

Water Resources Data for Iowa Water Year 1977



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT IA-77-1

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

CALENDAR FOR WATER YEAR 1977

1976

OCTOBER

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Water Resources Data for Iowa

Water Year 1977



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT IA-77-1

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

UNITED STATES DEPARTMENT OF THE INTERIOR

CECIL D. ANDRUS, Secretary

GEOLOGICAL SURVEY

H. William Menard, 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 52240**

1978

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 S. W. Wiitala, 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 J. S. Cragwall, Jr., Chief Hydrologist, U.S. Geological Survey, and G. W. Whetstone, Assistant Chief Hydrologist for Scientific Publications and Data Management.

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CONTENTS

| | Page |
|---|------|
| Preface..... | III |
| List of gaging stations, in downstream order, for which records are published..... | VII |
| Introduction..... | 1 |
| Cooperation..... | 2 |
| Acknowledgments..... | 3 |
| Hydrologic conditions..... | 3 |
| Definition of terms..... | 3 |
| Downstream order and station numbers..... | 14 |
| Numbering system for wells..... | 14 |
| Special networks and programs..... | 16 |
| Explanation of stage and water-discharge records | |
| Collection and computation of data..... | 16 |
| Accuracy of data..... | 21 |
| Other data available..... | 22 |
| Records of discharge collected by agencies other than the Geological Survey..... | 22 |
| Explanation of water-quality records | |
| Collection and examination of data..... | 22 |
| Water analysis..... | 23 |
| Water temperatures..... | 23 |
| Sediment..... | 24 |
| Explanation of ground-water level records..... | 24 |
| Collection of the data..... | 24 |
| Publications on techniques of water-resources investigations. | 25 |
| Discontinued gaging stations..... | 33 |
| Discontinued water-quality stations..... | 34 |
| Gaging station records..... | 35 |
| Discharge at partial-record stations and miscellaneous sites..... | 216 |
| Low-flow partial-record stations..... | 216 |
| Crest-stage partial-record stations..... | 228 |
| Miscellaneous sites..... | 237 |
| Seepage investigations..... | 238 |
| Analyses of samples collected at water-quality partial-record stations..... | 240 |
| Ground-water records..... | 252 |
| Ground-water level records..... | 252 |
| Index..... | 257 |

| | Page |
|--|------|
| ILLUSTRATIONS | |
| ----- | |
| Figure 1. Latitude-longitude well number..... | 15 |
| Figure 2. Local well numbering system for well 96-20-3cdbd1..... | 15 |
| Figure 3. Runoff during 1977 water year compared with mean runoff for period 1941-70 for three representative gaging stations..... | 29 |
| Figure 4. Location of continuous-record gaging stations in Iowa..... | 30 |
| Figure 5. Location of water-quality stations in Iowa..... | 31 |
| Figure 6. Location of observation wells in Iowa..... | 32 |

GAGING STATIONS, IN DOWNSTREAM ORDER,
FOR WHICH RECORDS ARE PUBLISHED

VII

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

| | Page |
|--|------|
| <u>UPPER MISSISSIPPI RIVER BASIN</u> | |
| Mississippi River: | |
| UPPER IOWA RIVER BASIN | |
| Upper Iowa River at Decorah (dt)..... | 35 |
| Upper Iowa River near Dorchester (dcts)..... | 38 |
| Mississippi River at McGregor (dcts)..... | 42 |
| TURKEY RIVER BASIN | |
| Turkey River at Garber (d)..... | 46 |
| LITTLE MAQUOKETA RIVER BASIN | |
| Little Maquoketa River near Durango (d)..... | 47 |
| MAQUOKETA RIVER BASIN | |
| Maquoketa River near Maquoketa (d)..... | 48 |
| Mississippi River at Clinton (dcbmts)..... | 49 |
| WAPSIPINICON RIVER BASIN | |
| Wapsipinicon River near Elma (d)..... | 54 |
| Wapsipinicon River at Independence (d)..... | 55 |
| Wapsipinicon River near De Witt (d)..... | 56 |
| PINE CREEK BASIN | |
| Pine Creek near Muscatine (d)..... | 57 |
| IOWA RIVER BASIN | |
| Iowa River at Marshalltown (d)..... | 58 |
| Timber Creek near Marshalltown (d)..... | 59 |
| Richland Creek near Haven (d)..... | 60 |
| Salt Creek near Elberon (d)..... | 61 |
| Walnut Creek near Hartwick (d)..... | 62 |
| Big Bear Creek at Ladora (d)..... | 63 |
| Iowa River at Marengo (d)..... | 64 |
| Coralville Lake near Coralville (d)..... | 65 |
| Iowa River: | |
| Rapid Creek near Iowa City (d)..... | 66 |
| Clear Creek near Coralville (d)..... | 67 |
| Iowa River at Iowa City (dcts)..... | 68 |
| Ralston Creek at Iowa City (dcts)..... | 72 |
| South Branch Ralston Creek at Iowa City (d)..... | 76 |
| English River at Kalona (d)..... | 77 |
| Iowa River near Lone Tree (d)..... | 78 |
| Cedar River at Charles City (d)..... | 79 |
| Little Cedar River near Ionia (d)..... | 80 |

VIII GAGING STATIONS, IN DOWNSTREAM ORDER--Continued

UPPER MISSISSIPPI RIVER BASIN--Continued

| | |
|--|------|
| IOWA RIVER BASIN--Continued | Page |
| Cedar River at Janesville (d)..... | 81 |
| West Fork Cedar River at Finchford (d)..... | 82 |
| Shell Rock River near Northwood (d)..... | 83 |
| Winnebago River at Mason City (d)..... | 84 |
| Willow Creek: | |
| Clear Creek: | |
| Clear Lake at Clear Lake (d)..... | 85 |
| Cedar River: | |
| Shell Rock River at Shell Rock (d)..... | 86 |
| Beaver Creek at New Hartford (d)..... | 87 |
| Cedar River at Cedar Falls (cmt)..... | 88 |
| Black Hawk Creek at Hudson (d)..... | 90 |
| Cedar River at Waterloo (d)..... | 91 |
| Cedar River at Gilbertville (cmt)..... | 92 |
| Fourmile Creek near Lincoln (d)..... | 94 |
| Half Mile Creek near Gladbrook (d)..... | 95 |
| Fourmile Creek near Traer (d)..... | 96 |
| Cedar River near Palo (cmt)..... | 97 |
| Cedar River at Cedar Rapids (d)..... | 99 |
| Prairie Creek at Fairfax (d)..... | 100 |
| Cedar River near Bertram (cmt)..... | 101 |
| Cedar River near Conesville (d)..... | 103 |
| Iowa River at Wapello (d)..... | 104 |
| SKUNK RIVER BASIN | |
| South Skunk River (head of Skunk River) near Ames (d)..... | 105 |
| Squaw Creek at Ames (d)..... | 106 |
| South Skunk River below Squaw Creek near Ames (d)..... | 107 |
| South Skunk River near Oskaloosa (d)..... | 108 |
| North Skunk River near Sigourney (d)..... | 109 |
| Big Creek near Mount Pleasant (d)..... | 110 |
| Skunk River at Augusta (dcts)..... | 111 |
| Mississippi River at Keokuk (dcbmts)..... | 115 |
| DES MOINES RIVER BASIN | |
| Des Moines River at Estherville (d)..... | 120 |
| Des Moines River at Humboldt (d)..... | 121 |
| East Fork Des Moines River at Dakota City (d)..... | 122 |
| Lizard Creek near Clare (d)..... | 123 |
| Des Moines River at Fort Dodge (d)..... | 124 |
| Boone River near Webster City (d)..... | 125 |
| Des Moines River near Stratford (d)..... | 126 |
| Saylorville Lake near Saylorville (d)..... | 127 |
| Des Moines River near Saylorville (dcmts)..... | 128 |
| Beaver Creek near Grimes (d)..... | 134 |
| North Raccoon River (head of Raccoon River): | |
| Cedar Creek: | |
| Big Cedar Creek near Varina (d)..... | 135 |
| North Raccoon River near Sac City (d)..... | 136 |

UPPER MISSISSIPPI RIVER BASIN--Continued

| | Page |
|---|------|
| DES MOINES RIVER BASIN--Continued | |
| North Raccoon River near Jefferson (d)..... | 137 |
| Hardin Creek: | |
| East Fork Hardin Creek near Churdan (d)..... | 138 |
| South Raccoon River: | |
| Middle Raccoon River at Panora (d)..... | 139 |
| South Raccoon River at Redfield (d)..... | 140 |
| Raccoon River at Van Meter (dcmt)..... | 141 |
| Walnut Creek at Des Moines (d)..... | 144 |
| Des Moines River below Raccoon River at Des Moines (d)..... | 145 |
| Des Moines River below Des Moines (cmt)..... | 146 |
| Fourmile Creek at Des Moines (d)..... | 148 |
| North River near Norwalk (d)..... | 149 |
| Middle River near Indianola (d)..... | 150 |
| South River near Ackworth (d)..... | 151 |
| White Breast Creek near Dallas (d)..... | 152 |
| Lake Red Rock near Pella (d)..... | 153 |
| Des Moines River near Tracy (d)..... | 154 |
| Cedar Creek near Bussey (d)..... | 155 |
| Muchakinock Creek near Eddyville (d)..... | 156 |
| Des Moines River at Ottumwa (d)..... | 158 |
| Des Moines River at Keosauqua (d)..... | 159 |
| <u>MISSOURI RIVER BASIN</u> | |
| Missouri River: | |
| BIG SIOUX RIVER BASIN | |
| Big Sioux River: | |
| Rock River near Rock Valley (d)..... | 160 |
| Big Sioux River at Akron (d)..... | 161 |
| Missouri River at Sioux City (dcbmts)..... | 162 |
| FLOYD RIVER BASIN | |
| Floyd River at Alton (d)..... | 170 |
| West Branch Floyd River near Struble (d)..... | 171 |
| Floyd River at James (d)..... | 172 |
| Missouri River at Decatur (cmt)..... | 173 |
| MONONA-HARRISON DITCH BASIN | |
| West Fork ditch (head of Monona-Harrison ditch) | |
| at Hornick (d)..... | 175 |
| Monona-Harrison ditch near Turin (d)..... | 176 |
| LITTLE SIOUX RIVER BASIN | |
| Little Sioux River at Linn Grove (d)..... | 177 |
| Little Sioux River at Correctionville (d)..... | 178 |
| Maple River at Mapleton (d)..... | 179 |
| Little Sioux River near Turin (d)..... | 180 |
| SOLDIER RIVER BASIN | |
| Soldier River at Pisgah (d)..... | 181 |

MISSOURI RIVER BASIN--Continued

| | Page |
|---|------|
| BOYER RIVER BASIN | |
| Boyer River at Logan (d)..... | 182 |
| Missouri River at Omaha, Nebraska (dcts)..... | 183 |
| MOSQUITO CREEK BASIN | |
| Mosquito Creek near Earling (d)..... | 184 |
| Missouri River at Nebraska City, Nebraska (dcbmts)..... | 185 |
| NISHNABOTNA RIVER BASIN | |
| West Nishnabotna River (head of Nishnabotna River) at Hancock (d)..... | 193 |
| West Nishnabotna River at Randolph (d)..... | 194 |
| East Nishnabotna River near Atlantic (d)..... | 195 |
| East Nishnabotna River at Red Oak (d)..... | 196 |
| Nishnabotna River above Hamburg (d)..... | 197 |
| TARKIO RIVER BASIN | |
| Tarkio River at Stanton (d)..... | 198 |
| Missouri River at Rulo, Nebraska (d)..... | 199 |
| NODAWAY RIVER BASIN | |
| Nodaway River at Clarinda (dcts)..... | 200 |
| PLATTE RIVER BASIN (Iowa-Missouri) | |
| Platte River near Diagonal (d)..... | 205 |
| One Hundred and Two River: | |
| East Fork One Hundred and Two River near Bedford (d)... | 206 |
| GRAND RIVER BASIN | |
| Grand River: | |
| Thompson River: | |
| Elk Creek near Decatur City (dcmts)..... | 207 |
| Thompson River at Davis City (d)..... | 210 |
| Weldon River near Leon (d)..... | 211 |
| CHARITON RIVER BASIN | |
| Chariton River near Chariton (d)..... | 212 |
| South Fork Chariton River near Promise City (d)..... | 213 |
| Rathbun Lake near Rathbun (d)..... | 214 |
| Chariton River near Rathbun (d)..... | 215 |

WATER RESOURCES DATA FOR IOWA, 1977

INTRODUCTION

Water resources data for the 1977 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 wells. This report contains discharge records for 111 gaging stations; stage or contents for 5 lakes and reservoirs; water quality for 21 gaging stations, and water levels for 34 observation wells. Also included are data for 125 crest-stage partial-record stations and 202 low-flow 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. 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 (or 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 water year 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 1974, streamflow data were released by the Geological Survey in annual reports on a State-boundary basis. Water-quality records for water years 1964 through 1974 were similarly released either in separate reports or in conjunction with streamflow records. Beginning with the 1975 water year, water data for streamflow, water quality, and ground water are published as an official Survey report 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-76-1." Water-Data reports are for sale by the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia, 22161.

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, Stanley C. Grant, 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 Energy and Minerals Resources Research Institute, James E. Gulliford, Ass't Division Chief.

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

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 seven 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, Iowa City, Marshalltown, Sioux City, and Waterloo.

Organizations that supplied data are acknowledged in station descriptions.

ACKNOWLEDGMENT

Iowa district personnel who contributed significantly to the collection and preparation of the data in this report were: I. L. Burmeister, chief, data section, assisted by O. J. Ramsvick, F. E. Lindstrom, W. J. Matthes, and S. A. Dvorak.

HYDROLOGIC CONDITIONS

Annual runoff for the 1977 water year generally varied from 1/2 inch in the northwestern part of the state to 3 inches in the eastern part. Amounts of 4 to 6 inches occurred on tributary streams in the extreme Southwest and in the Iowa River basin downstream from Marshalltown. Normal runoff is 2 inches in the Northwest to 8 inches in the Southwest.

The water year began with extreme low-flow conditions continuing from the summer of 1976. Below normal precipitation for the period June 1976 to August 1977 caused deficient streamflow during almost all of this period. Emergency operation of releases from the Coralville and Red Rock Reservoirs in February, June and July was implemented to conserve storage and prolong the availability of the minimum needs for water users. Fortunately, after 16 consecutive months of deficient streamflow at the index station on the Des Moines River at Ft. Dodge, 13 months on the Cedar River at Cedar Rapids, and 7 months on the Nishnabotna River above Hamburg, heavy thunderstorms occurred throughout the state in August. Many rural areas experienced flooding which caused additional losses to drought-stricken crops. The water year ended with excessive streamflow in the Southwest, deficient in the North Central, and normal elsewhere. See figure 3 for comparative runoff values of the three representative gaging stations.

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 \pm 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 \pm 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 \pm 1.0°C on M-enterococcus 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 (FT³/S, ft³/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 distribution 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 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 otherwise 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 interchangeably 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 ($\mu\text{g/g}$) 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 ($\mu\text{g/L}$, $\mu\text{g/l}$) 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.

Organism is any living entity, such as an insect, phytoplankter, 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 (m²), 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 Subcommittee 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.

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).

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.

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 chlorinated 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 measuring 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 ($\text{mg C}/(\text{m}^2 \cdot \text{time})$ for periphyton and macrophytes and $\text{mg C}/(\text{m}^3 \cdot \text{time})$ 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 ($\text{mg O}_2/\text{m}^2 \cdot \text{time}$) for periphyton and macrophytes and $\text{mg O}_2/(\text{m}^3 \cdot \text{time})$ 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 sediment 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 emerged 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 hierarchical 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 individual 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 acre-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.

Latitude and longitude coordinates for wells:
 1 414315N 0912520.1
 2 414315N 0912520.2
 3 414316N 0912519.1

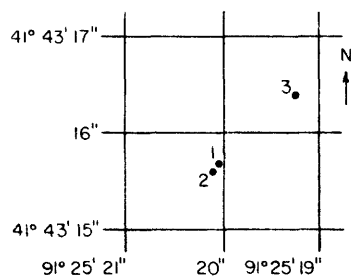


Figure 1. Latitude-longitude well number.

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 96-20-3cddb1 designates the well in the SE1/4 NW1/4 SE1/4 SW1/4 sec.3, T.96 N., R.20 W.

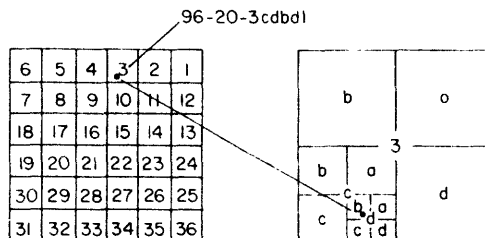


Figure 2. Local well numbering system for well 96-20-3cddb1.

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 above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." In references to datum of gage, the phrase "mean sea level" denotes "Sea Level Datum of 1929" as used by the Topographic Division of the Geological Survey unless otherwise qualified.

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 in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is 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 1976 at 58 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 a following 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-quality 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 state 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 different 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 precise 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 the well description. The height of the measuring point (MP) above or below land-surface datum 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 a depth to water of several hundred feet, the error of determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining 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 reported 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-two 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, 604

South Picket Street, Alexandria, VA 22304 (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 measurement, and data presentation, by H. H. Stevens Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 p. \$1.60.
- 2-D1. Application of surface geophysics to ground-water investigations, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages. \$1.90.
- 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. \$1.75.
- 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. \$0.25.
- 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. \$0.20.
- 3-A3. Measurement of peak discharge at culverts by indirect methods, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages. \$0.40.
- 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. \$1.00.
- 3-A5. Measurement of peak discharge at dams by indirect methods, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages. \$0.30.
- 3-A6. General procedure for gaging streams, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3. Chapter A6, 1968, 13 pages. \$0.20.
- 3-A7. Stage measurements at gaging stations, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages. \$0.45.
- 3-A8. Discharge measurements at gaging stations, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages. \$1.25.

- 3-A11. Measurement of discharge by moving-boat method, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages. \$0.40.
- 3-A12. Fluorometric procedures for dye tracing, by J. F. Wilson Jr.: USGS--TWRI Book 3, Chapter A12. 1968. 31 pages. \$1.35. Not currently available.
- 3-B1. Aquifer-test design, observation, and data analysis, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages \$0.70.
- 3-B2. Introduction to ground-water hydraulics-a programed text for self-instruction, by D. S. 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. \$0.65.
- 3-C2. Field methods for measurement of fluvial sediment, by H. P. Guy and W. W. Norman: USGS--TWRI Book 3, Chapter C2, 1970. 59 pages \$0.70.
- 3-C3. Computation of fluvial-sediment discharge, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages. \$1.15.
- 4-A1. Some statistical tools in hydrology, by H. C. Riggs: USGS--TWRI Book 4 Chapter A1. 1968. 39 pages. \$0.30.
- 4-A2. Frequency curves, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages. \$0.20.
- 4-B1. Low-flow investigations, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972, 18 pages. \$0.65.
- 4-B2. Storage analyses for water supply, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages. \$0.75.
- 4-B3. Regional analyses of streamflow characteristics, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages. \$0.75.
- 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. \$0.65.
- 5-A1. Methods for collection and analysis of water samples for dissolved minerals and gases, by Eugene Brown, M. W. Skougstad, and M. J. Fishman: USGS--TWRI Book 5, Chapter A1. 1970. 160 gages. \$2.40.

- 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. \$0.80.
- 5-A3. Methods for analysis of organic substances in water, by D. F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 pages. \$0.90.
- 5-A4. Methods for collection and analysis of aquatic biological and microbiological samples, by K. V. Slack, R. C. Averett, P. E. Greeson, and R. G. Lipscomb: USGS--TWRI Book 5, Chapter A4. 1973. 165 pages. \$1.95.
- 5-C1. Laboratory theory and methods for sediment analysis, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages. \$0.65.
- 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.
- 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. \$0.70.
- 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. \$0.40.

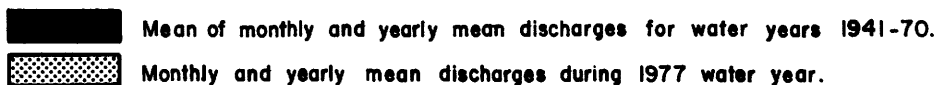
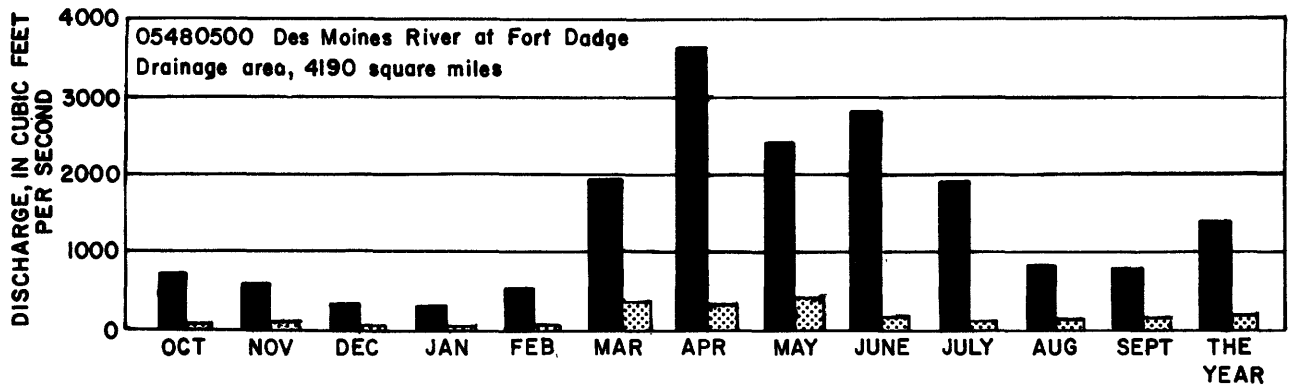
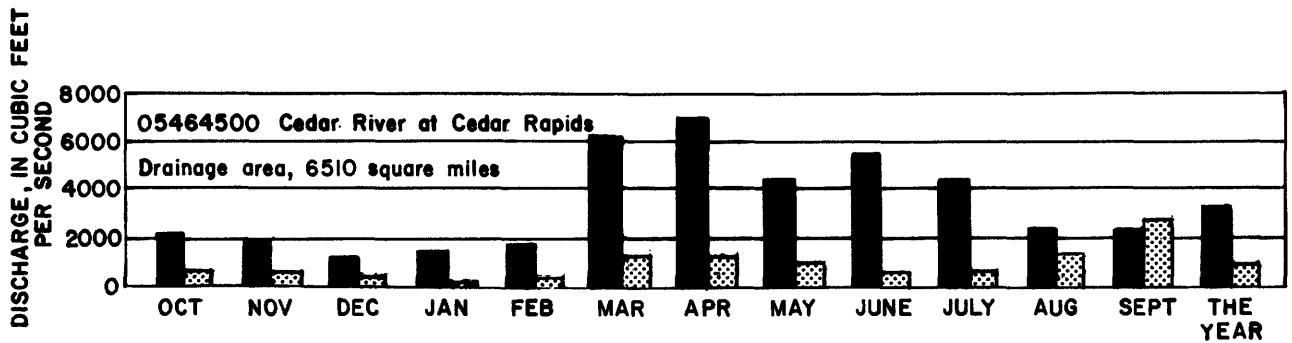
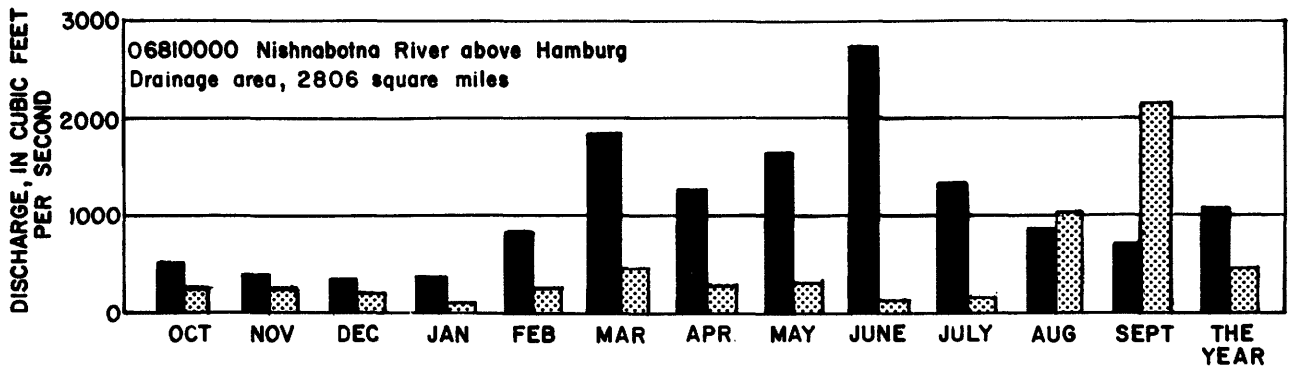


FIGURE 3.--RUNOFF DURING 1977 WATER YEAR COMPARED WITH MEAN RUNOFF FOR PERIOD 1941-70 FOR THREE REPRESENTATIVE GAGING STATIONS

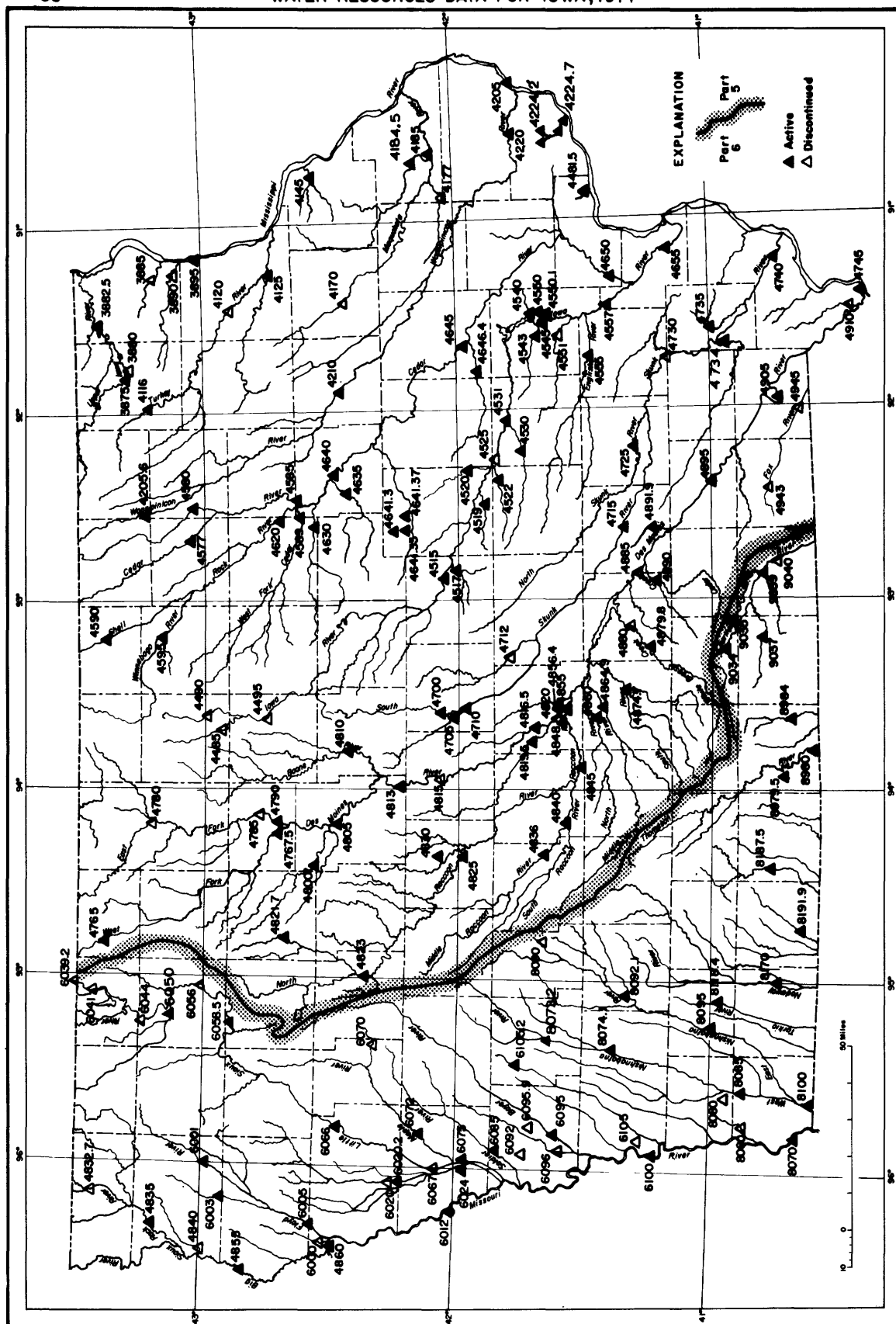


Figure 1.-- Map of Iowa showing location of continuous-record gaging stations.

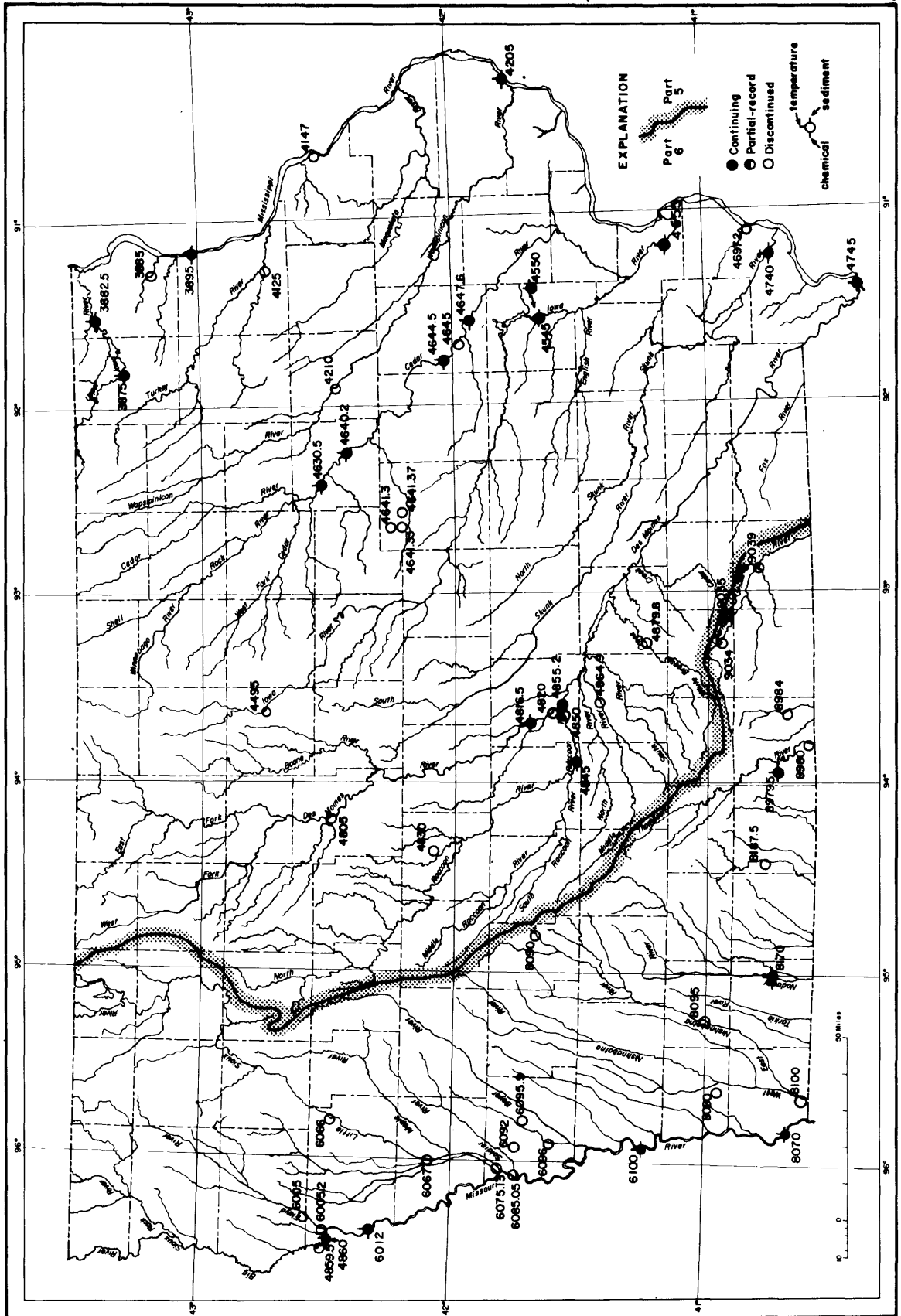


Figure 2.--Map of Iowa showing location of water-quality stations.

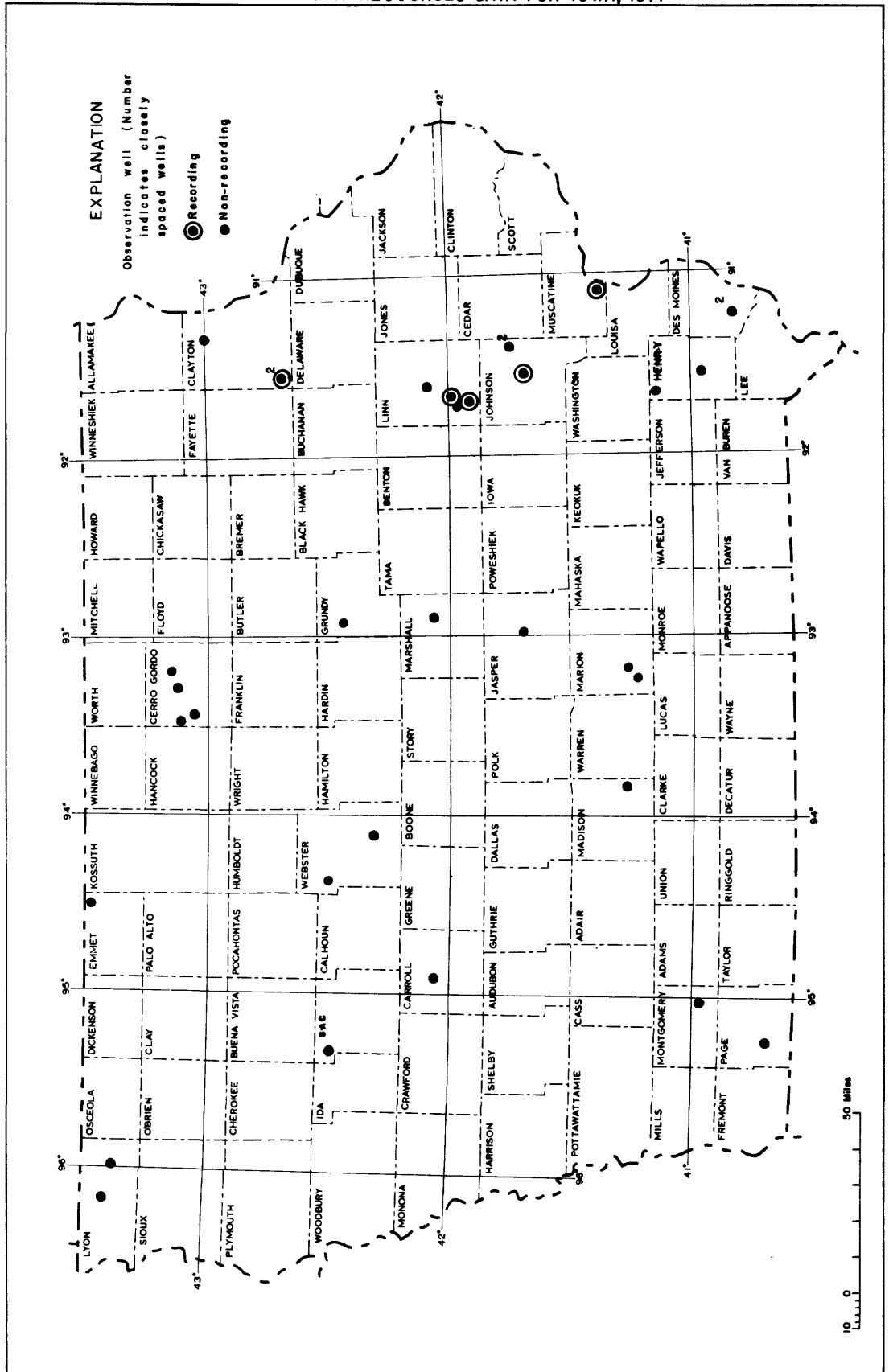


Figure 6---Location of observation wells in Iowa.

