	7.7	26	10	11	14	27	80	21	1330	85	18	19
9	6.9	25	12	12	14	27	76	19	414	54	16	16
10	7.7	24	13	12	14	27	73	17	228	44	16	15
11	7.7	22	12	16	14	32	69	17	159	39	29	13
12	7.7	20	12	14	14	43	74	15	124	36	48	12
13	7.3	19	13	14	14	64	88	12	145	33	60	20
14	6.9	18	13	14	14	58	94	11	174	32	32	17
15	7.7	16	12	16	15	54	84	9.9	2960	30	25	13
16	9.0	15	11	25	14	70	67	9.8	998	30	321	12
17	8.6	14	9.4	45	14	414	60	12	445	27	851	20
18	9.5	13	12	50	14	370	55	13	643	26	335	18
19	10	12	13	45	14	260	49	13	344	26	168	14
20	12	11	14	56	16	230	46	14	160	28	106	11
21	11	12	14	60	25	190	42	19	132	25	75	9.4
22	97	13	14	45	45	150	38	15	112	23	60	8.4
23	134	14	14	33	42	130	42	12	176	22	51	7.8
24	82	15	14	32	38	110	40	10	119	20	45	7.2
25	63	19	13	29	35	100	40	9.0	136	19	40	7.0
26	50	24	13	24	38	84	40	6.9	111	20	35	6.4
27	38	22	12	21	37	82	37	6.5	87	19	31	5.7
28	29	18	11	20	35	82	36	6.5	74	18	30	5.7
29	24	14	11	18	34	85	36	5.7	64	18	27	5.7
30	20	14	11	18	---	88	36	5.7	56	17	26	5.4
31	19	---	10	18	---	90	---	5.4	---	19	31	---
TOTAL	735.9	548	390.4	709.8	624	3077	2041	465.4	14112	1248	2610	503.7
MEAN	23.7	18.3	12.6	22.9	21.5	99.3	68.0	15.0	470	40.3	84.2	16.8
MAX	134	26	15	60	45	414	147	36	2960	173	851	52
MIN	6.9	11	9.4	8.0	14	27	36	5.4	56	17	16	5.4
CFSM	.05	.04	.03	.05	.04	.20	.14	.03	.93	.08	.17	.03
IN.	.05	.04	.03	.05	.05	.23	.15	.03	1.04	.09	.19	.04
AC-FT	1460	1090	774	1410	1240	6100	4050	923	27990	2480	5180	999

CAL YR 1979 TOTAL 89695.3 MEAN 246 MAX 5350 MIN 6.9 CFSM .49 IN 6.63 AC-FT 177900
WTR YR 1980 TOTAL 27065.2 MEAN 73.9 MAX 2960 MIN 5.4 CFSM .15 IN 2.00 AC-FT 53680

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	82.9	85.7	56.7	100.3	198.0	458.1	356.2	427.6	541.0	209.4	130.9	130.7	231.60
RUNOFF (INCHES)	0.20	0.19	0.13	0.23	0.41	1.05	0.79	0.98	1.20	0.48	0.30	0.29	6.25
STD. DEVIATION	0.38	0.35	0.21	0.37	0.35	0.90	0.82	0.98	1.62	0.58	0.33	0.38	3.99
PERCENT OF ANNUAL	3.20	3.00	2.10	3.70	6.60	17.00	13.00	16.00	19.00	7.70	4.80	4.60	----
PRECIP. (INCHES)	2.23	1.40	1.28	1.15	1.05	2.22	3.09	4.27	4.89	3.32	3.59	3.22	31.70

05487470 SOUTH RIVER NEAR ACKWORTH, IA

LOCATION.--Lat 41°20'14", long 93°29'10", in SE1/4 SE1/4 sec.34, T.76 N., R.23 W., Warren County, Hydrologic Unit 07100008, on right bank 15 ft (5 m) downstream from bridge on county highway, 0.5 mi (0.8 km) downstream from Otter Creek, and 2.2 mi (3.5 km) southwest of Ackworth.

DRAINAGE AREA.--460 mi² (1,191 km²).

PERIOD OF RECORD.--February 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1941, 1945 (M), 1946.

GAGE.--Water-stage recorder. Datum of gage is 769.97 ft (234.687 m) NGVD (levels by Corps of Engineers). Prior to June 12, 1946, nonrecording gage, June 12, 1946, to Apr. 13, 1960, water-stage recorder, and Apr. 14, 1960, to Aug. 21, 1961, nonrecording gage, all at site 4.0 mi (6.4 km) downstream at datum 8.06 ft (2.457 m) lower.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--40 years, 237 ft³/s (6.712 m³/s), 7.00 in/yr (178 mm/yr), 171,700 acre-ft/yr (212 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,000 ft³/s (963 m³/s) June 5, 1947, gage height, 24.60 ft (7.498 m), site and datum then in use; maximum gage height, 29.07 ft (8.861 m) June 10, 1974; no flow Sept. 19 to Oct. 13, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1930 reached a stage of 24.5 ft (7.47 m), from information by local residents, discharge, about 30,000 ft³/s (850 m³/s), at site 4.0 mi (6.4 km) downstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,900 ft³/s (337 m³/s) June 15, gage height, 24.31 ft (7.410 m) at 0945 hours, no other peak above base of 5,000 ft³/s (142 m³/s); minimum daily, 1.8 ft³/s (0.051 m³/s) Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	7.7	9.6	5.0	6.0	8.0	93	14	172	31	7.5	54
2	2.5	6.9	10	5.0	5.8	8.6	74	12	333	26	7.3	21
3	3.0	6.1	11	5.0	5.4	8.4	87	12	720	26	7.2	13
4	3.0	6.9	9.4	5.2	5.0	9.6	137	9.8	847	26	8.1	11
5	3.0	8.9	8.0	5.4	4.5	9.6	93	8.5	875	172	9.3	9.7
6	3.4	13	8.2	5.6	4.5	9.4	74	8.1	669	394	8.8	28
7	3.4	8.9	8.4	6.0	4.5	11	67	7.7	990	324	8.1	52
8	4.4	7.7	8.0	6.2	4.5	13	55	6.5	244	80	7.0	35
9	3.0	7.7	9.0	6.6	4.5	20	58	5.4	128	46	6.6	12
10	3.4	8.1	7.8	7.0	4.5	60	67	5.4	95	28	6.3	8.9
11	3.4	7.2	6.8	7.2	4.6	64	65	6.5	79	21	54	7.7
12	3.4	7.7	6.2	7.4	4.6	56	78	6.0	69	18	30	8.5
13	3.7	8.1	5.4	7.4	4.6	50	110	5.9	89	14	11	41
14	3.7	7.2	4.8	7.6	4.7	54	99	5.6	120	12	9.6	43
15	4.4	8.1	4.2	7.8	4.7	200	83	5.6	6650	11	9.3	21
16	4.4	6.5	3.8	54	4.8	316	68	5.5	1270	10	157	12
17	4.4	7.0	3.4	20	5.0	135	58	11	286	8.9	145	11
18	6.1	6.9	3.7	11	5.2	87	53	14	880	9.4	84	8.9
19	8.5	6.4	5.0	10	5.4	85	53	12	396	9.4	37	7.2
20	6.1	6.7	6.4	11	5.6	87	44	9.5	180	7.7	20	6.1
21	6.5	9.3	6.4	12	20	61	47	7.3	126	6.9	9.3	6.9
22	90	12	6.2	11	74	50	38	5.7	155	7.2	6.4	6.5
23	50	10	6.2	12	40	43	31	4.6	958	11	6.2	5.4
24	23	9.1	5.8	7.4	20	43	29	4.4	284	7.7	8.3	4.8
25	10	7.8	5.4	7.8	11	43	29	4.1	144	6.9	28	5.8
26	8.1	7.6	5.2	5.4	12	41	26	3.7	104	6.1	100	5.4
27	7.7	7.0	5.2	5.4	8.2	39	22	3.9	85	6.1	108	5.1
28	7.2	7.9	5.0	5.4	8.0	41	23	4.0	69	6.1	36	4.8
29	6.9	11	5.0	5.4	8.0	45	23	3.8	47	6.0	21	4.8
31	8.1	---	5.0	5.4	---	104	---	4.0	---	6.1	118	---
TOTAL	303.4	245.4	199.5	283.0	299.6	1852.6	1802	221.2	17103	1350.5	1149.3	464.9
MEAN	9.79	8.18	6.44	9.13	10.3	59.8	60.1	7.14	570	43.6	37.1	15.5
MAX	90	13	11	54	74	316	137	14	6650	394	157	54
MIN	1.8	6.1	3.4	5.0	4.5	8.0	18	3.7	39	6.0	6.2	4.4
CFSM	.02	.02	.01	.02	.02	.13	.13	.02	1.24	.10	.08	.03
IN.	.02	.02	.02	.02	.02	.15	.15	.02	1.38	.11	.09	.04
AC-FT	602	487	396	561	594	3670	3570	439	33920	2680	2280	922

CAL YR 1979 TOTAL 71601.7 MEAN 196 MAX 3340 MIN 1.8 CFSM .43 IN 5.79 AC-FT 142000
WTR YR 1980 TOTAL 25274.4 MEAN 69.1 MAX 6650 MIN 1.8 CFSM .15 IN 2.04 AC-FT 50130

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	87.8	90.7	51.9	107.7	212.0	450.9	362.8	415.0	573.1	143.6	95.8	107.2	223.0
RUNOFF (INCHES)	0.17	0.22	0.13	0.27	0.48	1.13	0.88	1.04	1.39	0.36	0.24	0.26	6.58
STD. DEVIATION	0.40	0.47	0.20	0.47	0.50	1.13	0.84	1.15	1.91	0.71	0.33	0.43	4.20
PERCENT OF ANNUAL	2.60	3.30	2.00	4.10	7.30	17.00	13.00	16.00	21.00	5.50	3.60	4.00	----
PRECIP. (INCHES)	2.23	1.40	1.28	1.15	1.05	2.22	3.09	4.27	4.89	3.32	3.59	3.22	31.70

05487980 WHITE BREAST CREEK NEAR DALLAS, IA

LOCATION.--Lat 41°14'41", long 93°16'08", in NW1/4 NW1/4 sec.3, T.74 N., R.21 W., Marion County, Hydrologic Unit 07100008, on left bank 15 ft (5 m) downstream from bridge on county highway, 0.5 mi (0.8 km) downstream from Kirk Branch, and 1.7 mi (2.7 km) northwest of Dallas.

DRAINAGE AREA.--342 mi² (886 km²).

PERIOD OF RECORD.--October 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 759.12 ft (231.380 m) NGVD (Corps of Engineers bench mark).

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Eight discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--18 years, 182 ft³/s (5.154 m³/s), 7.23 in/yr (184 mm/yr), 131,900 acre-ft/yr (163 hm³/yr); median of yearly mean discharges, 160 ft³/s (4.53 m³/s), 6.4 in/yr (162 mm/yr), 116,000 acre-ft/yr (143 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,430 ft³/s (267 m³/s) Oct. 11, 1973, gage height, 26.04 ft (7.937 m); minimum daily, 0.07 ft³/s (0.002 m³/s) Sept. 29, 1968.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 11, 1962, reached a stage of 28.87 ft (8.800 m), from floodmark, discharge, about 12,000 ft³/s (340 m³/s). Flood of June 6, 1947, may have been slightly higher.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,000 ft³/s (85.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 15	1030	3,360	95.2	16.32	4.974	June 22	2030	4,040	114	17.56	5.352
June 19	0030	*6,570	186	*21.78	6.638						

Minimum daily discharge, 1.0 ft³/s (0.028 m³/s) Aug. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	3.4	4.5	3.5	3.6	8.4	131	10	161	15	2.7	769
2	2.0	5.9	3.7	3.5	3.6	6.0	104	9.2	1150	14	2.3	540
3	2.4	4.0	3.4	3.2	3.7	4.8	100	8.7	1780	13	2.0	99
4	2.7	4.5	3.4	3.0	3.8	4.8	122	8.2	1730	14	1.8	40
5	2.9	5.6	4.0	3.0	3.9	6.8	101	7.6	1810	169	1.5	26
6	2.4	5.9	4.5	2.9	4.1	7.2	67	7.0	858	106	1.9	342
7	2.7	6.2	4.7	2.5	3.5	6.8	50	5.8	562	379	2.6	136
8	4.2	5.3	6.9	2.4	3.2	7.4	40	4.6	170	128	2.3	36
9	5.3	4.5	5.6	1.9	3.0	20	36	4.0	83	45	2.9	19
10	4.5	3.4	5.0	1.8	2.9	130	39	3.7	50	27	3.8	14
11	4.2	3.2	4.7	2.5	2.8	126	36	3.6	34	20	4.7	11
12	8.1	2.9	4.1	2.4	2.7	100	46	4.4	25	17	4.3	9.0
13	7.2	4.5	3.7	2.2	2.6	90	110	4.8	21	14	4.1	8.0
14	4.5	3.2	3.7	2.3	2.6	76	153	4.7	33	11	4.0	10
15	3.7	2.2	3.7	2.5	2.6	130	103	4.1	2150	9.2	4.1	12
16	3.2	2.2	3.0	45	2.7	220	66	4.0	542	8.0	49	13
17	3.2	2.4	2.5	50	2.7	200	47	4.8	180	6.5	58	11
18	4.0	2.7	2.2	25	2.7	110	38	8.7	1260	5.6	54	9.3
19	6.6	2.7	2.4	12	2.8	78	34	11	3010	5.7	35	8.5
20	7.8	3.4	2.9	6.0	2.9	66	30	8.6	377	6.2	17	7.8
21	8.1	5.0	2.9	4.0	4.0	56	26	8.6	136	5.6	9.3	7.2
22	40	7.5	3.1	4.2	45	46	22	7.4	648	3.6	5.3	6.9
23	48	4.7	3.5	4.0	37	40	19	5.5	274	4.7	2.9	6.9
24	10	3.7	4.5	3.8	30	38	16	4.5	80	4.0	1.5	7.5
25	12	2.7	5.6	3.9	26	36	15	4.7	49	3.3	1.0	7.2
26	8.2	3.4	5.2	3.8	18	34	13	4.6	42	3.6	1.2	6.6
27	7.3	4.0	4.6	3.7	12	32	12	4.1	32	3.4	1.5	5.9
28	6.6	5.0	4.3	3.6	7.6	31	11	5.6	26	3.4	1.9	5.3
29	6.1	4.5	4.0	3.6	8.0	31	11	8.6	21	3.9	1.9	4.7
30	5.6	4.0	3.6	3.6	---	35	11	9.4	17	3.6	2.2	4.2
31	3.7	---	3.3	3.6	---	108	---	9.0	---	3.2	125	---
TOTAL	239.4	122.6	123.2	219.4	250.0	1885.2	1609	1995	17311	1055.5	411.7	2183.0
MEAN	7.72	4.09	3.97	7.08	8.62	60.8	53.6	6.44	577	34.0	13.3	72.8
MAX	48	7.5	6.9	50	45	220	153	11	3010	379	125	769
MIN	2.0	2.2	2.2	1.8	2.6	4.8	11	3.6	17	3.2	1.0	4.2
CFSM	.02	.01	.01	.02	.03	.18	.16	.02	1.69	.10	.04	.21
IN.	.03	.01	.01	.02	.03	.21	.18	.02	1.88	.11	.04	.24
AC-FT	475	243	244	435	496	3740	3190	396	34340	2090	817	4330

CAL YR 1979 TOTAL 68158.7 MEAN 187 MAX 2970 MIN 1.2 CFSM .55 IN 7.41 AC-FT 135200
WTR YR 1980 TOTAL 25609.5 MEAN 70.0 MAX 3010 MIN 1.0 CFSM .21 IN 2.79 AC-FT 50800

05488100 LAKE RED ROCK NEAR PELLA, IA

LOCATION.--Lat 41°22'11", long 92°58'48", in NE1/4 NW1/4 sec.19, T.76 N., R.18 W., Marion County, Hydrologic Unit 07100008, at outlet works near right end of Red Rock Dam on Des Moines River, 1.4 mi (2.3 km) upstream from Lake Creek, 4.5 mi (7.2 km) southwest of Pella and at mile 142.3 (229.0 km).

DRAINAGE AREA.--12,323 mi² (31,917 km²).

PERIOD OF RECORD.--March 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is at NGVD (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam completed in 1969. Storage began in March 1969. Releases controlled through 14 concrete conduits extending through the concrete ogee spillway section into the stilling basin. Inlet invert elevation at 690 ft (210 m) NGVD. Maximum design discharge through the conduits is 37,500 ft³/s (1,060 m³/s) but normal flood control operation limits maximum outflow to 30,000 ft³/s (850 m³/s). Spillway section consists of 5 Tainter gates, 41 ft (12 m) wide and 46 ft (14 m) high, on concrete ogee crest at elevation 735 ft (224 m). The storage capacity of the reservoir at full flood-control pool level, 780 ft (238 m), is 1,790,000 acre-ft (2,210 hm³), surface area, 65,500 acres (26,510 hm²) and that of conservation pool level, 728 feet (222 m), is 89,000 acre-feet (110 hm³),surface area, 9,980 acres (3,998 hm²). Reservoir is used for flood control, low-flow augmentation, conservation and recreation. Normal operation will maintain an elevation of 728 ft (222 m) with minimum release of 300 ft³/s (8.50 m³/s) and maximum release of 30,000 ft³/s (850 m³/s) during the non-growing season, providing discharges at Ottumwa and Keosauqua do not exceed 30,000 ft³/s (850 m³/s) and 35,000 ft³/s (991 m³/s) respectively.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 1,680,000 acre-ft (2,070 hm³) May 12-14, 1973; maximum elevation, 777.95 ft (237.119 m) May 14, 1973; minimum daily contents, 58,000 acre-ft (71.5 hm³) Feb. 16, 1977; minimum elevation, 719.68 ft (219.358 m) Feb. 17, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 202,000 acre-ft (249 hm³) June 20; maximum elevation, 736.23 ft (224.403 m) June 20; minimum daily contents, 87,200 acre-ft (108 hm³) Mar. 2; minimum elevation, 727.97 ft (221.885 m) Apr. 16.

Capacity table (elevation, in feet, and contents, in acre-feet)

722	45,600	740	256,000	760	789,000
725	63,400	745	357,000	765	983,000
730	110,000	750	479,000	770	1,213,000
735	174,000	755	623,000		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	89400	89300	90700	88600	93000	88600	92600	98800	109000	127000	101000	124000
2	89800	89200	89500	88400	92500	87200	93500	99900	112000	120000	102000	123000
3	90000	90200	90400	88700	92100	88600	93700	100000	123000	113000	101000	121000
4	90500	91200	92200	89800	91800	90200	94200	101000	141000	108000	102000	119000
5	91100	91700	91100	90900	91500	90400	95100	101000	158000	105000	102000	117000
6	91100	90900	88900	91400	90500	90800	93800	99300	166000	104000	101000	115000
7	93400	90200	89800	90400	91100	91600	95500	99300	170000	104000	101000	114000
8	94700	90600	89900	90900	93100	91600	95700	100000	172000	104000	100000	112000
9	96000	90900	89900	90500	94400	91400	94700	101000	167000	103000	99900	110000
10	97400	90100	90500	91000	94400	91800	94200	102000	158000	101000	100000	108000
11	96000	90100	91700	92100	93800	92900	93800	103000	149000	101000	102000	107000
12	93900	91000	91600	92500	92800	93400	93400	104000	142000	101000	104000	106000
13	92800	92200	91700	93500	92500	93400	93700	104000	135000	100000	106000	105000
14	92700	93200	94000	94200	93000	94600	93200	103000	131000	99900	106000	105000
15	92600	93100	95500	94100	92800	95700	94300	102000	134000	101000	104000	104000
16	92600	92300	94200	94800	91700	96900	98300	102000	149000	101000	106000	106000
17	93200	92000	91500	92800	91500	96900	103000	104000	169000	101000	108000	107000
18	94800	92100	91600	92300	92900	96600	104000	105000	184000	102000	107000	107000
19	95300	92300	94200	91500	94900	96200	101000	104000	198000	102000	105000	107000
20	95400	91900	95700	89800	97900	95100	98100	104000	202000	102000	104000	107000
21	96200	91800	96100	91200	98400	94700	98100	104000	197000	102000	105000	107000
22	101000	91600	97100	94400	98200	96500	98800	104000	192000	102000	105000	106000
23	95900	89500	99400	96900	98200	94800	99400	104000	189000	102000	107000	105000
24	94700	88500	101000	98300	98900	92200	99800	103000	183000	102000	111000	106000
25	94400	92100	99400	99100	98400	90800	100000	103000	175000	102000	117000	106000
26	93800	92100	98800	99000	97800	90600	101000	103000	168000	102000	123000	105000
27	92000	90800	99400	97500	97600	90000	101000	103000	161000	102000	127000	108000
28	91000	90600	95500	96300	97700	89600	100000	104000	152000	102000	125000	109000
29	90400	89400	90200	95000	95300	90200	99200	103000	143000	101000	125000	111000
30	89700	90500	88000	93800	---	90800	98100	104000	134000	102000	124000	111000
31	90800	---	88400	93500	---	91500	---	105000	---	102000	124000	---
MAX	101000	93200	101000	99100	98900	96900	104000	105000	202000	127000	127000	124000
MIN	89400	88500	88000	88400	90500	87200	92600	98800	109000	99900	99900	104000

WTR YR 1980 MAX 202000 MIN 87200

05488500 DES MOINES RIVER NEAR TRACY, IA

LOCATION.--Lat 41°16'53", long 92°51'34", in NW1/4 SE1/4 sec.19, T.75 N., R.17 W., Mahaska County, Hydrologic Unit 07100009, on right bank 250 ft (76 m) upstream from abandoned Bellefountaine Bridge, 0.5 mi (0.8 km) downstream from bridge on old State Highway 92 (now relocated), 0.8 mi (1.3 km) east of Tracy, 3.1 mi (5.0 km) upstream from Cedar Creek, 3.8 mi (6.1 km) downstream from bridge on newly located State Highway 92, 6.4 mi (10.3 km) downstream from English Creek, and at mile 130.4 (209.8 km).

DRAINAGE AREA.--12,479 mi² (32,321 km²).

PERIOD OF RECORD.--March 1920 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1920 (M), 1922 (M), 1933.

GAGE.--Water-stage recorder. Datum of gage is 670.91 ft (204.493 m) NGVD. Prior to June 26, 1940, and June 30, 1952, to Nov. 4, 1960, nonrecording gage, and June 27, 1940, to June 29, 1952, water-stage recorder, at site 250 ft (76 m) downstream at same datum.

REMARKS.--Records good except those for winter period, which are fair. Flow regulated by Lake Red Rock (station 05488100) 11.9 mi (19.1 km) upstream, since March 12, 1969. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Eleven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--60 years, 4,677 ft³/s (132.4 m³/s), 5.09 in/yr (129 mm/yr), 3,388,000 acre-ft/yr (4,177 hm³/yr); median of yearly mean discharges, 4,060 ft³/s (115 m³/s), 4.4 in/yr (112 mm/yr), 2,941,000 acre-ft/yr (3,630 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 155,000 ft³/s (4,390 m³/s), June 14, 1947, gage height, 26.5 ft (8.08 m); minimum daily, 40 ft³/s (1.13 m³/s) Jan. 29 to Feb. 1, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1851, that of June 14, 1947. Flood of May 31, 1903, reached a stage of about 25 ft (7 m), discharge, about 130,000 ft³/s (3,680 m³/s). Minimum daily discharge since at least 1910, that of Jan. 29 to Feb. 1, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,800 ft³/s (447 m³/s) June 21, gage height, 10.64 ft (3.243 m); minimum daily, 451 ft³/s (12.8 m³/s) Aug. 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5670	6460	6400	3510	2230	3350	3850	3840	3490	6810	825	2450
2	5170	6190	6220	3520	2190	2640	3350	3100	5380	6710	836	3000
3	5150	5080	5160	3420	2180	1890	4280	3100	7200	6640	856	3470
4	4910	5060	3840	2900	2230	1630	4900	3090	5850	5930	888	3680
5	4590	5470	4370	2870	2190	2310	5660	3090	7190	4550	914	3890
6	4560	6390	5800	2850	2120	2270	6250	3070	10900	3770	893	3430
7	4310	6680	5770	2760	1660	1630	8180	2950	14200	3080	891	3400
8	3730	6680	5750	1250	1010	2070	10200	2550	13700	3040	885	3370
9	3310	7680	5600	1960	1350	2100	10700	2540	13600	3000	855	3340
10	3300	9780	5150	1750	1580	2100	9700	2420	13500	2960	714	3320
11	3700	9820	4420	1120	1960	2110	9500	2210	13300	2700	765	2830
12	4240	9180	4500	1710	2010	2490	9520	2210	11900	2260	1040	2030
13	3620	8200	4270	1710	1880	3720	9260	2280	10900	2170	1060	1980
14	2650	7870	3120	1400	1330	3740	8840	2520	11200	1900	1150	2060
15	2350	7970	1880	2530	1600	4020	8480	2520	11700	1570	2050	1460
16	2280	8140	2830	3720	1960	4730	6900	2380	8580	1560	2340	756
17	2030	7610	3110	5630	1420	5760	5020	2200	6970	1530	3700	728
18	1300	7340	1540	5630	932	6790	6340	2390	12800	1470	5620	787
19	1690	6980	1140	4640	880	7320	7010	2670	15100	1280	5670	903
20	2240	6980	1750	5290	498	8040	6490	2680	15500	1260	4930	901
21	2220	6970	2630	4530	1560	8520	5290	2680	15800	1260	3850	969
22	2940	6930	2650	3100	3040	7200	4630	2670	15100	1240	3840	1080
23	4250	7070	2930	3000	3460	7230	4630	2670	14500	1240	3340	1030
24	5050	7600	3910	3050	3630	7440	4610	2670	12500	1180	1710	723
25	5030	6280	5050	3020	4140	6180	4610	2670	12700	1030	545	1010
26	5830	8100	5040	3050	4410	5210	4600	2600	11900	1030	451	1800
27	7960	10200	3230	3080	4380	4740	4590	2500	10200	1010	843	1310
28	8540	9060	5790	2860	4330	4840	4580	2500	9300	995	2840	1740
29	8200	8720	5770	2700	4160	4010	4580	2430	8880	997	2670	2420
30	6720	7590	4790	2520	---	4010	4430	2230	7740	937	2020	2440
31	6450	---	3630	2470	---	4020	---	2680	---	805	2170	---
TOTAL	133990	224080	128040	93550	66320	134110	190980	82110	331580	75914	61161	62307
MEAN	4322	7469	4130	3018	2287	4326	6366	2649	11050	2449	1973	2077
MAX	8540	10200	6400	5630	4410	8520	10700	3840	15800	6810	5670	3890
MIN	1300	5060	1140	1120	498	1630	3350	2200	3490	805	451	723
AC-FT	265800	444500	254000	185600	131500	266000	378800	162900	657700	150600	121300	123600

CAL YR 1979 TOTAL 3766300 MEAN 10320 MAX 27800 MIN 750 AC-FT 7470000
WTR YR 1980 TOTAL 1584142 MEAN 4328 MAX 15800 MIN 451 AC-FT 3142000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	1148.3	2013.3	1190.6	1515.4	2876.1	7468.6	10513.8	8767.5	11632.3	6061.5	3463.7	2684.4	5028.6
RUNOFF (INCHES)	0.21	0.18	0.11	0.14	0.24	0.69	0.94	0.81	1.04	0.56	0.32	0.24	5.47
STD. DEVIATION	0.23	0.22	0.11	0.17	0.16	0.49	0.87	0.62	0.88	0.40	0.33	0.22	2.91
PERCENT OF ANNUAL	3.80	3.30	2.00	2.60	4.40	13.00	17.00	15.00	19.00	10.00	5.90	4.40	----
PRECIP. (INCHES)	2.06	1.37	1.05	1.10	1.01	2.22	2.83	4.05	4.72	3.16	3.18	2.96	29.70

05489000 CEDAR CREEK NEAR BUSSEY, IA

LOCATION.--Lat 41°13'09", long 92°54'38", at SW corner sec.11, T.74 N., R.18 W., Marion County, Hydrologic Unit 07100009, on left bank 10 ft (3 m) downstream from bridge on State Highway 156, 0.8 mi (1.3 km) downstream from North Cedar Creek, 1.6 mi (2.6 km) northwest of Bussey, 3.0 mi (4.8 km) upstream from Honey Creek, and 8.9 mi (14.3 km) upstream from mouth.

DRAINAGE AREA.--374 mi² (969 km²).

PERIOD OF RECORD.--October 1947 to current year.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 682.15 ft (207.919 m) NGVD (levels by Corps of Engineers). Prior to Feb. 21, 1949, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--33 years, 198 ft³/s (5.607 m³/s), 7.19 in/yr (183 mm/yr), 143,500 acre-ft/yr (177 hm³/yr); median of yearly mean discharges, 180 ft³/s (5.10 m³/s), 6.5 in/yr (165 mm/yr), 130,000 acre-ft/yr (160 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,300 ft³/s (830 m³/s) May 9, 1950, gage height, 27.50 ft (8.382 m); maximum gage height, 28.06 ft (8.553 m) July 2, 1958; no flow Sept. 6-20, 1955, Oct. 11, 12, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1946 reached a stage of 28.45 ft (8.672 m) on upstream side and 28.05 ft (8.550 m) on downstream side of bridge, levels to floodmarks by Corps of Engineers, discharge, 31,500 ft³/s (892 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 5	0300	6,140	174	20.60	6.279	June 15	2330	*7,230	205	*21.69	6.611
June 7	0445	4,130	117	17.86	5.444						

Minimum daily discharge, 3.7 ft³/s (0.10 m³/s) Dec. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.8	18	5.8	8.6	5.1	11	218	19	261	46	18	378
2	5.3	15	5.5	8.0	5.0	9.0	155	23	1580	40	24	460
3	7.0	10	5.3	8.0	5.0	8.0	210	28	3280	39	28	91
4	5.5	7.3	5.1	8.0	5.0	7.2	300	23	2570	36	36	132
5	4.8	5.2	6.7	8.2	5.2	7.2	137	21	4240	524	22	236
6	5.3	6.0	9.0	7.4	5.4	6.6	103	19	928	191	12	192
7	5.5	5.4	11	6.8	4.9	6.0	87	23	2390	66	12	83
8	6.7	5.6	9.1	6.0	4.8	6.6	75	20	369	38	11	47
9	4.8	5.9	9.0	5.0	4.7	12	71	18	173	26	10	33
10	4.4	6.6	9.2	4.8	4.6	340	92	16	118	21	9.3	26
11	4.8	5.9	9.0	6.0	4.5	200	85	17	95	20	15	22
12	5.1	6.0	8.0	5.8	4.4	74	131	15	86	18	16	29
13	5.3	5.8	7.0	4.4	4.4	70	622	13	995	18	12	48
14	5.3	5.5	6.2	4.8	4.5	70	318	11	320	20	8.0	41
15	5.5	6.1	5.6	5.8	4.5	200	207	12	4650	24	7.6	26
16	5.5	6.3	5.4	40	4.5	375	144	15	2920	25	68	17
17	5.5	5.4	4.2	100	4.5	169	107	17	453	34	128	16
18	9.8	6.3	3.7	70	4.5	86	90	27	298	47	82	17
19	27	7.0	4.0	54	4.8	73	78	29	1070	63	32	12
20	22	7.9	4.5	45	5.2	71	68	22	417	62	19	10
21	34	18	5.0	30	12	62	58	18	168	57	19	9.0
22	118	53	4.4	22	50	48	50	15	331	52	25	8.0
23	89	26	5.0	17	35	41	42	13	2250	50	25	7.3
24	45	15	6.0	12	30	44	34	12	227	41	23	5.6
25	21	9.8	11	9.0	27	47	31	11	138	38	23	5.5
26	12	8.0	10	7.0	20	44	28	11	96	31	23	5.1
27	7.2	7.0	9.0	6.2	15	40	25	9.9	77	26	22	5.2
28	5.9	7.3	8.0	5.8	12	40	23	9.1	65	20	20	5.4
29	4.5	7.0	7.6	5.6	11	41	21	8.6	52	8.9	20	4.5
30	4.3	6.3	7.8	5.4	---	51	18	9.0	49	15	20	4.4
31	8.5	---	8.2	5.2	---	300	---	9.6	---	14	49	---
TOTAL	500.0	304.6	215.3	531.8	307.5	2559.6	3628	514.2	30666	1710.9	838.9	1976.0
MEAN	16.1	10.2	6.95	17.2	10.6	82.6	121	16.6	1022	55.2	27.1	65.9
MAX	118	53	11	100	50	375	622	29	4650	524	128	460
MIN	4.3	5.2	3.7	4.4	4.4	6.0	18	8.6	49	8.9	7.6	4.4
CFSM	.04	.03	.02	.05	.03	.22	.32	.04	2.73	.15	.07	.18
IN.	.05	.03	.02	.05	.03	.25	.36	.05	3.05	.17	.08	.20
AC-FT	992	604	427	1050	610	5080	7200	1020	60830	3390	1660	3920

CAL YR 1979	TOTAL	65102.6	MEAN 178	MAX 3220	MIN 3.7	CFSM .48	IN 6.48	AC-FT	129100	
WTR YR 1980	TOTAL	43752.8	MEAN 120	MAX 4650	MIN 3.7	CFSM .32	IN 4.35	AC-FT	86780	

05489090 SOUTH COAL CREEK NEAR BUSSEY, IA

LOCATION.--Lat 41°13'18", long 92°47'36", in SE1/4 SE1/4 sec. 10, T.74 N., R.17 W., Mahaska County, Hydrologic Unit 07080105, on right bank 800 ft (244 m) upstream from bridge on county highway, 2.9 mi (4.7 km) upstream from mouth and 6.5 mi (10.5 km) northeast of Bussey.

DRAINAGE AREA.--12.9 mi² (33.4 km²).

PERIOD OF RECORD.--July 1976 to current year.

GAGE.--Water-stage recorder. Datum of gage is 671.67 ft (204.725 m) NGVD.

REMARKS.--Records good except those for winter period and discharges over 200 ft³/s (5.7 m³/s) which are poor. Several observations of water temperature were made during the period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,650 ft³/s (46.7 m³/s) July 7, 1978, gage height, 15.16 ft (4.621 m); no flow at times some years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 300 ft³/s (8.50 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 15	0815	*1,320	37.4	*14.27	4.349	June 22	2245	711	20.1	12.20	3.719

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.08	.36	.40	.21	.04	.29	2.1	.38	3.4	.38	.00	6.2
2	.03	.25	.30	.22	.03	.23	4.6	.40	17	.45	.00	1.8
3	.05	.18	.20	.21	.04	.22	11	.50	5.9	.37	.00	.27
4	.10	.18	.14	.22	.03	.21	7.0	.46	36	.38	3.7	40
5	.08	.28	.10	.22	.07	.19	2.1	.46	5.6	19	2.9	2.4
6	.10	.40	.09	.24	.08	.18	1.5	.40	1.3	1.5	.23	.97
7	.05	.23	.09	.23	.09	.17	1.1	.35	13	.51	.07	.47
8	.23	.18	.09	.22	.10	.19	.80	.25	1.6	.37	.00	.23
9	.10	.10	.09	.21	.10	1.5	.60	.25	.44	.25	.00	.18
10	.03	.05	.09	.20	.11	9.0	.50	.27	.30	.20	.00	.11
11	.10	.08	.09	.19	.11	3.0	.50	.42	.28	.15	1.6	.12
12	.18	.25	.09	.20	.12	.90	2.0	.43	.18	.22	.47	.17
13	.15	.25	.09	.21	.13	.30	1.6	.41	.34	.19	.16	6.5
14	.10	.40	.10	.22	.14	2.0	1.0	.41	57	.17	.06	.58
15	.10	.91	.10	1.0	.16	15	.80	.22	511	.16	.00	.21
16	.18	1.4	.11	10	.18	11	.70	.22	9.9	.13	19	.25
17	.25	2.3	.12	5.0	.23	10	.60	.53	4.7	.01	6.3	.30
18	.40	3.0	.12	3.2	.35	11	.50	.57	2.8	.12	.57	.22
19	1.1	3.5	.13	2.0	.54	5.0	.50	.54	2.0	.12	.24	.21
20	.23	5.3	.13	1.1	1.5	4.6	.40	.39	1.3	.16	.03	.21
21	.18	3.5	.12	.86	4.5	3.2	.40	.33	.94	.10	.03	.12
22	11	7.2	.14	.64	3.0	1.7	.40	.36	71	.08	.00	.13
23	1.5	6.9	.17	.48	2.0	.55	.38	.24	30	.06	.00	.06
24	.18	7.2	.16	.36	1.1	.82	.38	.27	2.4	.05	.00	.09
25	.15	5.9	.17	.45	.80	.75	.36	.28	1.3	.05	.00	.11
26	.13	4.4	.19	.35	.66	.40	.36	.28	.83	.05	.00	.07
27	.10	3.8	.19	.28	.60	.40	.34	.24	.69	.05	.00	.04
28	.13	2.5	.19	.21	.40	.36	.36	.24	.58	.05	.00	.00
29	.23	1.0	.20	.13	.35	.55	.36	.29	.40	.05	.00	.00
30	.13	.60	.20	.08	---	4.1	.40	.91	.36	.04	.10	.00
31	.40	---	.21	.06	---	10	---	.35	---	.01	3.6	---
TOTAL	17.77	62.60	4.61	29.20	17.56	97.81	43.64	11.65	782.54	25.43	39.06	62.02
MEAN	.57	2.09	.15	.94	.61	3.16	1.45	.38	26.1	.82	1.26	2.07
MAX	11	7.2	.40	10	4.5	15	11	.91	511	19	19	40
MIN	.03	.05	.09	.06	.03	.17	.34	.22	.18	.01	.00	.00
CFSM	.04	.16	.01	.07	.05	.25	.11	.03	2.02	.06	.10	.16
IN.	.05	.18	.01	.08	.05	.28	.13	.03	2.26	.07	.11	.18
AC-FT	35	124	9.1	58	35	194	87	23	1550	50	77	123

CAL YR 1979 TOTAL 3400.30 MEAN 9.32 MAX 330 MIN .02 CFSM .72 IN 9.80 AC-FT 6740
WTR YR 1980 TOTAL 1193.89 MEAN 3.26 MAX 511 MIN .00 CFSM .25 IN 3.44 AC-FT 2370

05489500 DES MOINES RIVER AT OTTUMWA, IA

LOCATION.--Lat 41°00'39", long 92°24'40", in SE1/4 NE1/4 sec.25, T.72 N., R.14 W., Wapello County, Hydrologic Unit 07100009, on right bank 15 ft (4 m) downstream from Wabash Railroad Bridge at Ottumwa, 0.4 mi (0.6 km) downstream from Ottumwa powerplant, 6.5 mi (10.5 km) upstream from Village Creek, 9.5 mi (15.3 km) downstream from South Avery Creek, and at mile 94.1 (151.4 km).

DRAINAGE AREA.--13,374 mi² (34,638 km²).

PERIOD OF RECORD.--March 1917 to current year (published as "at Eldon" October 1930 to March 1935). Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 525: 1917-20. WSP 1308: 1917-23 (M), 1925-27 (M), 1931. WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 622.00 ft (189.586 m) NGVD. Prior to Sept. 30, 1930, nonrecording gages at Market Street Bridge 1,700 ft (518 m) upstream at datum 0.83 ft (0.25 m) higher. Oct. 1, 1930, to Mar. 31, 1935, nonrecording gage at Eldon 15 mi (24.1 km) downstream at different datum. Apr. 1, 1935, to Oct. 25, 1963, water-stage recorder at site 1,100 ft (335 m) downstream at Vine Street Bridge at datum 0.77 ft (0.23 m) higher.

REMARKS.--Records good except those for winter period, which are fair. Prior to Dec. 12, 1958, and since Nov. 30, 1960, diurnal fluctuation at low flow caused by powerplant above station. Flow regulated by Lake Red Rock (station 05488100) 48.2 mi (77.6 km) upstream, since March 12, 1969. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station.

COOPERATION.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--63 years, 5,103 ft³/s (145 m³/s), 5.18 in/yr (132 mm/yr), 3,697,000 acre-ft/yr (4,560 hm³/yr); median of yearly mean discharges, 4,540 ft³/s (129 m³/s), 4.6 in/yr (117 mm/yr), 3,290,000 acre-ft/yr (4,060 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 135,000 ft³/s (3,820 m³/s) June 7, 1947, gage height, 20.2 ft (6.16 m), site and datum then in use; minimum daily, 30 ft³/s (0.85 m³/s) Jan. 27-29, 31, Feb. 2, 3, 5-7, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1850, that of June 7, 1947. Flood of May 31, 1903, reached a stage of 19.4 ft (5.91 m), former site and datum at Vine Street Bridge or about 22 ft (6.71 m) at Market Street Bridge, from information by Corps of Engineers and U.S. Weather Bureau, discharge, about 140,000 ft³/s (3,960 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 26,500 ft³/s (750 m³/s) June 15, gage height, 9.98 ft (3.042 m); minimum daily, 167 ft³/s (4.73 m³/s) Aug. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5910	6750	7290	3860	2800	4000	4880	4400	4040	7120	988	3380
2	5220	6960	6990	2440	2900	3800	4260	3700	8600	6880	1050	3690
3	5100	5730	6870	3520	2850	3420	4800	3220	10900	6870	1070	3860
4	5100	5400	4770	3500	2800	1920	5440	3160	9930	6730	997	4290
5	4620	5340	4220	3090	2400	2180	5990	3250	10800	5490	1180	4900
6	4530	6120	5700	3040	2500	2850	6240	3150	11400	5130	1170	4180
7	4530	6810	5800	2800	2550	2090	7440	3130	14800	3800	1090	3910
8	4110	6870	5900	2300	2100	2040	9760	2790	14500	3290	1020	3700
9	3550	6930	6000	1310	1550	2420	11000	2620	13500	3270	910	3640
10	3390	9270	6000	1720	1900	3090	10300	2600	13300	3180	970	3640
11	3520	9990	4950	1600	2050	3210	9880	2420	13100	3160	890	3670
12	4190	10000	4600	1450	2200	2730	10200	2270	12500	2590	1080	2670
13	4330	8640	4500	1380	2300	3520	10800	2330	11200	2440	1250	2400
14	3240	8190	3700	1600	1700	4080	9910	2470	12000	2330	1210	2420
15	2580	8070	2250	2110	1650	4590	9500	2600	23100	1850	1750	2330
16	2510	8370	2100	3000	2150	5460	8710	2610	16100	1810	2990	1460
17	2440	8130	3200	4500	2000	5880	6040	2410	7920	1780	3570	1130
18	1960	7890	3780	5800	1900	7020	5780	2360	10600	1760	5450	1040
19	1740	7350	2240	5100	1100	7300	7190	2680	14400	1550	5990	1300
20	2290	7440	1940	5250	800	8200	7250	2870	15600	1480	5790	1160
21	2560	7680	2850	5400	1200	8640	6190	2820	15200	1490	4440	1180
22	3090	7440	2950	3780	3100	8440	5030	2740	15200	1500	4140	1310
23	4000	7380	3190	3090	4200	7050	4790	2830	16500	1410	4110	1280
24	5370	8130	3550	3200	4470	8270	4730	2790	13900	1450	2820	1280
25	5700	7230	4860	3100	4500	7030	4720	2800	12400	1330	1570	991
26	5730	6810	5000	3100	4600	6180	4720	2780	12400	1310	922	1650
27	7650	10600	5100	3000	4800	5050	4700	2670	11200	1260	632	1920
28	8790	9780	4330	3000	4200	5300	4700	2630	9620	1250	167	1570
29	8910	9540	6120	2900	4100	4710	4690	2670	9330	1240	3000	2420
30	7620	8910	6060	2510	---	4440	4670	2480	8490	1190	2550	2850
31	6960	---	4530	2450	---	4880	---	2440	---	1170	2530	---
TOTAL	141240	233750	141040	94900	77370	149790	204310	86690	372530	87110	67296	75221
MEAN	4556	7792	4550	3061	2668	4832	6810	2796	12420	2810	2171	2507
MAX	8910	10600	7290	5800	4800	8640	11000	4400	23100	7120	5990	4900
MIN	1740	5340	1940	1310	800	1920	4260	2270	4040	1170	167	991
AC-FT	280100	463600	279800	188200	153500	297100	405200	171900	738900	172800	133500	149200

CAL YR 1979 TOTAL 3936830 MEAN 10790 MAX 33000 MIN 800 AC-FT 7809000
WTR YR 1980 TOTAL 1731247 MEAN 4730 MAX 23100 MIN 167 AC-FT 3434000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	2204	2278	1392	1740	3211	8120.3	11260	9280.3	12347	6496.2	3596.1	2996.8	5420.7
RUNOFF (INCHES)	0.21	0.19	0.12	0.15	0.25	0.70	0.94	0.80	1.03	0.56	0.31	0.25	5.51
STD. DEVIATION	0.22	0.24	0.11	0.13	0.17	0.50	0.83	0.61	0.87	0.40	0.30	0.22	2.90
PERCENT OF ANNUAL	3.80	3.40	2.20	2.70	4.50	13.00	17.00	14.00	19.00	10.00	5.60	4.50	----
PRECIP. (INCHES)	2.08	1.38	1.06	1.11	1.82	2.25	2.86	4.09	4.76	3.19	3.21	2.99	30.00

05490500 DES MOINES RIVER AT KEOSAUQUA, IA

LOCATION.--Lat 40°43'40", long 91°57'34", in SE1/4 SW1/4 sec.36, T.69 N., R.10 W., Van Buren County, Hydrologic Unit 07100009, on right bank 10 ft (3 m) upstream from bridge on State Highway 1 at Keosauqua, 4.0 mi (6.4 km) downstream from Chequest Creek, and at mile 51.3 (82.5 km).

DRAINAGE AREA.--14,038 mi² (36,358 km²).

PERIOD OF RECORD.--May 1903 to July 1906, April to December 1910, August 1911 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 525: 1913-20. WSP 1438: Drainage area. WSP 1508: 1903, 1905-6, 1915-18 (M), 1922 (M), 1924-26 (M), 1932-34 (M), 1937, 1942 (M).

GAGE.--Water-stage recorder. Datum of gage is 547.36 ft (166.835 m) NGVD. Prior to Dec. 24, 1933, nonrecording gage, and Dec. 25, 1933, to Sept. 30, 1972, water-stage recorder, same site at datum 10.00 ft (3.05 m) higher.

REMARKS.--Records good except those for winter period, which are fair. Prior to Dec. 21, 1958, and since Nov. 30, 1960, some diurnal fluctuation at medium and low stages caused by powerplant at Ottumwa. Flow regulated by Lake Red Rock (station 05488100) 91.0 mi (146 km) upstream, since March 12, 1969. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

COOPERATION.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--71 years (1903-5, 1911-80), 5,531 ft³/s (156.6 m³/s) 5.35 in/yr (136 mm/yr), 4,007,000 acre-ft/yr (4,940 hm³/yr); median of yearly mean discharges, 4,980 ft³/s (141 m³/s), 4.8 in/yr (122 mm/yr), 3,610,000 acre-ft/yr (4,450 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 146,000 ft³/s (4,130 m³/s) June 1, 1903, gage height, 27.85 ft (8.489 m), from floodmark, datum then in use; minimum daily, 40 ft³/s (1.13 m³/s) Jan. 30, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1, 1851, reached a stage of 24 ft (7 m), discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 41,200 ft³/s (1,170 m³/s) June 15, gage height, 22.07 ft (6.727 m); minimum daily, 318 ft³/s (9.01 m³/s) Aug. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5630	6250	7760	4140	2900	4600	5390	4500	5310	7720	1020	11800
2	5460	6220	6530	3770	3050	4200	5020	4190	16800	6760	903	7820
3	4940	6130	6700	2710	3000	3900	4780	3360	23100	6660	875	4390
4	4930	5010	5800	3700	3000	3500	6050	3200	14500	6550	957	6390
5	4790	4930	4330	3600	2900	3150	5710	3080	15700	6560	1220	6550
6	4450	5180	4330	3100	2500	2700	6060	3160	12300	5380	1140	5660
7	4420	5990	5900	2630	2600	3400	6320	3060	12300	4850	1040	4390
8	4350	6370	6200	2150	2800	3200	7990	3010	15800	3780	924	4120
9	3950	6410	6400	1960	2100	3200	9940	2590	13600	3460	856	3840
10	3350	7060	6300	1560	1650	3700	10400	2510	13200	3230	880	3730
11	3370	9080	5610	1830	2200	4400	9690	2510	13000	3000	865	3670
12	3530	9240	4870	1600	2400	5230	10300	2290	12600	2940	797	3710
13	4220	8750	4540	1500	2450	3920	12100	2220	11600	2370	862	2740
14	4120	7830	4960	1350	2500	5040	10600	2250	11900	2200	1510	2470
15	2960	7450	4410	2200	2100	5110	9680	2430	31600	2030	1260	2520
16	2460	7530	2680	3700	1800	5690	10000	2530	27500	1680	3140	2390
17	2490	7780	2680	5400	2400	5990	7880	2600	13100	1550	13200	2070
18	2310	7310	4600	6200	2300	6120	5450	2440	7750	1630	8310	1340
19	1930	7150	5620	6140	1800	6960	6250	2320	12700	1600	5830	1120
20	1690	6890	3700	5400	1300	7380	6980	2710	15400	1420	6630	1290
21	2300	8010	2160	5210	900	8010	6660	2740	15100	1670	5170	1220
22	3070	7520	3390	5800	2800	8350	5560	2710	15200	1370	3970	1210
23	3500	7060	3510	3580	4500	7330	4690	2700	15500	1400	3860	1310
24	4490	6980	3380	3210	4650	7230	4660	2680	15900	1250	3750	1320
25	5320	7600	3840	3590	4800	7780	4610	2650	12200	1280	2440	1280
26	5320	6400	4940	3430	5000	6510	4580	2670	12100	1290	2030	1010
27	5680	7590	6380	3200	5100	5660	4580	2630	11400	1310	1340	1580
28	7530	11500	4300	3100	5200	4950	4570	2480	9930	1150	601	1820
29	8060	8910	5100	3050	4900	5210	4560	2470	8960	1140	318	1510
30	7740	8600	6400	2900	---	4570	4550	2500	8640	1120	2670	2510
31	6580	---	6400	2800	---	5470	---	2250	---	1060	7750	---
TOTAL	134940	218730	153720	104510	85600	162460	205610	85440	424690	89410	85118	96780
MEAN	4353	7291	4959	3371	2952	5241	6854	2756	14160	2884	2746	3226
MAX	8060	11500	7760	6200	5200	8350	12100	4500	31600	7720	13200	11800
MIN	1690	4930	2160	1350	900	2700	4550	2220	5310	1060	318	1010
AC-FT	267700	433900	304900	207300	169800	322200	407800	169500	842400	177300	168800	192000

CAL YR 1979 TOTAL 3933880 MEAN 10780 MAX 34800 MIN 910 AC-FT 7803000
WTR YR 1980 TOTAL 1847008 MEAN 5046 MAX 31600 MIN 318 AC-FT 3664000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	2435.3	2516.4	1582.9	1826.4	3505.0	8767.0	12078	9862.8	13337	6940.5	3896.4	3271.4	5832.60
RUNOFF (INCHES)	0.22	0.20	0.13	0.15	0.26	0.72	0.96	0.81	1.06	0.57	0.32	0.26	5.64
STD. DEVIATION	0.22	0.25	0.11	0.18	0.17	0.50	0.84	0.63	0.90	0.41	0.29	0.22	2.93
PERCENT OF ANNUAL	3.80	3.60	2.20	2.60	4.90	12.00	17.00	14.00	19.00	10.00	5.50	4.70	----
PRECIP. (INCHES)	2.09	1.39	1.07	1.12	1.03	2.26	2.89	4.12	4.80	3.21	3.23	3.01	30.20

BIG SIOUX RIVER BASIN

06483500 ROCK RIVER NEAR ROCK VALLEY, IA

LOCATION.--Lat 43°12'52", long 96°17'39", in SW1/4 SW1/4 sec.16, T.97 N., R.46 W., Sioux County, Hydrologic Unit 10170204, on left bank 3 ft (0.9 m) upstream from bridge on county highway K30, 0.3 mi (0.5 km) north of Rock Valley and at mile 19.1 (30.7 km).

DRAINAGE AREA.--1,592 mi² (4,123 km²).

PERIOD OF RECORD.--June 1948 to current year.

REVISED RECORDS.--WSP 1439: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,222.84 ft (372.630 m) NGVD. Prior to Aug. 13, 1952, nonrecording gage (June 4, 1949, to Aug. 12, 1952, supplementary water-stage recorder operating above 6.2 ft (1.89 m) gage height) and Aug. 13, 1952, to May 4, 1976, water-stage recorder, at site 3.2 mi (5.1 km) downstream at datum 10.73 ft (3.271 m) lower.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--32 years, 323 ft³/s (9.147 m³/s), 2.76 in/yr (70 mm/yr), 234,000 acre-ft/yr (289 hm³/yr); median of yearly mean discharges, 250 ft³/s (7.08 m³/s), 2.1 in/yr (53 mm/yr), 181,000 acre-ft/yr (223 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,400 ft³/s (1,140 m³/s) Apr. 7, 1969, gage height, 17.32 ft (5.279 m); no flow for many days during winter period in 1959 and 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1897 reached a stage of 17.0 ft (5.18 m), former site and datum, discharge not determined, from information by State Highway Commission.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,000 ft³/s (85.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 2	0800	*8,820	250	*16.67	4.775	June 7	1200	4,220	120	12.74	3.883
Mar. 17	1500	3,000	85.0	10.88	3.315						

Minimum daily discharge, 72 ft³/s (2.04 m³/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

1	406	6210	835	420	160	400	839	556	1630	222	108	127
2	387	8730	822	400	160	400	825	536	1080	212	107	120
3	375	6500	828	380	150	380	863	514	891	207	101	118
4	360	3630	846	370	150	380	1800	492	937	361	103	120
5	351	2780	856	360	150	380	1840	473	1770	251	101	151
6	339	2660	877	350	150	370	1850	455	3340	268	99	200
7	329	2430	919	340	160	360	1420	434	3980	214	96	182
8	320	2140	801	320	150	350	1230	417	2180	198	95	154
9	312	1870	746	300	150	350	1140	407	1470	188	107	138
10	310	1640	811	280	150	350	1070	399	1150	181	127	124
11	310	1420	815	260	150	370	978	392	952	176	117	115
12	308	1300	644	250	150	500	891	385	798	171	111	107
13	303	1230	585	250	150	440	825	392	697	162	107	103
14	298	1160	605	240	150	420	768	397	635	159	144	98
15	296	1140	611	240	150	500	732	392	564	156	219	94
16	296	1120	640	230	150	1070	703	380	511	148	208	94
17	293	1090	710	230	150	2610	690	404	468	144	194	91
18	298	1060	800	220	150	1880	700	458	429	148	170	89
19	368	1030	820	210	160	1310	719	498	397	146	157	86
20	459	970	700	200	160	1050	745	495	368	144	187	90
21	490	1070	620	190	180	898	751	471	337	141	253	99
22	473	1280	580	190	250	774	748	437	319	136	239	99
23	432	1230	576	180	600	675	725	402	310	130	195	93
24	418	1170	550	180	500	599	703	380	295	126	169	88
25	406	1160	522	180	440	531	684	361	280	129	150	83
26	392	1250	514	170	420	520	669	347	272	126	157	79
27	382	1220	487	170	420	511	650	344	266	120	164	77
28	375	1100	471	170	420	508	632	344	258	117	150	75
29	368	835	458	170	400	528	605	356	243	113	144	74
30	483	758	440	160	---	608	579	667	230	111	134	72
31	2660	---	430	160	---	771	---	1740	---	110	127	---
TOTAL	13597	61183	20918	7770	6670	20793	27374	14725	27057	5215	4540	3240
MEAN	439	2039	675	251	230	671	912	475	902	168	146	108
MAX	2660	8730	919	420	600	2610	1850	1740	3980	361	253	200
MIN	293	758	430	160	150	350	579	344	230	110	95	72
CFSM	.28	1.28	.42	.16	.14	.42	.57	.30	.57	.11	.09	.07
IN.	.32	1.43	.49	.18	.16	.49	.64	.34	.63	.12	.11	.08
AC-FT	26970	121400	41490	15410	13230	41240	54300	29210	53670	10340	9010	6430

CAL YR 1979 TOTAL 403851.5 MEAN 1106 MAX 17100 MIN 6.9 CFSM .70 IN 9.44 AC-FT 801100
WTR YR 1980 TOTAL 213082.0 MEAN 582 MAX 8730 MIN 72 CFSM .37 IN 4.98 AC-FT 422600

06485500 BIG SIOUX RIVER AT AKRON, IA
(National stream-quality accounting network station)

LOCATION.--Lat 42°49'42", long 96°33'45", in NW1/4 SW1/4 sec.31, T.93 N., R.48 W., Plymouth County, Iowa, Hydrologic Unit 10170203, on left bank at west edge of Akron, 0.6 mi (1.0 km) downstream from bridge on State Highway 48, and 2.3 mi (3.7 km) upstream from Union Creek.

DRAINAGE AREA.--9,030 mi² (23,390 km²), approximately, of which about 1,970 mi² (5,100 km²) is probably noncontributing.

PERIOD OF RECORD.--October 1928 to current year.

REVISED RECORDS.--WSP 1309: 1929 (M), 1931-33 (M), 1936 (M), 1938 (M), 1940 (M). WSP 1389: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,118.90 ft (341.041 m) NGVD. Prior to Dec. 3, 1934, nonrecording gage at bridge 300 ft (91 m) upstream at same datum.

REMARKS.--Records good except those for the winter period, which are poor. Water-quality data available in reports of Water Resources Data for South Dakota. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--52 years, 860 ft³/s (24.36 m³/s), 623,100 acre-ft/yr (768 hm³/yr); median of yearly mean discharges, 730 ft³/s (20.7 m³/s), 529,000 acre-ft/yr (650 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 80,800 ft³/s (2,290 m³/s) Apr. 9, 1969, gage height, 22.99 ft (7.007 m); minimum daily, 4 ft³/s (0.11 m³/s) Jan. 17, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,500 ft³/s (99.1 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 14	1700	*8,730	247	*17.10	5.212	June 8	0700	5,500	1556	14.17	4.319
May 30	0900	4,530	128	12.76	3.889						

Minimum daily discharge, 191 ft³/s (5.41 m³/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	849	2870	1150	900	530	770	1450	994	2030	1750	329	375
2	806	4770	1180	850	530	700	1530	964	2120	2050	319	361
3	778	6020	1270	850	530	650	1580	930	1650	2060	303	379
4	755	8330	1480	860	520	640	1850	899	1350	2000	315	391
5	721	7810	1690	850	515	635	2830	866	1540	2150	308	394
6	688	5560	1840	830	505	630	2910	834	2390	1700	278	358
7	666	4400	1820	780	500	635	2740	800	4680	1550	268	404
8	650	3910	1960	730	500	700	2290	761	5340	1220	262	415
9	626	3420	1660	690	495	710	2090	734	3850	1050	262	414
10	607	3040	1510	660	490	730	1980	714	2740	963	416	373
11	600	2710	1770	670	490	770	1900	691	2340	891	332	329
12	589	2420	1710	690	490	800	1800	669	2110	817	330	309
13	578	2250	1290	730	485	840	1680	666	1980	743	332	286
14	563	2140	1240	740	485	880	1560	659	1950	686	305	265
15	552	2070	1220	760	485	940	1460	676	1920	639	300	252
16	544	2020	1140	760	485	1330	1380	657	1800	609	431	253
17	537	1980	980	750	480	1810	1330	658	1650	592	509	242
18	542	1950	1000	740	480	2960	1280	680	1480	550	512	238
19	563	1920	1100	720	475	2890	1250	738	1320	521	503	236
20	613	1880	1140	710	485	2360	1260	786	1190	520	479	249
21	712	1870	1160	700	515	2230	1270	782	1090	490	455	296
22	744	2000	1160	690	700	2010	1270	747	1030	468	530	253
23	723	2190	1080	670	1280	1690	1240	693	958	472	566	238
24	688	2150	1090	660	1120	1570	1210	644	901	468	539	236
25	672	2000	1060	650	990	1440	1170	604	849	448	503	231
26	656	1970	1020	630	920	1340	1140	571	800	439	488	215
27	649	2040	1000	600	870	1300	1110	547	780	409	518	208
28	634	2030	970	590	850	1240	1090	532	753	392	497	203
29	629	1760	960	570	820	1210	1060	816	812	369	467	197
30	697	1190	940	540	---	1200	1030	3400	1260	352	430	191
31	1070	---	920	540	---	1300	---	1400	---	338	400	---
TOTAL	20701	90670	39510	22110	18020	38910	47750	26112	54663	27706	12486	8791
MEAN	668	3022	1275	713	621	1255	1592	842	1822	894	403	293
MAX	1070	8330	1960	900	1280	2960	2910	3400	5340	2150	566	415
MIN	537	1190	920	540	475	630	1030	532	753	338	262	191
CFSM	.07	.34	.14	.08	.07	.14	.18	.09	.20	.10	.05	.03
IN.	.09	.37	.16	.09	.07	.16	.20	.11	.23	.11	.05	.04
AC-FT	41060	179800	78370	43860	35740	77180	94710	51790	108400	54950	24770	17440

CAL YR 1979 TOTAL 852930 MEAN 2337 MAX 29000 MIN 58 CFSM .26 IN 3.51 AC-FT 1692000
WTR YR 1980 TOTAL 407429 MEAN 1113 MAX 8330 MIN 191 CFSM .12 IN 1.68 AC-FT 808100

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	235.0	242.8	156.6	78.3	520.3	1801.5	3399.3	1253.2	1780.6	1096.5	626.6	485.6	977.9
RUNOFF (INCHES)	0.04	0.03	0.02	0.01	0.06	0.23	0.42	0.16	0.22	0.14	0.08	0.06	1.47
STD. DEVIATION	0.03	0.02	0.01	0.01	0.07	0.18	0.59	0.12	0.19	0.12	0.08	0.06	0.95
PERCENT OF ANNUAL	2.60	2.20	1.40	0.87	4.10	16.00	29.00	11.00	15.00	9.10	5.20	3.80	----
PRECIP. (INCHES)	1.36	0.70	0.65	0.43	0.80	1.11	1.89	2.91	3.97	2.91	2.91	2.36	22.00

06486000 MISSOURI RIVER AT SIOUX CITY, IA
(National stream-quality accounting network station)

LOCATION.--Lat 42°29'10", long 96°24'47", in NW1/4 SE1/4 sec.16, T.29 N., R.9 E., sixth principal meridan, Dakota County, Nebraska, Hydrologic Unit 10230001, on right bank on upstream side of bridge on U.S. Highway 77 at South Sioux City, Nebraska, 2.0 mi (3.2 km) downstream from Big Sioux River, and at mile 732.3 (1,178.3 km).

DRAINAGE AREA.--314,600 mi² (814,800 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1897 to current year in reports of Geological Survey. Prior to October 1928 and October 1931 to September 1938, monthly discharges only, published in WSP 1310. January 1879 to December 1890 (monthly discharges only) in House Document 238, 73rd Congress, 2d session, Missouri River. Gage-height records collected in this vicinity September 1878 to December 1899 are contained in reports of Missouri River Commission and since July 1889 are contained in reports of U.S. Weather Bureau.

REVISED RECORDS.--WSP 716: 1929-30. WSP 876: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,056.98 ft (322.168 m) NGVD. Sept. 2, 1878, to Dec. 31, 1905, nonrecording gages at various locations within 1.7 mi (2.7 km) of present site and at various datums. Jan. 1, 1906, to Feb. 14, 1935, nonrecording gage, and Feb. 15, 1935 to Sept. 30, 1969, water-stage recorder at present site at datum 19.98 ft (6.090 m) higher, and Oct. 1, 1969 to Sept. 30, 1970 at datum 20.00 ft (6.096 m) higher.

REMARKS.--Records good except those for Jan. 28 to Feb. 4, which are poor. Flow regulated by upstream main-stem reservoirs. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--83 years, 32,070 ft³/s (908.2 m³/s), 23,230,000 acre-ft/yr (28,600 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 441,000 ft³/s (12,500 m³/s) Apr. 14, 1952, gage height, 24.28 ft (7.401 m), datum then in use; minimum, 2,500 ft³/s (70.8 m³/s) Dec. 29, 1941; minimum gage height, 9.00 ft (2.743 m) Jan. 8, 1980, based on gage readings at site 14 mi (22.5 km) downstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 44,000 ft³/s (1,250 m³/s) Oct. 31, gage height, 20.53 ft (6.258 m); maximum gage height, 20.56 ft (6.267 m) Aug. 10; minimum daily discharge, 13,800 ft³/s (391 m³/s) Jan. 8; minimum gage height, 9.00 ft (2.743 m) Jan. 8, based on gage readings at site 14 mi (22.5 km) downstream.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39700	39900	39800	24100	17000	15900	33100	32300	32800	32400	37300	36900
2	39800	37800	40000	24100	18000	17700	32300	32300	33300	32900	38100	36500
3	40000	38500	41200	23800	18500	18900	33200	32100	33300	33300	38500	35400
4	40100	38900	40400	23200	19000	19700	33000	32200	31200	33200	39000	35400
5	39900	40000	38600	23700	19900	17000	32500	32600	30100	33300	38500	35100
6	39600	41400	35800	23500	20000	16000	33000	32400	29900	33200	38200	34800
7	39600	40800	33800	17200	20100	18500	32600	32500	32100	32800	38400	34400
8	39700	40100	30700	13800	19900	18500	31300	32600	32600	32900	38500	34200
9	39800	39300	28300	20600	19700	18400	30700	32700	31300	33300	39700	34200
10	39700	38400	27000	20000	19000	19200	30400	32700	31200	33700	41400	35200
11	39600	39100	27100	21300	19400	18000	31300	32600	31000	34400	42000	36600
12	39400	39100	25900	19000	18400	17800	32200	33000	31100	34700	39800	36800
13	39600	38900	26400	20900	19000	16200	32800	32700	31400	34500	36000	36600
14	39300	38900	26800	25100	20500	14100	33500	32200	31600	34700	34700	36800
15	39200	39800	26700	24300	19900	17500	33000	31700	32000	35800	36100	36800
16	39200	40000	25500	24200	18700	18700	32700	31500	32100	38700	38600	36700
17	39300	39700	25700	23700	18400	18800	32600	31700	32300	38200	38800	36500
18	39500	39900	27100	23000	18600	18900	32700	32000	32000	38000	36000	36300
19	40100	40100	27900	23200	20600	20700	33000	32200	31900	37800	35000	36700
20	39800	40000	25200	22800	20300	23500	33000	32400	32000	38100	35200	37900
21	39800	40400	24400	22500	19900	26200	32900	32200	32000	38000	35200	38700
22	40100	40300	24200	22600	20600	29000	32900	32000	32200	37800	34700	38300
23	39300	39200	24400	21300	21800	31900	32900	31500	32400	37400	34500	37400
24	38200	39400	24300	21400	20300	33200	33000	31300	32100	37500	34500	35600
25	38500	39800	23900	22400	19200	33000	33200	31400	32200	38300	34400	35300
26	38800	40200	24400	19900	17600	33100	33000	31500	32100	38000	35100	35300
27	39300	40700	24200	17700	19000	33000	32800	33500	32200	37400	35700	36800
28	40000	40400	24200	17000	19300	32600	32400	32000	31800	37400	34500	38500
29	40000	38900	24200	16500	17900	32900	32200	32100	31200	37100	35000	38500
30	41600	38800	24100	16500	---	33400	32300	37300	31000	37100	36100	38500
31	43500	---	24000	16500	---	33200	---	37200	---	37000	36300	---
TOTAL	1232000	1188700	886200	655800	560500	715500	976500	1008400	954400	1108900	1145800	1092700
MEAN	39740	39620	28590	21150	19330	23080	32550	32530	31810	35770	36960	36420
MAX	43500	41400	41200	25100	21800	33400	33500	37300	33300	38700	42000	38700
MIN	38200	37800	23900	13800	17000	14100	30400	31300	29900	32400	34400	34200
AC-FT	2444000	2358000	1758000	1301000	1112000	1419000	1937000	2000000	1893000	2200000	2273000	2167000

CAL YR 1979 TOTAL 12938300 MEAN 35450 MAX 50100 MIN 15000 AC-FT 25660000
WTR YR 1980 TOTAL 11525400 MEAN 31490 MAX 43500 MIN 13800 AC-FT 22860000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	21830	22558	10915	10915	12085	24559	47935	35474	45116	38203	32746	31017	28507
RUNOFF (INCHES)	0.11	0.08	0.04	0.04	0.04	0.09	0.17	0.13	0.16	0.14	0.12	0.11	1.23
STD. DEVIATION	0.03	0.03	0.01	0.01	0.02	0.04	0.13	0.05	0.07	0.05	0.02	0.02	0.33
PERCENT OF ANNUAL	8.80	6.70	3.30	3.30	3.80	6.90	14.00	10.00	13.00	12.00	9.60	9.30	----
PRECIP. (INCHES)	1.08	0.56	0.52	0.34	0.64	0.88	1.50	2.31	3.16	2.32	2.32	1.88	17.50

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972 to current year. Daily sediment loads October 1954 to September 1971 in reports of Corps of Engineers.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1972 to September 1976, November 1977 to current year.
WATER TEMPERATURES: October 1971 to September 1976, November 1977 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1971 to September 1976.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 850 micromhos Mar. 29, Apr. 2, 13, Nov. 2, 1973, Dec. 7-9, 1977 and Jan. 26, 1978; minimum daily, 410 micromhos Mar. 22, 1978.
WATER TEMPERATURES: Maximum daily, 28.0°C July 30, 1976 and Aug. 7, 1979; minimum daily, 0.0°C on many days during the winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,620 mg/L Nov. 20, 1972; minimum daily mean, 42 mg/L Dec. 29, 1975.
SEDIMENT LOADS: Maximum daily, 222,000 tons (201,000 tonnes) Nov. 20, 1972; minimum daily, 2,970 tons (2,700 tonnes) Dec. 29, 1975.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 840 micromhos Sept. 26; minimum daily, 580 micromhos May 30.
WATER TEMPERATURES: Maximum daily, 27.0°C July 13-15, 17, 19; minimum daily, 0.0°C on many days during the winter period.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1			---	675	760	760	760	780	690	760	790	800
2			---	675	750	700	750	800	720	760	800	800
3			---	700	750	725	740	800	720	780	800	800
4			---	725	740	750	740	800	720	780	790	800
5			760	725	750	725	750	800	720	780	790	800
6			760	725	650	725	760	810	720	780	800	800
7			760	750	725	700	750	---	720	---	800	825
8			780	800	700	675	740	750	720	---	800	775
9			770	800	750	650	730	750	725	---	800	825
10			760	750	750	650	750	750	720	775	750	825
11			780	725	750	740	720	750	725	700	780	825
12			770	750	700	740	720	750	725	775	780	825
13			770	750	775	760	730	750	725	650	790	825
14			760	750	775	800	730	740	725	790	790	825
15			800	750	700	760	730	750	725	780	790	825
16			800	760	750	780	760	760	720	800	760	825
17			760	770	750	800	760	740	750	790	760	825
18			750	740	750	760	770	700	650	800	780	825
19			760	790	675	800	770	750	750	790	800	825
20			760	800	750	760	780	690	750	780	800	825
21			760	790	750	750	790	750	750	790	800	825
22			780	780	700	750	790	750	750	790	825	825
23			780	775	710	750	790	700	750	790	800	825
24			---	760	700	760	800	750	700	780	800	825
25			---	750	750	760	790	750	760	780	800	820
26			790	760	750	750	790	750	760	790	800	840
27			800	760	750	740	790	725	690	800	800	830
28			700	780	700	720	790	720	750	800	825	830
29			725	780	750	780	780	720	760	---	800	830
30			700	750	---	760	790	580	760	---	800	830
31			650	760	---	750	---	690	---	790	800	---

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1			---	1.0	.0	.0	5.0	13.0	18.0	25.0	24.0	20.0
2			---	.0	.0	.0	5.0	13.0	18.0	24.0	24.0	20.0
3			---	.0	.0	.0	4.0	14.0	18.0	24.0	24.0	20.0
4			---	.0	.0	.0	4.0	15.0	18.0	24.0	23.0	21.0
5			1.5	.0	.0	.0	4.0	15.0	19.0	24.0	22.0	21.0
6			1.0	.0	.0	.0	5.0	14.0	19.0	24.0	24.0	21.0
7			1.0	.0	.0	.0	5.0	---	18.0	---	25.0	21.0
8			1.0	.0	.0	.0	7.0	13.0	18.0	---	24.0	22.0
9			.0	.0	.0	.0	7.0	13.0	19.0	---	23.0	21.0
10			.0	.0	.0	.0	7.0	13.0	20.0	25.0	23.0	20.0
11			.0	.0	.0	1.0	8.0	11.0	19.0	26.0	24.0	20.0
12			.0	.0	.0	.0	7.0	12.0	19.0	26.0	23.0	20.0
13			.0	.0	.0	.0	7.0	13.0	19.0	27.0	23.0	20.0
14			.0	.0	.0	.0	7.0	12.0	19.0	27.0	23.0	20.0
15			.0	.0	.0	2.0	7.0	12.0	20.0	27.0	23.0	19.0
16			.0	.0	.0	3.0	8.0	12.0	20.0	26.0	22.0	18.0
17			.0	.0	.0	2.0	9.0	12.0	20.0	27.0	21.0	18.0
18			.0	.0	.0	4.0	10.0	13.0	21.0	26.0	23.0	18.0
19			.0	.0	.0	4.0	10.0	13.0	20.0	27.0	23.0	19.0
20			.0	.0	.0	5.0	11.0	14.0	20.0	26.0	24.0	18.0
21			.0	.0	.0	4.0	12.0	14.0	20.0	26.0	22.0	17.0
22			.0	.0	.0	4.0	12.0	15.0	20.0	26.0	23.0	16.0
23			.0	.0	.0	4.0	13.0	15.0	21.0	25.0	23.0	16.0
24			---	.0	.0	3.0	12.0	16.0	22.0	25.0	22.0	15.0
25			---	.0	.0	4.0	11.0	17.0	23.0	24.0	23.0	15.0
26			.0	.0	.0	4.0	11.0	18.0	23.0	23.0	23.0	15.0
27			.0	.0	.0	4.0	12.0	17.0	24.0	24.0	23.0	15.0
28			.0	.0	.0	3.0	13.0	18.0	24.0	24.0	23.0	16.0
29			.0	.0	.0	4.0	13.0	19.0	24.0	24.0	22.0	17.0
30			1.0	.0	---	4.0	13.0	17.0	24.0	---	21.0	17.0
31			1.0	.0	---	4.0	---	17.0	---	23.0	21.0	---

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS (MG/L AS CACO3) (00900)
OCT											
23...	1100	39700	790	8.4	9.5	17	8.5	77	17	120	260
NOV											
06...	1515	41600	735	8.4	7.0	55	11.3	94	K1800	1200	270
DEC											
10...	1440	28480	750	8.2	3.0	13	14.0	107	31	90	290
JAN											
21...	1045	22000	820	8.1	.0	4.3	13.6	97	41	60	240
FEB											
08...	0830	29000	710	8.1	.0	3.5	13.9	97	96	30	230
MAR											
10...	1530	19300	650	8.0	1.0	30	12.4	90	45	110	240
APR											
04...	1240	33400	750	8.4	4.0	17	12.2	95	180	630	230
MAY											
06...	1500	32400	750	8.3	16.0	19	9.2	96	K8	K29	260
JUN											
17...	1100	32100	750	8.1	22.0	30	8.7	98	260	130	250
JUL											
15...	1120	35300	840	8.2	24.0	18	8.1	99	K12	28	260
AUG											
11...	1100	42100	780	7.8	25.0	30	7.8	98	K5500	K2200	250
SEP											
16...	1230	37400	810	8.1	15.0	17	8.1	96	55	34	250

K Results based on colony count outside the acceptable range (non-ideal colony count).

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM ADSORPTION RATIO (00931)	SODIUM+POTASSIUM DISSOLVED (MG/L AS NA) (00933)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY (MG/L AS CACO3) (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)
OCT											
23...	100	64	25	78	39	2.1	84	5.6	160	250	13
NOV											
06...	110	64	27	49	39	1.3	55	6.2	160	200	14
DEC											
10...	120	70	27	71	35	1.8	77	6.5	170	210	13
JAN											
21...	85	60	23	74	39	2.1	79	5.2	160	240	11
FEB											
08...	81	58	21	64	37	1.8	69	5.0	150	210	13
MAR											
10...	89	61	21	57	34	1.6	63	5.8	150	180	11
APR											
04...	79	57	21	62	36	1.8	--	5.1	150	210	9.8
MAY											
06...	110	63	25	68	36	1.8	--	5.5	150	230	12
JUN											
17...	91	61	24	68	36	1.9	--	5.5	160	210	10
JUL											
15...	96	63	24	75	38	2.0	--	5.8	160	220	11
AUG											
11...	91	61	24	79	40	2.2	--	7.1	160	260	11
SEP											
16...	88	58	25	79	40	2.2	--	5.8	160	260	12

DATE	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)
OCT											
23...	.5	6.2	537	539	.73	57600	.16	.07	.08	.80	.87
NOV											
06...	.4	9.2	474	472	.64	53200	1.5	.08	.10	1.0	1.1
DEC											
10...	.4	8.8	531	510	.72	40800	.64	.02	.02	1.1	1.1
JAN											
21...	.5	7.1	544	518	.74	32300	.15	.00	.00	1.3	1.3
FEB											
08...	.4	9.7	489	473	.67	38300	.55	.03	.04	.46	.49
MAR											
10...	.4	12	448	440	.61	23300	.48	.11	.13	.66	.77
APR											
04...	.4	8.1	488	465	.66	44000	.23	.10	.12	.43	.53
MAY											
06...	.4	7.1	514	502	.70	45000	.10	.03	.04	.64	.67
JUN											
17...	.4	8.1	488	484	.66	42300	.25	.01	.01	.75	.76
JUL											
15...	.6	7.0	514	504	.70	49000	.01	.01	.01	.73	.74
AUG											
11...	.6	4.4	527	543	.72	59900	.00	.01	.01	.94	.95
SEP											
16...	.5	7.1	532	544	.72	53700	.00	.00	.00	.67	.67

DATE	NITROGEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS, TOTAL (MG/L AS PO4) (71886)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED (MG/L AS C) (00689)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)
OCT											
23...	.27	.60	1.0	4.6	.140	.43	.010	22	--	--	--
NOV											
06...	.45	.65	2.6	12	.320	.98	.070	6.4	6.2	.2	0
DEC											
10...	.33	.77	1.7	7.7	.020	.06	.020	--	--	--	--
JAN											
21...	.55	.75	1.5	6.4	.030	.09	.010	4.1	--	--	--
FEB											
08...	.24	.25	1.0	4.6	.020	.06	.010	--	5.6	--	0
MAR											
10...	.18	.59	1.3	5.5	.120	.37	.030	4.5	--	--	--
APR											
04...	.08	.45	.76	3.4	.100	.31	.030	7.8	--	--	--
MAY											
06...	.17	.50	.77	3.4	.070	.21	.010	--	6.0	--	0
JUN											
17...	.30	.46	1.0	4.5	.100	.31	.020	--	--	--	--
JUL											
15...	.27	.47	.75	3.3	.070	.21	.020	5.8	--	--	--
AUG											
11...	.44	.51	.95	4.2	.090	.28	.020	--	5.5	.4	0
SEP											
16...	.37	.30	.67	3.0	.070	.21	.010	4.3	--	--	--

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA) (01006)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD) (01026)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR) (01031)
NOV											
06...	1815	5	2	300	200	60	8	3	5	8	8
FEB											
08...	0830	2	2	100	50	50	0	0	<1	10	10
MAY											
06...	1500	2	2	300	200	60	23	5	18	0	0
AUG											
11...	1100	3	2	100	40	60	18	16	2	10	0

DATE	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO) (01036)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU) (01041)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE) (01044)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
NOV										
06...	0	7	4	<3	25	18	7	9400	9400	10
FEB										
08...	0	0	0	<3	5	0	5	440	430	<10
MAY										
06...	0	0	--	<3	15	3	12	2100	--	<10
AUG										
11...	10	3	--	<3	20	14	6	2400	--	<10

DATE	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB) (01050)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN) (01054)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG) (71895)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)
NOV										
06...	25	25	0	480	410	70	.1	.0	.1	25
FEB										
08...	5	5	0	40	30	9	.0	.0	.1	7
MAY										
06...	44	29	15	130	130	4	.1	.0	.1	6
AUG										
11...	14	14	0	190	--	<1	.2	.0	.2	8

DATE	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE) (01146)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG) (01076)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
NOV										
06...	21	4	2	0	2	0	0	110	90	20
FEB										
08...	6	1	1	0	1	0	0	20	20	<3
MAY										
06...	4	2	2	0	2	0	0	60	--	<3
AUG										
11...	7	1	2	0	2	0	0	30	30	3

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	PHYTO-PLANK-TON, TOTAL (CELLS PER ML) (60050)	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70958)	BIOMASS CHLORO-PHYLL RATIO PERI-PHYTON (UNITS) (70950)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT										
22...	1445	--	94.3	90.9	55.6	.000	61.2	--	--	--
23...	1100	--	--	--	--	--	--	501	53700	16
NOV										
06...	1515	2900	--	--	--	--	--	762	85600	39
MAR										
10...	1530	1400	--	--	--	--	--	336	17500	32
MAY										
06...	1500	18000	--	--	--	--	--	270	23600	21
JUN										
17...	1100	--	26.3	24.3	4.69	.230	426	--	--	--
JUL										
15...	1120	15000	62.8	56.8	18.0	7.17	333	--	--	--
AUG										
11...	1100	4400	--	--	--	--	--	119	13500	66
SEP										
16...	1230	3100	22.1	19.0	14.7	.380	211	--	--	--

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, JULY 1979 TO SEPTEMBER 1980

DATE	JUL 10,79	SEP 4,79	NOV 6,79	MAR 10,80
TIME	1430	1515	1515	1530
TOTAL CELLS/ML	12000	6200	2900	1400
DIVERSITY: DIVISION	1.1	1.4	1.3	0.6
.CLASS	1.1	1.4	1.3	0.6
..ORDER	1.2	1.8	1.5	0.9
...FAMILY	2.0	2.4	1.8	1.4
....GENUS	3.0	3.3	2.3	1.9

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)								
.CHLOROPHYCEAE								
..CHLOROCOCCALES								
...CHARACIACEAE								
....SCHROEDERIA	--	-	--	-	*	0	--	-
...CHLOROCOCCACEAE								
....CHLOROCOCCUM	--	-	44	1	--	-	--	-
...COELASTRACEAE								
....COELASTRUM	--	-	--	-	--	-	--	-
...HYDRODICTYACEAE								
....PEDIASTRUM	--	-	--	-	--	-	--	-
...MICRACTINIACEAE								
....GOLENKINIA	*	0	--	-	--	-	--	-
....MICRACTINIUM	--	-	--	-	--	-	--	-
...OOCYSTACEAE								
....ANKISTRODESMUS	150	1	200	3	83	3	--	-
....CHLORELLA	--	-	110	2	--	-	--	-
....CHODATELLA	--	-	*	0	--	-	--	-
....CLOSTERIOPSIS	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	3000°	26	820	13	--	-	--	-
....KIRCHNERIELLA	--	-	89	1	--	-	--	-
....OOCYSTIS	500	4	--	-	83	3	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-
....TETRAEDRON	120	1	--	-	--	-	--	-
....WESTELLA	150	1	--	-	110	4	--	-
...SCENEDESMACEAE								
....ACTINASTRUM	1500	13	350	6	55	2	--	-
....CRUCIGENIA	--	-	--	-	220	8	--	-
....SCENEDESMUS	2500°	21	1500°	24	220	8	--	-
....TETRASTRUM	460	4	270	4	55	2	--	-
..TETRASPORALES								
...PALMELLACEAE								
....GLOEOCYSTIS	--	-	44	1	--	-	--	-
....SPHAEROCYSTIS	--	-	89	1	--	-	--	-
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	120	1	--	-	*	0	180	13
CHRYSOPHYTA								
.BACILLARIOPHYCEAE								
..CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	1300	12	1000°	16	69	2	100	8
....MELOSIRA	--	-	--	-	150	5	--	-
....SKELETONEMA	--	-	270	4	--	-	--	-
..PENNALES								
...DIATOMACEAE								
....DIATOMA	--	-	--	-	--	-	26	2
...FRAGILARIACEAE								
....ASTERIONELLA	--	-	--	-	--	-	830°	60
....FRAGILARIA	--	-	*	0	--	-	160	11
....SYNEDRA	--	-	150	2	--	-	13	1
...GOMPHONEMATACEAE								
....GOMPHONEMA	--	-	--	-	--	-	13	1
...NAVICULACEAE								
....GYROSIGMA	--	-	--	-	--	-	--	-
....NAVICULA	--	-	*	0	--	-	--	-
...NITZSCHIACEAE								
....NITZSCHIA	77	1	89	1	*	0	52	4
...SURIRELLACEAE								
....SURIRELLA	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)								
.CRYPTOPHYCEAE								
..CRYPTOMONADALES								
...CRYPTOCHRYSIDACEAE								
...CRYPTOMONADACEAE								
....CHROOMONAS	--	-	--	-	--	-	--	-
....CRYPTOMONAS	*	0	--	-	*	0	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
.CYANOPHYCEAE								
..CHROOCOCCALES								
...CHROOCOCCACEAE								
....AGMENELLUM	620	5	--	-	--	-	--	-
....ANACYSTIS	930	8	--	-	55	2	--	-
....COCCOCHLORIS	--	-	--	-	--	-	--	-
..HORMOGONALES								
...NOSTOCACEAE								
....ANABAENA	--	-	1000°	17	--	-	--	-
...OSCILLATORIACEAE								
....LYNGBYA	--	-	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	1700°	60	--	-
EUGLENOPHYTA (EUGLENOIDS)								
.EUGLENOPHYCEAE								
..EUGLENALES								
...EUGLENACEAE								
....EUGLENA	--	-	*	0	--	-	--	-
....EUTREPTIA	--	-	*	0	--	-	--	-
....TRACHELOMONAS	--	-	--	-	--	-	--	-

NOTE: ° - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, JULY 1979 TO SEPTEMBER 1980

DATE TIME	MAY 6,80	JUL 15,80	AUG 11,80	SEP 16,80
TIME	1500	1120	1100	1230
TOTAL CELLS/ML	18000	16000	4400	3100
DIVERSITY: DIVISION	1.5	1.5	1.5	1.0
.CLASS	1.5	1.5	1.5	1.0
..ORDER	2.1	1.7	2.0	1.3
...FAMILY	2.9	2.2	2.8	2.1
....GENUS	3.4	3.1	3.8	3.1

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER CENT
CHLOROPHYTA (GREEN ALGAE)								
.CHLOROPHYCEAE								
..CHLOROCOCCALES								
...COELASTRACEAE								
....COELASTRUM	--	-	--	-	54	1	--	-
...HYDRODICTYACEAE								
....PEDIASTRUM	--	-	--	-	--	-	100	3
...MICRACTINIACEAE								
....GOLENKINIA	--	-	*	0	27	1	*	0
....MICRACTINIUM	2500	14	--	-	240	6	--	-
...OOCYSTACEAE								
....ANKISTRODESMUS	900	5	*	0	41	1	140	5
....CHLORELLA	--	-	270	2	--	-	--	-
....CHODATELLA	650	4	*	0	--	-	*	0
....CLOSTERIOPSIS	--	-	--	-	27	1	--	-
....DICTYOSPHAERIUM	650	4	1100	7	540	12	630°	20
....KIRCHNERIELLA	160	1	--	-	--	-	--	-
....OOCYSTIS	330	2	--	-	260	6	--	-
....SELENASTRUM	--	-	--	-	--	-	39	1
...SCENEDESMACEAE								
....ACTINASTRUM	--	-	1600	10	430	10	260	8
....CRUCIGENIA	--	-	--	-	--	-	--	-
....SCENEDESMUS	1300	7	1600	10	350	8	570°	18
....TETRASTRUM	--	-	270	2	54	1	160	5
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	570	3	--	-	41	1	*	0
CHRYSOPHYTA								
.BACILLARIOPHYCEAE								
..CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	4700°	27	3100°	20	380	9	310	10
....MELOSIRA	--	-	3900°	25	68	2	670°	22
..PENNALES								
...DIATOMACEAE								
....DIATOMA	--	-	--	-	--	-	--	-
...FRAGILARIACEAE								
....ASTERIONELLA	820	5	--	-	--	-	--	-
....FRAGILARIA	*	0	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE								
....GOMPHONEMA	--	-	--	-	--	-	--	-
...NAVICULACEAE								
....GYROSIGMA	*	0	--	-	--	-	--	-
....NAVICULA	*	0	--	-	--	-	*	0
...NITZSCHIACEAE								
....NITZSCHIA	570	3	400	3	150	3	140	5
...SURIRELLACEAE								
....SURIRELLA	*	0	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)								
.CRYPTOPHYCEAE								
..CRYPTOMONADALES								
...CRYPTOCHRYSIDACEAE								
....CHROOMONAS	--	-	--	-	--	-	*	0
CYANOPHYTA (BLUE-GREEN ALGAE)								
.CYANOPHYCEAE								
..CHROOCOCCALES								
...CHROOCOCCACEAE								
....AGMENELLUM	2200	12	--	-	110	2	--	-
....ANACYSTIS	650	4	340	2	450	10	*	0
....COCCOCHLORIS	--	-	--	-	200	5	--	-
..HORMOGONALES								
...NOSTOCACEAE								
....ANABAENA	--	-	1100	7	--	-	--	-
...OSCILLATORIACEAE								
....LYNGBYA	--	-	--	-	320	7	--	-
....OSCILLATORIA	--	-	1700	11	610	14	--	-
EUGLENOPHYTA (EUGLENOIDS)								
.EUGLENOPHYCEAE								
..EUGLENALES								
...EUGLENACEAE								
....TRACHELOMONAS	--	-	--	-	*	0	--	-
PYRRHOPHYTA (FIRE ALGAE)								
.DINOPHYCEAE								
..PERIDINIALES								
...GLENODINIACEAE								
....GLENODINIUM	--	-	--	-	*	0	--	-

NOTE: ° - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

06600100 FLOYD RIVER AT ALTON, IA

LOCATION.--Lat 42°58'55", long 96°00'03", in NE1/4 NE1/4 sec.11, T.94 N., R.44 W., Sioux County, Hydrologic Unit 10230002, on left bank at downstream side of Chicago and Northwestern Railway Company bridge at east edge of Alton, 34.3 mi (55.2 km) upstream from West Branch Floyd River, and at mile 58.1 (93.5 km).

DRAINAGE AREA.--265 mi² (686 km²).

PERIOD OF RECORD.--October 1955 to current year. Prior to December 1955, monthly discharge only, published in WSP 1730.

GAGE.--Water-stage recorder. Datum of gage is 1,269.55 ft (386.959 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--25 years, 50.8 ft³/s (1.439 m³/s), 2.60 in/yr (66 mm/yr), 36,800 acre-ft/yr (45.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,000 ft³/s (396 m³/s) Mar. 23, 1979, gage height, 18.4 ft (5.61 m); no flow at times in 1956, 1958-59, 1965, 1968, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1953 reached a discharge of about 45,500 ft³/s (1,290 m³/s), from information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 800 ft³/s (22.7 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	2030	1,120	31.7	12.26	3.737	June 6	0645	*1,230	34.8	*12.68	3.865

Minimum daily discharge, 11 ft³/s (0.31 m³/s) Aug. 8, Sept. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

1	54	1060	200	75	28	40	88	95	295	59	13	20
2	51	834	190	75	28	40	85	92	282	54	12	22
3	50	429	190	70	28	40	101	89	541	51	12	36
4	49	337	187	70	28	40	171	87	387	76	20	55
5	47	301	190	70	28	40	300	86	964	87	19	40
6	47	316	183	60	28	40	288	83	965	81	14	32
7	46	312	175	50	28	40	249	81	423	65	12	27
8	46	284	140	50	28	40	212	78	313	56	11	23
9	45	258	120	50	28	50	202	77	260	50	12	20
10	44	234	160	55	28	70	191	79	224	45	35	17
11	46	216	130	60	28	70	174	78	197	41	29	16
12	47	209	120	60	28	50	161	75	176	38	19	15
13	44	200	120	60	28	50	151	77	164	33	22	14
14	43	198	120	55	28	60	145	78	154	31	43	14
15	44	196	120	55	28	80	142	76	149	29	31	13
16	44	192	100	50	28	200	135	73	139	27	32	12
17	44	189	90	50	28	150	136	86	128	25	37	12
18	44	187	100	50	30	120	139	108	123	24	35	11
19	50	182	100	50	35	92	142	114	116	24	31	12
20	53	172	100	50	35	83	143	108	107	37	29	20
21	51	192	95	50	40	72	140	100	102	35	33	50
22	49	261	95	50	40	67	136	93	99	26	27	54
23	51	289	90	50	60	65	127	86	97	23	22	43
24	51	270	90	50	60	62	120	83	92	21	19	35
25	50	246	85	45	50	59	116	80	86	21	16	29
26	48	239	85	40	45	60	111	75	81	19	24	26
27	48	239	80	40	40	65	108	75	79	18	38	22
28	47	217	80	35	40	67	103	72	74	17	39	21
29	46	180	80	35	40	72	100	87	66	15	32	21
30	116	180	80	30	---	84	98	364	61	14	27	20
31	650	---	80	30	---	93	---	435	---	13	23	---
TOTAL	2145	8619	3775	1620	991	2161	4514	3270	6944	1155	768	751
MEAN	69.2	287	122	52.3	34.2	69.7	150	105	231	37.3	24.8	25.0
MAX	650	1060	200	75	60	200	300	435	965	87	43	55
MIN	43	172	80	30	28	40	85	72	61	13	11	11
CFSM	.26	1.08	.46	.20	.13	.26	.57	.40	.87	.14	.09	.09
IN.	.30	1.21	.53	.23	.14	.30	.63	.46	.97	.16	.11	.11
AC-FT	4250	17100	7490	3210	1970	4290	8950	6490	13770	2290	1520	1490

CAL YR 1979 TOTAL 61968.42 MEAN 170 MAX 7080 MIN .40 CFSM .64 IN 8.70 AC-FT 122900
WTR YR 1980 TOTAL 36713.00 MEAN 100 MAX 1060 MIN 11 CFSM .38 IN 5.15 AC-FT 72820

06600300 WEST BRANCH FLOYD RIVER NEAR STRUBLE, IA

LOCATION (Revised).--Lat 42°55'15", long 96°10'30", in NE1/4 NE1/4 sec.32, T.94 N., R.45 W., Sioux County, Hydrologic Unit 10230002, on left bank near wingwall at downstream side of bridge on county highway B62, 0.2 mi (0.3 km) west of U.S. Highway 75, 0.8 mi (1.3 km) downstream from Orange City slough, 2.2 mi (3.5 km) northeast of Struble, 21.4 mi (34.4 km) upstream from Floyd River, and at mile 45.2 (72.7 km), above mouth of Floyd River.

DRAINAGE AREA.--181 mi² (469 km²).

PERIOD OF RECORD.--October 1955 to current year. Prior to December 1955, monthly discharge only, published in WSP 1730.

GAGE.--Water-stage recorder. Datum of gage is 1,239.40 ft (377.769 m) NGVD (State Highway Commission benchmark).

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--25 years, 32.0 ft³/s (0.906 m³/s), 2.40 in/yr (61 mm/yr), 23,180 acre-ft/yr (28.6 hm³/yr); median of yearly mean discharges, 30 ft³/s (0.85 m³/s), 2.3 in/yr (58 mm/yr), 21,700 acre-ft/yr (26.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,060 ft³/s (228 m³/s) Mar. 28, 1962, gage height, 15.63 ft (4.764 m); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 400 ft³/s (11.3 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 31	1030	659	18.7	8.38	2.554	June 7	0400	1,140	32.3	10.18	3.103
May 30	0115	*2,390	67.7	*13.40	4.084	July 4	1115	432	12.2	7.34	2.237
June 5	0645	444	12.6	7.40	2.256						

Minimum daily discharge, 9.1 ft³/s (0.258 m³/s) Sept. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	509	90	30	15	30	51	49	140	32	13	10
2	29	237	90	30	15	30	51	48	154	30	13	10
3	29	163	90	30	15	30	61	46	154	29	13	15
4	28	145	87	25	15	30	130	45	129	141	16	102
5	28	138	88	25	15	30	155	45	354	81	15	29
6	27	162	86	25	15	30	112	44	177	55	13	21
7	27	156	81	25	15	30	105	44	407	52	12	19
8	26	146	63	25	15	30	101	44	141	34	11	17
9	26	133	83	25	15	40	104	45	110	25	12	15
10	26	121	78	25	15	50	97	47	101	23	33	14
11	26	113	67	25	15	50	91	45	92	22	20	13
12	26	112	45	25	15	35	86	43	82	20	16	12
13	27	111	40	25	15	35	81	45	77	18	17	11
14	26	109	50	25	15	50	80	45	74	17	16	11
15	25	105	50	25	15	80	79	43	74	16	15	11
16	24	102	40	25	15	80	76	43	68	17	17	10
17	24	100	40	25	15	65	77	50	65	15	19	9.6
18	24	97	50	25	15	63	75	50	62	14	16	9.1
19	26	94	50	25	18	57	74	52	58	13	15	9.2
20	27	86	50	25	20	53	72	50	54	17	15	41
21	26	112	45	25	25	47	69	50	52	15	15	79
22	26	140	45	25	40	44	67	46	51	13	13	30
23	27	129	45	25	60	42	61	44	51	12	12	21
24	26	120	40	25	45	41	58	41	46	12	11	19
25	26	110	40	22	40	40	57	40	43	13	10	18
26	26	109	40	20	35	40	55	40	41	13	14	18
27	24	103	40	18	30	41	55	40	40	13	16	17
28	24	89	40	16	30	42	53	38	37	12	15	16
29	25	60	35	15	30	45	52	186	34	12	14	15
30	57	80	35	15	---	52	50	1070	33	12	11	15
31	559	---	35	15	---	52	---	217	---	13	11	---
TOTAL	1377	3991	1758	736	643	1384	2335	2735	3001	811	459	636.9
MEAN	44.4	133	56.7	23.7	22.2	44.6	77.8	88.2	100	26.2	14.8	21.2
MAX	559	509	90	30	60	80	155	1070	407	141	33	102
MIN	24	60	35	15	15	30	50	38	33	12	10	9.1
CFSM	.25	.74	.31	.13	.12	.25	.43	.49	.55	.15	.08	.12
IN.	.28	.82	.36	.15	.13	.28	.48	.56	.62	.17	.09	.13
AC-FT	2730	7920	3490	1460	1280	2750	4630	5420	5950	1610	910	1260

CAL YR 1979 TOTAL 36616.24 MEAN 100 MAX 4640 MIN .05 CFSM .55 IN 7.53 AC-FT 72630
WTR YR 1980 TOTAL 19866.90 MEAN 54.3 MAX 1070 MIN 9.1 CFSM .30 IN 4.08 AC-FT 39410

06600500 FLOYD RIVER AT JAMES, IA

LOCATION.--Lat 42°34'36", long 96°18'43", in SE1/4 SE1/4 sec.30, T.90 N., R.46 W., Plymouth County, Hydrologic Unit 10230002, on right bank at downstream side of bridge on county highway C70, 0.2 mi (0.3 km) east of James, 14.3 mi (23.0 km) downstream from West Branch Floyd River, and at mile 9.5 (15.3 km).

DRAINAGE AREA.--882 mi² (2,284 km²).

PERIOD OF RECORD.--December 1934 to current year.

REVISED RECORDS.--WSP 1240: 1935 (M), 1936, 1937-38 (M), 1942, 1945. WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,092.59 ft (333.021 m) NGVD. Prior to Sept. 11, 1938, June 9 to Nov. 5, 1953, and Oct. 1, 1955, to May 22, 1957, nonrecording gage and May 23, 1957, to Sept. 30, 1970, water-stage recorder at same site at datum 10.0 ft (3.048 m) higher.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--45 years (water years 1936-80), 182 ft³/s (5.154 m³/s), 2.80 in/yr (71 mm/yr), 131,900 acre-ft/yr (163 hm³/yr); median of yearly mean discharges, 150 ft³/s (4.25 m³/s), 2.3 in/yr (58 mm/yr), 109,000 acre-ft/yr (134 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 71,500 ft³/s (2,020 m³/s) June 8, 1953, gage height, 25.3 ft (7.71 m), from floodmarks, datum then in use, from rating curve extended above 16,000 ft³/s (453 m³/s) on basis of contracted-opening and flow-over-embankment measurement of peak flow; minimum daily, 0.90 ft³/s (0.025 m³/s) Jan. 10-22, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage and discharge since 1892, that of June 8, 1953, from information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft³/s (70.8 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
May 30	unknown	*4,000	113	*17.6	5.364	June 7	1715	2,960	83.8	16.15	4.923

Minimum daily discharge, 68 ft³/s (1.93 m³/s) Aug. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	180	2170	300	304	100	180	249	258	930	177	73	90
2	171	2140	400	298	100	180	249	250	793	172	74	81
3	165	1680	428	262	100	180	267	242	1150	164	74	82
4	157	1170	507	228	100	180	354	235	1030	165	83	506
5	153	998	547	200	100	180	568	226	1070	370	93	395
6	150	969	526	185	100	180	729	220	1700	291	84	209
7	147	966	518	170	100	180	657	213	2320	244	75	155
8	145	919	426	160	100	180	602	207	1250	230	68	128
9	143	833	328	150	100	190	563	202	749	196	72	109
10	146	748	455	150	100	300	530	200	594	181	108	98
11	146	671	490	150	100	260	502	200	506	166	187	89
12	147	622	297	150	100	240	465	199	445	155	151	82
13	148	590	240	150	100	230	431	195	401	142	110	79
14	147	557	356	150	100	224	411	195	379	133	130	77
15	143	541	400	150	100	306	405	195	362	127	140	75
16	141	523	257	150	100	565	393	193	356	124	133	75
17	139	509	233	150	100	581	381	190	336	116	170	74
18	137	498	348	150	100	371	381	190	317	112	163	71
19	149	483	354	150	110	302	382	190	306	105	141	71
20	151	456	366	150	120	267	381	190	286	109	130	96
21	150	495	353	150	120	237	375	190	272	116	130	218
22	148	679	350	150	150	216	359	190	262	119	119	246
23	148	775	348	150	220	201	343	190	260	107	105	176
24	150	782	330	150	250	191	315	190	256	97	90	141
25	150	719	318	150	200	186	305	190	241	95	82	124
26	150	681	314	150	160	181	296	188	230	95	89	110
27	147	665	318	140	180	187	289	180	221	91	123	101
28	145	590	322	130	180	194	279	180	213	86	130	96
29	139	400	309	120	180	205	270	180	197	81	124	92
30	242	300	302	110	---	220	262	2730	188	77	111	88
31	1420	---	304	100	---	239	---	1660	---	73	97	---
TOTAL	5994	24129	11344	5107	3670	7533	11993	10258	17620	4516	3459	4034
MEAN	193	804	366	165	127	243	400	331	587	146	112	134
MAX	1420	2170	547	304	250	581	729	2730	2320	370	187	506
MIN	137	300	233	100	100	180	249	180	188	73	68	71
CFSM	.22	.91	.42	.19	.14	.28	.45	.38	.67	.17	.13	.15
IN.	.25	1.02	.48	.22	.15	.32	.51	.43	.74	.19	.15	.17
AC-FT	11890	47860	22500	10130	7280	14940	23790	20350	34950	8960	6860	8000

CAL YR 1979	TOTAL	188388.8	MEAN 516	MAX 12300	MIN 6.3	CFSM .59	IN 7.95	AC-FT 373700			
WTR YR 1980	TOTAL	109657.0	MEAN 300	MAX 2730	MIN 68	CFSM .34	IN 4.62	AC-FT 217500			

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	45.9	47.4	38.3	23.0	152.5	474.3	379.5	206.6	395.3	206.6	130.1	118.6	180.5
RUNOFF (INCHES)	0.08	0.06	0.05	0.03	0.18	0.62	0.48	0.27	0.50	0.27	0.17	0.15	2.87
STD. DEVIATION	0.11	0.07	0.05	0.04	0.27	0.62	0.74	0.27	0.59	0.31	0.28	0.31	2.28
PERCENT OF ANNUAL	2.90	2.20	1.60	1.10	6.70	21.00	17.00	9.20	18.00	9.20	5.70	5.80	----
PRECIP. (INCHES)	1.67	0.84	0.77	0.56	0.92	1.62	2.22	3.71	4.57	3.24	3.39	3.21	26.70

06601200 MISSOURI RIVER AT DECATUR, NB

WATER-QUALITY RECORDS

LOCATION.--Lat 42°00'26", long 96°14'29", NE1/4 SW1/4 sec.36, T.24 N., R.10 E., Burt County, Hydrologic Unit 10230001, at bridge on State Highway 175 and 51 at Decatur, Nebraska, 6.0 mi (9.7 km) west of Onawa, Iowa and at mile 691.0 (1,111.8 km).