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. |
| East Branch Iowa River near Klemme, Iowa. | 05449000 | 133 | 1948-76. |
| 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 | 1933-52. |
| 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. |
| 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. |
| East Fork Des Moines River near Burt, Iowa. | 05478000 | 146 | 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 | 1920-58. |
| 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. |
| 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. |
| Millford Creek at Millford, 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. |
| Waubensie Creek near Bartlett, Iowa. | 06806000 | 30.4 | 1946-69. |
| West Nishnabotha River at (near) White Cloud, Iowa. | 06807500 | 967 | 1918-24. |
| Mule Creek near Malvern, Iowa. | 06808000 | 10.6 | 1954-69. |
| Davids Creek near Hamlin, Iowa. | 06809000 | 26.0 | 1952-73. |
| Tarkio River (East Tarkio Creek) at Blanchard, Iowa. | 06812000 | 200 | 1934-40. |
| West Modaway 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. |

WATER RESOURCES DATA FOR IOWA, 1977

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 |
| 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 at Cedar Rapids, Iowa. | 05464500 | 6,640 | Chem. * | 1906-07; 1944-54 |
| | | | Temp. * | 1944-54 |
| | | | Sed. | 1943-54 |
| | | | Chem. | 1969-73 |
| Mississippi River at Burlington, Iowa. | 05469720 | 4,000 | | |
| | 11 | 4,190 | Chem. | 1972-73 |
| Des Moines River at Fort Dodge, Iowa. | 05480500 | 6,245 | Chem. | 1954-55 |
| Des Moines River at Des Moines, Iowa. | 05482000 | | 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 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. | 05487900 | 342 | Chem. | 1968-73 |
| | | | Temp. | 1967-73 |
| | | | Sed. | 1967-73 |
| Big Sioux River at Sioux City, Iowa. | 05485950 | 9,410 | Chem. | 1969-73 |
| Floyd River at James, Iowa. | 05600500 | 882 | Temp. | 1968-73 |
| | | | Sed. | 1968-73 |
| Floyd River at Sioux City, Iowa. | 05600520 | 921 | Chem. | 1969-73 |
| Little Sioux River at Correctionville, Iowa. | 05606600 | 2,500 | Chem. * | 1954-55 |
| | | | Temp. * | 1951-62 |
| | | | Sed. | 1950-62 |
| Little Sioux River near Kennebec, Iowa. | 05606700 | 2,738 | Temp. | 1950-55 |
| | | | Sed. | 1950-57 |
| Little Sioux River at River Sioux, Iowa. | 05607513 | 3,600 | Chem. | 1969-73 |
| Soldier River near Mondamin, Iowa. | 05608505 | 440 | Chem. | 1970-73 |
| Steer Creek near Magnolia, Iowa. | 05609200 | 9.26 | Temp. | 1963-69 |
| | | | Sed. | 1963-69 |
| Thompson Creek near Woodbine, Iowa. | 05609590 | 6.97 | Temp. | 1963-69 |
| | | | Sed. | 1963-69 |
| Willow Creek near Logan, Iowa. | 05609600 | 129 | Chem. | 1972-75 |
| | | | Temp. | 1972-75 |
| | | | Sed. | 1971-75 |
| Mule Creek near Malvern, Iowa. | 05808000 | 10.6 | Temp. | 1958-69 |
| | | | Sed. | 1954-69 |
| Davids Creek near Hamlin, Iowa. | 05809000 | 26.0 | Temp. * | 1952-53; 1965-68 |
| | | | Sed. * | 1952-68 |
| East Nishnabotna River at Red Oak, Iowa. | 05809500 | 894 | Temp. | 1962-73 |
| | | | Sed. | 1962-73 |
| Nishnabotna River above Hamburg, Iowa. | 05810000 | 2,806 | Chem. * | 1969-70 |
| Platte River near Diagonal, Iowa. | 05818750 | 217 | Chem. | 1969-73 |
| Thompson River at Davis City, Iowa. | 05898000 | 701 | Chem. | 1967-73 |
| | | | Temp. | 1968-73 |
| | | | Sed. | 1968-73 |
| Weldon River near Leon, Iowa. | 05898400 | 104 | Chem. | 1968-73 |
| Chariton River near Chariton, Iowa. | 05903400 | 182 | Temp. | 1969-73 |
| | | | Sed. | 1969-73 |
| Honey Creek near Russell, Iowa. | 05903500 | 13.2 | Sed. | 1952-62 |
| Chariton River near Rathbun, Iowa. | 05903900 | 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) above mean sea level.

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

AVERAGE DISCHARGE.--26 years, 297 ft³/s (8.411 m³/s), 7.89 in/yr (200 mm/yr), 215,200 acre-ft/yr (265 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.--Maximum discharge, 2,010 ft³/s (56.9 m³/s) Feb. 24, gage height, 6.31 ft (1.923 m), no peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 38 ft³/s (1.08 m³/s) Jan. 20.

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

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-------------|-------|-------|----------|----------|--------|----------|---------|--------------|------|------|------|------|
| 1 | 63 | 92 | 74 | 49 | 57 | 805 | 132 | 92 | 119 | 57 | 55 | 87 |
| 2 | 63 | 84 | 78 | 50 | 56 | 763 | 151 | 89 | 107 | 53 | 55 | 87 |
| 3 | 63 | 80 | 77 | 52 | 59 | 768 | 181 | 87 | 100 | 63 | 53 | 77 |
| 4 | 63 | 80 | 76 | 54 | 60 | 1280 | 230 | 206 | 92 | 67 | 52 | 76 |
| 5 | 63 | 80 | 67 | 55 | 58 | 795 | 210 | 222 | 132 | 59 | 52 | 69 |
| 6 | 63 | 80 | 66 | 55 | 56 | 415 | 185 | 181 | 129 | 57 | 52 | 65 |
| 7 | 63 | 80 | 80 | 56 | 57 | 459 | 167 | 196 | 92 | 196 | 52 | 63 |
| 8 | 68 | 84 | 69 | 58 | 60 | 668 | 154 | 167 | 84 | 89 | 64 | 61 |
| 9 | 69 | 78 | 72 | 60 | 64 | 467 | 144 | 144 | 77 | 66 | 63 | 59 |
| 10 | 70 | 82 | 68 | 60 | 67 | 336 | 135 | 132 | 75 | 57 | 63 | 57 |
| 11 | 70 | 76 | 70 | 61 | 70 | 333 | 129 | 122 | 72 | 51 | 64 | 53 |
| 12 | 70 | 70 | 74 | 61 | 72 | 376 | 122 | 116 | 70 | 57 | 61 | 53 |
| 13 | 73 | 80 | 84 | 62 | 75 | 330 | 116 | 110 | 70 | 50 | 61 | 53 |
| 14 | 78 | 90 | 84 | 61 | 77 | 288 | 113 | 105 | 66 | 48 | 59 | 52 |
| 15 | 82 | 86 | 94 | 60 | 78 | 242 | 110 | 113 | 63 | 50 | 61 | 52 |
| 16 | 82 | 84 | 108 | 58 | 81 | 212 | 107 | 107 | 63 | 48 | 63 | 50 |
| 17 | 80 | 80 | 105 | 55 | 84 | 189 | 105 | 107 | 66 | 141 | 63 | 55 |
| 18 | 84 | 77 | 100 | 47 | 87 | 177 | 102 | 102 | 66 | 132 | 61 | 53 |
| 19 | 84 | 79 | 97 | 40 | 88 | 162 | 102 | 97 | 61 | 94 | 61 | 53 |
| 20 | 86 | 80 | 95 | 38 | 88 | 153 | 102 | 97 | 57 | 102 | 61 | 61 |
| 21 | 86 | 77 | 84 | 47 | 90 | 142 | 107 | 97 | 57 | 94 | 61 | 57 |
| 22 | 84 | 72 | 81 | 58 | 110 | 134 | 107 | 107 | 55 | 77 | 61 | 61 |
| 23 | 90 | 77 | 79 | 61 | 300 | 126 | 141 | 102 | 61 | 68 | 61 | 59 |
| 24 | 90 | 57 | 75 | 62 | 1510 | 122 | 141 | 102 | 59 | 68 | 61 | 105 |
| 25 | 84 | 79 | 68 | 60 | 1360 | 120 | 125 | 105 | 61 | 72 | 59 | 119 |
| 26 | 82 | 79 | 60 | 55 | 939 | 130 | 116 | 97 | 61 | 68 | 59 | 92 |
| 27 | 80 | 79 | 55 | 52 | 987 | 138 | 107 | 94 | 61 | 66 | 59 | 85 |
| 28 | 80 | 82 | 50 | 58 | 847 | 150 | 105 | 89 | 59 | 68 | 63 | 83 |
| 29 | 84 | 94 | 49 | 61 | --- | 160 | 100 | 119 | 55 | 64 | 70 | 91 |
| 30 | 84 | 90 | 48 | 60 | --- | 152 | 94 | 135 | 59 | 61 | 66 | 90 |
| 31 | 84 | --- | 48 | 58 | --- | 146 | --- | 119 | --- | 59 | 75 | --- |
| TOTAL | 2365 | 2408 | 2335 | 1724 | 7537 | 10738 | 3940 | 3758 | 2249 | 2302 | 1871 | 2078 |
| MEAN | 76.3 | 80.3 | 75.3 | 55.6 | 269 | 346 | 131 | 121 | 75.0 | 74.3 | 60.4 | 69.3 |
| MAX | 90 | 94 | 108 | 62 | 1510 | 1280 | 230 | 222 | 132 | 196 | 75 | 119 |
| MIN | 63 | 57 | 48 | 38 | 56 | 120 | 94 | 67 | 55 | 48 | 52 | 50 |
| CFSM | .15 | .16 | .15 | .11 | .53 | .68 | .26 | .24 | .15 | .15 | .12 | .14 |
| IN. | .17 | .18 | .17 | .13 | .55 | .78 | .29 | .27 | .16 | .17 | .14 | .15 |
| AC-FT | 4690 | 4780 | 4630 | 3420 | 14950 | 21300 | 7810 | 7450 | 4460 | 4570 | 3710 | 4120 |
| CAL YR 1976 | TOTAL | 89269 | MEAN 244 | MAX 7130 | MIN 48 | CFSM .48 | IN 6.50 | AC-FT 177100 | | | | |
| WTR YR 1977 | TOTAL | 43305 | MEAN 119 | MAX 1510 | MIN 38 | CFSM .23 | IN 3.15 | AC-FT 85900 | | | | |

UPPER IOWA RIVER BASIN

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.

REMARKS.--No record Oct. 1-3.

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, 33.5 July 1-6; minimum, 0.0°C on many days during winter period.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DAY | MAX | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX | MIN |
|-------|---------|-----|----------|-----|----------|-----|---------|-----|----------|-----|-------|------|
| | OCTOBER | | NOVEMBER | | DECEMBER | | JANUARY | | FEBRUARY | | MARCH | |
| 1 | --- | --- | 7.0 | 4.0 | 0.5 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2 | --- | --- | 8.5 | 5.5 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 3 | --- | --- | 5.5 | 3.5 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 4 | --- | --- | 5.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5 | --- | --- | 4.5 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6 | --- | --- | 4.5 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 7 | --- | --- | 3.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| 8 | --- | --- | 1.5 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| 9 | --- | --- | 2.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.5 |
| 10 | --- | --- | 2.0 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.5 | 2.0 |
| 11 | --- | --- | 1.5 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.5 | 4.5 |
| 12 | --- | --- | 1.5 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 6.0 | 5.5 |
| 13 | --- | --- | 1.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.5 | 5.0 |
| 14 | 14.0 | 9.5 | 1.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 8.0 | 5.0 |
| 15 | 11.5 | 8.5 | 1.5 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 8.5 | 6.0 |
| 16 | 8.5 | 6.5 | 1.5 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 8.0 | 4.5 |
| 17 | 9.0 | 5.0 | 2.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 6.0 | 4.5 |
| 18 | 6.5 | 5.0 | 1.5 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.5 | 3.5 |
| 19 | 5.5 | 5.0 | 2.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.5 | 3.5 |
| 20 | 6.5 | 4.5 | 1.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 6.0 | 3.5 |
| 21 | 5.5 | 4.0 | 1.5 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.5 | 4.0 |
| 22 | 6.0 | 3.0 | 1.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 6.5 | 2.0 |
| 23 | 6.5 | 4.5 | 1.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 8.5 | 3.5 |
| 24 | 6.0 | 5.0 | 1.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 9.0 | 4.0 |
| 25 | 6.0 | 4.5 | 2.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 10.5 | 4.5 |
| 26 | 5.5 | 4.5 | 1.5 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 10.0 | 8.0 |
| 27 | 5.5 | 3.0 | 0.5 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 10.0 | 10.0 |
| 28 | 6.0 | 2.0 | 0.5 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 10.0 | 10.0 |
| 29 | 6.5 | 3.5 | 0.5 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | --- | --- | 11.5 | 9.0 |
| 30 | 6.5 | 6.0 | 0.5 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | --- | --- | 9.5 | 8.5 |
| 31 | 8.0 | 4.5 | --- | --- | 0.0 | 0.0 | 0.0 | 0.0 | --- | --- | 8.5 | 6.0 |
| MONTH | 14.0 | 2.0 | 8.5 | 0.5 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 11.5 | 0.0 |

WATER-QUALITY RECORDS

[illegible]

UPPER IOWA RIVER BASIN

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 07050002, 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) above mean sea level. Prior to Jan. 5, 1938, nonrecording gage on old bridge at site 0.2 mi (0.3 km) upstream at datum 5.91 ft (1.801 m) higher. Jan. 5, 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.--Water-discharge record good except those for winter period, which are poor. Corps of Engineers gage-height telemeter at station.

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.--Maximum discharge, 4,110 ft³/s (116 m³/s) Feb. 24, gage height, 12.35 ft (3.764 m) at 0100 hours, no other peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 79 ft³/s (2.24 m³/s) Dec. 31.

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 | 136 | 139 | 122 | 82 | 92 | 228 | 228 | 159 | 159 | 126 | 116 | 147 |
| 2 | 136 | 140 | 120 | 86 | 94 | 211 | 255 | 155 | 154 | 108 | 113 | 166 |
| 3 | 132 | 137 | 118 | 88 | 96 | 211 | 287 | 150 | 142 | 119 | 110 | 169 |
| 4 | 132 | 134 | 118 | 90 | 99 | 596 | 327 | 172 | 135 | 143 | 109 | 161 |
| 5 | 134 | 134 | 114 | 92 | 96 | 795 | 364 | 285 | 150 | 118 | 109 | 158 |
| 6 | 136 | 134 | 104 | 92 | 91 | 677 | 337 | 294 | 159 | 106 | 104 | 145 |
| 7 | 129 | 133 | 104 | 93 | 91 | 583 | 308 | 255 | 167 | 184 | 107 | 135 |
| 8 | 128 | 130 | 107 | 95 | 96 | 928 | 278 | 262 | 142 | 352 | 114 | 129 |
| 9 | 130 | 130 | 108 | 98 | 104 | 987 | 258 | 227 | 128 | 336 | 174 | 127 |
| 10 | 131 | 115 | 108 | 102 | 108 | 647 | 247 | 205 | 125 | 231 | 136 | 120 |
| 11 | 131 | 123 | 108 | 100 | 112 | 468 | 233 | 189 | 122 | 163 | 119 | 116 |
| 12 | 132 | 106 | 110 | 100 | 116 | 572 | 217 | 177 | 117 | 128 | 113 | 113 |
| 13 | 133 | 103 | 111 | 99 | 130 | 558 | 208 | 173 | 115 | 122 | 110 | 115 |
| 14 | 132 | 138 | 120 | 99 | 126 | 459 | 199 | 162 | 113 | 118 | 108 | 111 |
| 15 | 130 | 152 | 120 | 100 | 126 | 404 | 205 | 152 | 111 | 115 | 106 | 106 |
| 16 | 128 | 146 | 120 | 96 | 130 | 352 | 190 | 165 | 113 | 125 | 120 | 106 |
| 17 | 127 | 166 | 121 | 95 | 145 | 310 | 183 | 164 | 114 | 480 | 123 | 107 |
| 18 | 126 | 130 | 122 | 94 | 142 | 289 | 180 | 160 | 117 | 1190 | 117 | 115 |
| 19 | 133 | 128 | 122 | 92 | 143 | 265 | 176 | 151 | 117 | 356 | 114 | 114 |
| 20 | 136 | 120 | 120 | 98 | 145 | 252 | 183 | 148 | 113 | 231 | 118 | 110 |
| 21 | 137 | 118 | 116 | 101 | 152 | 229 | 190 | 152 | 111 | 309 | 118 | 117 |
| 22 | 136 | 120 | 124 | 103 | 180 | 217 | 188 | 146 | 111 | 233 | 116 | 127 |
| 23 | 134 | 106 | 120 | 104 | 370 | 206 | 184 | 152 | 111 | 180 | 114 | 133 |
| 24 | 141 | 118 | 111 | 106 | 2380 | 193 | 215 | 153 | 109 | 167 | 114 | 242 |
| 25 | 141 | 120 | 108 | 105 | 1340 | 189 | 216 | 147 | 108 | 160 | 114 | 252 |
| 26 | 138 | 125 | 103 | 104 | 540 | 185 | 200 | 155 | 105 | 156 | 113 | 217 |
| 27 | 135 | 106 | 91 | 85 | 356 | 197 | 187 | 145 | 102 | 144 | 116 | 170 |
| 28 | 134 | 91 | 80 | 102 | 300 | 205 | 177 | 134 | 102 | 139 | 126 | 161 |
| 29 | 135 | 120 | 80 | 101 | --- | 234 | 169 | 126 | 100 | 138 | 130 | 168 |
| 30 | 140 | 116 | 81 | 99 | --- | 243 | 164 | 146 | 119 | 131 | 134 | 174 |
| 31 | 140 | --- | 79 | 96 | --- | 229 | --- | 163 | --- | 123 | 140 | --- |
| TOTAL | 4143 | 3778 | 3390 | 2998 | 7900 | 12139 | 6753 | 5424 | 3691 | 6731 | 3675 | 4331 |
| MEAN | 134 | 126 | 109 | 96.7 | 252 | 392 | 225 | 175 | 123 | 217 | 119 | 144 |
| MAX | 141 | 166 | 124 | 106 | 2380 | 987 | 364 | 294 | 167 | 1190 | 174 | 252 |
| MIN | 126 | 91 | 79 | 82 | 91 | 185 | 164 | 126 | 100 | 106 | 104 | 106 |
| CFSM | .17 | .16 | .14 | .13 | .37 | .51 | .29 | .23 | .16 | .28 | .16 | .19 |
| IN. | .20 | .16 | .16 | .14 | .30 | .59 | .33 | .26 | .18 | .33 | .18 | .21 |
| AC-FT | 8220 | 7490 | 6720 | 5950 | 15670 | 24080 | 13390 | 10760 | 7320 | 13350 | 7290 | 8550 |

| | | | | | | | | |
|-------------|-------|--------|----------|----------|--------|----------|---------|--------------|
| CAL YR 1976 | TOTAL | 143897 | MEAN 393 | MAX 9470 | MIN 79 | CFSM .51 | IN 6.95 | AC-FT 285400 |
| WTR YR 1977 | TOTAL | 64953 | MEAN 176 | MAX 2380 | MIN 79 | CFSM .23 | IN 3.14 | AC-FT 126800 |

05388250 UPPER IOWA RIVER NEAR DORCHESTER, IOWA--Continued.

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1975 to current year.

SEDIMENT RECORDS: 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, 535 micromhos Aug. 5, 1975; minimum daily, 205 micromhos July 21, 1977.

SEDIMENT CONCENTRATION: Maximum daily mean, 4,100 mg/L Mar. 27, 1976; minimum daily mean, 5 mg/L Nov. 17, 1976, Jan. 17, 1977.

SEDIMENT LOADS: Maximum daily, 105,000 tons (95,300 tonnes) Mar. 12, 1976; minimum daily, 1.3 tons (1.2 tonnes) Jan. 17, 1977.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 600 micromhos Jan. 13; minimum daily, 205 micromhos July 21.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,690 mg/L July 18; minimum daily mean, 5 mg/L Nov. 17, Jan. 17.

SEDIMENT LOADS: Maximum daily, 10,700 tons (9,710 tonnes) Feb. 24; minimum daily, 1.3 tons (1.2 tonnes) Jan. 17.

WATER QUALITY DATA, JULY 1976 TO SEPTEMBER 1977

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | 400 | 390 | 380 | 470 | 460 | 400 | 430 | 400 | 370 | 380 | 320 | 370 |
| 2 | 370 | 310 | 380 | 520 | 440 | 420 | 420 | 440 | 360 | 380 | 320 | 400 |
| 3 | 370 | 370 | 380 | 510 | 460 | 410 | 440 | 420 | 370 | 380 | 330 | 350 |
| 4 | 370 | 440 | 360 | 470 | 370 | 310 | 440 | 420 | 360 | 340 | 330 | 390 |
| 5 | 410 | 410 | 375 | 500 | 380 | 320 | 380 | 420 | 380 | 330 | 310 | 380 |
| 6 | 400 | 410 | 410 | 510 | 450 | 340 | 450 | 440 | 380 | 320 | 320 | 400 |
| 7 | 405 | 380 | 380 | 530 | 380 | 300 | 430 | 450 | 390 | 310 | 320 | 400 |
| 8 | 400 | 350 | 420 | 580 | 390 | 260 | 400 | 400 | 390 | 350 | --- | 390 |
| 9 | 390 | 410 | 360 | 480 | 410 | --- | 450 | 410 | 390 | 330 | 330 | 390 |
| 10 | 390 | 420 | 350 | 530 | 380 | 310 | 450 | 450 | 400 | 330 | 290 | --- |
| 11 | 400 | 410 | 370 | 560 | 390 | 320 | 450 | 400 | 400 | 390 | 340 | 370 |
| 12 | 390 | 420 | 350 | 550 | 410 | 300 | 450 | 400 | 400 | 390 | 340 | 370 |
| 13 | 370 | 400 | 360 | 600 | 480 | 360 | 450 | 400 | 400 | 325 | 340 | 370 |
| 14 | 380 | 420 | 360 | 460 | 500 | 320 | 420 | 430 | 400 | 320 | 340 | 370 |
| 15 | 370 | 380 | 360 | 450 | 460 | 400 | 420 | 450 | 400 | 360 | 340 | 390 |
| 16 | 360 | 450 | 370 | 500 | 480 | 400 | 430 | 400 | 380 | 360 | 360 | 360 |
| 17 | 380 | 370 | 380 | 500 | 500 | 380 | 430 | 420 | 380 | 210 | 360 | 370 |
| 18 | 380 | 390 | 350 | 530 | 380 | 340 | 420 | 410 | 380 | 245 | 340 | 360 |
| 19 | 410 | 360 | 390 | 470 | 380 | 340 | 420 | 410 | 390 | 280 | 360 | 360 |
| 20 | 430 | 380 | 390 | 375 | 470 | 340 | 420 | 410 | 380 | 270 | 360 | 360 |
| 21 | 390 | 370 | 450 | 380 | 460 | 360 | 420 | 410 | 380 | 205 | 360 | 360 |
| 22 | 440 | 365 | 450 | 340 | 460 | 330 | 420 | 410 | 380 | 330 | 360 | 420 |
| 23 | 380 | 360 | 440 | 380 | 460 | 350 | 400 | 410 | 400 | 330 | 390 | 420 |
| 24 | 420 | 340 | 440 | 310 | 340 | 320 | 390 | 410 | 400 | 330 | 390 | 430 |
| 25 | 420 | 335 | 440 | 340 | 300 | 340 | 390 | 380 | 400 | 310 | 375 | 440 |
| 26 | 440 | 340 | 420 | 440 | 360 | 320 | 390 | 380 | 400 | 320 | 400 | 440 |
| 27 | 340 | 350 | 420 | 370 | 390 | 310 | 370 | 380 | 400 | 325 | 390 | 460 |
| 28 | 390 | 380 | 420 | 490 | 390 | 305 | 400 | 420 | 390 | 315 | 360 | 380 |
| 29 | 420 | 375 | 470 | 420 | --- | 360 | 420 | 360 | 380 | 320 | 400 | 380 |
| 30 | 410 | 360 | 410 | 440 | --- | 320 | 430 | 360 | 380 | 320 | 340 | 420 |
| 31 | 320 | --- | 440 | 430 | --- | 330 | --- | 370 | --- | 320 | 360 | --- |

UPPER IOWA RIVER BASIN

05388250 UPPER IOWA RIVER NEAR DORCHESTER, IOWA--Continued.

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| 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 | 16 | 5.9 | 14 | 5.3 | 12 | 4.0 | 34 | 7.5 | 22 | 5.5 | 32 | 20 |
| 2 | 24 | 8.8 | 13 | 4.9 | 10 | 3.2 | 40 | 9.3 | 18 | 4.6 | 13 | 7.5 |
| 3 | 32 | 11 | 15 | 5.5 | 13 | 4.1 | 20 | 4.8 | 20 | 5.2 | 17 | 9.6 |
| 4 | 29 | 10 | 13 | 4.7 | 17 | 5.4 | 50 | 12 | 20 | 5.3 | 376 | 603 |
| 5 | 27 | 9.8 | 18 | 6.5 | 30 | 9.2 | 20 | 5.0 | 15 | 3.9 | 268 | 575 |
| 6 | 14 | 5.1 | 17 | 6.2 | 25 | 7.0 | 27 | 6.7 | 16 | 3.9 | 82 | 150 |
| 7 | 23 | 8.0 | 16 | 5.7 | 28 | 7.9 | 16 | 4.0 | 15 | 3.7 | 73 | 115 |
| 8 | 32 | 11 | 15 | 5.3 | 71 | 21 | 6 | 1.6 | 22 | 6.7 | 238 | 596 |
| 9 | 49 | 17 | 9 | 3.2 | 55 | 16 | 14 | 3.7 | 18 | 5.1 | 377 | 1000 |
| 10 | 26 | 9.2 | 9 | 2.8 | 26 | 7.6 | 20 | 5.5 | 17 | 5.0 | 234 | 409 |
| 11 | 39 | 14 | 6 | 2.0 | 15 | 4.4 | 22 | 5.9 | 25 | 7.6 | 68 | 90 |
| 12 | 28 | 10 | 8 | 2.3 | 12 | 3.6 | 27 | 7.3 | 37 | 12 | 75 | 116 |
| 13 | 21 | 7.5 | 10 | 2.8 | 12 | 3.6 | 13 | 3.5 | 19 | 6.7 | 114 | 172 |
| 14 | 18 | 6.4 | 13 | 4.8 | 23 | 7.5 | 28 | 7.5 | 8 | 2.7 | 69 | 86 |
| 15 | 26 | 9.1 | 16 | 6.6 | 55 | 18 | 20 | 5.4 | 18 | 6.1 | 70 | 76 |
| 16 | 21 | 7.3 | 11 | 4.3 | 34 | 11 | 7 | 1.8 | 8 | 2.8 | 67 | 64 |
| 17 | 19 | 6.5 | 5 | 2.2 | 27 | 8.8 | 5 | 1.3 | 9 | 3.5 | 58 | 49 |
| 18 | 19 | 6.5 | 12 | 4.2 | 21 | 6.9 | 15 | 3.8 | 25 | 9.6 | 28 | 22 |
| 19 | 14 | 5.0 | 8 | 2.8 | 19 | 6.3 | 16 | 4.0 | 14 | 5.4 | 42 | 30 |
| 20 | 11 | 4.0 | 9 | 2.9 | 22 | 7.1 | 13 | 3.4 | 13 | 5.1 | 67 | 46 |
| 21 | 12 | 4.4 | 12 | 3.8 | 22 | 6.9 | 10 | 2.7 | 14 | 5.7 | 26 | 16 |
| 22 | 14 | 5.1 | 16 | 5.2 | 22 | 7.4 | 12 | 3.3 | 18 | 8.7 | 34 | 20 |
| 23 | 13 | 4.7 | 14 | 4.0 | 20 | 6.5 | 9 | 2.5 | 170 | 170 | 38 | 21 |
| 24 | 12 | 4.6 | 11 | 3.5 | 24 | 7.2 | 13 | 3.7 | 1650 | 10700 | 32 | 17 |
| 25 | 12 | 4.6 | 6 | 1.9 | 43 | 13 | 15 | 4.3 | 385 | 1390 | 35 | 18 |
| 26 | 12 | 4.5 | 11 | 3.7 | 27 | 7.5 | 33 | 9.3 | 350 | 510 | 50 | 25 |
| 27 | 15 | 5.5 | 8 | 2.3 | 22 | 5.4 | 25 | 5.7 | 146 | 140 | 55 | 29 |
| 28 | 20 | 7.2 | 19 | 4.7 | 21 | 4.5 | 27 | 7.4 | 88 | 71 | 50 | 28 |
| 29 | 14 | 5.1 | 15 | 4.9 | 22 | 4.8 | 17 | 4.6 | --- | --- | 34 | 21 |
| 30 | 14 | 5.3 | 10 | 3.1 | 26 | 5.7 | 12 | 3.2 | --- | --- | 31 | 20 |
| 31 | 16 | 6.0 | --- | --- | 30 | 6.4 | 20 | 5.2 | --- | --- | 50 | 31 |
| TOTAL | --- | 229.1 | --- | 122.1 | --- | 237.9 | --- | 155.9 | --- | 13104.8 | --- | 4482.1 |

| DAY | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) |
|-------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|
| APRIL | | | MAY | | JUNE | | JULY | | AUGUST | | SEPTEMBER | |
| 1 | 15 | 9.2 | 27 | 12 | 47 | 20 | 60 | 20 | 104 | 33 | 38 | 15 |
| 2 | 14 | 9.6 | 21 | 8.8 | 66 | 27 | 46 | 13 | 105 | 32 | 39 | 17 |
| 3 | 22 | 17 | 27 | 11 | 62 | 24 | 60 | 19 | 87 | 26 | 39 | 18 |
| 4 | 15 | 13 | 24 | 11 | 42 | 15 | 58 | 22 | 132 | 39 | 39 | 17 |
| 5 | 18 | 18 | 43 | 33 | 79 | 32 | 63 | 20 | 152 | 45 | 27 | 12 |
| 6 | 15 | 14 | 64 | 51 | 44 | 19 | 75 | 21 | 349 | 98 | 40 | 16 |
| 7 | 21 | 17 | 87 | 60 | 60 | 27 | 108 | 54 | 278 | 80 | 37 | 13 |
| 8 | 13 | 9.8 | 135 | 95 | 33 | 13 | 149 | 142 | 263 | 81 | 50 | 17 |
| 9 | 32 | 22 | 58 | 36 | 44 | 15 | 145 | 132 | 110 | 52 | 35 | 12 |
| 10 | 27 | 18 | 80 | 44 | 36 | 12 | 119 | 74 | 116 | 43 | 36 | 12 |
| 11 | 24 | 15 | 102 | 52 | 47 | 15 | 101 | 44 | 70 | 22 | 38 | 12 |
| 12 | 28 | 16 | 129 | 62 | 33 | 10 | 105 | 36 | 54 | 16 | 35 | 11 |
| 13 | 23 | 13 | 132 | 62 | 49 | 15 | 88 | 29 | 53 | 16 | 30 | 9.2 |
| 14 | 22 | 12 | 74 | 32 | 31 | 9.5 | 179 | 57 | 78 | 23 | 26 | 7.8 |
| 15 | 24 | 13 | 62 | 25 | 56 | 17 | 850 | 264 | 62 | 18 | 40 | 11 |
| 16 | 11 | 5.6 | 60 | 27 | 56 | 17 | 880 | 297 | 57 | 18 | 27 | 7.7 |
| 17 | 23 | 11 | 58 | 26 | 40 | 12 | 2530 | 3280 | 76 | 25 | 18 | 5.2 |
| 18 | 26 | 13 | 72 | 31 | 57 | 18 | 2690 | 8640 | 61 | 19 | 22 | 6.8 |
| 19 | 26 | 12 | 27 | 11 | 45 | 14 | 680 | 654 | 48 | 15 | 24 | 7.4 |
| 20 | 52 | 26 | 42 | 17 | 40 | 12 | 850 | 530 | 49 | 16 | 28 | 8.3 |
| 21 | 47 | 24 | 42 | 17 | 61 | 18 | 900 | 751 | 40 | 13 | 48 | 15 |
| 22 | 46 | 23 | 79 | 31 | 48 | 14 | 460 | 289 | 45 | 14 | 72 | 25 |
| 23 | 25 | 12 | 40 | 16 | 76 | 23 | 300 | 146 | 44 | 14 | 118 | 42 |
| 24 | 29 | 17 | 52 | 21 | 40 | 12 | 264 | 119 | 31 | 9.5 | 211 | 138 |
| 25 | 23 | 13 | 59 | 23 | 51 | 15 | 175 | 76 | 50 | 15 | 164 | 112 |
| 26 | 26 | 14 | 53 | 22 | 28 | 7.9 | 172 | 72 | 25 | 7.6 | 96 | 56 |
| 27 | 23 | 15 | 55 | 22 | 49 | 13 | 174 | 68 | 39 | 12 | 36 | 17 |
| 28 | 27 | 13 | 60 | 22 | 46 | 13 | 102 | 68 | 20 | 6.8 | 32 | 14 |
| 29 | 29 | 13 | 37 | 13 | 36 | 9.7 | 161 | 60 | 57 | 20 | 15 | 6.8 |
| 30 | 48 | 21 | 54 | 21 | 54 | 17 | 196 | 69 | 63 | 23 | 26 | 12 |
| 31 | --- | --- | 53 | 23 | --- | --- | 123 | 41 | 68 | 26 | --- | --- |
| TOTAL | --- | 449.2 | --- | 937.8 | --- | 486.1 | --- | 16107 | --- | 877.9 | --- | 672.2 |

TOTAL LOAD FOR YEAR: 37863.2 TONS.

UPPER IOWA RIVER BASIN

05388250 UPPER IOWA RIVER NEAR DORCHESTER, IOWA--Continued.

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TIME | TEMPER- ATURE (DEG C) (00010) | NUMBER OF SAM- PLING POINTS (00063) | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | 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 07... | 1130 | 9.0 | 5 | 135 | 1 | 2 | 9 |
| NOV 18... | 1100 | 1.5 | 5 | 139 | 1 | 1 | 8 |
| MAR 31... | 1000 | 8.0 | 5 | 226 | -- | 0 | 3 |
| APR 27... | 1030 | 15.0 | 4 | 168 | 2 | 2 | 5 |
| MAY 25... | 1015 | 21.5 | 3 | 148 | 1 | 4 | 9 |
| AUG 25... | 1000 | 17.5 | 5 | 115 | 3 | 4 | 9 |
| SEP 28... | 1330 | 14.0 | 4 | 165 | 0 | 1 | 4 |

| 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 07... | 68 | 75 | 80 | 83 | 89 | 97 | 100 |
| NOV 18... | 60 | 75 | 80 | 83 | 89 | 96 | 100 |
| MAR 31... | 63 | 91 | 97 | 98 | 99 | 99 | 100 |
| APR 27... | 63 | 92 | 98 | 99 | 100 | -- | -- |
| MAY 25... | 66 | 81 | 85 | 88 | 92 | 98 | 100 |
| AUG 25... | 69 | 92 | 96 | 97 | 98 | 100 | -- |
| SEP 28... | 59 | 80 | 83 | 85 | 88 | 90 | 100 |

MISSISSIPPI RIVER MAIN STEM

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

GAGE.--Water-stage recorder. Datum of gage is 605.30 ft (184.495 m) above mean sea level, adjustment of 1912. 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.--41 years, 33,320 ft³/s (943.6 m³/s), 6.70 in/yr (170 mm/yr), 24,140,000 acre-ft/yr (29,800 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 (7.735 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, 42,000 ft³/s (1,190 m³/s) Sept. 30; maximum gage height, 8.61 ft (2.624 m) Sept. 30; minimum daily discharge, 7,700 ft³/s (218 m³/s) Dec. 1; minimum gage height, 5.59 ft (1.704 m) Nov. 8.