DRAINAGE AREA.--316,160 mi² (818,860 km²).

PERIOD OF RECORD.--Water years 1974 to current year.

REMARKS.--Water discharge estimated on basis of records at gaging station 41.3 mi (66.4 km) upstream at Sioux City. No significant inflow between gaging station and sampling site. Records of daily gage heights available in subdistrict office, USGS, Council Bluffs, Iowa.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	OXYGEN DEMAND, CHEM-ICAL (HIGH LEVEL) (MG/L) (00340)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
APR												
09...	1246	30100	760	8.1	6.0	11.8	94	19	370	491	.67	39900
MAY												
07...	1100	32000	750	8.3	16.0	9.3	96	14	500	513	.70	44300
JUN												
11...	1245	31000	720	8.1	24.5	9.4	98	32	400	474	.64	39700
JUL												
16...	1145	35600	850	8.3	25.5	7.7	80	15	K63	516	.70	49600
AUG												
13...	1245	36900	790	8.3	25.0	8.3	102	16	3600	483	.66	46800
SEP												
17...	1215	34900	780	8.4	21.5	8.1	95	49	83	453	.62	42700

DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, TOTAL (MG/L AS NO3) (71887)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	CYANIDE TOTAL (MG/L AS CN) (00720)
APR												
09...	186	.86	.10	.89	.99	1.9	8.2	.260	12	0	50	.00
MAY												
07...	53	.15	.00	1.1	1.1	1.3	5.5	.080	9	0	50	.00
JUN												
11...	123	.69	.06	1.9	2.0	2.7	12	.180	12	0	50	.05
JUL												
16...	58	.01	.00	1.1	1.1	1.1	4.9	.090	11	0	40	.05
AUG												
13...	68	.03	.00	1.0	1.0	1.0	4.6	.090	7	0	30	.00
SEP												
17...	88	.00	.00	.73	.73	.73	3.2	.110	10	0	40	.01

06602020 WEST FORK DITCH AT HORNICK, IA

LOCATION.--Lat 42°13'37", long 96°04'40", in SW1/4 sec.27, T.86 N., R.45 W., Woodbury County, Hydrologic Unit 10230004, on left bank at upstream side of State Highway 141 bridge, 1.0 mi (1.6 km) east of Hornick, 9.2 mi (14.8 km) upstream from Wolf Creek, and 13.5 mi (21.7 km) north of Onawa.

DRAINAGE AREA.--403 mi² (1,044 km²).

PERIOD OF RECORD.--April 1939 to September 1969 (published as "at Holly Springs"), July 1974 to current year.

REVISED RECORDS.--WSP 1240: 1943, 1945 (M). WSP 1310: 1941 (M) 1944-46 (M). WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,045.82 ft (318.766 m) NGVD. Prior to June 16, 1959, nonrecording gage at site 3.0 mi (4.8 km) upstream and June 16, 1959 to Sept. 30, 1969, recording gage at site 2.2 mi (3.5 km) upstream at datum 7.0 ft (2.134 m) higher.

REMARKS.--Records good except those for winter period, which are poor. West Fork ditch is a dredged channel which diverts flow of West Fork Little Sioux River at Holly Springs 5.5 mi (8.8 km) south, thence southeast 6.5 mi (10.5 km) to a point 1.2 mi (1.9 km) 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. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--36 years (1940-69, 1975-80), 94.7 ft³/s (2.682 m³/s), 3.19 in/yr (81 mm/yr), 68,610 acre-ft/yr (84.6 hm³/yr): median of yearly mean discharges, 86 ft³/s (2.44 m³/s), 2.9 in/yr (74 hm/yr), 62,300 acre-ft/yr (76.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,400 ft³/s (351 m³/s) Mar. 28, 1952, gage height, 22.46 ft (6.846 m), site and datum then in use; maximum gage height, 25.2 ft (7.681 m), site and datum then in use, Mar. 30, 1950, from floodmark; minimum daily discharge, 0.2 ft³/s (0.006 m³/s) July 30, Aug. 17, 1956.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,420 ft³/s (40.2 m³/s) Oct. 31, gage height, 11.95 ft (3.642 m), no peak above base of 1,800 ft³/s (51.0 m³/s); minimum daily, 27 ft³/s (0.76 m³/s) Sept. 16, 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	1020	150	90	80	100	88	83	292	69	33	48
2	67	534	180	90	80	100	91	82	215	67	33	47
3	66	347	220	80	80	120	109	81	255	65	32	52
4	66	304	220	80	80	120	176	78	256	65	35	331
5	64	289	200	70	90	90	191	77	172	68	38	198
6	64	308	200	70	90	80	201	75	177	92	39	78
7	63	305	220	80	80	80	182	73	152	76	33	53
8	63	270	220	90	80	90	175	72	307	65	29	44
9	62	261	200	100	80	120	178	73	188	60	59	41
10	62	232	190	100	70	170	174	73	147	58	50	37
11	62	211	180	120	70	173	160	72	135	59	65	34
12	62	208	160	130	70	93	153	72	125	57	55	30
13	60	205	140	120	60	83	143	74	125	54	44	29
14	59	200	120	110	58	85	138	79	137	51	38	29
15	60	193	140	100	58	170	137	74	150	49	40	28
16	60	193	120	110	60	282	134	71	166	48	44	27
17	59	188	100	120	70	165	130	82	162	47	50	28
18	60	184	100	120	70	102	133	94	173	46	63	28
19	62	178	120	110	80	94	129	90	168	44	53	27
20	67	175	150	100	70	89	129	86	169	44	47	42
21	68	203	140	100	80	82	124	81	144	43	50	124
22	65	364	140	90	120	75	112	77	141	43	51	66
23	72	375	130	90	250	73	105	73	130	40	45	44
24	76	303	120	90	200	70	100	70	105	40	43	35
25	71	271	110	90	120	67	98	68	93	37	42	33
26	69	264	100	80	140	68	95	66	88	46	42	32
27	67	266	120	70	140	71	93	330	82	44	47	30
28	67	244	120	60	120	74	91	76	78	39	51	30
29	66	200	110	70	120	80	88	81	74	37	46	29
30	133	150	100	80	---	87	86	940	72	35	76	28
31	973	---	100	80	---	91	---	922	---	34	50	---
TOTAL	2983	8435	4620	2890	2766	3244	3943	4345	4678	1622	1423	1682
MEAN	96.2	281	149	93.2	95.4	105	131	140	156	52.3	45.9	56.1
MAX	973	1020	220	130	250	282	201	940	307	92	76	331
MIN	59	150	100	60	58	67	86	66	72	34	29	27
CFSM	.24	.70	.37	.23	.24	.26	.33	.35	.39	.13	.11	.14
IN.	.28	.78	.43	.27	.26	.30	.36	.40	.43	.15	.13	.16
AC-FT	5920	16730	9160	5730	5490	6430	7820	8620	9280	3220	2820	3340

CAL YR 1979 TOTAL 67185.1 MEAN 184 MAX 5400 MIN 8.0 CFSM .46 IN 6.20 AC-FT 133300
WTR YR 1980 TOTAL 42631.0 MEAN 116 MAX 1020 MIN 27 CFSM .29 IN 3.94 AC-FT 84560

06602400 MONONA-HARRISON DITCH NEAR TURIN, IA

LOCATION.--Lat 41°57'52", long 95°59'30", in NW1/4 NE1/4 sec.32, T.83 N., R.44 W., Monona County, Hydrologic Unit 10230004, on left pier at downstream side of bridge on county highway E54, 1.0 mi (1.6 km) west of gaging station on Little Sioux River near Turin, 4 mi (6.4 km) southwest of Turin, 5.2 mi (8.4 km) northeast of Blencoe, and 12.5 mi (20.1 km) upstream from mouth.

DRAINAGE AREA.--900 mi² (2,331 km²).

PERIOD OF RECORD.--April 1939 to current year. Records for April 1939 to January 1958 not equivalent owing to diversion from Little Sioux River through equalizer ditch 1.5 mi (2.4 km) upstream. Prior to May 1942, published as "near Blencoe".

GAGE.--Water-stage recorder. Datum of gage is 1,015.00 ft (309.372 m) NGVD (Corps of Engineers bench mark). Prior to May 7, 1942, nonrecording gage at site 4.8 mi (7.7 km) downstream at datum 5.40 ft (1.646 m) lower. May 7, 1942, to Oct. 13, 1953, nonrecording gage and Oct. 14, 1953 to Sept. 30, 1975, recording gage at same site at datum 5.00 ft (1.524 m) higher.

REMARKS.--Records good except those for winter period, and periods of no gage-height record, Oct. 30 to Nov. 4 and May 28 to June 2, which are poor. Monona-Harrison ditch is a dug channel and is a continuation of West Fork ditch, paralleling the Little Sioux River, and discharging into the Missouri River 1.5 mi (2.4 km) upstream from the mouth of the Little Sioux River. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--22 years, 209 ft³/s (5.919 m³/s), 3.15 in/yr (80 mm/yr), 151,400 acre-ft/yr (187 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,900 ft³/s (564 m³/s) Feb. 19, 1971, gage height, 23.03 ft (7.020 m); minimum daily, 8.5 ft³/s (0.24 m³/s) Jan. 3-11, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,200 ft³/s (62.3 m³/s) May 31, gage height, 13.0 ft (4.0 m) time unknown, from graph based on station 06602020; no peak above base of 2,500 ft³/s (70.8 m³/s); minimum daily, 44 ft³/s (1.25 m³/s) Aug. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	104	1300	300	202	140	200	171	151	500	121	52	103
2	99	900	350	187	140	160	179	149	350	118	50	62
3	101	600	300	174	140	200	206	146	302	114	48	52
4	98	500	276	130	160	150	350	143	403	114	53	434
5	96	421	284	120	180	150	328	141	267	116	59	520
6	95	507	292	120	170	180	306	137	255	129	62	169
7	95	463	279	140	163	125	282	131	244	131	53	97
8	96	394	226	160	164	138	264	129	293	119	44	76
9	92	354	228	160	146	160	266	130	304	102	55	65
10	92	324	236	180	130	236	273	134	215	90	229	59
11	94	301	220	220	130	303	251	132	199	87	116	56
12	94	287	200	220	120	200	237	132	195	85	93	56
13	91	277	180	200	120	158	224	136	191	78	72	53
14	88	270	200	160	107	156	216	145	185	76	58	51
15	90	265	220	150	100	233	214	148	213	76	48	52
16	91	261	200	170	120	443	211	143	213	74	66	53
17	90	257	180	177	140	325	208	156	197	74	88	52
18	94	253	200	176	140	218	206	176	191	71	84	54
19	101	247	220	173	113	207	203	177	335	69	90	54
20	104	237	280	165	111	186	198	166	207	67	75	59
21	101	296	230	156	116	172	195	159	171	65	78	201
22	99	643	212	150	303	157	187	150	168	63	72	303
23	97	668	211	149	400	150	173	144	166	59	63	102
24	104	482	211	155	400	144	165	139	171	60	56	76
25	99	400	197	140	250	141	162	138	160	61	51	65
26	95	369	186	120	309	144	161	136	150	79	51	61
27	93	362	190	100	185	151	160	1080	141	80	52	61
28	90	306	194	120	220	157	157	450	134	67	55	60
29	90	250	193	140	240	166	154	200	126	61	56	60
30	222	250	197	140	---	180	152	1400	123	58	57	61
31	1200	---	206	140	---	178	---	1700	---	54	198	---
TOTAL	4195	12444	7098	4894	5157	5868	6459	8598	6769	2618	2284	3227
MEAN	135	415	229	158	178	189	215	277	226	84.5	73.7	108
MAX	1200	1300	350	220	400	443	350	1700	500	131	229	520
MIN	88	237	100	100	100	126	152	129	123	54	44	51
CFSM	.15	.46	.25	.18	.20	.21	.24	.31	.25	.09	.08	.12
IN.	.17	.51	.29	.20	.21	.24	.27	.36	.28	.11	.09	.13
AC-FT	8320	24680	14080	9710	10230	11640	12810	17050	13430	5190	4530	6400

CAL YR 1979 TOTAL 109734 MEAN 301 MAX 7000 MIN 24 CFSM .33 IN 4.54 AC-FT 217700
WTR YR 1980 TOTAL 69611 MEAN 190 MAX 1700 MIN 44 CFSM .21 IN 2.88 AC-FT 138100

06605000 OCHEYEDAN RIVER NEAR SPENCER, IOWA

LOCATION.--Lat 43°07'44", long 95°12'37", in SW1/4SW1/4 sec.15, T.96N., R.37W., Clay County, Hydrologic Unit 10230003, on left bank 3 ft (1 m) downstream from bridge on county highway M38, 3.4 mi (5.5 km) west by southwest of Spencer, and at mile 4.1 (6.6 km).

DRAINAGE AREA.--426 mi² (1,103 km²).

PERIOD OF RECORD.--October 1977 to current year. Occasional low-flow measurements, water years 1957-61, 1964, 1966-68, 1970, 1971, 1974-77.

GAGE.--Water-stage recorder. Datum of gage is 1,311.66 ft NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,960 ft³/s (112 m³/s) May 11, 1979, gage height, 9.54 ft (2.908 m); maximum gage height, 9.96 ft (3.036 m) Mar. 23, 1979, backwater from ice; no flow Jan. 24 to Mar. 9, 1979.

EXTRMES OUTSIDE PERIOD OF RECORD.--Flood of June 8, 1963 reached a stage of 12.89 ft (3.929 m), discharge, 26,000 ft³/s (736 m³/s) on basis of contracted-opening measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,700 ft³/s (48.1 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 2	0645	*2,300	65.1	*8.93	2.722	June 5	2145	2,190	62.0	8.64	2.633

Minimum daily discharge, 24 ft³/s (0.68 m³/s), Aug. 7,8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	238	1930	477	149	80	88	159	159	548	90	27	55
2	226	2380	460	142	80	87	142	156	427	84	26	55
3	221	1520	430	135	78	87	162	149	408	79	26	51
4	213	1050	410	129	76	86	213	144	460	81	33	57
5	205	917	400	123	74	86	714	139	1690	80	30	58
6	200	926	420	119	72	88	700	131	1520	73	26	52
7	194	902	410	116	72	84	553	126	785	66	24	79
8	192	830	380	113	72	110	442	116	592	63	24	66
9	186	767	365	111	74	125	408	113	479	60	25	57
10	181	697	360	110	74	145	366	114	410	57	34	53
11	186	650	350	109	74	152	328	109	356	55	35	49
12	181	618	325	109	74	148	301	99	321	53	29	49
13	168	589	315	110	74	145	279	108	288	50	56	45
14	165	570	305	117	75	190	272	106	297	50	70	43
15	165	558	290	126	75	370	265	102	292	46	49	41
16	164	548	275	130	76	730	249	97	256	44	57	40
17	160	534	265	124	78	530	251	109	231	42	86	39
18	159	517	255	117	80	370	260	133	218	42	66	38
19	231	500	261	109	86	183	269	143	204	42	54	36
20	299	464	280	103	96	162	270	140	184	50	55	40
21	247	544	285	98	110	135	269	132	176	50	63	85
22	226	773	275	95	140	123	267	123	166	53	53	88
23	224	803	250	93	150	114	249	113	155	50	46	71
24	218	742	230	92	140	104	233	108	147	47	43	64
25	207	675	215	89	120	97	221	100	137	43	40	59
26	197	644	205	87	100	92	208	96	130	42	77	53
27	195	611	190	85	91	93	199	92	126	31	104	52
28	191	565	180	84	89	99	189	92	114	30	82	48
29	183	541	170	82	88	103	179	96	102	30	69	46
30	236	529	160	81	---	178	171	446	95	29	60	46
31	996	---	155	80	---	200	---	711	---	28	54	---
TOTAL	7054	23894	9348	3367	2568	5304	8788	4602	11314	1640	1523	1615
MEAN	228	796	302	109	88.6	171	293	148	377	52.9	49.1	53.8
MAX	996	2380	477	149	150	730	714	711	1690	90	104	88
MIN	159	464	155	80	72	84	142	92	95	28	24	36
CFSM	.54	1.87	.71	.26	.21	.40	.69	.35	.89	.12	.12	.13
IN.	.62	2.09	.82	.29	.22	.46	.77	.40	.99	.14	.13	.14
AC-FT	13990	47390	18540	6680	5090	10520	17430	9130	22440	3250	3020	3200

CAL YR 1979 TOTAL 145193.52 MEAN 398 MAX 2880 MIN .00 CFSM .93 IN 12.68 AC-FT 288000
WTR YR 1980 TOTAL 81017.00 MEAN 221 MAX 2380 MIN 24 CFSM .52 IN 7.07 AC-FT 160700

06605850 LITTLE SIOUX RIVER AT LINN GROVE, IA

LOCATION.--Lat 42°53'24", long 95°14'30", in SW1/4 SW1/4 sec.5, T.93 N., R.37 W., Buena Vista County, Hydrologic Unit 10230003, on right bank at downstream side of bridge on State Highway 264, in Linn Grove, Iowa, and at mile 123.7 (199.0 km).

DRAINAGE AREA.--1,548 mi² (4,009 km²).

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,223.60 ft (372.95 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

AVERAGE DISCHARGE.--8 years, 523 ft³/s (14.81 m³/s), 4.59 in/yr (117 mm/yr), 378,900 acre-ft/yr (467 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,620 ft³/s (244 m³/s) Apr. 29, 1975; gage height, 17.85 ft (5.441 m); maximum gage height, 18.2 ft (5.55 m), from graph based on gage readings, Mar. 24, 1979 (backwater from ice); minimum daily discharge, 0.70 ft³/s (0.020 m³/s) Feb. 4, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,580 ft³/s (10.1 m³/s) Nov. 5, gage height, 14.34 ft (4.371 m); minimum daily, 71 ft³/s (2.01 m³/s) Aug. 9.

REVISIONS.--Revised maximum and daily discharges, in cubic feet per second, for water years 1978-79 are given below. These figures supersede those published in the reports for 1978-79.

July 9, 1978	2,610	Apr. 1, 1979	6,700	Apr. 11, 1979	2,570	May 16, 1979	2,600	Sept. 1, 1979	3,720
10	3,210	2	6,740	12	2,400	17	2,480	2	3,430
11	3,790	3	5,640	14	2,360	Aug. 24	2,350	3	2,970
13	3,080	4	4,560	15	2,570	25	2,700	4	2,550
Mar. 26, 1979	5,470	5	3,890	16	2,650	26	3,290	5	2,270
27	5,940	6	3,570	17	2,460	27	3,870	17	2,490
28	5,530	7	3,310	18	2,320	28	3,780	18	2,620
29	4,970	8	3,160	May 13	2,630	29	3,400	19	2,420
30	5,230	9	3,060	14	3,350	30	3,290		
31	5,850	10	2,780	15	2,920	31	3,560		

Month	Total	Mean	Max	Min	Cfsm	Inches	Acre-ft
July 1978	58,311	1,881	3,800	345	1.22	1.40	115,700
Wtr. yr. 1978	192,131	526	3,800	24	.34	4.62	381,100
March 1979	63,050	2,034	7,300	25	1.31	1.51	125,100
April 1979	84,740	2,825	6,740	1,410	1.82	2.04	168,100
May 1979	49,143	1,585	3,350	807	1.02	1.18	97,480
August 1979	47,290	1,525	3,870	521	.99	1.14	93,800
September 1979	59,322	1,977	3,720	916	1.28	1.43	117,700
Cal. yr. 1978	166,072	455	3,800	27	.29	3.99	329,400
Wtr. yr. 1979	344,231	943	7,300	16	.61	8.27	682,800

Water year 1979: Maximum discharge, 8,090 ft³/s (229 m³/s) Mar. 24, gage height 18.2 ft (5.55 m) from graph based on gage readings, backwater from ice.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	857	1400	1300	580	315	400	769	587	1240	333	80	264
2	810	1730	1150	560	310	385	766	561	1460	310	76	254
3	774	2060	1030	540	300	370	809	537	1560	286	72	244
4	737	2640	1040	500	290	370	1010	522	1480	287	85	240
5	701	3440	1070	480	280	380	1140	491	1620	291	106	232
6	669	3380	1070	460	275	420	1340	465	2090	275	104	230
7	645	3100	1030	440	270	470	1630	448	2370	257	88	216
8	616	2990	980	430	265	560	1870	415	2660	239	74	240
9	587	2930	930	420	262	660	1900	400	2960	221	71	252
10	568	2760	880	420	260	740	1820	415	2650	214	92	216
11	554	2530	830	420	258	780	1720	380	2140	202	152	196
12	542	2290	790	425	256	760	1600	356	1660	189	127	180
13	525	2070	760	440	254	700	1460	352	1380	183	112	166
14	501	1880	720	460	254	680	1320	369	1340	175	145	152
15	486	1750	700	490	252	730	1220	367	1220	171	188	142
16	472	1630	680	540	252	900	1120	349	1190	162	201	137
17	467	1540	660	545	250	1170	1010	345	1050	149	245	128
18	450	1460	650	510	250	1100	967	357	942	141	293	121
19	448	1400	650	480	256	1070	951	414	864	144	277	115
20	467	1340	700	455	265	1050	936	448	782	178	257	116
21	611	1330	780	430	350	1000	937	448	716	206	259	154
22	745	1470	800	410	640	948	949	424	655	168	273	345
23	849	1710	780	390	680	830	970	396	610	152	249	365
24	912	1900	740	375	640	700	861	376	572	135	210	310
25	943	2020	700	365	560	600	795	356	532	125	182	270
26	927	2010	670	355	500	559	752	338	493	118	203	242
27	888	1890	640	345	470	564	709	321	456	111	311	222
28	839	1760	620	335	440	559	676	299	427	99	445	212
29	789	1640	610	330	420	565	645	284	395	90	398	198
30	802	1460	600	325	---	600	614	367	357	88	343	190
31	992	---	600	320	---	673	---	875	---	83	299	---
TOTAL	21173	61510	25160	13575	10074	21293	33266	13072	37871	5782	6017	6349
MEAN	683	2050	812	438	347	687	1109	422	1262	187	194	212
MAX	992	3440	1300	580	680	1170	1900	875	2960	333	445	365
MIN	448	1330	600	320	250	370	614	284	357	83	71	115
CFSM	.44	1.32	.53	.28	.22	.44	.72	.27	.82	.12	.13	.14
IN.	.51	1.48	.60	.33	.24	.51	.80	.31	.91	.14	.14	.15
AC-FT	42000	122000	49900	26930	19980	42230	65980	25930	75120	11470	11930	12590

CAL YR 1979 TOTAL 448792 MEAN 1230 MAX 7300 MIN 16 CFSM .80 IN 10.78 AC-FT 890200
WTR YR 1980 TOTAL 255142 MEAN 697 MAX 3440 MIN 71 CFSM .45 IN 6.13 AC-FT 506100

06606600 LITTLE SIOUX RIVER AT CORRECTIONVILLE, IA

LOCATION.--Lat 42°28'20", long 95°47'49", in NE1/4 NW1/4 sec.1, T.88 N., R.43 W., Woodbury County, Hydrologic Unit 10230003, on right bank 50 ft, revised, (15 m) upstream from bridge on State Highway 31, 0.3 mi (0.5 km) upstream from Bacon Creek, 0.5 mi (0.8 km) west of Correctionville, 0.8 mi (1.3 km) downstream from Pierson Creek, and at mile 56.0 (90.1 km).

DRAINAGE AREA.--2,500 mi² (6,475 km²).

PERIOD OF RECORD.--May 1918 to July 1925, October 1928 to July 1932, June 1936 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 856: 1919. WSP 1240: 1924-25, 1931, 1932 (M), 1937, 1945 (M), 1947 (M), 1949 (M). WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,096.49 ft (334.210 m) NGVD. May 28, 1918, to July 1, 1925 and Oct. 29, 1928 to July 15, 1929, nonrecording gage 0.2 mi (0.3 km) downstream at datum 1.25 ft (0.381 m) lower. July 16, 1929, to July 2, 1932, and June 15, 1936, to Nov. 7, 1938, nonrecording gage at present site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--53 years (1918-24, 1928-31, 1936-80), 713 ft³/s (20.19 m³/s), 3.87 in/yr (98 mm/yr), 516,600 acre-ft/yr (637 hm³/yr); median of yearly mean discharge, 560 ft³/s (15.9 m³/s), 3.0 in/yr (76 mm/yr), 406,000 acre-ft/yr (501 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,800 ft³/s (844 m³/s) Apr. 7, 1965, gage height, 25.86 ft (7.882 m); minimum daily, 2.6 ft³/s (0.074 m³/s) July 17, 25, 1936, caused by construction dam above gage; minimum daily discharge excluding regulation, 4.0 ft³/s (0.11 m³/s) Oct. 9-12, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 23 or 24, 1891, reached a stage of 29.34 ft (8.943 m), present datum, from levels to floodmark by Soil Conservation Service (discharge not determined).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 8	1100	*4,480	127	*14.38	4.383	June 6	1900	4,000	113	13.83	4.215

Minimum daily discharge, 223 ft³/s (6.32 m³/s) Aug. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1250	2890	2200	1120	600	700	1150	1050	1440	705	234	579
2	1180	3140	2000	1120	580	700	1200	1020	1530	654	229	497
3	1120	3060	1700	1100	560	700	1300	984	1620	603	223	443
4	1080	3040	1700	1050	540	700	1600	955	1780	572	234	525
5	1050	3310	1890	1000	520	700	1900	920	2090	530	274	526
6	995	3890	1990	950	510	700	1920	889	3780	583	263	504
7	956	4280	2190	900	500	700	2110	860	3490	594	245	447
8	927	4450	2070	1000	490	700	2300	832	3190	615	239	415
9	893	4310	1900	1100	490	700	2460	811	3100	536	264	386
10	866	4060	1790	1000	480	800	2460	795	3150	510	344	379
11	843	3890	1770	950	480	1100	2480	785	3230	479	366	388
12	823	3700	1660	900	480	1600	2410	773	2980	455	408	362
13	799	3420	1470	900	480	1300	2280	765	2440	432	375	321
14	781	3120	1350	900	470	1200	2130	761	2050	415	359	302
15	764	2870	1250	900	470	1300	1960	759	2030	399	417	291
16	742	2670	1200	900	470	1500	1820	752	2020	360	395	284
17	730	2510	1200	900	470	2130	1720	768	1860	340	487	272
18	720	2380	1200	880	460	1890	1630	789	1690	312	536	264
19	732	2270	1400	860	460	1990	1570	800	1560	296	519	258
20	725	2170	1450	840	460	1900	1530	805	1430	295	526	292
21	712	2250	1400	820	700	1870	1500	812	1320	307	525	418
22	755	2540	1300	810	1500	1810	1460	822	1240	318	492	392
23	868	2680	1350	800	1300	1590	1410	809	1190	314	450	418
24	934	2790	1400	820	1100	1410	1360	781	1130	294	434	510
25	989	2830	1300	950	900	1280	1310	758	1060	294	408	523
26	1020	2880	1250	850	800	1190	1270	733	1020	346	401	468
27	1020	2940	1200	800	760	1140	1230	732	904	288	527	441
28	1000	2900	1180	750	720	1120	1180	740	848	267	611	437
29	971	2650	1160	700	710	1120	1140	718	806	256	607	415
30	1180	2490	1140	660	---	1130	1090	927	752	247	675	386
31	2220	---	1140	620	---	1140	---	1180	---	239	654	---
TOTAL	29645	92380	47200	27850	18460	37810	50880	25885	56730	12855	12721	12143
MEAN	956	3079	1523	898	637	1220	1696	835	1891	415	410	405
MAX	2220	4450	2200	1120	1500	2130	2480	1180	3780	705	675	579
MIN	712	2170	1140	620	460	700	1090	718	752	239	223	258
CFSM	.38	1.23	.61	.36	.26	.49	.68	.33	.76	.17	.16	.16
IN.	.44	1.37	.70	.41	.27	.56	.76	.39	.84	.19	.19	.18
AC-FT	58800	183200	93620	55240	36620	75000	100900	51340	112500	25500	25230	24090

CAL YR 1979 TOTAL 701739 MEAN 1923 MAX 12200 MIN 45 CFSM .77 IN 10.44 AC-FT 1392000
WTR YR 1980 TOTAL 424559 MEAN 1160 MAX 4450 MIN 223 CFSM .46 IN 6.32 AC-FT 842100

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	228.5	246.5	173.5	130.1	360.1	1171.0	1815.0	1040.9	1501.3	997.5	498.7	403.3	710.3
RUNOFF (INCHES)	0.14	0.11	0.08	0.06	0.16	0.54	0.81	0.48	0.67	0.46	0.23	0.18	3.90
STD. DEVIATION	0.14	0.09	0.06	0.05	0.18	0.43	1.03	0.37	0.59	0.49	0.27	0.23	2.54
PERCENT OF ANNUAL	3.50	2.90	2.00	1.50	4.20	14.00	21.00	12.00	17.00	12.00	5.90	4.70	----
PRECIP. (INCHES)	1.86	0.90	0.71	0.53	0.90	1.41	2.20	4.06	5.04	3.76	3.33	3.02	27.70

06607200 MAPLE RIVER AT MAPLETON, IA

LOCATION.--Lat 42°09'28", long 95°48'27", in SE1/4 SE1/4 sec.23, T.85 N., R.43 W., Monona County, Hydrologic Unit 10230005, on right bank on downstream side of bridge on State Highway 175, 0.5 mi (0.8 km) southwest of Mapleton, 0.8 mi (1.3 km) downstream from Wilsey Creek, 2.0 mi (3.2 km) upstream from McClarey Creek, and 16.0 mi (25.7 km) upstream from mouth.

DRAINAGE AREA.--669 mi² (1,732 km²).

PERIOD OF RECORD.--October 1941 to current year.

REVISED RECORDS.--WSP 1310: 1942 (M), 1946 (M), 1948 (M). WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,085.86 ft (330.970 m) NGVD. See WSP 1730 for history of changes prior to Sept. 20, 1956.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--39 years, 231 ft³/s (6.542 m³/s), 4.69 in/yr (119 mm/yr), 167,400 acre-ft/yr (206 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,800 ft³/s (589 m³/s) Sept. 12, 1978, gage height, 16.74 ft (5.102 m); maximum gage height, 22.1 ft (6.74 m) June 12, 1950; no flow Sept. 21, 22, 1945 caused by temporary dam above gage; minimum daily discharge excluding regulation, 2.5 ft³/s (0.071 m³/s) Feb. 17-20, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,590 ft³/s (45.0 m³/s) Mar. 15, gage height, 4.37 ft (1.332 m), no peak above base of 4,000 ft³/s (113 m³/s); maximum gage height, 5.84 ft (1.780 m) Feb. 22, backwater from ice; minimum daily discharge, 57 ft³/s (1.61 m³/s) Sept. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	167	896	330	180	165	170	223	198	240	130	67	120
2	165	675	310	220	160	170	234	192	217	122	66	89
3	162	530	300	230	155	200	356	189	206	118	63	78
4	159	474	320	220	150	180	650	184	192	127	65	176
5	156	458	350	210	145	170	522	173	195	134	70	95
6	154	506	358	200	145	170	439	168	223	137	84	77
7	151	514	355	200	145	170	405	165	304	127	72	67
8	149	491	327	200	145	200	391	165	251	120	61	61
9	148	461	302	200	145	370	373	165	313	134	394	59
10	143	441	360	300	145	900	369	165	242	120	320	57
11	144	404	327	300	145	542	348	168	200	125	208	58
12	132	382	300	290	145	365	324	168	181	118	183	59
13	131	379	266	290	145	245	304	178	200	112	130	59
14	119	354	260	280	145	282	291	181	203	108	103	60
15	126	344	250	280	145	1050	281	175	214	108	93	60
16	132	340	240	270	145	1120	272	175	291	105	145	60
17	126	332	230	260	145	607	272	200	240	110	235	60
18	207	324	250	250	145	368	284	214	220	95	197	59
19	422	319	350	240	145	315	289	226	220	84	267	58
20	271	316	330	230	145	285	282	223	192	82	148	70
21	206	390	300	220	200	248	269	206	178	84	144	368
22	226	520	300	210	500	223	243	195	209	85	122	184
23	260	616	320	200	400	219	228	189	240	82	95	114
24	269	566	320	190	250	210	217	178	192	77	82	104
25	240	510	310	220	200	200	214	175	173	82	77	93
26	217	482	300	210	170	201	212	168	173	91	74	80
27	206	450	290	200	170	206	206	231	155	125	73	71
28	192	400	280	190	170	209	203	212	149	100	78	68
29	186	370	270	180	170	226	200	184	139	82	78	64
30	346	350	260	175	---	226	198	266	137	73	104	62
31	683	---	200	170	---	223	---	327	---	68	183	---
TOTAL	6395	13594	9265	7015	5180	10270	9098	6003	6289	3257	4081	2690
MEAN	206	453	299	226	179	331	303	194	210	105	132	89.7
MAX	683	896	360	300	500	1120	650	327	313	137	394	368
MIN	119	316	200	170	145	170	198	165	137	68	61	57
CFSM	.31	.68	.45	.34	.27	.50	.45	.29	.31	.16	.20	.13
IN.	.36	.76	.52	.39	.29	.57	.51	.33	.35	.18	.23	.15
AC-FT	12680	26960	18380	13910	10270	20370	18050	11910	12470	6480	8090	5340

CAL YR 1979 TOTAL 153625 MEAN 421 MAX 6640 MIN 45 CFSM .63 IN 8.54 AC-FT 304700
WTR YR 1980 TOTAL 83147 MEAN 227 MAX 1120 MIN 57 CFSM .34 IN 4.62 AC-FT 164900

05607500 LITTLE SIOUX RIVER NEAR TURIN, IA

LOCATION.--Lat 41°57'52, long 95°58'21", in NW1/4 NE1/4 sec.33, T.83 N., R.44 W., Monona County, Hydrologic Unit 10230003, on left bank on downstream side of bridge on county highway E54, 1.0 mi (1.6 km) east of gaging station on Monona-Harrison ditch near Turin, 2.5 mi (4.0 km) downstream from Maple River, 3.8 mi (6.1 km) south of Turin, 6.2 mi (10.0 km) northeast of Blencoe, and at mile 13.5 (21.7 km).

DRAINAGE AREA.--3,526 mi² (9,132 km²). Prior to Jan. 15, 1958, 4,426 mi² (11,463 km²), combined area above this station and Monona-Harrison ditch station 1.0 mi (1.6 km) west.

PERIOD OF RECORD.--January 1958 to current year. April 1939 to May 1942 at site 4.7 mi (7.5 km) downstream published as "near Blencoe", June 1942 to January 1958 at site 1,200 ft (370 m) east on old river channel; records not equivalent owing to diversion into Monona-Harrison ditch through equalizer ditch 1.5 mi (2.4 km) upstream.

GAGE.--Water-stage recorder. Datum of gage is 1,019.850 ft (310.850 m) NGVD (Corps of Engineers bench mark). Prior to July 15, 1958, nonrecording gages near present site at different datums. July 15 to Sept. 3, 1958, nonrecording gage at present site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--22 years, 1,111 ft³/s (31.46 m³/s), 4.28 in/yr (109 mm/yr), 804,900 acre-ft/yr (992 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 30,000 ft³/s (850 m³/s) Feb. 19, 1971, gage height, 27.44 ft (8.364 m), backwater from ice; minimum daily, 17 ft³/s (0.48 m³/s) Jan. 18-20, Jan. 28 to Feb. 1, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s (127 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 9	0430	*6,270	149	16.43	4.703
Feb. 23	0715	ice jam		*17.62	5.371
June 7	0930	4,720	134	14.82	4.517

Minimum daily discharge, 291 ft³/s (8.24 m³/s) Aug. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1510	3360	2840	1500	760	1050	1380	1410	1870	757	299	735
2	1440	3890	2700	1500	730	1000	1440	1380	1860	714	296	633
3	1390	3820	2600	1500	700	1000	1670	1330	2100	681	291	598
4	1350	3620	2500	1450	680	1000	2190	1300	2250	659	295	793
5	1310	3670	2400	1400	660	1000	2310	1240	2370	641	293	655
6	1280	4180	2400	1350	660	1000	2360	1180	3200	696	339	592
7	1240	4780	2500	1250	640	1000	2630	1160	4540	708	342	565
8	1200	5150	2600	1200	640	1000	2810	1150	3740	745	315	509
9	1170	5180	2510	1300	640	1000	2960	1120	3630	680	411	475
10	1150	4850	2310	1400	640	1000	3120	1090	3640	600	708	455
11	1110	4550	2180	1300	620	1200	3160	1040	3590	563	551	463
12	1080	4340	2000	1200	620	2200	3060	1050	3040	527	543	473
13	1070	4040	1900	1200	620	2000	2900	1060	2940	495	558	444
14	1060	3670	1800	1200	620	1800	2740	1050	2710	471	501	425
15	1040	3350	1700	1200	620	2000	2560	1070	2550	442	475	424
16	1010	3120	1650	1200	600	2300	2350	1040	2400	446	573	411
17	993	2920	1600	1200	600	2660	2230	1050	2270	433	631	399
18	996	2770	1600	1200	600	2490	2120	1080	2000	416	727	389
19	1170	2660	1700	1200	600	2260	2030	1110	1820	404	768	378
20	1160	2540	1900	1200	600	2380	1970	1090	1770	382	632	384
21	1030	2560	1800	1150	620	2220	1910	1070	1470	376	601	517
22	1020	2900	1700	1100	1000	2090	1860	1000	1410	388	587	754
23	1150	3200	1700	1100	2000	1960	1810	962	1430	404	562	538
24	1310	3310	1700	1100	1800	1690	1750	955	1260	403	528	538
25	1340	3350	1650	1200	1500	1540	1690	922	1160	386	496	587
26	1360	3420	1600	1300	1300	1430	1630	906	1080	425	456	606
27	1320	3490	1550	1100	1250	1370	1600	965	1010	415	447	564
28	1330	3450	1500	1000	1200	1350	1550	1010	928	415	552	528
29	1300	3250	1500	900	1150	1350	1490	975	860	356	619	520
30	1440	2980	1500	850	---	1350	1450	1110	796	335	630	485
31	2500	---	1500	800	---	1350	---	1410	---	312	830	---
TOTAL	38829	108370	61090	37550	24670	49040	64730	34285	65694	15675	15856	15837
MEAN	1253	3612	1971	1211	851	1582	2158	1106	2190	506	511	528
MAX	2500	5180	2840	1500	2000	2660	3160	1410	4540	757	830	793
MIN	993	2540	1500	800	600	1000	1380	906	796	312	291	378
CFSM	.36	1.02	.56	.34	.24	.45	.61	.31	.62	.14	.15	.15
IN.	.41	1.14	.64	.40	.26	.52	.68	.36	.69	.17	.17	.17
AC-FT	77020	215000	121200	74480	48930	97270	128400	68000	130300	31090	31450	31410

CAL YR 1979 TOTAL 894897 MEAN 2452 MAX 21900 MIN 120 CFSM .70 IN 9.44 AC-FT 1775000
WTR YR 1980 TOTAL 531625 MEAN 1453 MAX 5180 MIN 291 CFSM .41 IN 5.61 AC-FT 1054000

06608500 SOLDIER RIVER AT PISGAH, IA

LOCATION.--Lat 41°49'62", long 95°65'50", in NW1/4 NE1/4 sec.14, T.81 N., R.44 W., Harrison County, Hydrologic Unit 10230001, on left bank on downstream side of bridge on county highway F20, at west edge of Pisgah, 0.4 mi (0.6 km) downstream from Cobb Creek, 0.5 mi (0.8 km) upstream from Mogger Ditch, and 13.1 mi (21.1 km) upstream from mouth.

DRAINAGE AREA.--407 mi² (1,054 km²).

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 956: 1940 (M). WSP 1240: 1940, 1941 (M), 1947. WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,036.53 ft (315.934 m) NGVD. Prior to Oct. 11, 1954, nonrecording gage at same site and datum with supplementary water-stage recorder operating above 8.2 ft (2.60 m) gage height Mar. 2, 1946, to Sept. 24, 1953.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--40 years, 123 ft³/s (3.483 m³/s), 4.10 in/yr (104 mm/yr), 89,110 acre-ft/yr (110 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,500 ft³/s (637 m³/s) June 12, 1950, gage height, 28.17 ft (8.586 m); minimum daily, 2 ft³/s (0.057 m³/s) Jan. 2-10, 1945.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,910 ft³/s (111 m³/s) June 15, gage height, 11.01 ft (3.356 m) no peak above base of 5,000 ft³/s (142 m³/s); minimum daily, 14 ft³/s (0.40 m³/s) Aug. 8, Sept. 26-29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	129	52	52	42	42	70	43	70	28	16	67
2	38	82	50	50	42	41	75	42	59	27	16	35
3	39	71	52	48	42	40	136	41	52	27	15	29
4	38	68	55	46	42	39	212	41	45	29	18	77
5	38	82	65	45	42	38	108	40	45	31	18	45
6	40	116	74	44	42	38	92	39	221	46	17	28
7	39	85	74	43	42	38	96	36	75	31	15	23
8	39	75	72	42	42	38	90	35	42	27	14	20
9	38	71	72	41	42	150	79	36	35	25	15	18
10	38	63	85	40	42	540	74	39	32	25	56	17
11	42	64	75	40	42	156	69	39	31	23	60	17
12	40	66	70	40	42	113	65	38	29	24	42	17
13	38	64	65	40	42	101	61	41	91	22	39	16
14	39	63	62	40	42	140	60	44	114	19	25	15
15	41	64	58	40	42	748	58	42	1190	31	23	16
16	42	63	55	150	42	376	55	42	109	29	67	15
17	42	60	55	400	42	139	55	56	62	23	138	15
18	42	60	55	103	42	112	50	60	295	21	66	16
19	66	59	55	70	42	109	46	52	113	21	63	15
20	66	56	55	50	42	100	51	48	58	20	106	15
21	51	74	55	40	200	85	48	44	47	19	84	15
22	60	116	55	45	500	78	45	41	91	19	46	17
23	103	94	55	45	277	78	42	38	92	19	29	15
24	74	80	55	50	135	72	41	35	50	19	24	15
25	60	75	58	55	100	68	42	35	41	19	20	15
26	57	63	60	50	80	66	43	32	37	38	19	14
27	54	60	60	48	60	72	44	43	35	30	19	14
28	52	58	60	46	50	73	43	49	33	21	20	14
29	51	56	60	45	45	101	43	47	29	21	20	14
30	108	54	60	44	---	94	42	539	28	19	19	15
31	280	---	56	43	---	74	---	140	---	17	291	---
TOTAL	1795	2191	1890	1935	2287	3959	2035	1897	3252	770	1410	664
MEAN	57.9	73.0	61.0	62.4	78.9	128	67.8	61.2	108	24.8	45.5	22.1
MAX	280	129	85	400	500	748	212	539	1190	46	291	77
MIN	38	54	50	40	42	38	41	32	28	17	14	14
CFSM	.14	.18	.15	.15	.19	.31	.17	.15	.27	.06	.11	.05
IN.	.16	.20	.17	.18	.21	.36	.19	.17	.30	.07	.13	.06
AC-FT	3560	4350	3750	3840	4540	7850	4040	3760	6450	1530	2800	1320

CAL YR 1979	TOTAL	65027	MEAN	178	MAX	5090	MIN 25	CFSM .44	IN 5.94	AC-FT	129000	
WTR YR 1980	TOTAL	24085	MEAN	65.8	MAX	1190	MIN 14	CFSM .16	IN 2.20	AC-FT	47770	

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	45.9	47.4	35.3	45.9	132.9	271.8	120.4	155.3	291.8	134.1	120.0	80.3	124.1
RUNOFF (INCHES)	0.16	0.13	0.10	0.13	0.34	0.77	0.33	0.44	0.80	0.38	0.34	0.22	4.14
STD. DEVIATION	0.14	0.08	0.07	0.22	0.27	0.71	0.31	0.36	0.62	0.25	0.34	0.24	2.30
PERCENT OF ANNUAL	3.90	3.10	2.40	3.10	8.20	19.00	8.00	11.00	19.00	9.20	8.20	5.30	----
PRECIP. (INCHES)	1.84	0.87	0.66	0.57	0.95	1.63	2.36	4.02	5.29	3.15	3.59	2.58	27.50

06609600 BOYER RIVER AT LOGAN, IA

LOCATION.--Lat 41°38'33", long 95°46'57", in SE1/4 NW1/4 sec.19, T.79 N., R.42 W., Harrison County, Hydrologic Unit 10230007, on left bank 9 ft (3 m) downstream from Illinois Central Railroad bridge at Logan, 0.4 mi (0.6 km) downstream from Elk Grove Creek, 10.5 mi (16.9 km) upstream from Willow Creek, and 15.8 mi (25.4 km) upstream from mouth.

DRAINAGE AREA.--871 mi² (2,256 km²).

PERIOD OF RECORD.--May 1918 to July 1925, November 1937 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 956: 1938-39. WSP 1240: 1918-19, 1920 (M), 1921, 1922 (M), 1924-25, 1938 (M), 1945. WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,009.38 ft (307.659 m) NGVD (Chicago and Northwestern Railway Company bench mark). See WSP 1918 for history of changes prior to Oct. 18, 1960.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--48 years (water years 1919-24, 1939-80), 306 ft³/s (8.666 m³/s), 4.77 in/yr (121 mm/yr), 221,700 acre-ft/yr (273 hm³/yr); median of yearly mean discharge, 280 ft³/s (7.93 m³/s), 4.4 in/yr (112 mm/yr), 203,000 acre-ft/yr (250 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,000 ft³/s (708 m³/s) Feb. 19, 1971, gage height, 22.65 ft (6.904 m), from floodmark; maximum gage height, 25.22 ft (7.687 m) Mar. 1, 1965, backwater from ice; minimum daily discharge, 1.5 ft³/s (0.042 m³/s) July 16, 1938.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,870 ft³/s (280 m³/s) June 15, gage height, 14.84 ft (4.523 m) at 0130 hours, no other peak above base of 6,000 ft³/s (170 m³/s); minimum daily, 29 ft³/s (0.821 m³/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113	526	240	160	115	120	162	156	329	95	51	58
2	104	478	220	155	110	120	205	156	290	89	47	51
3	107	386	230	150	110	180	307	140	433	88	45	46
4	99	340	250	145	110	180	465	129	245	92	49	56
5	104	338	352	140	110	160	454	138	435	117	51	70
6	99	374	249	135	110	140	358	136	1040	122	50	48
7	98	383	261	130	110	130	311	127	539	91	48	44
8	100	366	187	125	110	130	290	127	304	82	44	41
9	100	343	153	120	110	300	275	127	245	76	43	38
10	104	310	201	115	110	1580	263	134	213	74	169	36
11	106	298	275	115	110	745	240	134	195	75	153	35
12	106	290	250	115	110	379	237	131	192	75	92	35
13	104	279	220	115	110	255	239	136	244	69	78	36
14	103	273	200	115	110	291	231	140	592	66	73	37
15	106	270	180	115	110	1250	221	153	3100	67	66	36
16	108	287	170	130	110	1260	218	156	395	77	87	35
17	109	270	160	800	110	673	219	172	228	69	246	34
18	115	265	150	451	110	351	206	184	234	69	174	36
19	133	265	150	334	110	283	210	184	165	64	139	34
20	120	251	150	250	120	253	217	177	148	64	140	33
21	152	273	150	190	150	215	203	156	137	60	96	33
22	174	326	150	210	1000	183	186	151	131	60	73	37
23	288	352	150	250	978	167	165	149	128	59	63	41
24	290	351	155	300	532	155	160	138	125	56	57	42
25	275	327	160	230	484	148	153	131	122	62	55	44
26	243	308	165	200	458	145	162	123	117	85	50	37
27	227	301	170	170	380	147	160	147	111	96	54	33
28	217	285	170	140	349	152	160	156	103	66	54	34
29	214	273	170	130	142	190	162	174	96	58	59	31
30	271	260	170	125	---	203	162	754	94	55	56	29
31	457	---	165	120	---	194	---	718	---	54	108	---
TOTAL	4946	9648	6023	5980	6688	10679	7004	5734	10730	2332	2570	1200
MEAN	160	322	194	193	231	344	233	185	358	75.2	82.9	40.0
MAX	457	526	352	800	1000	1580	465	754	3100	122	246	70
MIN	98	251	150	115	110	120	153	123	94	54	43	29
CFSM	.18	.37	.22	.22	.27	.40	.27	.21	.41	.09	.10	.05
IN.	.21	.41	.26	.26	.29	.46	.30	.24	.46	.10	.11	.05
AC-FT	9810	19140	11950	11860	13270	21180	13890	11370	21280	4630	5100	2380

CAL YR 1979 TOTAL 194667 MEAN 533 MAX 17200 MIN 52 CFSM .61 IN 8.31 AC-FT 386100
WTR YR 1980 TOTAL 73534 MEAN 201 MAX 3100 MIN 29 CFSM .23 IN 3.14 AC-FT 145900

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	131.8	136.2	100.8	124.1	309.1	721.2	440.7	612.6	849.4	434.2	294.7	240.4	368.2
RUNOFF (INCHES)	0.18	0.13	0.11	0.12	0.30	0.78	0.45	0.54	0.95	0.47	0.38	0.22	4.63
STD. DEVIATION	0.19	0.09	0.07	0.17	0.25	0.72	0.44	0.44	0.70	0.40	0.42	0.24	2.73
PERCENT OF ANNUAL	3.70	2.90	2.20	2.50	6.90	17.00	9.80	12.00	21.00	10.00	8.00	4.90	----
PRECIP. (INCHES)	1.81	1.01	0.76	0.75	0.87	1.57	2.77	3.76	4.76	3.44	3.69	2.80	28.00

06610000 MISSOURI RIVER AT OMAHA, NB

LOCATION.--Lat 41°15'32", long 95°55'20", in SE1/4 NW1/4 sec.23, T.15 N., R.13 E., Douglas County, Hydrologic Unit 10230006, on right bank on left side of concrete floodwall, at foot of Douglas Street, 275 ft (84 m) downstream from Interstate 480 Highway bridge in Omaha, and at mile 615.9 (991.0 km).