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 | 8400 | 14400 | 7700 | 9600 | 8700 | 15000 | 30100 | 29000 | 18800 | 22200 | 14900 | 27000 |
| 2 | 9700 | 13100 | 7900 | 9500 | 8600 | 15000 | 30500 | 23500 | 18700 | 21600 | 14200 | 31600 |
| 3 | 9600 | 12200 | 8000 | 9600 | 8600 | 15000 | 31800 | 21700 | 19600 | 21400 | 15700 | 36000 |
| 4 | 9700 | 12500 | 8000 | 9200 | 8100 | 15100 | 33200 | 19200 | 18900 | 21000 | 12800 | 37800 |
| 5 | 9800 | 11500 | 8000 | 9100 | 8000 | 15200 | 35500 | 18200 | 19200 | 21400 | 12700 | 37800 |
| 6 | 11300 | 10300 | 7900 | 9000 | 8000 | 15100 | 36200 | 17600 | 22200 | 21500 | 13200 | 37600 |
| 7 | 12300 | 9500 | 8000 | 8900 | 8100 | 15100 | 35800 | 17300 | 23700 | 24700 | 13900 | 36500 |
| 8 | 12200 | 9200 | 8100 | 8700 | 8200 | 15300 | 32900 | 17500 | 25600 | 27800 | 15000 | 35700 |
| 9 | 11300 | 9000 | 8000 | 8800 | 8700 | 15600 | 28600 | 17800 | 26600 | 28500 | 16000 | 35300 |
| 10 | 11200 | 10100 | 8000 | 9000 | 9000 | 17500 | 24600 | 18200 | 23900 | 28100 | 16200 | 34100 |
| 11 | 11200 | 10300 | 8200 | 9200 | 9300 | 21200 | 21100 | 17400 | 19700 | 27500 | 16900 | 32800 |
| 12 | 11400 | 11200 | 8200 | 9300 | 9500 | 25300 | 19300 | 16300 | 16100 | 25200 | 16700 | 32200 |
| 13 | 11800 | 12300 | 9200 | 9700 | 9700 | 29400 | 19000 | 15300 | 13100 | 22400 | 13000 | 32100 |
| 14 | 12300 | 12800 | 9500 | 10200 | 10000 | 32600 | 19500 | 14800 | 12700 | 19700 | 11200 | 32300 |
| 15 | 12200 | 11700 | 10600 | 10800 | 10100 | 34800 | 19400 | 14400 | 12800 | 18200 | 9550 | 31700 |
| 16 | 12100 | 12200 | 11400 | 10400 | 10200 | 36300 | 20500 | 14300 | 14900 | 17700 | 10500 | 30800 |
| 17 | 12200 | 11600 | 11500 | 10100 | 10400 | 36300 | 22600 | 15100 | 17400 | 16500 | 9500 | 29300 |
| 18 | 12100 | 10900 | 11600 | 9800 | 10500 | 36700 | 25300 | 17300 | 20600 | 18900 | 9550 | 27100 |
| 19 | 11100 | 10300 | 10900 | 9600 | 10500 | 36300 | 27500 | 18700 | 22400 | 20900 | 9550 | 25900 |
| 20 | 12100 | 11000 | 11200 | 9200 | 10600 | 35000 | 28900 | 20100 | 22500 | 17000 | 10100 | 24200 |
| 21 | 11900 | 11500 | 11600 | 8800 | 10600 | 33500 | 31700 | 22900 | 21800 | 13100 | 10500 | 23100 |
| 22 | 12600 | 10900 | 11800 | 8700 | 11200 | 31600 | 34300 | 24100 | 21400 | 11600 | 11500 | 22400 |
| 23 | 11700 | 11100 | 12300 | 8700 | 12700 | 27700 | 35300 | 21600 | 21200 | 12900 | 11700 | 22600 |
| 24 | 10800 | 11900 | 12000 | 8700 | 14200 | 23200 | 35000 | 19200 | 19700 | 14500 | 12400 | 24700 |
| 25 | 11800 | 10800 | 11600 | 8600 | 15500 | 22200 | 35100 | 18500 | 19300 | 16100 | 13200 | 26800 |
| 26 | 12300 | 10000 | 11000 | 8700 | 15200 | 23900 | 33700 | 17400 | 19500 | 16000 | 13200 | 29700 |
| 27 | 13000 | 9740 | 10500 | 8800 | 15100 | 25300 | 31400 | 16000 | 19500 | 14900 | 14600 | 33600 |
| 28 | 15000 | 10600 | 10400 | 8900 | 15000 | 28300 | 31200 | 14900 | 21100 | 13600 | 13100 | 37800 |
| 29 | 13800 | 9000 | 9900 | 9300 | --- | 30200 | 31700 | 14800 | 22000 | 13100 | 13800 | 40400 |
| 30 | 13500 | 8200 | 9600 | 9000 | --- | 30200 | 31200 | 15100 | 21700 | 13600 | 15100 | 42000 |
| 31 | 13600 | --- | 9600 | 8800 | --- | 30700 | --- | 17100 | --- | 13800 | 19800 | --- |
| TOTAL | 364000 | 329840 | 302200 | 286700 | 294300 | 784600 | 872900 | 565300 | 596600 | 595400 | 408050 | 950900 |
| MEAN | 11740 | 10990 | 9748 | 9248 | 10510 | 25310 | 29100 | 18240 | 19990 | 19210 | 13160 | 31700 |
| MAX | 15000 | 14400 | 12300 | 10800 | 15500 | 36700 | 36200 | 29000 | 26600 | 28500 | 19800 | 42000 |
| MIN | 8400 | 8200 | 7700 | 8600 | 8000 | 15000 | 19000 | 14300 | 12700 | 11600 | 9500 | 22400 |
| CFSM | .17 | .16 | .14 | .14 | .16 | .38 | .43 | .27 | .30 | .29 | .20 | .47 |
| IN. | .20 | .18 | .17 | .16 | .16 | .43 | .48 | .31 | .33 | .33 | .22 | .52 |
| AC-FT | 722000 | 654200 | 599400 | 568700 | 583700 | 1556000 | 1731000 | 1121000 | 1183000 | 1181000 | 809400 | 1886000 |

| | | | | | | | | | | | | | |
|-------------|-------|---------|------|-------|-----|--------|-----|------|------|-----|---------|-------|----------|
| CAL YR 1976 | TOTAL | 9324740 | MEAN | 25480 | MAX | 125000 | MIN | 7700 | CFSM | .38 | IN 5.14 | AC-FT | 18500000 |
| WTR YR 1977 | TOTAL | 6350790 | MEAN | 17400 | MAX | 42000 | MIN | 7700 | CFSM | .26 | IN 3.50 | AC-FT | 12600000 |

WATER-QUALITY RECORDS

SEDIMENT LOADS: Maximum daily, 11,900 tons (10,800 tonnes) June 10; minimum daily, 31 tons (28 tonnes) Dec. 25.

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

[illegible]

MISSISSIPPI RIVER MAIN STEM

05389500 MISSISSIPPI RIVER AT MCGREGOR, IOWA--Continued

WATER-QUALITY RECORDS

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-----|------|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| 1 | 15.5 | --- | --- | 0.0 | --- | 0.0 | --- | --- | --- | 24.0 | --- | 23.0 |
| 2 | --- | --- | --- | --- | 0.0 | --- | --- | 18.0 | 22.0 | --- | --- | --- |
| 3 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 26.0 | --- |
| 4 | --- | 5.0 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5 | 17.0 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 6 | --- | --- | --- | --- | --- | 0.0 | --- | --- | --- | --- | --- | 24.0 |
| 7 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 30.0 | --- | --- |
| 8 | 13.0 | --- | --- | --- | 0.0 | --- | --- | --- | --- | --- | --- | --- |
| 9 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 28.5 | --- | --- |
| 10 | --- | --- | 0.0 | --- | --- | --- | --- | 19.0 | --- | --- | --- | --- |
| 11 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 12 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 24.0 | --- |
| 13 | --- | --- | --- | --- | --- | --- | 17.0 | --- | --- | --- | --- | --- |
| 14 | 14.0 | --- | --- | 0.0 | --- | --- | --- | --- | --- | --- | --- | --- |
| 15 | --- | --- | --- | --- | 0.0 | --- | --- | --- | --- | --- | --- | --- |
| 16 | --- | --- | --- | --- | --- | --- | --- | --- | 26.0 | --- | --- | --- |
| 17 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 23.5 | --- |
| 18 | --- | --- | 0.0 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 19 | --- | --- | --- | --- | --- | --- | 19.0 | --- | --- | --- | --- | --- |
| 20 | 8.0 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 21 | --- | --- | --- | 0.0 | 0.0 | --- | --- | --- | --- | --- | --- | --- |
| 22 | --- | --- | 0.0 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 23 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 24 | --- | --- | --- | --- | --- | --- | --- | 23.0 | --- | --- | --- | --- |
| 25 | --- | --- | --- | 0.0 | 0.0 | --- | --- | --- | --- | --- | --- | --- |
| 26 | --- | --- | --- | 0.0 | --- | --- | 16.0 | --- | --- | --- | --- | --- |
| 27 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 28 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 29.0 | --- | --- |
| 29 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 30 | --- | --- | --- | --- | --- | --- | --- | --- | 28.0 | --- | --- | --- |
| 31 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 24.0 | --- |

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DAY | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) |
|-------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|
| | OCTOBER | | NOVEMBER | | DECEMBER | | JANUARY | | FEBRUARY | | MARCH | |
| 1 | 9 | 204 | 63 | 2450 | 14 | 291 | 3 | 78 | 40 | 940 | 9 | 364 |
| 2 | 9 | 236 | 53 | 1870 | 14 | 299 | 2 | 51 | 60 | 1390 | 8 | 324 |
| 3 | 12 | 311 | 43 | 1420 | 12 | 259 | 1 | 26 | 64 | 1490 | 7 | 283 |
| 4 | 18 | 471 | 34 | 1150 | 9 | 194 | 1 | 25 | 64 | 1400 | 8 | 326 |
| 5 | 26 | 688 | 30 | 931 | 6 | 130 | 6 | 147 | 61 | 1320 | 16 | 667 |
| 6 | 30 | 915 | 26 | 723 | 5 | 107 | 12 | 292 | 47 | 1020 | 28 | 1140 |
| 7 | 28 | 930 | 24 | 616 | 5 | 108 | 11 | 264 | 30 | 655 | 33 | 1350 |
| 8 | 22 | 725 | 26 | 646 | 5 | 109 | 11 | 258 | 12 | 266 | 35 | 1450 |
| 9 | 19 | 580 | 31 | 753 | 5 | 108 | 10 | 238 | 9 | 211 | 42 | 1770 |
| 10 | 19 | 575 | 37 | 1010 | 4 | 86 | 9 | 219 | 8 | 194 | 60 | 2840 |
| 11 | 20 | 605 | 46 | 1280 | 3 | 66 | 8 | 199 | 6 | 151 | 68 | 3890 |
| 12 | 27 | 831 | 55 | 1660 | 3 | 66 | 7 | 176 | 4 | 103 | 42 | 2370 |
| 13 | 35 | 1120 | 63 | 2090 | 2 | 50 | 7 | 183 | 3 | 79 | 25 | 1980 |
| 14 | 44 | 1460 | 67 | 2320 | 2 | 51 | 7 | 193 | 4 | 108 | 25 | 2200 |
| 15 | 36 | 1190 | 66 | 2080 | 3 | 86 | 8 | 233 | 4 | 109 | 31 | 2910 |
| 16 | 28 | 915 | 65 | 2140 | 6 | 185 | 9 | 253 | 5 | 138 | 51 | 5000 |
| 17 | 26 | 856 | 63 | 1970 | 0 | 248 | 13 | 355 | 4 | 112 | 60 | 5880 |
| 18 | 24 | 764 | 60 | 1770 | 10 | 313 | 16 | 423 | 3 | 85 | 68 | 6740 |
| 19 | 22 | 659 | 57 | 1590 | 10 | 294 | 21 | 544 | 2 | 57 | 55 | 5390 |
| 20 | 19 | 621 | 54 | 1600 | 8 | 242 | 32 | 795 | 2 | 57 | 49 | 4630 |
| 21 | 20 | 643 | 51 | 1580 | 6 | 188 | 34 | 808 | 3 | 86 | 33 | 2980 |
| 22 | 20 | 680 | 45 | 1320 | 4 | 127 | 42 | 987 | 3 | 91 | 24 | 2050 |
| 23 | 21 | 663 | 37 | 1110 | 1 | 33 | 34 | 799 | 21 | 720 | 24 | 1790 |
| 24 | 20 | 583 | 33 | 1060 | 1 | 32 | 24 | 564 | 33 | 1270 | 22 | 1380 |
| 25 | 18 | 578 | 30 | 875 | 1 | 31 | 16 | 372 | 11 | 460 | 23 | 1380 |
| 26 | 20 | 664 | 28 | 756 | 2 | 69 | 13 | 305 | 7 | 287 | 34 | 2190 |
| 27 | 23 | 807 | 25 | 657 | 2 | 113 | 10 | 238 | 8 | 326 | 44 | 3010 |
| 28 | 20 | 1130 | 23 | 658 | 4 | 112 | 7 | 168 | 9 | 364 | 46 | 3510 |
| 29 | 42 | 1560 | 10 | 437 | 4 | 107 | 6 | 151 | --- | --- | 40 | 3260 |
| 30 | 55 | 2900 | 13 | 268 | 4 | 104 | 6 | 194 | --- | --- | 50 | 2450 |
| 31 | 67 | 2460 | --- | --- | 4 | 104 | 22 | 523 | --- | --- | 36 | 2980 |
| TOTAL | --- | 26439 | --- | 38810 | --- | 4332 | --- | 10061 | --- | 13490 | --- | 78974 |

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

TOTAL LOAD FOR YEAR: 627561 TONS.

| DATE | TIME | TEMPER- ATURE (DEG C) (00010) | NUMBER OF SAM- PLING POINTS (00063) | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | BED MAT. FALL DIAM. | BED MAT. FALL DIAM. | BED MAT. FALL DIAM. | BED MAT. FALL DIAM. | BED MAT. FALL DIAM. | BED MAT. FALL DIAM. |
|-----------|---------------------------------------|--|---|--|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| | | | | | % FINER THAN .004 MM (80157) | % FINER THAN .062 MM (80158) | % FINER THAN .125 MM (80159) | % FINER THAN .250 MM (80160) | % FINER THAN .500 MM (80161) | % FINER THAN 1.00 MM (80162) |
| NOV 04... | 1320 | 5.0 | 6 | 12200 | -- | -- | -- | -- | -- | -- |
| MAR 15... | 1030 | -- | 6 | 35200 | -- | -- | -- | -- | -- | -- |
| APR 19... | 1630 | 19.0 | 6 | 29100 | -- | -- | -- | -- | -- | -- |
| MAY 17... | 1500 | -- | 6 | 17900 | -- | -- | -- | -- | -- | -- |
| JUN 15... | 1200 | 23.0 | 6 | 11900 | -- | -- | -- | -- | -- | -- |
| JUL 09... | 1330 | 28.5 | 6 | 21900 | 12 | 30 | 32 | 58 | 92 | 96 |
| AUG 18... | 1730 | -- | 5 | 9000 | -- | -- | -- | -- | -- | -- |
| SEP 21... | 1110 | -- | 6 | 23300 | -- | -- | -- | -- | -- | -- |
| DATE | BED MAT. SIEVE DIAM. | BED MAT. SIEVE DIAM. | BED MAT. SIEVE DIAM. | BED MAT. SIEVE DIAM. | BED MAT. SIEVE DIAM. | BED MAT. SIEVE DIAM. | BED MAT. SIEVE DIAM. | BED MAT. SIEVE DIAM. | BED MAT. SIEVE DIAM. | BED MAT. SIEVE DIAM. |
| | % FINER THAN .062 MM (80164) | % FINER THAN .125 MM (80165) | % FINER THAN .250 MM (80166) | % FINER THAN .500 MM (80167) | % FINER THAN 1.00 MM (80168) | % FINER THAN 2.00 MM (80169) | % FINER THAN 4.00 MM (80170) | % FINER THAN 8.00 MM (80171) | % FINER THAN 16.0 MM (80172) | % FINER THAN 32.0 MM (80173) |
| NOV 04... | 10 | 14 | 36 | 63 | 76 | 87 | 95 | 98 | 100 | -- |
| MAR 15... | 16 | 21 | 45 | 64 | 74 | 86 | 90 | 91 | 92 | 100 |
| APR 19... | 13 | 18 | 41 | 64 | 77 | 88 | 96 | 99 | 100 | -- |
| MAY 17... | 11 | 15 | 35 | 74 | 86 | 93 | 96 | 96 | 98 | 100 |
| JUN 15... | 22 | 28 | 45 | 73 | 85 | 95 | 100 | -- | -- | -- |
| JUL 09... | -- | -- | -- | -- | -- | 96 | 96 | 100 | -- | -- |
| AUG 18... | 15 | 22 | 44 | 74 | 87 | 97 | 98 | 99 | 100 | -- |
| SEP 21... | 6 | 10 | 39 | 89 | 96 | 98 | 99 | 100 | -- | -- |

TURKEY RIVER BASIN

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 Voiga 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) above mean sea level. 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.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--57 years (1913-16, 1919-27, 1929-30, 1932-77), 895 ft³/s (25.35 m³/s), 7.87 in/yr (200 mm/yr), 648,400 acre-ft/yr (799 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.--Maximum discharge, 8,320 ft³/s (236 m³/s) Aug. 16, gage height, 15.52 ft (4.730 m) at 1200 hours, no other peak above base of 8,000 ft³/s (227 m³/s); minimum daily, 70 ft³/s (1.98 m³/s) Dec. 21.

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 | 148 | 190 | 110 | 112 | 94 | 495 | 402 | 250 | 221 | 138 | 254 | 626 |
| 2 | 142 | 188 | 114 | 117 | 92 | 450 | 455 | 246 | 206 | 137 | 245 | 554 |
| 3 | 142 | 182 | 98 | 111 | 96 | 646 | 550 | 242 | 193 | 145 | 255 | 491 |
| 4 | 147 | 170 | 94 | 91 | 93 | 1960 | 580 | 382 | 181 | 165 | 225 | 461 |
| 5 | 190 | 174 | 84 | 85 | 92 | 1180 | 634 | 386 | 182 | 142 | 222 | 438 |
| 6 | 182 | 162 | 94 | 85 | 88 | 826 | 628 | 354 | 170 | 144 | 216 | 405 |
| 7 | 163 | 138 | 80 | 86 | 89 | 670 | 590 | 354 | 162 | 198 | 234 | 375 |
| 8 | 150 | 94 | 76 | 79 | 92 | 724 | 535 | 330 | 162 | 241 | 536 | 350 |
| 9 | 152 | 150 | 85 | 74 | 99 | 680 | 490 | 306 | 150 | 229 | 1090 | 331 |
| 10 | 155 | 130 | 89 | 79 | 116 | 778 | 455 | 298 | 146 | 208 | 500 | 310 |
| 11 | 150 | 110 | 80 | 84 | 158 | 802 | 410 | 282 | 158 | 186 | 352 | 289 |
| 12 | 150 | 94 | 86 | 79 | 370 | 1340 | 334 | 254 | 158 | 209 | 285 | 279 |
| 13 | 149 | 90 | 90 | 78 | 355 | 1230 | 330 | 226 | 146 | 221 | 248 | 282 |
| 14 | 143 | 94 | 88 | 78 | 450 | 946 | 306 | 214 | 138 | 194 | 224 | 273 |
| 15 | 140 | 110 | 96 | 82 | 415 | 730 | 346 | 214 | 130 | 150 | 205 | 262 |
| 16 | 134 | 182 | 98 | 86 | 358 | 590 | 390 | 194 | 130 | 169 | 3410 | 234 |
| 17 | 139 | 254 | 102 | 82 | 335 | 495 | 310 | 784 | 126 | 568 | 1890 | 269 |
| 18 | 134 | 258 | 104 | 80 | 378 | 465 | 298 | 378 | 130 | 1620 | 930 | 278 |
| 19 | 155 | 242 | 105 | 82 | 352 | 415 | 282 | 310 | 130 | 958 | 740 | 277 |
| 20 | 164 | 174 | 105 | 72 | 333 | 390 | 306 | 302 | 130 | 440 | 820 | 272 |
| 21 | 166 | 158 | 70 | 85 | 329 | 374 | 366 | 378 | 122 | 850 | 730 | 258 |
| 22 | 166 | 154 | 85 | 87 | 480 | 346 | 386 | 270 | 118 | 510 | 625 | 257 |
| 23 | 158 | 182 | 93 | 89 | 4000 | 338 | 356 | 242 | 114 | 460 | 555 | 260 |
| 24 | 178 | 222 | 88 | 92 | 3760 | 306 | 326 | 230 | 116 | 585 | 500 | 543 |
| 25 | 194 | 250 | 98 | 95 | 1650 | 302 | 314 | 222 | 132 | 525 | 450 | 655 |
| 26 | 198 | 258 | 100 | 116 | 958 | 290 | 314 | 207 | 118 | 415 | 1680 | 654 |
| 27 | 186 | 226 | 100 | 100 | 670 | 306 | 298 | 202 | 99 | 366 | 1130 | 636 |
| 28 | 178 | 178 | 92 | 94 | 540 | 334 | 290 | 197 | 90 | 342 | 843 | 560 |
| 29 | 174 | 134 | 73 | 89 | --- | 440 | 266 | 192 | 86 | 327 | 801 | 552 |
| 30 | 186 | 122 | 120 | 87 | --- | 460 | 258 | 191 | 146 | 326 | 696 | 556 |
| 31 | 202 | --- | 115 | 91 | --- | 445 | --- | 234 | --- | 297 | 677 | --- |
| TOTAL | 5015 | 5070 | 2912 | 2747 | 16844 | 19953 | 11807 | 8671 | 4290 | 11465 | 21568 | 11995 |
| MEAN | 162 | 169 | 93.9 | 88.6 | 602 | 644 | 394 | 286 | 143 | 370 | 696 | 400 |
| MAX | 202 | 258 | 120 | 117 | 4000 | 1960 | 634 | 784 | 221 | 1620 | 3410 | 655 |
| MIN | 134 | 90 | 70 | 72 | 80 | 290 | 258 | 191 | 86 | 137 | 205 | 234 |
| CFSM | .11 | .11 | .06 | .06 | .39 | .42 | .26 | .19 | .09 | .24 | .45 | .26 |
| IN. | .12 | .12 | .07 | .07 | .41 | .46 | .28 | .21 | .10 | .28 | .52 | .29 |
| AC-FT | 9950 | 10060 | 5780 | 5450 | 33410 | 39580 | 23420 | 17600 | 8510 | 22740 | 42700 | 23790 |

CAL YR 1976 TOTAL 245142 MEAN 670 MAX 13900 MIN 70 CFSM .43 IN 5.90 AC-FT 486200
WTR YR 1977 TOTAL 122537 MEAN 336 MAX 4000 MIN 70 CFSM .22 IN 2.95 AC-FT 243100

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), 1945, 1948. WRD IA-76-01: 1975.

GAGE.--Water-stage recorder. Datum of gage is 612.03 ft (186.547 m) above mean sea level. 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.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--43 years, 85.7 ft³/s (2.427 m³/s), 8.95 in/yr (227 mm/yr), 62,090 acre-ft/yr (76.6 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 (142 dm³/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, 2,700 ft³/s (76.5 m³/s) Feb. 23, gage height, 10.29 ft (3.136 m) no peak above base of 3,000 ft³/s (85.0 m³/s); minimum daily, 6.8 ft³/s (0.193 m³/s) Jan. 1.

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 | 26 | 23 | 11 | 6.8 | 7.8 | 34 | 36 | 18 | 15 | 24 | 14 | 27 |
| 2 | 24 | 20 | 11 | 6.9 | 7.8 | 33 | 42 | 18 | 15 | 15 | 58 | 32 |
| 3 | 26 | 18 | 11 | 7.0 | 7.8 | 50 | 39 | 18 | 15 | 13 | 42 | 20 |
| 4 | 27 | 18 | 12 | 7.2 | 7.8 | 130 | 43 | 33 | 15 | 14 | 18 | 21 |
| 5 | 38 | 18 | 12 | 8.0 | 7.8 | 49 | 64 | 56 | 14 | 13 | 189 | 20 |
| 6 | 34 | 18 | 12 | 9.0 | 7.8 | 38 | 45 | 33 | 14 | 12 | 27 | 19 |
| 7 | 18 | 18 | 12 | 11 | 7.8 | 38 | 36 | 26 | 14 | 12 | 18 | 19 |
| 8 | 17 | 18 | 12 | 9.8 | 7.8 | 41 | 31 | 22 | 15 | 12 | 199 | 18 |
| 9 | 17 | 18 | 13 | 8.6 | 8.2 | 55 | 28 | 21 | 15 | 12 | 38 | 18 |
| 10 | 17 | 19 | 12 | 9.2 | 8.8 | 48 | 26 | 21 | 15 | 11 | 25 | 17 |
| 11 | 17 | 18 | 12 | 9.3 | 19 | 53 | 23 | 20 | 15 | 11 | 19 | 18 |
| 12 | 17 | 18 | 11 | 9.4 | 130 | 125 | 22 | 18 | 16 | 11 | 17 | 20 |
| 13 | 17 | 19 | 11 | 9.4 | 72 | 66 | 22 | 17 | 15 | 11 | 17 | 21 |
| 14 | 17 | 19 | 12 | 9.4 | 33 | 49 | 21 | 16 | 15 | 11 | 16 | 21 |
| 15 | 17 | 18 | 14 | 9.3 | 23 | 43 | 21 | 15 | 14 | 11 | 15 | 21 |
| 16 | 17 | 18 | 16 | 9.3 | 20 | 35 | 20 | 15 | 13 | 14 | 36 | 23 |
| 17 | 18 | 16 | 17 | 9.3 | 15 | 33 | 19 | 15 | 13 | 839 | 27 | 28 |
| 18 | 18 | 16 | 17 | 9.3 | 14 | 33 | 19 | 15 | 13 | 558 | 19 | 35 |
| 19 | 21 | 17 | 17 | 9.4 | 13 | 33 | 18 | 15 | 13 | 69 | 17 | 33 |
| 20 | 22 | 16 | 16 | 8.4 | 13 | 32 | 20 | 84 | 13 | 35 | 31 | 27 |
| 21 | 22 | 17 | 13 | 7.6 | 13 | 32 | 30 | 91 | 12 | 40 | 29 | 25 |
| 22 | 21 | 15 | 11 | 7.5 | 13 | 32 | 36 | 33 | 13 | 29 | 32 | 25 |
| 23 | 22 | 14 | 12 | 7.5 | 1320 | 32 | 27 | 29 | 13 | 21 | 23 | 40 |
| 24 | 23 | 15 | 11 | 7.4 | 279 | 32 | 22 | 23 | 13 | 23 | 20 | 181 |
| 25 | 22 | 17 | 12 | 7.6 | 56 | 31 | 21 | 21 | 16 | 25 | 19 | 55 |
| 26 | 19 | 18 | 14 | 7.6 | 46 | 31 | 21 | 19 | 14 | 19 | 20 | 37 |
| 27 | 19 | 16 | 15 | 7.8 | 38 | 44 | 20 | 17 | 13 | 17 | 32 | 31 |
| 28 | 19 | 13 | 13 | 7.8 | 35 | 59 | 20 | 16 | 12 | 16 | 35 | 29 |
| 29 | 20 | 11 | 10 | 7.8 | --- | 106 | 20 | 15 | 12 | 15 | 39 | 28 |
| 30 | 22 | 10 | 8.2 | 7.8 | --- | 62 | 20 | 15 | 25 | 15 | 25 | 27 |
| 31 | 27 | --- | 7.1 | 7.8 | --- | 43 | --- | 15 | --- | 14 | 24 | --- |
| TOTAL | 661 | 509 | 387.3 | 260.2 | 2231.4 | 1522 | 832 | 790 | 430 | 1942 | 1140 | 926 |
| MEAN | 21.3 | 17.0 | 12.5 | 8.39 | 79.7 | 49.1 | 27.7 | 25.5 | 14.3 | 62.6 | 36.8 | 30.9 |
| MAX | 38 | 23 | 17 | 11 | 1320 | 130 | 64 | 91 | 25 | 839 | 199 | 181 |
| MIN | 17 | 10 | 7.1 | 6.8 | 7.8 | 31 | 18 | 15 | 12 | 11 | 14 | 17 |
| CFSM | .16 | .13 | .10 | .07 | .61 | .38 | .21 | .20 | .11 | .48 | .28 | .24 |
| IN- | .19 | .15 | .11 | .07 | .64 | .44 | .24 | .23 | .12 | .56 | .33 | .26 |
| AC-FT | 1310 | 1010 | 768 | 516 | 4430 | 3020 | 1650 | 1570 | 853 | 3850 | 2260 | 1840 |

| | | | | | | | | | | | | | | |
|-------------|-------|---------|------|------|-----|------|-----|-----|------|-----|----|------|-------|-------|
| CAL YR 1976 | TOTAL | 20314.3 | MEAN | 55.5 | MAX | 1400 | MIN | 7.1 | CFSM | .43 | IN | 5.81 | AC-FT | 40290 |
| WTR YR 1977 | TOTAL | 11630.9 | MEAN | 31.9 | MAX | 1320 | MIN | 6.8 | CFSM | .25 | IN | 3.33 | AC-FT | 23070 |

MAQUOKETA RIVER BASIN

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 626.52 ft (190.963 m) above mean sea level, adjustment of 1912. 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.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--64 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.--Maximum discharge, 4,870 ft³/s (138 m³/s) Sept. 18, gage height, 17.73 ft (5.404 m) no peak above base of 7,500 ft³/s (212 m³/s); minimum daily, 135 ft³/s (3.82 m³/s) Dec. 31.

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 | 202 | 358 | 380 | 145 | 180 | 647 | 516 | 408 | 361 | 664 | 289 | 508 |
| 2 | 308 | 361 | 370 | 155 | 180 | 709 | 493 | 415 | 350 | 340 | 293 | 487 |
| 3 | 319 | 350 | 330 | 170 | 185 | 689 | 414 | 413 | 351 | 320 | 290 | 440 |
| 4 | 304 | 339 | 300 | 172 | 190 | 843 | 456 | 424 | 332 | 295 | 269 | 386 |
| 5 | 367 | 331 | 290 | 175 | 195 | 909 | 568 | 502 | 336 | 289 | 361 | 401 |
| 6 | 402 | 327 | 280 | 175 | 190 | 825 | 508 | 600 | 339 | 276 | 649 | 343 |
| 7 | 378 | 337 | 260 | 165 | 195 | 896 | 566 | 493 | 291 | 261 | 367 | 376 |
| 8 | 350 | 308 | 260 | 160 | 210 | 634 | 520 | 525 | 258 | 250 | 658 | 340 |
| 9 | 325 | 326 | 250 | 160 | 230 | 533 | 527 | 437 | 271 | 265 | 746 | 330 |
| 10 | 325 | 333 | 240 | 160 | 270 | 579 | 488 | 414 | 253 | 249 | 513 | 303 |
| 11 | 325 | 339 | 220 | 160 | 350 | 596 | 484 | 411 | 270 | 253 | 435 | 306 |
| 12 | 325 | 279 | 200 | 160 | 520 | 660 | 484 | 414 | 258 | 261 | 369 | 305 |
| 13 | 332 | 253 | 200 | 165 | 600 | 777 | 445 | 421 | 269 | 248 | 354 | 310 |
| 14 | 320 | 246 | 180 | 160 | 780 | 775 | 466 | 396 | 235 | 235 | 385 | 305 |
| 15 | 326 | 284 | 180 | 165 | 630 | 624 | 419 | 394 | 235 | 226 | 328 | 303 |
| 16 | 318 | 322 | 190 | 165 | 610 | 464 | 443 | 385 | 238 | 462 | 1070 | 311 |
| 17 | 282 | 359 | 200 | 160 | 660 | 487 | 416 | 406 | 235 | 2100 | 793 | 348 |
| 18 | 318 | 385 | 205 | 175 | 730 | 471 | 426 | 395 | 265 | 2410 | 505 | 3140 |
| 19 | 328 | 390 | 210 | 165 | 750 | 499 | 421 | 402 | 257 | 1380 | 483 | 1150 |
| 20 | 338 | 367 | 200 | 165 | 780 | 453 | 427 | 340 | 252 | 762 | 628 | 838 |
| 21 | 349 | 345 | 190 | 170 | 900 | 445 | 484 | 599 | 262 | 577 | 630 | 718 |
| 22 | 340 | 336 | 190 | 170 | 1060 | 450 | 528 | 648 | 239 | 593 | 703 | 636 |
| 23 | 340 | 292 | 185 | 175 | 2340 | 399 | 553 | 596 | 238 | 406 | 563 | 557 |
| 24 | 341 | 271 | 200 | 175 | 2560 | 391 | 551 | 522 | 255 | 373 | 506 | 1370 |
| 25 | 340 | 335 | 200 | 180 | 1460 | 377 | 499 | 413 | 276 | 348 | 444 | 847 |
| 26 | 348 | 395 | 205 | 190 | 1200 | 372 | 416 | 416 | 248 | 356 | 428 | 734 |
| 27 | 341 | 361 | 210 | 190 | 910 | 387 | 412 | 409 | 257 | 347 | 436 | 691 |
| 28 | 338 | 363 | 210 | 190 | 684 | 459 | 385 | 374 | 243 | 312 | 420 | 681 |
| 29 | 323 | 450 | 200 | 195 | --- | 807 | 426 | 352 | 235 | 326 | 555 | 631 |
| 30 | 340 | 420 | 170 | 185 | --- | 702 | 438 | 385 | 775 | 316 | 581 | 585 |
| 31 | 358 | --- | 135 | 180 | --- | 673 | --- | 374 | --- | 312 | 511 | --- |
| TOTAL | 10250 | 10162 | 7040 | 5277 | 19549 | 18532 | 14179 | 13683 | 8684 | 15812 | 15582 | 18680 |
| MEAN | 331 | 339 | 227 | 170 | 698 | 598 | 473 | 441 | 289 | 510 | 503 | 623 |
| MAX | 402 | 450 | 380 | 195 | 2560 | 909 | 568 | 648 | 775 | 2410 | 1070 | 3140 |
| MIN | 202 | 246 | 135 | 145 | 180 | 372 | 385 | 340 | 235 | 226 | 289 | 303 |
| CFSM | .21 | .22 | .15 | .11 | .45 | .39 | .31 | .28 | .19 | .33 | .32 | .40 |
| IN | .25 | .24 | .17 | .13 | .47 | .44 | .34 | .33 | .21 | .38 | .37 | .45 |
| AC-FT | 20330 | 20160 | 13950 | 10470 | 38780 | 36760 | 28120 | 27140 | 17220 | 31360 | 30910 | 37050 |

CAL YR 1976 TOTAL 243366 MEAN 665 MAX 10500 MIN 135 CFSM .43 IN 5.83 AC-FT 482700
WTR YR 1977 TOTAL 157430 MEAN 431 MAX 3140 MIN 135 CFSM .28 IN 3.77 AC-FT 312300

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) above mean sea level. 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.--Five discharge measurements and discharge data at Lock and Dam No. 13 furnished by Corps of Engineers.

AVERAGE DISCHARGE.--104 years, 47,040 ft³/s (1,332 m³/s), 7.46 in/yr (189 mm/yr), 34,080,000 acre-ft/yr (42,020 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, 50,800 ft³/s (1,440 m³/s) Jul. 19; maximum gage height, 10.66 ft (3.249 m) Jul. 19; minimum daily discharge, 9,600 ft³/s (272 m³/s) Dec. 5.

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 | 14900 | 18200 | 10800 | 12300 | 11100 | 26000 | 37900 | 38600 | 19900 | 26400 | 16400 | 19400 |
| 2 | 14300 | 18400 | 10100 | 12400 | 11200 | 24500 | 37300 | 35100 | 20800 | 25600 | 16900 | 20600 |
| 3 | 13900 | 19000 | 9800 | 11900 | 11500 | 23700 | 39700 | 30700 | 21100 | 24500 | 12600 | 28800 |
| 4 | 14300 | 18100 | 9700 | 11800 | 12000 | 24800 | 41400 | 24100 | 21100 | 24000 | 16200 | 32600 |
| 5 | 12100 | 18700 | 9600 | 11600 | 12800 | 24300 | 45700 | 25300 | 20300 | 24300 | 17400 | 34400 |
| 6 | 15100 | 17600 | 9800 | 11300 | 13200 | 23800 | 47200 | 25700 | 20900 | 23300 | 18000 | 37400 |
| 7 | 15200 | 16400 | 10000 | 11700 | 13600 | 24000 | 46800 | 26600 | 24700 | 22200 | 16800 | 35200 |
| 8 | 17100 | 15200 | 10100 | 11500 | 13800 | 23000 | 44200 | 24800 | 27200 | 25000 | 20500 | 33900 |
| 9 | 16900 | 14600 | 10200 | 11400 | 14000 | 25100 | 41000 | 24200 | 29600 | 28600 | 20100 | 33900 |
| 10 | 16600 | 14600 | 10300 | 11300 | 14200 | 27800 | 38100 | 22800 | 30000 | 29400 | 21200 | 33300 |
| 11 | 17100 | 14000 | 10300 | 11300 | 14800 | 30100 | 37500 | 22500 | 27500 | 29200 | 22800 | 32900 |
| 12 | 16200 | 14800 | 10200 | 11200 | 15600 | 36900 | 34500 | 22300 | 24700 | 28900 | 21000 | 31000 |
| 13 | 15200 | 15600 | 10200 | 11200 | 16900 | 42400 | 29300 | 20900 | 20400 | 28100 | 17800 | 30900 |
| 14 | 18600 | 15900 | 10200 | 11200 | 18100 | 41800 | 24700 | 19300 | 17100 | 26900 | 12400 | 31900 |
| 15 | 17400 | 15800 | 10400 | 11200 | 18500 | 41200 | 23800 | 18200 | 17000 | 22600 | 11800 | 24900 |
| 16 | 16100 | 16200 | 10800 | 11400 | 18900 | 43400 | 24300 | 17900 | 17500 | 19800 | 13100 | 30000 |
| 17 | 15600 | 17100 | 11800 | 11600 | 19000 | 43300 | 26300 | 17900 | 17600 | 19200 | 14500 | 26900 |
| 18 | 15500 | 15600 | 12800 | 11800 | 19000 | 45100 | 26700 | 18200 | 23100 | 31100 | 14900 | 26100 |
| 19 | 15900 | 14900 | 13600 | 11900 | 19000 | 47900 | 31000 | 20100 | 25600 | 50800 | 14200 | 27800 |
| 20 | 17200 | 14400 | 14200 | 12000 | 19200 | 45500 | 34400 | 23300 | 25900 | 38900 | 12000 | 27700 |
| 21 | 18000 | 14200 | 14700 | 12000 | 19700 | 43300 | 37000 | 25200 | 25900 | 25100 | 12600 | 24900 |
| 22 | 16600 | 14000 | 14200 | 12000 | 19500 | 41800 | 41200 | 28000 | 24300 | 20400 | 13300 | 22900 |
| 23 | 15200 | 13400 | 13800 | 11700 | 22600 | 39100 | 43200 | 25700 | 23500 | 18700 | 13600 | 23600 |
| 24 | 15400 | 12700 | 12000 | 11300 | 31800 | 35000 | 43300 | 25400 | 22500 | 17400 | 13200 | 30700 |
| 25 | 15800 | 11200 | 10800 | 11300 | 40500 | 28800 | 42800 | 23400 | 22200 | 15100 | 10500 | 32800 |
| 26 | 14900 | 9700 | 10600 | 11700 | 36800 | 28700 | 42900 | 21600 | 22400 | 20900 | 9660 | 35700 |
| 27 | 15900 | 10000 | 10800 | 11300 | 31100 | 29300 | 43000 | 19800 | 21200 | 20500 | 10500 | 38500 |
| 28 | 17700 | 10500 | 11000 | 12000 | 28700 | 32300 | 41700 | 18100 | 21400 | 21100 | 11800 | 40200 |
| 29 | 17300 | 10900 | 11500 | 12100 | --- | 40100 | 41700 | 17400 | 22600 | 18800 | 14700 | 41700 |
| 30 | 16400 | 10500 | 11800 | 12100 | --- | 47500 | 41000 | 17300 | 23800 | 16000 | 17000 | 45000 |
| 31 | 16500 | --- | 12200 | 11700 | --- | 43900 | --- | 18500 | --- | 17600 | 18700 | --- |
| TOTAL | 494900 | 442200 | 348300 | 361200 | 537100 | 1074400 | 1129600 | 718900 | 681800 | 760400 | 476160 | 935300 |
| MEAN | 15960 | 14740 | 11240 | 11650 | 19180 | 34660 | 37650 | 23190 | 22730 | 24530 | 15360 | 31180 |
| MAX | 18600 | 19000 | 14700 | 12400 | 40500 | 47900 | 47200 | 38600 | 30000 | 50800 | 22800 | 45000 |
| MIN | 12100 | 9700 | 9600 | 11200 | 11100 | 23000 | 23800 | 17300 | 17000 | 15100 | 9660 | 19400 |
| CFSM | .19 | .17 | .13 | .14 | .22 | .41 | .44 | .27 | .27 | .29 | .18 | .36 |
| IN. | .22 | .19 | .15 | .16 | .23 | .47 | .49 | .31 | .30 | .33 | .21 | .41 |
| AC-FT | 981600 | 877100 | 690900 | 716400 | 1065000 | 2131000 | 2241000 | 1426000 | 1352000 | 1508000 | 944500 | 1855000 |

CAL YR 1976 TOTAL 12641800 MEAN 34540 MAX 154000 MIN 9600 CFSM .40 IN 5.49 AC-FT 25070000
WTR YR 1977 TOTAL 7960260 MEAN 21810 MAX 50800 MIN 9600 CFSM .26 IN 3.46 AC-FT 15790000

MISSISSIPPI RIVER MAIN STEM

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

WATER-QUALITY RECORDS

LOCATION.--Samples collected at 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.

REMARKS.--Recorded water temperature data for station 05420400 at Dam 13 available since June 1969 in reports of Water Resources Data for Illinois.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TIME | INSTANTANEOUS DIS-CHARGE (CFS) (00061) | DIS-SOLVED SILICA (SI02) (MG/L) (00955) | TOTAL IRON (FE) (UG/L) (01045) | DIS-SOLVED IRON (FE) (UG/L) (01046) | TOTAL MAN-GANESE (MN) (UG/L) (01055) | SUS-PENDED MAN-GANESE (MN) (UG/L) (01054) | DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056) | DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915) | DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925) |
|-----------|------|--|---|--------------------------------|-------------------------------------|--------------------------------------|---|---|---|--|
| OCT 27... | 1130 | 16500 | .1 | -- | -- | -- | -- | -- | 42 | 19 |
| JAN 04... | 1030 | 14000 | 2.1 | -- | -- | -- | -- | -- | 47 | 22 |
| FEB 09... | 1200 | 13900 | 8.8 | -- | -- | -- | -- | -- | 49 | 21 |
| MAR 23... | 1300 | 42000 | 7.3 | 830 | 110 | 110 | 70 | 40 | 42 | 16 |
| APR 21... | 1000 | 38200 | .2 | -- | -- | -- | -- | -- | 32 | 15 |
| JUN 07... | 1400 | 24700 | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL 18... | 1300 | 30000 | .5 | -- | -- | -- | -- | -- | 37 | 16 |
| AUG 19... | 1230 | 14000 | .2 | -- | -- | -- | -- | -- | 34 | 15 |
| SEP 14... | 1030 | 34000 | 8.0 | 1500 | 30 | 200 | 200 | 0 | 35 | 15 |

| DATE | DIS-SOLVED SODIUM (NA) (MG/L) (00930) | DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935) | BICAR-BONATE (HCO3) (MG/L) (00440) | CAR-BONATE (CO3) (MG/L) (00445) | ALKA-LINITY AS CAC03 (MG/L) (00410) | DIS-SOLVED SULFATE (SO4) (MG/L) (00945) | DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940) | DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950) | TOTAL NITRITE PLUS NITRATE (MG/L) (00630) | TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625) |
|-----------|---------------------------------------|---|------------------------------------|---------------------------------|-------------------------------------|---|--|---|---|--|
| OCT 27... | 9.0 | 2.7 | 196 | 0 | 161 | 18 | 12 | .3 | .04 | .71 |
| JAN 04... | 13 | 2.2 | 220 | 0 | 180 | 28 | 17 | .2 | .24 | 1.1 |
| FEB 09... | 13 | 2.4 | 213 | 0 | 170 | 21 | 17 | .4 | .81 | .90 |
| MAR 23... | 13 | 3.8 | 162 | 0 | 130 | 21 | 15 | .1 | .74 | 1.6 |
| APR 21... | 11 | 3.0 | 130 | 0 | 110 | 24 | 14 | .1 | .01 | 1.5 |
| JUN 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL 18... | 11 | 2.6 | 160 | 0 | 130 | 28 | 11 | .1 | .02 | .92 |
| AUG 19... | 9.6 | 2.4 | 160 | 0 | 130 | 18 | 10 | .2 | .18 | .62 |
| SEP 14... | 7.8 | 2.4 | 150 | 0 | 120 | 22 | 13 | .2 | .26 | -- |

| DATE | TOTAL NITRO-GEN (N) (MG/L) (00600) | TOTAL NITRO-GEN (NO3) (MG/L) (71887) | TOTAL PHOS-PHORUS (P) (MG/L) (00665) | DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300) | DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301) | DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303) | DIS-SOLVED SOLIDS (TONS PER DAY) (70302) | HARD-NESS (CA,MG) (MG/L) (00900) | NON-CAR-BONATE HARD-NESS (MG/L) (00902) | PERCENT SODIUM (00932) |
|-----------|------------------------------------|--------------------------------------|--------------------------------------|--|---|--|--|----------------------------------|---|------------------------|
| OCT 27... | .75 | 3.3 | .10 | 205 | 200 | .28 | 9130 | 180 | 22 | 10 |
| JAN 04... | 1.3 | 5.9 | .08 | 247 | 240 | .34 | 9340 | 210 | 27 | 12 |
| FEB 09... | 1.7 | 7.6 | .10 | 338 | 238 | .46 | 12700 | 210 | 34 | 12 |
| MAR 23... | 2.3 | 10 | .20 | 198 | 198 | .27 | 22500 | 170 | 38 | 14 |
| APR 21... | 1.5 | 6.7 | .15 | 192 | 163 | .26 | 19800 | 140 | 35 | 14 |
| JUN 07... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL 18... | .94 | 4.2 | .17 | 200 | 185 | .27 | 16200 | 160 | 27 | 13 |
| AUG 19... | .80 | 3.5 | .18 | 166 | 168 | .25 | 7030 | 150 | 15 | 12 |
| SEP 14... | -- | -- | .24 | 177 | 177 | .24 | 16200 | 150 | 26 | 10 |

MISSISSIPPI RIVER MAIN STEM

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

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | SODIUM AD- SORP- TION RATIO (00931) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) | TUR- BID- ITY (JTU) (00070) | CARBON DIOXIDE (CO2) (MG/L) (00405) | TOTAL PHYTO- PLANK- TON (CELLS PER ML) (60050) | FECAL COLI- FORM .7UM-MF (COL./ 100 ML) (31625) | FECAL STREP- TOCOCCI KF AGAR (COL. PER 100 ML) (31673) | TOTAL ORGANIC CARBON (C) (MG/L) (00680) |
|-----------|--|---|--------------------------|--|---|---|---|---|---|--|
| OCT 27... | .3 | 370 | 8.0 | 9.0 | 15 | 3.1 | 23000 | 38 | 60 | -- |
| JAN 04... | .4 | 240 | 8.8 | .5 | 5 | .6 | 15000 | 896 | 280 | -- |
| FEB 09... | .4 | 360 | 7.8 | .0 | 2 | 5.4 | -- | 300 | 110 | -- |
| MAR 23... | .4 | 360 | 8.7 | 4.5 | 8 | .5 | -- | 44 | 110 | -- |
| APR 21... | .4 | 240 | 8.5 | 18.0 | 15 | .7 | -- | 88 | 120 | -- |
| JUN 07... | -- | 330 | 8.4 | 27.0 | -- | -- | -- | 200 | 90 | -- |
| JUL 18... | .4 | 340 | 7.6 | 29.0 | 9 | 6.4 | -- | -- | -- | -- |
| AUG 19... | .3 | 400 | 7.6 | 26.0 | 10 | 6.4 | -- | 140 | 140 | -- |
| SEP 14... | .3 | 330 | 8.2 | 21.5 | 25 | 1.5 | 27000 | 230 | 180 | -- |

| DATE | TOTAL ARSENIC (AS) (UG/L) (01002) | SUS- PENDE D ARSENIC (AS) (UG/L) (01001) | DIS- SOLVED ARSENIC (AS) (UG/L) (01000) | TOTAL CAD- MIUM (CD) (UG/L) (01027) | SUS- PENDE D CAD- MIUM (CD) (UG/L) (01026) | DIS- SOLVED CAD- MIUM (CD) (UG/L) (01025) | TOTAL CHRO- MIUM (CR) (UG/L) (01034) | SUS- PENDE D CHRO- MIUM (CR) (UG/L) (01031) | DIS- SOLVED CHRO- MIUM (CR) (UG/L) (01030) | TOTAL COBALT (CO) (UG/L) (01037) |
|-----------|---|---|--|--|--|---|---|---|--|--|
| OCT 27... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR 23... | 1 | 0 | 1 | 2 | 2 | 0 | <10 | <10 | 0 | 0 |
| APR 21... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP 14... | 2 | 0 | 2 | <10 | <8 | 2 | 10 | 0 | 10 | <50 |

| DATE | SUS- PENDE D COBALT (CO) (UG/L) (01036) | DIS- SOLVED COBALT (CO) (UG/L) (01035) | TOTAL COPPER (CU) (UG/L) (01042) | SUS- PENDE D COPPER (CU) (UG/L) (01041) | DIS- SOLVED COPPER (CU) (UG/L) (01040) | TOTAL LEAD (PB) (UG/L) (01051) | SUS- PENDE D LEAD (PB) (UG/L) (01050) | DIS- SOLVED LEAD (PB) (UG/L) (01049) | TOTAL MERCURY (HG) (UG/L) (71900) | SUS- PENDE D MERCURY (HG) (UG/L) (71895) |
|-----------|--|---|--|--|---|--|--|---|---|---|
| OCT 27... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR 23... | 0 | 0 | 16 | 7 | 9 | 10 | 10 | 0 | .2 | .0 |
| APR 21... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP 14... | <50 | 0 | <10 | <8 | 2 | <100 | <76 | 24 | .1 | .0 |

| DATE | DIS- SOLVED MERCURY (HG) (UG/L) (71890) | TOTAL SELE- NIUM (SE) (UG/L) (01147) | SUS- PENDE D SELE- NIUM (SE) (UG/L) (01146) | DIS- SOLVED SELE- NIUM (SE) (UG/L) (01145) | TOTAL ZINC (ZN) (UG/L) (01092) | SUS- PENDE D ZINC (ZN) (UG/L) (01091) | DIS- SOLVED ZINC (ZN) (UG/L) (01090) | SUS- PENDE D SEDI- MENT (MG/L) (80154) | SUS- PENDE D SEDI- MENT DIS- CHARGE (T/DAY) (80155) |
|-----------|--|---|---|--|--|--|---|---|--|
| OCT 27... | -- | -- | -- | -- | -- | -- | -- | 25 | 1110 |
| MAR 23... | .2 | 0 | 0 | 0 | 60 | 0 | 100 | 41 | 4650 |
| APR 21... | -- | -- | -- | -- | -- | -- | -- | 53 | 5470 |
| AUG 19... | -- | -- | -- | -- | -- | -- | -- | 47 | 1780 |
| SEP 14... | .3 | 0 | 0 | 0 | 30 | 20 | 10 | 70 | 6430 |

MISSISSIPPI RIVER MAIN STEM

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

WATER QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TIME | TEMPER- ATURE (DEG C) (00010) | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | SUS- PENDE SEDI- MENT DIS- CHARGE (MG/L) (80154) | SUS- PENDE SEDI- MENT DIS- CHARGE (T/DAY) (80155) | SUS. SED. SIEVE DIAM. % FINER THAN .062 MM (70331) |
|--------------|------|--|--|---|--|---|
| OCT 27... | 1130 | 9.0 | 16500 | 25 | 1110 | -- |
| MAR 23... | 1300 | 4.5 | 42000 | 41 | 4650 | 91 |
| APR 21... | 1000 | 18.0 | 38200 | 53 | 5470 | 87 |
| AUG 19... | 1230 | 26.0 | 14000 | 47 | 1780 | 89 |
| SEP 14... | 1030 | 21.5 | 34000 | 70 | 6430 | 92 |

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

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

| DATE TIME | OCT 27,76 1130 | JAN 4,77 1030 | FEB 9,77 1200 | SEP 14,77 1030 |
|---------------------|-------------------|------------------|------------------|-------------------|
| TOTAL CELLS/ML | 23000 | 15000 | 350 | 27000 |
| DIVERSITY: DIVISION | 1.5 | 0.0 | 1.5 | 1.5 |
| ...CLASS | 1.5 | 0.0 | 1.5 | 1.5 |
| ...ORDER | 1.5 | 0.0 | 2.1 | 2.0 |
| ...FAMILY | 1.9 | 0.0 | 2.4 | 2.1 |
| ...GENUS | 2.6 | 0.3 | 2.6 | 2.3 |

| ORGANISM | CELLS /ML | PER- CENT | CELLS /ML | PER- CENT | CELLS /ML | PER- CENT | CELLS /ML | PER- CENT |
|-------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| CHLOROPHYTA (GREEN ALGAE) | | | | | | | | |
| ..CHLOROPHYCEAE | | | | | | | | |
| ...CHLOROCOCCALES | | | | | | | | |
| ...CHARACIACEAE | | | | | | | * | 0 |
| ...SCHROEDERIA | -- | - | -- | - | -- | - | | |
| ...MICRACTINIACEAE | | | | | | | | |
| ...MICRACTINIUM | 5200# | 22 | -- | - | 13 | 4 | -- | - |
| ...OOCYSTACEAE | | | | | | | | |
| ...ANKISTRODESMUS | 360 | 2 | -- | - | -- | - | * | 0 |
| ...DICTYOSPHAERIUM | * | 0 | -- | - | -- | - | -- | - |
| ...KIRCHNERIELLA | * | 0 | -- | - | -- | - | -- | - |
| ...OOCYSTIS | -- | - | -- | - | -- | - | 700 | 3 |
| ...SELENASTRUM | * | 0 | -- | - | -- | - | 320 | 1 |
| ...TREUBARIA | * | 0 | -- | - | -- | - | -- | - |
| ...SCENEDESMACEAE | | | | | | | | |
| ...ACTINASTRUM | * | 0 | -- | - | -- | - | -- | - |
| ...SCENEDESMUS | 1200 | 5 | * | 0 | 40 | 11 | 1100 | 4 |
| ...TETRASTRUM | 1800 | 8 | * | 0 | 27 | 8 | * | 0 |
| ...TETRASPORALES | | | | | | | | |
| ...TETRASPORAACEAE | | | | | | | | |
| ...SCHIZOCHLAMYS | -- | - | -- | - | 7 | 2 | -- | - |
| ...VOLVOCALES | | | | | | | | |
| ...CHLAMYDOMONADACEAE | | | | | | | | |
| ...CHLAMYDOMONAS | -- | - | * | 0 | -- | - | -- | - |
| ...ZYGNEMATALES | | | | | | | | |
| ...DESMIDIACEAE | | | | | | | | |
| ...CLOSTERIUM | * | 0 | -- | - | -- | - | -- | - |
| ...COSMARIUM | -- | - | -- | - | -- | - | * | 0 |
| ...ZYGNEMATAACEAE | | | | | | | | |
| ...MOUGEOTIA | -- | - | -- | - | -- | - | 1200 | 4 |
| CHRYSPHYTA | | | | | | | | |
| ..BACILLARIOPHYCEAE | | | | | | | | |
| ...CENTRALES | | | | | | | | |
| ...COSCINODISCAEAE | | | | | | | | |
| ...CYCLOTELLA | -- | - | 14000# | 95 | 54# | 15 | 570 | 2 |
| ...MELOSIRA | 4900# | 21 | * | 0 | -- | - | 12000# | 44 |
| ...STEPHANODISCUS | 6100# | 26 | 770 | 5 | -- | - | -- | - |
| ...PENNALES | | | | | | | | |
| ...CYMBELLACEAE | | | * | 0 | -- | - | -- | - |
| ...CYMBELLA | -- | - | -- | - | -- | - | -- | - |
| ...DIATOMACEAE | | | | | | | | |
| ...DIATOMA | -- | - | -- | - | 3 | 1 | -- | - |
| ...FRAGILARIACEAE | | | | | | | | |
| ...ASTERIONELLA | * | 0 | * | 0 | 120# | 35 | -- | - |
| ...SYNEDRA | * | 0 | * | 0 | -- | - | * | 0 |
| ...NAVICULACEAE | | | | | | | | |
| ...NAVICULA | * | 0 | -- | - | -- | - | -- | - |
| ...NITZSCHIAEAE | | | | | | | | |
| ...NITZSCHIA | * | 0 | * | 0 | 10 | 3 | -- | - |
| CYANOPHYTA (BLUE-GREEN ALGAE) | | | | | | | | |
| ..CYANOPHYCEAE | | | | | | | | |
| ...CHROCOCCOCCALES | | | | | | | | |
| ...CHROCOCCOCCAEAE | | | | | | | | |
| ...AGMENELLUM | -- | - | -- | - | -- | - | 480 | 2 |
| ...ANACYSTIS | * | 0 | -- | - | -- | - | 2500 | 9 |
| ...HORMOGONALES | | | | | | | | |
| ...OSCILLATORIACEAE | | | | | | | | |
| ...OSCILLATORIA | 3700# | 16 | * | 0 | 71# | 20 | 7800# | 29 |
| EUGLENOPHYTA (EUGLENOIDS) | | | | | | | | |
| ..EUGLENOPHYCEAE | | | | | | | | |
| ...EUGLENALES | | | | | | | | |
| ...EUGLENACEAE | | | | | | | | |
| ...EUGLENA | -- | - | -- | - | -- | - | * | 0 |
| ...TRACHELOMONAS | * | 0 | * | 0 | 3 | 1 | * | 0 |
| PYRRHOPHYTA (FIRE ALGAE) | | | | | | | | |
| ..DINOPHYCEAE | | | | | | | | |
| ...PERIDINIALES | | | | | | | | |
| ...PERIDINIACEAE | | | | | | | | |
| ...PERIDINIUM | -- | - | -- | - | -- | - | * | 0 |

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

WAPSIPINICON RIVER BASIN

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) above mean sea level.

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

AVERAGE DISCHARGE.--19 years, 57.5 ft³/s (1.628 m³/s), 8.20 in/yr (208 mm/yr), 41,660 acre-ft/yr (51.4 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; minimum daily, 1.9 ft³/s (0.054 m³/s) Feb. 4-8, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 68 ft³/s (1.93 m³/s) May 30, gage height, 5.12 ft (1.561 m) no peak above base of 600 ft³/s (17.0 m³/s); maximum gage height, 8.11 ft (2.472 m) Mar. 9, backwater from ice; minimum daily discharge, 3.0 ft³/s (0.085 m³/s) Jan. 17 to Feb. 10.

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 | 5.9 | 10 | 5.7 | 4.1 | 3.0 | 7.0 | 31 | 11 | 19 | 9.5 | 5.6 | 14 |
| 2 | 6.1 | 9.9 | 5.6 | 3.9 | 3.0 | 7.0 | 37 | 10 | 15 | 6.8 | 5.5 | 14 |
| 3 | 6.1 | 9.5 | 5.6 | 3.8 | 3.0 | 7.0 | 50 | 9.5 | 13 | 7.0 | 5.4 | 14 |
| 4 | 5.4 | 9.0 | 5.6 | 3.7 | 3.0 | 7.1 | 46 | 11 | 11 | 6.9 | 5.3 | 14 |
| 5 | 5.6 | 8.0 | 5.7 | 3.6 | 3.0 | 7.9 | 39 | 28 | 11 | 5.3 | 5.3 | 14 |
| 6 | 6.3 | 8.6 | 5.8 | 3.6 | 3.0 | 9.0 | 31 | 32 | 9.7 | 7.1 | 5.3 | 14 |
| 7 | 6.4 | 8.4 | 5.9 | 3.5 | 3.0 | 10 | 25 | 21 | 8.8 | 18 | 5.6 | 14 |
| 8 | 7.5 | 7.5 | 6.1 | 3.4 | 3.0 | 20 | 23 | 16 | 8.9 | 13 | 9.8 | 14 |
| 9 | 6.5 | 6.3 | 6.4 | 3.3 | 3.0 | 46 | 20 | 13 | 8.4 | 11 | 13 | 16 |
| 10 | 6.7 | 5.5 | 6.7 | 3.3 | 3.0 | 48 | 19 | 12 | 7.9 | 9.5 | 13 | 16 |
| 11 | 7.6 | 5.0 | 6.9 | 3.2 | 3.1 | 45 | 17 | 11 | 8.5 | 8.2 | 10 | 17 |
| 12 | 8.0 | 5.3 | 7.0 | 3.2 | 3.3 | 44 | 15 | 10 | 7.8 | 11 | 8.6 | 18 |
| 13 | 7.7 | 5.6 | 7.0 | 3.1 | 3.4 | 43 | 15 | 9.7 | 7.1 | 8.1 | 6.7 | 20 |
| 14 | 7.3 | 6.0 | 7.0 | 3.1 | 3.7 | 41 | 14 | 8.9 | 6.8 | 6.5 | 5.8 | 20 |
| 15 | 6.9 | 6.5 | 7.0 | 3.1 | 3.9 | 38 | 14 | 8.8 | 6.7 | 5.8 | 6.4 | 21 |
| 16 | 7.2 | 7.0 | 7.0 | 3.1 | 4.1 | 37 | 13 | 9.0 | 7.0 | 6.0 | 12 | 22 |
| 17 | 7.4 | 7.6 | 7.1 | 3.0 | 4.3 | 36 | 13 | 8.9 | 7.6 | 9.3 | 12 | 25 |
| 18 | 8.1 | 8.0 | 7.1 | 3.0 | 4.4 | 35 | 13 | 8.9 | 7.3 | 17 | 8.8 | 27 |
| 19 | 9.5 | 8.4 | 7.0 | 3.0 | 4.5 | 31 | 13 | 8.1 | 6.2 | 12 | 14 | 23 |
| 20 | 9.3 | 6.9 | 7.0 | 3.0 | 4.5 | 22 | 14 | 8.6 | 5.7 | 7.9 | 26 | 17 |
| 21 | 9.6 | 6.0 | 6.9 | 3.0 | 4.7 | 14 | 39 | 11 | 5.8 | 7.4 | 19 | 16 |
| 22 | 9.4 | 5.5 | 6.9 | 3.0 | 5.0 | 5.3 | 40 | 31 | 6.1 | 6.2 | 16 | 15 |
| 23 | 9.5 | 5.8 | 6.4 | 3.0 | 5.4 | 3.6 | 29 | 32 | 5.6 | 5.5 | 15 | 17 |
| 24 | 10 | 6.1 | 6.1 | 3.0 | 5.9 | 6.0 | 20 | 16 | 5.6 | 27 | 13 | 40 |
| 25 | 11 | 6.3 | 6.0 | 3.0 | 6.7 | 4.5 | 16 | 12 | 5.1 | 34 | 12 | 31 |
| 26 | 11 | 6.9 | 6.0 | 3.0 | 6.9 | 9.2 | 14 | 10 | 4.7 | 15 | 12 | 25 |
| 27 | 11 | 6.6 | 5.9 | 3.0 | 7.0 | 23 | 14 | 21 | 4.6 | 10 | 14 | 22 |
| 28 | 10 | 6.2 | 5.7 | 3.0 | 7.0 | 28 | 13 | 28 | 5.8 | 8.7 | 15 | 18 |
| 29 | 10 | 5.9 | 5.3 | 3.0 | --- | 31 | 12 | 23 | 5.4 | 8.0 | 35 | 18 |
| 30 | 10 | 5.7 | 4.6 | 3.0 | --- | 34 | 11 | 40 | 7.8 | 6.9 | 28 | 25 |
| 31 | 10 | --- | 4.3 | 3.0 | --- | 31 | --- | 27 | --- | 6.5 | 15 | --- |
| TOTAL | 253.0 | 210.0 | 193.5 | 100.0 | 117.8 | 730.6 | 670 | 506.4 | 239.9 | 321.1 | 378.1 | 581 |
| MEAN | 8.16 | 7.00 | 6.24 | 3.23 | 4.21 | 23.6 | 22.3 | 16.3 | 8.00 | 10.4 | 12.2 | 19.4 |
| MAX | 11 | 10 | 7.1 | 4.1 | 7.0 | 48 | 50 | 40 | 19 | 34 | 35 | 40 |
| MIN | 5.4 | 5.0 | 4.3 | 3.0 | 3.0 | 3.6 | 11 | 8.1 | 4.6 | 5.3 | 5.3 | 14 |
| CFSM | .09 | .07 | .07 | .03 | .04 | .25 | .23 | .17 | .08 | .11 | .13 | .20 |
| IN. | .10 | .08 | .08 | .04 | .05 | .29 | .26 | .20 | .09 | .13 | .15 | .23 |
| AC-FT | 502 | 417 | 384 | 198 | 234 | 1450 | 1330 | 1000 | 476 | 637 | 750 | 1150 |

CAL YR 1976 TOTAL 9407.1 MEAN 25.7 MAX 531 MIN 4.3 CFSM .27 IN 3.68 AC-FT 18660
WTR YR 1977 TOTAL 4301.4 MEAN 11.8 MAX 50 MIN 3.0 CFSM .12 IN 1.68 AC-FT 8530

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) above mean sea level. 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.--44 years, 559 ft³/s (15.83 m³/s), 7.24 in/yr (184 mm/yr), 405,000 acre-ft/yr (499 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) 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, 1,100 ft³/s (31.2 m³/s) Sept. 27, gage height, 5.94 ft (1.811 m), no peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 7.0 ft³/s (0.20 m³/s) Jan. 25-30.

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 | 16 | 52 | 30 | 23 | 8.0 | 81 | 224 | 135 | 70 | 39 | 59 | 567 |
| 2 | 16 | 58 | 30 | 23 | 9.0 | 77 | 262 | 126 | 79 | 40 | 55 | 520 |
| 3 | 16 | 56 | 29 | 23 | 9.0 | 81 | 271 | 117 | 75 | 41 | 52 | 452 |
| 4 | 16 | 44 | 28 | 21 | 9.0 | 98 | 346 | 142 | 71 | 42 | 49 | 413 |
| 5 | 16 | 42 | 29 | 20 | 9.0 | 106 | 373 | 190 | 69 | 44 | 51 | 366 |
| 6 | 16 | 49 | 31 | 19 | 9.0 | 121 | 367 | 174 | 64 | 46 | 50 | 328 |
| 7 | 18 | 49 | 29 | 17 | 9.0 | 121 | 374 | 172 | 53 | 39 | 52 | 292 |
| 8 | 10 | 38 | 28 | 15 | 9.0 | 141 | 340 | 166 | 58 | 38 | 54 | 256 |
| 9 | 25 | 43 | 28 | 14 | 9.0 | 168 | 302 | 145 | 53 | 44 | 54 | 244 |
| 10 | 25 | 41 | 28 | 13 | 16 | 191 | 270 | 141 | 51 | 63 | 58 | 206 |
| 11 | 25 | 37 | 28 | 13 | 32 | 260 | 240 | 138 | 52 | 60 | 62 | 185 |
| 12 | 29 | 33 | 26 | 13 | 30 | 414 | 213 | 126 | 49 | 51 | 70 | 196 |
| 13 | 32 | 35 | 25 | 13 | 27 | 489 | 199 | 112 | 48 | 41 | 79 | 184 |
| 14 | 27 | 36 | 23 | 13 | 25 | 489 | 186 | 102 | 48 | 42 | 71 | 170 |
| 15 | 33 | 38 | 23 | 12 | 26 | 618 | 186 | 91 | 47 | 39 | 69 | 166 |
| 16 | 24 | 39 | 24 | 12 | 28 | 430 | 177 | 86 | 45 | 38 | 148 | 167 |
| 17 | 22 | 41 | 24 | 12 | 28 | 345 | 172 | 87 | 50 | 41 | 130 | 165 |
| 18 | 22 | 42 | 25 | 10 | 30 | 330 | 163 | 100 | 51 | 45 | 155 | 595 |
| 19 | 30 | 43 | 26 | 10 | 30 | 273 | 153 | 127 | 50 | 85 | 227 | 887 |
| 20 | 34 | 45 | 28 | 10 | 31 | 254 | 158 | 85 | 46 | 145 | 345 | 937 |
| 21 | 37 | 46 | 30 | 9.0 | 30 | 234 | 206 | 40 | 43 | 115 | 367 | 939 |
| 22 | 31 | 40 | 29 | 9.0 | 33 | 208 | 199 | 44 | 42 | 82 | 311 | 779 |
| 23 | 33 | 34 | 28 | 9.0 | 51 | 197 | 203 | 63 | 42 | 67 | 296 | 620 |
| 24 | 47 | 40 | 28 | 8.0 | 106 | 173 | 190 | 75 | 41 | 76 | 280 | 850 |
| 25 | 45 | 46 | 26 | 7.0 | 116 | 173 | 180 | 79 | 38 | 86 | 241 | 937 |
| 26 | 44 | 50 | 25 | 7.0 | 121 | 162 | 179 | 78 | 38 | 68 | 304 | 997 |
| 27 | 43 | 46 | 25 | 7.0 | 106 | 173 | 178 | 71 | 37 | 57 | 401 | 1050 |
| 28 | 44 | 35 | 26 | 7.0 | 85 | 179 | 163 | 75 | 37 | 71 | 570 | 944 |
| 29 | 44 | 35 | 26 | 7.0 | --- | 221 | 150 | 75 | 35 | 131 | 628 | 786 |
| 30 | 54 | 32 | 25 | 7.0 | --- | 227 | 139 | 72 | 39 | 96 | 598 | 790 |
| 31 | 54 | --- | 24 | 8.0 | --- | 221 | --- | 79 | --- | 83 | 600 | --- |
| TOTAL | 938 | 1265 | 834 | 391.0 | 1031.0 | 7255 | 6763 | 3313 | 1521 | 1955 | 6486 | 15988 |
| MEAN | 30.3 | 42.2 | 26.9 | 12.6 | 36.8 | 234 | 225 | 107 | 50.7 | 63.1 | 209 | 533 |
| MAX | 54 | 58 | 31 | 23 | 121 | 618 | 374 | 190 | 79 | 145 | 628 | 1050 |
| MIN | 16 | 32 | 23 | 7.0 | 8.0 | 77 | 139 | 40 | 35 | 38 | 49 | 165 |
| CFSM | .03 | .04 | .03 | .01 | .04 | .22 | .22 | .10 | .05 | .06 | .20 | .51 |
| IN. | .03 | .04 | .03 | .01 | .04 | .26 | .24 | .12 | .05 | .07 | .23 | .57 |
| AC-FT | 1860 | 2510 | 1650 | 776 | 2040 | 14390 | 13410 | 6570 | 3020 | 3880 | 12860 | 31710 |

CAL YR 1976 TOTAL 124917.0 MEAN 341 MAX 7300 MIN 13 CFSM .33 IN 4.43 AC-FT 247800
WTR YR 1977 TOTAL 47740.0 MEAN 131 MAX 1050 MIN 7.0 CFSM .13 IN 1.69 AC-FT 94690

WAPSIPINICON RIVER BASIN

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) above mean sea level.

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.--43 years, 1,435 ft³/s (40.64 m³/s), 8.36 in/yr (212 mm/yr), 1,039,700 acre-ft/yr (1,282 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.--Maximum discharge, 5,640 ft³/s (157 m³/s) Sept. 19, gage height, 10.90 ft (3.322 m) no peak above base of 6,000 ft³/s (170 m³/s); minimum daily, 46 ft³/s (1.30 m³/s) Jan. 22, 23.