DRAINAGE AREA.--322,800 mi² (836,100 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1928 to current year. April 1872 to December 1899 (gage heights only) in reports of the Missouri River Commission and since January 1875, (gage heights only) in reports of the U.S. Weather Bureau.

REVISED RECORDS.--WSP 761: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 958.24 ft (292.072 m) NGVD. See WSP 1730 for history of changes prior to Sept. 30, 1936.

REMARKS.--Records good except those for Jan. 26 to Feb. 5, which are poor. Flow regulated by upstream main-stem reservoirs. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--52 years, 29,830 ft³/s (844.8 m³/s), 21,610,000 acre-ft/yr (26,600 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 396,000 ft³/s (11,200 m³/s) Apr. 18, 1952, gage height, 30.20 ft (9.205 m); minimum, about 2,200 ft³/s (62 m³/s) Jan. 6, 1937; minimum gage height observed, -2.77 ft (-0.844 m) Jan. 10, 1957, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 54,100 ft³/s (1,530 m³/s) Nov. 1, gage height, 9.07 ft (2.765 m); maximum gage height, 10.38 ft (3.164 m) June 15; minimum daily discharge, 17,700 ft³/s (501 m³/s) Mar. 15; minimum gage height, 2.00 ft (0.610 m) Jan. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42500	52800	43800	26900	19000	23100	35600	35600	46900	33600	37700	39700
2	42500	48000	43800	26900	19500	20200	35900	35300	39000	33800	37800	38600
3	42400	45700	43700	27000	20500	19000	36900	34700	36200	35200	38700	38100
4	41800	45700	44500	26900	21000	21600	37500	34200	39500	34900	39000	36200
5	41400	47100	43000	26800	21500	23800	37800	33800	39600	36100	39200	37600
6	41900	50100	40200	26600	22400	23600	35800	33900	36900	34900	39200	37400
7	42200	51500	38700	26600	22300	20200	35600	34300	39800	34200	38300	36600
8	42400	50800	36700	23200	22600	21600	37500	34000	37400	33300	38200	36300
9	41900	48500	33500	20000	22500	23100	37700	34000	38400	32900	38600	36300
10	41500	46900	32300	18300	22400	26100	37200	34300	37000	33500	39400	36500
11	41600	44900	32400	22300	21600	26200	35500	34400	35600	33800	45000	36900
12	41300	45700	32500	23800	21200	24900	35400	34700	36000	34100	40800	38000
13	40100	44400	32000	23700	20800	22100	35400	34700	36500	34500	38800	37900
14	40900	44300	31200	22600	19500	20400	35600	34700	36800	34500	36000	37300
15	40900	44300	31400	28300	21100	17700	35400	35000	47000	34600	34600	37000
16	40400	44400	31200	30500	22800	19200	34600	34500	38800	36200	36400	37500
17	39600	44200	29100	30500	21300	22500	33900	34600	36900	38100	42200	37200
18	40600	43800	28000	28400	19500	22400	34100	34900	35600	39300	42100	36100
19	42200	44200	28900	26700	19400	21500	34000	35000	35900	38800	38300	36300
20	42900	45500	31600	25900	21200	21600	34600	34600	34400	38900	35500	37100
21	42900	47100	29100	25700	24000	24400	35000	33800	33600	38600	35400	38500
22	42800	48400	27400	25700	26500	27700	34900	33600	34100	38800	36000	41000
23	42700	49500	27300	26000	28700	31100	34700	34200	34600	38800	35600	40200
24	42800	47600	27700	25700	30300	33700	34300	34600	34200	38100	35200	38100
25	41400	46500	28000	25600	28600	35300	34600	34400	33700	37600	34900	36300
26	41300	46600	27200	26000	25500	35200	35000	34200	33300	38400	35100	35900
27	41900	46100	27000	25000	22500	35600	34900	33900	33800	38700	35300	36200
28	42400	46300	26900	21000	21700	34400	34700	35700	33900	38000	36000	36700
29	41900	46500	26800	20000	23900	33700	34600	35500	34300	37600	37600	38400
30	44000	44200	26900	19500	---	33900	34900	33500	34100	37700	37200	39300
31	50200	---	26900	19500	---	34600	---	42000	---	37600	39000	---
TOTAL	1305300	1401600	1009700	771600	653800	800400	1063600	1076600	1103800	1125100	1173100	1125200
MEAN	42110	46720	32570	24890	22540	25820	35450	34730	36790	36290	37840	37510
MAX	50200	52800	44500	30500	30300	35600	37800	42000	47000	39300	45000	41000
MIN	39600	43800	26800	18300	19000	17700	33900	33500	33300	32900	34600	35900
AC-FT	2589000	2780000	2003000	1530000	1297000	1588000	2110000	2135000	2189000	2232000	2327000	2232000

CAL YR 1979 TOTAL 14795800 MEAN 40540 MAX 82800 MIN 18500 AC-FT 29350000
WTR YR 1980 TOTAL 12609800 MEAN 34450 MAX 52800 MIN 17700 AC-FT 25010000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	22399	23146	11199	11199	15499	27999	52078	36398	46291	41998	33599	31825	30200
RUNOFF (INCHES)	0.11	0.08	0.04	0.04	0.05	0.10	0.18	0.13	0.16	0.15	0.12	0.11	1.27
STD. DEVIATION	0.02	0.03	0.01	0.01	0.02	0.04	0.13	0.05	0.07	0.06	0.03	0.02	0.33
PERCENT OF ANNUAL	8.50	6.60	3.30	3.20	4.00	7.30	14.00	10.00	13.00	12.00	9.40	9.00	----
PRECIP. (INCHES)	1.18	0.62	0.52	0.41	0.53	1.00	1.55	2.43	3.03	2.05	2.32	2.05	17.70

06610000 MISSOURI RIVER AT OMAHA, NB--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Samples collected from Interstate 80 highway bridge 2.0 mi (3.2 km) downstream from gaging station.

PERIOD OF RECORD.--Water years 1969-76, 1978 to current year. Daily sediment loads for April 1939 to September 1971 are in reports of Corps of Engineers.

PERIOD OF DAILY RECORD.--
CHEMICAL ANALYSES: July 1969 to June 1972.
SPECIFIC CONDUCTANCE: October 1972 to September 1976, January 1978 to current year.
WATER TEMPERATURES: October 1971 to September 1976, January 1978 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1971 to September 1976.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 900 micromhos Oct. 30,31, 1978; minimum daily, 338 micromhos Mar. 22, 1978.
WATER TEMPERATURES: Maximum daily, 32.0°C July 24, 1972; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,180 mg/L May 19, 1974; minimum daily mean, 166 mg/L Sept. 13, 1976.
SEDIMENT LOADS: Maximum daily, 1,060,000 tons (962,000 tonnes) May 19, 1974; minimum daily, 3,990 tons (3,620 tonnes Jan. 14, 1975.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 875 micromhos Feb. 16, 19, 20; minimum daily, 600 micromhos Mar. 19, May 13.
WATER TEMPERATURES: Maximum daily, 30.0°C July 14; minimum daily, 0.0°C on many days during winter period.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	750	690	800	770	650	730	750	730	650	760	810	800
2	800	700	775	770	800	750	700	740	680	750	810	800
3	775	740	750	760	800	750	800	740	700	750	800	790
4	760	760	750	760	775	720	800	750	675	760	810	775
5	760	740	775	760	750	720	790	770	660	720	740	725
6	760	720	800	750	760	730	780	760	700	730	810	775
7	790	700	650	720	775	730	750	775	700	725	770	775
8	775	720	750	740	775	730	800	775	700	740	780	775
9	775	745	750	760	800	670	800	775	675	775	790	800
10	760	760	750	775	800	670	780	650	675	800	780	800
11	775	745	750	725	775	650	780	760	690	790	760	800
12	780	750	825	775	725	650	780	760	700	800	775	810
13	775	725	800	775	675	670	790	600	720	780	775	800
14	790	755	800	775	700	680	800	750	730	800	700	800
15	800	750	800	750	700	700	800	750	650	780	740	800
16	800	755	725	750	875	680	700	680	700	780	700	810
17	800	755	780	775	825	750	680	750	740	800	730	810
18	800	750	700	625	775	740	640	750	740	775	740	790
19	800	755	625	625	875	600	660	750	720	800	760	750
20	675	---	790	675	875	700	700	710	720	710	775	760
21	750	---	790	775	---	650	720	740	740	760	725	790
22	750	---	790	750	---	700	700	700	750	810	675	800
23	760	---	800	800	---	650	720	750	740	820	800	790
24	760	---	800	750	---	650	720	725	750	780	800	690
25	770	---	800	725	---	700	720	725	750	820	800	740
26	760	750	800	650	710	700	730	725	750	820	800	690
27	760	775	800	750	700	700	750	740	750	800	800	750
28	755	725	780	750	700	725	760	725	750	800	800	790
29	760	775	780	775	730	675	740	725	750	820	780	750
30	750	800	780	825	---	800	740	725	750	825	800	750
31	740	---	780	800	---	800	---	700	---	820	800	---

06610000 MISSOURI RIVER AT OMAHA, NB--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.0	10.0	1.0	3.0	.0	1.0	6.0	17.0	20.0	---	28.0	23.0
2	19.0	10.5	4.0	3.0	2.0	2.0	7.0	20.0	22.0	---	26.0	23.0
3	20.0	9.0	3.5	2.0	1.0	2.0	7.0	17.0	22.0	---	25.0	25.0
4	16.0	10.0	3.5	2.0	1.0	1.0	8.0	16.0	22.0	---	23.0	23.0
5	17.0	9.0	3.0	2.0	.0	.0	8.0	18.0	25.0	---	25.0	24.0
6	17.0	8.0	3.0	2.0	.0	1.0	10.0	18.0	25.0	---	26.0	24.0
7	16.0	8.0	3.0	.0	.0	1.0	10.0	18.0	24.0	---	28.0	24.0
8	19.0	7.0	3.0	.0	.0	1.0	10.0	18.0	25.0	---	26.0	24.0
9	15.0	6.0	3.0	.0	1.0	3.0	10.0	17.0	22.0	29.0	26.0	24.0
10	15.0	6.0	4.0	2.0	1.0	5.0	9.0	20.0	24.0	29.0	27.0	24.0
11	15.0	7.0	2.0	1.0	.0	3.0	8.0	17.0	24.0	29.0	27.0	22.0
12	14.0	5.0	2.0	1.0	.0	2.0	10.0	15.0	23.0	29.0	27.0	23.0
13	14.0	6.0	3.0	3.0	1.0	5.0	11.0	16.0	24.0	29.0	26.0	21.0
14	13.0	7.0	2.0	3.0	1.0	7.0	10.0	17.0	26.0	30.0	25.0	22.0
15	13.0	7.0	3.0	4.0	1.0	7.0	11.0	17.0	22.0	28.0	24.0	23.0
16	15.0	7.0	.0	3.0	1.0	6.0	11.0	15.0	24.0	27.0	26.0	18.0
17	15.0	12.0	.0	2.0	1.0	7.0	13.0	16.0	24.0	27.0	23.0	20.0
18	16.0	10.0	1.0	3.0	.0	7.0	13.0	15.0	24.0	29.0	24.0	19.0
19	16.0	10.0	1.0	3.0	.0	8.0	15.0	15.0	22.0	27.0	25.0	22.0
20	18.0	---	2.0	3.0	2.0	6.0	17.0	18.0	---	27.0	24.0	19.0
21	13.0	---	3.0	3.0	---	8.0	20.0	18.0	---	25.0	24.0	21.0
22	11.0	---	3.0	3.0	---	8.0	17.0	20.0	---	25.0	25.0	19.0
23	12.0	---	3.0	1.0	---	7.0	15.0	21.0	---	25.0	27.0	18.0
24	12.0	---	2.5	3.0	---	4.0	17.0	21.0	---	27.0	27.0	17.0
25	12.0	---	2.0	3.0	---	5.0	18.0	22.0	---	26.0	26.0	18.0
26	13.0	6.0	2.0	3.0	2.0	5.0	15.0	22.0	---	25.0	24.0	18.0
27	13.0	5.0	2.0	2.0	2.0	5.0	15.0	23.0	---	27.0	24.0	19.0
28	12.0	3.0	2.0	1.0	2.0	7.0	15.0	23.0	---	25.0	24.0	17.0
29	11.0	3.0	3.0	1.0	1.0	7.0	16.0	23.0	---	25.0	25.0	18.0
30	13.0	1.0	3.0	.0	---	7.0	15.0	23.0	---	25.0	23.0	17.0
31	11.0	---	3.0	.0	---	7.0	---	22.0	---	26.0	24.0	---

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS (MG/L AS CACO3) (00900)
OCT											
25...	1200	41000	760	8.4	11.0	27	10.0	93	7800	18000	260
NOV											
05...	1215	46200	760	8.4	9.0	54	10.2	92	9000	K32000	260
DEC											
06...	1140	41000	780	8.1	2.0	27	12.8	98	2600	260	280
JAN											
14...	1000	2200	775	8.0	1.0	14	12.2	90	4900	37	290
FEB											
04...	0930	23200	770	7.6	.0	5.4	13.5	96	310	230	270
MAR											
03...	1000	18000	755	7.2	.0	10	13.5	97	140	300	280
APR											
07...	1300	35600	780	8.1	8.0	41	10.6	100	350	4500	260
MAY											
05...	1000	34400	780	8.2	17.0	24	8.9	96	--	--	260
JUN											
09...	1200	37500	720	8.3	21.0	260	6.9	76	34000	2070	250
30...	1130	34100	675	.1	26.0	33	7.1	91	K100	K200	250
AUG											
12...	1420	42100	780	7.9	25.0	35	7.2	94	1400	15000	240
SEP											
08...	1230	38100	795	7.8	25.0	22	8.2	101	290	190	250

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM+ POTAS-SIUM DIS-SOLVED (MG/L AS NA) (00933)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY (MG/L AS CACO3) (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
OCT											
25...	96	63	24	70	48	1.9	76	6.0	160	210	12
NOV											
05...	88	67	22	60	33	1.6	66	6.0	170	190	14
DEC											
06...	97	68	26	65	45	1.7	70	4.8	180	220	11
JAN											
14...	85	73	25	65	43	1.7	70	5.3	200	210	15
FEB											
04...	83	68	25	66	34	1.7	71	5.2	190	210	15
MAR											
03...	94	71	26	66	33	1.7	73	6.7	190	190	18
APR											
07...	91	65	24	58	32	1.6	--	5.6	170	190	11
MAY											
05...	100	67	23	63	34	1.7	--	5.1	160	220	11
JUN											
09...	98	63	22	54	32	1.5	--	5.5	150	180	12
30...	94	62	24	69	37	1.9	--	5.3	160	230	12
AUG											
12...	92	59	23	76	40	2.1	--	6.8	150	250	11
SEP											
08...	86	59	24	71	38	2.0	--	6.3	160	220	12

K Results based on colony count outside the acceptable range (non-ideal colony count).

06610000 MISSOURI RIVER AT OMAHA, NB--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)
OCT											
25...	.5	8.1	507	492	.69	56100	.52	.01	.01	.82	.83
NOV											
05...	.4	9.6	487	481	.66	50700	2.3	.07	.08	1.1	1.2
DEC											
06...	.5	9.2	582	519	.79	64400	1.4	.06	.07	1.4	1.5
JAN											
14...	.5	12	536	532	.73	3180	1.4	.10	.12	.47	.57
FEB											
04...	.4	11	536	519	.73	33600	1.1	.18	.22	.41	.59
MAR											
03...	.4	11	514	508	.70	25000	1.1	.41	.50	.79	1.2
APR											
07...	.5	8.8	513	470	.70	49300	1.2	.17	.21	.93	1.1
MAY											
05...	.5	.6	469	489	.64	43600	.45	.01	.01	.99	1.0
JUN											
09...	.5	8.4	459	442	.62	46500	1.6	.01	.01	2.6	2.6
30...	.5	7.8	502	508	.68	46200	.46	.00	.00	1.3	1.3
AUG											
12...	.6	6.5	520	524	.71	59100	.12	.01	.01	.99	1.0
SEP											
08...	.5	7.7	519	497	.71	53400	.06	.00	.00	.79	.79

DATE	NITROGEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS, TOTAL (MG/L AS PO4) (71886)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED (MG/L AS C) (00689)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)
OCT											
25...	.09	.74	1.4	6.0	.110	.34	.020	7.1	--	--	--
NOV											
05...	.67	.53	3.5	16	.350	1.1	.090	9.6	4.9	1.4	0
DEC											
06...	.20	1.3	2.9	13	.240	.74	.100	--	--	--	--
JAN											
14...	.03	.54	2.0	8.7	.900	2.8	.050	10	--	--	--
FEB											
04...	.19	.40	1.7	7.5	.070	.21	.040	--	5.2	.5	0
MAR											
03...	.49	.71	2.3	10	.140	.43	.090	6.1	--	--	--
APR											
07...	.55	.55	2.3	10	.280	.86	.070	12	--	--	--
MAY											
05...	.58	.42	1.5	6.4	.090	.28	.010	--	7.9	.7	0
JUN											
09...	2.1	.46	4.2	19	.550	1.7	.060	24	--	--	--
30...	.73	.57	1.5	7.8	.050	.16	.030	10	--	--	--
AUG											
12...	.65	.35	1.1	5.0	.120	.37	.030	--	3.6	.6	0
SEP											
08...	.43	.36	.85	3.8	.130	.40	.060	5.8	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOSER 1979 TO SEPTEMBER 1980

DATE	TIME	PHYTOPLANKTON, TOTAL (CELLS PER ML) (60050)	PERIPHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)	PERIPHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	CHLOR-A PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-5 PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2) (70958)	BIOMASS CHLOROPHYLL RATIO PERIPHYTON (UNITS) (70950)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT										
15...	1320	--	106	101	52.1	8.96	96.0	--	--	--
25...	1200	--	--	--	--	--	--	717	79400	14
NOV										
05...	1215	5300	--	--	--	--	--	903	113000	29
19...	1120	--	21.7	21.0	27.3	.000	25.6	--	--	--
DEC										
06...	1140	--	--	--	--	--	--	998	110000	14
JAN										
14...	1000	--	--	--	--	--	--	69	410	83
MAR										
03...	1005	4000	--	--	--	--	--	--	--	--
MAY										
05...	1000	19000	--	--	--	--	--	319	29600	21
JUN										
09...	1200	17000	--	--	--	--	--	--	--	--
16...	1230	--	4.96	3.54	9.46	2.58	150	--	--	--
30...	1130	21000	--	--	--	--	--	362	33300	41
JUL										
21...	1415	--	12.0	10.4	7.37	2.39	217	--	--	--
AUG										
12...	1420	6400	--	--	--	--	--	364	41400	36
SEP										
08...	1230	15000	--	--	--	--	--	--	--	--
18...	1000	--	35.0	29.3	47.0	8.22	121	--	--	--

06610000 MISSOURI RIVER AT OMAHA, NB--Continued

WATER-QUALITY RECORDS

RADIOCHEMICAL ANALYSES, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	GROSS ALPHA, DIS-SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS-SOLVED (PCI/L AS SR/YT-90) (80060)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90) (80060)	RADIUM 226, DIS-SOLVED, RADON METHOD (PCI/L) (09511)	URANIUM DIS-SOLVED, EXTRAC-TION (UG/L) (80020)
AUG 12...	1420	<7.4	6.2	6.1	4.3	5.9	4.1	.08	4.6

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA) (01006)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD) (01026)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR) (01031)
NOV 05...	1215	9	6	300	200	80	5	2	3	8	8
FEB 04...	0930	2	2	200	100	60	0	0	<1	0	0
MAY 08...	1000	2	1	300	200	60	--	--	--	0	0
AUG 12...	1420	5	2	100	20	80	7	--	<1	0	0

DATE	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO) (01036)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU) (01041)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE) (01044)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
NOV 05...	0	7	4	<3	17	12	5	9000	9000	40
FEB 04...	0	0	0	<3	7	0	7	610	600	<10
MAY 05...	0	0	--	<3	50	31	19	440	--	<10
AUG 12...	0	3	--	<3	19	14	5	4300	--	<10

DATE	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB) (01050)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN) (01054)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG) (71895)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)
NOV 05...	28	28	0	550	550	5	.3	.0	.3	26
FEB 04...	3	3	0	40	20	20	.1	.0	.1	7
MAY 05...	--	--	70	170	170	4	.2	.1	.1	11
AUG 12...	13	12	1	250	--	<1	.2	.0	.3	8

DATE	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE) (01146)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG) (01076)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
NOV 05...	22	4	2	0	2	0	0	80	70	8
FEB 04...	4	3	2	0	2	0	0	10	6	4
MAY 05...	7	4	2	0	2	0	0	120	100	20
AUG 12...	5	3	2	1	1	0	0	30	--	<3

06610000 MISSOURI RIVER AT OMAHA, NB--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, JUNE 1979 TO SEPTEMBER 1980

DATE	JUN 18,79	JUL 9,79	AUG 13,79	SEP 10,79	NOV 5,79	MAR 3,80
TIME	0845	1230	1335	1320	1215	1005
TOTAL CELLS/ML	5200	24000	18000	7800	5300	4000
DIVERSITY: DIVISION	1.9	0.8	1.5	1.0	1.2	1.2
.CLASS	1.9	0.8	1.5	1.0	1.2	1.2
..ORDER	2.8	0.9	1.7	1.2	1.3	1.6
...FAMILY	3.4	1.1	2.0	1.9	1.4	1.8
....GENUS	3.8	2.0	2.5	2.3	1.5	2.5

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...CHLOROCOCCACEAE												
....CHLOROCOCCUM	--	-	--	-	--	-	*	0	--	-	--	-
...MICRACTINIACEAE												
....GOLENKINIA	52	1	--	-	--	-	--	-	--	-	--	-
....MICRACTINIUM	290	5	--	-	--	-	--	-	--	-	--	-
...OOCYSTACEAE												
....ANKISTRODESMUS	39	1	270	1	--	-	57	1	--	-	160	4
....CHLORELLA	--	-	--	-	--	-	4600°	59	--	-	--	-
....CHODATELLA	*	0	--	-	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	270	1	3600°	20	57	1	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	57	1	--	-	--	-
....OOCYSTIS	--	-	270	1	300	2	--	-	260	5	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-	--	-
....TETRAEDRON	--	-	*	0	*	0	--	-	--	-	--	-
....WESTELLA	160	3	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE												
....ACTINASTRUM	52	1	1600	7	--	-	360	5	--	-	--	-
....CRUCIGENIA	--	-	--	-	--	-	--	-	--	-	--	-
....SCENEDESMUS	650	13	2300	10	1400	8	730	9	390	7	59	1
....TETRASTRUM	260	5	540	2	300	2	76	1	--	-	59	1
..TETRASPORALES												
...PALMELLACEAE												
....SPHAEROCYSTIS	440	8	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CHLAMYDOMONAS	210	4	*	0	150	1	*	0	--	-	190	5
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....CYCLOTELLA	210	4	14000°	59	6800°	38	400	5	390	7	180	4
....MELOSIRA	--	-	--	-	1200	7	76	1	130	2	--	-
....SKELETONEMA	--	-	4000°	17	--	-	250	3	--	-	--	-
....STEPHANODISCUS	100	2	--	-	--	-	--	-	--	-	--	-
....THALASSIOSIRA	--	-	130	1	--	-	--	-	--	-	--	-
..PENNALES												
...ACHNANTHACEAE												
....ACHNANTHES	--	-	--	-	--	-	--	-	--	-	--	-
...DIATOMACEAE												
....DIATOMA	--	-	--	-	--	-	--	-	--	-	29	1
...FRAGILARIACEAE												
....ASTERIONELLA	100	2	--	-	--	-	--	-	--	-	2000°	49
....FRAGILARIA	360	7	--	-	--	-	--	-	--	-	590	15
....SYNEDRA	*	0	--	-	--	-	--	-	130	2	--	-
...NAVICULACEAE												
....GYROSIGMA	--	-	--	-	--	-	--	-	--	-	--	-
....NAVICULA	--	-	270	1	*	0	57	1	--	-	--	-
...NITZSCHIACEAE												
....NITZSCHIA	91	2	130	1	300	2	270	3	64	1	29	1
.XANTHOPHYCEAE												
..HETEROCOCCALES												
...CHLOROTHECIACEAE												
....OPHIOCYTIUM	*	0	--	-	--	-	--	-	--	-	--	-
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOCHRYSIDACEAE												
....CHROOMONAS	--	-	--	-	--	-	--	-	64	1	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....ANACYSTIS	520	10	--	-	--	-	520	7	--	-	--	-
..HORMOGONALES												
...NOSTOCACEAE												
....ANABAENA	210	4	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	--	-	--	-	--	-	--	-
....OSCILLATORIA	780	15	--	-	3800°	21	--	-	3900°	73	430	11
....SCHIZOTHRIX	--	-	--	-	--	-	230	3	--	-	290	7
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	620	12	--	-	*	0	--	-	--	-	--	-
....TRACHELOMONAS	*	0	--	-	--	-	--	-	--	-	29	1

NOTE: ° - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

06610000 MISSOURI RIVER AT OMAHA, NB--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, JUNE 1979 TO SEPTEMBER 1980

DATE	MAY 5,80	JUN 9,80	JUN 30,80	AUG 12,80	SEP 8,80
TIME	1000	1200	1130	1420	1230
TOTAL CELLS/ML	19000	17000	21000	6400	15000
DIVERSITY: DIVISION	1.4	1.4	1.6	1.2	1.5
.CLASS	1.4	1.4	1.6	1.2	1.5
..ORDER	1.7	2.2	2.1	1.7	1.6
...FAMILY	2.6	2.7	2.5	2.8	2.2
....GENUS	3.2	3.4	3.3	3.4	2.8

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...CHARACIACEAE										
....SCHROEDERIA	--	-	--	-	--	-	38	1	--	-
...COELASTRACEAE										
....COELASTRUM	--	-	--	-	--	-	980°	15	230	2
...HYDRODICTYACEAE										
....PEDIASTRUM	--	-	--	-	--	-	110	2	--	-
...MICRACTINIACEAE										
....GOLENKINIA	480	3	--	-	*	0	*	0	--	-
....MICRACTINIUM	5100°	27	--	-	--	-	--	-	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	800	4	140	1	690	3	38	1	190	1
....CHLORELLA	*	0	--	-	--	-	--	-	--	-
....CHODATELLA	*	0	--	-	--	-	--	-	--	-
....CLOSTERIOPSIS	--	-	--	-	--	-	--	-	78	1
....DICTYOSPHAERIUM	--	-	2900°	17	--	-	620	10	1700	12
....KIRCHNERIELLA	--	-	2200	13	--	-	--	-	940	6
....OOCYSTIS	1100	6	--	-	340	2	410	6	*	0
....SELENASTRUM	*	0	--	-	--	-	--	-	--	-
....TETRAEDRON	--	-	--	-	--	-	--	-	78	1
....TREUBARIA	--	-	--	-	*	0	--	-	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	640	3	--	-	2500	12	450	7	940	6
....CRUCIGENIA	--	-	--	-	--	-	75	1	--	-
....SCENEDESMUS	1400	8	1400	8	5100°	25	1200°	19	3000°	20
....TETRASTRUM	1300	7	--	-	--	-	--	-	--	-
..TETRASPORALES										
...PALMELLACEAE										
....SPHAEROCYSTIS	--	-	2200	13	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	640	3	410	2	*	0	75	1	120	1
...VOLVOCACEAE										
....PANDORINA	--	-	--	-	--	-	300	5	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....STAURASTRUM	--	-	--	-	--	-	*	0	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	3200°	17	1500	9	3400°	17	1000°	16	1700	11
....MELOSIRA	320	2	270	2	1100	5	230	4	--	-
....SKELETONEMA	--	-	--	-	--	-	--	-	--	-
....STEPHANODISCUS	--	-	410	2	860	4	--	-	--	-
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	*	0	--	-	--	-
...FRAGILARIACEAE										
....ASTERIONELLA	--	-	550	3	--	-	--	-	--	-
....SYNEDRA	--	-	270	2	--	-	--	-	--	-
...NAVICULACEAE										
....GYROSIGMA	--	-	--	-	--	-	--	-	*	0
....NAVICULA	--	-	270	2	--	-	--	-	*	0
...NITZSCHIACEAE										
....NITZSCHIA	480	3	410	2	780	4	430	7	120	1
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	--	-	2100	10	--	-	5000°	34
....ANACYSTIS	3100°	16	--	-	690	3	340	5	310	2
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	--	-	690	3	--	-	--	-
...OSCILLATORIACEAE										
....LYNGBYA	--	-	2100	12	--	-	--	-	--	-
....OSCILLATORIA	--	-	1600	10	1700	8	--	-	--	-
....SCHIZOTHRIX	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	*	0	--	-	--	-	--	-	78	1
....TRACHELOMONAS	*	0	--	-	340	2	*	0	--	-
PYRRHOPHYTA (FIRE ALGAE)										
.DINOPHYCEAE										
..PERIDINIALES										
...GLENODINIACEAE										
....GLENODINIUM	--	-	--	-	--	-	*	0	*	0

NOTE: ° - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

06807000 MISSOURI RIVER AT NEBRASKA CITY, NB

LOCATION.--Lat 40°40'55", long 95°50'48", in NW1/4 NE1/4 sec.9, T.8 N., R.14 E., Otoe County, Hydrologic Unit 10240001, on right bank 0.7 mi (1.1 km) upstream from Waubonsie Highway Bridge at Nebraska City, and at mile 562.6 (905.2 km).

DRAINAGE AREA .--410,000 mi² (1,062,000 km²), approximately. The 3,959 mi² (10,254 km²) in Great Divide basin are not included.

PERIOD OF RECORD.--August 1929 to current year. Gage-height records collected in this vicinity from August 1878 to December 1899 are contained in reports of Missouri River Commission.

REVISED RECORDS.--WSP 761: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 905.36 ft (275.954 m) NGVD, supplementary adjustment of 1954. See WSP 1918 or 1919 for history of changes prior to Apr. 1, 1963.

REMARKS.--Records good. Flow regulated by upstream main-stem reservoirs. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--51 years, 35,670 ft³/s (1,010 m³/s), 25,840,000 acre-ft/yr (31,900 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 414,000 ft³/s (11,700 m³/s) Apr. 19, 1952; maximum gage height, 27.56 ft (8.431 m) Apr. 18, 1952; minimum discharge, 1,600 ft³/s (45.3 m³/s) Dec. 31, 1946 (discharge measurement); minimum gage height observed, -0.28 ft (-0.085 m) Dec. 24, 1960, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 74,800 ft³/s (2,120 m³/s) June 4, gage height, 15.53 ft (4.734 m); minimum daily, 19,800 ft³/s (561 m³/s) Jan. 10; minimum gage height, 4.31 ft (1.314 m) Jan. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44900	63600	47000	33800	22600	31800	48500	41800	58800	38400	37700	41000
2	44400	59900	48200	32500	22100	28600	47200	42000	52300	37600	38000	40000
3	44300	55600	47500	32100	23100	26100	47000	41600	60000	38200	38800	39600
4	44100	53200	48800	31900	24200	26700	50600	41000	64300	37800	39500	38400
5	43600	51700	48700	31400	24600	27800	51200	40700	61500	39700	39300	38000
6	43800	52100	47000	30200	25600	27400	48900	40300	56900	38800	39600	38200
7	44000	53900	45400	29700	26100	25500	49300	40700	60000	38300	39200	37200
8	44700	53900	45900	27300	26300	26500	50300	41700	57200	37500	39100	36400
9	44900	53600	42700	21800	26700	31800	50800	41700	54400	37200	39100	35900
10	44900	53100	40200	19800	27300	37000	50500	42000	52400	36900	39800	36300
11	44700	51900	38800	23400	27600	39900	49600	41900	49600	36700	46200	36700
12	44300	51700	39300	24200	27100	39000	47900	42000	48200	36400	44600	37600
13	43600	50500	37800	24300	26900	38100	47200	42500	50100	36200	42300	38300
14	43300	50300	36400	23300	26500	36600	46800	42200	50000	36000	40300	38000
15	44000	49800	37000	26000	26300	35800	45600	43000	57700	35800	38200	38100
16	43700	50000	36100	29500	27200	37300	44700	44300	53000	35900	39300	38600
17	43600	49100	32700	30700	26800	36600	44100	46300	49400	36700	47600	38200
18	43200	48700	30300	31700	25800	34600	42200	47300	46400	39000	45100	38000
19	43500	48700	31300	33000	25900	33400	42500	48500	45400	39500	41800	38100
20	45000	48400	33500	32400	26600	32600	42700	48600	43400	39500	39400	38600
21	45900	49900	33500	32000	29200	32900	42900	47600	42100	39300	37100	39300
22	46800	51200	31000	31100	32300	34600	42400	47100	42100	39200	36500	40500
23	47100	53800	32100	30300	35000	36800	42800	46100	42200	39100	36500	41100
24	46500	53100	34300	29400	35200	39000	42000	45800	42300	38800	36300	40600
25	45300	52300	33500	29000	36100	41500	41700	45300	42300	38700	36100	39500
26	43800	51100	32900	28000	33200	42000	41400	45000	41600	38600	36600	38400
27	44000	50600	32900	26500	32700	41700	41700	45400	40700	39000	37100	38500
28	44300	50900	33400	25700	32500	42100	42000	46500	40400	38700	38000	38700
29	44700	51100	33400	23900	33700	42200	42300	53900	39600	38300	39200	39400
30	46500	48300	33900	24200	---	43300	41700	50100	38600	38100	39300	40300
31	55100	---	32800	23900	---	45500	---	52100	---	37700	39800	---
TOTAL	1392500	1562000	1178300	873000	815200	1094700	1368500	1385000	1492900	1177600	1227400	1157500
MEAN	44920	52070	38010	28160	28110	35310	45620	44680	49760	37990	39590	38580
MAX	55100	63600	48800	33800	36100	45500	51200	53900	64300	39700	47600	41100
MIN	43200	48300	30300	19800	22100	25500	41400	40300	38600	35800	36100	35900
AC-FT	2762000	3098000	2337000	1732000	1617000	2171000	2714000	2747000	2961000	2336000	2435000	2296000

CAL YR 1979 TOTAL 16927800 MEAN 46380 MAX 114000 MIN 20500 AC-FT 33580000
WTR YR 1980 TOTAL 14724600 MEAN 40230 MAX 64300 MIN 19800 AC-FT 29210000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	28755	29714	14377	14377	19897	35944	59428	43133	59428	46727	35944	37142	36328
RUNOFF (INCHES)	0.10	0.08	0.04	0.04	0.05	0.10	0.16	0.12	0.16	0.13	0.10	0.10	1.19
STD. DEVIATION	0.02	0.02	0.01	0.01	0.02	0.04	0.10	0.04	0.06	0.05	0.02	0.02	0.29
PERCENT OF ANNUAL	8.00	6.50	3.50	3.40	4.80	8.40	14.00	10.00	14.00	11.00	8.70	8.30	----
PRECIP. (INCHES)	1.30	0.69	0.58	0.46	0.59	1.11	1.72	2.69	3.35	2.27	2.57	2.27	19.60

06807320 WEST NISHNABOTNA RIVER AT HARLAN, IA

LOCATION.--Lat 41°38'41", long 95°18'50", in NW1/4 NE1/4 sec. 19, T.79 N., R.38 W., Shelby County, Hydrologic Unit 10240002, in southeast part of City of Harlan, in city owned brick pumphouse on right bank, 50 ft (15 m) landward of levee, 250 ft (76 m) downstream from State Highway 44, 1.4 mi (2.3 km) downstream from confluence with West Fork, 80.1 mi (128.9 km) upstream from confluence with East Nishnabotna River, and at mile 95.6 (153.8 km) above mouth of Nishnabotna River.

DRAINAGE AREA.--316 mi² (818 km²).

PERIOD OF RECORD.--Oct. 1, 1977 to current year. Occasional low-flow measurements, water years 1957-77.

GAGE.--Water-stage recorder. Datum of gage is 1,162.894 ft (354.450 m) NGVD.

REMARKS.-- Records fair except those for winter period, which are poor. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,500 ft³/s (411 m³/s) Sept. 13, 1978, gage height, 26.18 ft (7.980 m); minimum daily, 9.0 ft³/s (0.25 m³/s) Feb. 16-22.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s (42.5 m³/s) and maximum (*):

		Discharge		Gage height				Discharge		Gage height	
Date	Time	(ft³/s)	(m³/s)	(ft)	(m)	Date	Time	(ft³/s)	(m³/s)	(ft)	(m)
June 6	1100	*5,870	166	*17.02	5.188	June 15	0100	3,150	89.2	13.46	4.103

Minimum daily discharge, 13 ft³/s (0.37 m³/s) Aug. 7-9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	141	75	45	40	50	62	52	80	66	18	33
2	43	105	85	40	40	60	76	52	125	61	17	23
3	43	94	100	40	40	60	131	51	292	62	15	20
4	42	89	143	40	40	65	135	49	91	64	21	29
5	41	116	122	40	40	65	99	48	84	73	19	21
6	41	149	133	40	40	70	91	44	1480	67	15	21
7	41	122	113	40	40	70	87	42	198	55	13	21
8	40	113	133	40	40	80	84	42	122	50	13	21
9	40	106	149	40	40	100	84	44	102	49	13	21
10	40	104	166	40	40	572	79	47	95	47	45	20
11	39	97	86	50	40	161	77	44	95	46	66	20
12	38	95	60	60	40	89	74	45	91	45	30	19
13	38	94	60	70	43	73	70	49	221	41	32	19
14	40	92	50	80	45	139	72	48	135	36	23	19
15	40	91	50	80	45	620	69	47	873	41	19	19
16	39	88	40	80	45	389	65	50	206	51	107	19
17	39	88	40	70	45	109	67	70	142	40	178	18
18	39	88	50	70	45	88	65	67	127	38	80	18
19	48	86	60	70	50	83	62	59	116	36	48	19
20	43	88	70	70	60	76	62	53	107	33	35	19
21	42	109	70	70	100	68	60	48	102	30	29	17
22	52	131	70	60	250	66	55	44	100	27	25	16
23	84	113	60	60	100	63	53	42	137	26	23	16
24	102	110	60	60	80	60	51	41	103	25	20	16
25	89	104	55	60	75	56	51	38	92	26	20	16
26	82	102	50	50	75	56	51	32	87	31	19	17
27	74	96	50	40	75	60	51	42	82	29	24	17
28	66	90	50	40	60	59	50	79	73	26	24	17
29	62	85	50	40	55	76	50	62	68	22	22	19
30	124	80	45	40	---	71	51	53	64	21	23	21
31	184	---	45	40	---	62	---	54	---	19	111	---
TOTAL	1778	3056	2390	1665	1728	3716	2134	1538	5690	1283	1147	591
MEAN	57.4	102	77.1	53.7	59.6	120	71.1	49.6	190	41.4	37.0	19.7
MAX	184	149	166	80	250	620	135	79	1480	73	178	33
MIN	38	80	40	40	40	50	50	32	64	19	13	16
CFSM	.18	.32	.24	.17	.19	.38	.23	.16	.60	.13	.12	.06
IN.	.21	.36	.28	.20	.20	.44	.25	.18	.67	.15	.14	.07
AC-FT	3530	6080	4740	3300	3430	7370	4230	3050	11290	2540	2280	1170

CAL YR 1979 TOTAL 77266 MEAN 212 MAX 10500 MIN 16 CFSM .67 IN 9.10 AC-FT 153300
WTR YR 1980 TOTAL 26726 MEAN 73.0 MAX 1480 MIN 13 CFSM .23 IN 3.15 AC-FT 53010

06807410 WEST NISHNABOTNA RIVER AT HANCOCK, IA

LOCATION(revised).--Lat 41°23'24", long 95°22'17", in NE1/4 sec.18, T.76 N., R.39 W., Pottawattamie County, Hydrologic Unit 10240002, on right bank at upstream side of bridge on county highway G30, 0.6 mi (1.0 km) west of Hancock school, and 3.0 mi (4.8 km) downstream from Jim Creek, 59.6 mi (95.9 km) upstream from confluence with East Nishnabotna River, and at mile 75.1 mi (120.8 km) above mouth of Nishnabotna River.

DRAINAGE AREA.--609 mi² (1,577 km²).

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,085.83 ft, revised, (330.96 1 m) NGVD. Prior to Sept. 15, 1980, on downstream end of right pier at same datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--21 years, 266 ft³/s (7.533 m³/s), 5.93 in/yr (151 mm/yr), 192,700 acre-ft/yr (238 hm³/yr); median of yearly mean discharges, 230 ft³/s (6.51 m³/s), 5.1 in/yr (130 mm/yr), 167,000 acre-ft/yr (205 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,400 ft³/s (748 m³/s) Sept. 13, 1972, gage height, 22.12 ft (6.742 m); minimum daily, 2.2 ft³/s (0.062 m³/s) Feb. 8, 9, 1971.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 6	1530	6,630	188	11.22	3.420	June 15	0700	*9,880	280	*14.01	4.270

Minimum daily discharge, 48 ft³/s (1.36 m³/s) Sept. 29,30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

1	75	317	200	120	90	120	119	100	154	144	74	209
2	75	219	250	110	90	100	134	100	158	142	73	103
3	75	191	296	100	90	120	178	99	340	140	77	88
4	78	197	354	100	90	120	228	93	222	137	77	86
5	75	191	346	100	90	140	187	96	193	224	76	85
6	80	274	346	100	90	140	165	91	2180	184	69	77
7	78	247	276	100	90	160	152	87	809	172	63	73
8	80	224	151	100	90	180	152	84	299	156	62	70
9	75	208	124	100	90	200	151	87	235	147	58	67
10	80	193	176	100	90	1600	147	90	206	142	62	64
11	87	187	197	120	90	309	139	88	182	136	348	69
12	84	184	150	140	90	187	137	87	176	130	124	68
13	81	180	120	150	90	154	130	90	195	127	91	66
14	82	180	120	160	90	160	127	90	245	124	124	62
15	83	176	120	170	90	808	129	97	3490	126	97	60
16	86	172	100	180	90	420	126	91	630	127	401	62
17	83	170	100	170	90	242	127	116	363	127	319	61
18	82	168	120	160	90	170	124	124	299	124	222	60
19	91	163	140	160	90	154	119	114	257	114	136	58
20	94	160	160	150	100	140	118	105	231	108	113	57
21	84	187	180	150	150	129	114	102	215	102	99	53
22	178	240	180	140	1100	119	110	94	213	99	93	51
23	307	224	180	140	442	115	105	88	222	96	86	49
24	206	203	170	130	226	111	102	88	240	96	82	50
25	168	199	160	120	176	108	102	86	199	96	78	57
26	151	195	160	100	170	110	103	83	184	96	74	51
27	139	189	150	90	167	110	103	91	172	91	74	49
28	127	180	150	90	165	111	102	103	165	86	78	49
29	121	170	150	90	158	127	100	144	154	86	79	48
30	156	150	140	90	---	130	100	113	146	81	78	48
31	304	---	130	90	---	121	---	118	---	76	307	---
TOTAL	3565	5938	5596	3820	4564	6915	3930	3039	12774	3836	3794	2051
MEAN	115	198	181	123	157	223	131	98.0	426	124	122	68.4
MAX	307	317	354	180	1100	1600	228	144	3490	224	401	209
MIN	75	150	100	90	90	100	100	83	146	76	58	48
CFSM	.19	.33	.30	.20	.26	.37	.22	.16	.70	.20	.20	.11
IN.	.22	.36	.34	.23	.28	.42	.24	.19	.78	.23	.23	.13
AC-FT	7070	11780	11100	7580	9050	13720	7800	6030	25340	7610	7530	4070

CAL YR 1979	TOTAL	145472	MEAN 399	MAX 14800	MIN 40	CFSM .66	IN 8.89	AC-FT	288500	
WTR YR 1980	TOTAL	59822	MEAN 163	MAX 3490	MIN 48	CFSM .27	IN 3.65	AC-FT	118700	

06808500 WEST NISHNABOTNA RIVER AT RANDOLPH, IA

LOCATION.--Lat 40°52'23", long 95°34'48", in NE1/4 NE1/4 sec.17, T.70 N., R.41 W., Fremont County, Hydrologic Unit 10240002, on right bank 30 ft (9 m) upstream from bridge on State Highway 184, 0.3 mi (0.5 km) downstream from Deer Creek, 0.5 mi (0.8 km) west of Randolph, and 16.0 mi (25.7 km) upstream from confluence with East Nishnabotna River and at mile 31.5 (50.7 km) above mouth of Nishnabotna River.

DRAINAGE AREA.--1,326 mi² (3,434 km²).

PERIOD OF RECORD.--June 1948 to current year.

REVISED RECORDS.--WSP 1440: Drainage area. WDR Iowa 1974: 1973 (M). WDR IA-76-1: 1975 (P).

GAGE.--Water-stage recorder. Datum of gage is 932.99 ft (284.375 m) NGVD, unadjusted. Prior to Aug. 26, 1955, nonrecording gage and June 30, 1949, to Aug. 25, 1955, supplementary water-stage recorder, operating above gage height 8.4 ft (2.56 m) at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--32 years, 545 ft³/s (15.43 m³/s), 5.58 in/yr (142 mm/yr), 394,900 acre-ft/yr (487 hm³/yr); median of yearly mean discharges, 480 ft³/s (13.6 m³/s), 4.9 in/yr (124 mm/yr), 348,000 acre-ft/yr (429 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,500 ft³/s (1,010 m³/s) June 21, 1967, gage height, 22.60 ft (6.885 m); maximum gage height, 24.8 ft (7.56 m) Mar. 5, 1949, from graph based on gage readings (backwater from ice); minimum daily discharge, 10 ft³/s (0.283 m³/s) Dec. 17-21, 1955.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of about 24 ft (7.3 m), discharge not determined, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,500 ft³/s (184 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 2	1400	6,680	189	15.82	4.822	June 7	1715	7,100	201	16.14	4.919
June 4	0915	*13,000	368	*19.60	5.974	June 15	1700	9,440	267	17.71	5.398

Minimum daily discharge, 187 ft³/s (5.30 m³/s) Oct. 16-18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	227	689	250	358	195	250	391	292	2890	416	222	1100
2	220	614	300	338	190	350	396	305	3640	420	222	594
3	216	483	350	310	190	400	506	308	1130	416	212	413
4	211	436	407	280	190	450	604	302	6840	420	238	363
5	209	475	472	250	190	500	615	304	1420	1610	244	1060
6	207	536	453	220	190	550	541	297	899	812	489	532
7	207	577	435	210	190	520	496	287	5020	528	336	333
8	202	550	393	200	190	600	455	280	1650	439	232	258
9	197	512	370	200	190	800	435	281	855	402	210	266
10	194	487	360	200	190	978	420	289	713	384	208	244
11	192	457	340	210	190	1070	421	285	630	357	631	250
12	192	447	280	220	190	582	410	286	936	344	784	264
13	189	431	310	250	190	411	378	281	1310	336	353	369
14	189	437	350	300	190	416	365	274	586	319	348	277
15	189	429	400	350	190	942	360	273	5200	310	436	250
16	187	428	350	400	190	1200	354	283	2340	327	1950	259
17	187	417	300	500	190	835	383	334	1060	315	4040	272
18	187	414	270	450	190	504	380	353	1010	323	1210	260
19	193	408	250	400	190	397	359	356	850	357	652	247
20	199	406	250	350	190	366	348	334	631	298	499	234
21	198	445	270	300	250	340	338	302	584	290	416	223
22	342	515	400	270	1840	321	326	283	560	282	376	216
23	590	535	480	250	1660	315	312	272	638	267	354	211
24	531	506	450	300	763	310	297	247	664	259	341	209
25	399	481	420	280	517	298	293	243	575	255	327	209
26	351	478	410	260	367	294	294	241	512	319	315	219
27	322	460	390	240	367	298	293	242	483	294	308	209
28	298	434	380	220	385	306	283	246	468	271	326	205
29	282	350	380	210	300	336	277	259	439	259	338	204
30	382	300	375	205	---	423	286	291	425	244	483	204
31	755	---	362	200	---	445	---	300	---	232	1230	---
TOTAL	8444	14137	11207	8731	10254	15817	11616	8930	44958	12105	18330	9984
MEAN	272	471	362	282	354	510	387	288	1499	390	591	333
MAX	755	689	480	500	1840	1200	615	356	6840	1610	4040	1100
MIN	187	300	250	200	190	260	277	241	425	232	208	204
CFSM	.21	.36	.27	.21	.27	.39	.29	.22	1.13	.29	.45	.25
IN.	.24	.40	.31	.24	.29	.44	.33	.25	1.26	.34	.51	.28
AC-FT	16750	28040	22230	17320	20340	31370	23040	17710	89170	24010	36360	19800

CAL YR 1979 TOTAL 298430 MEAN 818 MAX 15100 MIN 187 CFSM .62 IN 8.37 AC-FT 591900
WTR YR 1980 TOTAL 174513 MEAN 477 MAX 6840 MIN 187 CFSM .36 IN 4.90 AC-FT 346100

06809210 EAST NISHNABOTNA RIVER NEAR ATLANTIC, IA

LOCATION.--Lat 41°20'47", long 95°04'31", in NW1/4 NW1/4 sec.35, T.76 N., R.37 W., Cass County, Hydrologic Unit 10240003, on left bank at downstream side of bridge on county highway, 1.9 mi (3.1 km) upstream from Turkey Creek, 5.4 mi (8.7 km) southwest of junction of U.S. Highway 6 and State Highway 83 in Atlantic, 69.1 mi (112.2 km) upstream from confluence with West Nishnabotna River, and at mile 84.6 (136.1 km) above mouth of Nishnabotna River.

DRAINAGE AREA.--436 mi² (1,129 km²).

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,105.83 ft (337.057 m) NGVD. Prior to Oct. 1, 1970, at site 2.0 mi (3.2 km) upstream at datum 5.00 ft (1.524 m) higher.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--20 years, 208 ft³/s (5.891 m³/s), 6.48 in/yr (165 mm/yr), 150,700 acre-ft/yr (186 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,700 ft³/s (756 m³/s) Sept. 12, 1972, gage height, 22.81 ft (6.952 m); minimum daily, 2.5 ft³/s (0.071 m³/s) July 10, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,000 ft³/s (85.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 6	1500	9,500	269	14.25	4.343	June 15	0530	*13,500	382	16.50	5.029

Minimum daily discharge, 26 ft³/s (0.74 m³/s) Sept. 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

1	58	108	70	60	50	80	87	72	165	92	44	233
2	50	100	90	56	50	95	95	74	245	90	46	76
3	51	79	115	52	50	90	127	74	313	87	41	55
4	50	74	120	50	50	90	192	74	200	98	43	46
6	50	81	125	48	50	90	176	59	162	473	46	44
6	48	125	95	46	50	90	152	67	2880	125	46	41
7	46	122	90	45	50	95	141	63	1450	108	38	38
8	46	111	63	45	50	100	127	62	430	98	34	37
9	48	103	75	45	50	120	125	62	344	84	33	35
10	48	90	85	45	50	339	119	62	303	84	34	34
11	50	90	80	45	50	160	116	63	269	84	394	34
12	46	87	65	48	50	130	111	65	248	84	224	34
13	41	84	55	50	50	95	103	65	275	84	90	35
14	40	81	50	52	50	90	98	65	279	79	100	35
15	40	81	45	55	50	424	95	65	4600	79	103	34
16	41	81	42	90	50	303	90	67	654	79	243	34
17	41	79	40	150	50	154	84	87	355	84	315	34
18	41	79	40	120	50	103	87	125	282	90	152	33
19	44	76	42	100	50	90	87	103	238	71	106	33
20	48	72	50	95	50	81	84	92	206	67	84	31
21	43	92	60	87	350	71	84	81	181	67	74	30
22	141	147	70	81	865	67	81	74	173	63	67	29
23	233	146	80	69	377	67	74	71	179	60	63	29
24	125	125	80	74	168	65	72	71	168	55	58	29
25	98	133	75	72	100	67	72	71	152	60	56	31
26	81	114	70	65	80	65	74	67	138	72	55	30
27	74	108	70	55	75	63	76	65	122	71	55	28
28	65	90	70	45	75	65	76	71	111	60	55	28
29	62	80	65	50	60	74	74	576	95	63	55	26
30	74	75	62	55	---	87	74	160	84	51	55	26
31	125	---	62	52	---	87	---	111	---	48	162	---
TOTAL	2048	2913	2201	2002	3150	3597	3053	2894	15301	2800	2971	1262
MEAN	66.1	97.1	71.0	64.6	109	116	102	93.4	510	90.3	95.8	42.1
MAX	233	147	125	150	865	424	192	576	4600	473	394	233
MIN	40	72	40	45	50	63	72	62	84	48	33	26
CFSM	.15	.22	.16	.15	.25	.27	.23	.21	1.17	.21	.22	.10
IN.	.17	.25	.19	.17	.27	.31	.26	.25	1.31	.24	.25	.11
AC-FT	4060	5780	4370	3970	6250	7130	6060	5740	30350	5550	5890	2500

CAL YR 1979	TOTAL	98291	MEAN 269	MAX 14300	MIN 32	CFSM .62	IN 8.39	AC-FT	195000	
WTR YR 1980	TOTAL	44192	MEAN 121	MAX 4600	MIN 26	CFSM .28	IN 3.77	AC-FT	87650	

06809500 EAST NISHNABOTNA RIVER AT RED OAK, IA

LOCATION.--Lat 41°00'41", long 95°14'07", in NW1/4 SE1/4 sec.29, T.72 N., R.38 W., Montgomery County, Hydrologic Unit 10240003, on left bank on downstream side of Coolbaugh Street bridge in Red Oak, and 0.2 mi (0.3 km) upstream from Red Oak Creek, 38.0 mi (61.1 km) upstream from confluence with West Nishnabotna River, and at mile 53.5 (86.1 km), above mouth of Nishnabotna River.

DRAINAGE AREA.--894 mi² (2,315 km²).

PERIOD OF RECORD.--May 1918 to July 1925, May 1936 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 1240: 1921, 1922-23 (M), 1924, 1942 (M), 1944 (M), 1946. WSP 1440: Drainage area. WSP 1710: 1957.

GAGE.--Water-stage recorder. Datum of gage is 1,005.45 ft (306.461 m) NGVD. Prior to July 5, 1925, nonrecording gage at present site at datum 4.60 ft (1.402 m) higher. May 29, 1936, to Nov. 13, 1952, nonrecording gage with supplementary water-stage recorder in operation above 3.2 ft (0.975 m) gage height July 30, 1939, to Nov. 13, 1952, and Nov. 14, 1952, to June 13, 1966, water-stage recorder, all at site 0.5 mi (0.8 km) upstream at datum 5.00 ft (1.524 m) higher. June 14, 1966, to Sept. 30, 1969, at present site at datum 5.00 ft (1.524 m) higher.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--50 years (water years 1918-24, 1936-80), 374 ft³/s (10.59 m³/s), 5.68 in/yr (144 mm/yr), 271,000 acre-ft/yr (334 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,000 ft³/s (1,080 m³/s) Sept. 13, 1972, gaage height, 27.43 ft (8.361 m); maximum gage height, 28.23 ft (8.605 m) June 13, 1947, present datum; minimum daily discharge, 6 ft³/s (0.17 m³/s) Aug. 18, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s (127 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 4	0615	5,750	163	13.43	4.093	June 15	1530	*14,200	4002	*19.60	5.974
June 6	2130	12,300	348	18.44	5.621						

Minimum daily discharge, 64 ft³/s (1.81 m³/s) Aug. 9, 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	114	394	100	201	90	208	185	127	764	315	103	979
2	111	268	95	187	90	257	194	125	1360	311	99	367
3	109	230	110	155	90	258	233	122	638	298	94	225
4	109	209	200	130	90	242	307	118	2580	299	96	185
5	109	223	250	110	90	235	305	110	742	1710	94	563
6	111	291	230	100	90	247	262	106	3640	572	96	214
7	107	315	210	95	90	239	244	102	5290	365	90	180
8	104	278	160	90	90	247	234	96	1650	302	74	160
9	104	259	120	85	90	317	223	94	859	267	64	149
10	100	242	160	85	90	419	219	95	674	245	64	132
11	98	225	200	85	90	467	215	96	572	231	248	129
12	100	222	120	90	90	259	209	94	509	220	605	131
13	98	219	85	95	90	239	203	94	481	208	224	225
14	96	212	120	110	90	233	192	93	512	197	188	157
15	98	209	150	150	90	434	189	89	7850	191	287	132
16	98	210	130	240	90	635	182	90	2470	188	419	123
17	98	198	100	380	90	378	183	113	1090	188	2000	123
18	98	190	85	363	90	240	183	154	841	185	483	119
19	111	187	80	261	90	208	175	159	718	194	358	111
20	107	182	80	212	90	199	168	131	620	169	219	106
21	116	206	85	213	160	183	162	111	559	160	188	99
22	201	279	120	199	1500	165	153	98	528	146	162	95
23	540	327	242	184	843	159	145	90	610	134	140	91
24	380	273	214	176	413	156	140	83	671	145	128	89
25	223	253	203	198	263	150	138	82	496	137	119	94
26	198	244	192	140	181	147	138	80	454	182	113	101
27	173	236	178	120	245	143	137	76	425	182	125	94
28	159	220	181	110	242	145	137	92	397	145	124	88
29	147	130	178	100	231	160	129	229	368	132	118	85
30	165	110	178	95	---	204	128	360	336	122	148	86
31	314	---	201	90	---	202	---	149	---	112	654	---
TOTAL	4696	7041	4757	4849	5878	7775	5712	3658	38704	8252	7924	5432
MEAN	151	235	153	156	203	251	190	118	1290	266	256	181
MAX	540	394	250	380	1500	635	307	360	7850	1710	2000	979
MIN	96	110	80	85	90	143	128	76	336	112	64	85
CFSM	.17	.26	.17	.17	.23	.28	.21	.13	1.44	.30	.29	.20
IN.	.20	.29	.20	.20	.24	.32	.24	.15	1.61	.34	.33	.23
AC-FT	9310	13970	9440	9620	11660	15420	11330	7260	76770	16370	15720	10770

CAL YR 1979	TOTAL	189870	MEAN 520	MAX 11900	MIN 80	CFSM .58	IN 7.90	AC-FT 376600			
WTR YR 1980	TOTAL	104678	MEAN 286	MAX 7850	MIN 64	CFSM .32	IN 4.36	AC-FT 207600			

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	131.8	136.2	100.8	124.1	309.1	721.2	440.7	612.6	849.4	434.2	294.7	240.4	368.2
RUNOFF (INCHES)	0.21	0.17	0.13	0.16	0.36	0.93	0.55	0.79	1.06	0.56	0.38	0.30	5.59
STD. DEVIATION	0.21	0.14	0.09	0.16	0.25	0.82	0.44	0.72	1.17	0.61	0.36	0.36	2.79
PERCENT OF ANNUAL	3.60	3.00	2.20	2.70	7.00	16.00	10.00	14.00	19.00	9.90	6.70	5.50	----
PRECIP. (INCHES)	2.07	1.09	0.90	0.73	0.94	1.96	2.84	4.05	5.31	3.30	3.95	3.66	30.80

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA
(National stream-quality accounting network station)

LOCATION.--Lat 40°37'57", long 95°37'32", in SW1/4 SE1/4 sec.11, T.67 N., R.42 W., Fremont County, Hydrologic Unit 10240004, on left bank 1.7 mi (2.1 km) downstream from confluence of East Nishnabotna and West Nishnabotna Rivers, 2 mi (3.2 km) northeast of Hamburg, and at mile 13.8 (22.2 km).

DRAINAGE AREA.--2,806 mi² (7,268 km²).

PERIOD OF RECORD.--March 1922 to September 1923, October 1928 to current year. Monthly discharge only for some periods published in WSP 1310.

REVISED RECORDS.--WSP 1240: 1923, 1929-37, 1938-40 (M), 1943 (M). WSP 1440: Drainage area. WDR Iowa. 1974: 1973.

GAGE.--Water-stage recorder. Datum of gage is 894.17 ft (272.543 m) NGVD. See WSP 1730 for history of changes prior to Nov. 16, 1950.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--53 years, 1,036 ft³/s (29.31 m³/s), 5.01 in/yr (127 mm/yr), 749,900 acre-ft/yr (925 hm³/yr); median of yearly mean discharges, 930 ft³/s (26.3 m³/s), 4.5 in/yr (114 mm/yr), 674,000 acre-ft/yr (831 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,500 ft³/s (1,570 m³/s) June 24, 1947, gage height, 26.03 ft (7.934 m), present site and datum, from floodmark; maximum gage height, 27.46 ft (8.370 m) Mar. 7, 1979 (backwater from ice); minimum daily discharge, 4.5 ft³/s (0.13 m³/s) Aug. 30, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 9,000 ft³/s (255 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 4	1600	*19,800	561	*24.93	7.599	June 15	----	15,500	439	a23.20	7.071
June 7	----	15,000	425	----	---						

a From high-water mark.

Minimum daily discharge, 284 ft³/s (8.0 m³/s) Sept. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	471	1270	600	800	430	750	945	627	2230	943	497	2360
2	458	1280	700	780	430	850	926	625	5000	955	488	1560
3	478	1060	900	760	430	750	1060	615	4500	967	476	800
4	469	964	1100	740	430	800	1150	600	11900	916	560	600
5	509	1010	1300	700	430	850	1220	585	5120	1790	544	936
6	483	1150	1200	600	430	900	1170	569	2270	3050	533	1720
7	467	1160	1070	550	430	950	1050	542	11400	1200	860	607
8	477	1170	964	500	430	1000	989	528	8830	1000	512	496
9	460	1070	868	460	430	1300	953	526	2650	900	446	444
10	462	1020	800	440	430	2070	928	527	1800	839	423	415
11	469	982	700	440	430	1730	944	526	1100	795	681	388
12	468	953	650	460	430	1380	985	525	900	776	1300	388
13	471	941	700	500	430	992	889	524	2830	734	1180	531
14	469	921	750	550	430	895	855	520	900	706	700	590
15	479	907	850	600	430	1460	832	516	6040	692	773	411
16	485	906	800	700	430	1800	815	511	9160	685	1670	386
17	483	892	750	850	430	1760	881	586	3340	676	4820	396
18	481	875	700	1000	430	1250	878	627	2280	670	3060	383
19	532	865	650	950	430	976	827	635	2290	662	1200	346
20	533	857	650	850	450	926	808	646	1680	661	900	353
21	519	930	700	750	600	903	772	588	1530	650	713	332
22	818	1010	800	650	2500	863	745	560	1470	640	623	317
23	1270	1080	900	600	3050	821	720	524	1570	601	539	303
24	1350	1120	1100	620	1990	803	685	509	1550	581	491	298
25	1080	1040	1000	640	1290	781	666	498	1500	566	460	299
26	888	1000	950	550	872	761	656	483	1260	620	420	306
27	802	969	900	500	873	756	653	483	1170	672	405	308
28	752	940	880	480	920	755	648	480	1100	621	395	301
29	725	800	860	460	650	797	633	476	1030	582	431	284
30	754	700	840	450	---	933	625	505	980	540	457	286
31	1110	---	820	440	---	1060	---	701	---	511	1650	---
TOTAL	19672	29842	26452	19370	21365	32622	25908	17167	99380	26201	28207	17144
MEAN	635	995	853	625	737	1052	864	554	3313	845	910	571
MAX	1350	1280	1300	1000	3050	2070	1220	701	11900	3050	4820	2360
MIN	458	700	600	440	430	750	625	476	900	511	395	284
CFSM	.23	.36	.30	.22	.26	.38	.31	.20	1.18	.30	.32	.20
IN.	.26	.40	.35	.26	.28	.43	.34	.23	1.32	.35	.37	.23
AC-FT	39020	59190	52470	38420	42380	64710	51390	34050	197100	51970	55950	34010

CAL YR 1979 TOTAL 624451 MEAN 1711 MAX 22000 MIN 380 CFSM .61 IN 8.28 AC-FT 1239000
WTR YR 1980 TOTAL 363330 MEAN 993 MAX 11900 MIN 284 CFSM .35 IN 4.82 AC-FT 720700

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	413.8	427.6	340.7	389.4	835.3	1849.7	1232.4	1630.7	2716.2	1338.6	876.2	704.2	1074.90
RUNOFF (INCHES)	0.21	0.17	0.14	0.16	0.31	0.76	0.49	0.67	1.08	0.55	0.36	0.28	5.20
STD. DEVIATION	0.18	0.13	0.10	0.14	0.21	0.64	0.42	0.59	1.25	0.44	0.25	0.24	2.69
PERCENT OF ANNUAL	4.00	3.30	2.60	3.10	6.60	14.00	9.60	13.00	21.00	10.00	6.80	5.50	----
PRECIP. (INCHES)	2.46	1.11	0.88	0.73	0.96	1.95	2.55	3.99	5.21	3.73	3.84	3.22	30.60

05810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 1979 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 1979 to current year.
WATER TEMPERATURES: April 1979 to current year.

REMARKS.--Daily samples for specific conductance and water temperature are collected from Hwy 275 bridge in Hamburg, located 2.4 mi (3.9 km) below gaging station.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 815 micromhos Sept. 16, 18, 19, 28, 30, 1979; minimum daily, 160 micromos June 5, 16, 1980.
WATER TEMPERATURES: Maximum daily, 32.0°C July 14, 1980; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT PERIOD: April to September 1979.
SPECIFIC CONDUCTANCE: Maximum daily, 815 micromhos Sept. 16, 18, 19, 28, 30; minimum daily, 180 micromhos July 24.
WATER TEMPERATURES: Maximum daily, 29.0°C July 13; minimum daily 1.0°C Dec. 12.

Water year 1980.
SPECIFIC CONDUCTANCE: Maximum daily, 650 micromhos Feb. 1, May 24, 27, 28; minimum daily, 160 micromhos June 5, 16.
WATER TEMPERATURES: Maximum daily, 32.0°C July 14; minimum daily, 0.0°C on many days during winter period.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		---	---				---	530	525	410	255	485
2		---	---				---	550	520	440	275	300
3		---	---				---	540	540	500	415	300
4		---	---				---	490	535	520	445	390
5		---	---				---	510	540	520	435	480
6		---	---				---	550	535	530	520	490
7		---	---				---	580	535	510	540	285
8		---	---				---	600	540	500	545	220
9		---	---				---	490	550	520	550	355
10		---	580				---	520	540	540	520	410
11		---	580				---	520	530	480	540	410
12		---	600				---	520	530	540	490	520
13		---	---				---	490	545	580	530	525
14		---	---				---	510	555	480	510	540
15		---	---				---	510	540	300	550	800
16		---	---				---	520	550	310	565	815
17		---	---				---	520	560	465	560	800
18		---	---				---	525	560	500	560	815
19		---	---				600	500	400	530	550	815
20		---	---				580	460	500	440	505	800
21		---	---				520	490	500	445	420	800
22		---	---				480	405	330	440	450	730
23		---	---				500	525	310	545	495	730
24		---	---				530	525	330	180	410	715
25		555	---				560	520	470	210	400	715
26		570	---				540	510	520	330	450	---
27		575	---				480	535	540	365	515	800
28		580	---				460	540	350	395	525	815
29		580	---				530	515	320	420	480	745
30		600	---				440	400	380	230	460	815
31		---	---				---	500	---	305	440	---

06810000 NISHNASOTNA RIVER ABOVE HAMBURG, IA--Continued

WATER-QUALITY RECORDS

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	600	480	---	530	650	580	660	---	500	540	480	280
2	600	430	---	520	640	580	560	---	280	520	460	340
3	600	530	---	520	610	570	520	---	220	525	410	370
4	600	545	---	530	610	570	450	---	180	550	380	450
5	600	560	---	540	600	540	510	570	160	520	440	460
6	500	540	---	560	610	560	530	590	280	300	490	260
7	600	550	---	520	600	540	440	590	200	280	400	360
8	590	550	---	---	580	570	470	600	175	390	340	490
9	580	560	---	---	600	560	560	590	225	460	440	550
10	625	580	580	---	600	370	460	600	350	510	360	500
11	560	580	580	---	600	380	530	600	430	530	420	470
12	570	580	600	---	600	370	540	600	460	480	380	580
13	600	585	---	---	610	400	580	590	280	500	320	570
14	600	580	---	---	590	420	590	590	350	460	340	480
15	600	580	---	580	600	390	560	600	470	450	400	500
16	600	580	---	500	600	380	460	620	160	440	420	550
17	550	580	---	460	600	360	500	610	220	480	280	560
18	560	580	---	470	630	360	500	610	320	500	240	540
19	625	585	---	490	630	420	560	600	360	510	300	520
20	600	580	---	490	610	470	500	610	430	540	350	530
21	625	570	---	520	600	520	580	610	480	480	470	540
22	580	560	625	530	430	530	580	630	490	550	520	580
23	530	540	530	550	410	540	590	640	400	560	480	540
24	510	555	500	570	380	550	600	650	460	520	570	540
25	480	555	520	580	370	550	600	640	510	500	560	530
26	500	570	520	590	430	560	560	640	450	490	560	500
27	550	575	520	540	420	560	560	650	500	550	530	500
28	570	580	520	610	390	530	550	650	520	470	550	500
29	575	580	500	600	480	520	570	640	520	490	570	540
30	560	600	430	620	---	560	580	640	530	520	560	520
31	500	---	480	610	---	580	---	620	---	610	330	---

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		---	---				---	14.0	19.0	26.0	23.0	25.0
2		---	---				---	15.0	19.0	23.0	24.0	23.0
3		---	---				---	13.0	21.0	24.0	25.0	24.0
4		---	---				---	14.0	21.0	26.0	27.0	25.0
5		---	---				---	17.0	22.0	22.0	28.0	25.0
6		---	---				---	16.0	23.0	22.0	28.0	25.0
7		---	---				---	19.0	24.0	21.0	27.0	23.0
8		---	---				---	20.0	22.0	21.0	28.0	22.0
9		---	---				---	20.0	19.0	25.0	27.0	23.0
10		---	6.0				---	18.0	17.0	25.0	27.0	23.0
11		---	5.0				---	14.0	19.0	27.0	22.0	23.0
12		---	1.0				---	14.0	21.0	27.0	23.0	24.0
13		---	---				---	15.0	23.0	29.0	23.0	19.0
14		---	---				---	17.0	20.0	28.0	22.0	18.0
15		---	---				---	19.0	25.0	24.0	20.0	16.0
16		---	---				---	19.0	25.0	25.0	19.0	17.0
17		---	---				---	20.0	23.0	24.0	23.0	18.0
18		---	---				---	22.0	22.0	24.0	25.0	19.0
19		---	---				18.0	19.0	23.0	24.0	27.0	18.0
20		---	---				15.0	22.0	20.0	24.0	26.0	19.0
21		---	---				16.0	19.0	23.0	25.0	26.0	18.0
22		---	---				16.0	19.0	24.0	26.0	24.0	16.0
23		---	---				16.0	18.0	22.0	26.0	24.0	16.0
24		---	---				17.0	17.0	20.0	23.0	23.0	18.0
25		5.0	---				17.0	18.0	21.0	24.0	24.0	19.0
26		5.0	---				18.0	19.0	22.0	26.0	24.0	---
27		5.0	---				16.0	19.0	23.0	26.0	22.0	22.0
28		3.0	---				15.0	20.0	23.0	26.0	21.0	21.0
29		3.0	---				14.0	21.0	24.0	26.0	24.0	24.0
30		2.0	---				13.0	22.0	25.0	25.0	25.0	23.0
31		---	---				---	20.0	---	26.0	26.0	---

06810000 NISHNABOTNA RIVER BASIN ABOVE HAMBURG, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.0	10.0	---	3.0	1.0	2.0	10.0	---	20.0	26.0	25.0	23.0
2	17.0	7.0	---	4.0	.0	1.0	9.0	---	20.0	25.0	27.0	23.0
3	19.0	8.0	---	1.0	1.0	3.0	9.0	---	21.0	24.0	27.0	24.0
4	15.0	7.0	---	2.0	1.0	2.0	10.0	---	20.0	25.0	25.0	24.0
5	12.0	9.0	---	2.0	.0	.0	13.0	17.0	22.0	25.0	23.0	23.0
6	13.0	7.0	---	2.0	.0	.0	12.0	17.0	25.0	25.0	24.0	25.0
7	13.0	5.0	---	1.0	.0	1.0	13.0	17.0	23.0	25.0	27.0	25.0
8	15.0	5.0	---	---	.0	2.0	12.0	14.0	21.0	28.0	27.0	26.0
9	13.0	6.0	---	---	.0	1.0	9.0	15.0	21.0	28.0	28.0	25.0
10	12.0	4.0	6.0	---	1.0	1.0	9.0	17.0	21.0	30.0	28.0	19.0
11	13.0	8.0	5.0	---	.0	2.0	9.0	15.0	22.0	31.0	25.0	21.0
12	14.0	6.0	1.0	---	.0	2.0	8.0	15.0	22.0	30.0	28.0	22.0
13	10.0	4.0	---	---	.0	4.0	9.0	14.0	23.0	31.0	26.0	23.0
14	10.0	4.0	---	---	.0	4.0	5.0	16.0	25.0	32.0	28.0	22.0
15	11.0	6.0	---	2.0	.0	8.0	10.0	16.0	26.0	31.0	26.0	19.0
16	13.0	5.0	---	3.0	.0	8.0	11.0	14.0	21.0	30.0	26.0	17.0
17	14.0	7.0	---	2.0	1.0	10.0	13.0	14.0	21.0	28.0	23.0	23.0
18	12.0	9.0	---	1.0	.0	11.0	13.0	14.0	22.0	28.0	24.0	20.0
19	16.0	13.0	---	2.0	1.0	9.0	18.0	16.0	20.0	27.0	26.0	16.0
20	18.0	8.0	---	1.0	2.0	10.0	17.0	18.0	20.0	28.0	27.0	14.0
21	18.0	8.0	---	1.0	1.0	10.0	19.0	21.0	20.0	27.0	26.0	20.0
22	13.0	8.0	3.0	.0	2.0	12.0	19.0	20.0	---	25.0	24.0	22.0
23	9.0	4.0	2.0	.0	1.0	8.0	18.0	20.0	22.0	24.0	24.0	17.0
24	7.0	8.0	1.0	2.0	1.0	11.0	15.0	21.0	23.0	26.0	24.0	15.0
25	10.0	5.0	.0	2.0	.0	6.0	18.0	22.0	25.0	27.0	25.0	15.0
26	10.0	5.0	1.0	.0	1.0	6.0	15.0	23.0	26.0	24.0	26.0	13.0
27	10.0	5.0	1.0	.0	.0	7.0	19.0	22.0	26.0	24.0	24.0	16.0
28	9.0	3.0	1.0	1.0	3.0	9.0	15.0	23.0	28.0	25.0	23.0	16.0
29	10.0	3.0	2.0	.0	4.0	8.0	17.0	23.0	26.0	27.0	24.0	17.0
30	13.0	2.0	3.0	.0	---	7.0	18.0	22.0	26.0	27.0	25.0	17.0
31	14.0	---	2.0	.0	---	6.0	---	22.0	---	26.0	22.0	---

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)
APR												
04...	1500	2710	520	8.1	6.0	180	11.6	97	3300	31000	240	53
23...	1100	2530	460	7.8	16.0	740	7.9	82	37000	160000	170	20
MAY												
14...	1020	1700	600	7.9	13.0	75	9.6	90	2900	3500	270	61
JUN												
04...	1200	1500	580	8.2	19.5	94	7.9	90	7200	1800	270	48
26...	1130	1100	540	8.0	23.0	160	7.7	92	13400	12800	270	56
JUL												
16...	1045	1400	320	7.5	25.0	1500	4.5	56	70000	190000	140	33
AUG												
06...	1045	1070	540	7.6	28.0	180	7.6	96	1500	2600	270	56
27...	0955	580	530	8.1	21.0	110	7.9	92	16000	4500	250	40
SEP												
17...	1035	605	560	8.3	18.0	44	8.6	95	8000	500	280	41

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM+ POTAS-SIUM DIS-SOLVED (MG/L AS NA) (00933)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY (MG/L AS CACO3) (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
APR											
04...	66	19	11	9	.3	--	5.0	190	42	11	.3
23...	56	7.4	9.7	11	.3	16	6.1	150	34	13	.4
MAY											
14...	74	21	10	7	.3	11	1.3	210	43	13	.3
JUN											
04...	71	22	11	8	.3	14	2.7	220	42	13	.4
26...	72	21	11	8	.3	15	4.2	210	42	16	.4
JUL											
16...	39	11	7.6	14	.3	14	6.7	110	25	8.2	.4
AUG											
06...	72	21	13	9	.3	18	4.8	210	48	15	.4
27...	67	20	12	9	.3	18	6.0	210	45	16	.4
SEP											
17...	76	22	14	14	.4	18	4.1	240	47	12	.3

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)
APR											
04...	13	307	282	.42	2250	5.2	.38	--	1.8	2.2	1.4
23...	10	277	227	.38	1890	5.7	.09	.11	6.3	5.4	4.7
MAY											
14...	12	333	301	.45	1530	6.3	.01	.01	.61	.62	.05
JUN											
04...	12	339	307	.45	1370	5.9	.03	.04	1.4	1.4	1.0
26...	15	338	308	.46	1000	5.5	.03	.04	2.5	2.5	2.0
JUL											
16...	10	236	174	.32	892	3.5	.05	.07	9.9	10	9.3
AUG											
06...	7.9	312	308	.42	901	5.0	.02	.02	1.7	1.7	--
27...	16	323	309	.44	506	3.5	.01	.01	.64	.65	.00
SEP											
17...	14	349	348	.47	570	3.3	.02	.02	1.2	1.2	.35

DATE	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, TOTAL (MG/L AS NO3) (71887)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS, ORTHOPH OSPHATE TOTAL (MG/L AS PO4) (00650)	PHOS-PHORUS, TOTAL (MG/L AS PO4) (71886)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED (MG/L AS C) (00689)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)
APR											
04...	.78	7.4	33	.580	--	--	.130	18	--	--	--
23...	1.7	12	54	1.700	5.2	5.2	.180	52	9.0	154	3
MAY											
14...	.56	6.9	31	.500	1.5	1.5	.150	9.5	--	--	--
JUN											
04...	.38	7.3	32	.490	1.5	1.5	.200	--	3.3	3.5	0
26...	.53	8.0	35	.780	2.4	2.4	.190	--	--	--	--
JUL											
16...	.75	14	60	.660	--	1.7	.110	--	--	40	0
AUG											
06...	--	6.7	30	.760	--	2.3	.280	--	--	--	--
27...	1.2	4.2	18	.340	--	1.0	.190	--	--	--	--
SEP											
17...	.85	4.5	20	.320	--	.98	.310	--	3.5	1.5	0

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)
OCT												
24...	1335	1430	495	7.7	5.0	52	10.8	88	>100000	>50000	210	37
NOV												
21...	1200	889	575	8.3	7.0	42	10.8	93	10000	42000	280	45
DEC												
18...	1025	E500	680	7.6	.0	7.6	13.4	95	5800	K7500	360	57
JAN												
15...	1100	620	530	7.5	1.0	15	12.2	90	1900	760	280	40
FEB												
04...	1230	408	600	7.6	.0	2.6	11.2	80	2200	1100	310	40
MAR												
03...	1130	850	650	7.9	.0	26	12.7	91	440	680	250	20
APR												
08...	1215	1040	570	8.1	12.0	76	8.1	79	2700	23000	260	39
MAY												
13...	1215	400	600	8.1	15.0	12	9.6	98	1000	500	270	45
JUN												
03...	1200	3900	330	7.0	17.5	1800	3.7	41	400000	360000	85	24
JUL												
01...	1200	1060	540	8.3	25.5	56	8.4	105	3500	700	260	41
AUG												
07...	1230	950	350	--	28.0	860	5.0	63	K130000	K280000	170	25
SEP												
09...	1310	950	560	8.4	24.0	92	--	-	11000	4600	250	24

K Results based on colony count outside the acceptable range (non-ideal colony count).

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM+ POTAS-SIUM DIS-SOLVED (MG/L AS NA) (00933)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY (MG/L AS CACO3) (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
OCT											
24...	55	17	11	14	.3	20	9.3	170	41	16	.3
NOV											
21...	76	23	13	9	.3	16	3.4	240	42	14	.3
DEC											
18...	95	29	18	14	.4	21	2.9	300	50	15	.3
JAN											
15...	76	22	13	9	.3	15	2.4	240	47	15	.3
FEB											
04...	83	25	14	9	.3	17	2.6	270	47	11	.3
MAR											
03...	67	20	13	10	.4	21	8.3	230	42	14	.3
APR											
08...	69	21	13	10	.4	--	5.1	220	41	13	.3
MAY											
13...	72	23	17	12	.4	--	2.6	230	43	16	.5
JUN											
03...	24	6.2	17	25	.8	--	18	61	42	8.2	.4
JUL											
01...	70	21	12	9	.3	--	3.7	220	38	12	.4
AUG											
07...	43	14	7.5	9	.3	--	4.2	140	23	8.2	.5
SEP											
09...	67	21	14	10	.4	--	6.0	230	42	16	.4

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AMMONIA TOTAL (MG/L AS NH4) (71845)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)
OCT											
24...	12	278	273	.38	1070	2.5	.41	.50	4.2	4.6	3.3
NOV											
21...	17	354	351	.48	850	4.1	.08	.10	1.0	1.1	.76
DEC											
18...	22	438	436	.60	--	5.3	.27	.33	.71	.98	.00
JAN											
15...	17	345	356	.47	578	4.2	.24	.29	.53	.77	.19
FEB											
04...	19	387	383	.53	426	4.4	.23	.28	.49	.72	.00
MAR											
03...	17	351	335	.48	806	3.7	.86	1.0	1.0	1.9	.70
APR											
08...	15	345	330	.47	972	4.8	.12	.15	1.7	1.8	.70
MAY											
13...	12	335	336	.46	363	2.6	.00	.00	1.2	1.2	.62
JUN											
03...	7.0	321	180	.44	3380	3.1	.27	.33	41	41	39
JUL											
01...	12	321	316	.44	919	3.9	.02	.02	1.5	1.5	1.2
AUG											
07...	5.0	209	200	.28	536	2.5	.06	.07	11	11	10
SEP											
09...	14	328	328	.45	841	2.2	.00	.00	1.8	1.8	1.2

DATE	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, TOTAL (MG/L AS NO3) (71887)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS, ORTHOPH OSPHATE TOTAL (MG/L AS PO4) (00650)	PHOS-PHORUS, TOTAL (MG/L AS PO4) (71886)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED (MG/L AS C) (00689)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)
OCT											
24...	1.3	7.1	31	1.500	--	4.6	.200	28	--	--	--
NOV											
21...	.34	5.2	23	.340	--	1.0	.150	12	10	.8	0
DEC											
18...	1.1	6.3	28	.160	--	.49	.060	--	--	--	--
JAN											
15...	.58	5.0	22	.290	--	.89	.090	5.2	--	--	--
FEB											
04...	.76	5.1	23	.070	--	.21	.050	--	8.6	--	0
MAR											
03...	1.2	5.6	25	.310	--	.95	.220	9.5	--	--	--
APR											
08...	1.1	6.6	29	.600	--	1.8	.170	13	--	--	--
MAY											
13...	.58	3.8	17	.250	--	.77	.130	--	12	1.3	0
JUN											
03...	2.4	44	200	4.100	--	13	.090	410	--	--	--
JUL											
01...	.30	5.4	24	.470	--	1.4	.180	15	--	--	--
AUG											
07...	.99	14	60	1.700	--	5.2	.120	--	13	.0	1
SEP											
09...	.56	4.0	18	.520	--	1.6	.230	11	--	--	--

06810000 NISHNABOTNA RIVER ABOVE HAMBURG,IA-Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	PHYTO-PLANK-TON, TOTAL (CELLS PER ML) (60050)	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70958)	BIOMASS CHLORO-PHYLL RATIO PERI-PHYTON (UNITS) (70950)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
APR										
23...	1100	1100	--	--	--	--	--	--	--	--
MAY										
14...	1020	3900	--	--	--	--	--	--	--	--
22...	1330	--	.630	.550	.280	.000	286	--	--	--
JUN										
26...	1130	5700	--	--	--	--	--	--	--	--
AUG										
20...	1300	--	23.2	21.1	.667	.022	3148	--	--	--
27...	0955	7900	--	--	--	--	--	--	--	--
SEP										
17...	1035	14000	--	--	--	--	--	517	845	94
24...	1200	--	2.91	2.50	1.55	.150	200	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	PHYTO-PLANK-TON, TOTAL (CELLS PER ML) (60050)	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70958)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT									
24...	1335	--	1.57	1.26	.000	.000	1230	4750	89
NOV									
21...	1200	5100	--	--	--	--	--	--	--
DEC									
18...	1025	--	--	--	--	--	73	118	74
MAR									
03...	1130	850	--	--	--	--	--	--	--
MAY									
13...	1215	26000	--	--	--	--	--	--	--
JUL									
01...	1200	120000	--	--	--	--	--	--	--
SEP									
09...	1310	56000	--	--	--	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA) (01006)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD) (01026)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR) (01031)
APR											
23...	1100	14	2	800	600	200	0	0	0	40	40
JUN											
04...	1200	5	3	300	100	200	0	0	1	10	10
JUL											
16...	1045	26	3	1200	1100	100	2	1	1	90	90
SEP											
17...	1035	5	4	200	0	200	1	0	1	10	0

DATE	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO) (01036)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU) (01041)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE) (01044)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
APR										
23...	0	19	19	0	73	68	5	45000	45000	20
JUN										
04...	0	5	5	0	18	7	11	7500	7500	0
JUL										
15...	0	49	47	2	170	160	8	83000	83000	100
SEP										
17...	10	2	0	<3	8	4	4	3600	3600	<10

06810000 NISHNABOTNA RIVERABOVE HAMBURG, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB) (01050)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN) (01054)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG) (71895)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)
APR										
23...	60	60	0	2300	2300	0	.4	.3	.1	--
JUN										
04...	26	26	0	570	570	0	.1	.1	.0	--
JUL										
16...	110	110	0	8600	5600	20	.4	.3	.1	--
SEP										
17...	9	9	0	270	260	6	.1	.0	.1	--

DATE	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE) (01146)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG) (01076)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
APR										
23...	--	--	5	3	2	3	0	190	180	10
JUN										
04...	--	--	1	0	3	0	0	50	30	20
JUL										
16...	--	--	2	1	1	0	0	370	350	20
SEP										
17...	--	--	2	0	2	0	0	20	0	20

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BARIUM, SUS-PENDED RECOV-ERABLE (UG/L AS BA) (01006)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD) (01026)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR) (01031)
NOV											
21...	1200	10	7	300	100	200	1	0	<1	10	10
FEB											
04...	1230	2	1	400	200	200	0	0	<1	0	0
MAY											
13...	1215	2	3	200	100	100	1	0	3	0	0
AUG											
07...	1230	17	3	1400	1200	200	3	2	1	120	110

DATE	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)	COBALT, SUS-PENDED RECOV-ERABLE (UG/L AS CO) (01036)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU) (01041)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE) (01044)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
NOV										
21...	0	2	0	<3	5	1	4	4500	4500	<10
FEB										
04...	0	1	0	<3	15	0	18	640	630	<10
MAY										
13...	0	2	--	<3	9	4	5	1900	--	<10
AUG										
07...	10	52	52	0	150	140	9	130000	130000	30

DATE	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB) (01050)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN) (01054)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG) (71895)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)
NOV										
21...	9	8	1	260	210	50	.1	.0	.1	12
FEB										
04...	7	7	0	190	20	170	.1	.1	.0	7
MAY										
13...	9	5	4	210	180	30	.6	.3	.3	6
AUG										
07...	92	84	8	6900	6900	0	.7	.5	.2	70

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA-Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE) (01146)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, SUS-PENDED RECOV-ERABLE (UG/L AS AG) (01076)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
NOV 21...	7	5	2	1	1	0	0	40	40	4
FEB 04...	7	0	4	0	4	0	0	40	40	5
MAY 13...	0	9	3	0	3	0	0	130	--	<3
AUG 07...	60	10	3	1	2	1	0	430	420	10

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, APRIL 1979 TO SEPTEMBER 1980

DATE	APR 23,79	MAY 14,79	JUN 26,79	AUG 27,79	SEP 17,79
TIME	1100	1020	1130	0955	1038
TOTAL CELLS/ML	1100	3900	5700	7900	14000
DIVERSITY: DIVISION	1.6	1.8	1.2	1.3	1.5
.CLASS	1.6	1.8	1.2	1.3	1.5
..ORDER	1.6	2.2	1.3	1.5	2.4
...FAMILY	2.6	2.6	1.7	2.1	2.6
....GENUS	2.6	3.0	1.8	2.2	2.9

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...CHARACIACEAE										
....SCHROEDERIA	--	-	72	2	--	-	--	-	--	-
...CHLOROCOCCACEAE										
....CHLOROCOCCUM	--	-	--	-	--	-	120	1	--	-
...COELASTRACEAE										
....COELASTRUM	--	-	--	-	630	11	--	-	--	-
...MICRACTINIACEAE										
....GOLENKINIA	--	-	--	-	--	-	--	-	--	-
....MICRACTINIUM	210°	18	--	-	--	-	470	6	140	1
...OOCYSTACEAE										
....ANKISTRODESMUS	100	9	72	2	--	-	--	-	200	1
....CHODATELLA	--	-	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	580	15	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	220	6	--	-	--	-	140	1
....OOCYSTIS	--	-	--	-	360	6	--	-	--	-
....SELENASTRUM	--	-	--	-	--	-	--	-	--	-
....TREUBARIA	--	-	--	-	--	-	120	1	--	-
....WESTELLA	--	-	--	-	--	-	1000	13	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	--	-	--	-	--	-	--	-	--	-
....SCENEDESMUS	--	-	--	-	720	13	1200	15	2200°	16
....TETRASTRUM	--	-	--	-	--	-	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	72	2	--	-	350	4	950	7
....CHLOROGONIUM	--	-	--	-	--	-	--	-	--	-
...PHACOTACEAE										
....PTEROMONAS	--	-	--	-	--	-	--	-	270	2
...VOLVOCACEAE										
....PANDORINA	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	290	7	91	2	230	3	480	3
....MELOSIRA	--	-	140	4	--	-	--	-	--	-
..PENNALES										
...FRAGILARIACEAE										
....FRAGILARIA	--	-	--	-	91	2	--	-	--	-
....SYNEDRA	100	9	72	2	91	2	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	100	9	--	-	--	-	--	-	--	-
...NAVICULACEAE										
....NAVICULA	100	9	140	4	--	-	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	--	-	580	15	--	-	230	3	2500°	18
...SURIRELLACEAE										
....SURIRELLA	100	9	72	2	--	-	--	-	--	-
.CHRYSOPHYCEAE										
..CHRYSOMONADALES										
...MALLOMONADACEAE										
....MALLOMONAS	--	-	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE	--	-	--	-	--	-	--	-	--	-
..CRYPTOMONADALES										
...CRYPTOCHRYSIDACEAE										
....CHROOMONAS	--	-	--	-	--	-	--	-	--	-
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	--	-	91	2	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	--	-	--	-	--	-	1600	12
....ANACYSTIS	--	-	1400°	35	--	-	--	-	1500	11
..HORMOGONALES										
...OSCILLATORIACEAE										
....OSCILLATORIA	--	-	--	-	3600°	63	4200°	53	3700°	27
....SCHIZOTHRIX	--	-	--	-	--	-	--	-	--	-
...SCYTONEMATACEAE										
....PLECTONEMA	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	--	-	--	-	--	-	--	-
....TRACHELOMONAS	410°	36	220	6	--	-	--	-	*	0

NOTE: ° - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

05810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA--Continued

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, APRIL 1979 TO SEPTEMBER 1980

DATE	NOV 21,79	MAR 3,80	MAY 13,80	JUL 1,80	SEP 9,80
TIME	1200	1130	1215	1200	1310
TOTAL CELLS/ML	5100	850	26000	120000	56000
DIVERSITY: DIVISIO	1.1	1.9	1.2	1.2	1.3
.CLASS	1.1	1.9	1.2	1.2	1.5
..ORDER	1.4	0.0	1.9	1.9	2.2
...FAMILY	2.3	0.0	2.3	3.1	2.8
....GENUS	2.4	0.0	2.6	3.4	3.4

ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...CHARACIACEAE										
...SCHROEDERIA	--	-	--	-	--	-	--	-	--	-
...CHLOROCOCCACEAE										
....CHLOROCOCCUM	--	-	--	-	140	1	--	-	--	-
...COELASTRACEAE										
....COELASTRUM	--	-	--	-	--	-	9000	7	--	-
...MICRACTINIACEAE										
....GOLENKINIA	*	0	--	-	1700	7	*	0	--	-
....MICRACTINIUM	--	-	--	-	9500°	36	24000°	20	12000°	21
...OOCYSTACEAE										
....ANKISTRODESMUS	*	0	140°	16	430	2	*	0	1100	2
....CHODATELLA	27	1	--	-	140	1	*	0	1800	3
....DICTYOSPHAERIUM	--	-	--	-	290	1	11000	9	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	*	0	2900	5
....OOCYSTIS	27	1	--	-	--	-	--	-	360	1
....SELENASTRUM	--	-	--	-	140	1	--	-	--	-
....TREUBARIA	--	-	--	-	--	-	--	-	720	1
....WESTELLA	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	55	1	--	-	--	-	4500	4	2900	5
....SCENEDESMUS	250	5	--	-	580	2	9000	7	1100	2
....TETRASTRUM	--	-	--	-	--	-	--	-	1400	3
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	55	1	290°	34	3000	12	7900	7	12000°	21
....CHLOROGONIUM	--	-	--	-	--	-	1100	1	--	-
...PHACOTACEAE										
....PTEROMONAS	160	3	--	-	--	-	1100	1	--	-
...VOLVOCACEAE										
....PANDORINA	--	-	--	-	--	-	9000	7	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	82	2	84	10	1600	6	25000°	21	9400°	17
....MELOSIRA	--	-	--	-	--	-	3400	3	1800	3
..PENNALES										
...FRAGILARIACEAE										
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	*	0	--	-	--	-	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	*	0	--	-	--	-	--	-	--	-
...NAVICULACEAE										
....NAVICULA	27	1	7	1	--	-	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	220	4	35	4	6900°	27	7300	6	2200	4
...SURIRELLACEAE										
....SURIRELLA	290	6	21	2	--	-	--	-	--	-
.CHRYSOPHYCEAE										
..CHRYSOMONADALES										
...MALLOMONADACEAE										
....MALLOMONAS	*	0	--	-	--	-	--	-	1400	3
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE	--	-	14	2	--	-	--	-	--	-
..CRYPTOMONADALES										
...CRYPTOCHRYSIDACEAE										
....CHROOMONAS	--	-	--	-	140	1	*	0	360	1
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	--	-	--	-	*	0	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	--	-	--	-	--	-	--	-
....ANACYSTIS	55	1	--	-	1400	6	4500	4	3600	6
..HORMOGONALES										
...OSCILLATORIACEAE										
....OSCILLATORIA	2600°	51	--	-	--	-	--	-	--	-
....SCHIZOTHRIX	--	-	140°	16	--	-	--	-	--	-
...SCYTONEMATACEAE										
....PLECTONEMA	1200°	23	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	7	1	--	-	--	-	720	1
....TRACHELOMONAS	27	1	110	13	--	-	--	-	360	1
PYRRHOPHYTA (FIRE ALGAE)										
.DINOPHYCEAE										
..GYMNODINIALES										
...GYMNODINIACEAE										
....GYMNODINIUM	--	-	7	1	--	-	--	-	--	-

NOTE: ° - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

06811840 TARKIO RIVER AT STANTON, IA

LOCATION.--Lat 40°58'52", long 95°06'32", in NW1/4 SW1/4 sec.4, T.71 N., R.37 W., Montgomery County, Hydrologic Unit 10240005, on right bank 10 ft (3 m) downstream from bridge on county highway H42, 0.1 mi (0.2 km) downstream from Little Tarkio Creek, and 0.5 mi (0.8 km) west of Stanton.

DRAINAGE AREA.--49.3 mi² (127.7 km²).

PERIOD OF RECORD.--October 1957 to current year. Annual maximum, water years 1952-57.

REVISED RECORDS.--WSP 1919: 1960 (M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,104.67 ft (336.703 m) NGVD.

REMARKS.--Records fair except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--23 years, 27.0 ft³/s (0.765 m³/s), 7.44 in/yr (189 mm/yr), 19,560 acre-ft/yr (24.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,500 ft³/s (637 m³/s) June 9, 1967, gage height, 28.56 ft (8.705 m), from rating curve extended above 1,600 ft³/s (45.3 m³/s) on basis of slope-area measurement of peak flow; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s (42.5 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 2	0915	2,630	74.5	14.53	4.429	Sept. 5	0500	1,820	51.5	13.47	4.106
June 4	0515	*3,730	106	*15.76	4.804						

No flow July 30 to Aug. 10, Aug. 13, 14, 21-29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	21	7.0	8.6	.42	.30	20	5.8	271	27	.00	22
2	1.5	13	3.5	6.1	.36	1.5	27	5.7	626	33	.00	3.1
3	1.8	11	5.6	4.7	.39	1.0	42	5.3	102	33	.00	.30
4	1.8	9.6	9.0	4.3	.42	.66	30	6.6	918	34	.00	.13
5	2.1	34	16	4.0	.45	.56	25	5.9	121	68	.00	278
6	3.1	32	12	2.0	.48	.50	20	5.6	96	26	.00	54
7	7.0	23	14	.80	.46	1.1	16	3.9	82	19	.00	45
8	9.8	20	4.2	.72	.38	11	14	5.0	74	14	.00	29
9	12	17	10	.66	.36	60	13	6.6	72	9.8	.00	20
10	16	13	12	.62	.34	10	12	6.3	60	12	.00	15
11	20	12	4.3	1.7	.32	6.2	20	6.5	55	16	14	9.3
12	18	12	1.4	1.4	.30	4.0	21	4.7	56	13	.14	8.1
13	11	11	4.8	1.5	.28	5.0	16	5.2	54	13	.00	67
14	4.9	10	3.9	4.0	.27	30	14	2.7	47	6.2	.00	37
15	12	10	5.0	8.0	.26	87	13	2.2	140	3.4	.07	29
16	10	8.3	1.5	29	.25	37	11	3.6	56	7.2	44	33
17	14	9.1	2.1	21	.24	23	18	16	51	4.1	27	37
18	21	10	3.0	12	.23	14	16	9.4	47	1.4	5.1	26
19	46	8.3	4.5	9.1	.22	13	13	7.3	45	2.2	.24	14
20	18	7.5	7.0	7.8	.90	9.2	12	4.8	43	.83	.07	8.9
21	2.6	26	9.0	8.4	47	7.8	10	4.0	41	.59	.00	5.9
22	91	29	9.7	6.6	80	7.9	8.5	2.7	54	.40	.00	7.1
23	64	20	13	5.0	43	9.4	7.8	3.0	47	.14	.00	4.7
24	26	17	9.1	7.0	20	7.4	9.5	3.5	38	.06	.00	2.7
26	8.3	17	6.0	4.6	11	7.2	11	2.8	34	.01	.00	4.0
26	6.1	16	7.0	.50	7.0	7.6	9.6	2.5	31	3.7	.00	5.0
27	6.2	13	7.3	.86	10	8.3	9.7	2.8	29	2.3	.00	3.9
28	5.2	10	6.3	1.5	7.0	8.8	8.9	2.6	26	.13	.00	2.6
29	1.8	6.4	6.6	.90	.70	12	6.8	2.4	25	.03	.00	1.2
30	7.9	9.0	10	.35	---	18	6.2	2.6	26	.01	37	1.1
31	32	---	9.6	.48	---	20	---	2.9	---	.00	136	---
TOTAL	482.7	455.2	224.4	164.19	233.03	429.42	461.0	150.9	3367	350.50	263.62	774.03
MEAN	15.6	15.2	7.24	5.30	8.04	13.9	15.4	4.87	112	11.3	8.50	25.8
MAX	91	34	16	29	80	87	42	16	918	68	136	278
MIN	1.5	6.4	1.4	.35	.22	.30	6.2	2.2	25	.00	.00	.13
CFSM	.32	.31	.15	.11	.16	.28	.31	.10	2.27	.23	.17	.52
IN.	.36	.34	.17	.12	.18	.32	.35	.11	2.54	.26	.20	.58
AC-FT	957	903	445	326	462	852	914	299	6680	695	523	1540

CAL YR 1979 TOTAL 12147.10 MEAN 33.3 MAX 1250 MIN 1.4 CFSM .68 IN 9.17 AC-FT 24090
WTR YR 1980 TOTAL 7355.99 MEAN 20.1 MAX 918 MIN .00 CFSM .41 IN 5.55 AC-FT 14590

06813500 MISSOURI RIVER AT RULO, NB

LOCATION.--Lat 40°03'14", long 95°25'12", in NW1/4 NW1/4 sec.17, T.1 N., R.18 E., Richardson County, Hydrologic Unit 10240005, on downstream end of middle pier of bridge on U.S. Highway 159 at Rulo, 3.2 mi (5.1 km) upstream from Big Nemaha River, and at mile 498.0 (801.3 km).

DRAINAGE AREA.--414,900 mi² (1,074,600 km²), approximately. The 3,959 mi² (10,254 km²) in Great Divide basin are not included.

PERIOD OF RECORD.--October 1949 to current year in reports of Geological Survey. Gage-height record collected at site 80 ft (24 m) upstream January 1885 to December 1899 published in reports of Missouri River Commission September 1929 to September 1950 in files of Kansas City office of Corps of Engineers.

GAGE.--Water-stage recorder. Datum of gage is 837.23 ft (255.188 m) NGVD. Prior to Sept. 13, 1950, nonrecording gage at site 80 ft (24 m) upstream at same datum.