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 | 118 | 160 | 170 | 90 | 50 | 360 | 551 | 355 | 225 | 3040 | 175 | 630 |
| 2 | 116 | 155 | 152 | 88 | 50 | 400 | 518 | 349 | 221 | 2020 | 139 | 708 |
| 3 | 116 | 164 | 138 | 82 | 51 | 420 | 491 | 339 | 217 | 524 | 230 | 746 |
| 4 | 114 | 162 | 130 | 78 | 52 | 460 | 494 | 338 | 211 | 420 | 205 | 751 |
| 5 | 146 | 160 | 122 | 76 | 52 | 450 | 506 | 358 | 205 | 290 | 188 | 740 |
| 6 | 161 | 159 | 114 | 72 | 52 | 410 | 519 | 362 | 199 | 260 | 215 | 706 |
| 7 | 152 | 161 | 106 | 65 | 52 | 377 | 519 | 347 | 201 | 240 | 225 | 656 |
| 8 | 145 | 155 | 96 | 66 | 54 | 403 | 524 | 342 | 206 | 220 | 785 | 604 |
| 9 | 136 | 161 | 86 | 64 | 60 | 471 | 532 | 356 | 200 | 198 | 1600 | 570 |
| 10 | 134 | 160 | 88 | 64 | 68 | 440 | 526 | 361 | 206 | 178 | 1000 | 535 |
| 11 | 132 | 157 | 88 | 65 | 76 | 471 | 516 | 351 | 267 | 175 | 604 | 507 |
| 12 | 125 | 135 | 88 | 63 | 90 | 513 | 503 | 340 | 454 | 158 | 536 | 488 |
| 13 | 122 | 115 | 88 | 60 | 116 | 524 | 484 | 326 | 292 | 156 | 492 | 482 |
| 14 | 119 | 109 | 90 | 57 | 108 | 568 | 466 | 318 | 231 | 146 | 816 | 459 |
| 15 | 115 | 126 | 90 | 54 | 110 | 535 | 449 | 310 | 208 | 163 | 651 | 436 |
| 16 | 118 | 142 | 92 | 52 | 124 | 556 | 438 | 301 | 193 | 151 | 888 | 434 |
| 17 | 118 | 165 | 93 | 51 | 130 | 564 | 433 | 353 | 192 | 250 | 2080 | 434 |
| 18 | 146 | 178 | 94 | 47 | 148 | 584 | 409 | 307 | 301 | 371 | 1310 | 2900 |
| 19 | 166 | 165 | 98 | 48 | 160 | 609 | 395 | 285 | 263 | 315 | 865 | 5320 |
| 20 | 154 | 185 | 98 | 48 | 170 | 580 | 394 | 277 | 191 | 238 | 686 | 4170 |
| 21 | 145 | 173 | 96 | 48 | 190 | 549 | 411 | 305 | 176 | 205 | 623 | 2740 |
| 22 | 141 | 156 | 98 | 46 | 200 | 535 | 425 | 343 | 171 | 190 | 596 | 2330 |
| 23 | 137 | 120 | 100 | 46 | 242 | 502 | 423 | 401 | 165 | 175 | 553 | 2120 |
| 24 | 138 | 124 | 98 | 48 | 358 | 478 | 410 | 390 | 163 | 178 | 548 | 2320 |
| 25 | 140 | 148 | 100 | 50 | 328 | 447 | 393 | 333 | 181 | 202 | 549 | 2420 |
| 26 | 141 | 194 | 102 | 50 | 330 | 420 | 386 | 313 | 184 | 192 | 544 | 2180 |
| 27 | 140 | 200 | 102 | 52 | 340 | 406 | 377 | 276 | 161 | 208 | 538 | 2120 |
| 28 | 141 | 191 | 104 | 52 | 340 | 406 | 370 | 260 | 147 | 202 | 544 | 2120 |
| 29 | 144 | 220 | 106 | 53 | --- | 534 | 361 | 250 | 142 | 198 | 590 | 1970 |
| 30 | 153 | 190 | 104 | 52 | --- | 594 | 356 | 242 | 842 | 180 | 571 | 1880 |
| 31 | 161 | --- | 97 | 54 | --- | 584 | --- | 233 | --- | 185 | 584 | --- |
| TOTAL | 4234 | 4810 | 3230 | 1841 | 4101 | 15150 | 13579 | 10023 | 7015 | 11626 | 19938 | 44481 |
| MEAN | 137 | 160 | 104 | 59.4 | 146 | 489 | 453 | 323 | 224 | 375 | 643 | 1403 |
| MAX | 166 | 220 | 170 | 90 | 358 | 609 | 551 | 401 | 842 | 3040 | 2080 | 5320 |
| MIN | 114 | 109 | 88 | 46 | 50 | 360 | 356 | 233 | 142 | 146 | 139 | 434 |
| CFSM | .06 | .07 | .05 | .03 | .06 | .21 | .19 | .14 | .10 | .16 | .28 | .64 |
| IN | .07 | .08 | .05 | .03 | .07 | .24 | .22 | .16 | .11 | .19 | .32 | .71 |
| AC-FT | 8400 | 9540 | 6410 | 3650 | 8130 | 30050 | 26930 | 19680 | 13910 | 23060 | 39550 | 88230 |

CAL YR 1976 TOTAL 261622 MEAN 715 MAX 7750 MIN 88 CFSM .21 IN 4.18 AC-FT 518900
WTR YR 1977 TOTAL 140030 MEAN 384 MAX 5320 MIN 46 CFSM .17 IN 2.24 AC-FT 277700

PINE CREEK BASIN

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 in Old Pine Creek Mill at Wildcat Den State Park, 9.8 miles (15.8 km) NE of Muscatine, and 1.5 miles (2.4 km) upstream from mouth.

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

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

GAGE.--Water-stage recorder. Prior to June 30, 1977, mill dam control.

REMARKS.--Records fair except those for winter period and the period after June 30, which are poor. Mill dam partially washed out on June 30.

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 (4.82 m) Mar. 4, 1976; no flow Jan. 11-16, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 700 ft³/s (19.82 m³/s) and maximum (*):

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) |
|---------|------|---|-------------------------|----------|------|---|-------------------------|
| Feb. 11 | 1625 | 1,800 51.0 | 13.33 4.063 | Aug. 8 | 0850 | *4,500 127 | 10.68 3.255 |
| June 30 | 0940 | 2,750 77.9 | *14.77 4.502 | Sept. 18 | 0515 | 1,290 36.5 | 8.55 2.606 |
| July 18 | 1435 | 1,170 33.1 | 8.47 2.582 | | | | |

No flow Jan. 11-16.

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 | 1.6 | 2.7 | .60 | .02 | .02 | 5.2 | 17 | 4.1 | .67 | 52 | 1.6 | 4.6 |
| 2 | 1.4 | 2.5 | .50 | .02 | .02 | 5.5 | 17 | 3.8 | .53 | 15 | 81 | 3.6 |
| 3 | 1.4 | 2.3 | .45 | .02 | .02 | 10 | 13 | 3.8 | .53 | 3.2 | 51 | 2.2 |
| 4 | 1.4 | 2.3 | .38 | .02 | .02 | 9.5 | 30 | 4.9 | .40 | 1.4 | 33 | 2.2 |
| 5 | 15 | 2.3 | .34 | .01 | .02 | 6.4 | 23 | 10 | .53 | 13 | 49 | 1.8 |
| 6 | 7.8 | 2.3 | .30 | .01 | .02 | 7.3 | 16 | 12 | .20 | 14 | 67 | 1.5 |
| 7 | 3.1 | 2.2 | .27 | .01 | .02 | 7.8 | 14 | 6.4 | .30 | 1.2 | 75 | .86 |
| 8 | 2.5 | 1.9 | .24 | .01 | .02 | 10 | 12 | 4.7 | 1.0 | 1.4 | 737 | .53 |
| 9 | 2.3 | 2.3 | .21 | .01 | .02 | 11 | 12 | 3.6 | .53 | 1.4 | 43 | .27 |
| 10 | 2.2 | 2.3 | .20 | .01 | .75 | 12 | 10 | 3.1 | 4.4 | 1.6 | 31 | .21 |
| 11 | 2.2 | 2.0 | .38 | .00 | 439 | 14 | 9.5 | 3.0 | 3.1 | 1.6 | 26 | .21 |
| 12 | 2.0 | 1.7 | .19 | .00 | 513 | 52 | 8.2 | 2.7 | 2.2 | 1.8 | 24 | 13 |
| 13 | 1.9 | 1.7 | .40 | .00 | 242 | 16 | 8.2 | 2.5 | 1.2 | 1.8 | 25 | 28 |
| 14 | 1.9 | 1.7 | 1.0 | .00 | 19 | 12 | 8.2 | 2.3 | .80 | 2.1 | 26 | 6.8 |
| 15 | 2.0 | 2.0 | .60 | .00 | 55 | 10 | 7.8 | 2.0 | .53 | 2.1 | 23 | 3.6 |
| 16 | 2.2 | 2.0 | .30 | .00 | 24 | 7.3 | 6.9 | 13 | .53 | 2.4 | 17 | 11 |
| 17 | 2.3 | 2.7 | .10 | .01 | 17 | 6.0 | 6.0 | 19 | 1.3 | 2.4 | 12 | 33 |
| 18 | 2.3 | 2.7 | .08 | .01 | 30 | 6.9 | 5.5 | 5.7 | 10 | 223 | 6.0 | 300 |
| 19 | 3.3 | 2.5 | .06 | .01 | 40 | 6.0 | 6.0 | 3.6 | 2.0 | 2.5 | 2.0 | 67 |
| 20 | 3.0 | 2.4 | .04 | .01 | 89 | 6.9 | 9.1 | 3.0 | .80 | 2.8 | 1.0 | 51 |
| 21 | 1.9 | 2.2 | .03 | .01 | 139 | 9.5 | 19 | 4.1 | .53 | 2.8 | .44 | 40 |
| 22 | 1.9 | 1.7 | .03 | .01 | 149 | 14 | 12 | 3.3 | .40 | 3.2 | 15 | 36 |
| 23 | 2.2 | 1.7 | .03 | .01 | 112 | 13 | 8.6 | 2.7 | .40 | 3.2 | 12 | 35 |
| 24 | 2.3 | 2.0 | .02 | .01 | 55 | 12 | 7.3 | 2.2 | .80 | 29 | 12 | 36 |
| 25 | 2.3 | 2.7 | .05 | .02 | 16 | 11 | 6.0 | 2.0 | .67 | 3.8 | 3.9 | 30 |
| 26 | 2.2 | 2.5 | .30 | .02 | 8.2 | 10 | 5.7 | 2.0 | .44 | 4.6 | 25 | 25 |
| 27 | 2.0 | 1.5 | .10 | .02 | 5.7 | 12 | 5.2 | 1.6 | .40 | 5.1 | 17 | 21 |
| 28 | 1.9 | 1.0 | .05 | .02 | 5.5 | 35 | 4.7 | 1.2 | .36 | 3.7 | 47 | 18 |
| 29 | 2.0 | .80 | .03 | .02 | --- | 72 | 4.4 | .92 | .30 | 3.3 | 28 | 18 |
| 30 | 2.5 | .70 | .02 | .02 | --- | 40 | 4.1 | 1.0 | 624 | 2.2 | 14 | 18 |
| 31 | 3.1 | --- | .02 | .02 | --- | 22 | --- | .92 | --- | 6.4 | 7.6 | --- |
| TOTAL | 86.1 | 61.30 | 7.32 | .36 | 2033.58 | 472.3 | 316.4 | 135.14 | 659.85 | 414.0 | 1512.54 | 808.38 |
| MEAN | 2.78 | 2.04 | .24 | .012 | 72.6 | 15.2 | 10.5 | 4.36 | 22.0 | 13.4 | 48.8 | 26.9 |
| MAX | 15 | 2.7 | 1.0 | .02 | 513 | 72 | 30 | 19 | 624 | 223 | 737 | 300 |
| MIN | 1.4 | .70 | .02 | .00 | .02 | 5.2 | 4.1 | .92 | .20 | 1.2 | .44 | .21 |
| CFSM | .07 | .06 | .006 | .000 | 1.84 | .39 | .27 | .11 | .56 | .34 | 1.24 | .68 |
| IN. | .08 | .06 | .01 | .00 | 1.92 | .45 | .30 | .13 | .62 | .39 | 1.43 | .76 |
| AC-FT | 171 | 122 | 15 | .7 | 4030 | 937 | 628 | 268 | 1310 | 821 | 3000 | 1600 |

CAL YR 1975 TOTAL 6785.66 MEAN 18.5 MAX 1190 MIN .02 CFSM .47 IN 6.41 AC-FT 13469
WTR YR 1977 TOTAL 6507.27 MEAN 17.8 MAX 737 MIN .00 CFSM .45 IN 6.14 AC-FT 12910

IOWA RIVER BASIN

05451500 IOWA RIVER AT MARSHALLTOWN, IA

LOCATION.--Lat 42°03'57", long 92°54'27", in SE1/4 SE1/4 sec.23, T.84N., R.18 W., Marshall County, Hydrologic Unit 07080208, on right bank 10 ft (3 m) downstream from State Highway 14 bridge, 1,500 ft (457 m) 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 (260.025 m) above mean sea level. 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.--59 years (1902-3, 1914-27, 1932-77), 766 ft³/s (21.69 m³/s), 6.65 in/yr (169 mm/yr), 558,000 acre-ft/yr (696 km³/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 km³/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, 19.38 ft (5.907 m) June 23, 1974; minimum daily discharge, 4.7 ft³/s (0.13 m³/s) Jan. 25, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,330 ft³/s (179 m³/s) Aug. 17, gage height, 16.35 ft (4.983 m) at 0015 hours, no other peak above base of 5,000 ft³/s (142 m³/s); minimum daily, 4.7 ft³/s (0.13 m³/s) Jan. 25.

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 | 64 | 81 | 63 | 16 | 13 | 182 | 160 | 136 | 62 | 34 | 18 | 880 |
| 2 | 60 | 79 | 63 | 16 | 16 | 192 | 178 | 128 | 59 | 26 | 20 | 612 |
| 3 | 62 | 77 | 60 | 16 | 24 | 200 | 202 | 122 | 57 | 33 | 31 | 468 |
| 4 | 64 | 75 | 58 | 16 | 16 | 220 | 204 | 133 | 54 | 40 | 29 | 412 |
| 5 | 65 | 74 | 57 | 15 | 16 | 240 | 206 | 195 | 54 | 40 | 30 | 356 |
| 6 | 60 | 74 | 55 | 15 | 16 | 280 | 204 | 144 | 50 | 44 | 36 | 311 |
| 7 | 59 | 69 | 52 | 14 | 16 | 270 | 197 | 143 | 46 | 72 | 47 | 407 |
| 8 | 58 | 62 | 48 | 14 | 18 | 274 | 180 | 141 | 48 | 92 | 353 | 586 |
| 9 | 59 | 83 | 43 | 13 | 18 | 266 | 166 | 160 | 47 | 68 | 1110 | 569 |
| 10 | 59 | 69 | 41 | 13 | 17 | 250 | 157 | 153 | 47 | 52 | 433 | 501 |
| 11 | 62 | 62 | 38 | 12 | 17 | 280 | 144 | 135 | 47 | 43 | 369 | 380 |
| 12 | 63 | 62 | 35 | 13 | 20 | 330 | 141 | 120 | 46 | 37 | 277 | 319 |
| 13 | 63 | 73 | 33 | 13 | 20 | 326 | 138 | 107 | 41 | 28 | 196 | 342 |
| 14 | 59 | 90 | 32 | 12 | 29 | 317 | 136 | 99 | 41 | 29 | 158 | 387 |
| 15 | 60 | 94 | 29 | 11 | 54 | 272 | 135 | 94 | 38 | 22 | 202 | 335 |
| 16 | 59 | 99 | 32 | 10 | 67 | 238 | 135 | 92 | 34 | 45 | 4640 | 281 |
| 17 | 59 | 98 | 35 | 9.0 | 72 | 182 | 132 | 91 | 42 | 30 | 4260 | 273 |
| 18 | 60 | 97 | 31 | 6.5 | 80 | 188 | 136 | 88 | 63 | 28 | 1560 | 1780 |
| 19 | 62 | 87 | 29 | 5.7 | 86 | 176 | 135 | 84 | 107 | 49 | 969 | 1230 |
| 20 | 63 | 82 | 28 | 5.7 | 93 | 172 | 136 | 88 | 63 | 43 | 717 | 728 |
| 21 | 64 | 76 | 28 | 5.7 | 100 | 166 | 168 | 88 | 48 | 42 | 561 | 543 |
| 22 | 66 | 65 | 26 | 5.3 | 110 | 157 | 193 | 89 | 42 | 77 | 417 | 451 |
| 23 | 70 | 62 | 24 | 5.3 | 122 | 151 | 178 | 91 | 39 | 67 | 318 | 404 |
| 24 | 73 | 84 | 24 | 5.1 | 140 | 141 | 197 | 91 | 40 | 51 | 246 | 1090 |
| 25 | 74 | 105 | 23 | 4.7 | 158 | 140 | 220 | 82 | 45 | 43 | 200 | 1060 |
| 26 | 79 | 88 | 22 | 4.8 | 152 | 138 | 197 | 76 | 46 | 34 | 368 | 745 |
| 27 | 77 | 62 | 21 | 5.9 | 158 | 141 | 176 | 72 | 36 | 25 | 618 | 580 |
| 28 | 74 | 70 | 20 | 6.7 | 170 | 151 | 160 | 73 | 35 | 23 | 1350 | 493 |
| 29 | 76 | 82 | 20 | 8.0 | --- | 160 | 148 | 74 | 33 | 35 | 1300 | 442 |
| 30 | 81 | 70 | 18 | 9.1 | --- | 166 | 141 | 86 | 35 | 24 | 842 | 476 |
| 31 | 83 | --- | 18 | 11 | --- | 162 | --- | 74 | --- | 20 | 716 | --- |
| TOTAL | 2037 | 2351 | 1106 | 317.5 | 1818 | 6528 | 5000 | 3349 | 1445 | 1296 | 22391 | 17441 |
| MEAN | 65.7 | 78.4 | 35.7 | 10.2 | 64.9 | 211 | 167 | 108 | 48.2 | 41.8 | 722 | 581 |
| MAX | 83 | 105 | 63 | 16 | 170 | 330 | 220 | 195 | 107 | 92 | 4640 | 1780 |
| MIN | 58 | 62 | 18 | 4.7 | 13 | 138 | 132 | 72 | 33 | 20 | 18 | 273 |
| CFSM | .04 | .05 | .02 | .007 | .04 | .14 | .11 | .07 | .03 | .03 | .46 | .37 |
| IN. | .05 | .06 | .03 | .01 | .04 | .16 | .12 | .08 | .03 | .03 | .53 | .41 |
| AC-FT | 4040 | 4660 | 2190 | 630 | 3610 | 12950 | 9920 | 6640 | 2870 | 2570 | 44410 | 34590 |

| | | | | | | | | |
|-------------|-------|----------|----------|----------|---------|----------|---------|--------------|
| CAL YR 1976 | TOTAL | 219242.0 | MEAN 599 | MAX 7920 | MIN 18 | CFSM .38 | IN 5.21 | AC-FT 434900 |
| WTR YR 1977 | TOTAL | 65079.5 | MEAN 178 | MAX 4640 | MIN 4.7 | CFSM .11 | IN 1.55 | AC-FT 129100 |

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 (6.6 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) above mean sea level.

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.--28 years, 65.9 ft³/s (1.866 m³/s), 7.58 in/yr (193 mm/yr), 47,740 acre-ft/yr (58.9 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.--Peak discharges above base of 1,000 ft³/s (28.3 m³/s) and maximum (*):

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) |
|---------|------|---|-------------------------|---------|------|---|-------------------------|
| Aug. 16 | 1030 | *12,000 340 | *17.69 5.392 | Aug. 28 | 1645 | 2,150 60.9 | 13.10 3.993 |

No flow Jan. 26 to Feb. 2, July 15, 16.

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 | 2.4 | 8.1 | 1.4 | .20 | .00 | 9.6 | 6.3 | 3.0 | 2.0 | 2.2 | 5.8 | 190 |
| 2 | 2.0 | 3.2 | 1.7 | .15 | .00 | 10 | 8.5 | 3.3 | 1.2 | 1.4 | 4.9 | 137 |
| 3 | 2.6 | 2.6 | 1.9 | .13 | .01 | 11 | 10 | 3.1 | 1.0 | 1.3 | 3.4 | 139 |
| 4 | 4.4 | 3.0 | 1.8 | .12 | .02 | 12 | 11 | 3.7 | .90 | 1.6 | 3.7 | 184 |
| 5 | 4.6 | 2.2 | 1.9 | .10 | .03 | 13 | 14 | 6.1 | 1.1 | 9.4 | 4.5 | 130 |
| 6 | 2.9 | 1.7 | 2.1 | .09 | .04 | 12 | 9.5 | 6.7 | 1.3 | 183 | 8.3 | 103 |
| 7 | 2.8 | 2.4 | 2.0 | .09 | .06 | 11 | 7.1 | 5.5 | 1.1 | 3.0 | 11 | 93 |
| 8 | 2.7 | 4.5 | 1.9 | .08 | .09 | 12 | 6.1 | 5.1 | .85 | 1.3 | 28 | 99 |
| 9 | 2.8 | 3.7 | 2.1 | .08 | .15 | 13 | 5.3 | 3.5 | .87 | .30 | 33 | 105 |
| 10 | 3.4 | 2.0 | 2.0 | .07 | .20 | 12 | 5.0 | 2.5 | .79 | .60 | 26 | 95 |
| 11 | 3.7 | 1.9 | 1.9 | .07 | .32 | 15 | 4.3 | 2.0 | .98 | 1.6 | 11 | 81 |
| 12 | 2.4 | 2.0 | 2.0 | .06 | .48 | 14 | 3.5 | 2.0 | 1.0 | 1.6 | 7.2 | 70 |
| 13 | 2.2 | 5.1 | 1.9 | .06 | .77 | 12 | 3.4 | 2.0 | 1.1 | 1.3 | 5.0 | 68 |
| 14 | 2.6 | 4.2 | 1.9 | .06 | 1.0 | 9.0 | 4.0 | 2.2 | 1.1 | .74 | 5.2 | 58 |
| 15 | 2.9 | 5.3 | 1.8 | .05 | 1.5 | 6.0 | 4.9 | 2.4 | .72 | .00 | 255 | 52 |
| 16 | 3.4 | 3.8 | 1.7 | .05 | 2.1 | 2.5 | 4.6 | 2.3 | .51 | .00 | 6570 | 50 |
| 17 | 4.5 | 4.2 | 1.5 | .04 | 3.2 | 7.6 | 3.9 | 1.8 | 1.1 | 1.4 | 599 | 66 |
| 18 | 5.0 | 5.3 | 1.4 | .04 | 4.5 | 10 | 3.7 | 1.4 | 1.5 | 2.2 | 148 | 553 |
| 19 | 5.2 | 5.1 | 1.3 | .03 | 6.2 | 11 | 3.5 | 1.4 | 1.1 | 1.3 | 117 | 213 |
| 20 | 6.2 | 3.9 | 1.2 | .02 | 9.0 | 8.8 | 4.2 | 2.0 | 1.2 | .65 | 117 | 138 |
| 21 | 6.7 | 5.1 | 1.0 | .02 | 9.4 | 9.2 | 6.1 | 2.9 | .95 | .60 | 103 | 114 |
| 22 | 7.2 | 3.4 | .90 | .02 | 9.0 | 9.0 | 6.3 | 3.6 | .65 | .85 | 95 | 96 |
| 23 | 8.2 | 3.2 | .80 | .02 | 9.4 | 7.3 | 4.3 | 4.4 | .63 | .82 | 83 | 91 |
| 24 | 6.8 | 3.8 | .70 | .01 | 10 | 6.4 | 3.6 | 5.5 | .85 | 1.6 | 82 | 250 |
| 25 | 7.3 | 4.2 | .60 | .01 | 10 | 5.7 | 3.2 | 3.2 | 1.8 | 2.2 | 81 | 123 |
| 26 | 5.1 | 4.5 | .53 | .00 | 9.0 | 5.4 | 2.6 | 1.3 | 3.2 | 1.6 | 143 | 101 |
| 27 | 4.6 | 3.1 | .46 | .00 | 8.0 | 8.6 | 2.5 | 1.4 | 1.6 | 1.6 | 113 | 87 |
| 28 | 4.8 | 2.0 | .39 | .00 | 8.8 | 12 | 2.6 | 1.2 | .60 | 1.2 | 1430 | 78 |
| 29 | 4.9 | 1.4 | .34 | .00 | --- | 18 | 2.5 | 1.7 | .30 | 1.3 | 306 | 74 |
| 30 | 6.4 | 1.3 | .30 | .00 | --- | 10 | 2.5 | 5.4 | .60 | 2.4 | 181 | 96 |
| 31 | 7.8 | --- | .25 | .00 | --- | 6.3 | --- | 3.0 | --- | 5.2 | 243 | --- |
| TOTAL | 138.5 | 106.2 | 41.67 | 1.67 | 103.27 | 309.4 | 159.1 | 95.6 | 32.60 | 234.26 | 10823.0 | 3734 |
| MEAN | 4.47 | 3.54 | 1.34 | .054 | 3.69 | 9.98 | 5.30 | 3.08 | 1.09 | 7.56 | 349 | 124 |
| MAX | 8.2 | 8.1 | 2.1 | .20 | 10 | 18 | 14 | 6.7 | 3.2 | 183 | 6570 | 553 |
| MIN | 2.0 | 1.3 | .25 | .00 | .00 | 2.5 | 2.5 | 1.2 | .30 | .00 | 3.4 | 50 |
| CFSM | .04 | .03 | .01 | .000 | .03 | .09 | .05 | .03 | .009 | .06 | 2.96 | 1.05 |
| IN. | .04 | .03 | .01 | .00 | .03 | .10 | .05 | .03 | .01 | .07 | 3.41 | 1.18 |
| AC-FT | 275 | 211 | 83 | 3.3 | 205 | 614 | 316 | 190 | 65 | 465 | 21470 | 7410 |

| | | | | | | | | |
|-------------|-------|----------|-----------|----------|---------|----------|---------|-------------|
| CAL YR 1976 | TOTAL | 19209.27 | MEAN 52.5 | MAX 1330 | MIN .25 | CFSM .45 | IN 6.06 | AC-FT 38100 |
| WTR YR 1977 | TOTAL | 15779.27 | MEAN 43.2 | MAX 6570 | MIN .00 | CFSM .37 | IN 4.97 | AC-FT 31300 |

IOWA RIVER BASIN

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) above mean sea level. 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.--Six discharge measurement furnished by Corps of Engineers.

AVERAGE DISCHARGE.--28 years, 32.8 ft³/s (0.929 m³/s), 7.94 in/yr (202 mm/yr), 23,760 acre-ft/yr (29.2 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.--Peak discharges above base of 1,000 ft³/s (28.3 m³/s) and maximum (*):

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) |
|---------|------|---|-------------------------|---------|------|---|-------------------------|
| Aug. 16 | 1300 | *5,350 152 | *23.03 7.020 | Aug. 28 | 1500 | 2,150 60.9 | 19.50 5.944 |

No flow Jan. 22 to Feb. 2.

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 | .99 | 1.7 | .68 | .07 | .00 | 9.3 | 2.1 | .61 | 1.0 | 7.1 | .26 | 74 |
| 2 | .92 | 1.4 | .60 | .06 | .00 | 10 | 2.8 | .63 | .70 | .85 | .44 | 30 |
| 3 | .98 | 1.3 | .58 | .05 | .01 | 9.1 | 2.8 | .76 | .62 | .50 | .36 | 25 |
| 4 | 1.1 | 1.2 | .60 | .05 | .01 | 8.0 | 3.3 | 1.1 | .53 | .29 | .34 | 43 |
| 5 | 1.9 | 1.1 | .62 | .04 | .02 | 5.0 | 4.6 | 4.1 | .54 | .07 | .51 | 20 |
| 6 | 1.8 | 1.0 | .60 | .04 | .02 | 2.2 | 2.8 | 5.0 | .44 | .01 | 1.4 | 16 |
| 7 | 1.2 | 1.0 | .62 | .04 | .03 | 1.5 | 2.3 | 4.2 | .43 | 3.1 | .55 | 18 |
| 8 | 1.3 | .99 | .64 | .03 | .05 | 2.2 | 1.8 | 1.6 | .57 | 1.2 | .72 | 13 |
| 9 | 1.0 | 1.0 | .62 | .03 | .06 | 4.4 | 1.7 | .86 | .48 | .26 | .16 | 12 |
| 10 | .92 | 1.0 | .60 | .03 | .08 | 3.5 | 1.7 | .74 | .40 | .20 | 4.6 | 8.4 |
| 11 | .94 | .93 | .70 | .03 | .11 | 10 | 1.6 | .56 | .42 | .39 | 1.9 | 5.2 |
| 12 | .93 | .86 | .68 | .02 | .15 | 16 | 1.5 | .56 | .35 | .14 | 1.0 | 4.7 |
| 13 | .89 | .86 | .74 | .02 | .23 | 5.6 | 1.6 | .62 | .36 | .15 | .50 | 4.0 |
| 14 | .89 | .86 | .61 | .02 | .37 | 3.6 | 1.7 | .45 | .31 | .09 | .28 | 3.2 |
| 15 | 1.1 | .86 | .56 | .02 | .60 | 3.2 | 1.8 | .45 | .28 | .18 | 132 | 2.6 |
| 16 | 1.2 | .86 | .50 | .02 | .90 | 2.5 | 1.8 | .50 | .27 | .53 | 2880 | 3.0 |
| 17 | 1.1 | .89 | .46 | .01 | 1.4 | 2.7 | 1.9 | .56 | .32 | .57 | 120 | 17 |
| 18 | 1.1 | .95 | .42 | .01 | 2.2 | 5.7 | 1.7 | .54 | .20 | .68 | 46 | 475 |
| 19 | 1.9 | .98 | .38 | .01 | 3.3 | 4.4 | 1.5 | .50 | .15 | .52 | 31 | 118 |
| 20 | 1.6 | 1.0 | .36 | .01 | 4.7 | 3.1 | 1.5 | .51 | .11 | .38 | 25 | 60 |
| 21 | 1.3 | 1.1 | .32 | .01 | 5.6 | 4.4 | 2.5 | .59 | .21 | .32 | 29 | 43 |
| 22 | 1.2 | .92 | .28 | .00 | 9.0 | 3.1 | 1.9 | .80 | .19 | .28 | 20 | 34 |
| 23 | 1.2 | .86 | .25 | .00 | 10 | 2.8 | 1.4 | .57 | .30 | .28 | 17 | 36 |
| 24 | 1.2 | .84 | .22 | .00 | 9.3 | 2.5 | 1.5 | .56 | .31 | .38 | 15 | 173 |
| 25 | 1.2 | .90 | .20 | .00 | 8.9 | 2.1 | 1.2 | .56 | 35 | .26 | 14 | 57 |
| 26 | 1.2 | .90 | .18 | .00 | 8.6 | 2.3 | .54 | .62 | 1.6 | .25 | 295 | 42 |
| 27 | 1.2 | .82 | .16 | .00 | 9.0 | 2.3 | .57 | .57 | .50 | .27 | 37 | 34 |
| 28 | 1.1 | .84 | .13 | .00 | 9.8 | 3.0 | .58 | .58 | .21 | .32 | 1020 | 29 |
| 29 | 1.2 | .82 | .12 | .00 | --- | 5.6 | .55 | 6.5 | .04 | .32 | 146 | 28 |
| 30 | 1.4 | .76 | .11 | .00 | --- | 3.1 | .52 | 14 | 124 | .29 | 55 | 44 |
| 31 | 1.8 | --- | .09 | .00 | --- | 2.0 | --- | 4.4 | --- | .26 | 298 | --- |
| TOTAL | 37.76 | 29.50 | 13.62 | .62 | 85.44 | 145.2 | 53.76 | 91.50 | 170.84 | 20.44 | 5280.14 | 1472.1 |
| MEAN | 1.22 | .98 | .44 | .020 | 3.05 | 4.68 | 1.79 | 2.95 | 5.69 | .66 | 170 | 49.1 |
| MAX | 1.9 | 1.7 | .74 | .07 | 10 | 16 | 4.6 | 41 | 124 | 7.1 | 2880 | 475 |
| MIN | .89 | .76 | .09 | .00 | .00 | 1.5 | .52 | .45 | .04 | .01 | .26 | 2.6 |
| CFSM | .02 | .02 | .008 | .000 | .05 | .08 | .03 | .05 | .10 | .01 | 3.03 | .88 |
| IN. | .03 | .02 | .01 | .00 | .06 | .10 | .04 | .06 | .11 | .01 | 3.50 | .98 |
| AC-FT | 75 | 59 | 27 | 1.2 | 169 | 288 | 107 | 181 | 339 | 41 | 10470 | 2920 |

| | | | | | | | | |
|-------------|-------|---------|-----------|----------|---------|----------|---------|-------------|
| CAL YR 1976 | TOTAL | 8732.92 | MEAN 23.9 | MAX 688 | MIN .09 | CFSM .43 | IN 5.79 | AC-FT 17320 |
| WTR YR 1977 | TOTAL | 7400.92 | MEAN 20.3 | MAX 2880 | MIN .00 | CFSM .36 | IN 4.91 | AC-FT 14680 |

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 mi² (521 km²).

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) above mean sea level (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.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--32 years, 121 ft³/s (3.427 m³/s), 8.18 in/yr (208 mm/yr), 87,660 acre-ft/yr (108 hm³/yr); median of yearly mean discharges, 100 ft³/s (2.83 m³/s), 6.8 in/yr (173 mm/yr), 72,400 acre-ft/yr (89.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 35,000 ft³/s (991 m³/s) June 13, 1947, gage height, 17.5 ft (5.36 m) from rating curve extended above 17,000 ft³/s (481 m³/s); maximum gage height, 17.78 ft (5.419 m) July 18, 1969; minimum daily discharge, 0.85 ft³/s (0.024 m³/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 ft³/s (850 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s (42.5 m³/s) and maximum (*):

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) |
|---------|------|---|-------------------------|----------|------|---|-------------------------|
| Aug. 16 | 0815 | 3,010 85.2 | 14.63 4.459 | Aug. 28 | 1345 | *3,110 88.1 | *14.71 4.484 |
| Aug. 26 | 0945 | 2,190 62.0 | 13.84 4.218 | Sept. 18 | 1615 | 2,080 58.9 | 13.71 4.179 |

Minimum daily discharge, 0.85 ft³/s (0.024 m³/s) Jan. 31.