REMARKS.--Records good. Flow regulated by upstream main-stem reservoirs. Several observations of water temperature were made during the year. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--31 years, 39,710 ft³/s (1,125 m³/s), 28,770,000 acre-ft/yr (35,500 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 358,000 ft³/s (10,100 m³/s) Apr. 22, 1952, gage height, 25.60 ft (7.803 m); minimum daily, 4,420 ft³/s (125 m³/s) Jan. 13, 1957; minimum gage height, 0.65 ft (0.198 m) Jan. 7, 1971, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1881 reached a stage of 22.9 ft (6.98 m), from floodmark, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 84,600 ft³/s (2,400 m³/s) June 5, gage height, 16.81 ft (5.124 m); minimum daily, 22,200 ft³/s (629 m³/s) Jan. 10; minimum gage height, 5.34 ft (1.628 m) Jan. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45600	55600	47300	33700	25200	32700	51700	42500	59300	39200	38600	43000
2	44700	51100	47600	34200	24100	29800	49000	42400	68900	40200	38600	40900
3	44500	54600	47800	32800	24100	27700	54700	42500	72200	39600	38600	39200
4	44100	53400	48600	32800	25300	26700	56400	41600	65000	38800	39600	38700
5	44300	53000	49700	32300	25800	27400	54300	41300	73600	39000	40100	37400
6	43800	53000	48400	31100	26300	27600	51800	40700	63000	42800	39800	39900
7	44500	55000	47100	29800	27000	27400	49700	40600	65000	39600	40000	38600
8	44600	56500	47800	28800	27000	26100	50500	40900	67500	38100	39300	37200
9	44800	54800	46800	25600	27200	29100	51800	42200	57700	37000	39200	36900
10	45600	53600	43600	22200	27500	37000	52300	42200	53500	36800	39500	36700
11	45400	52100	41600	22600	27800	42300	51600	42300	50400	36500	42600	36800
12	45700	51600	41000	25000	27600	39400	53400	42200	47700	36400	50200	37200
13	45000	51300	39800	25300	27500	37500	50900	42800	50400	36400	45000	38400
14	43900	51300	37500	25100	27800	35900	49300	42600	49100	36500	41300	38800
15	43800	51100	37400	24900	27600	37100	49100	43100	51500	36000	40100	38400
16	44000	50200	37700	28600	27900	38500	47900	44700	69500	35900	39400	38700
17	43900	49900	34800	31500	28400	38400	47100	47400	52900	36400	46600	39000
18	43300	50100	31300	32900	27600	35200	46500	48100	47600	38000	58200	39100
19	44400	50400	31900	33500	26700	34800	45000	48800	46700	39400	44300	38500
20	46100	50300	33100	33900	26900	34600	45000	48900	44200	39200	41900	38800
21	47000	55500	34700	32700	27900	34600	44700	48300	42300	39600	39100	39200
22	51900	54800	33400	32800	33400	36300	44600	47700	41000	39500	38000	40100
23	51000	55300	32300	32200	36500	38200	43900	47100	42900	39700	37700	41000
24	48400	55600	35800	32000	35800	40500	44500	46800	42500	39400	37100	39600
25	46900	53200	35600	31100	34400	43300	43900	46300	42400	38900	36400	39000
26	45100	51400	34400	30500	33100	44900	44100	45500	42100	39000	36000	38900
27	44100	51500	33900	30600	32700	44000	44000	44900	41100	39500	35900	38400
28	45200	50800	34400	28800	33100	44500	44000	45000	41100	39500	36400	38300
29	45500	51300	34400	26500	34300	45600	43700	52000	40300	39200	37400	38800
30	47700	50100	33800	25800	---	55500	43000	53300	39700	38800	38200	39800
31	57000	---	33600	25800	---	59500	---	50900	---	38800	39300	---
TOTAL	1421700	1598400	1217100	915400	836500	1152100	1448400	1395600	1571100	1193700	1254400	1165300
MEAN	45860	53280	39260	29530	28840	37160	48280	45020	52370	38510	40460	38840
MAX	57000	55600	49700	34200	36500	59500	56400	53300	73600	42800	58200	43000
MIN	43300	49900	31300	22200	24100	26100	43000	40600	39700	35900	35900	36700
AC-FT	2820000	3170000	2414000	1816000	1659000	2285000	2873000	2768000	3116000	2368000	2488000	2311000

CAL YR 1979 TOTAL 17935800 MEAN 49140 MAX 135000 MIN 21000 AC-FT 35580000
WTR YR 1980 TOTAL 15169700 MEAN 41450 MAX 73600 MIN 22200 AC-FT 30090000

06817000 NODAWAY RIVER AT CLARINDA, IA

LOCATION.--Lat 40°44'19", long 95°00'47", in SW1/4 NE1/4 sec.32, T.69 N., R.36 W., Page County, Hydrologic Unit 10240009, near left abutment on downstream side of bridge on State Highway 2 (city route), 0.5 mi (0.8 km) downstream from North Branch, 1.2 mi (1.9 km) east of city square of Clarinda, and 7.5 mi (12.1 km) upstream from East Nodaway River.

DRAINAGE AREA.--762 mi² (1,973 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1918 to July 1925, May 1936 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 1240: 1918-20 (M), 1921, 1922-25 (M), 1936-38, 1942, 1943-45 (M), 1948. WSP 1440: Drainage area. WSP 1710: 1958, 1959 (P).

GAGE.--Water-stage recorder. Datum of gage is 960.36 ft (292.718 m) NGVD. Prior to July 5, 1925, and May 28, 1936, to Mar. 26, 1957, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. Clarinda municipal water supply is taken from Nodaway River, 500 ft (152 m) above station. Average daily pumpage was 1.20 ft³/s (0.034 m³/s).

COOPERATION.--Average pumpage furnished by Clarinda water works.

AVERAGE DISCHARGE.--50 years (1918-24, 1936-80), 328 ft³/s (9.289 m³/s), 5.85 in/yr (149 mm/yr), 237,600 acre-ft/yr (293 hm³/yr); median of yearly mean discharges, 260 ft³/s (7.36 m³/s), 4.6 in/yr (117 mm/yr), 188,000 acre-ft/yr (232 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,100 ft³/s (881 m³/s) June 13, 1947, gage height, 25.3 ft (7.71 m), from floodmark, from rating curve extended above 15,000 ft³/s (425 m³/s) on basis of an overflow profile and extended channel rating; minimum daily, 1 ft³/s (0.028 m³/s) Sept. 5, 9, 12, 14, 1918, Dec. 9, 27-31, 1923.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1903 reached a stage of 25.4 ft (7.74 m), from floodmarks, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft³/s (142 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 2	1530	6,630	188	8.78	2.676	June 7	1845	6,390	181	8.59	2.618
June 4	0830	*8,490	240	*10.15	3.094						

Minimum daily discharge, 29 ft³/s (0.82 m³/s) May 30, Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	111	52	70	45	100	131	62	974	121	45	730
2	34	78	48	59	45	130	126	64	4040	134	48	237
3	35	67	60	55	45	140	223	63	2290	127	41	130
4	32	60	76	50	45	120	282	57	4510	119	47	98
5	32	97	91	48	45	100	214	54	2500	192	46	74
6	34	147	80	46	45	100	166	50	1250	617	46	426
7	34	125	70	44	45	120	146	46	4740	231	41	188
8	34	106	50	42	45	152	126	43	2910	163	34	126
9	31	91	79	40	45	405	120	38	963	126	30	79
10	31	79	84	40	45	525	115	43	613	103	34	68
11	36	78	68	40	45	312	130	44	470	99	70	63
12	34	77	47	42	45	176	178	46	411	95	231	62
13	32	73	59	44	45	150	165	44	377	92	132	128
14	34	69	75	46	45	120	144	44	320	83	65	149
15	36	65	63	55	45	517	127	40	2030	74	72	97
16	40	63	50	80	45	504	114	44	1770	73	438	75
17	38	63	40	120	45	277	118	82	584	73	2070	66
18	38	64	38	160	45	168	123	104	408	68	510	66
19	54	68	38	120	46	152	111	100	332	66	280	57
20	65	74	40	100	48	128	99	75	287	67	243	50
21	81	90	45	90	200	111	95	61	248	63	135	46
22	213	110	55	70	1500	96	85	47	233	56	87	37
23	350	98	65	60	642	82	81	44	279	58	75	35
24	213	90	80	95	240	76	75	38	559	51	61	37
25	115	80	90	83	113	73	73	37	267	54	59	38
26	82	78	75	40	145	72	70	31	209	64	56	39
27	66	77	66	50	237	75	71	36	176	84	50	38
28	54	63	72	45	252	74	65	36	156	78	56	34
29	49	60	66	45	231	84	66	31	139	60	52	30
30	65	56	75	45	---	127	64	29	126	51	49	29
31	114	---	72	45	---	152	---	33	---	47	1320	---
TOTAL	2142	2457	1969	1969	4464	5418	3703	1566	34171	3389	6523	3332
MEAN	69.1	81.9	63.5	63.5	154	175	123	50.5	1139	109	210	111
MAX	350	147	91	160	1500	525	282	104	4740	617	2070	730
MIN	31	56	38	40	45	72	64	29	126	47	30	29
CFSM	.09	.11	.08	.08	.20	.23	.16	.07	1.50	.14	.28	.15
IN.	.10	.12	.10	.10	.22	.26	.18	.08	1.67	.17	.32	.16
AC-FT	4250	4870	3910	3910	8850	10750	7340	3110	67780	6720	12940	6610

CAL YR 1979 TOTAL 146055 MEAN 400 MAX 12400 MIN 31 CFSM .53 IN 7.13 AC-FT 289700
WTR YR 1980 TOTAL 71103 MEAN 194 MAX 4740 MIN 29 CFSM .26 IN 3.47 AC-FT 141000

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	112.4	116.1	79.3	119.0	270.8	588.2	430.3	561.8	792.3	323.9	178.5	198.1	316.0
RUNOFF (INCHES)	0.20	0.17	0.12	0.18	0.37	0.89	0.63	0.85	1.16	0.49	0.27	0.29	5.63
STD. DEVIATION	0.29	0.26	0.13	0.23	0.28	0.80	0.58	0.86	1.40	0.49	0.25	0.34	3.22
PERCENT OF ANNUAL	3.50	3.10	2.00	3.20	7.10	16.00	11.00	15.00	21.00	8.60	4.70	5.20	----
PRECIP. (INCHES)	2.14	1.23	0.85	0.75	0.89	2.01	2.67	3.87	5.14	3.50	3.77	3.39	30.20

05817000 NODAWAY RIVER AT CLARINDA, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1976 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1975 to current year.
WATER TEMPERATURES: October 1975 to September 1978, October 1979 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1975 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis. Suspended-sediment samples at normal flows and winter period are collected below dam 300 ft (91 m) upstream from gage. Samples at higher stages are collected from bridge at gage. Random water temperatures are on file for the 1979 water year.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 540 micromhos Dec. 14, 1979; minimum daily, 130 micromhos June 15, 1976.
WATER TEMPERATURES: Maximum daily, 30.5°C Aug. 23, 1978; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 23,800 mg/L Apr. 17, 1978; minimum daily mean, 5 mg/L Dec. 14, 1977, Feb. 24, 1978.
SEDIMENT LOADS: Maximum daily, 991,000 tons (899,000 tonnes) Sept. 2, 1977; minimum daily, 0.23 ton (0.21 tonne) Dec. 14, 1977.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 540 micromhos Dec. 14; minimum daily, 140 micromhos June 8.
WATER TEMPERATURES: Maximum daily, 29.0°C July 10; minimum daily, 0.0°C on many days during winnter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 16,000 mg/L June 2; minimum daily mean, 6 mg/L Oct. 13, Jan. 2.
SEDIMENT LOADS: Maximum daily, 225,000 tons (160,000 tonnes) June 4; minimum daily, 0.52 ton ((0.47 tonne) Oct. 13.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 26 DEG. C), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	420	440	480	470	500	390	440	410	340	430	400	230
2	430	440	520	460	490	400	430	420	230	400	380	260
3	430	460	520	460	500	430	410	420	185	410	390	310
4	430	460	500	460	480	420	410	420	200	410	380	340
5	430	440	440	460	480	410	450	430	180	410	390	360
6	430	400	440	460	470	430	430	425	270	300	380	220
7	430	440	440	500	470	420	430	430	200	270	370	260
8	420	460	460	480	480	410	440	430	140	320	380	320
9	420	460	460	520	480	400	420	440	210	360	380	350
10	430	460	460	500	470	260	430	450	300	400	380	386
11	430	460	440	480	460	270	420	440	350	410	350	410
12	420	440	480	460	480	280	400	435	360	380	340	410
13	430	460	520	480	460	300	410	420	360	400	300	390
14	430	460	540	480	360	320	420	420	380	410	320	300
15	430	460	500	440	370	240	420	430	380	420	340	330
16	440	460	480	480	380	230	420	405	200	400	310	350
17	440	460	520	440	360	250	400	390	240	380	220	380
18	420	460	530	450	380	280	400	400	310	400	210	400
19	420	460	600	410	370	325	400	420	350	420	280	400
20	440	460	440	460	420	390	400	420	380	420	320	410
21	440	440	450	420	380	410	410	430	380	410	350	410
22	380	440	440	440	250	420	420	440	400	420	360	410
23	380	440	440	460	260	440	420	440	380	410	380	420
24	380	460	430	455	270	440	430	440	360	400	400	420
25	385	460	450	450	310	450	430	430	310	390	400	420
26	420	460	460	460	330	450	430	430	360	390	380	410
27	460	460	460	420	340	450	420	440	400	380	370	390
28	460	460	440	530	340	450	400	420	410	400	380	390
29	460	480	440	500	360	440	420	430	420	380	380	380
30	480	500	460	510	---	440	400	420	420	380	380	400
31	420	---	470	490	---	430	---	420	---	390	220	---

06817000 NODAWAY RIVER AT CLARINDA, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18.5	8.0	.0	2.0	.0	.0	7.0	13.0	18.0	25.0	24.0	22.0
2	13.5	5.5	.0	.0	---	.0	7.0	15.0	18.0	23.0	26.0	22.0
3	17.5	4.5	2.5	.0	.0	1.0	7.0	17.0	19.0	21.0	23.0	23.0
4	---	4.5	3.5	1.0	1.0	1.0	6.0	16.0	19.0	25.0	22.0	22.0
5	11.0	8.5	3.5	.0	1.0	.0	8.0	16.0	21.0	24.0	19.0	22.0
6	11.0	5.0	2.5	.0	1.0	.0	13.0	16.0	19.0	21.0	21.0	22.0
7	11.0	3.5	2.5	.0	.0	1.0	---	14.0	21.0	28.0	24.0	22.0
8	13.5	4.0	1.5	.0	5.0	1.0	10.0	10.0	21.0	27.0	24.0	23.0
9	14.5	5.0	1.0	.0	1.0	2.0	7.0	11.0	20.0	26.0	26.0	24.0
10	14.5	3.5	.0	1.0	.0	2.0	7.0	12.0	20.0	29.0	25.0	18.5
11	12.5	1.5	3.5	.0	1.0	1.0	8.0	12.0	21.0	28.0	23.0	20.0
12	13.0	1.0	.0	.0	.0	1.0	5.0	12.0	20.0	26.0	22.0	20.0
13	7.0	2.0	.0	1.0	1.0	2.0	7.0	11.0	20.0	26.0	23.0	23.0
14	10.0	3.0	.0	2.0	1.0	2.0	4.0	11.0	22.0	26.0	24.0	20.0
15	9.0	4.0	.5	1.0	.0	3.0	8.0	15.0	22.0	27.0	22.0	18.0
16	13.5	5.5	.0	4.0	1.0	5.0	10.0	17.0	18.0	27.0	23.0	17.0
17	14.5	6.5	1.0	4.0	.0	3.0	11.0	14.0	19.0	23.0	22.0	10.0
18	14.5	7.0	1.0	.0	1.0	4.0	10.0	15.0	22.0	25.0	22.0	13.0
19	13.5	10.0	.0	.0	2.0	8.5	12.0	14.0	20.0	26.0	25.0	19.0
20	16.5	7.0	2.0	.0	1.5	8.0	15.0	18.0	20.0	26.0	26.0	18.0
21	16.5	8.0	2.0	.0	2.0	6.0	11.0	15.0	19.0	25.0	21.0	18.0
22	12.0	6.5	2.0	.0	2.0	8.0	11.0	13.0	22.0	22.0	22.0	21.0
23	4.5	5.5	1.0	.0	4.0	9.0	16.0	18.0	21.0	26.0	22.0	13.0
24	8.0	5.0	3.0	1.0	3.0	3.0	15.0	18.0	21.0	23.0	22.0	14.0
25	8.0	---	5.0	2.0	1.0	4.0	10.0	20.0	24.0	28.0	22.0	15.0
26	9.0	6.0	.0	1.0	.0	4.0	11.0	21.0	27.5	23.0	22.0	13.0
27	11.0	6.0	2.0	.0	2.0	9.0	12.0	20.0	25.0	22.0	22.0	13.0
28	11.5	3.5	2.0	.0	2.0	9.0	15.5	21.0	26.0	24.5	21.0	15.0
29	11.0	1.0	2.0	1.0	.0	9.0	12.0	22.0	23.0	23.0	24.0	13.0
30	13.5	1.5	2.0	.0	---	11.0	14.0	21.0	22.0	23.0	24.0	15.0
31	13.5	---	.0	.0	---	4.0	---	19.0	---	25.0	21.0	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	60	5.8	204	61	15	2.1	20	3.8	15	1.8	28	7.6
2	40	3.7	195	41	12	1.6	6	.96	15	1.8	22	7.7
3	135	13	55	9.9	14	2.3	14	2.1	17	2.1	36	14
4	25	2.2	46	7.5	22	4.5	12	1.6	12	1.5	23	7.5
5	12	1.0	118	31	33	8.1	38	4.9	25	3.0	20	5.4
6	22	2.0	346	137	33	7.1	7	.87	13	1.6	14	3.8
7	20	1.8	176	59	49	9.3	15	1.8	9	1.1	19	6.2
8	35	3.2	129	37	22	3.0	26	2.9	8	.97	24	9.8
9	19	1.6	104	26	19	4.1	32	3.5	9	1.1	139	152
10	12	1.0	60	13	34	7.7	35	3.8	10	1.2	1180	1670
11	28	2.7	50	11	45	8.3	18	1.9	9	1.1	810	682
12	30	2.8	40	8.3	11	1.4	15	1.7	12	1.5	438	208
13	6	.52	68	13	8	1.3	13	1.5	27	3.3	322	130
14	10	.92	48	8.9	10	2.0	16	2.0	17	2.1	185	60
15	15	1.5	44	7.7	11	1.9	16	2.4	15	1.8	3210	5220
16	34	3.7	42	7.1	19	2.6	80	17	21	2.6	3140	4660
17	38	3.9	41	7.0	15	1.6	21	6.8	29	3.5	1520	1140
18	36	3.7	47	8.1	25	2.6	342	148	22	2.7	680	308
19	48	7.0	55	10	15	1.5	280	91	26	3.2	400	164
20	30	5.3	36	7.2	20	2.2	36	9.7	14	1.8	280	97
21	28	6.1	58	14	14	1.7	70	17	490	265	222	67
22	660	414	105	31	15	2.2	52	9.8	2380	9640	163	42
23	915	865	84	22	15	2.6	24	3.9	870	1510	139	31
24	472	271	60	15	20	4.3	87	22	750	486	122	25
25	222	69	52	11	15	3.6	98	22	270	82	96	19
26	90	20	55	12	14	2.8	19	2.1	82	32	78	15
27	67	12	30	6.2	14	2.5	10	1.4	100	64	58	12
28	37	5.4	24	4.1	16	3.1	20	2.4	203	138	68	14
29	32	4.2	19	3.1	23	4.1	20	2.4	62	39	73	17
30	74	13	16	2.4	19	3.8	15	1.8	---	---	206	71
31	206	63	---	---	11	2.1	13	1.6	---	---	300	123
TOTAL	---	1810.04	---	631.5	---	108.0	---	394.63	---	12295.77	---	14989.0

06817000 NODAWAY RIVER AT CLARINDA, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	188	66	14	2.3	4890	30100	37	12	77	9.4	2200	4340
2	155	53	17	2.9	16000	185000	103	37	82	11	458	293
3	788	474	15	2.6	10400	73800	50	17	85	9.4	170	60
4	1000	761	17	2.6	15600	225000	42	13	74	9.4	137	36
5	730	422	26	3.8	8310	61500	410	213	74	9.2	103	21
6	350	157	33	4.5	2220	10300	2520	4500	74	9.2	1380	1870
7	221	87	27	3.4	12500	169000	1480	923	79	8.7	400	203
8	176	60	20	2.3	12000	105000	460	202	76	7.0	109	37
9	117	38	19	1.9	3420	9820	282	96	73	5.9	62	13
10	97	30	22	2.6	1040	1720	157	44	64	5.9	47	8.6
11	158	55	19	2.3	645	819	89	24	106	20	40	6.8
12	304	146	22	2.7	605	671	58	15	240	179	29	4.9
13	165	74	26	3.1	740	753	40	9.9	258	92	330	114
14	107	42	15	1.8	398	344	40	9.0	149	26	795	320
15	78	27	21	2.3	7360	81400	38	7.6	96	19	202	53
16	62	19	61	7.2	11900	65100	60	12	1230	3740	82	17
17	62	20	67	15	3050	4810	71	14	4790	29200	34	6.1
18	68	23	43	12	855	942	76	14	1200	1830	49	8.7
19	41	12	41	11	578	518	69	12	428	324	45	6.9
20	30	8.0	28	5.7	368	285	74	13	208	136	22	3.0
21	26	6.7	25	4.1	300	201	92	16	139	51	25	3.1
22	24	5.5	29	3.7	240	151	96	15	94	22	31	3.1
23	29	6.3	34	4.0	370	279	115	18	50	10	13	1.2
24	35	7.1	30	3.1	3110	5110	116	16	45	7.4	9	.90
25	22	4.3	28	2.8	1180	851	85	12	44	7.0	12	1.2
26	13	2.5	31	2.6	370	209	73	13	42	6.4	15	1.6
27	15	2.9	35	3.4	212	101	80	18	56	7.6	23	2.4
28	15	2.6	32	3.1	130	55	71	15	44	6.7	21	1.9
29	17	3.0	29	2.4	71	27	75	12	53	7.4	24	1.9
30	17	2.9	34	2.7	43	15	65	9.0	52	6.9	26	2.0
31	---	---	49	4.4	---	---	67	8.5	4920	19800	---	---
TOTAL	---	2617.8	---	128.3	---	1033881	---	6340.0	---	55583.5	---	7441.30

TOTAL LOAD FOR YEAR: 1136220.84 TONS.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	TEMPER-ATURE, WATER (DEG C) (00010)	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)
FEB							
22...	0815	2.0	1440	3790	14700	39	42
MAR							
15...	0830	3.0	517	3690	5150	45	48
19...	1520	11.0	152	443	182	67	73
JUN							
04...	0730	19.0	7530	21200	431000	39	44
07...	0730	21.0	3660	11300	112000	52	60
26...	1400	30.5	200	344	186	--	--

DATE	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
FEB							
22...	45	57	--	--	--	--	93
MAR							
15...	53	70	--	--	--	--	100
19...	--	83	--	--	--	--	88
JUN							
04...	51	58	94	96	98	100	--
07...	62	76	--	--	--	--	96
26...	--	--	--	--	--	--	99

06817000 NODAWAY RIVER AT CLARINDA, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	NUMBER OF SAM-PLING POINTS (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)
OCT							
25...	1700	121	4	1	2	8	34
JAN							
24...	1430	113	3	--	0	8	37
MAR							
19...	1520	152	2	1	1	12	52
APR							
28...	1520	65	3	1	2	15	45
JUN							
26...	1430	200	3	0	1	8	62
JUL							
28...	1230	63	3	1	1	11	63
SEP							
10...	1440	71	3	1	2	21	67

DATE	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
OCT						
25...	54	66	74	82	87	100
JAN						
24...	50	61	70	80	91	100
MAR						
19...	71	80	87	93	97	100
APR						
28...	60	72	79	84	89	100
JUN						
26...	82	91	96	99	100	--
JUL						
28...	82	89	92	95	96	100
SEP						
10...	84	90	95	98	100	--

06818750 PLATTE RIVER NEAR DIAGONAL, IA

LOCATION.--Lat 40°46'02", long 94°24'46", in NE1/4 NW1/4 sec.22, T.69 N., R.31 W., Ringgold County, Hydrologic Unit 10240012, on left bank at downstream side of bridge on county highway, 2.2 mi (3.5 km) upsstream from Turkey Creek, 4.6 mi (7.4 km) southwest of Diagonal, and 4.9 mi (7.9 km) downstream from Gard Creek.

DRAINAGE AREA.--217 mi² (562 km²).

PERIOD OF RECORD.--April 1968 to current year.

REVISED RECORDS.--WSP 2119: 1969 (P).

GAGE.--Water-stage recorder. Datum of gage is 1,095.27 ft (333.838 m) NGVD.

REMARKS.--Records good except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--12 years, 125 ft³/s (3.540 m³/s), 7.82 in/yr (199 mm/yr), 90,560 acre-ft/yr (112 hm³/yr); median of yearly mean discharges, 110 ft³/s (3.12 m³/s), 6.9 in/yr (175 mm/yr), 79,700 acre-ft/yr (98.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,420 ft³/s (182 m³/s) Oct. 12, 1973, gage height, 23.24 ft (7.084 m); minimum daily, 0.21 ft³/s (0.006 m³/s) Jan. 14, 15, 1969.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1967 reached a stage of 23.16 ft (7.059 m), from floodmark by local resident, discharge, 6,360 ft³/s (180 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,000 ft³/s (85.0 m³/s), and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 2	1145	*4,940	140	*20.13	6.136	June 4	2145	4,350	123	18.80	5.730

Minimum daily discharge, 1.4 ft³/s (0.040 m³/s) Aug. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	8.4	7.8	5.2	10	31	63	18	540	9.8	2.7	171
2	2.8	9.1	7.5	5.4	9.5	30	66	17	2750	9.1	2.3	54
3	2.8	7.8	7.3	5.7	9.0	28	276	18	304	9.2	2.3	21
4	1.5	7.0	6.9	6.4	8.6	28	154	18	3170	9.8	2.7	12
5	2.3	12	6.7	6.7	8.3	28	79	17	1240	145	3.3	845
6	2.3	53	8.5	8.6	8.0	29	61	16	265	81	4.3	363
7	2.1	28	9.4	9.2	7.7	29	51	19	174	28	3.7	69
8	2.8	17	9.7	8.7	7.4	39	40	18	134	17	3.1	33
9	2.1	14	9.4	8.7	7.2	200	39	17	87	13	2.3	20
10	1.9	11	7.4	9.0	6.9	563	34	19	70	7.1	2.3	15
11	4.4	9.8	7.1	9.2	6.7	104	39	19	56	5.6	4.6	13
12	1.7	11	8.0	9.5	6.5	61	93	20	44	5.0	9.0	12
13	1.7	10	8.2	10	6.3	38	159	20	37	4.7	6.1	11
14	2.1	11	7.6	11	6.1	117	82	23	32	4.4	4.9	15
15	2.3	10	6.6	12	6.0	496	60	21	67	3.8	4.9	11
16	2.5	8.7	5.4	57	5.8	234	44	20	87	3.6	376	8.8
17	2.1	8.4	4.0	118	5.7	75	37	23	42	3.3	135	9.6
18	2.3	9.0	3.4	44	5.6	47	36	34	33	3.6	29	10
19	3.2	8.9	3.3	30	5.5	40	31	26	26	3.3	10	9.0
20	3.7	8.2	3.3	25	5.4	36	28	22	26	2.9	5.4	6.8
21	4.9	12	3.4	23	816	31	25	23	19	2.9	3.1	7.5
22	191	38	3.5	20	1210	26	22	23	19	2.6	1.6	5.1
23	135	24	3.6	19	260	24	20	21	44	2.4	2.0	4.0
24	35	16	3.7	22	71	25	18	23	27	2.3	1.5	4.0
25	19	13	3.8	17	57	23	17	26	18	2.2	1.5	4.3
26	12	11	4.0	16	52	20	18	27	15	2.9	1.5	3.7
27	10	9.6	4.2	15	43	19	17	40	13	2.2	1.4	3.9
28	9.5	9.0	4.4	14	34	20	15	38	12	3.1	1.7	5.8
29	7.8	8.5	4.6	13	32	25	16	14	10	2.7	1.4	3.6
30	7.6	8.1	4.8	12	---	36	17	11	8.9	2.4	15	3.4
31	8.5	---	5.0	11	---	111	---	12	---	2.2	1060	---
TOTAL	489.9	411.5	182.5	581.3	2717.2	2613	1657	663	9369.9	397.1	1704.6	1754.5
MEAN	15.8	13.7	5.89	18.8	93.7	84.3	55.2	21.4	312	12.8	55.0	58.5
MAX	191	53	9.7	118	1210	563	276	40	3170	145	1060	845
MIN	1.5	7.0	3.3	5.2	5.4	19	15	11	8.9	2.2	1.4	3.4
CFSM	.07	.06	.03	.09	.43	.39	.25	.10	1.44	.06	.25	.27
IN.	.08	.07	.03	.10	.47	.45	.28	.11	1.61	.07	.29	.30
AC-FT	972	816	362	1150	5390	5180	3290	1320	18590	788	3380	3480

CAL YR 1979 TOTAL 46046.0 MEAN 126 MAX 3000 MIN 1.5 CFSM .58 IN 7.89 AC-FT 91330
WTR YR 1980 TOTAL 22541.5 MEAN 61.6 MAX 3170 MIN 1.4 CFSM .28 IN 3.86 AC-FT 44710

06819190 EAST FORK ONE HUNDRED AND TWO RIVER NEAR BEDFORD, IA

LOCATION.--Lat 40°38'01", long 94°44'41", in NE1/4 NE1/4 sec.9, T.67 N., R.34 W., Taylor County, Hydrologic Unit 10240013, on left bank at downstream side of bridge of county highway J55, 0.4 mi (0.6 km) upstream from Daugherty Creek, and 2.8 mi (4.5 km) southwest of junction of U.S. Highways 2 and 148 in Bedford.

DRAINAGE AREA.--92.1 mi² (238.5 km²).

PERIOD OF RECORD.--September 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,057.51 ft (322.329 m) NGVD (levels by Corps of Engineers). Prior to Oct. 1, 1968, at datum 5.00 ft (1.524 m) higher.

REMARKS.--Records fair except those for winter period, which are poor. Slight regulation at low flow by low dam used for water supply in Bedford. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--21 years, 52.7 ft³/s (1.492 m³/s), 7.77 in/yr (197 mm/yr), 38,180 acre-ft/yr (47.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,980 ft³/s (283 m³/s) Oct. 11, 1973, gage height, 20.72 ft (6.315 m); maximum gage height, 20.95 ft (6.386 m) Jan. 12, 1960, present datum; no flow at times in 1966-68, 1972, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (56.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 2	0915	*6,460	183	*15.93	4.855	June 4	0830	4,320	122	12.66	3.859

Minimum daily discharge, 0.19 ft³/s (0.005 m³/s) Oct. 1-3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.19	.47	3.0	3.3	6.2	7.6	31	6.4	529	1.5	1.0	277
2	.19	.40	2.0	3.3	5.8	9.0	49	6.3	3690	3.8	1.3	72
3	.19	.34	1.4	3.4	5.6	11	222	6.2	387	2.3	1.2	20
4	.47	.40	2.0	3.3	5.3	14	66	6.0	1550	1.9	1.1	9.1
5	.77	3.3	2.9	3.5	5.0	16	36	5.6	178	1.9	1.4	516
6	.40	1.6	3.1	3.6	4.8	18	29	5.2	62	4.7	1.2	60
7	.25	.55	4.8	3.7	4.5	22	24	4.8	37	2.1	1.1	17
8	.25	.47	5.4	2.2	4.3	31	18	4.5	21	1.7	1.0	9.1
9	.25	.55	3.7	1.7	4.1	45	19	4.2	16	1.5	.95	5.8
10	.25	1.3	2.7	1.4	3.9	200	15	5.4	13	1.4	.90	4.4
11	.25	.98	3.2	1.3	3.7	98	58	5.5	10	1.4	2.2	4.2
12	.29	2.4	2.8	1.2	3.5	25	168	4.3	8.1	1.3	1.4	3.9
13	.22	2.5	2.3	1.1	3.4	20	110	5.1	7.8	1.4	.82	3.9
14	.22	1.6	1.8	3.5	3.2	170	47	4.7	6.8	1.3	1.0	3.2
15	.22	1.3	1.3	9.0	3.1	390	30	4.3	5.2	1.2	7.5	3.1
16	.25	1.3	1.7	20	3.0	157	22	4.3	5.2	1.1	437	3.5
17	.22	1.2	1.4	22	2.9	52	21	9.2	4.0	1.1	62	5.4
18	.22	1.1	.82	25	2.8	33	21	8.7	5.0	1.1	29	3.7
19	.40	1.1	.70	14	2.7	29	18	6.2	3.9	1.2	24	2.6
20	.34	10	.85	12	2.7	22	16	5.5	3.4	1.4	23	2.8
21	.40	30	1.1	13	110	17	13	4.8	2.9	2.5	22	1.6
22	11	26	1.3	15	80	13	12	4.5	2.9	1.5	20	.82
23	22	13	1.6	9.0	20	12	10	4.4	2.8	1.4	19	.90
24	5.4	11	2.4	6.4	7.0	14	7.9	4.5	2.9	1.4	17	.90
25	1.0	6.3	2.2	6.9	12	11	7.4	3.9	3.2	1.6	18	.82
26	.65	5.9	2.0	7.4	11	9.9	7.1	15	2.9	2.1	4.2	.75
27	.47	4.8	1.8	7.9	9.0	11	6.4	13	2.6	1.6	2.2	.68
28	.40	5.3	1.9	8.5	6.0	11	7.7	5.5	2.4	1.3	1.7	.59
29	.40	4.9	2.1	7.7	7.0	15	6.9	4.2	1.6	1.2	1.5	.71
30	.47	4.0	2.9	7.0	---	34	6.6	4.1	1.5	1.1	17	.54
31	.55	---	3.2	6.5	---	65	---	4.6	---	1.1	2060	---
TOTAL	48.58	144.06	70.37	233.8	342.5	1582.5	1105.0	180.9	6568.1	52.1	2781.67	1035.01
MEAN	1.57	4.80	2.27	7.54	11.8	51.0	36.8	5.84	219	1.68	89.7	34.5
MAX	22	30	5.4	25	110	390	222	15	3690	4.7	2060	516
MIN	.19	.34	.70	1.1	2.7	7.6	6.4	3.9	1.5	1.1	.82	.54
CFSM	.02	.05	.03	.08	.13	.55	.40	.06	2.38	.02	.97	.38
IN.	.02	.06	.03	.09	.14	.64	.45	.07	2.65	.02	1.12	.42
AC-FT	96	286	140	464	679	3140	2190	359	13030	103	5520	2050

CAL YR 1979 TOTAL 18055.06 MEAN 49.5 MAX 2000 MIN .19 CFSM .54 IN 7.29 AC-FT 35810
WTR YR 1980 TOTAL 14144.59 MEAN 38.6 MAX 3690 MIN .19 CFSM .42 IN 5.71 AC-FT 28060

06897950 ELK CREEK NEAR DECATUR CITY, IA
(Hydrologic bench-mark station)

LOCATION.--Lat 40°43'18", long 93°56'12", near the southeast corner sec.34, T.69 N., R.27 W., Decatur County, Hydrologic Unit 10280102, at right downstream corner of bridge on county highway, 1,000 ft (305 m) downstream from West Elk Creek, 5.2 mi (8.4 km) upstream from mouth, and 5.7 mi (9.2 km) southwest of Decatur City.

DRAINAGE AREA.--52.5 mi² (136 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 924.70 ft (281.849 m) NGVD. Oct. 1, 1967, to Sept. 30, 1974, at datum 10.00 ft (3.05 m) higher.

REMARKS.--Records good except those for winter period, which are poor.

AVERAGE DISCHARGE.--13 years, 30.0 ft³/s (0.850 m³/s), 7.76 in/yr (197 mm/yr), 21,740 acre-ft/yr (26.8 hm³/yr); median of yearly discharges, 23 ft³/s (0.65 m³/s), 5.9 in/yr (150 mm/yr), 16,700 acre-ft/yr (20.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,400 ft³/s (464 m³/s) June 2, 1980, gage height, 28.22 ft (8.601 m), from rating curve extended above 5,300 ft³/s (150 m³/s) on basis of step-backwater computation; no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 14, 1967, reached a stage of 18.35 ft (5.593 m), datum in use prior to Oct. 1, 1974, discharge, 17,800 ft³/s (504 m³/s), revised, estimated from rating curve extended above 5,300 ft³/s (150 m³/s) on basis of step-backward computation. Flood of Aug. 6, 1959, reached a stage between 20.5 and 22.5 ft (6.25 and 6.86 m), datum in use prior to Oct. 1, 1974, 300 ft (91 m) downstream, from information by assistant county engineer, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage Height (ft)	Gage Height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage Height (ft)	Gage Height (m)
Mar. 15	1545	892	25.3	15.23	4.642	Aug. 31	0215	6,220	176	22.37	6.818
June 2	1200	*16,400	464	*28.22	8.601	Sep. 1	0015	1,560	44.2	16.79	5.118
June 4	0715	3,170	89.8	19.26	5.870	Sep. 5	0715	1,660	47.0	16.99	5.179

No flow Oct. 1 - 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	1.5	.02	.03	.03	2.6	26	2.5	56	1.2	.03	370
2	.00	1.1	.02	.03	.03	1.8	26	2.6	3310	1.6	.01	3.5
3	.00	.97	.01	.03	.02	1.6	64	2.9	34	2.2	.01	.34
4	.00	.77	.01	.03	.02	1.5	21	2.9	503	1.8	.05	.13
5	.00	.75	.10	.03	.02	1.4	12	3.2	35	16	.09	338
6	.00	.46	.11	.03	.02	1.2	9.3	2.9	20	4.1	.07	29
7	.00	.09	.10	.02	.02	1.3	7.5	3.1	11	1.7	.05	6.0
8	.00	.11	.09	.01	.02	2.0	11	2.9	9.4	.97	.03	.93
9	.00	.07	.09	.01	.02	22	14	2.9	7.2	.43	.03	.15
10	.00	.05	.07	.01	.02	120	18	3.0	6.5	.37	.01	.15
11	.00	.01	.10	.01	.02	43	36	3.2	6.0	.27	.08	.24
12	.00	.01	.07	.01	.02	23	99	2.3	5.4	.21	.09	.24
13	.00	.05	.05	.01	.02	11	65	3.7	5.9	.09	.03	.23
14	.00	.07	.04	.01	.02	58	28	3.1	4.6	.07	.37	.17
15	.00	.04	.03	.10	.02	254	18	2.3	6.2	.09	1.1	.17
16	.00	.17	.02	2.5	.02	74	11	2.0	4.5	.11	26	.23
17	.00	.03	.01	1.4	.02	30	11	5.0	3.2	.07	22	.28
18	.00	.03	.01	.84	.02	19	10	5.0	3.1	.05	1.5	.16
19	.00	.01	.01	.64	.02	17	7.1	3.8	3.1	.11	.86	.19
20	.00	.09	.01	.50	.04	13	8.2	3.1	3.0	.09	.57	.24
21	.00	.81	.02	.45	110	8.4	4.7	2.5	2.9	.11	.52	.19
22	11	.53	.03	.44	90	5.9	2.3	1.6	2.6	.08	.43	.17
23	3.9	.48	.05	.41	20	7.1	2.3	1.3	2.6	.04	.30	.09
24	2.0	.23	.06	.55	7.2	11	2.4	.94	2.7	.02	.17	.11
25	1.4	.20	.04	.68	6.7	10	2.4	.91	2.4	.02	.07	.16
26	1.0	.16	.03	.35	6.0	12	2.2	.54	2.2	.10	.01	.15
27	.80	.13	.03	.24	5.3	15	2.2	.54	2.0	.06	.01	.12
28	.74	.07	.03	.14	4.2	19	2.2	.38	1.7	.04	.01	.12
29	.68	.05	.03	.09	3.5	22	2.3	.22	1.4	.02	.01	.21
30	.63	.03	.03	.06	---	37	2.4	.16	1.1	.01	22	.21
31	1.0	---	.03	.05	---	44	---	.15	---	.01	1110	---
TOTAL	23.15	9.08	1.35	9.71	253.34	888.8	527.5	71.64	4058.7	32.04	1186.51	751.88
MEAN	.75	.30	.044	.31	8.74	28.7	17.6	2.31	135	1.03	38.3	25.1
MAX	11	1.5	.11	2.5	110	254	99	5.0	3310	16	1110	370
MIN	.00	.01	.01	.01	.02	1.2	2.2	.15	1.1	.01	.01	.09
CFSM	.01	.006	.001	.006	.17	.55	.34	.04	2.57	.02	.73	.48
IN.	.02	.01	.00	.01	.18	.63	.37	.05	2.88	.02	.84	.53
AC-FT	46	18	2.7	19	502	1760	1050	142	8050	64	2350	1490

CAL YR 1979 TOTAL 6783.87 MEAN 18.6 MAX 1120 MIN .00 CFSM .35 IN 4.81 AC-FT 13460
WTR YR 1980 TOTAL 7813.70 MEAN 21.3 MAX 3310 MIN .00 CFSM .41 IN 5.54 AC-FT 15500

05B97950 ELK CREEK NEAR DECATUR CITY, IA--Continued
(Hydrologic bench-mark station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968 to current year.

REMARKS.--Miscellaneous biological data collected September 1970 to September 1972 are available in the District office.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)
NOV												
08...	0915	.05	840	7.9	2.0	11.5	83	4700	4600	690	260	--
DEC												
14...	0830	.05	690	8.1	.0	13.7	96	K700	84	560	370	100
MAR												
20...	0915	12	470	8.1	5.0	12.7	95	320	K150	690	210	66
APR												
30...	1300	2.3	565	7.9	16.0	9.6	97	2800	130	160	310	76
JUN												
12...	0700	5.8	610	7.4	16.0	9.7	84	4100	500	1600	290	61
JUL												
22...	1400	.04	480	7.8	29.0	10.1	131	K1900	K68	140	250	7

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY (MG/L AS CACO3) (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
NOV												
08...	76	17	11	8	.3	4.8	220	52	14	.2	6.4	326
DEC												
14...	110	24	16	8	.4	7.9	270	67	26	.2	2.5	426
MAR												
20...	61	13	8.2	8	.2	8.6	140	74	10	.2	10	274
APR												
30...	91	19	13	8	.3	4.1	230	80	11	.3	6.8	369
JUN												
12...	87	18	11	7	.3	4.7	230	58	8.4	.2	11	348
JUL												
22...	71	17	11	9	.3	4.8	240	29	12	.5	3.8	298

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS, ORTHOPH OSPHATE DISSOL. (MG/L AS P) (00671)	PHOS-PHORUS, ORTHOPH OSPHATE DISSOL. (MG/L AS PO4) (00660)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV											
08...	--	.44	.05	.12	.10	.080	.01	.03	28	.00	100
DEC											
14...	416	.58	.06	.03	--	.090	--	--	52	.01	56
MAR											
20...	271	.37	9.47	1.2	1.2	.190	.05	.15	58	2.0	98
APR											
30...	--	.50	2.33	.01	.02	.030	.01	.03	49	.31	--
JUN											
12...	337	.47	5.47	.19	.19	.040	.01	.03	29	.46	52
JUL											
22...	293	.41	.03	.00	.00	.180	.00	.00	28	.00	73

K Results based on colony count outside the acceptable range (non-ideal colony count).

05897950 ELK CREEK NEAR DECATUR CITY, IA--Continued
(Hydrologic bench-mark station)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	CYANIDE TOTAL (MG/L AS CN) (00720)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)
NOV 08...	0915	.00	1	400	0	0	10
APR 30...	1300	.00	18	300	0	0	3

DATE	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
NOV 08...	1200	4	580	.1	0	0	10
APR 30...	400	1	520	.1	1	0	20

06898000 THOMPSON RIVER AT DAVIS CITY, IA

LOCATION.--Lat 40°38'25", long 93°48'29", in SE1/4 SE1/4 sec.35, T.68 N., R.26 W., Decatur County, Hydrologic Unit 10280102, on right bank 15 ft (5 m) downstream from bridge on U.S. Highway 69 at Davis City, 2.6 mi (4.2 km) upstream from Dickersons Branch, and 5.2 mi (8.4 km) upstream from Iowa-Missouri State line.

DRAINAGE AREA.--701 mi² (1,816 km²).

PERIOD OF RECORD.--May 1918 to July 1925, July 1941 to current year. Monthly discharge only for some periods, published in WSP 1310. Prior to October 1918, published as "Grand River".

REVISED RECORDS.--WSP 1240: 1918, 1920-21 (M), 1922-24, 1925 (M), 1946-47 (M). WSP 1440: Drainage area. WSP 1710: 1957.

GAGE.--Water-stage recorder. Datum of gage is 874.04 ft (266.407 m) NGVD. May 14, 1918, to July 2, 1925, July 14, 1941, to Feb. 24, 1942, nonrecording gage, and Feb. 25, 1942, to Feb. 8, 1957, water-stage recorder at same site at datum 2.00 ft (0.61 m) higher.

REMARKS.-- Records good except those for winter period, which are fair. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--45 years (1918-24, 1941-80), 366 ft³/s (10.37 m³/s), 7.09 in/yr (180 mm/yr), 265,200 acre-ft/yr (327 hm³/yr); median of yearly mean discharges, 310 ft³/s (8.78 m³/s), 5.9 in/yr (150 mm/yr), 222,000 acre- ft/yr (274 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,300 ft³/s (688 m³/s) June 10, 1974, gage height, 19.43 ft (5.922 m), from rating curve extended above 17,000 ft³/s (481 m³/s) on basis of velocity-area study; minimum daily, 0.1 ft³/s (0.003 m³/s) June 25, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 8, 1885, reached a stage of 22.8 ft (6.95 m), datum in use prior to Feb. 9, 1967, from floodmark, discharge, 30,000 ft³/s (850 m³/s), from rating curve extended as explained above.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s (127 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 2	2045	*12,400	351	*12.94	3.944	Aug. 31	0745	5,660	160	8.25	2.515
June 5	1000	6,610	187	8.99	2.740	Sep. 1	0315	5,440	154	8.06	2.457

Minimum daily discharge, 2.7 ft³/s (0.076 m³/s) Oct. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.3	14	13	15	10	90	241	38	451	48	17	3580
2	4.4	9.7	11	14	10	82	182	37	6680	48	15	429
3	4.3	9.5	12	14	9.7	74	275	36	7310	45	12	155
4	3.1	10	13	14	9.4	66	379	35	4320	40	11	95
5	3.0	13	14	13	9.2	58	299	34	5540	572	14	1540
6	3.9	14	15	12	9.2	60	220	30	1450	741	11	1860
7	3.5	13	14	12	9.0	64	215	27	557	386	12	420
8	3.4	21	9.7	11	9.0	68	176	24	492	203	12	160
9	2.7	42	12	11	9.2	80	169	22	801	93	11	99
10	2.9	38	15	18	9.3	100	131	22	359	63	9.4	74
11	3.9	28	17	13	9.5	130	154	20	214	49	12	59
12	4.5	22	12	11	9.7	165	283	19	164	40	12	52
13	4.4	19	17	9.8	9.7	217	507	20	141	36	9.9	46
14	3.7	17	14	9.5	9.6	231	255	21	123	31	11	47
15	4.4	15	13	9.9	9.6	1030	156	20	109	29	51	40
16	4.7	16	12	18	9.7	1270	107	19	389	26	84	40
17	5.4	16	10	31	9.9	726	97	22	708	23	226	51
18	11	14	9.8	25	10	302	92	27	227	23	428	41
19	14	15	9.7	22	10	194	86	27	144	21	192	37
20	11	16	10	21	11	209	80	31	118	21	95	30
21	9.3	20	12	20	28	175	75	36	101	29	64	27
22	60	20	13	19	330	161	71	35	88	22	46	23
23	120	19	14	20	600	150	67	27	81	23	35	20
24	234	27	17	21	350	161	61	22	101	20	27	18
25	112	37	15	23	210	146	58	18	114	18	22	17
26	70	33	14	18	140	126	52	15	83	20	18	14
27	49	34	14	16	120	111	49	14	74	18	14	14
28	36	25	14	14	105	103	44	12	64	17	12	13
29	28	17	15	12	98	113	41	12	57	17	11	13
30	17	15	16	11	---	184	39	12	53	15	12	13
31	18	---	16	11	---	252	---	13	---	14	2910	---
TOTAL	856.8	609.2	413.2	489.2	2173.7	6898	4661	747	31133	2751	4416.3	9027
MEAN	27.6	20.3	13.3	15.8	75.0	223	155	24.1	1038	88.7	142	301
MAX	234	42	17	31	600	1270	507	38	7310	741	2910	3580
MIN	2.7	9.5	9.7	9.5	9.0	58	39	12	53	14	9.4	13
CFSM	.04	.03	.02	.02	.11	.32	.22	.03	1.48	.13	.20	.43
IN.	.05	.03	.02	.03	.12	.37	.25	.04	1.65	.15	.23	.48
AC-FT	1700	1210	820	970	4310	13680	9250	1480	61750	5460	8760	17910

CAL YR 1979 TOTAL 129575.0 MEAN 355 MAX 5520 MIN 2.7 CFSM .51 IN 6.88 AC-FT 257000
WTR YR 1980 TOTAL 64175.4 MEAN 175 MAX 7310 MIN 2.7 CFSM .25 IN 3.41 AC-FT 127300

NORMAL MONTHLY AND ANNUAL DISCHARGE, RUNOFF AND PRECIPITATION, STANDARD PERIOD 1941-70.

PARAMETER	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DISCHARGE (ft³/s)	152.0	157.1	91.2	188.5	323.1	626.3	584.3	583.7	722.5	279.7	170.3	226.2	340.3
RUNOFF (INCHES)	0.22	0.25	0.15	0.31	0.48	1.03	0.93	0.96	1.15	0.46	0.28	0.36	6.59
STD. DEVIATION	0.45	0.53	0.23	0.54	0.42	0.91	0.95	0.93	1.47	0.62	0.51	0.61	3.82
PERCENT OF ANNUAL	3.40	4.00	2.30	4.60	7.80	15.00	15.00	15.00	17.00	7.00	4.20	5.00	----
PRECIP. (INCHES)	2.45	1.27	1.15	1.01	0.94	2.05	3.12	3.79	4.94	3.42	3.75	3.81	31.70

06898400 WELDON RIVER NEAR LEON, IA

LOCATION.--Lat 40°41'45", long 93°38'07", in NE1/4 NE1/4 sec.17, T.68 N., R.24 W., Decatur County, Hydrologic Unit 10280102, on left bank 10 ft (3 m) downstream from bridge on county highway A, 200 ft (61 m) upstream from unnamed creek, 1.3 mi (2.1 km) downstream from Brush Creek, and 6.5 mi (10.5 km) southeast of post office at Leon.

DRAINAGE AREA.--104 mi² (269 km²).

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 906.26 ft (276.228 m) NGVD.

REMARKS.--Records good except those for winter period, which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--22 years, 72.8 ft³/s (2.062 m³/s), 9.51 in/yr (242 mm/yr), 52,740 acre-ft/yr (65.0 hm³/yr); median of yearly mean discharges, 56 ft³/s (1.59 m³/s), 7.3 in/yr (185 mm/yr), 40,600 acre-ft/yr (50.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 48,600 ft³/s (1,376 m³/s) Aug. 6, 1959, gage height, 25.27 ft (7.702 m), from rating curve extended above 5,600 ft³/s (159 m³/s) on basis of contracted-opening and flow-over-embankment measurement at gage height 25.27 ft (7.702 m); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Stage and discharge of the flood of Aug. 6, 1959, are the greatest since at least 1919.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s (127 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 2	1745	*10,000	283	*21.61	6.587	Sep. 1	0045	6,420	182	17.90	5.456
June 4	1445	7,140	202	18.80	5.730						

Minimum daily discharge, 0.01 ft³/s (<0.001 m³/s) July 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	9.0	1.4	.35	1.1	5.4	53	4.0	463	.03	1.6	2730
2	1.5	8.4	1.3	.34	1.0	4.4	39	3.6	5390	.60	1.2	244
3	.95	8.0	1.2	.32	.95	4.1	118	3.1	712	.15	1.2	132
4	.57	8.0	1.1	.31	.90	3.8	66	2.7	3740	.01	.70	99
5	.45	1.6	1.1	.30	.87	3.5	35	2.4	251	176	1.0	1720
6	.94	1.1	1.2	.29	.84	3.4	27	1.8	98	65	1.2	378
7	1.2	.76	1.2	.28	.82	3.3	23	1.2	55	33	1.6	134
8	.31	.72	1.2	.27	.80	3.2	19	.98	34	8.5	1.2	86
9	.40	.72	1.1	.26	.81	20	20	1.1	24	3.0	1.0	69
10	.29	.72	.93	.55	.83	190	18	1.4	18	1.2	1.0	67
11	.28	.72	.80	.40	.85	100	37	1.4	12	.69	1.6	53
12	.81	4.1	.72	.31	.86	56	235	1.2	7.2	.61	1.9	46
13	.43	2.6	.66	.29	.87	30	237	1.3	6.3	.48	1.9	42
14	.40	1.9	.64	.28	.86	174	81	1.0	5.4	.28	5.0	34
15	.39	1.6	.62	6.0	.86	584	46	.87	4.1	.17	2.1	31
16	.41	1.4	.60	30	.86	259	32	1.7	3.3	.13	19	34
17	.43	1.6	.58	21	.88	76	29	5.1	2.9	.06	312	39
18	.45	1.6	.56	16	.90	39	30	3.9	2.2	.14	31	32
19	1.8	1.9	.54	12	.90	36	27	2.7	1.9	.37	8.4	24
20	1.3	2.2	.52	8.0	.92	33	21	1.8	1.4	.79	3.8	19
21	1.2	4.5	.51	5.7	60	25	17	1.9	1.2	2.8	2.1	15
22	5.6	3.3	.56	4.4	45	18	11	.85	1.0	1.3	1.4	12
23	3.7	3.0	.62	3.5	28	18	13	.59	.85	.78	.89	12
24	2.6	2.7	.60	2.8	19	22	13	.48	.79	.85	.63	11
25	2.1	3.0	.55	2.3	12	21	11	.49	2.5	.74	.49	11
26	1.8	2.7	.51	2.0	10	19	10	.61	.25	2.8	.44	9.9
27	1.6	2.2	.47	1.8	8.4	16	8.6	.69	.10	1.3	.71	8.1
28	1.4	1.9	.44	1.5	6.6	16	7.2	.45	.05	1.3	.58	7.2
29	1.2	1.7	.41	1.4	6.0	19	8.8	.35	.04	1.7	1.3	5.4
30	1.1	1.5	.38	1.3	---	50	4.7	.10	.04	1.9	6.7	5.9
31	1.0	---	.37	1.1	---	126	---	.20	---	1.8	1660	---
TOTAL	38.41	85.14	23.39	125.35	212.68	1978.1	1297.3	49.96	10838.52	308.48	2073.64	6110.5
MEAN	1.24	2.84	.75	4.04	7.33	63.8	43.2	1.61	361	9.95	66.9	204
MAX	5.6	9.0	1.4	30	60	584	237	5.1	5390	176	1660	2730
MIN	.28	.72	.37	.26	.80	3.2	4.7	.10	.04	.01	.44	5.4
CFSM	.01	.03	.007	.04	.07	.61	.42	.02	3.47	.10	.64	1.96
IN.	.01	.03	.01	.04	.08	.71	.46	.02	3.88	.11	.74	2.19
AC-FT	76	169	46	249	422	3920	2570	99	21500	612	4110	12120

CAL YR 1979 TOTAL 23118.78 MEAN 63.3 MAX 2740 MIN .28 CFSM .61 IN 8.27 AC-FT 45860
WTR YR 1980 TOTAL 23141.47 MEAN 63.2 MAX 5390 MIN .01 CFSM .61 IN 8.28 AC-FT 45900

05903400 CHARITON RIVER NEAR CHARITON, IA

LOCATION.--Lat 40°57'12", long 93°15'37", in SW1/4 NE1/4 sec.15, T.71 N., R.21 W., Lucas County, Hydrologic Unit 10Z80Z01, on right bank 15 ft (5 m) downstream from bridge on county highway S43, 0.4 mi (0.6 km) downstream from Wolf Creek, and 5.0 mi (8.0 km) southeast of Chariton.

DRAINAGE AREA.--182 mi² (471 km²).

PERIOD OF RECORD.--October 1955 to current year. Occasional low-flow measurements, water years 1958-60, 1962, 1964.

GAGE.--Water-stage recorder. Datum of gage is 917.95 ft (279.794 m) NGVD (levels by U.S. Weather Bureau from a Corps of Engineers bench mark).

REMARKS.--Records good except those for winter period and those below 20 ft³/s (0.57 m³/s), which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--15 years, 103 ft³/s (2.917 m³/s), 7.69 in/yr (195 mm/yr), 74,620 acre-ft/yr (92.0 hm³/yr); median of yearly mean discharges, 83 ft³/s (2.35 m³/s), 6.2 in/yr (157 mm/yr), 60,100 acre-ft/yr (74.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,000 ft³/s (198 m³/s) June 2, 1980, gage height, 20.84 ft (6.352 m); no flow Aug. 1, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1960 reached a stage of about 23 ft (7.0 m), discharge, about 15,000 ft³/s (425 m³/s) and flood of June 5, 1947 reached a stage of 21.85 ft (6.599 m), from floodmark, discharge, 11,000 ft³/s (312 m³/s). A discharge of 0.08 ft³/s (0.002 m³/s) was measured on Oct. 30, 1963.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft³/s (34.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 2	2000	*7,000	198	*20.84	6.352	Sep. 1	2115	1,210	34.3	16.70	5.090
June 4	2100	5,380	152	20.31	6.190						

Minimum daily discharge, 0.14 ft³/s (0.004 m³/s) Aug. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	3.4	5.3	3.2	3.2	4.2	93	5.7	165	1.7	.34	1120
2	1.5	4.3	4.6	3.2	3.4	3.6	88	5.4	2600	1.3	.34	767
3	1.5	4.2	4.1	3.2	3.4	3.3	81	5.1	2260	1.3	.34	546
4	1.5	4.3	4.2	3.2	3.4	3.2	92	5.0	3120	1.2	.32	216
5	1.4	3.8	4.5	3.2	3.6	3.1	62	4.7	2730	25	.31	122
6	1.4	4.2	4.7	3.2	3.6	3.1	42	4.4	1540	136	.34	213
7	1.4	4.4	4.9	3.2	3.6	3.1	28	4.0	888	122	.34	309
8	1.5	4.0	5.0	3.2	3.6	3.1	22	3.5	176	29	.31	98
9	1.6	3.8	5.3	3.2	3.1	17	20	3.4	54	20	.29	24
10	1.6	3.6	5.7	3.3	2.9	80	22	3.3	31	14	.29	11
11	2.8	3.4	6.2	3.9	2.6	88	22	3.4	20	10	.48	6.4
12	1.8	3.2	5.1	3.7	2.3	72	73	3.6	15	7.5	.49	4.6
13	2.0	3.3	4.5	3.5	2.1	60	298	3.7	177	6.3	.52	5.3
14	2.7	3.7	4.2	3.3	2.0	90	184	3.5	121	5.4	.40	4.1
15	2.8	4.0	3.9	3.2	2.0	360	105	3.4	620	4.6	.41	2.5
16	3.4	3.8	3.7	27	2.0	380	46	3.3	398	3.6	2.2	1.7
17	3.2	3.7	3.5	35	2.0	343	27	4.1	73	2.7	12	2.2
18	3.3	3.3	3.4	21	2.1	108	25	5.3	88	2.0	38	2.1
19	5.7	4.5	3.3	14	2.2	48	21	4.8	228	1.4	80	2.1
20	7.1	10	3.3	9.4	2.6	38	17	4.3	64	.98	31	2.0
21	4.8	14	3.3	8.6	40	32	14	4.1	27	.46	8.1	1.5
22	12	12	3.4	5.5	140	26	12	4.1	17	.40	2.7	1.2
23	14	10	3.7	5.0	84	23	9.8	3.9	37	.36	.87	1.1
24	8.5	9.4	4.0	4.7	45	22	8.5	3.2	17	.34	.44	.92
25	5.9	11	3.8	4.7	27	24	7.6	3.6	11	.31	.34	1.0
26	5.0	10	3.6	4.4	16	22	7.1	3.3	7.7	.43	.30	1.7
27	4.6	9.0	3.4	4.0	8.2	21	6.6	3.9	5.0	.46	.20	1.5
28	4.6	8.1	3.4	3.6	4.9	20	6.1	3.7	4.7	.58	.15	1.2
29	4.8	7.1	3.3	3.3	4.6	24	5.9	4.1	3.1	.47	.14	1.2
30	5.3	6.0	3.2	3.3	---	32	5.8	3.7	2.3	.40	.25	1.2
31	5.2	---	3.2	3.3	---	115	---	3.3	---	.35	379	---
TOTAL	124.4	179.5	127.6	206.5	425.4	2071.7	1451.4	124.8	15500.8	400.54	561.21	3471.52
MEAN	4.01	5.98	4.12	6.66	14.7	66.8	48.4	4.03	517	12.9	18.1	116
MAX	14	14	6.2	35	140	380	298	5.7	3120	136	379	1120
MIN	1.4	3.2	3.2	3.2	2.0	3.1	5.8	3.2	2.3	.31	.14	.92
CFSM	.02	.03	.02	.04	.08	.37	.27	.02	2.84	.07	.10	.64
IN.	.03	.04	.03	.04	.09	.42	.30	.03	3.17	.08	.11	.71
AC-FT	247	356	253	410	844	4110	2880	248	30750	794	1110	6890

CAL YR 1979	TOTAL	39302.47	MEAN	108	MAX	1570	MIN	.97	CFSM .59	IN 8.03	AC-FT	77960
WTR YR 1980	TOTAL	24645.37	MEAN	67.3	MAX	3120	MIN	.14	CFSM .37	IN 5.04	AC-FT	48880

06903700 SOUTH FORK CHARITON RIVER NEAR PROMISE CITY, IA

LOCATION.--Lat 40°48'02", long 93°11'32", in SW1/4 SW1/4 sec.5, T.69 N., R.20 W., Wayne County, Hydrologic Unit 10280201, on right bank 20 ft (6 m) downstream from bridge on county highway S50, 1.3 mi (2.1 km) downstream from Jordan Creek and 4.3 mi (6.9 km) northwest of Promise City.

DRAINAGE AREA.--168 mi² (435 km²).

PERIOD OF RECORD.--October 1967 to current year. Occasional low-flow measurements, water years 1958-66, published as "near Bethlehem". Monthly discharge measurements for March 1965 to September 1967 available in files of Iowa City district office.

GAGE.--Water-stage recorder. Datum of gage is 913.70 ft (278.496 m) NGVD (Corps of Engineers bench mark).

REMARKS.--Records good except for winter period, which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--13 years, 106 ft³/s (3.002 m³/s), 8.57 in/yr (216 mm/yr) 76,800 acre-ft/yr (94.7 hm³/yr); median of yearly mean discharges, 95 ft³/s (2.690 m³/s), 7.7 in/yr (195 mm/yr) 68,800 acre-ft/yr (84.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,200 ft³/s (317 m³/s) June 3, 1980, gage height, 22.92 ft (6.986 m); no flow July 6, 7, 21-24, 28-31, and Aug. 1, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 21, 1965, reached a stage of 26.5 ft (7.77 m), from floodmarks, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (56.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
June 3	0115	*11,200	317	*22.92	6.986	Sep. 1	1915	8,550	242	21.48	6.547
June 4	1645	5,800	164	19.61	5.977	Sep. 5	1445	2,140	60.6	12.83	3.911

Minimum daily discharge, 0.59 ft³/s (0.017 m³/s) Oct. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.7	5.7	4.9	1.0	2.5	8.8	98	7.0	839	2.5	1.5	6780
2	4.0	4.2	4.1	1.0	2.5	7.4	92	6.7	3830	2.4	1.5	2940
3	1.6	3.3	3.7	1.0	2.4	6.7	193	6.2	5730	3.0	1.5	155
4	1.2	3.0	3.7	1.0	2.4	6.4	138	5.7	3520	3.0	1.5	76
5	1.1	3.3	3.9	1.0	2.3	6.1	71	5.4	1330	38	1.6	1190
6	1.2	4.4	4.0	.99	2.3	6.0	51	4.7	156	288	4.0	514
7	1.2	3.5	4.1	.98	2.3	5.9	40	2.6	80	156	4.0	87
8	1.1	3.3	4.2	.96	2.4	6.1	31	3.2	49	20	2.6	41
9	.91	3.9	4.2	.96	2.4	140	29	3.3	34	8.0	1.7	23
10	.59	3.6	4.1	1.2	2.5	400	31	3.3	25	5.0	1.4	17
11	.82	3.1	4.0	1.5	2.5	190	63	11	18	3.9	1.8	13
12	1.1	2.9	4.0	1.1	2.6	110	436	9.2	14	3.2	1.8	12
13	1.1	3.2	3.1	1.0	2.5	66	631	7.3	54	2.7	1.4	9.9
14	1.3	3.6	2.8	.96	2.4	150	161	5.2	25	2.3	1.6	8.2
15	1.4	3.5	2.4	2.8	2.4	350	100	4.1	206	2.0	2.1	7.1
16	1.8	3.6	1.8	41	2.5	339	69	3.6	79	2.1	7.2	5.8
17	2.1	3.5	1.5	31	2.6	130	57	6.7	24	2.3	1160	9.8
18	2.9	3.1	1.3	22	2.6	70	65	8.0	19	2.4	343	9.5
19	9.6	4.0	1.2	16	2.7	55	52	7.0	185	1.6	24	7.6
20	6.2	6.6	1.1	12	6.2	48	40	5.7	36	1.5	11	5.5
21	4.2	16	1.2	8.0	72	38	32	5.4	15	1.4	8.6	4.3
22	120	14	1.4	6.9	230	28	26	3.9	8.7	1.6	4.7	3.4
23	46	9.4	1.5	5.7	98	24	22	3.2	7.3	2.3	3.3	2.9
24	12	9.6	1.4	4.7	40	32	18	3.3	6.1	1.7	2.8	2.6
25	5.8	12	1.3	4.1	27	45	17	4.9	5.2	1.4	2.4	2.5
26	4.5	11	1.2	3.6	20	41	15	4.1	4.7	1.9	2.1	2.5
27	3.6	10	1.2	3.3	14	33	12	3.6	4.1	2.0	1.8	2.5
28	3.9	9.0	1.1	3.0	10	33	12	4.0	3.4	1.5	1.8	2.6
29	4.0	7.4	1.1	2.8	9.4	54	9.7	4.2	2.8	1.5	1.5	2.7
30	4.4	5.8	1.1	2.7	---	84	7.8	3.6	2.5	1.3	2.5	2.7
31	5.6	---	1.0	2.6	---	272	---	3.3	---	1.3	2560	---
TOTAL	259.92	179.4	77.6	186.85	573.4	2785.4	2619.5	159.4	17411.8	557.8	4166.6	11941.1
MEAN	8.38	5.98	2.50	6.03	19.8	89.9	87.3	5.14	580	18.3	134	398
MAX	120	16	4.9	41	230	400	631	11	6730	288	2560	6780
MIN	.59	2.9	1.0	.96	2.3	5.9	7.8	2.6	2.5	1.3	1.4	2.5
CFSM	.05	.04	.02	.04	.12	.54	.52	.03	3.45	.11	.80	2.37
IN.	.06	.04	.02	.04	.13	.62	.58	.04	3.86	.13	.92	2.64
AC-FT	516	356	154	371	1140	5520	5200	316	34540	1130	8260	23690

CAL YR 1979 TOTAL 43527.92 MEAN 119 MAX 3720 MIN .59 CFSM .71 IN 9.64 AC-FT 86340
WTR YR 1980 TOTAL 40928.77 MEAN 112 MAX 6780 MIN .59 CFSM .67 IN 9.06 AC-FT 81180

06903880 RATHBUN LAKE NEAR RATHBUN, IA

LOCATION.--Lat 40°49'30", long 92°53'33", in NW1/4 NE1/4 sec.35, T.70 N., R.18 W., Appanoose County, Hydrologic Unit 10280201, at control tower of Rathbun Dam, 1.8 mi (2.9 km) north of Rathbun and 3.9 mi (6.3 km) upstream from Walnut Creek and at mile 142.3 (229.0 km).

DRAINAGE AREA.--549 mi² (1,421 km²).

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is at NGVD.

REMARKS.--Reservoir is formed by earthfill dam completed in 1969. Storage began in November 1969. Release is controlled by two hydraulically controlled slide gages, 6 ft (2 m) wide and 12 ft (4 m) high, into forechamber of an 11-ft (3 m) diameter horseshoe conduit through the dam. No dead storage. Maximum design discharge through gates is 5,000 ft³/s (142 m³/s). Uncontrolled notch spillway is concrete overflow section 500 ft (152 m) in length, located about 3,000 ft (914 m) west of the right abutment of the dam and provides emergency discharge into the adjacent drainage area of Little Walnut Creek. Uncontrolled notch spillway is at elevation 926 ft (282 m), contents 552,000 acre-ft (681 hm³), surface area, 21,000 acres (8,499 hm²). Conservation pool level is at elevation 904.0 ft (275.54 m), contents 205,000 acre-ft (253 hm³), surface area, 11,000 acres (4,452 hm²). Reservoir is used for flood control, low-flow augumentation, conservation and recreation.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 402,000 acre-ft (496 hm³) May 8-10, 1973; maximum elevation, 918.15 ft (279.852 m) May 9, 1973; minimum daily contents, 100 acre-ft (0.123 hm³) Oct. 1-15, Nov. 17-21, 1969; minimum elevation, 855.40 ft (260.726 m) Oct. 6-10, 1969.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 303,000 acre-ft (374 hm³) June 19-20; maximum elevation, 911.81 ft (277.920 m) June 20; minimum daily contents, 194,000 acre-ft (239 hm³) Feb. 1-22; minimum elevation, 902.98 ft (275.228 m) Feb. 11-14.

Capacity table (elevation, in feet, and contents, in acre-feet)

860	400	880	33,800	900	164,300
862	850	885	55,730	905	216,600
865	2,390	890	84,530	910	278,500
870	7,950	895	120,000	915	351,000
860	18,100				

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	201000	198000	196000	195000	194000	202000	201000	204000	203000	286000	225000	219000
2	201000	198000	196000	195000	194000	202000	202000	204000	206000	284000	223000	232000
3	201000	198000	196000	195000	194000	202000	203000	204000	233000	283000	221000	243000
4	201000	198000	196000	195000	194000	202000	204000	204000	260000	281000	219000	246000
5	201000	198000	196000	195000	194000	203000	204000	204000	280000	280000	217000	248000
6	200000	198000	196000	195000	194000	202000	204000	204000	292000	280000	215000	252000
7	200000	197000	196000	195000	194000	202000	204000	204000	298000	278000	214000	254000
8	200000	197000	196000	195000	194000	203000	205000	204000	301000	276000	212000	255000
9	200000	197000	196000	195000	194000	203000	205000	203000	302000	274000	211000	254000
10	200000	197000	196000	195000	194000	204000	204000	203000	301000	272000	211000	253000
11	200000	197000	195000	195000	194000	206000	203000	203000	300000	270000	211000	251000
12	200000	197000	195000	195000	194000	208000	204000	203000	298000	267000	211000	250000
13	200000	197000	195000	195000	194000	209000	205000	203000	298000	265000	210000	250000
14	199000	196000	195000	195000	194000	209000	206000	203000	296000	262000	210000	249000
15	199000	196000	195000	195000	194000	210000	207000	203000	299000	260000	210000	247000
16	199000	196000	195000	195000	194000	212000	206000	202000	301000	258000	210000	245000
17	199000	196000	195000	195000	194000	213000	205000	203000	300000	255000	214000	245000
18	199000	196000	195000	195000	194000	213000	205000	203000	299000	253000	215000	243000
19	200000	196000	195000	195000	194000	213000	205000	203000	303000	253000	216000	241000
20	200000	196000	195000	195000	194000	212000	205000	203000	303000	251000	216000	239000
21	200000	196000	195000	195000	194000	210000	205000	203000	302000	249000	216000	238000
22	201000	196000	195000	195000	194000	208000	205000	203000	301000	247000	215000	236000
23	203000	196000	195000	195000	195000	207000	205000	203000	299000	244000	213000	234000
24	204000	196000	195000	195000	195000	206000	205000	202000	298000	242000	211000	232000
25	204000	196000	195000	195000	202000	205000	205000	202000	296000	239000	210000	231000
26	204000	196000	195000	195000	202000	203000	205000	202000	294000	238000	208000	229000
27	204000	196000	195000	195000	202000	202000	205000	202000	293000	237000	206000	228000
28	204000	196000	195000	195000	202000	200000	205000	202000	291000	236000	206000	228000
29	197000	196000	195000	195000	202000	200000	205000	202000	290000	233000	206000	228000
30	197000	196000	195000	195000	---	200000	204000	202000	287000	230000	205000	228000
31	197000	---	195000	195000	---	201000	---	201000	---	228000	209000	---
MAX	204000	198000	196000	195000	202000	213000	207000	204000	303000	286000	225000	255000
MIN	197000	196000	195000	195000	194000	200000	201000	201000	203000	228000	205000	219000

WTR YR 1980 MAX 303000 MIN 194000

06903900 CHARITON RIVER NEAR RATHBUN, IA

LOCATION.--Lat 40°49'22", long 92°53'22", in SE1/4 NE1/4 sec.35, T.70 N., R.18 W., Appanoose County, Hydrologic Unit 10280201, on left bank 600 ft (183 m) downstream from outlet of Rathbun Dam, 1.8 mi (2.9 km) north of Rathbun and 3.7 mi (6.0 km) upstream from Walnut Creek and at mile 142.1 (228.6 km).

DRAINAGE AREA.--649 mi² (1,421 km²).

PERIOD OF RECORD.--October 1956 to current year. Monthly discharge only for some periods, published in WSP 1730.

REVISED RECORDS.--WSP 1560: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 847.92 ft (258.446 m) NGVD. Prior to Nov. 16, 1960, nonrecording gage and Nov. 17, 1960, to Sept. 30, 1969, recording gage, at site 3.1 mi (5.0 km) downstream at datum 4.65 ft (1.42 m) lower.

REMARKS.--Records good. Flow regulated by Rathbun Reservoir (station 06903880) since Nov. 21, 1969. Records of discharge include diversion of 10 ft³/s (0.28 m³/s) Oct. 1 to Oct. 23; 9 ft³/s (0.25 m³/s) Oct. 24 to Aug. 18, and 13 ft³/s (0.37 m³/s) Aug. 19 to Sept. 30 from reservoir through fish ponds on left bank downstream from dam. Diverted flow returns to stream 0.1 mi (0.2 km) downstream from gage. Several observations of water temperature were made during the year. Corps of Engineers gage-height telemeter at station. Rathbun Regional Water Association permit No. 3663 allows withdrawal from Rathbun Dam discharge immediately downstream from gage for maximum rate of 4,200 gpm (9.36 ft³/s) and maximum quantity of 638 million gallons per year (1,955 acre-ft).

AVERAGE DISCHARGE.--24 years, 314 ft³/s (8.89 m³/s) 7.77 in/yr (197 mm/yr), 227,500 acre-ft/yr (281 hm³/yr); median of yearly mean discharges, 230 ft³/s (6.51 m³/s) 5.7 in/yr (145 mm/yr), 167,000 acre-ft/yr (206 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,800 ft³/s (617 m³/s) Mar. 31, 1960, gage height, 25.3 ft (7.71 m), from floodmark, site and datum then in use; no flow Oct. 26, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,190 ft³/s (33.7 m³/s) Aug. 4, gage height, 11.88 ft (3.621 m); maximum gage height, 13.95 ft (4.252 m) June 2, backwater from Walnut Creek; minimum daily discharge, 19 ft³/s (0.54 m³/s) Oct. 13, 27-31, Feb. 16-23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FE5	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	20	20	21	21	20	109	23	21	767	1030	24
2	21	20	20	21	21	20	109	23	20	719	808	24
3	20	20	20	21	21	20	111	23	20	761	976	25
4	20	20	20	21	21	20	109	23	20	759	823	24
5	20	20	20	21	20	20	110	22	20	280	595	24
6	20	20	20	21	20	20	110	21	21	819	736	24
7	20	20	20	21	20	20	110	22	24	1150	734	22
8	20	20	20	22	20	20	109	22	24	1140	507	466
9	20	20	20	22	20	20	280	22	199	1020	55	479
10	20	20	20	22	20	20	424	21	391	1130	55	618
11	20	20	20	22	20	20	426	21	567	1130	54	635
12	20	20	20	22	20	72	432	22	753	1130	54	27
13	19	20	20	22	20	111	434	21	632	1130	54	416
14	20	20	20	21	20	112	427	22	722	1130	54	738
15	20	20	20	21	20	112	426	22	39	1080	53	737
16	20	20	20	21	19	279	426	22	452	898	57	551
17	21	20	20	21	19	413	426	22	757	1050	59	469
18	20	20	20	21	19	612	270	22	589	402	59	737
19	20	20	21	21	19	774	109	22	128	553	170	737
20	21	20	21	21	19	768	109	22	616	674	290	739
21	22	20	21	21	19	770	72	21	758	709	397	738
22	22	20	21	21	19	770	54	22	757	1110	721	738
23	21	20	21	21	19	769	54	22	757	1110	720	738
24	20	20	21	21	20	767	54	21	757	1110	720	736
25	20	20	21	21	20	767	37	21	756	963	719	737
26	20	20	21	21	20	765	23	21	756	404	718	356
27	19	20	21	21	20	764	22	21	761	393	306	27
28	19	20	21	21	20	538	23	21	769	798	22	26
29	19	20	21	21	20	108	23	21	768	1110	21	26
30	19	20	21	21	---	109	23	20	767	1110	22	26
31	19	---	21	21	---	110	---	21	---	1110	24	---
TOTAL	622	600	633	657	576	9710	5451	672	13621	27649	11613	11664
MEAN	20.1	20.0	20.4	21.2	19.9	313	182	21.7	454	892	375	389
MAX	22	20	21	22	21	774	434	23	769	1150	1030	739
MIN	19	20	20	21	19	20	22	20	20	280	21	22
AC-FT	1230	1190	1260	1300	1140	19260	10810	1330	27020	54840	23030	23140

CAL YR 1979 TOTAL 118190 MEAN 324 MAX 1170 MIN 19 AC-FT 234400
WTR YR 1980 TOTAL 83468 MEAN 228 MAX 1150 MIN 19 AC-FT 165600

06904010 CHARITON RIVER NEAR MOULTON, IA

LOCATION.--Lat 40°41'30", long 92°46'15", in SE1/4 NE1/4 sec.14, T.68N., R.17W., Appanoose County, Hydrologic Unit 10280201, on right bank 6 ft (2 m) downstream from bridge on county highway J45, 0.7 mi (1.1 km) downstream from Hickory Creek, 5.0 mi (8.0 km) west of Moulton, 8.0 mi (12.9 km) upstream from Iowa-Missouri border, 20.8 mi (33.5 km) downstream from Rathbun dam, and at mile 121.5 (195.5 km).

DRAINAGE AREA.--740 mi² (1,917 km²).

PERIOD OF RECORD.--August 1979 to current year.

GAGE.--Water-stage recorder/ Datum of gage is 800.00 ft (243.840 m) NGVD (Corps of Engineers benchmark).

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated by Rathbun Reservoir (station 06903880) 20.8 mi (33.5 km) upstream. Several observations of water temperature were made during the year. Corps of Engineers rain-gage and gage-height telemeters at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,660 ft³/s (217 m³/s) June 4, 1980, gage height, 35.17 ft (10,720 m); minimum daily, 19 ft³/s (0.538 m³/s) Oct. 26, 1980.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of about 45 ft (13.7 m), discharge unknown, from information by Corps of Engineers.

EXTREMES FOR CURRENT PERIOD.--August to September 1979: Maximum discharge, 2,040 ft³/s (57.8 m³/s) Aug. 3, gage height, 26.36 ft (8.035 m); minimum daily, 22 ft³/s (0.623 m³/s), Sept. 14.

Water year 1980.--Maximum discharge, 7,660 ft³/s (217 m³/s) June 4, gage height, 35.17 ft (10.720 m); minimum daily, 19 ft³/s (0.538 m³/s) Oct. 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	36	28	25	25	49	250	40	665	800	1130	6210
2	26	28	28	25	25	46	215	38	4920	768	1080	4690
3	26	22	27	25	26	43	322	37	7280	785	836	1730
4	27	22	25	25	26	40	336	36	6460	798	1210	767
5	27	22	24	26	26	37	247	34	3130	575	581	1920
6	29	28	23	25	26	35	203	32	521	618	793	2260
7	25	28	22	27	27	53	176	30	424	1410	815	560
8	26	28	23	32	27	82	161	29	174	1310	810	279
9	26	28	24	32	27	140	171	29	147	1160	280	831
10	26	27	22	33	28	370	442	29	396	1190	95	609
11	32	27	22	33	28	290	545	32	456	1230	93	909
12	36	27	22	33	28	220	786	31	787	1220	92	461
13	39	27	24	33	29	210	919	35	902	1210	93	135
14	40	27	24	33	29	190	710	33	902	1210	100	839
15	44	28	23	35	30	354	603	31	1090	1220	100	902
16	44	27	24	37	29	397	554	29	402	902	142	904
17	42	27	25	39	28	529	541	44	816	1130	1820	432
18	39	28	24	37	28	520	533	46	855	749	2050	841
19	73	27	23	35	29	812	263	44	857	360	441	870
20	29	32	23	33	30	834	187	36	858	701	436	882
21	23	112	23	31	72	824	173	34	858	510	290	868
22	43	70	22	30	260	817	113	30	858	1050	807	868
23	44	51	24	29	200	807	103	28	839	1160	863	853
24	27	37	24	29	150	836	91	28	827	1160	859	846
25	22	33	24	31	110	853	87	27	814	1160	845	846
26	19	31	24	30	80	851	73	29	795	644	840	770
27	25	29	24	29	62	841	56	31	787	378	761	157
28	25	30	25	27	53	829	50	32	801	475	159	56
29	28	29	25	26	51	351	47	32	804	1130	67	52
30	27	28	25	25	---	198	45	30	806	1190	63	50
31	32	---	25	25	---	282	---	28	---	1200	2890	---
TOTAL	999	996	745	934	1589	12740	9002	1024	40231	29403	21441	32397
MEAN	32.2	33.2	24.0	30.1	54.8	411	300	33.0	1341	948	692	1080
MAX	73	112	28	39	260	853	919	46	7280	1410	2890	6210
MIN	19	22	22	25	25	35	45	27	147	360	63	50
CFSM	.04	.05	.03	.04	.07	.56	.41	.05	1.81	1.28	.94	1.46
IN.	.05	.05	.04	.05	.08	.64	.45	.05	2.02	1.48	1.08	1.63
AC-FT	1980	1980	1480	1850	3150	25270	17860	2030	79800	58320	42530	64260

WTR YR 1980 TOTAL 151501 MEAN 414 MAX 7280 MIN 19 CFSM .56 IN 7.62 AC-FT 300500

Crest-stage partial-record stations

The following table contains annual maximum discharge for crest-stage stations. A crest-stage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained, but is not published herein. The years given in the period of record represent water years up to the current year for which the annual maximum has been determined.

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1980

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	ANNUAL MAXIMUM DATE	ANNUAL MAXIMUM GAGE HEIGHT (FEET)	ANNUAL MAXIMUM DISCHARGE (CFS)
		UPPER IOWA RIVER BASIN					
05388310	WATERLOO CR NR DORCHESTER, IOWA.	LAT 4327XX, LONG 9130XX, IN NW 1/4 SEC. 25, T.100 N., R.6 W., ALLAMAKEE COUNTY, ON STATE HIGHWAY 76, 1.4 MILES SOUTH OF DORCHESTER.	43.6	1966-	08-17-80	699.92	1,600
		WEXFORD CREEK BASIN					
05388400	WEXFORD CR NR HARPERS FERRY, IOWA.	LAT 4316XX, LONG 9108XX, IN SE 1/4 SEC. 25, T.98 N., R.3 W., ALLAMAKEE COUNTY, AT BRIDGE, 5 MILES NORTH OF HARPERS FERRY.	11.9	1953-	02-22-80	6.33	B
		PAINT CREEK BASIN					
05388600	PAINT CR NR WATERVILLE, IOWA.	LAT 4311XX, LONG 9116XX, NEAR CENTER SEC.36, T.97 N., R.4 W., ALLAMAKEE COUNTY, AT BRIDGE, 3 MILES SOUTHEAST OF WATERVILLE.	56.0	1953-	05-30-80	10.42	2,200
053887D0	LITTLE PAINT CR TR NR WATERVILLE, IOWA.	LAT 4314XX, LONG 9115XX, IN SE 1/4 SEC. 1, T.97 N., R.4 W., ALLAMAKEE COUNTY, AT CULVERT, 3.5 MILES NORTHEAST OF WATERVILLE.	1.09	1953-	1980	1.99	130
		TURKEY RIVER BASIN					
05411530	NB TURKEY R NR CRESCO, IOWA.	LAT 4322XX, LONG 9213XX, IN NW 1/4 SEC. 25, T.99 N., R.12 ., HOWARD COUNTY, AT BRIDGE ON STATE HIGHWAY 9, ABOUT 5 MILES WEST OF CRESCO.	19.5	1966-	09-22-80	88.04	134
05411700*	CRANE CR NR LOURDES, IOWA.	LAT 4315XX, LONG 9219XX, IN NW 1/4 SEC. 6, T.97 N., R.12 W., HOWARD COUNTY, AT BRIDGE ON STATE HIGHWAY 272, 1 MILE SW OF LOURDES.	75.8	1951-	09-22-80	11.48	3,750
		LITTLE MAQUOKETA RIVER BASIN					
05414360	LITTLE MAQUOKETA R NEAR GRAF, IOWA.	LAT 423009, LONG 905150, IN SE 1/4 SEC. 20, T.89 N., R.1 E., DUBUQUE COUNTY, AT BRIDGE, 300 FEET DOWNSTREAM FROM ILLINOIS CENTRAL RR BRIDGE, 0.5 MILE NE OF GRAF.	39.6	1951-	1980	A	(+)
05414400	MF LITTLE MAQUOKETA R NEAR RICKARDSVILLE, IOWA.	LAT 423338, LONG 905135, IN SE 1/4 SEC. 32, T.90 N., R.1 E., DUBUQUE COUNTY, AT BRIDGE, 2 MILES SOUTHEAST OF RICKARDSVILLE.	30.2	1951-	1976 02-25-77 06-16-78 03-29-78 08-17-80	A 13.61 16.59 14.37 16.78	(+) 350 1,260 470 1,350
05414450*	NF LITTLE MAQUOKETA NEAR RICKARDSVILLE, IOWA.	LAT 423509, LONG 905120, NEAR NW CORNER SEC. 28, T.90 N., R.1 E., DUBUQUE COUNTY, AT BRIDGE, 1 MILE NE OF RICKARDSVILLE.	21.6	1951-	1980	6.77	B
05414600	LITTLE MAQUOKETA R TR AT DUBUQUE, IOWA.	LAT 423233, LONG 904138, NEAR NW CORNER SEC.11, T.89 N., R.2 E., DUBUQUE COUNTY, AT BRIDGE ON STATE HIGHWAY 386 NR NORTH CITY LIMITS OF DUBUQUE.	1.54	1951-	08-17-80	12.62	400
		MAQUOKETA RIVER BASIN					
05417000	MAQUOKETA RIVER NR MANCHESTER, IOWA.	LAT 422722, LONG 912556, IN NW1/4NE1/4 SEC. 9, T.88 N., R.5 W., DELAWARE CO., ON LEFT BANK, 0.6 MI DOWNSTREAM FROM SAND CREEK, 1.5 MI UPSTREAM FROM SPRING BRANCH, 2.3 MI SOUTHEAST FROM DAM ON MAQUOKETA RIVER IN MANCHESTER, AND AT MILE 100.5.	305	1933-73. 1976-	1980	9.02	2,630
05417530	PLUM CR AT EARLVILLE, IOWA.	LAT 422813, LONG 911453, IN NE 1/4 SEC. 1, T.88 N., R.4 W., DELAWARE COUNTY, AT BRIDGE ON U.S. HIGHWAY 20, 1.5 MILES SOUTHEAST OF EARLVILLE.	41.1	1966-	07-26-80	83.99	920
05417590	KITTY CR NR LANGWORTHY, IOWA.	LAT 4212XX, LONG 9112XX, IN NW 1/4 SEC. 4, T.85 N., R.3 W., JONES COUNTY, AT BRIDGE ON U.S. HIGHWAY 151, ABOUT 1 MILE NE OF LANGWORTHY.	14.4	1966-	1980	A	(+)

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1980--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	ANNUAL MAXIMUM DATE	ANNUAL MAXIMUM GAGE HEIGHT (FEET)	ANNUAL MAXIMUM DISCHARGE (CFS)
		WAPSIPINICON RIVER BASIN					
05420600	LITTLE WAPSIPINICON TR NR RICEVILLE, IOWA.	LAT 4321XX, LONG 9229XX, NEAR S 1/4 CORNER SEC.27, T.99 N., R.14 W., HOWARD COUNTY, AT CULVERT, 3.5 MILES EAST OF RICEVILLE.	0.90	1953-	08-16-80	5.03	520
05420620	LITTLE WAPSIPINICON R NR ACME, IOWA.	LAT 4320XX, LONG 9229XX, AT N 1/4 CORNER SEC. 10, T.98 N., R.14 W., HOWARD COUNTY, AT BRIDGE ON CO. ROAD D, 1 MILE NORTH OF ACME.	7.76	1953-	08-16-80	6.39	620
05420640*	LITTLE WAPSIPINICON R AT ELMA, IOWA.	LAT 4314XX, LONG 9227XX, IN NW 1/4 SEC. 12, T.97 N., R.14 W., HOWARD COUNTY, AT BRIDGE ON COUNTY ROAD A, NEAR WEST CITY LIMITS OF ELMA.	37.3	1953-	08-16-80	10.59	2,100
05420650	LITTLE WAPSIPINICON R NR NEW HAMPTON, IOWA.	LAT 4304XX, LONG 9224XX, IN NW 1/4 SEC. 9, T.95 N., R.13 W., CHICKASAW COUNTY AT BRIDGE ON U.S. HIGHWAY 18, 4 MILES WEST OF NEW HAMPTON.	95.0	1966-	08-13-80	87.79	3,800
05420690	EF WAPSIPINICON R NR NEW HAMPTON, IOWA.	LAT 4305XX, LONG 9218XX, IN SE 1/4 SEC. 31, T.96 N., R.12 W., CHICKASAW CO. AT BRIDGE ON U.S. HIGHWAY 63, 2 MILES NORTH OF NEW HAMPTON.	30.3	1966-	08-10-80	85.12	2,520
05420850	LITTLE WAPSIPINICON R NR ORAN, IOWA.	LAT 4243XX, LONG 9202XX, IN NE 1/4 SEC. 8, T.91 N., R.10 W., FAYETTE COUNTY, AT BRIDGE ON STATE HIGHWAY 3, 2 MILES NE OF ORAN.	94.1	1966-	07-26-80	87.69	1,200
05420855	BUCK CR NR ORAN, IOWA.	LAT 424253, LONG 920733, IN NE 1/4 SEC. 10, T.91 N., R.11 W., BREMER COUNTY, AT BRIDGE ON STATE HIGHWAY 3, 2.5 MILES NW OF ORAN.	37.9	1966-	08-13-80	89.67	1,200
05421100	PINE CR TR NR WINTHROP, IOWA.	LAT 4229XX, LONG 9147XX, IN SW 1/4 SEC. 27, T.89 N., R.8 W., BUCHANAN COUNTY, AT CULVERT, 1.4 MILES NORTH OF U.S. HIGHWAY 20 AND 2.5 MILES NW OF WINTHROP.	0.334	1953-	06-02-80	7.02	180
05421200	PINE CR NR WINTHROP, IOWA.	LAT 4228XX, LONG 9147XX, IN SW 1/4 SEC. 34, T.89 N., R.8 W., BUCHANAN COUNTY, AT RR BRIDGE, 500 FT UPSTREAM FROM U.S. HIGHWAY 20 AND 2.5 MILES NW OF WINTHROP.	28.3	1950-	03-16-80	13.57	1,100
05421300	PINE CR TR NO. 2 AT WINTHROP, IOWA.	LAT 4228XX, LONG 9144XX, AT N 1/4 CORNER SEC. 2, T.88 N., R.8 W., BUCHANAN COUNTY, AT CULVERT ON U.S. HIGHWAY 20 NEAR WEST CITY LIMITS OF WINTHROP.	0.704	1953-	06-02-80	6.78	220
05421550*	BUFFALO CR ABOVE WINTHROP, IOWA.	LAT 4230XX, LONG 9144XX, NEAR NE CORNER SEC. 25, T.89 N., R. 8 W., BUCHANAN COUNTY, AT BRIDGE, 1.5 MILES NE OF WINTHROP.	68.2	1957-	1980	16.03	B
05421600	BUFFALO CR NR WINTHROP, IOWA.	LAT 4228XX, LONG 9143XX, IN NE 1/4 SEC. 1, T.88 N., R.8 W., BUCHANAN COUNTY, AT BRIDGE ON U.S. HIGHWAY 20, 1 MILE EAST OF WINTHROP.	71.4	1953-	1980	86.69	B
05421890	SILVER CR AT WELTON, IOWA.	LAT 4155XX, LONG 9036XX, IN NW 1/4 SEC. 15, T.82 N., R.3 E., CLINTON COUNTY, AT BRIDGE ON U.S. HIGHWAY 61 AT NORTH EDGE OF WELTON.	9.03	1966-	1980	86.76	(+)
		IOWA RIVER BASIN					
05448400*	WESTMAIN DRAINAGE DITCH 1 & 2 NR BRITT, IOWA.	LAT 4306XX, LONG 9347XX, IN SW 1/4 SEC. 27, T.96 N., R.25 W., HANCOCK COUNTY, AT BRIDGE ON U.S. HIGHWAY 18 NEAR EAST CITY LIMITS OF BRITT.	21.2	1966-	1980	A	(+)
05448600	EB IOWA R ABOVE HAYFIELD, IOWA.	LAT 4309XX, LONG 9341XX, NEAR S 1/4 CORNER SEC. 4, T.96 N., R.24 W., HANCOCK COUNTY, AT BRIDGE, 1.5 MILES SE OF HAYFIELD.	2.23	1953-	08-13-80	3.87	23
05448700	EB IOWA R NR HAYFIELD, IOWA.	LAT 4311XX, LONG 9339XX, IN NW 1/4 SEC. 35, T.97 N., R.24 W., HANCOCK COUNTY, AT BRIDGE, 2 MILES EAST OF HAYFIELD.	7.94	1952-	08-10-80	8.79	66
05448800	EB IOWA R NR GARNER, IOWA.	LAT 4306XX, LONG 9337XX, NEAR CENTER SEC. 25, T.96 N., R.24 W., HANCOCK COUNTY, AT BRIDGE ON U.S. HIGHWAY 18, 1.2 MILES WEST OF GARNER.	45.1	1952-	08-17-80	7.22	120

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1980--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	ANNUAL MAXIMUM DATE	ANNUAL MAXIMUM GAGE HEIGHT (FEET)	ANNUAL MAXIMUM DISCHARGE (CFS)
		IOWA RIVER BASIN--CONTINUED					
05448900	EB IOWA R TR NR GARNER, IOWA.	LAT 4305XX, LONG 9340XX, NEAR CENTER SEC. 27, T.96 N., R.24 W., HANCOCK COUNTY, AT CULVERT ON U.S. HWY 18, 2.1 MILES WEST OF GARNER.	5.98	1952-	1980	A	(+)
05451955	STEIN CR NR CLUTIER, IOWA.	LAT 420445, LONG 921800, IN NE 1/4 SEC. 24, T.84 N., R.13 W., TAMA COUNTY, AT BRIDGE ON STATE HIGHWAY 318, 5 MILES EAST OF CLUTIER.	23.4	1971-	08-13-80	74.18	1,800
05453200	PRICE CR AT AMANA, IOWA.	LAT 4148XX, LONG 9153XX, IN SE 1/4 SEC. 22, T.81 N., R.9 W., IOWA COUNTY, AT BRIDGE ON STATE HIGHWAY 149, NEAR NORTH EDGE OF AMANA.	29.1	1966-	1980	A	(+)
05453600	RAPID CR BELOW MORSE, IOWA.	LAT 414345, LONG 912538, NEAR NE CORNER SEC. 21, T.80 N., R.5 W., JOHNSON COUNTY, AT BRIDGE, 1.5 MILES SE OF MORSE.	8.12	1951-	02-21-80	16.73	220
05453750	RAPID CR SW OF MORSE, IOWA.	LAT 414323, LONG 912616, IN W 1/2 SEC. 21, T.80 N., R.5 W., JOHNSON COUNTY, AT BRIDGE, 2 MILES SOUTHWEST OF MORSE.	15.2	1951-	02-21-80	22.71	520
05453850	RAPID CR TR NO. 3 NR OASIS, IOWA.	LAT 414233, LONG 912714, NEAR CENTER OF SEC. 29, T.80 N., R.5 W., JOHNSON COUNTY, AT BRIDGE, 3.5 MILES WEST OF OASIS.	1.62	1951-	06-02-80	19.76	150
05453900	RAPID CR TR NR OASIS, IOWA.	LAT 414114, LONG 912637, NEAR SW CORNER SEC. 33, T.80 N., R.5 W., JOHNSON COUNTY, AT BRIDGE, 3 MILES SW OF OASIS.	.97	1951-	06-02-80	14.77	270
05453950	RAPID CR TR NR IOWA CITY, IOWA.	LAT 414156, LONG 912839, IN NW 1/4 SEC. 31, T.80 N., R.5 W., JOHNSON COUNTY, AT BRIDGE, 4 MILES NE OF IOWA CITY.	3.43	1951-	06-02-80	21.04	170
05455100*	OLD MANS CR NR IOWA CITY, IOWA.	LAT 413623, LONG 913656, IN NW 1/4 SEC. 36, T.79 N., R.7 W., JOHNSON COUNTY, AT BRIDGE, 3 MILES SOUTHWEST OF IOWA CITY.	201	1950-64, 1965-	1980	A	(+)
05455140	N ENGLISH R NR MONTEZUMA, IOWA.	LAT 413845, LONG 923420, IN SW 1/4 SEC. 14, T.79 N., R.15 W., POWESHIEK CO., AT BRIDGE, 5.0 MILES NORTHWEST OF MONTEZUMA.	31.0	1972-	1980	A	(+)
05455200*	N ENGLISH R NR GUERNSEY, IOWA.	LAT 4138XX, LONG 9224XX, NEAR SW CORNER SEC. 17, T.79 N., R.13 W., POWESHIEK COUNTY, AT BRIDGE, 2.2 MILES WEST OF GUERNSEY.	58.7	1953-	02-22-80	18.85	B
05455210	N ENGLISH R AT GUERNSEY, IOWA.	LAT 4138XX, LONG 9221XX, IN NW 1/4 SEC. 22, T.79 N., R.13 W., POWESHIEK CO., AT BRIDGE ON STATE HIGHWAY 21, 1 MILE SW OF GUERNSEY.	81.5	1960, 1966-	1980	A	(+)
05455230	DEEP R AT DEEP RIVER, IOWA.	LAT 4135XX, LONG 9221XX, IN SW 1/4 SEC. 3, T.78 N., R.13 W., POWESHIEK CO., AT BRIDGE ON STATE HIGHWAY 21, 1 MILE NE OF DEEP RIVER.	30.5	1960, 1966-	1980	A	(+)
05455300	S ENGLISH R NR BARNES CITY, IOWA.	LAT 4131XX, LONG 9228XX, NEAR NW CORNER SEC. 34, T.78 N., R.14 W., POWESHIEK COUNTY, AT BRIDGE, 1 MILE NORTH OF BARNES CITY.	11.5	1953-	1980	A	(+)
05455350	S ENGLISH R TR NO.2 NR MONTEZUMA, IOWA.	LAT 4134XX, LONG 9227XX, NEAR SW CORNER SEC. 11, T.78 N., R.14 W., POWESHIEK COUNTY, AT BOX CULVERT, 4 MILES SE OF MONTEZUMA.	0.523	1953-	02-22-80	8.50	30
05455550	BULGERS RUN NR RIVERSIDE, IOWA.	LAT 4129XX, LONG 9138XX, IN SE 1/4 SEC. 11, T.77 N., R.7 W., WASHINGTON CO., AT BRIDGE ON STATE HIGHWAY 22, 2.5 MILES WEST OF RIVERSIDE.	6.31	1965-	09-13-80	86.06	1,150
05457440	DEER CR NR CARPENTER, IOWA.	LAT 4325XX, LONG 9259XX, IN NE 1/4 SEC. 8, T.99 N., R.18 W., MITCHELL COUNTY, AT BRIDGE ON STATE HIGHWAY 105, 1.5 MILES EAST OF CARPENTER.	91.6	1966-	05-30-80	82.31	3,400
05458560	BEAVERDAM CR NR SHEFFIELD, IOWA.	LAT 4256XX, LONG 9312XX, IN NW 1/4 SEC. 27, T.94 N., R.20 W., CERRO GORDO CO. AT BRIDGE ON U.S. HIGHWAY 65, 3 MILES NORTH OF SHEFFIELD.	123	1966-	08-17-80	55.81	1,670
05459010	ELK CR AT KENSETT, IOWA.	LAT 4322XX, LONG 9313XX, IN NE 1/4 SEC. 28, T.99 N., R.20 W., WORTH COUNTY, AT BRIDGE ON U.S. HIGHWAY 65, 1 MILE NORTH OF KENSETT.	58.1	1966-	05-30-80	90.63	370