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 | 7.6 | 9.7 | 4.6 | 1.1 | .92 | 16 | 14 | 7.2 | 4.3 | 4.1 | 2.7 | 123 |
| 2 | 7.6 | 9.0 | 4.1 | 1.2 | 1.5 | 18 | 18 | 7.4 | 3.8 | 3.3 | 2.6 | 67 |
| 3 | 7.4 | 8.4 | 3.6 | 1.2 | 1.8 | 21 | 17 | 6.9 | 3.6 | 3.5 | 2.6 | 49 |
| 4 | 7.7 | 7.9 | 3.3 | 1.2 | 1.9 | 24 | 19 | 6.7 | 3.5 | 4.0 | 2.8 | 47 |
| 5 | 12 | 7.4 | 3.1 | 1.2 | 1.9 | 24 | 25 | 6.5 | 3.5 | 3.1 | 3.3 | 37 |
| 6 | 11 | 9.0 | 3.2 | 1.2 | 1.8 | 24 | 18 | 6.3 | 3.3 | 2.9 | 6.1 | 30 |
| 7 | 8.5 | 7.7 | 3.0 | 1.3 | 2.0 | 27 | 18 | 6.1 | 3.1 | 3.9 | 5.1 | 25 |
| 8 | 8.1 | 7.2 | 3.0 | 1.4 | 2.5 | 31 | 14 | 5.9 | 3.7 | 4.0 | 197 | 23 |
| 9 | 8.4 | 9.0 | 2.9 | 1.4 | 3.0 | 36 | 13 | 5.7 | 3.8 | 3.2 | 43 | 20 |
| 10 | 8.1 | 9.2 | 2.7 | 1.4 | 3.2 | 35 | 11 | 5.5 | 3.5 | 2.9 | 26 | 16 |
| 11 | 7.8 | 7.7 | 2.6 | 1.3 | 3.5 | 21 | 10 | 5.3 | 3.6 | 3.4 | 11 | 14 |
| 12 | 7.7 | 9.6 | 2.6 | 1.3 | 4.5 | 98 | 9.2 | 5.1 | 3.5 | 3.4 | 7.4 | 13 |
| 13 | 7.3 | 7.9 | 2.5 | 1.3 | 5.2 | 83 | 9.3 | 4.9 | 3.2 | 2.9 | 6.2 | 14 |
| 14 | 7.3 | 9.6 | 2.4 | 1.3 | 5.5 | 49 | 9.9 | 4.8 | 3.2 | 2.8 | 5.7 | 13 |
| 15 | 7.4 | 9.4 | 2.3 | 1.2 | 5.8 | 34 | 11 | 4.8 | 3.2 | 2.5 | 51 | 12 |
| 16 | 7.0 | 12 | 2.2 | 1.1 | 6.2 | 23 | 10 | 4.7 | 3.2 | 14 | 1870 | 14 |
| 17 | 7.5 | 9.3 | 2.2 | 1.1 | 6.2 | 17 | 8.9 | 4.7 | 5.0 | 6.4 | 158 | 24 |
| 18 | 8.1 | 11 | 2.1 | 1.1 | 6.6 | 22 | 9.2 | 4.6 | 100 | 5.6 | 53 | 1530 |
| 19 | 9.6 | 11 | 2.0 | 1.2 | 7.4 | 19 | 8.4 | 4.5 | 19 | 5.4 | 30 | 478 |
| 20 | 10 | 9.2 | 2.0 | 1.2 | 8.5 | 16 | 11 | 4.7 | 7.6 | 3.8 | 25 | 220 |
| 21 | 9.2 | 9.5 | 1.9 | 1.1 | 9.6 | 22 | 17 | 5.6 | 5.5 | 3.3 | 20 | 155 |
| 22 | 8.1 | 6.6 | 1.8 | 1.0 | 11 | 17 | 18 | 8.0 | 5.3 | 3.4 | 15 | 138 |
| 23 | 9.2 | 9.1 | 1.3 | .95 | 15 | 17 | 12 | 7.3 | 4.8 | 2.9 | 12 | 127 |
| 24 | 9.5 | 8.8 | 1.3 | 1.0 | 20 | 14 | 9.8 | 5.5 | 5.3 | 3.0 | 10 | 446 |
| 25 | 9.3 | 8.6 | 1.4 | .92 | 15 | 13 | 8.5 | 4.8 | 5.0 | 3.0 | 9.1 | 277 |
| 26 | 8.7 | 8.5 | 1.3 | .99 | 15 | 13 | 8.2 | 4.7 | 4.3 | 2.6 | 933 | 184 |
| 27 | 8.3 | 5.6 | 1.2 | .95 | 15 | 14 | 7.7 | 8.2 | 3.8 | 2.5 | 181 | 145 |
| 28 | 8.2 | 4.7 | 1.2 | 1.0 | 16 | 18 | 7.4 | 6.2 | 3.6 | 3.1 | 2220 | 128 |
| 29 | 8.7 | 4.6 | 1.1 | 1.0 | --- | 27 | 7.4 | 4.9 | 3.3 | 8.3 | 411 | 115 |
| 30 | 10 | 4.6 | 1.1 | .96 | --- | 21 | 7.4 | 5.5 | 5.1 | 3.7 | 164 | 105 |
| 31 | 12 | --- | 1.1 | .85 | --- | 16 | --- | 5.3 | --- | 4.7 | 130 | --- |
| TOTAL | 267.3 | 251.8 | 71.1 | 35.42 | 196.52 | 830 | 367.3 | 178.3 | 233.6 | 125.6 | 6613.6 | 4589 |
| MEAN | 8.62 | 8.39 | 2.29 | 1.14 | 7.02 | 26.8 | 12.2 | 5.75 | 7.79 | 4.05 | 213 | 153 |
| MAX | 12 | 12 | 4.6 | 1.4 | 20 | 98 | 25 | 8.2 | 100 | 14 | 2220 | 1530 |
| MIN | 7.0 | 4.6 | 1.1 | .85 | .92 | 13 | 7.4 | 4.5 | 3.1 | 2.5 | 2.6 | 12 |
| CFSM | .04 | .04 | .01 | .006 | .04 | .13 | .06 | .03 | .04 | .02 | 1.06 | .76 |
| IN. | .05 | .05 | .01 | .01 | .04 | .15 | .07 | .03 | .04 | .02 | 1.22 | .85 |
| AC-FT | 530 | 499 | 141 | 70 | 390 | 1650 | 729 | 354 | 463 | 249 | 13120 | 9100 |

| CAL YR 1976 | TOTAL | 25444.60 | MEAN 69.5 | MAX 1790 | MIN 1.1 | CFSM .35 | IN 4.71 | AC-FT 50470 |
|-------------|-------|----------|-----------|----------|---------|----------|---------|-------------|
| WTR YR 1977 | TOTAL | 13759.54 | MEAN 37.7 | MAX 2220 | MIN .85 | CFSM .19 | IN 2.55 | AC-FT 27290 |

IOWA RIVER BASIN

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) above mean sea level.

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.--28 years, 40.8 ft³/s (1.155 m³/s), 7.81 in/yr (198 mm/yr), 29,560 acre-ft/yr (36.4 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.--Peak discharges above base of 1,000 ft³/s (28.3 m³/s) and maximum (*):

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) |
|---------|------|---|-------------------------|----------|------|---|-------------------------|
| Aug. 16 | 0900 | *6,800 193 | *16.30 4.968 | Sept. 18 | 0200 | 2,310 65.4 | 14.20 4.328 |
| Aug. 20 | 0615 | 1,290 36.5 | 12.18 3.712 | | | | |

No flow Jan. 20 to Feb. 2.

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 | 1.6 | 1.1 | .25 | .03 | .00 | 4.0 | 5.4 | .75 | .38 | 9.0 | .08 | 38 |
| 2 | 1.7 | 1.2 | .20 | .03 | .00 | 3.5 | 5.0 | .57 | .26 | .85 | .07 | 26 |
| 3 | 1.7 | 1.0 | .17 | .03 | .01 | 3.0 | 3.8 | .69 | .31 | 1.2 | .10 | 18 |
| 4 | 2.0 | .69 | .15 | .03 | .01 | 2.5 | 3.9 | 1.7 | .33 | 1.0 | .08 | 28 |
| 5 | 4.0 | .70 | .12 | .03 | .02 | 2.2 | 3.5 | 26 | .35 | .59 | .22 | 20 |
| 6 | 2.2 | .83 | .10 | .03 | .02 | 2.1 | 3.4 | 2.3 | .29 | .52 | .20 | 16 |
| 7 | 2.0 | .51 | .08 | .03 | .03 | 2.3 | 3.1 | 1.8 | .23 | .95 | .23 | 15 |
| 8 | 1.7 | .63 | .07 | .03 | .05 | 3.5 | 2.7 | 1.0 | .43 | .97 | 116 | 17 |
| 9 | 1.6 | 1.1 | .06 | .03 | .06 | 4.5 | 2.5 | .93 | .17 | .25 | 50 | 12 |
| 10 | 1.2 | .74 | .04 | .02 | .09 | 6.0 | 2.1 | .75 | .16 | .21 | 12 | 8.0 |
| 11 | 1.2 | .72 | .03 | .02 | .12 | 8.1 | 1.9 | .57 | .13 | .32 | 4.8 | 7.5 |
| 12 | 1.1 | .71 | .02 | .02 | .16 | 20 | 1.7 | .45 | .12 | .18 | 2.5 | 7.7 |
| 13 | .73 | .77 | .01 | .02 | .21 | 10 | 1.6 | .45 | .11 | .15 | .79 | 7.4 |
| 14 | .88 | .74 | .01 | .02 | .35 | 9.7 | 1.4 | .45 | .19 | .25 | .57 | 5.8 |
| 15 | .67 | .80 | .01 | .02 | .52 | 9.7 | 1.0 | .45 | .25 | .12 | 9.4 | 5.1 |
| 16 | .67 | .85 | .01 | .01 | .80 | 10 | 1.0 | .45 | .26 | 111 | 1940 | 5.3 |
| 17 | .67 | .90 | .02 | .01 | 1.4 | 11 | .91 | .35 | .31 | 2.8 | 112 | 91 |
| 18 | .76 | .86 | .02 | .01 | 2.1 | 14 | .81 | .40 | .60 | .74 | 62 | 892 |
| 19 | .85 | .80 | .02 | .01 | 3.5 | 13 | .74 | .35 | .35 | .59 | 48 | 101 |
| 20 | .92 | .68 | .03 | .00 | 5.0 | 11 | .63 | .38 | .16 | .39 | 39 | 64 |
| 21 | .82 | .60 | .04 | .00 | 6.0 | 9.9 | .80 | 1.3 | .11 | .15 | 40 | 42 |
| 22 | 1.0 | .54 | .04 | .00 | 7.5 | 9.9 | .75 | 1.6 | .13 | .13 | 32 | 31 |
| 23 | .96 | .58 | .04 | .00 | 7.3 | 8.4 | .63 | 1.5 | .15 | .10 | 27 | 22 |
| 24 | .87 | .62 | .04 | .00 | 7.2 | 7.6 | .40 | 1.0 | 5.3 | .18 | 23 | 104 |
| 25 | .81 | .60 | .04 | .00 | 7.0 | 6.2 | .38 | .93 | 3.2 | .11 | 22 | 42 |
| 26 | .85 | .57 | .04 | .00 | 6.0 | 6.2 | .45 | .69 | 1.1 | .10 | 39 | 29 |
| 27 | .79 | .52 | .04 | .00 | 5.0 | 8.4 | .51 | .51 | 1.1 | .08 | 37 | 19 |
| 28 | .68 | .44 | .04 | .00 | 4.5 | 8.4 | .45 | .51 | .78 | .10 | 437 | 18 |
| 29 | .81 | .35 | .04 | .00 | --- | 7.8 | .57 | .51 | .35 | .16 | 81 | 16 |
| 30 | 1.2 | .30 | .04 | .00 | --- | 6.6 | .63 | .51 | 10 | .12 | 46 | 44 |
| 31 | 1.3 | --- | .03 | .00 | --- | 5.6 | --- | .42 | --- | .05 | 47 | --- |
| TOTAL | 38.24 | 21.45 | 1.85 | .43 | 64.95 | 235.1 | 52.66 | 50.27 | 27.61 | 133.36 | 3229.04 | 1751.8 |
| MEAN | 1.23 | .72 | .060 | .014 | 2.32 | 7.58 | 1.76 | 1.62 | .92 | 4.30 | 104 | 58.4 |
| MAX | 4.0 | 1.2 | .25 | .03 | 7.5 | 20 | 5.4 | 26 | 10 | 111 | 1940 | 892 |
| MIN | .67 | .30 | .01 | .00 | .00 | 2.1 | .38 | .35 | .11 | .05 | .07 | 5.1 |
| CFSM | .02 | .01 | .001 | .000 | .03 | .11 | .03 | .02 | .01 | .06 | 1.47 | .82 |
| IN. | .02 | .01 | .00 | .00 | .03 | .12 | .03 | .03 | .01 | .07 | 1.69 | .92 |
| AC-FT | 76 | 43 | 3.7 | .9 | 129 | 466 | 104 | 100 | 55 | 265 | 6400 | 3470 |

| | | | | | | | | |
|-------------|-------|----------|-----------|----------|---------|----------|---------|-------------|
| CAL YR 1976 | TOTAL | 10501.65 | MEAN 29.0 | MAX 1340 | MIN .01 | CFSM .41 | IN 5.56 | AC-FT 21030 |
| WTR YR 1977 | TOTAL | 5606.76 | MEAN 15.4 | MAX 1940 | MIN .00 | CFSM .22 | IN 2.94 | AC-FT 11120 |

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) above mean sea level. 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.--Seven discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--32 years, 115 ft³/s (3.257 m³/s), 8.26 in/yr (210 mm/yr), 83,320 acre-ft/yr (103 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.--Peak discharges above base of 2,000 ft³/s (56.6 m³/s) and maximum (*):

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) |
|---------|------|---|-------------------------|----------|------|---|-------------------------|
| Aug. 16 | 1845 | 4,650 132 | 12.39 3.776 | Sept. 18 | 1745 | *8,280 234 | *15.32 4.670 |

No flow Jan. 19. to Feb. 3.

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 | 4.2 | 7.0 | 1.6 | .09 | .00 | 9.2 | 12 | 4.0 | 4.3 | 33 | 3.0 | 108 |
| 2 | 4.1 | 6.0 | 1.4 | .08 | .00 | 10 | 13 | 3.7 | 2.9 | 7.3 | 2.6 | 64 |
| 3 | 4.5 | 5.2 | 1.2 | .07 | .00 | 11 | 15 | 3.8 | 2.5 | 4.2 | 1.8 | 47 |
| 4 | 4.1 | 4.8 | 1.1 | .06 | .01 | 12 | 15 | 5.9 | 2.3 | 3.5 | 1.7 | 47 |
| 5 | 7.6 | 4.6 | 1.0 | .05 | .01 | 13 | 20 | 100 | 2.2 | 2.4 | 2.1 | 39 |
| 6 | 8.7 | 7.2 | .91 | .05 | .02 | 14 | 16 | 21 | 1.8 | 1.8 | 4.1 | 35 |
| 7 | 6.9 | 5.7 | .84 | .04 | .03 | 15 | 12 | 19 | 1.5 | 2.3 | 4.2 | 30 |
| 8 | 6.2 | 4.2 | .82 | .04 | .04 | 17 | 11 | 13 | 2.1 | 5.7 | 288 | 32 |
| 9 | 5.7 | 5.5 | .80 | .03 | .05 | 19 | 9.7 | 9.7 | 2.0 | 4.1 | 191 | 28 |
| 10 | 5.5 | 5.4 | .78 | .03 | .08 | 17 | 9.2 | 8.2 | 1.6 | 3.4 | 31 | 24 |
| 11 | 4.6 | 4.2 | .75 | .02 | .11 | 22 | 8.4 | 6.5 | 1.9 | 3.0 | 14 | 20 |
| 12 | 4.4 | 4.3 | .73 | .02 | .16 | 57 | 7.3 | 4.9 | 1.5 | 2.9 | 8.7 | 18 |
| 13 | 4.1 | 4.7 | .73 | .02 | .22 | 26 | 6.9 | 3.9 | 1.3 | 2.9 | 6.4 | 19 |
| 14 | 3.9 | 4.6 | .70 | .01 | .32 | 18 | 6.7 | 3.7 | 1.2 | 1.9 | 4.7 | 17 |
| 15 | 5.2 | 4.9 | .66 | .01 | .45 | 14 | 6.9 | 4.0 | 1.1 | 1.6 | 4.4 | 15 |
| 16 | 4.7 | 5.0 | .60 | .01 | .66 | 12 | 6.8 | 4.0 | 1.1 | 456 | 3490 | 14 |
| 17 | 4.4 | 5.4 | .60 | .01 | .96 | 11 | 5.9 | 4.2 | 1.4 | 74 | 397 | 267 |
| 18 | 5.1 | 5.4 | .45 | .01 | 1.4 | 12 | 5.7 | 4.1 | 7.3 | 22 | 142 | 6630 |
| 19 | 5.4 | 6.5 | .42 | .00 | 2.0 | 16 | 5.5 | 3.9 | 3.5 | 12 | 93 | 924 |
| 20 | 5.7 | 6.6 | .40 | .00 | 2.8 | 12 | 5.3 | 4.0 | 2.0 | 7.8 | 71 | 357 |
| 21 | 5.0 | 6.5 | .35 | .00 | 4.1 | 13 | 8.3 | 5.7 | 1.6 | 5.7 | 64 | 259 |
| 22 | 5.5 | 4.0 | .30 | .00 | 5.1 | 14 | 9.3 | 18 | 1.6 | 4.7 | 47 | 214 |
| 23 | 5.7 | 4.3 | .27 | .00 | 5.6 | 14 | 6.3 | 8.2 | 2.5 | 3.6 | 35 | 191 |
| 24 | 5.7 | 4.2 | .24 | .00 | 5.8 | 11 | 4.6 | 6.1 | 19 | 4.5 | 26 | 244 |
| 25 | 5.6 | 4.0 | .21 | .00 | 6.0 | 10 | 3.7 | 5.7 | 20 | 3.9 | 22 | 195 |
| 26 | 5.4 | 3.4 | .19 | .00 | 6.5 | 9.4 | 3.5 | 4.0 | 16 | 2.6 | 70 | 156 |
| 27 | 5.4 | 2.9 | .17 | .00 | 7.3 | 10 | 3.3 | 3.2 | 5.1 | 2.3 | 58 | 136 |
| 28 | 4.9 | 2.5 | .15 | .00 | 8.3 | 13 | 3.7 | 3.3 | 3.3 | 2.1 | 798 | 118 |
| 29 | 5.3 | 2.0 | .13 | .00 | --- | 26 | 3.7 | 3.3 | 2.1 | 2.4 | 202 | 110 |
| 30 | 5.7 | 1.8 | .11 | .00 | --- | 20 | 3.9 | 3.0 | 14 | 2.1 | 100 | 105 |
| 31 | 6.6 | --- | .10 | .00 | --- | 14 | --- | 8.5 | --- | 2.4 | 75 | --- |
| TOTAL | 165.8 | 142.8 | 18.61 | .65 | 58.02 | 491.6 | 248.6 | 300.5 | 130.7 | 688.1 | 6257.7 | 10463 |
| MEAN | 5.35 | 4.76 | .60 | .021 | 2.07 | 15.9 | 8.29 | 9.69 | 4.36 | 22.2 | 202 | 349 |
| MAX | 8.7 | 7.2 | 1.6 | .09 | 8.3 | 57 | 20 | 100 | 20 | 456 | 3490 | 6630 |
| MIN | 3.9 | 1.8 | .10 | .00 | .00 | 9.2 | 3.3 | 3.0 | 1.1 | 1.6 | 1.7 | 14 |
| CFSM | .03 | .03 | .003 | .000 | .01 | .08 | .04 | .05 | .02 | .12 | 1.07 | 1.85 |
| IN. | .03 | .03 | .00 | .00 | .01 | .10 | .05 | .06 | .03 | .14 | 1.23 | 2.06 |
| AC-FT | 329 | 283 | 37 | 1.3 | 115 | 975 | 493 | 596 | 259 | 1360 | 12410 | 20750 |

| | | | | | | | | |
|-------------|-------|----------|-----------|----------|---------|----------|---------|-------------|
| CAL YR 1976 | TOTAL | 28279.71 | MEAN 77.3 | MAX 3060 | MIN .10 | CFSM .41 | IN 5.57 | AC-FT 56090 |
| WTR YR 1977 | TOTAL | 18966.08 | MEAN 52.0 | MAX 6630 | MIN .00 | CFSM .28 | IN 3.73 | AC-FT 37620 |

IOWA RIVER BASIN

05453100 IOWA RIVER AT MARENGO, IA

LOCATION.--Lat 41°48'41", long 92°03'42", in SW1/4 NE1/4 sec.24, T.81 N., R.11 W., Iowa County, Hydrologic Unit 07080208, on right bank 10 ft (3 m) downstream from abandoned highway bridge, 0.7 mi (1.1 km) downstream from Big Bear Creek, 0.8 mi (1.3 km) north of Marengo, 4.9 mi (7.9 km) upstream from Hilton Creek, and at mile 139.4 (224.3 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.

GAGE.--Water-stage recorder. Datum of gage is 720.52 ft (219.614 m) above mean sea level.

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 telemeters at station.

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

AVERAGE DISCHARGE.--21 years, 1,664 ft³/s (47.12 m³/s), 8.09 in/yr (205 mm/yr), 1,206,000 acre-ft/yr (1,490 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 (ft ³ /s) (m ³ /s) | Gage height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) |
|---------|------|---|-------------------------|----------|------|---|-------------------------|
| Aug. 16 | 2200 | 8,080 229 | 15.49 4.721 | Sept. 19 | 0130 | *15,100 428 | *17.39 5.300 |

Minimum daily discharge, 24 ft³/s (0.68 m³/s) Jan. 29 to Feb. 1.

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 | 117 | 148 | 108 | 43 | 24 | 200 | 292 | 188 | 220 | 190 | 75 | 2300 |
| 2 | 114 | 147 | 100 | 42 | 25 | 218 | 292 | 177 | 162 | 146 | 75 | 2010 |
| 3 | 109 | 141 | 96 | 42 | 26 | 230 | 289 | 171 | 142 | 100 | 73 | 1750 |
| 4 | 107 | 139 | 90 | 41 | 27 | 234 | 313 | 179 | 127 | 88 | 73 | 1550 |
| 5 | 126 | 132 | 88 | 40 | 31 | 234 | 349 | 273 | 120 | 61 | 74 | 1440 |
| 6 | 133 | 130 | 84 | 38 | 33 | 226 | 355 | 282 | 115 | 77 | 78 | 1290 |
| 7 | 130 | 128 | 80 | 37 | 35 | 251 | 336 | 254 | 112 | 78 | 84 | 1160 |
| 8 | 122 | 120 | 75 | 36 | 37 | 278 | 322 | 252 | 112 | 78 | 253 | 1060 |
| 9 | 116 | 121 | 71 | 34 | 39 | 298 | 307 | 224 | 109 | 64 | 602 | 1050 |
| 10 | 111 | 120 | 68 | 33 | 42 | 324 | 293 | 203 | 104 | 69 | 316 | 1110 |
| 11 | 111 | 116 | 65 | 32 | 50 | 358 | 278 | 197 | 100 | 89 | 369 | 1090 |
| 12 | 112 | 105 | 63 | 31 | 58 | 549 | 260 | 201 | 100 | 88 | 519 | 1070 |
| 13 | 109 | 116 | 62 | 30 | 61 | 559 | 245 | 197 | 98 | 85 | 411 | 989 |
| 14 | 108 | 110 | 60 | 29 | 63 | 482 | 236 | 184 | 96 | 81 | 357 | 916 |
| 15 | 108 | 110 | 59 | 30 | 66 | 449 | 230 | 175 | 92 | 76 | 324 | 875 |
| 16 | 110 | 103 | 58 | 29 | 68 | 422 | 232 | 163 | 89 | 362 | 6000 | 870 |
| 17 | 110 | 109 | 57 | 28 | 71 | 401 | 226 | 158 | 88 | 452 | 5740 | 1300 |
| 18 | 108 | 122 | 57 | 28 | 75 | 406 | 213 | 152 | 88 | 176 | 4630 | 11400 |
| 19 | 122 | 146 | 57 | 28 | 79 | 379 | 206 | 146 | 122 | 125 | 4390 | 10000 |
| 20 | 119 | 132 | 56 | 28 | 85 | 355 | 202 | 145 | 125 | 106 | 4770 | 4130 |
| 21 | 119 | 136 | 56 | 28 | 92 | 338 | 223 | 145 | 109 | 95 | 3360 | 2680 |
| 22 | 122 | 137 | 54 | 28 | 104 | 331 | 231 | 169 | 111 | 88 | 1900 | 2010 |
| 23 | 122 | 123 | 53 | 28 | 124 | 320 | 232 | 166 | 104 | 86 | 1430 | 1680 |
| 24 | 122 | 129 | 52 | 27 | 162 | 299 | 232 | 151 | 115 | 88 | 1160 | 1700 |
| 25 | 124 | 134 | 51 | 28 | 184 | 283 | 233 | 142 | 106 | 88 | 995 | 2120 |
| 26 | 127 | 136 | 49 | 27 | 176 | 267 | 227 | 139 | 131 | 92 | 985 | 2130 |
| 27 | 129 | 115 | 48 | 27 | 180 | 276 | 238 | 137 | 111 | 86 | 1650 | 1870 |
| 28 | 131 | 94 | 47 | 26 | 196 | 287 | 242 | 132 | 93 | 82 | 2960 | 1600 |
| 29 | 133 | 112 | 46 | 24 | --- | 332 | 223 | 130 | 88 | 81 | 4630 | 1410 |
| 30 | 140 | 116 | 45 | 24 | --- | 315 | 205 | 126 | 127 | 79 | 4130 | 1290 |
| 31 | 147 | --- | 44 | 24 | --- | 300 | --- | 177 | --- | 78 | 2640 | --- |
| TOTAL | 3718 | 3727 | 1999 | 970 | 2213 | 10201 | 7762 | 5535 | 3416 | 3594 | 55053 | 65870 |
| MEAN | 120 | 124 | 64.5 | 31.3 | 79.0 | 329 | 259 | 179 | 114 | 116 | 1776 | 2196 |
| MAX | 147 | 148 | 108 | 43 | 196 | 559 | 355 | 282 | 220 | 452 | 6000 | 11400 |
| MIN | 107 | 94 | 44 | 24 | 24 | 200 | 202 | 126 | 88 | 76 | 73 | 870 |
| CFSM | .04 | .04 | .02 | .01 | .03 | .12 | .09 | .06 | .04 | .04 | .64 | .79 |
| IN. | .05 | .05 | .03 | .01 | .03 | .14 | .10 | .07 | .05 | .05 | .73 | .88 |
| AC-FT | 7370 | 7390 | 3970 | 1920 | 4390 | 20230 | 15400 | 10980 | 6780 | 7130 | 109200 | 130700 |

| | | | | | | | | | | | | | | |
|-------------|-------|--------|------|------|-----|-------|-----|----|------|-----|----|------|-------|--------|
| CAL YR 1976 | TOTAL | 412299 | MEAN | 1127 | MAX | 15700 | MIN | 44 | CFSM | .40 | IN | 5.49 | AC-FT | 817800 |
| WTR YR 1977 | TOTAL | 164058 | MEAN | 449 | MAX | 11400 | MIN | 24 | CFSM | .16 | IN | 2.18 | AC-FT | 325400 |

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 mean sea level (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 546.0 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 600 ft (182 m) in length at elevation 712 ft (217 m) above mean sea level, contents, 469,000 acre-ft (578 hm³). 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, 680 ft (207 m) June 15 to Sept. 25, 683 ft (208 m) Sept. 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. Minimum observed elevation on Jan. 15, 1975 is approximate due to freezing of gages.

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 observed elevation, 658.77 ft (200.793 m) Mar. 10, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 105,000 acre-ft (129 hm³) Sept. 22, elevation, 689.33 ft (210.108 m); minimum daily contents, 15,700 acre-ft (19.4 hm³) Apr. 30, May 1-3; minimum observed elevation, 670.38 ft (204.332 m) May 1.

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

| | | | | | |
|-----|--------|-----|---------|-----|---------|
| 665 | 5,000 | 683 | 55,000 | 700 | 232,000 |
| 670 | 10,600 | 685 | 63,000 | 705 | 327,000 |
| 675 | 21,000 | 690 | 108,000 | 710 | 427,000 |
| 680 | 40,300 | 695 | 162,000 | 712 | 469,000 |

CONTENTS, IN ACRE-Feet, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS AT 2400

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-----|--------|--------|--------|--------|--------|--------|---------|--------|--------|---------|---------|---------|
| 1 | 42000 | 41000 | 40200 | 34500 | 27100 | 27100 | 33400 | 15700 | 20000 | 24300 | 33800 | 65400 |
| 2 | 42000 | 41000 | 40200 | 34200 | 26800 | 27600 | 32100 | 15700 | 20300 | 24800 | 33800 | 63600 |
| 3 | 42000 | 41000 | 40100 | 34000 | 26600 | 28100 | 30800 | 15700 | 20400 | 25200 | 33800 | 62500 |
| 4 | 42000 | 41000 | 40100 | 33800 | 26300 | 28700 | 29500 | 15800 | 20500 | 25600 | 33900 | 62300 |
| 5 | 42000 | 41000 | 40000 | 33500 | 26100 | 29300 | 28300 | 16000 | 20600 | 25900 | 33900 | 61900 |
| 6 | 42100 | 40900 | 39800 | 33300 | 25800 | 29900 | 27000 | 16300 | 20600 | 26200 | 34000 | 61700 |
| 7 | 42100 | 40900 | 39700 | 33100 | 25500 | 30700 | 25900 | 16500 | 20600 | 26400 | 35300 | 61400 |
| 8 | 42000 | 40900 | 39500 | 32900 | 25300 | 31400 | 24800 | 16600 | 20700 | 26400 | 41000 | 61500 |
| 9 | 42000 | 41000 | 39300 | 32600 | 25100 | 32300 | 23800 | 16700 | 20700 | 26500 | 43700 | 63600 |
| 10 | 41900 | 40900 | 39100 | 32400 | 24800 | 33300 | 22800 | 16800 | 20700 | 26500 | 45100 | 63400 |
| 11 | 41900 | 40900 | 38800 | 32100 | 24700 | 34500 | 21800 | 16800 | 20700 | 26500 | 46100 | 63600 |
| 12 | 41800 | 40800 | 38600 | 31900 | 24700 | 35900 | 20700 | 16800 | 20700 | 26400 | 46900 | 63700 |
| 13 | 41700 | 40800 | 38400 | 31700 | 24700 | 37300 | 19600 | 16800 | 20700 | 26500 | 47800 | 63300 |
| 14 | 41600 | 40700 | 38200 | 31400 | 24700 | 38600 | 18700 | 16800 | 20700 | 26600 | 49200 | 62900 |
| 15 | 41500 | 40600 | 38000 | 31200 | 24800 | 39700 | 18000 | 16900 | 20700 | 26700 | 51000 | 63000 |
| 16 | 41500 | 40600 | 37800 | 31000 | 24800 | 40700 | 17600 | 16900 | 20700 | 26900 | 50500 | 63100 |
| 17 | 41400 | 40500 | 37600 | 30700 | 24800 | 41600 | 17300 | 17000 | 20700 | 27300 | 59100 | 67900 |
| 18 | 41300 | 40400 | 37400 | 30500 | 24800 | 42400 | 17000 | 17200 | 20700 | 28700 | 74800 | 84400 |
| 19 | 41500 | 40400 | 37200 | 30200 | 24800 | 42800 | 16700 | 17300 | 20800 | 29400 | 77600 | 95500 |
| 20 | 41400 | 40400 | 37000 | 30000 | 24800 | 42900 | 16500 | 17700 | 20900 | 29600 | 79800 | 101000 |
| 21 | 41400 | 40400 | 36800 | 29800 | 24900 | 43100 | 16500 | 18100 | 21000 | 29600 | 81300 | 105000 |
| 22 | 41300 | 40400 | 36600 | 29500 | 25100 | 43100 | 16800 | 18500 | 21100 | 29600 | 81200 | 105000 |
| 23 | 41200 | 40400 | 36400 | 29300 | 25400 | 43000 | 16900 | 18700 | 21200 | 29600 | 77600 | 105000 |
| 24 | 41200 | 40400 | 36100 | 29000 | 25600 | 42800 | 16800 | 18900 | 21200 | 32200 | 73100 | 102000 |
| 25 | 41200 | 40400 | 35900 | 28800 | 25900 | 42100 | 16500 | 19000 | 21400 | 33200 | 69200 | 101000 |
| 26 | 41100 | 40400 | 35700 | 28600 | 26100 | 40700 | 16300 | 19200 | 21500 | 33300 | 66200 | 99100 |
| 27 | 41100 | 40300 | 35500 | 28300 | 26400 | 39500 | 16000 | 19400 | 21600 | 33400 | 63000 | 95500 |
| 28 | 41100 | 40300 | 35300 | 28100 | 26700 | 38600 | 15800 | 19500 | 21700 | 33600 | 62400 | 92800 |
| 29 | 41000 | 40300 | 35100 | 27800 | --- | 37600 | 15800 | 19600 | 21900 | 33700 | 62500 | 89900 |
| 30 | 41000 | 40300 | 34900 | 27600 | --- | 36100 | 15700 | 19700 | 23800 | 33700 | 64600 | 96700 |
| 31 | 41000 | --- | 34700 | 27300 | --- | 34700 | --- | 19800 | --- | 33800 | 66500 | --- |
| MAX | 42100 | 41000 | 40200 | 34500 | 27100 | 43100 | 33400 | 19800 | 23800 | 33800 | 81300 | 105000 |
| MIN | 41000 | 40300 | 34700 | 27300 | 24700 | 27100 | 15700 | 15700 | 20000 | 24300 | 33800 | 61400 |
| + | 679.99 | 679.81 | 678.02 | 675.19 | 675.05 | 677.22 | 670.46 | 672.20 | 674.88 | 677.36 | 684.12 | 686.47 |
| * | -600 | -700 | -5,600 | -7,400 | -600 | +8,000 | -19,000 | +4,000 | +4,000 | +10,000 | +32,700 | +30,200 |

CAL YR 1976.....MAX 156,000 MIN 10,700 *-10,800

WTR YR 1977.....MAX 105,000 MIN 15,700 **55,100

+ Elevation, in feet, at end of month.

* Change in contents, in acre-feet.

IOWA RIVER BASIN

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. WRD 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) above mean sea level.

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

AVERAGE DISCHARGE.--40 years, 15.3 ft³/s (0.433 m³/s), 8.21 in/yr (209 mm/yr), 11,080 acre-ft/yr (13.7 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,100 ft³/s (173 m³/s) May 23, 1955, 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.--Peak discharges above base of 600 ft³/s (17.0 m³/s) and maximum (*):

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) |
|---------|------|---|-------------------------|----------|------|---|-------------------------|
| Aug. 8 | 0845 | 1,230 34.8 | 10.31 3.142 | Sept. 18 | 0400 | 1,940 54.9 | 11.56 3.523 |
| Aug. 16 | 0500 | *4,000 113 | *13.85 4.221 | | | | |

No flow for many days.

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 | .01 | .14 | .00 | .00 | .00 | 1.3 | 2.4 | 2.3 | .00 | 7.8 | .02 | 7.8 |
| 2 | .01 | .10 | .00 | .00 | .00 | 1.4 | 2.4 | 2.2 | .00 | 2.0 | .00 | 6.9 |
| 3 | .01 | .09 | .00 | .00 | .00 | 2.9 | 1.7 | 2.1 | .00 | .89 | .05 | 5.5 |
| 4 | .01 | .09 | .00 | .00 | .00 | 2.0 | 4.0 | 7.0 | .00 | .56 | .06 | 5.1 |
| 5 | .20 | .08 | .00 | .00 | .00 | .90 | 5.5 | 10 | .00 | .29 | .03 | 4.6 |
| 6 | .16 | .07 | .00 | .00 | .00 | .95 | 3.7 | 1.8 | .00 | .12 | .04 | 3.5 |
| 7 | .14 | .07 | .00 | .00 | .00 | 1.0 | 2.9 | 1.6 | .00 | .03 | .20 | 2.9 |
| 8 | .10 | .06 | .00 | .00 | .05 | 3.0 | 2.1 | .98 | .00 | .00 | 295 | 2.5 |
| 9 | .07 | .07 | .00 | .00 | .70 | 2.2 | 1.7 | .80 | .00 | .00 | 42 | 2.1 |
| 10 | .05 | .07 | .00 | .00 | 3.5 | 1.7 | 1.3 | .67 | .00 | .00 | 21 | 1.7 |
| 11 | .03 | .10 | .00 | .00 | 18 | 5.1 | 1.0 | .56 | .67 | .00 | 14 | 1.3 |
| 12 | .02 | .08 | .00 | .00 | 3.0 | 21 | .89 | .51 | 2.5 | .00 | 11 | 1.3 |
| 13 | .01 | .07 | .00 | .00 | .80 | 4.4 | .84 | .44 | .89 | .00 | 10 | 1.9 |
| 14 | .01 | .06 | .00 | .00 | .25 | 2.1 | .84 | .34 | .31 | .00 | 14 | 1.7 |
| 15 | .01 | .07 | .00 | .00 | .08 | 1.5 | .93 | .31 | .14 | .00 | 5.8 | 1.2 |
| 16 | .01 | .06 | .00 | .00 | .05 | .89 | .84 | .21 | .02 | .00 | 1260 | 1.5 |
| 17 | .01 | .07 | .00 | .00 | .04 | .71 | 1.5 | .18 | .00 | .00 | 49 | 59 |
| 18 | .07 | .09 | .00 | .00 | .03 | .67 | 1.5 | .62 | .00 | .76 | 27 | 762 |
| 19 | .17 | .14 | .10 | .00 | .04 | .62 | 1.4 | .93 | .00 | .93 | 19 | 74 |
| 20 | .09 | .17 | .82 | .00 | .05 | .62 | 15 | .34 | .00 | .23 | 15 | 44 |
| 21 | .04 | .16 | .09 | .00 | .17 | .93 | 49 | .31 | .00 | .01 | 12 | 33 |
| 22 | .01 | .14 | .00 | .00 | 3.3 | 1.2 | 17 | .23 | .00 | .00 | 9.2 | 27 |
| 23 | .01 | .09 | .00 | .00 | 18 | 1.6 | 12 | .12 | .00 | .00 | 7.3 | 24 |
| 24 | .01 | .09 | .00 | .00 | 9.0 | 1.1 | 8.9 | .04 | .00 | .93 | 6.0 | 93 |
| 25 | .01 | .11 | .00 | .00 | 1.4 | .89 | 6.9 | .01 | .00 | 9.2 | 4.4 | 36 |
| 26 | .01 | .10 | .00 | .00 | 1.2 | .76 | 5.8 | .00 | .00 | 1.6 | 6.0 | 28 |
| 27 | .01 | .05 | .00 | .00 | 1.4 | .98 | 4.9 | .00 | .00 | .62 | 4.9 | 23 |
| 28 | .01 | .00 | .00 | .00 | 1.6 | 7.6 | 4.0 | .11 | .00 | .26 | 37 | 20 |
| 29 | .03 | .00 | .00 | .00 | --- | 18 | 3.0 | .08 | .00 | .18 | 20 | 18 |
| 30 | .94 | .00 | .00 | .00 | --- | 6.2 | 2.5 | .08 | 123 | .26 | 13 | 32 |
| 31 | .53 | --- | .00 | .00 | --- | 3.3 | --- | .05 | --- | .18 | 10 | --- |
| TOTAL | 2.80 | 2.49 | 1.01 | .00 | 62.66 | 97.52 | 166.44 | 34.92 | 127.53 | 118.92 | 1913.00 | 1324.5 |
| MEAN | .090 | .083 | .033 | .000 | 2.24 | 3.15 | 5.55 | 1.13 | 4.25 | 3.84 | 61.7 | 44.2 |
| MAX | .94 | .17 | .82 | .00 | 18 | 21 | 49 | 10 | 123 | 93 | 1260 | 762 |
| MIN | .01 | .00 | .00 | .00 | .00 | .62 | .84 | .00 | .00 | .00 | .00 | 1.2 |
| CFSM | .004 | .003 | .001 | .000 | .09 | .13 | .22 | .05 | .17 | .15 | 2.44 | 1.75 |
| IN. | .00 | .00 | .00 | .00 | .09 | .14 | .24 | .05 | .19 | .17 | 2.81 | 1.95 |
| AC-FT | 5.6 | 4.9 | 2.0 | .00 | 124 | 193 | 330 | 69 | 253 | 236 | 3790 | 2630 |

| | | | | | | | | | | | | | | |
|-------------|-------|---------|------|------|-----|------|-----|-----|------|-----|----|------|-------|------|
| CAL YR 1976 | TOTAL | 1303.34 | MEAN | 3.56 | MAX | 89 | MIN | .00 | CFSM | .14 | IN | 1.92 | AC-FT | 2590 |
| WTR YR 1977 | TOTAL | 3851.79 | MEAN | 10.6 | MAX | 1260 | MIN | .00 | CFSM | .42 | IN | 5.66 | AC-FT | 7640 |

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 mi² (254.1 km²).

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 647.48 ft (197.352 m) above mean sea level (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.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--24 years, 62.1 ft³/s (1.759 m³/s), 8.60 in/yr (218 mm/yr), 44,990 acre-ft/yr (55.5 hm³/yr); median of yearly mean discharges, 46 ft³/s (1.30 m³/s), 6.4 in/yr (163 mm/yr), 33,300 acre-ft/yr (41.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,630 ft³/s (188 m³/s) May 17, 1974, gage height, 13.93 ft (4.246 m); no flow Jan 18-Feb. 4, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28.3 m³/s) and maximum (*):

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) |
|---------|------|---|-------------------------|----------|------|---|-------------------------|
| Aug. 16 | 0330 | *3,540 100 | *13.02 3.968 | Sept. 18 | 1300 | 1,620 45.9 | 10.62 3.298 |

No flow Jan. 18-Feb. 4.

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 | 1.9 | 3.7 | 4.0 | .18 | .00 | 117 | 15 | 6.0 | 2.6 | 4.2 | 4.1 | 37 |
| 2 | 1.6 | 3.7 | 3.3 | .24 | .00 | 116 | 15 | 6.2 | 2.6 | 6.6 | 4.0 | 36 |
| 3 | 1.6 | 3.6 | 2.7 | .29 | .00 | 127 | 14 | 5.8 | 2.4 | 4.2 | 4.0 | 34 |
| 4 | 1.8 | 3.4 | 2.7 | .22 | .00 | 128 | 23 | 6.9 | 3.6 | 3.4 | 3.9 | 32 |
| 5 | 7.2 | 3.7 | 2.5 | .20 | .05 | 124 | 29 | 11 | 2.5 | 3.2 | 3.8 | 30 |
| 6 | 4.7 | 3.7 | 2.3 | .19 | .11 | 111 | 19 | 8.1 | 2.1 | 3.2 | 3.8 | 27 |
| 7 | 3.4 | 3.7 | 2.4 | .21 | .12 | 100 | 16 | 6.0 | 2.0 | 3.5 | 3.8 | 22 |
| 8 | 2.9 | 4.0 | 2.2 | .19 | .13 | 99 | 13 | 5.5 | 2.3 | 3.1 | 662 | 9.0 |
| 9 | 2.8 | 3.8 | 1.6 | .20 | .13 | 114 | 11 | 4.6 | 2.2 | 3.2 | 166 | 9.2 |
| 10 | 2.8 | 3.8 | 1.5 | .21 | .14 | 92 | 9.3 | 4.2 | 2.4 | 2.8 | 88 | 9.3 |
| 11 | 2.7 | 3.7 | 1.4 | .22 | .25 | 63 | 8.3 | 4.0 | 6.1 | 2.9 | 45 | 9.3 |
| 12 | 2.6 | 3.7 | 1.2 | .21 | .41 | 80 | 7.2 | 3.6 | 4.0 | 2.8 | 32 | 9.3 |
| 13 | 2.5 | 3.7 | 1.1 | .19 | .70 | 24 | 6.9 | 3.5 | 2.6 | 2.6 | 20 | 9.3 |
| 14 | 2.5 | 3.7 | .82 | .13 | 1.1 | 14 | 7.5 | 3.3 | 2.4 | 2.6 | 14 | 9.3 |
| 15 | 2.4 | 4.2 | .73 | .12 | 2.1 | 12 | 8.0 | 3.2 | 2.1 | 2.6 | 16 | 9.2 |
| 16 | 2.4 | 4.2 | .64 | .10 | 3.0 | 11 | 6.7 | 3.1 | 1.9 | 11 | 1970 | 9.2 |
| 17 | 2.5 | 4.6 | .57 | .05 | 5.0 | 9.4 | 6.0 | 2.9 | 2.4 | 5.0 | 208 | 9.9 |
| 18 | 2.6 | 4.8 | .52 | .00 | 8.4 | 11 | 5.4 | 3.2 | 5.0 | 3.7 | 152 | 1330 |
| 19 | 3.0 | 5.0 | .46 | .00 | 15 | 11 | 9.0 | 2.7 | 2.9 | 3.8 | 111 | 630 |
| 20 | 2.9 | 5.0 | .40 | .00 | 27 | 10 | 21 | 3.2 | 1.9 | 3.3 | 86 | 180 |
| 21 | 3.1 | 5.0 | .36 | .00 | 43 | 13 | 60 | 72 | 1.7 | 2.7 | 76 | 137 |
| 22 | 2.9 | 4.8 | .32 | .00 | 78 | 15 | 33 | 9.5 | 1.8 | 2.3 | 69 | 96 |
| 23 | 2.9 | 5.0 | .33 | .00 | 194 | 16 | 17 | 5.5 | 2.5 | 2.1 | 60 | 72 |
| 24 | 2.9 | 5.2 | .32 | .00 | 208 | 14 | 13 | 4.3 | 17 | 3.4 | 49 | 367 |
| 25 | 2.9 | 5.0 | .28 | .00 | 158 | 11 | 11 | 3.9 | 4.1 | 8.9 | 42 | 158 |
| 26 | 3.0 | 5.0 | .27 | .00 | 135 | 10 | 8.6 | 3.7 | 2.4 | 7.5 | 38 | 111 |
| 27 | 3.0 | 5.0 | .28 | .00 | 129 | 13 | 7.5 | 3.3 | 1.8 | 5.7 | 38 | 79 |
| 28 | 3.1 | 4.9 | .26 | .00 | 120 | 35 | 4.6 | 3.1 | 1.8 | 4.9 | 37 | 61 |
| 29 | 3.1 | 4.6 | .21 | .00 | --- | 70 | 5.9 | 2.9 | 1.6 | 4.5 | 37 | 53 |
| 30 | 3.4 | 5.0 | .16 | .00 | --- | 29 | 5.9 | 2.9 | 110 | 4.3 | 37 | 46 |
| 31 | 3.7 | --- | .14 | .00 | --- | 18 | --- | 2.8 | --- | 4.2 | 37 | --- |
| TOTAL | 90.8 | 129.2 | 35.97 | 3.15 | 1128.64 | 1617.4 | 416.8 | 210.9 | 200.7 | 166.0 | 4117.4 | 3631.0 |
| MEAN | 2.93 | 4.31 | 1.16 | .10 | 40.3 | 52.2 | 13.9 | 6.80 | 6.69 | 5.35 | 133 | 121 |
| MAX | 7.2 | 5.2 | 4.0 | .29 | 208 | 128 | 60 | 72 | 110 | 42 | 1970 | 1330 |
| MIN | 1.6 | 3.4 | .14 | .00 | .00 | 9.4 | 4.6 | 2.7 | 1.6 | 2.1 | 3.8 | 9.0 |
| CFSM | .03 | .04 | .01 | .001 | .41 | .53 | .14 | .07 | .07 | .06 | 1.36 | 1.23 |
| IN | .03 | .05 | .01 | .00 | .43 | .61 | .16 | .08 | .08 | .06 | 1.56 | 1.38 |
| AC-FT | 180 | 256 | 71 | 6.2 | 2240 | 3210 | 827 | 418 | 398 | 329 | 8170 | 7200 |

| | | | | | | | | | | | | | | |
|-------------|-------|----------|------|------|-----|------|-----|-----|------|-----|----|------|-------|-------|
| CAL YR 1976 | TOTAL | 10965.57 | MEAN | 30.0 | MAX | 885 | MIN | .14 | CFSM | .31 | IN | 4.16 | AC-FT | 21750 |
| WTR YR 1977 | TOTAL | 11747.96 | MEAN | 32.2 | MAX | 1970 | MIN | .00 | CFSM | .33 | IN | 4.45 | AC-FT | 23300 |

IOWA RIVER BASIN

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) above mean sea level. 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 power plant 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.--74 years, 1,628 ft³/s (46.10 m³/s), 6.76 in/yr (172 mm/yr), 1,179,000 acre-ft/yr (1,454 hm³/yr); median of yearly mean discharges, 1,420 ft³/s (40.2 m³/s), 5.9 in/yr (150 mm/yr), 1,029,000 acre-ft/yr (1,270 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, 5,240 ft³/s (148 m³/s) Sept. 18, gage height, 16.38 ft (4.993 m); minimum daily, 49 ft³/s (1.39 m³/s) Aug. 1, 2.

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 | 152 | 157 | 155 | 148 | 146 | 99 | 958 | 273 | 103 | 167 | 49 | 3650 |
| 2 | 152 | 160 | 155 | 148 | 146 | 101 | 928 | 252 | 107 | 88 | 49 | 3530 |
| 3 | 150 | 160 | 163 | 146 | 144 | 112 | 886 | 246 | 109 | 78 | 50 | 2780 |
| 4 | 155 | 155 | 160 | 142 | 142 | 110 | 922 | 255 | 118 | 70 | 50 | 2210 |
| 5 | 195 | 155 | 160 | 142 | 138 | 107 | 898 | 267 | 116 | 63 | 50 | 1860 |
| 6 | 168 | 157 | 152 | 142 | 134 | 107 | 862 | 255 | 107 | 77 | 50 | 1570 |
| 7 | 165 | 123 | 158 | 140 | 132 | 107 | 838 | 246 | 107 | 60 | 50 | 1410 |
| 8 | 157 | 115 | 155 | 140 | 130 | 112 | 766 | 246 | 114 | 60 | 87 | 1220 |
| 9 | 157 | 117 | 155 | 140 | 132 | 120 | 710 | 240 | 109 | 59 | 98 | 1120 |
| 10 | 155 | 130 | 155 | 138 | 132 | 122 | 700 | 237 | 116 | 59 | 103 | 1010 |
| 11 | 157 | 130 | 158 | 136 | 148 | 167 | 685 | 237 | 148 | 59 | 103 | 898 |
| 12 | 157 | 130 | 160 | 140 | 186 | 264 | 650 | 234 | 126 | 57 | 93 | 991 |
| 13 | 155 | 128 | 155 | 138 | 156 | 146 | 645 | 231 | 109 | 63 | 87 | 1200 |
| 14 | 157 | 126 | 155 | 136 | 134 | 122 | 620 | 237 | 109 | 55 | 87 | 1060 |
| 15 | 155 | 123 | 158 | 136 | 99 | 118 | 814 | 228 | 105 | 54 | 65 | 832 |
| 16 | 155 | 140 | 156 | 138 | 99 | 112 | 454 | 207 | 103 | 88 | 3020 | 720 |
| 17 | 152 | 185 | 158 | 144 | 99 | 114 | 301 | 165 | 109 | 82 | 838 | 760 |
| 18 | 155 | 182 | 162 | 152 | 99 | 144 | 298 | 150 | 105 | 77 | 2120 | 3930 |
| 19 | 160 | 178 | 162 | 156 | 99 | 347 | 312 | 150 | 99 | 70 | 3400 | 3400 |
| 20 | 155 | 175 | 160 | 154 | 99 | 406 | 354 | 150 | 85 | 60 | 3920 | 3740 |
| 21 | 155 | 175 | 162 | 152 | 99 | 418 | 478 | 171 | 71 | 60 | 3930 | 4170 |
| 22 | 152 | 172 | 158 | 152 | 99 | 418 | 371 | 122 | 59 | 55 | 3930 | 4160 |
| 23 | 155 | 175 | 152 | 154 | 152 | 470 | 333 | 112 | 57 | 55 | 3900 | 4130 |
| 24 | 157 | 175 | 152 | 150 | 148 | 454 | 350 | 103 | 54 | 160 | 3680 | 4710 |
| 25 | 157 | 175 | 148 | 148 | 110 | 575 | 375 | 101 | 53 | 140 | 3180 | 3380 |
| 26 | 157 | 178 | 150 | 152 | 103 | 856 | 368 | 101 | 53 | 71 | 2810 | 3290 |
| 27 | 155 | 172 | 150 | 148 | 99 | 892 | 358 | 99 | 51 | 59 | 2730 | 4050 |
| 28 | 155 | 170 | 148 | 150 | 99 | 970 | 326 | 99 | 53 | 55 | 2620 | 3620 |
| 29 | 157 | 165 | 152 | 148 | --- | 1080 | 294 | 99 | 53 | 54 | 2630 | 3150 |
| 30 | 165 | 165 | 150 | 148 | --- | 1150 | 294 | 98 | 264 | 51 | 3320 | 3180 |
| 31 | 162 | --- | 150 | 148 | --- | 1030 | --- | 98 | --- | 50 | 3660 | --- |
| TOTAL | 4891 | 4648 | 4844 | 4506 | 3503 | 11350 | 17148 | 5709 | 2972 | 2256 | 50759 | 75731 |
| MEAN | 158 | 155 | 156 | 145 | 125 | 366 | 572 | 184 | 99.1 | 72.8 | 1637 | 2524 |
| MAX | 195 | 185 | 165 | 156 | 186 | 1150 | 958 | 273 | 264 | 167 | 3930 | 4710 |
| MIN | 150 | 115 | 148 | 136 | 99 | 99 | 294 | 98 | 51 | 50 | 49 | 720 |
| AC-FT | 9700 | 9220 | 9610 | 8940 | 6950 | 22510 | 34010 | 11320 | 5890 | 4470 | 100700 | 150200 |
| CAL YR 1976 TOTAL | 449672 | | | 1229 | MAX 6110 | MIN 115 | AC-FT 891900 | | | | | |
| WTR YR 1977 TOTAL | 188317 | | | MEAN 516 | MAX 4710 | MIN 49 | AC-FT 373500 | | | | | |

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 ice affect 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 each year.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 7,800 mg/L June 13, 1953; minimum daily mean, 2 mg/L Dec. 16, 18, 20, 21, 27, 1963, Jan. 19, 20, 21, 22, 1977.

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.--

WATER TEMPERATURES: Maximum, 30.5°C July 19; minimum, 0.0°C on many days during winter period.

22. SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,660 mg/L Aug. 16; minimum daily mean, 2.0 mg/L Jan. 19, 20, 21.

SEDIMENT LOADS: Maximum daily, 19,200 tons (17,400 tonnes) Aug. 16; minimum daily, 0.82 tons (0.74 tonnes) Jan. 21, 22.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | 480 | 500 | 540 | --- | 600 | 690 | 420 | --- | 510 | 380 | 450 | 340 |
| 2 | --- | --- | 540 | --- | 650 | 750 | --- | 530 | 520 | --- | 430 | 370 |
| 3 | --- | 400 | 420 | --- | 660 | 650 | --- | 560 | 530 | --- | 410 | --- |
| 4 | --- | --- | --- | 520 | 680 | --- | 360 | 560 | --- | --- | 400 | --- |
| 5 | --- | 400 | --- | --- | --- | --- | 430 | 550 | --- | 380 | 400 | --- |
| 6 | 450 | --- | --- | --- | --- | --- | 400 | 560 | 500 | 390 | --- | 300 |
| 7 | 480 | --- | --- | 575 | 680 | 750 | 460 | --- | 500 | 390 | --- | 290 |
| 8 | --- | --- | 470 | --- | 620 | 700 | 460 | --- | 500 | 440 | 370 | 340 |
| 9 | --- | 490 | 520 | --- | 700 | 740 | --- | 520 | 480 | --- | 270 | 340 |
| 10 | --- | 520 | --- | --- | 700 | 720 | --- | 520 | 480 | --- | 240 | --- |
| 11 | --- | 470 | --- | --- | --- | 700 | 500 | 540 | --- | 480 | 240 | --- |
| 12 | 500 | --- | --- | 560 | 630 | --- | 500 | 520 | --- | 460 | 330 | 320 |
| 13 | 500 | --- | 550 | --- | --- | --- | 510 | 540 | 500 | 460 | --- | --- |
| 14 | --- | --- | 490 | --- | 660 | 610 | 480 | --- | 500 | 500 | --- | 370 |
| 15 | --- | --- | 465 | --- | 690 | 610 | 530 | --- | 480 | 510 | 350 | 400 |
| 16 | --- | 500 | 370 | --- | 730 | 610 | --- | 560 | 460 | --- | 160 | 420 |
| 17 | --- | --- | --- | --- | 700 | 625 | --- | 550 | 460 | --- | 310 | --- |
| 18 | 380 | --- | --- | 640 | 650 | 650 | 550 | 550 | --- | 480 | 460 | --- |
| 19 | 490 | 410 | --- | --- | --- | --- | 520 | 540 | --- | 470 | 450 | 350 |
| 20 | --- | --- | --- | --- | --- | --- | 520 | 530 | 500 | 470 | --- | 450 |
| 21 | --- | --- | --- | 630 | --- | --- | 480 | --- | 530 | 500 | --- | 480 |
| 22 | --- | 430 | 560 | --- | 650 | 610 | 500 | --- | 500 | 500 | 330 | 435 |
| 23 | --- | 450 | 560 | --- | --- | 600 | --- | 460 | 540 | --- | 280 | 490 |
| 24 | --- | 380 | --- | 630 | 725 | --- | --- | 500 | 430 | --- | 180 | --- |
| 25 | --- | --- | --- | 520 | 750 | --- | 500 | 520 | --- | 470 | 220 | --- |
| 26 | --- | --- | --- | --- | --- | --- | 530 | 490 | --- | 440 | 230 | 340 |
| 27 | 380 | --- | 380 | --- | --- | --- | 520 | 470 | 490 | 410 | --- | 340 |
| 28 | --- | --- | --- | --- | 670 | --- | 520 | --- | 470 | 410 | --- | 290 |
| 29 | 500 | 530 | --- | --- | --- | 480 | 530 | --- | 510 | 460 | 240 | 310 |
| 30 | --- | 380 | 440 | --- | --- | 440 | --- | --- | 460 | 450 | 270 | 310 |
| 31 | --- | --- | --- | 640 | --- | 440 | --- | 510 | --- | --- | 240 | --- |

IOWA RIVER BASIN

05454500 IOWA RIVER AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-----|------|------|-----|-----|-----|-----|------|------|------|------|------|------|
| 1 | 21.0 | 11.0 | 0.0 | --- | 1.5 | 6.0 | 7.5 | --- | 23.0 | 22.0 | 25.0 | 23.0 |
| 2 | --- | --- | 0.0 | --- | 1.5 | 6.5 | --- | 17.0 | 21.5 | --- | 25.5 | 22.5 |
| 3 | --- | 9.0 | 0.0 | --- | 2.0 | 6.5 | --- | 15.5 | 21.0 | --- | 25.0 | --- |
| 4 | 21.5 | --- | --- | 2.0 | 3.0 | --- | 8.5 | 16.5 | --- | --- | 26.0 | --- |
| 5 | --- | 7.5 | --- | --- | --- | --- | 7.0 | 17.5 | --- | 28.0 | 26.0 | --- |
| 6 | 15.0 | --- | --- | --- | --- | --- | 8.5 | 18.0 | 25.0 | 28.0 | --- | 22.5 |
| 7 | 13.0 | --- | --- | 2.0 | 3.0 | 9.0 | 8.0 | --- | 23.0 | 28.5 | --- | 22.0 |
| 8 | --- | --- | 0.0 | --- | 3.0 | 8.0 | 8.0 | --- | 22.0 | 30.0 | 23.5 | 22.5 |
| 9 | --- | 7.5 | 2.0 | --- | 4.0 | 8.0 | --- | 16.5 | 21.5 | --- | 22.0 | 22.5 |
| 10 | --- | 5.5 | --- | --- | 5.0 | 7.5 | --- | 16.5 | 21.0 | --- | 26.5 | --- |
| 11 | --- | 5.0 | --- | --- | 3.0 | 9.5 | 12.0 | 17.0 | --- | 27.0 | 22.0 | --- |
| 12 | 15.5 | --- | --- | 2.0 | --- | --- | 13.5 | 18.0 | --- | 27.5 | 21.5 | 21.0 |
| 13 | 15.0 | --- | 1.0 | 4.0 | --- | --- | 14.0 | 19.0 | 22.5 | 29.0 | --- | --- |
| 14 | 17.0 | --- | 3.5 | --- | 4.0 | 6.0 | 14.0 | --- | 22.0 | 29.0 | --- | 19.5 |
| 15 | --- | --- | 3.5 | --- | 5.5 | 8.5 | 15.5 | --- | 23.0 | 28.5 | 22.0 | 19.5 |
| 16 | --- | 6.0 | 2.5 | --- | 5.0 | 9.5 | --- | 23.0 | 24.5 | --- | 21.5 | 20.5 |
| 17 | --- | --- | --- | --- | 6.0 | 8.5 | --- | 22.5 | 26.0 | --- | 22.0 | --- |
| 18 | 11.5 | --- | --- | 2.0 | 6.5 | 7.0 | 14.5 | 23.0 | --- | 27.5 | 21.5 | --- |
| 19 | 10.0 | 4.5 | --- | --- | --- | --- | 18.5 | 24.0 | --- | 30.5 | 22.0 | 19.0 |
| 20 | 9.0 | --- | --- | --- | --- | --- | 18.0 | 25.5 | 25.0 | 28.5 | --- | 18.5 |
| 21 | --- | --- | --- | 3.0 | --- | --- | 18.5 | --- | 24.0 | 29.0 | --- | 18.0 |
| 22 | --- | 2.5 | 2.0 | --- | 6.5 | 6.5 | 17.5 | --- | 23.0 | 27.0 | 21.0 | 19.0 |
| 23 | --- | 2.5 | 1.0 | --- | --- | 5.0 | --- | 21.0 | 23.5 | --- | 21.0 | 18.0 |
| 24 | --- | 4.0 | --- | 3.0 | 6.0 | 5.0 | --- | 23.0 | 25.0 | --- | 20.0 | --- |
| 25 | --- | --- | --- | 2.0 | 6.0 | 6.0 | 15.5 | 23.5 | --- | 27.0 | 20.0 | --- |
| 26 | --- | --- | --- | --- | --- | --- | 15.5 | 25.0 | --- | 25.0 | 21.0 | 21.0 |
| 27 | 8.5 | --- | 4.0 | --- | --- | --- | 16.5 | 24.5 | 26.5 | 25.0 | --- | 17.5 |
| 28 | 7.0 | --- | --- | --- | 6.0 | --- | 16.5 | --- | 27.0 | 24.0 | --- | 19.5 |
| 29 | 8.0 | 0.0 | 0.0 | --- | --- | 8.5 | 15.0 | --- | 25.0 | 26.0 | 21.0 | 20.0 |
| 30 | --- | 0.0 | 0.0 | --- | --- | 9.0 | --- | --- | 25.0 | --- | 22.0 | 19.0 |
| 31 | --- | --- | --- | 1.0 | --- | 7.5 | --- | 24.5 | --- | --- | 23.0 | --- |

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DAY | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) |
|---------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|
| OCTOBER | | NOVEMBER | | DECEMBER | | JANUARY | | FEBRUARY | | MARCH | | |
| 1 | 38 | 16 | 22 | 9.3 | 8 | 3.6 | 11 | 4.4 | 5 | 2.0 | 13 | 3.5 |
| 2 | 39 | 16 | 25 | 11 | 9 | 4.0 | 12 | 4.8 | 6 | 2.4 | 18 | 4.9 |
| 3 | 37 | 15 | 22 | 9.5 | 12 | 5.3 | 11 | 4.3 | 4 | 1.6 | 43 | 13 |
| 4 | 39 | 16 | 18 | 7.5 | 11 | 4.8 | 11 | 4.2 | 4 | 1.5 | 36 | 11 |
| 5 | 111 | 58 | 14 | 5.9 | 10 | 4.3 | 10 | 3.8 | 6 | 2.2 | 30 | 8.7 |
| 6 | 49 | 22 | 18 | 7.6 | 8 | 3.3 | 10 | 3.8 | 7 | 2.5 | 25 | 7.2 |
| 7 | 24 | 11 | 17 | 5.6 | 7 | 3.0 | 6 | 2.3 | 7 | 2.5 | 19 | 5.5 |
| 8 | 23 | 9.7 | 12 | 3.7 | 6 | 2.5 | 7 | 2.6 | 10 | 3.5 | 26 | 7.9 |
| 9 | 23 | 9.7 | 7 | 2.2 | 12 | 5.0 | 11 | 4.2 | 11 | 3.9 | 37 | 12 |
| 10 | 22 | 9.2 | 11 | 3.9 | 13 | 5.4 | 12 | 4.5 | 13 | 4.6 | 31 | 10 |
| 11 | 21 | 8.9 | 20 | 7.0 | 11 | 4.7 | 10 | 3.7 | 14 | 5.6 | 64 | 29 |
| 12 | 26 | 11 | 18 | 6.3 | 10 | 4.3 | 9 | 3.4 | 24 | 12 | 119 | 85 |
| 13 | 129 | 54 | 15 | 5.2 | 7 | 2.9 | 7 | 2.6 | 17 | 7.2 | 83 | 33 |
| 14 | 105 | 45 | 13 | 4.4 | 8 | 3.3 | 9 | 3.3 | 7 | 2.5 | 56 | 18 |
| 15 | 103 | 43 | 12 | 4.0 | 22 | 9.4 | 11 | 4.0 | 6 | 1.6 | 42 | 13 |
| 16 | 76 | 32 | 11 | 4.2 | 13 | 5.5 | 9 | 3.4 | 10 | 2.7 | 38 | 11 |
| 17 | 48 | 20 | 17 | 8.5 | 10 | 4.3 | 6 | 2.3 | 7 | 1.9 | 32 | 9.8 |
| 18 | 24 | 10 | 14 | 6.9 | 12 | 5.2 | 3 | 1.2 | 8 | 2.1 | 34 | 13 |
| 19 | 22 | 9.5 | 9 | 4.3 | 14 | 6.1 | 2 | 0.84 | 7 | 1.9 | 44 | 41 |
| 20 | 29 | 12 | 8 | 3.8 | 13 | 5.6 | 2 | 0.83 | 6 | 1.6 | 43 | 47 |
| 21 | 28 | 12 | 9 | 4.3 | 11 | 4.8 | 2 | 0.82 | 5 | 1.3 | 28 | 32 |
| 22 | 27 | 11 | 9 | 4.2 | 9 | 3.8 | 2 | 0.82 | 6 | 1.6 | 13 | 15 |
| 23 | 26 | 11 | 8 | 3.8 | 6 | 2.5 | 3 | 1.2 | 38 | 16 | 20 | 25 |
| 24 | 25 | 11 | 11 | 5.2 | 6 | 2.5 | 3 | 1.2 | 39 | 16 | 26 | 32 |
| 25 | 23 | 9.7 | 11 | 5.2 | 8 | 3.2 | 5 | 2.0 | 29 | 8.6 | 30 | 47 |
| 26 | 20 | 8.5 | 10 | 4.8 | 10 | 4.1 | 7 | 2.9 | 24 | 6.7 | 35 | 81 |
| 27 | 15 | 6.3 | 10 | 4.6 | 11 | 4.5 | 8 | 3.2 | 23 | 6.1 | 41 | 99 |
| 28 | 16 | 6.7 | 9 | 4.1 | 13 | 5.2 | 7 | 2.8 | 19 | 5.1 | 86 | 225 |
| 29 | 25 | 11 | 8 | 3.6 | 14 | 5.7 | 6 | 2.4 | --- | --- | 83 | 242 |
| 30 | 35 | 16 | 8 | 3.6 | 12 | 4.9 | 5 | 2.0 | --- | --- | 53 | 165 |
| 31 | 31 | 14 | --- | --- | 11 | 4.5 | 3 | 1.2 | --- | --- | 46 | 128 |
| TOTAL | --- | 545.2 | --- | 164.2 | --- | 138.2 | --- | 85.01 | --- | 127.2 | --- | 1474.5 |

05454500 IOWA RIVER AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DAY | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) |
|-------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|
| | APRIL | | MAY | | JUNE | | JULY | | AUGUST | | SEPTEMBER | |
| 1 | 45 | 116 | 71 | 52 | 66 | 18 | 114 | 51 | 48 | 6.4 | 67 | 660 |
| 2 | 43 | 108 | 66 | 45 | 66 | 19 | 102 | 24 | 44 | 5.8 | 66 | 629 |
| 3 | 42 | 100 | 61 | 41 | 62 | 18 | 96 | 20 | 38 | 5.1 | 62 | 465 |
| 4 | 63 | 157 | 68 | 47 | 63 | 20 | 94 | 18 | 38 | 5.1 | 55 | 328 |
| 5 | 54 | 131 | 63 | 45 | 62 | 19 | 93 | 16 | 39 | 5.3 | 49 | 246 |
| 6 | 53 | 123 | 56 | 39 | 58 | 17 | 101 | 21 | 39 | 5.3 | 44 | 187 |
| 7 | 50 | 113 | 56 | 37 | 67 | 19 | 74 | 12 | 38 | 5.1 | 44 | 168 |
| 8 | 42 | 87 | 66 | 44 | 69 | 21 | 27 | 4.4 | 272 | 920 | 47 | 155 |
| 9 | 48 | 92 | 74 | 48 | 62 | 18 | 24 | 3.8 | 392 | 104 | 54 | 163 |
| 10 | 49 | 93 | 76 | 49 | 67 | 21 | 26 | 4.1 | 310 | 86 | 58 | 158 |
| 11 | 63 | 117 | 79 | 51 | 70 | 28 | 30 | 4.8 | 197 | 55 | 62 | 150 |
| 12 | 64 | 112 | 71 | 45 | 68 | 23 | 30 | 4.6 | 87 | 22 | 62 | 166 |
| 13 | 61 | 106 | 70 | 44 | 61 | 18 | 25 | 4.3 | 72 | 17 | 57 | 185 |
| 14 | 58 | 97 | 70 | 45 | 63 | 19 | 26 | 3.9 | 94 | 22 | 48 | 137 |
| 15 | 58 | 127 | 67 | 41 | 60 | 17 | 31 | 4.5 | 86 | 15 | 48 | 108 |
| 16 | 58 | 71 | 67 | 37 | 45 | 13 | 37 | 8.8 | 1660 | 19200 | 51 | 99 |
| 17 | 58 | 47 | 77 | 34 | 37 | 11 | 36 | 8.0 | 370 | 837 | 57 | 117 |
| 18 | 61 | 49 | 69 | 28 | 48 | 14 | 33 | 6.9 | 157 | 899 | 512 | 5430 |
| 19 | 68 | 57 | 66 | 27 | 50 | 13 | 32 | 6.0 | 147 | 1350 | 280 | 2570 |
| 20 | 61 | 58 | 81 | 33 | 44 | 10 | 25 | 4.1 | 153 | 1620 | 120 | 1210 |
| 21 | 86 | 111 | 239 | 110 | 29 | 5.6 | 25 | 4.1 | 143 | 1520 | 112 | 1260 |
| 22 | 75 | 75 | 245 | 81 | 49 | 7.8 | 26 | 3.9 | 120 | 1270 | 87 | 977 |
| 23 | 63 | 57 | 165 | 50 | 43 | 6.6 | 27 | 4.0 | 105 | 1110 | 50 | 558 |
| 24 | 69 | 65 | 82 | 23 | 54 | 7.9 | 62 | 27 | 109 | 1080 | 182 | 2310 |
| 25 | 76 | 77 | 55 | 15 | 59 | 8.4 | 38 | 14 | 136 | 1170 | 117 | 1070 |
| 26 | 73 | 73 | 37 | 10 | 49 | 7.0 | 32 | 6.1 | 66 | 501 | 89 | 791 |
| 27 | 72 | 70 | 44 | 12 | 28 | 3.9 | 35 | 5.6 | 51 | 376 | 74 | 809 |
| 28 | 72 | 63 | 46 | 12 | 32 | 4.6 | 45 | 6.7 | 58 | 410 | 79 | 772 |
| 29 | 73 | 58 | 50 | 13 | 40 | 5.7 | 50 | 7.3 | 70 | 497 | 78 | 663 |
| 30 | 73 | 58 | 55 | 15 | 85 | 61 | 52 | 7.2 | 70 | 627 | 72 | 618 |
| 31 | --- | --- | 63 | 17 | --- | --- | 50 | 6.8 | 68 | 672 | --- | --- |
| TOTAL | --- | 2668 | --- | 1190 | --- | 474.5 | --- | 322.9 | --- | 34418.1 | --- | 23159 |

TOTAL LOAD FOR YEAR: 64766.81 TONS.

| DATE | TIME | TEMPER- ATURE (DEG C) (00010) | NUMBER OF SAM- PLING POINTS | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | SUS- PENDE SEDIM- ENT (MG/L) (80154) | SUS- PENDE SEDIM- MENT (T/DAY) (80155) | SUS. SED. FALL DIAM. % FINER THAN (70337) | SUS. SED. FALL DIAM. % FINER THAN (70338) | SUS. SED. FALL DIAM. % FINER THAN (70339) | SUS. SED. FALL DIAM. % FINER THAN (70340) |
|--------------|------|--|---|---|---|---|---|---|---|---|
| | | | (00063) | (00061) | (80154) | (80155) | (70337) | (70338) | (70339) | (70340) |
| APR 21... | 1030 | 18.5 | -- | 518 | 97 | 136 | 78 | 81 | 87 | 94 |
| SEP 22... | 1130 | 19.0 | 4 | 4160 | -- | -- | -- | -- | -- | -- |
| | | SUS. SED. SIEVE DIAM. % FINER THAN (70331) | BED MAT. SIEVE DIAM. % FINER THAN (80164) | BED MAT. SIEVE DIAM. % FINER THAN (80165) | BED MAT. SIEVE DIAM. % FINER THAN (80166) | BED MAT. SIEVE DIAM. % FINER THAN (80167) | BED MAT. SIEVE DIAM. % FINER THAN (80168) | BED MAT. SIEVE DIAM. % FINER THAN (80169) | BED MAT. SIEVE DIAM. % FINER THAN (80170) | BED MAT. SIEVE DIAM. % FINER THAN (80171) |
| DATE | | .062 MM (70331) | .062 MM (80164) | .125 MM (80165) | .250 MM (80166) | .500 MM (80167) | 1.00 MM (80168) | 2.00 MM (80169) | 4.00 MM (80170) | 8.00 MM (80171) |
| APR 21... | 98 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP 22... | -- | 1 | 1 | 5 | 47 | 84 | 95 | 97 | 98 | 100 |

IOWA RIVER BASIN

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. WRD Iowa. 1967: 1965-66.