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1980--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	ANNUAL MAXIMUM DATE	ANNUAL MAXIMUM GAGE HEIGHT (FEET)	ANNUAL MAXIMUM DISCHARGE (CFS)
		IOWA RIVER BASIN--CONTINUED					
05459490	SPRING CR NR MASON CITY, IOWA.	LAT 431248, LONG 931238, IN SE 1/4 SEC. 16, T.97 N., R.20 W., CERRO GORDO CO. AT BRIDGE ON U.S. HIGHWAY 65, 4 MILES NORTH OF MASON CITY.	29.3	1966-	05-30-80	90.32	4,500
05460100	WILLOW CR NR MASON CITY, IOWA.	LAT 4309XX, LONG 9316XX, IN NE 1/4 SEC. 12, T.96 N., R.21 W., CERRO GORDO CO. AT BRIDGE ON U.S. HIGHWAY 18, 3.5 MILES WEST OF MASON CITY.	78.6	1966-	05-30-80	91.17	950
05462750	BEAVER CR TR NR APLINGTON, IOWA.	LAT 4235XX, LONG 9251XX, IN NW 1/4 SEC. 27, T.90 N., R.17 W., BUTLER COUNTY, AT BRIDGE ON U.S. HIGHWAY 20, 2 MILES EAST OF APLINGTON.	11.6	1966-	06-16-80	94.13	2,400
05463090	BLACK HAWK CR AT GRUNDY CENTER, IOWA.	LAT 4222XX, LONG 9246XX, IN NW 1/4 SEC. 7, T.87 N., R.16 W., GRUNDY COUNTY, AT BRIDGE ON STATE HIGHWAY 14, AT NORTH EDGE OF GRUNDY CENTER.	56.9	1966-	06-01-80	86.46	1,700
05464145	TWELVE MILE CR NR TRAER, IOWA.	LAT 421350, LONG 922756, IN SE 1/4 SEC. 27, T.86 N., R.14 W., TAMA COUNTY, AT BRIDGE ON U.S. HIGHWAY 63, 2.5 MILES NORTH OF TRAER.	43.8	1966-	08-06-80	86.41	1,000
05464310	PRATT CR NR GARRISON, IOWA.	LAT 421053, LONG 921110, IN SE 1/4 SEC. 12, T.85 N., R.12 W., BENTON COUNTY, AT BRIDGE ON U.S. HIGHWAY 218, 3.5 MILES NW OF GARRISON.	23.4	1966-	1980	A	(+)
05464318	E BLUE CR AT CENTER POINT, IOWA.	LAT 421244, LONG 914721, IN SW 1/4 SEC. 33, T.86 N., R.8 W., LINN COUNTY, AT BRIDGE ON STATE HIGHWAY 150, 1.5 MILES NORTH OF CENTER POINT.	17.6	1966-	1980	A	(+)
05464560	PRAIRIE CR AT BLAIRSTOWN, IOWA.	LAT 415442, LONG 920503, IN SW 1/4 SEC. 13, T.82 N., R.11 W., BENTON COUNTY, AT BRIDGE ON STATE HIGHWAY 82, AT NORTH EDGE OF BLAIRSTOWN.	87.0	1966-	1980	A	(+)
05464880	OTTER CR AT WILTON, IOWA.	LAT 413617, LONG 910208, IN NE 1/4 SEC. 35, T.79 N., R.2 W., CEDAR COUNTY, AT BRIDGE ON STATE HIGHWAY 38, 1.5 MILES NW OF WILTON.	10.7	1966-	1980	84.98	B
05465150	NF LONG CR AT AINSWORTH, IOWA.	LAT 4117XX, LONG 9132XX, IN SW 1/4 SEC. 22, T.75 N., R.6 W., WASHINGTON CO., AT BRIDGE ON U.S. HIGHWAY 218, 1 MILE SE OF AINSWORTH.	30.2	1951, 1965-	09-13-80	88.20	600
		SKUNK RIVER BASIN					
05469860	MUD LAKE DRAINAGE DITCH 71 IN JEWELL, IOWA.	LAT 4219XX, LONG 9338XX, IN SW 1/4 SEC. 27, T.87 N., R.24 W., HAMILTON CO., AT BRIDGE ON U.S. HIGHWAY 69 IN JEWELL.	65.4	1966-	1980	A	(+)
05469990	KEIGLEY BR NR STORY CITY, IOWA.	LAT 4209XX, LONG 9337XX, IN NW 1/4 SEC. 26, T.85 N., R.24 W., STORY COUNTY, AT BRIDGE ON U.S. HIGHWAY 69, 3 MILES SOUTH OF STORY CITY.	31.0	1966-	06-14-80	88.35	430
05472090	N SKUNK R NR BAXTER, IOWA.	LAT 4149XX, LONG 9304XX, IN NE 1/4 SEC. 21, T.81 N., R.19 W., JASPER COUNTY, AT BRIDGE ON STATE HIGHWAY 223, 4.5 MILES EAST OF BAXTER.	52.2	1966-	1980	A	(+)
05472290	SUGAR CR NR SEARSBORO, IOWA.	LAT 4134XX, LONG 9244XX, IN SE 1/4 SEC. 7, T.78 N., R.16 W., POWESHIEK CO., AT BRIDGE ON STATE HIGHWAY 225, 1.8 MILES WEST OF SEARSBORO.	52.7	1966-	02-22-80	88.52	780
05472390	MIDDLE CR NR LACEY, IOWA.	LAT 4125XX, LONG 9239XX, IN NE 1/4 SEC. 1, T.76 N., R.16 W., MAHASKA COUNTY, AT BRIDGE ON U.S. HIGHWAY 63, 1.5 MILES NW OF LACEY.	23.0	1966-	1980	84.26	400
05472445	ROCK CR AT SIGOURNEY, IOWA.	LAT 412012, LONG 921320, IN NE 1/4 SEC. 3, T.75 N., R.12 W., KEOKUK COUNTY, AT BRIDGE ON STATE HIGHWAY 92, NEAR WEST EDGE OF SIGOURNEY.	26.3	1966-	1980	A	(+)
05473300*	CEDAR CR NR BATAVIA, IOWA.	LAT 4101XX, LONG 9207XX, IN SW 1/4 SEC. 27, T.72 N., R.11 W., JEFFERSON CO., AT BRIDGE ON U.S. HIGHWAY 34, 2.5 MILES NE OF BATAVIA.	252	1966-	06-02-80	80.46	4,100

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1980--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	ANNUAL MAXIMUM DATE	ANNUAL MAXIMUM GAGE HEIGHT (FEET)	ANNUAL MAXIMUM DISCHARGE (CFS)
		DES MOINES RIVER BASIN					
05480930	WHITE FOX CR AT CLARION, IOWA.	LAT 4244XX, LONG 9342XX, IN NW 1/4 SEC. 5, T.91 N., R.24 W., WRIGHT COUNTY, AT BRIDGE ON STATE HIGHWAY 3, 1.5 MILES EAST OF CLARION.	13.3	1966-	06-15-80	90.55	370
05481510	BLUFF CR AT PILOT MOUND, IOWA.	LAT 4210XX, LONG 9401XX, IN NW 1/4 SEC. 20, T.85 N., R.27 W., BOONE COUNTY, AT BRIDGE ON STATE HIGHWAY 329, AT NW EDGE OF PILOT MOUND.	23.5	1966-	05-30-80	84.23	275
05481680	BEAVER CR AT BEAVER, IOWA.	LAT 4202XX, LONG 9409XX, IN NE 1/4 SEC. 6, T.83 N., R.28 W., BOONE COUNTY, AT BRIDGE ON U.S. HIGHWAY 30, AT SW EDGE OF BEAVER.	38.5	1966-	1980	A	(+)
05481690	W BEAVER CR AT GRAND JUNCTION, IOWA.	LAT 4202XX, LONG 9413XX, IN NE 1/4 SEC. 3, T.83 N., R.29 W., GREENE COUNTY, AT BRIDGE ON U.S. HIGHWAY 30, NEAR EAST EDGE OF GRAND JUNCTION.	12.6	1966-	1980	A	(+)
05482600	HARDIN CR AT FARNHAMVILLE, IOWA.	LAT 421601, LONG 942510, NEAR NE CORNER SEC. 14, T.86 N., R.31 W., CALHOUN CO., AT BRIDGE ON STATE HIGHWAY 175, NEAR WEST CITY LIMITS OF FARNHAMVILLE.	43.7	1952-	1980	A	(+)
05482800	HAPPY RUN AT CHURDAN, IOWA.	LAT 4210XX, LONG 9430XX, NEAR SW CORNER SEC. 17, T.85 N., R.31 W., GREENE CO. AT BRIDGE NEAR WEST CITY LIMITS OF CHURDAN.	7.58	1952-	1980	A	(+)
05482900	HARDIN CR NR FARLIN, IOWA.	LAT 4206XX, LONG 9426XX, NEAR N 1/4 CORNER SEC. 14, T.84 N., R.31 W., GREENE COUNTY, AT BRIDGE, 1.5 MILES NE OF FARLIN.	101	1951-	1980	A	(+)
05483318	BRUSHY FORK CR NR TEMPLETON, IOWA.	LAT 4157XX, LONG 9453XX, IN NW 1/4 SEC. 1, T.82 N., R.35 W., CARROLL COUNTY, AT BRIDGE ON U.S. HIGHWAY 71, 4 MILES NE OF TEMPLETON.	45.0	1966-	1980	A	(+)
05483349	M RACCOON R TR AT CARROLL, IOWA.	LAT 4203XX, LONG 9453XX, IN NW 1/4 SEC. 36, T.84 N., R.35 W., CARROLL COUNTY, AT BRIDGE ON U.S. HIGHWAY 71, 1.5 MILES SOUTH OF CARROLL.	6.58	1966-	1980	19.66	(+)
05487350	S OTTER CR TR NR WOODBURN, IOWA.	LAT 4103XX, LONG 9336XX, NEAR SW CORNER SEC. 11, T.72 N., R.24 W., CLARKE CO. AT BRIDGE, 2 MILES NORTH OF WOODBURN.	0.71	1955-	06-18-80	11.03	(+)
05487500	S WHITE BREAST CR NR OSCEOLA, IOWA.	LAT 405736, LONG 934128, NEAR SW CORNER SEC. 12, T.71 N., R.25 W., CLARKE COUNTY, AT BRIDGE, 6 MILES SE OF OSCEOLA.	28.0	1953-	06-02-80	11.53	1,900
05487800*	WHITE BREAST CR AT LUCAS, IOWA.	LAT 4101XX, LONG 9328XX, IN NE 1/4 SEC. 23, T.72 N., R.23 W., LUCAS COUNTY, AT BRIDGE ON U.S. HIGHWAY 65, NEAR SOUTH CITY LIMITS OF LUCAS.	128	1953-	06-02-80	13.60	2,000
05488620	COAL CR NR ALBIA, IOWA.	LAT 4101XX, LONG 9251XX, IN SW 1/4 SEC. 20, T.72 N., R.17 W., MONROE COUNTY, AT BRIDGE ON U.S. HIGHWAY 34, 2 MILES SW OF ALBIA.	13.5	1966-	06-02-80	82.95	(+)
05489150	L MUCHAKINOCK CR AT OSKALOOSA, IOWA.	LAT 4116XX, LONG 9238XX, IN SE 1/4 SEC. 25, T.75 N., R.16 W., MAHASKA COUNTY, AT BRIDGE ON STATE HIGHWAY 137, AT SOUTH EDGE OF OSKALOOSA.	9.12	1966-	06-05-80	86.69	410
05489350	S AVERY CR NR BLAKESBURG, IOWA.	LAT 4101XX, LONG 9237XX, IN SE 1/4 SEC. 19, T.72 N., R.15 W., WAPELLO COUNTY, AT BRIDGE ON U.S. HIGHWAY 34, 3.5 MILES NORTH OF BLAKESBURG.	33.1	1965-	06-15-80	84.96	5,500
05489490	BEAR CR AT OTTUMWA, IOWA.	LAT 410045, LONG 922754, IN NW 1/4 SEC. 27, T.72 N., R.14 W., WAPELLO COUNTY, AT BRIDGE ON U.S. HIGHWAY 34, NEAR WEST EDGE OF OTTUMWA.	22.9	1965-	08-17-80	89.05	2,700

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1980--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	ANNUAL MAXIMUM DATE	ANNUAL MAXIMUM GAGE HEIGHT (FEET)	ANNUAL MAXIMUM DISCHARGE (CFS)
		FOX RIVER BASIN					
05494100	S FOX CR TR NR WEST GROVE, IOWA.	LAT 4044XX, LONG 9238XX, NEAR S 1/4 CORNER SEC. 31, T.69 N., R.15 W., DAVIS CO., AT CULVERT ON STATE HIGHWAY 2, 3.5 MILES WEST OF WEST GROVE.	0.55	1953-	06-02-80	11.63	788
05494110	S FOX CR NR WEST GROVE, IOWA.	LAT 4044XX, LONG 9236XX, IN SE 1/4 SEC. 32, T.69 N., R.15 W., DAVIS COUNTY, AT BRIDGE ON STATE HIGHWAY 2, 2.4 MILES WEST OF WEST GROVE.	12.2	1965-	06-02-80	88.85	(+)
		BIG SIOUX RIVER BASIN					
06483410	OTTER CR NORTH OF SIBLEY, IOWA.	LAT 4328XX, LONG 9544XX, AT NE CORNER SEC. 25, T.100 N., R.42 W., OSCEOLA CO., AT BRIDGE ON COUNTY ROAD H, 4 MILES NORTH OF SIBLEY.	11.9	1952-	10-31-79	6.92	170
06483420	SCHUTTE CR NR SIBLEY, IOWA.	LAT 4328XX, LONG 9547XX, NEAR NW CORNER SEC. 23, T.100 N., R.42 W., OSCEOLA COUNTY, AT CULVERT, 6 MILES NW OF SIBLEY.	1.43	1952-	10-31-79	9.16	(+)
06483430	OTTER CR AT SIBLEY, IOWA.	LAT 4324XX, LONG 9546XX, NEAR N 1/4 CORNER SEC. 14, T.99 N., R.42 W., OSCEOLA CO., AT BRIDGE, 1 MILE NW OF SIBLEY.	29.9	1952-	10-31-79	7.79	530
06483440	DAWSON CR NR SIBLEY, IOWA.	LAT 4323XX, LONG 9543XX, NEAR NW CORNER SEC. 20, T.99 N., R.41 W., OSCEOLA CO., AT CULVERT ON COUNTY ROAD D, 2 MILES SE OF SIBLEY.	4.35	1952-	10-31-79	6.15	(+)
06483450	WAGNER CR NR ASHTON, IOWA.	LAT 4321XX, LONG 9546XX, ON SOUTH LINE SEC. 35, T.99 N., R.42 W., OSCEOLA COUNTY, AT BRIDGE, 3 MILES NE OF ASHTON.	7.09	1952-	10-31-79	14.93	110
06483460	*OTTER CR NR ASHTON, IOWA.	LAT 4320XX, LONG 9546XX, IN SE 1/4 SEC. 2, T.98 N., R.42 W., OSCEOLA COUNTY, AT BRIDGE, 2 MILES NORTHEAST OF ASHTON.	88.0	1952-	10-31-79	8.98	1,050
06483495	BURR OAK CR NR PERKINS, IOWA.	LAT 431443, LONG 961038, IN SE 1/4 SEC. 5, T.97 N., R.45 W., SIOUX CO., AT BRIDGE ON U.S. HIGHWAY 75, 4 MILES NORTH OF PERKINS.	30.9	1966-	10-31-79	85.22	370
		PERRY CREEK BASIN					
06599800	PERRY CR NR MERRILL, IOWA.	LAT 424316, LONG 962033, IN NW 1/4 SEC. 12, T.91 N., R.47 W., PLYMOUTH CO., AT BRIDGE ON COUNTY ROAD M, 5 MILES WEST OF MERRILL.	8.17	1953-	05-30-80	4.96	(+)
06599950	PERRY CR NR HINTON, IOWA.	LAT 423757, LONG 962213, IN NE 1/4 SEC. 15, T.90 N., R.47 W., PLYMOUTH CO., AT BRIDGE, 4 MILES WEST OF HINTON.	30.8	1953-	05-30-80	30.08	(+)
		FLOYD RIVER BASIN					
06600030	L FLOYD R NR SANBORN, IOWA.	LAT 431110, LONG 954330, IN NE 1/4 SEC. 31, T.97 N., R.41 W., O BRIEN CO., AT BRIDGE ON U.S. HIGHWAY 18, 3.5 MILES WEST OF SANBORN.	8.44	1966-	06-06-80	86.50	(+)
06600080	WILLOW CR AT HOSPERS, IOWA.	LAT 430438, LONG 955416, IN NE 1/4 SEC. 3, T.95 N., R.43 W., SIOUX CO., AT BRIDGE ON STATE HIGHWAY 60, AT NORTH EDGE OF HOSPERS.	37.9	1966-	06-06-80	85.85	(+)
		MONONA-HARRISON DITCH BASIN					
06601480	BIG WHISKEY SLOUGH NR REMSEN, IOWA.	LAT 4248XX, LONG 9553XX, IN NW 1/4 SEC. 11, T.92 N., R.43 W., PLYMOUTH CO., AT BRIDGE ON STATE HIGHWAY 3, 4.2 MILES EAST OF REMSEN.	12.9	1966-	06-06-80	91.32	255
06602190	ELLIOTT CR AT LAWTON, IOWA.	LAT 422830, LONG 961122, IN NW 1/4 SEC. 3, T.88 N., R.46 W., WOODBURY CO., AT BRIDGE ON U.S. HIGHWAY 20, AT WEST EDGE OF LAWTON.	34.8	1966-	1980	A	(+)
06602240	BIG WHISKEY CR NR LAWTON, IOWA.	LAT 422830, LONG 961501, IN NW 1/4 SEC. 6, T.88 N., R.46 W., WOODBURY CO., AT BRIDGE ON U.S. HIGHWAY 20, 3.5 MILES WEST OF LAWTON.	51.3	1966-	1980	A	(+)

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1980--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	ANNUAL MAXIMUM DATE	ANNUAL MAXIMUM GAGE HEIGHT (FEET)	ANNUAL MAXIMUM DISCHARGE (CFS)
		LITTLE SIOUX RIVER BASIN					
06604510	OCHEYEDAN R NR OCHEYEDAN, IOWA.	LAT 4326XX, LONG 9537XX, IN NE 1/4 SEC. 6, T.99 N., R.40 W., OSCEOLA CO., AT BRIDGE ON STATE HIGHWAY 9, 4 MILES NW OF OCHEYEDAN.	73.5	1966-	10-31-79	82.82	(+)
06605340	PRAIRIE CR NR SPENCER, IOWA.	LAT 430516, LONG 950940, IN SE 1/4 SEC. 36, T.96 N., R.37 W., CLAY COUNTY, AT BRIDGE ON U.S. HIGHWAY 71, 4 MILES SOUTH OF SPENCER.	22.3	1966-	06-05-80	89.13	520
06605750	WILLOW CR NR CORNELL, IOWA.	LAT 4243XX, LONG 9510XX, IN SE 1/4 SEC. 12, T.94 N., R.37 W., CLAY COUNTY, AT BRIDGE ON U.S. HIGHWAY 71, 2 MILES NW OF CORNELL.	78.6	1966-	06-05-80	89.35	1,780
06605890	WATERMAN CR AT HARTLEY, IOWA.	LAT 431106, LONG 953043, IN NE 1/4 SEC. 36, T.97 N., R.40 W., O BRIEN CO., AT BRIDGE ON U.S. HIGHWAY 18, 1.8 MILES WEST OF HARTLEY.	28.7	1966-	06-06-80	87.66	1,700
06606790	MAPLE CR NR ALTA, IOWA.	LAT 4245XX, LONG 9522XX, IN NE 1/4 SEC. 31, T.92 N., R.38 W., BUENA VISTA CO. AT BRIDGE ON STATE HIGHWAY 3, 6 MILES NW OF ALTA.	15.5	1966-	06-05-80	85.46	84
06607197	WILSEY CR AT MAPLETON, IOWA.	LAT 4210XX, LONG 9545XX, IN SE 1/4 SEC. 14, T.85 N., R.43 W., MONONA CO., AT BRIDGE ON STATE HIGHWAY 141, 1.2 MILES NW OF MAPLETON.	18.4	1966-	1980	A	(+)
		SOLDIER RIVER BASIN					
06608450	JORDAN CR AT MOORHEAD, IOWA.	LAT 4155XX, LONG 9552XX, IN NW 1/4 SEC. 16, T.82 N., R.43 W., MONONA CO., AT BRIDGE ON STATE HIGHWAY 183, AT SW CORNER OF MOORHEAD.	30.1	1966-	1980	A	(+)
		BOYER RIVER BASIN					
06609560	WILLOW CR NR SOLDIER, IOWA.	LAT 4155XX, LONG 9542XX, IN NW 1/4 SEC. 14, T.82 N., R.42 W., MONONA CO., AT BRIDGE ON STATE HIGHWAY 37, 6 MILES SE OF SOLDIER.	29.1	1966-	1980	A	(+)
		MOSQUITO CREEK BASIN					
06610510	MOSER CR NR EARLING, IOWA.	LAT 4147XX, LONG 9527XX, IN NE 1/4 SEC. 1, T.80 N., R.40 W., SHELBY CO., AT BRIDGE ON STATE HIGHWAY 37, 1.5 MILES WEST OF EARLING.	21.6	1966-	06-06-80	78.62	(+)
06610600*	MOSQUITO CR AT NEOLA, IOWA.	LAT 412709, LONG 953637, IN NE 1/4 SEC. 19, T.77 N., R.42 W., POTTAWATTAMIE CO., AT BRIDGE ON COUNTY ROAD S, 0.5 MILE SOUTH OF NEOLA.	131	1966-	06-06-80	27.56	(+)
		NISHNABOTNA RIVER BASIN					
06807418	GRAYBILL CR NR CARSON, IOWA.	LAT 4114XX, LONG 9523XX, IN NW 1/4 SEC. 7, T.74 N., R.39 W., POTTAWATTAMIE CO., AT BRIDGE ON STATE HIGHWAY 92, 2 MILES EAST OF CARSON.	45.9	1966-	1980	A	(+)
06807470	INDIAN CR NR EMERSON, IOWA.	LAT 4102XX, LONG 9523XX, IN NW 1/4 SEC. 19, T.72 N., R.39 W., MONTGOMERY CO., AT BRIDGE ON U.S. HIGHWAY 34, 1 MILE EAST OF EMERSON.	37.3	1966-	06-04-80	88.78	1,000
06807720	M SILVER CR NR AVOCA, IOWA.	LAT 412833, LONG 952806, NEAR N 1/4 CORNER SEC. 17, T.77 N., R.40 W., POTTAWATTAMIE CO., AT BRIDGE ON STATE HIGHWAY 83, 7 MILES WEST OF AVOCA.	3.21	1955-	06-06-80	6.71	220
06807760	M SILVER CR NR OAKLAND, IOWA.	LAT 411928, LONG 953319, NEAR E 1/4 CORNER SEC. 4, T.75 N., R.41 W., POTTAWATTAMIE CO., AT BRIDGE, 8.5 MILES NW OF OAKLAND.	25.7	1953-	06-06-80	6.64	550
06807780	M SILVER CR AT TREYNOR, IOWA.	LAT 411437, LONG 953653, NEAR NE CORNER SEC. 1, T.74 N., R.42 W., POTTAWATTAMIE CO., AT BRIDGE ON COUNTY ROAD F, 1 MILE NORTH OF TREYNOR.	42.7	1953-	06-06-80	11.37	2,300
06808880	BLUEGRASS CR AT AUDUBON, IOWA.	LAT 4143XX, LONG 9456XX, IN NW 1/4 SEC. 28, T.80 N., R.35 W., AUDUBON CO., AT BRIDGE ON U.S. HIGHWAY 71, NEAR SOUTH EDGE OF AUDUBON.	15.4	1966-	1980	A	(+)

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1980--CONTINUED

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (SQ MI)	PERIOD OF RECORD	ANNUAL MAXIMUM DATE	ANNUAL MAXIMUM GAGE HEIGHT (FEET)	ANNUAL MAXIMUM DISCHARGE (CFS)
		TARKIO RIVER BASIN					
06811760	TARKIO R NR ELLIOT, IOWA.	LAT 4106XX, LONG 9506XX, NEAR NE CORNER SEC. 28, T.73 N., R.37 W., MONTGOMERY COUNTY, AT BRIDGE, 4.5 MILES SE OF ELLIOT.	10.7	1952-	06-02-80	10.28	1,000
06811800	E TARKIO CR NR STANTON, IOWA.	LAT 4105XX, LONG 9506XX, IN W 1/2 SEC. 34, T.73 N., R.37 W., MONTGOMERY CO., AT BRIDGE, 7 MILES NORTH OF STANTON.	4.66	1952-	1980	A	(+)
06811820	TARKIO R TR NR STANTON, IOWA.	LAT 4103XX,LONG 9506XX, NEAR NE CORNER SEC. 16, T.72 N., R.37 W., MONTGOMERY COUNTY, AT BOX CULVERT, 4 MILES NORTH OF STANTON.	0.67	1952-	1980	2.05	(+)
06811875	SNAKE CR NR YORK-TOWN, IOWA.	LAT 4045XX, LONG 9508XX, IN NW 1/4 SEC. 32, T.69 N., R.37 W., PAGE COUNTY, AT BRIDGE ON STATE HIGHWAY 2, 1.5 MILES NE OF YORKTOWN.	9.10	1966-	1980	A	(+)
		NODAWAY RIVER BASIN					
06816290	W NODAWAY R AT MASSENA, IOWA.	LAT 4115XX, LONG 9445XX, IN SE 1/4 SEC. 33, T.75 N., R.34 W., CASS COUNTY, AT BRIDGE ON STATE HIGHWAY 148, AT SE CORNER OF MASSENA.	23.4	1966-	1980	A	(+)
		PLATTE RIVER BASIN					
06818598	PLATTE R NR STRING-TOWN, IOWA.	LAT 4059XX, LONG 9430XX, IN SE 1/4 SEC. 2, T.71 N., R.32 W., ADAMS COUNTY, AT BRIDGE ON U.S. HIGHWAY 34, 3.8 MILES EAST OF STRINGTOWN.	51.7	1966-	06-04-80	91.37	1,900
06819110	MB 102 R NR GRAVITY, IOWA.	LAT 4050XX, LONG 9444XX, IN SE 1/4 SEC. 27, T.70 N., R.34 W., TAYLOR COUNTY, AT BRIDGE ON STATE HIGHWAY 148, 4.8 MILES NORTH OF GRAVITY.	33.5	1966-	1980	A	(+)
		CHARITON RIVER BASIN					
06903980	CHARITON R NR UDELL, IOWA.	LAT 404653, LONG 925012, IN NE 1/4 SEC. 17, T.69 N., R.17 W., APPANOOSE CO., AT BRIDGE, 5.0 MILES WEST OF UDELL.	631	1972-	06-02-80	857.16	4,600
06903990	COOPER CR AT CENTERVILLE, IOWA.	LAT 404502, LONG 925136, IN NW 1/4 SEC. 30, T.69 N., R.17 W., APPANOOSE CO., AT BRIDGE ON STATE HIGHWAY 5, AT NORTH EDGE OF CENTERVILLE.	47.8	1966-	06-02-80	76.47	3,600
06904040	CHARITON R AT COAL CITY, IOWA.	LAT 403535, LONG 924240, IN NE 1/4 SEC. 20, T.67 N., R.16 W., APPANOOSE CO., AT BRIDGE IN COAL CITY.	816	1972-	06-02-80	823.69	7,000

* Also a low-flow partial-record station.
\+ Discharge not determined.
A Peak stage did not reach bottom of gage.
B Ice affected.

DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1980

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements	
					Date	Discharge (ft^3/s)
		Upper Iowa River Basin				
Bear Creek	Upper Iowa River	NE1/4 sec.2, T.99 N., R.6 W., Allamakee County, at bridge on State Highway 76, 3.0 mi (4.8 km) south of Dorchester.	118	1941-77	04-03-80	69.9
					05-20-80	53.0
					06-30-80	56.8
					08-11-80	91.7
					09-23-80	149
		Boyer River Basin				
*06609400 Boyer River	Missouri River	Lat 4200XX, long 9523XX, in NE1/4 sec.16, T.83 N., R.39 W., Crawford County, at bridge, 2 miles SW of Denison.	517	1957-79	10-10-79	66.6
					06-27-80	63.0
					09-18-80	26.7

* Also a low-flow partial-record station.

Carroll County

420335N0945215.1. Local number 84-35-25bddb1. City of Carroll, test hole 1. Drilled observation artesian well in Dakota Sandstone of Early Cretaceous age, diam 8 in, depth 120 ft, cased to 100. Lsd 1,244 ft above msl. MP top of casing, 4.0 ft above lsd (since July 1975). Highest water level 34.55 below lsd, Sept. 8, 1945; lowest 77.68 below lsd, June 14, 1968. Records available: 1939-49, 1952 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Nov. 19, 1979	62.50	Feb. 19, 1980	61.58	May 8, 1980	72.50	July 24, 1980	76.50

Cerro Gordo County

430456N0932536.1. Local number 95-22-3abba1. Knut Olson. Drilled domestic and stock artesian well in limestone of Devonian age, diam 4 in, depth 134 ft, casing information not available. Lsd 1,258 ft above msl. MP top of casing, 1.40 ft above lsd. Highest water level 14.34 below lsd, July 3, 1945; lowest 24.87 below lsd, Feb. 14, 1979. Records available: 1941 to current year.

Nov. 7, 1979	21.88	Feb. 4, 1980	23.40	May 19, 1980	23.93	Aug. 11, 1980	24.85

430806N0931645.1. Local number 96-21-13bccb1. Mason City & Clear Lake RR. Drilled unused artesian well in dolomite in Cedar Valley Limestone of Devonian age, diam 5 in, depth 198 ft, casing information not available. Lsd 1,165 ft above msl. MP top of well curb, 1.30 ft above lsd. Highest water level 1.73 below lsd, June 28, 1951; lowest 17.26 below lsd, Nov. 18, 1955. Records available: 1940 to current year.

Nov. 7, 1979	4.03	Feb. 4, 1980	5.88	May 20, 1980	5.90	Aug. 11, 1980	4.49

430658N0932810.1. Local number 96-22-20cadc1. W. Baine and H. Elder. Drilled unused water-table well in glacial drift, diam 5 in, depth 126 ft, casing information not available. Lsd 1,249 ft above msl. MP hole in side of casing, 1.30 ft above lsd. Highest water level 29.65 below lsd, Mar. 25, 1942; lowest 51.37 below lsd, Aug. 4, 1977. Records available: 1940 to current year.

Nov. 7, 1979	41.03	Feb. 4, 1980	41.13	May 19, 1980	42.20	Aug. 11, 1980	48.72

Clayton County

424101N0913200.1. Local number 91-6-22acab1. Howard Bowman. Dug unused water-table well in glacial drift, diam 36 in, depth 18 ft, cribbed with brick. Lsd 1,221 ft above msl. MP top of board platform, 0.08 ft above lsd. Highest water level 3.54 below lsd, May 6, 1960; lowest 10.03 below lsd, Jan. 24, 1955 and Feb. 7, 1977. Records available: 1957 to current year.

Oct. 7, 1979	8.39	Jan. 7, 1980	8.09	Apr. 7, 1980	6.86	July 7, 1980	7.70
Oct. 21	8.60	Jan. 21	7.69	Apr. 21	7.14	July 21	8.06
Nov. 7	8.29	Feb. 7	8.61	May 7	7.98	Aug. 7	8.20
Nov. 21	8.07	Feb. 21	8.86	May 21	7.70	Aug. 21	4.41
Dec. 7	8.46	Mar. 7	8.40	June 7	6.33	Sept. 7	7.26
Dec. 21	7.79	Mar. 21	8.40	June 21	6.24	Sept. 21	6.58

424057N0913200.1. Local number 91-6-22acac1. City of Strawberry Point, well 2. Drilled unused artesian well in dolomite of Silurian age, diam 16 to 10 in, depth 492 ft, cased 16-in 0-130, 12-in 130-161, lined 10-in 229-370. Lsd 1,219 ft above msl. MP top of recorder platform, 2.10 ft above lsd. Highest water level 114.38 below lsd, May 9, 1973; lowest 133.18 below lsd, Feb. 4, 1968. Records available: 1963 to current year.

Water level at noon, from recorder graph, water year October 1 to September 30 1979-80

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	124.36	125.68	------	------	127.34	127.74	127.10	126.77	127.24	127.62	128.16	------
10	124.75	125.90	e125.80	------	127.15	127.50	126.89	126.95	127.45	127.54	128.23	127.00
15	124.95	------	126.09	126.68	127.46	127.85	126.95	127.60	127.58	127.66	128.54	127.02
20	124.75	126.17	e126.25	127.02	127.40	127.45	126.97	127.41	127.54	127.65	128.03	126.86
25	------	------	126.40	127.40	127.75	127.50	126.73	127.53	127.30	127.77	------	126.85
Eom	------	------	126.34	127.55	128.00	127.46	126.67	127.78	127.60	128.04	------	126.70

e Estimated

425940N0911947.1. Local number 95-4-32dddd1. Milton and Willis Meier. Drilled stock artesian well in St. Peter Sandstone of Middle Ordovician age, diam 6 in, reported depth 380 ft, Casing information not available. Lsd 1,090 ft above msl. MP plug in pumpbase, 1.00 ft above lsd. Highest water level 82.56 below lsd, Oct. 8, 1974; lowest 126.56 below lsd, Jan. 13, 1969. Records available: 1957 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 15, 1980	88.33	May 20, 1980	91.15	Aug. 11, 1980	92.91		

Des Moines County

404844N0911427.1. Local number 69-3-6aaba1. Iowa Ordnance Plant, well 3. Drilled unused artesian well in St. Peter Sandstone of Middle Ordovician age, diam 16 in, depth 1,209 ft, cased 0-855. Lsd 717 ft above msl. MP top of platform, 1.61 ft above lsd. Highest water level 143.22 below lsd, Sept . 20, 1980; lowest 201.75 below lsd, Aug. 15, 1978. Records available: 1950 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 6, 1979	184.04	Jan. 20, 1980	179.19	Apr. 17, 1980	163.07	Aug. 11, 1980	145.94
Dec. 8	182.55	Mar. 15	174.73	June 28	153.98	Sept. 20	143.22

404753N0911425.1. Local number 69-3-6ddcd1. Iowa Ordnance Plant, well 2. Drilled unused artesian well in limestone of Devonian and Mississippian age, diam 19 in, depth 675 ft, cased 0-75. Lsd 699 ft above msl. MP top of platform, 1.91 ft above lsd. Highest water level 74.46 below lsd, Apr. 18, 1975; lowest 83.19 below lsd, Apr. 26, 1950. Records available: 1950 to current year.

Oct. 6, 1979	79.19	Jan. 20, 1980	80.64	Apr. 17, 1980	80.89	Aug. 11, 1980	81.71
Dec. 8	80.13	Mar. 15	80.74	June 28	81.29	Sept. 20	81.76

Emmet County

432927N0943455.1. Local number 100-32-11ddddl. Okamanpedan Lake Reserve State Park. Drilled public-supply artesian well in Dakota Sandstone of Early Cretaceous age, diam 6 in, depth 277 ft, casing information not available. Lsd 1,233 ft above msl. MP plug in pumpbase, 0.61 ft above lsd. Highest water level 59.60 below lsd, Dec. 19, 1946; lowest 77.86 below lsd, Aug. 27, 1979. Records available: 1939 to current year.

Nov. 27, 1979	77.69	Feb. 26, 1980	69.72	May 6, 1980	69.68	July 28, 1980	70.02

Grundy County

422605N0925600.1 Local number 88-18-15dbb1. Town of Wellsburg. Drilled public-emergency-supply artesian well in English River Siltstone, of Stainbrook (1950), of Early Mississippian age, diam 12 in, depth 280 ft, cased to 128. Lsd 1,060 ft above msl. MP edge of vent pipe, 1.25 ft above lsd. Highest water level 34.72 below lsd, May 6, 1980. lowest 96.81 below lsd, Sept. 27, 1960. Records available: 1960 to current year.

Jan. 15, 1980	35.66	May 6, 1980	34.72	Aug. 26, 1980	35.39		

Henry County

405810N0913305.2. Local number 71-6-9aba2. City of Mount Pleasant, well 4. Drilled municipal artesian well in Jordan Sandstone of Late Cambrian age, diam 20 to 19 in, depth 1,860 ft, cased 20-in, 0-623 ft. Lsd 732 ft above msl. MP hole in pumpbase, 2.25 ft above lsd. Highest water level 132.00 below lsd, May 5, 1946; lowest non pumping 198.75 below lsd, June 7, 1978. Records available: 1946-50, 1953-57, 1959 to current year. Water levels affected by pumping.

Jan. 17, 1980	192.75	Aug. 21, 1980	p221.04				

p Well being pumped.

410848N0913948.1. Local number 73-7-9aab1. Town of Wayland. Dug unused water-table well in glacial drift, diam 4 ft, depth 52 ft, casing information not available. Lsd 745 ft above msl. MP top of cement cover, 0.21 ft above lsd. Highest water level 2.30 below lsd, Sept. 1, 1965; lowest 14.69 below lsd, Feb. 2, 1977. Records available: 1960 to current year.

Jan. 17, 1980	10.14	May 6, 1980	9.33	Aug. 21, 1980	9.03		

Jasper County

414205N0925920.1. Local number 80-18-31abbb1. P. W. Beukema. Dug stock water-table well in glacial drift, diam 36 in, depth 37 ft, cribbed with brick. Lsd 937 ft above msl. MP top of cement platform, 0.70 ft above lsd (since Apr. 1, 1970). Highest water level 2.67 below lsd, June 10, 1947; lowest 27.15 below lsd, Dec. 18, 1948. Records available: 1940 to current year.

Jan. 14, 1980	12.07	Apr. 29, 1980	12.69	Oct. 29, 1980	15.50		

Johnson County

414107N0913229.1. Local number 79-6-4aaaal. Forest View Trailer Court. Drilled unused artesian well in limestone of Silurian age, diam 6 in, depth 280 ft, cased to 96 ft. Lsd 735 ft above msl. MP top of casing, 1.00 ft above lsd. Highest water level 96.93 ft below lsd, Mar. 23, 1979; lowest 146.01 ft below lsd, July 17, 1971. Records available: 1971 to current year.

Water level at noon, from recorder graph, water year October 1 to September 30
1979-80

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
6	122.15	118.08	102.17	98.69	97.84	98.08	------	112.56	121.40	e127.40	130.93	129.36
10	122.38	113.32	101.45	98.13	97.80	e98.09	------	115.44	123.30	e128.65	130.30	129.55
15	122.30	109.40	100.55	98.25	97.75	------	------	118.01	124.65	130.28	129.92	129.04
20	121.89	107.75	100.07	98.46	97.67	------	e98.90	119.55	125.52	130.59	129.47	128.42
25	121.48	104.90	99.45	97.67	98.19	------	101.07	119.34	126.30	130.48	129.79	128.53
Eom	120.77	103.70	98.78	98.40	98.47	------	108.08	119.39	e126.50	130.88	129.58	128.37

e Estimated.

414315N0912520.1. Local number 80-5-22cbcbl. Chicago, Rock Island & Pacific RR. Co. Drilled unused water-table well in glacial drift, diam 1 1/4 in, depth 20 ft, screened 18-20 ft. Lsd 753 ft above msl. MP top of casing 4.20 ft above lsd. Highest water level 5.78 below lsd, Sept. 20, 1977; lowest dry, Dec. 2-31, 1955, Nov. 8 to Dec. 31, 1964. Records available: 1941-56, 1958 to current year.

Date	Wster level	Date	Water level	Date	Water level	Date	Water level
Oct. 23, 1979	14.86	Mar. 21, 1980	11.76	June 20, 1980	8.58	Sept. 17, 1980	5.89
Dec. 18	12.75	Apr. 22	7.79	July 18	12.54		
Feb. 21, 1980	12.71	May 22	9.54	Aug. 14	14.32		

414316N0912520.2. Local number 80-5-22cbcb2. Chicago, Rock Island & Pacific RR. Co. Drilled unused artesian well in limestone of Devonian age, diam 5 in, depth 82 ft cased. Lsd 753 ft above msl. MP top of casing 2.50 ft above lsd (since July 1, 1975). Highest water level 8.15 below lsd, Apr. 21, 1952; lowest 21.05 below lsd, Sept. 26, 1957. Records available: 1941 to current year.

Oct. 23, 1979	16.98	Mar. 21, 1980	16.84	June 20, 1980	15.89	Sept. 17, 1980	16.10
Dec. 18	17.04	Apr. 22	15.88	July 18	17.29		
Feb. 21, 1980	16.86	May 22	16.93	Aug. 14	17.91		

Linn County

415422N0914226.1. Local number 82-7-18cdcdl. Lester Petrak. Dug unused water-table well in glacial drift, diam 4 ft, depth 14 ft, cribbed with brick. Lsd 835 ft above msl. MP base of recorder shelter, 0.25 ft above lsd, Oct. 1980. Highest water level 1.09 below lsd, Aug. 4, 1968; lowest e11.75 below lsd, Feb. 8, 1977. Records available: 1959 to current year.

Water level at noon, from recorder graph, water year October 1 to September 30
1979-80

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
6	7.77	-----	8.43	9.14	7.71	8.12	8.10	7.17	7.83	e7.95	-----	8.18
10	7.96	-----	8.61	9.22	7.98	8.29	7.86	7.38	8.03	-----	-----	7.73
16	8.13	-----	8.74	9.17	8.28	8.25	7.78	7.67	7.74	-----	9.11	5.91
20	8.18	-----	8.88	7.46	8.44	7.88	6.96	7.84	7.35	8.55	8.43	5.78
25	-----	8.03	8.87	7.09	7.87	7.94	6.79	8.02	7.35	8.60	8.73	6.16
Eom	-----	8.25	9.02	7.50	7.96	8.15	6.91	8.06	e7.62	-----	9.02	6.57

e Estimated.

415816N0913934.1. Local number 83-7-28addal. The Kacena Co., Inc. Drilled unused artesian well in limestone of Silurian age, diam 10 in, depth 420 ft, cased to 75. Lsd 735 ft above msl. MP top of recorder platform, 2.95 ft below lsd. Highest water level 51.10 below lsd, Feb. 25, 1963; lowest 93.80 below lsd, Aug. 1, 1975. Records available: 1962 to current year.

Water level at noon, from recorder graph, water year October 1 to September 30
1979-80

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	-----	-----	83.26	-----	81.34	80.76	80.35	82.25	86.37	90.16	90.13	91.13
10	-----	85.90	e82.80	-----	e81.25	80.65	80.55	82.48	86.85	90.96	91.80	91.43
15	86.40	-----	e83.70	81.27	-----	81.44	-----	83.35	86.83	91.32	92.40	90.61
20	-----	-----	84.25	81.28	-----	81.03	80.93	83.60	88.65	92.27	91.15	-----
25	-----	83.05	82.50	81.71	80.76	81.39	80.72	-----	89.24	91.36	90.95	-----
Eom	-----	84.56	-----	81.53	80.94	80.58	e81.50	85.45	90.16	90.64	90.70	-----

e Estimated

Linn County--Continued

415725N0914104.1. Local number 83-7-32acdc1. Floyd Felter. 22nd Ave. SW. and 11th St. SW., Cedar Rapids. Drilled unused artesian well in limestone of Silurian age, diam 5 in, depth 282 ft, cased. Lsd 805 ft above msl. MP plug in well cover, at lsd. Highest water level 75.88 below lsd, Jan. 26, 1942; lowest 107.00 below lsd, Sept. 16, 1976. Records available: 1940 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 23, 1979	99.92	Mar. 21, 1980	100.22	June 20, 1980	101.53	Aug. 14, 1980	103.26
Dec. 18	101.70	Apr. 22	100.22	July 18	104.73	Sept. 17	101.64
Feb. 21, 1980	100.42	May 21	101.15				

420526N0913707.1. Local number 84-7-13bcbb1. U.S. Geol. Survey. Drilled observation water-table well in glacial drift, diam 1 1/4 in. depth 17 ft, screened 15-17. Lsd 882 ft above msl. MP top of casing, 0.75 ft above lsd. Highest water level 1.11 below lsd, Mar. 29, 1960; lowest 12.90 below lsd, Dec. 3, 1956. Records available: 1940 to current year.

Oct. 23, 1979	5.35	Jan. 21, 1980	4.16	Apr. 22, 1980	3.66	July 18, 1980	5.94
Nov. 20	6.66	Feb. 21	4.31	May 21	4.99	Aug. 14	5.15
Dec. 18	6.64	Mar. 21	4.15	June 20	4.80	Sept. 17	3.54

Lyon County

432140N0955953.1. Local number 99-44-26dddd1. State of Iowa. Drilled unused water-table well in glacial drift diam 20 in, depth 38 ft, lined with tile. Lsd 1,400 ft above msl. MP plug in well cover, 2.01 ft above lsd, Highest water level 0.09 below lsd, Mar. 2, 1973; lowest 9.74 below lsd, Oct. 24, 1940. Records available: 1940-43, 1947 to current year.

Oct. 2, 1979	1.65	Feb. 6, 1980	1.71	Apr. 24, 1980	0.86	July 31, 1980	3.35

432553N0961055.1. Local number 99-45-5abac1. City of Rock Rapids. Drilled unused artesian well in Dakota sandstone of Early Cretaceous age, diam 10 in, depth 375 ft, cased to 296. Lsd 1,375 ft above msl. MP plug in cover over casing, 1.00 ft above lsd. Highest water level 100.08 below lsd, July 27, 1964; lowest 113.90 below lsd, Sept. 25, 1980. Records available: 1960 to current year.

Oct. 2, 1979	112.79	Jan. 14, 1980	112.89	Apr. 24, 1980	113.17	Sept. 25, 1980	113.97
Nov. 14,	112.89	Feb. 6,	113.13	June 9,	113.25		
Dec. 4,	112.95	Mar. 13,	113.01	June 26	113.38		

Madison County

411727N0934830.1. Local number 75-26-23aaac1. Town of St. Charles, No. 1. Drilled unused artesian well in limestone of Mississippian age, diam 10 in, depth 1,058 ft, cased 0-657. Lsd 1,067 ft above msl. MP plug in well over, 1.20 ft above lsd (since Jan. 1, 1971). Highest water level 261.62 below lsd, Nov. 20, 1962; lowest 269.53 below lsd, July 31, 1980. Records available: 1962 to current year. Records prior to April 1970 are from recording gage; subsequent records are periodic tape measurements.

Jan. 14, 1980	269.32	Apr. 29, 1980	269.36	July 31, 1980	269.53

Marion County

411323N0931426.1. Local number 74-21-11dbcc2. Town of Melcher. Drilled unused water-table well in glacial drift, diam 18 in, depth 25 ft, lined with tile. Lsd 948 ft above msl. MP top of well cover, 0.75 ft above lsd (since June 21, 1976). Highest water level 0.12 below lsd, Apr. 24, 1976; lowest 16.27 below lsd, Oct. 22, 1953. Records available: 1950 to current year.

Oct. 12, 1979	6.41	Jan. 21, 1980	5.08	Apr. 22, 1980	4.65	Aug. 9, 1980	6.21
24	5.77	Feb. 10	4.97	May 9	5.44	23	5.91
Nov. 10	6.83	20	3.74	27	6.05	Sept. 11	5.82
21	8.13	Mar. 10	5.25	June 10	5.15	26	5.80
Dec. 10	5.58	20	5.30	July 10	5.24		
Jan. 10, 1980	5.97	Apr. 10	5.40	25	5.97		

Marshall County

420355N0925347.1. Local number 84-18-24cdca1. City of Marshalltown. Drilled unused artesian well in glacial sand and gravel of Pleistocene age, diam 8 in, depth 200 ft, cased to 190, screened 190-200. Lsd 871 ft above msl. MP top of casing, at lsd. Highest water level 4.92 below lsd, July 13, 1951; lowest 54.54 below lsd, Aug. 19, 1980. Records available: 1949 to current year.

Jan. 14, 1980	49.60	May 6, 1980	51.24	Aug. 19, 1980	54.54		

Montgomery County

405835N0950129.1. Local number 71-36-6dad1. State of Iowa. Drilled observation water-table well in glacial drift, diam 1 1/4 in, depth 38 ft, screened 36-38. Lsd 1,081 ft above msl. MP top of casing, 3.02 ft above lsd. Highest water level 2.52 below lsd, May 31, 1951; lowest 30.99 below lsd, Apr. 26, 1950. Records available: 1950 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 26, 1979	14.91	Feb. 21, 1980	15.22	Aug. 10, 1980	14.73	Sept. 24, 1980	14.98
Nov. 20,	14.99	Mar. 20,	15.06	Aug. 18,	14.99	Sept. 30,	15.02
Dec. 13,	15.03	Apr. 29,	14.61	Sept. 3,	14.90		
Jan. 25, 1980	15.14	July 14,	14.01	Sept. 17,	14.94		

Muscatine County

412120N0910804.4. Local number 76-2-30cbaa1. U.S. Geol. Survey. Drilled observation water-table well in alluvial sand and gravel, diam 6 in, depth 27 ft, screened 24-27. Lsd 546 ft above msl. MP base of recorder shelter above lsd. Highest water level 8.51 below lsd, May 16, 1973; lowest 15.39 below lsd, Aug. 10, 1980. Records available: 1966 to current year.

Water level at noon, from recorder graph, water year October 1 to September 30
1979-80

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	14.57	14.76	14.92	14.94	14.77	14.80	14.93	14.77	15.00	e15.03	15.33	14.77
10	14.61	14.80	14.93	14.92	14.76	14.83	14.93	14.78	15.01	15.06	15.39	14.60
15	14.64	14.84	14.94	14.89	14.74	14.87	14.94	14.79	15.04	15.10	15.34	14.49
20	14.67	14.87	14.95	14.85	14.75	14.89	14.93	14.92	14.93	15.21	15.02	14.41
25	14.70	14.88	14.95	14.81	14.75	14.89	14.88	14.93	14.90	15.23	14.84	14.36
Eom	14.71	14.91	14.95	14.79	14.77	14.90	14.81	15.00	15.03	15.29	14.83	14.35

e Estimated

Page County

404257N0951512.1. Local number 68-38-7ccal. William Brayman. Drilled unused water-table well in glacial drift, diam 12 in, depth 44 ft, lined with tile. Lsd 1,087 ft above msl. MP top of 3/4-in pipe inserted through board cover, 1.50 ft above lsd. Highest water level 1.44 below lsd, June 23, 1947; lowest 20.96 below lsd, Nov. 24, 1958. Records available: 1934 to current year.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 25, 1979	13.46	June 26, 1980	12.89	July 28, 1980	13.61	Sept. 10, 1980	11.78

Sac County

423013N0951753.1. Local number 89-38-26abaa1. City of Schaller. Drilled public-emergency-supply artesian well in Dakota Sandstone of Early Cretaceous age, diam 10 to 8 in, depth 352 ft, cased to 352, perforated 304-352. Lsd 1,376 ft above msl. MP edge of pump breather pipe, 1.80 ft above lsd. Highest water level 210.04 below lsd, Mar. 25, 1948; lowest 240.10 below lsd, May 24, 1977. Records available: 1940 to current year.

Nov. 28, 1979	230.30	Feb. 27, 1980	230.40	May 7, 1980	234.41	July 30, 1980	230.99

Webster County

421837N0940836.1. Local number 87-28-29cccd1. Ransom Helms. Drilled unused water-table well in glacial drift, diam 12 in, depth 42 ft, lined with tile. Lsd 1,165 ft above msl. MP top of platform, 4.10 ft above lsd. Highest water level 0.05 below lsd, Aug. 1, 1972; lowest 13.62 below lsd, Mar. 12, 1956. Records available: 1942 to current year.

Oct. 22, 1979	4.51	Jan. 18, 1980	3.53	Apr. 21, 1980	3.78	July 21, 1980	4.83
Nov. 20	3.73	Feb. 21	4.96	May 19	4.09	Aug. 20	2.49
Dec. 21	3.48	Mar. 21	4.30	June 20	3.80	Sept. 22	4.35

423013N0942147.1. Local number 89-30-22ddaa1. Johnson Township Consolidated School, Barnum. Drilled unused artesian well in sandstone of Cretaceous age, diam 4 in, reported depth 208 ft, cased to bottom, perforated 203-208, measured depth 203 ft. Lsd 1,174 ft above msl. MP top of casing, 6.40 ft below lsd. Highest water level 30.86 below lsd, July 2, 1945; lowest 52.60 below lsd, Feb. 26, 1980. Records available: 1942-45, 1947 to current year.

Nov. 20, 1979	42.66	Feb. 26, 1980	52.60	May 16, 1980	45.50	July 28, 1980	45.85

New MP top of casing, 1.03 ft above lsd, July 1980.

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FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI). This report contains both the inch-pound and SI unit equivalents in the station manuscript descriptions.

Multiply inch-pound units	By	To obtain SI units
	Length	
inches (in)	2.54×10^{1}	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^{0}	kilometers (km)
	Area	
acres	4.047×10^{3}	square meters (m^2)
	4.047×10^{-1}	square hectometers (hm^2)
	4.047×10^{-3}	square kilometers (km^2)
square miles (mi^2)	2.590×10^{0}	square kilometers (km^2)
	Volume	
gallons (gal)	3.785×10^{0}	liters (L)
	3.785×10^{0}	cubic decimeters (dm^3)
	3.785×10^{-3}	cubic meters (m^3)
million gallons	3.785×10^{3}	cubic meters (m^3)
	3.785×10^{-3}	cubic hectometers (hm^3)
cubic feet (ft^3)	2.832×10^{1}	cubic decimeters (dm^3)
	2.832×10^{-2}	cubic meters (m^3)
cfs-days	2.447×10^{3}	cubic meters (m^3)
	2.447×10^{-3}	cubic hectometers (hm^3)
acre-feet (acre-ft)	1.233×10^{3}	cubic meters (m^3)
	1.233×10^{-3}	cubic hectometers (hm^3)
	1.233×10^{-6}	cubic kilometers (km^3)
	Flow	
cubic feet per second (ft^3/s)	2.832×10^{1}	liters per second (L/s)
	2.832×10^{1}	cubic decimeters per second (dm^3/s)
	2.832×10^{-2}	cubic meters per second (m^3/s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm^3/s)
	6.309×10^{-5}	cubic meters per second (m^3/s)
million gallons per day	4.381×10^{1}	cubic decimeters per second (dm^3/s)
	4.381×10^{-2}	cubic meters per second (m^3/s)
	Mass	
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons

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