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

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

AVERAGE DISCHARGE.--53 years, 1.67 ft³/s (0.047 m³/s), 7.53 in/yr (191 mm/yr), 1,210 acre-ft/yr (1.49 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,940 ft³/s (54.9 m³/s) Sept. 21, 1955, gage height, 6.90 ft (2.103 m); maximum gage height, 9.06 ft (2.761 m) July 18, 1956; no flow at times during most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 522 ft³/s (14.78 m³/s) Aug. 16, gage height, 6.13 ft (1.868 m) at 0230 hours, no other peak above base of 200 ft³/s (5.66 m³/s); no flow for many days.

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 | .03 | .00 | .00 | .00 | .16 | 1.1 | .31 | .00 | .09 | .00 | .26 |
| 2 | .00 | .02 | .00 | .00 | .00 | .17 | 1.2 | .26 | .00 | .01 | .00 | .24 |
| 3 | .00 | .03 | .00 | .00 | .00 | .46 | .65 | .25 | .00 | .00 | .00 | .18 |
| 4 | .00 | .02 | .00 | .00 | .00 | .39 | 3.4 | .85 | .02 | .00 | .00 | .16 |
| 5 | .55 | .03 | .00 | .00 | .00 | .22 | 2.3 | 1.2 | .00 | .00 | .00 | .12 |
| 6 | .11 | .03 | .00 | .00 | .00 | .25 | 1.5 | .44 | .00 | .00 | .01 | .11 |
| 7 | .02 | .04 | .00 | .00 | .00 | .27 | .83 | .34 | .00 | .00 | .04 | .09 |
| 8 | .00 | .03 | .00 | .00 | .00 | .49 | .56 | .26 | .00 | .00 | .13 | .07 |
| 9 | .00 | .04 | .00 | .00 | .00 | .33 | .47 | .20 | .00 | .00 | .44 | .07 |
| 10 | .00 | .06 | .00 | .00 | .27 | .26 | .40 | .17 | .00 | .00 | .12 | .04 |
| 11 | .00 | .03 | .00 | .00 | 3.9 | 6.9 | .32 | .15 | .59 | .00 | .42 | .03 |
| 12 | .00 | .00 | .00 | .00 | .59 | 10 | .25 | .14 | .20 | .00 | .07 | .05 |
| 13 | .00 | .00 | .00 | .00 | .26 | 1.0 | .27 | .13 | .04 | .00 | .47 | .11 |
| 14 | .00 | .00 | .00 | .00 | .11 | .50 | .27 | .05 | .00 | .00 | .32 | .05 |
| 15 | .00 | .01 | .00 | .00 | .04 | .47 | .25 | .05 | .00 | .00 | .09 | .05 |
| 16 | .00 | .05 | .00 | .00 | .02 | .59 | .23 | .05 | .00 | .00 | .54 | .07 |
| 17 | .00 | .05 | .00 | .00 | .00 | .30 | .24 | .08 | .02 | .00 | .87 | 2.0 |
| 18 | .00 | .07 | .00 | .00 | .00 | .38 | .20 | .07 | .00 | .00 | .47 | 27 |
| 19 | .00 | .07 | .01 | .00 | .00 | .25 | .21 | .04 | .00 | .00 | .32 | 1.9 |
| 20 | .03 | .06 | .10 | .00 | .00 | .38 | 8.1 | .25 | .00 | .00 | .23 | 1.0 |
| 21 | .02 | .06 | .04 | .00 | .01 | .83 | 10 | .16 | .00 | .00 | .23 | .68 |
| 22 | .02 | .05 | .01 | .00 | .40 | 1.2 | 3.2 | .07 | .00 | .00 | .16 | .55 |
| 23 | .01 | .02 | .00 | .00 | 3.5 | .87 | 1.8 | .05 | .00 | .00 | .12 | .53 |
| 24 | .00 | .02 | .00 | .00 | .87 | .75 | 1.3 | .04 | .00 | .12 | .08 | 2.1 |
| 25 | .01 | .07 | .00 | .00 | .16 | .59 | .83 | .03 | .00 | .00 | .06 | .58 |
| 26 | .01 | .05 | .00 | .00 | .14 | .53 | .62 | .05 | .00 | .00 | .75 | .44 |
| 27 | .01 | .02 | .00 | .00 | .16 | 1.7 | .45 | .03 | .00 | .00 | .18 | .36 |
| 28 | .01 | .00 | .00 | .00 | .19 | 9.6 | .35 | .01 | .00 | .00 | 4.8 | .30 |
| 29 | .02 | .00 | .00 | .00 | --- | 8.1 | .30 | .00 | .00 | .00 | .65 | .26 |
| 30 | .04 | .00 | .00 | .00 | --- | 2.7 | .31 | .02 | 3.3 | .00 | .40 | 9.8 |
| 31 | .05 | --- | .00 | .00 | --- | 1.3 | --- | .03 | --- | .00 | .34 | --- |
| TOTAL | .91 | .96 | .16 | .00 | 10.62 | 51.94 | 41.92 | 5.78 | 4.17 | .22 | 78.64 | 49.20 |
| MEAN | .029 | .032 | .005 | .000 | .38 | 1.68 | 1.40 | .19 | .14 | .007 | 2.54 | 1.64 |
| MAX | .55 | .07 | .10 | .00 | 3.9 | 10 | 10 | 1.2 | 3.3 | .12 | 54 | 27 |
| MIN | .00 | .00 | .00 | .00 | .00 | .16 | .20 | .00 | .00 | .00 | .00 | .03 |
| CFSM | .01 | .01 | .002 | .000 | .13 | .56 | .47 | .06 | .05 | .002 | .84 | .55 |
| IN. | .01 | .01 | .00 | .00 | .13 | .64 | .52 | .07 | .05 | .00 | .97 | .61 |
| AC-FT | 1.8 | 1.9 | .3 | .00 | 21 | 103 | 83 | 11 | 8.3 | .4 | 156 | 98 |

CAL YR 1976 TOTAL 294.78 MEAN .81 MAX 34 MIN .00 CFSM .27 IN 3.64 AC-FT 585
WTR YR 1977 TOTAL 244.52 MEAN .67 MAX 54 MIN .00 CFSM .22 IN 3.02 AC-FT 485

05455000 RALSTON CREEK AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 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. No flow Oct. 1-4, 9-19, 24, Nov. 12-14, 29, 30, Dec. 1-18, Dec. 23 to Feb. 9, Feb. 17-20, June 1-3, 5-10, 14-16, 18-29, July 3-23, July 25 to Aug. 5.

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 each year.

SEDIMENT CONCENTRATION: 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.

SEDIMENT LOADS: Maximum daily, 4,300 tons (3,900 tonnes) May 23, 1966; minimum daily, 0 ton (0 tonne) on many days in 1953-59, 1963-68, 1971, 1972, 1975, 1976, 1977.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 800 micromhos Mar. 23; minimum daily, 120 micromhos May 19, 20.

WATER TEMPERATURES: Maximum daily, 26.0°C May 26; minimum daily, 0.0°C on many days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,420 mg/L Aug. 8; minimum daily mean, 0 mg/L on many days.

SEDIMENT LOADS: Maximum daily, 743 tons (674 tonnes) Aug. 16; minimum daily, 0 ton (0 tonne) on many days.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | --- | 460 | | | --- | --- | 480 | 420 | --- | 300 | --- | --- |
| 2 | --- | 375 | | | --- | 620 | 500 | 420 | --- | 310 | --- | --- |
| 3 | --- | 380 | | | --- | 620 | 460 | 370 | --- | --- | --- | --- |
| 4 | --- | 410 | | | --- | 500 | 540 | 370 | --- | --- | --- | --- |
| 5 | 660 | 410 | | | --- | 560 | 520 | 460 | --- | --- | --- | --- |
| 6 | --- | 360 | | | --- | 610 | 560 | 420 | --- | --- | 180 | --- |
| 7 | 670 | 380 | | | --- | 610 | 490 | 460 | --- | --- | --- | --- |
| 8 | 680 | 400 | | | --- | 480 | 480 | 420 | --- | --- | 180 | --- |
| 9 | --- | --- | | | --- | 480 | 460 | 420 | --- | --- | --- | --- |
| 10 | --- | 420 | | | --- | 430 | 470 | 380 | --- | --- | --- | 440 |
| 11 | --- | 470 | | | 565 | 520 | 480 | 390 | 150 | --- | --- | 520 |
| 12 | --- | 470 | | | 450 | 610 | 530 | 420 | 500 | --- | --- | 470 |
| 13 | --- | --- | | | 480 | 640 | 450 | 430 | 490 | --- | --- | 510 |
| 14 | --- | --- | | | 450 | 710 | 450 | 420 | --- | --- | --- | 510 |
| 15 | --- | --- | | | 630 | 700 | 400 | 420 | --- | --- | --- | 550 |
| 16 | --- | 600 | | | 630 | 680 | 440 | 440 | --- | --- | --- | 510 |
| 17 | --- | 340 | | | --- | 570 | 420 | 460 | --- | --- | --- | 580 |
| 18 | --- | 390 | | | --- | 700 | 440 | 360 | --- | --- | --- | 450 |
| 19 | --- | 370 | | | --- | 660 | 410 | 120 | --- | --- | 500 | 520 |
| 20 | --- | 370 | | | --- | 650 | 460 | 120 | --- | --- | 510 | 500 |
| 21 | 680 | 330 | | | 630 | 230 | 420 | 460 | --- | --- | 520 | 430 |
| 22 | 720 | 380 | | | 560 | 600 | 420 | 460 | --- | --- | 510 | 480 |
| 23 | 700 | 375 | | | 400 | 800 | 520 | 440 | --- | --- | 530 | 470 |
| 24 | --- | 370 | | | 630 | 620 | 480 | 380 | --- | 150 | --- | 490 |
| 25 | 710 | 360 | | | 690 | 500 | 480 | 440 | --- | --- | 480 | 540 |
| 26 | --- | --- | | | --- | 510 | 460 | 440 | --- | --- | --- | 500 |
| 27 | 720 | --- | | | 640 | 540 | 430 | 490 | --- | --- | --- | 470 |
| 28 | 720 | --- | | | 630 | 505 | 440 | 410 | --- | --- | 420 | 490 |
| 29 | 680 | --- | | | --- | 600 | 400 | 240 | --- | --- | --- | 450 |
| 30 | --- | --- | | | --- | 480 | 420 | 220 | 215 | --- | 540 | 460 |
| 31 | 340 | --- | | | --- | 480 | --- | 240 | --- | --- | 510 | --- |

IOWA RIVER BASIN

05455000 RALSTON CREEK AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|
| 1 | --- | 2.0 | | | --- | --- | 5.0 | 17.0 | --- | 22.0 | --- | 20.0 |
| 2 | --- | 8.0 | | | --- | --- | 9.0 | 12.0 | --- | 22.0 | --- | 22.0 |
| 3 | --- | 4.0 | | | --- | 0.0 | 4.0 | 11.0 | --- | --- | --- | 20.0 |
| 4 | --- | 3.0 | | | --- | 0.0 | 5.0 | 12.0 | 24.0 | --- | --- | 19.0 |
| 5 | 9.0 | 0.0 | | | --- | 0.0 | 6.0 | 16.0 | --- | --- | --- | 19.0 |
| 6 | 5.0 | 2.0 | | | --- | 0.0 | 6.0 | 15.0 | --- | --- | 22.0 | 18.0 |
| 7 | 7.0 | 1.0 | | | --- | 0.0 | 15.0 | 11.0 | --- | --- | 24.0 | 16.0 |
| 8 | 4.0 | 0.0 | | | --- | 0.0 | 13.0 | 13.0 | --- | --- | 21.0 | 21.0 |
| 9 | --- | 2.0 | | | --- | 0.0 | 6.0 | 9.0 | --- | --- | 22.0 | 19.0 |
| 10 | --- | 1.0 | | | 2.0 | 4.0 | 12.0 | 14.0 | --- | --- | 24.0 | 19.0 |
| 11 | --- | 0.0 | | | 0.0 | 4.0 | 15.0 | 15.0 | 20.0 | --- | 21.0 | 19.0 |
| 12 | --- | 1.0 | | | 0.0 | 5.0 | 17.0 | 12.0 | 20.0 | --- | 22.0 | 16.0 |
| 13 | --- | --- | | | 1.0 | 4.0 | 13.0 | 12.0 | 19.0 | --- | 21.0 | 15.0 |
| 14 | --- | --- | | | 0.0 | 12.0 | 12.0 | 18.0 | --- | --- | 18.0 | 17.0 |
| 15 | --- | --- | | | 0.0 | 11.0 | 13.0 | 17.0 | --- | --- | 23.0 | 15.0 |
| 16 | --- | 0.0 | | | 0.0 | 4.0 | 20.0 | 19.0 | --- | --- | 20.5 | 16.0 |
| 17 | --- | 2.0 | | | --- | 3.0 | 21.0 | 25.0 | --- | --- | 20.0 | 17.0 |
| 18 | --- | 4.0 | | | --- | 4.0 | 22.0 | 23.0 | --- | --- | 19.0 | 16.0 |
| 19 | --- | 2.0 | | | --- | 1.0 | 18.0 | 23.0 | --- | --- | 12.0 | 15.0 |
| 20 | --- | 2.0 | | | --- | 7.0 | 16.0 | 22.0 | --- | --- | 19.0 | 17.0 |
| 21 | 5.0 | 0.0 | | | 0.0 | 0.0 | 14.0 | 23.0 | --- | --- | 22.0 | 19.0 |
| 22 | 6.0 | 1.0 | | | 1.0 | 6.0 | 12.0 | 19.0 | --- | --- | 19.0 | 16.0 |
| 23 | 5.0 | 0.0 | | | 2.0 | 9.0 | 12.0 | 16.0 | --- | --- | 20.0 | 17.0 |
| 24 | --- | 1.0 | | | 0.0 | 7.0 | 14.0 | 25.0 | 20.0 | 20.0 | 19.0 | 16.0 |
| 25 | 5.0 | 2.0 | | | 0.0 | 7.0 | 15.0 | 18.0 | --- | --- | 19.0 | 18.0 |
| 26 | 5.0 | --- | | | 0.0 | 7.0 | 15.0 | 26.0 | --- | --- | 22.0 | 16.0 |
| 27 | 4.0 | --- | | | 0.0 | 9.0 | 20.0 | 24.0 | --- | --- | 22.0 | 16.0 |
| 28 | 3.0 | --- | | | 0.0 | 9.5 | 15.0 | 20.0 | --- | --- | 21.0 | 16.0 |
| 29 | 5.0 | --- | | | --- | 13.0 | 6.0 | 22.0 | --- | --- | 18.0 | 21.0 |
| 30 | 6.0 | --- | | | --- | 7.0 | 8.0 | 21.0 | 20.0 | --- | 17.0 | 14.0 |
| 31 | 6.0 | --- | | | --- | 7.0 | --- | 20.0 | --- | --- | 22.0 | --- |

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| 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 | 0 | .00 | 135 | 0.01 | 0 | .00 | 0 | .00 | 0 | .00 | 10 | .00 |
| 2 | 0 | .00 | 110 | 0.01 | 0 | .00 | 0 | .00 | 0 | .00 | 8 | .00 |
| 3 | 0 | .00 | 131 | 0.01 | 0 | .00 | 0 | .00 | 0 | .00 | 14 | 0.02 |
| 4 | 0 | .00 | 144 | 0.01 | 0 | .00 | 0 | .00 | 0 | .00 | 27 | 0.03 |
| 5 | 173 | 0.26 | 183 | 0.01 | 0 | .00 | 0 | .00 | 0 | .00 | 7 | .00 |
| 6 | 18 | 0.01 | 146 | 0.01 | 0 | .00 | 0 | .00 | 0 | .00 | 30 | 0.02 |
| 7 | 12 | .00 | 144 | 0.02 | 0 | .00 | 0 | .00 | 0 | .00 | 17 | 0.01 |
| 8 | 9 | .00 | 135 | 0.01 | 0 | .00 | 0 | .00 | 0 | .00 | 7 | 0.01 |
| 9 | 0 | .00 | 122 | 0.01 | 0 | .00 | 0 | .00 | 0 | .00 | 5 | .00 |
| 10 | 0 | .00 | 167 | 0.03 | 0 | .00 | 0 | .00 | 25 | 0.02 | 6 | .00 |
| 11 | 0 | .00 | 158 | 0.01 | 0 | .00 | 0 | .00 | 50 | 0.53 | 220 | 4.1 |
| 12 | 0 | .00 | 0 | .00 | 0 | .00 | 0 | .00 | 54 | 0.09 | 300 | 8.1 |
| 13 | 0 | .00 | 0 | .00 | 0 | .00 | 0 | .00 | 50 | 0.04 | 13 | 0.04 |
| 14 | 0 | .00 | 0 | .00 | 0 | .00 | 0 | .00 | 35 | 0.01 | 18 | 0.02 |
| 15 | 0 | .00 | 50 | .00 | 0 | .00 | 0 | .00 | 15 | .00 | 56 | 0.08 |
| 16 | 0 | .00 | 165 | 0.02 | 0 | .00 | 0 | .00 | 5 | .00 | 32 | 0.05 |
| 17 | 0 | .00 | 108 | 0.01 | 0 | .00 | 0 | .00 | 0 | .00 | 26 | 0.02 |
| 18 | 0 | .00 | 82 | 0.02 | 0 | .00 | 0 | .00 | 0 | .00 | 15 | 0.02 |
| 19 | 0 | .00 | 60 | 0.01 | 45 | .00 | 0 | .00 | 0 | .00 | 22 | 0.01 |
| 20 | 50 | .00 | 92 | 0.01 | 207 | 0.06 | 0 | .00 | 0 | .00 | 27 | 0.03 |
| 21 | 17 | .00 | 178 | 0.03 | 185 | 0.02 | 0 | .00 | 10 | .00 | 147 | 0.33 |
| 22 | 13 | .00 | 223 | 0.03 | 45 | .00 | 0 | .00 | 14 | 0.02 | 68 | 0.22 |
| 23 | 10 | .00 | 232 | 0.01 | 0 | .00 | 0 | .00 | 87 | 0.82 | 25 | 0.06 |
| 24 | 0 | .00 | 239 | 0.01 | 0 | .00 | 0 | .00 | 24 | 0.06 | 12 | 0.02 |
| 25 | 16 | .00 | 243 | 0.05 | 0 | .00 | 0 | .00 | 23 | 0.01 | 32 | 0.05 |
| 26 | 15 | .00 | 212 | 0.03 | 0 | .00 | 0 | .00 | 20 | 0.01 | 58 | 0.08 |
| 27 | 8 | .00 | 119 | 0.01 | 0 | .00 | 0 | .00 | 18 | 0.01 | 127 | 0.58 |
| 28 | 6 | .00 | 37 | .00 | 0 | .00 | 0 | .00 | 13 | 0.01 | 218 | 9.6 |
| 29 | 85 | .00 | 0 | .00 | 0 | .00 | 0 | .00 | --- | --- | 117 | 4.7 |
| 30 | 193 | 0.02 | 0 | .00 | 0 | .00 | 0 | .00 | --- | --- | 47 | 0.34 |
| 31 | 153 | 0.02 | --- | --- | 0 | .00 | 0 | .00 | --- | --- | 45 | 0.16 |
| TOTAL | --- | 0.31 | --- | 0.38 | --- | 0.08 | --- | .00 | --- | 1.63 | --- | 28.70 |

05455000 RALSTON CREEK AT IOWA CITY, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DAY | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | | | |
|-------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|--|-----------|--|
| APRIL | | | MAY | | | JUNE | | | JULY | | | AUGUST | | SEPTEMBER | |
| 1 | 42 | 0.12 | 39 | 0.03 | 0 | .00 | 230 | 0.06 | 0 | .00 | 30 | 0.02 | | | |
| 2 | 135 | 0.44 | 90 | 0.06 | 0 | .00 | 86 | .00 | 0 | .00 | 17 | 0.01 | | | |
| 3 | 37 | 0.06 | 72 | 0.05 | 0 | .00 | 0 | .00 | 0 | .00 | 23 | 0.01 | | | |
| 4 | 69 | 0.63 | 121 | 0.28 | 56 | .00 | 0 | .00 | 0 | .00 | 43 | 0.02 | | | |
| 5 | 63 | 0.39 | 58 | 0.19 | 0 | .00 | 0 | .00 | 0 | .00 | 22 | 0.01 | | | |
| 6 | 74 | 0.30 | 85 | 0.10 | 0 | .00 | 0 | .00 | 55 | .00 | 12 | .00 | | | |
| 7 | 23 | 0.05 | 87 | 0.08 | 0 | .00 | 0 | .00 | 37 | .00 | 22 | 0.01 | | | |
| 8 | 11 | 0.02 | 92 | 0.06 | 0 | .00 | 0 | .00 | 1420 | 100 | 13 | .00 | | | |
| 9 | 39 | 0.05 | 73 | 0.04 | 0 | .00 | 0 | .00 | 213 | 0.25 | 26 | .00 | | | |
| 10 | 76 | 0.08 | 83 | 0.04 | 0 | .00 | 0 | .00 | 54 | 0.02 | 78 | 0.01 | | | |
| 11 | 73 | 0.06 | 82 | 0.03 | 200 | 0.32 | 0 | .00 | 71 | 0.08 | 99 | 0.01 | | | |
| 12 | 106 | 0.07 | 63 | 0.02 | 40 | 0.02 | 0 | .00 | 40 | 0.01 | 91 | 0.01 | | | |
| 13 | 103 | 0.08 | 144 | 0.05 | 43 | .00 | 0 | .00 | 500 | 0.63 | 60 | 0.02 | | | |
| 14 | 71 | 0.05 | 108 | 0.01 | 0 | .00 | 0 | .00 | 550 | 0.48 | 45 | 0.01 | | | |
| 15 | 54 | 0.04 | 87 | 0.01 | 0 | .00 | 0 | .00 | 120 | 0.03 | 37 | .00 | | | |
| 16 | 65 | 0.04 | 91 | 0.01 | 0 | .00 | 0 | .00 | 1320 | 743 | 28 | 0.01 | | | |
| 17 | 77 | 0.05 | 101 | 0.02 | 26 | .00 | 0 | .00 | 50 | 0.12 | 460 | 2.5 | | | |
| 18 | 114 | 0.06 | 85 | 0.02 | 0 | .00 | 0 | .00 | 46 | 0.06 | 674 | 83 | | | |
| 19 | 137 | 0.08 | 45 | .00 | 0 | .00 | 0 | .00 | 48 | 0.04 | 209 | 1.1 | | | |
| 20 | 210 | 8.9 | 25 | 0.02 | 0 | .00 | 0 | .00 | 44 | 0.03 | 64 | 0.17 | | | |
| 21 | 262 | 7.1 | 37 | 0.02 | 0 | .00 | 0 | .00 | 36 | 0.02 | 56 | 0.10 | | | |
| 22 | 113 | 0.98 | 97 | 0.02 | 0 | .00 | 0 | .00 | 25 | 0.01 | 76 | 0.11 | | | |
| 23 | 126 | 0.61 | 46 | 0.01 | 0 | .00 | 0 | .00 | 47 | 0.02 | 54 | 0.08 | | | |
| 24 | 106 | 0.37 | 82 | 0.01 | 0 | .00 | 63 | 0.02 | 48 | 0.01 | 710 | 4.0 | | | |
| 25 | 105 | 0.24 | 67 | 0.01 | 0 | .00 | 0 | .00 | 22 | .00 | 29 | 0.05 | | | |
| 26 | 117 | 0.20 | 68 | 0.01 | 0 | .00 | 0 | .00 | 92 | 0.19 | 28 | 0.03 | | | |
| 27 | 90 | 0.11 | 40 | .00 | 0 | .00 | 0 | .00 | 27 | 0.01 | 32 | 0.03 | | | |
| 28 | 72 | 0.07 | 73 | .00 | 0 | .00 | 0 | .00 | 179 | 2.3 | 46 | 0.04 | | | |
| 29 | 103 | 0.08 | 118 | .00 | 0 | .00 | 0 | .00 | 20 | 0.04 | 42 | 0.03 | | | |
| 30 | 65 | 0.05 | 149 | 0.01 | 1150 | 10 | 0 | .00 | 59 | 0.06 | 319 | 43 | | | |
| 31 | --- | --- | 142 | 0.01 | --- | --- | 0 | .00 | 45 | 0.04 | --- | --- | | | |
| TOTAL | --- | 21.38 | --- | 1.22 | --- | 10.34 | --- | 0.08 | --- | 847.45 | --- | 134.39 | | | |

TOTAL LOAD FOR YEAR: 1045.96 TONS.

| DATE | TIME | TEMPER- ATURE (DEG C) (00010) | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | SUS- PENDE SEDI- MENT CHARGE (MG/L) (80154) | SUS- PENDE SEDI- MENT CHARGE (T/DAY) (80155) | SUS. SED. FALL DIAM. % FINER THAN (70337) | SUS. SED. FALL DIAM. % FINER THAN (70338) | SUS. SED. FALL DIAM. % FINER THAN (70339) | SUS. SED. FALL DIAM. % FINER THAN (70340) | SUS. SED. FALL DIAM. % FINER THAN (70342) | SUS. SED. FALL DIAM. % FINER THAN (70331) |
|-------|------|--|--|---|--|---|---|---|---|---|---|
| AUG | | | | | | | | | | | |
| 08... | 0820 | 20.0 | 55 | 5230 | 777 | 50 | 58 | 64 | 75 | 100 | -- |
| 08... | 0840 | 20.0 | 71 | 4690 | 899 | 49 | 55 | 63 | 81 | -- | 99 |

IOWA RIVER BASIN

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.--WRD Iowa 1966: Drainage area.

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

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, 2.47 ft³/s (0.070 m³/s), 11.41 in/yr (290 mm/yr), 1,790 acre-ft/yr (2.21 hm³/yr); median of yearly mean discharges, 2.1 ft³/s (0.06 m³/s), 9.7 in/yr (246 mm/yr), 1,520 acre-ft/yr (1.88 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.--Peak discharges above base of 200 ft³/s (5.66 m³/s) and maximum (*):

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) |
|---------|------|---|-------------------------|---------|------|---|-------------------------|
| Apr. 20 | 1645 | 316 8.95 | 6.07 1.850 | Aug. 15 | 2355 | *534 15.1 | *7.51 2.289 |

No flow for many days.

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 | .01 | .00 | .00 | .00 | .15 | .90 | .50 | .04 | .40 | .00 | 1.3 |
| 2 | .00 | .01 | .00 | .00 | .00 | .16 | .68 | .47 | .03 | .21 | .00 | 2.3 |
| 3 | .00 | .01 | .00 | .00 | .00 | .45 | .53 | .53 | .03 | .16 | .00 | 1.3 |
| 4 | .00 | .00 | .00 | .00 | .00 | .35 | 5.7 | 2.4 | 1.0 | .09 | .00 | .96 |
| 5 | 2.8 | .00 | .00 | .00 | .00 | .20 | 1.5 | 1.7 | .07 | .02 | .56 | .81 |
| 6 | .18 | .11 | .00 | .00 | .00 | .23 | 1.2 | 1.5 | .00 | .01 | .77 | .38 |
| 7 | .03 | .01 | .00 | .00 | .00 | .25 | .80 | .49 | .06 | .01 | 2.7 | .37 |
| 8 | .00 | .02 | .00 | .00 | .00 | .45 | .62 | .44 | .24 | .00 | 10 | .31 |
| 9 | .00 | .01 | .00 | .00 | .00 | .25 | .66 | .39 | .03 | .00 | 2.3 | .30 |
| 10 | .00 | .01 | .00 | .00 | .10 | .38 | .62 | .39 | .52 | .00 | .43 | .22 |
| 11 | .00 | .03 | .00 | .00 | 6.4 | 11 | .53 | .48 | 8.5 | .00 | 3.1 | .20 |
| 12 | .00 | .00 | .00 | .00 | 1.5 | 4.7 | .62 | .81 | .20 | .00 | .38 | .68 |
| 13 | .00 | .00 | .00 | .00 | .20 | .62 | .63 | .60 | .12 | .00 | .64 | .63 |
| 14 | .00 | .00 | .00 | .00 | .10 | .36 | .59 | .33 | .08 | .00 | 4.6 | .17 |
| 15 | .00 | .00 | .00 | .00 | .03 | .32 | .53 | .33 | .05 | .00 | 28 | .53 |
| 16 | .00 | .00 | .00 | .00 | .00 | .22 | .51 | .48 | .03 | .63 | 48 | .26 |
| 17 | .00 | .00 | .00 | .00 | .00 | .26 | .40 | .46 | .95 | .01 | 2.3 | 9.3 |
| 18 | .00 | .00 | .00 | .00 | .00 | .47 | .29 | .41 | .10 | .70 | 1.0 | 31 |
| 19 | .23 | .02 | .00 | .00 | .00 | .43 | .38 | .37 | .00 | .01 | .80 | 4.2 |
| 20 | .03 | .01 | .09 | .00 | .00 | .67 | 14 | 2.5 | .00 | .01 | .61 | 2.4 |
| 21 | .00 | .02 | .04 | .00 | .05 | 1.7 | 9.4 | .54 | .00 | .00 | .92 | 1.8 |
| 22 | .00 | .01 | .00 | .00 | .40 | 2.3 | 2.3 | .41 | .00 | .00 | .44 | 1.1 |
| 23 | .00 | .00 | .00 | .00 | 3.0 | .78 | 1.6 | .33 | .48 | .00 | .52 | 1.5 |
| 24 | .00 | .00 | .00 | .00 | 1.0 | .59 | 1.1 | .15 | .05 | 3.9 | .62 | 3.4 |
| 25 | .00 | .06 | .00 | .00 | .28 | .66 | .94 | .22 | .00 | .06 | .45 | 1.1 |
| 26 | .00 | .10 | .00 | .00 | .16 | .81 | .84 | .23 | .00 | .01 | 5.6 | .95 |
| 27 | .00 | .02 | .00 | .00 | .17 | 1.1 | .71 | .12 | .00 | .00 | .45 | .79 |
| 28 | .00 | .01 | .00 | .00 | .18 | 13 | .81 | .09 | .02 | .01 | 9.3 | .73 |
| 29 | .00 | .00 | .00 | .00 | --- | 3.0 | .65 | .17 | .00 | .02 | 1.6 | .68 |
| 30 | .01 | .00 | .00 | .00 | --- | 1.3 | .56 | .19 | 22 | .36 | 1.1 | 11 |
| 31 | .07 | --- | .00 | .00 | --- | .76 | --- | .06 | --- | .16 | 1.6 | --- |
| TOTAL | 3.35 | .47 | .13 | .00 | 13.57 | 47.92 | 50.60 | 18.09 | 34.60 | 6.78 | 124.65 | 80.67 |
| MEAN | .11 | .016 | .004 | .000 | .48 | 1.55 | 1.69 | .58 | 1.15 | .22 | 4.02 | 2.69 |
| MAX | 2.8 | .11 | .09 | .00 | 6.4 | 13 | 14 | 2.5 | 22 | 3.9 | 48 | 31 |
| MIN | .00 | .00 | .00 | .00 | .00 | .15 | .29 | .06 | .00 | .00 | .00 | .17 |
| CFSM | .04 | .005 | .001 | .000 | .16 | .53 | .58 | .20 | .39 | .08 | 1.37 | .92 |
| IN. | .04 | .01 | .00 | .00 | .17 | .61 | .64 | .23 | .44 | .09 | 1.58 | 1.02 |
| AC-FT | 6.6 | .9 | .3 | .00 | 27 | 95 | 100 | 36 | 69 | 13 | 247 | 160 |

| | | | | | | | | | | | | | | |
|-------------|-------|--------|------|------|-----|----|-----|-----|------|-----|----|------|-------|-----|
| CAL YR 1976 | TOTAL | 304.07 | MEAN | .83 | MAX | 36 | MIN | .00 | CFSM | .28 | IN | 3.85 | AC-FT | 603 |
| WTR YR 1977 | TOTAL | 380.83 | MEAN | 1.04 | MAX | 48 | MIN | .00 | CFSM | .35 | IN | 4.82 | AC-FT | 755 |

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 (193.076 m) above mean sea level (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 and those above 300 ft³/s for period Aug. 8 to Sept. 25 which are fair. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

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

AVERAGE DISCHARGE.--38 years, 361 ft³/s (10.22 m³/s), 8.56 in/yr (217 mm/yr), 261,500 acre-ft/yr (322 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, 3,520 ft³/s (99.7 m³/s) Aug. 16, gage height, 11.98 ft (3.652 m) at 1800 hours, from graph based on gage readings, no peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 0.66 ft³/s (0.019 m³/s) Feb. 5-7.

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 | 28 | 11 | 6.2 | .90 | .70 | 47 | 86 | 17 | 15 | 33 | 4.2 | 301 |
| 2 | 29 | 14 | 5.0 | .90 | .70 | 47 | 71 | 18 | 13 | 13 | 3.0 | 1160 |
| 3 | 28 | 16 | 4.7 | .90 | .70 | 39 | 66 | 18 | 11 | 7.5 | 3.5 | 980 |
| 4 | 25 | 15 | 4.7 | .90 | .70 | 42 | 72 | 21 | 12 | 8.4 | 1.8 | 576 |
| 5 | 21 | 14 | 4.4 | .80 | .66 | 29 | 105 | 35 | 39 | 6.2 | .80 | 492 |
| 6 | 24 | 13 | 3.8 | .80 | .66 | 28 | 93 | 42 | 21 | 6.0 | 3.5 | 323 |
| 7 | 28 | 11 | 4.5 | .80 | .66 | 28 | 78 | 68 | 13 | 5.0 | 353 | 229 |
| 8 | 29 | 8.8 | 4.7 | .80 | .70 | 35 | 62 | 177 | 11 | 4.5 | 1770 | 179 |
| 9 | 26 | 9.4 | 4.9 | .80 | .80 | 42 | 53 | 87 | 10 | 4.0 | 1440 | 157 |
| 10 | 21 | 9.4 | 4.0 | .80 | 1.2 | 33 | 47 | 58 | 7.5 | 3.5 | 470 | 133 |
| 11 | 17 | 9.4 | 3.6 | .80 | 1.7 | 84 | 40 | 44 | 10 | 4.0 | 200 | 110 |
| 12 | 13 | 8.8 | 3.6 | .80 | 2.5 | 197 | 34 | 35 | 45 | 4.5 | 101 | 125 |
| 13 | 11 | 7.4 | 3.4 | .80 | 3.5 | 270 | 30 | 29 | 25 | 5.0 | 79 | 139 |
| 14 | 9.4 | 6.8 | 3.6 | .80 | 5.0 | 129 | 28 | 25 | 15 | 5.0 | 56 | 135 |
| 15 | 9.4 | 6.2 | 3.1 | .70 | 7.5 | 81 | 26 | 22 | 9.2 | 5.0 | 42 | 129 |
| 16 | 8.1 | 5.5 | 3.3 | .70 | 11 | 61 | 26 | 19 | 5.5 | 62 | 1950 | 123 |
| 17 | 6.8 | 6.2 | 3.7 | .70 | 15 | 48 | 25 | 19 | 4.8 | 50 | 3350 | 135 |
| 18 | 5.5 | 6.8 | 3.8 | .70 | 21 | 42 | 23 | 16 | 20 | 40 | 1750 | 819 |
| 19 | 7.4 | 7.4 | 4.0 | .70 | 23 | 37 | 20 | 14 | 127 | 60 | 499 | 2720 |
| 20 | 7.4 | 8.8 | 3.6 | .70 | 22 | 37 | 21 | 12 | 54 | 55 | 248 | 1030 |
| 21 | 9.4 | 11 | 3.2 | .70 | 20 | 40 | 59 | 103 | 28 | 29 | 157 | 488 |
| 22 | 11 | 9.4 | 2.4 | .70 | 28 | 43 | 106 | 51 | 17 | 27 | 117 | 345 |
| 23 | 11 | 8.8 | 2.7 | .70 | 45 | 56 | 73 | 31 | 14 | 11 | 96 | 283 |
| 24 | 11 | 8.1 | 3.3 | .70 | 62 | 64 | 56 | 61 | 115 | 10 | 83 | 654 |
| 25 | 11 | 8.8 | 3.3 | .70 | 61 | 58 | 41 | 41 | 33 | 7.5 | 71 | 693 |
| 26 | 11 | 10 | 3.6 | .70 | 74 | 46 | 32 | 45 | 19 | 6.2 | 1530 | 418 |
| 27 | 11 | 9.4 | 3.4 | .70 | 64 | 43 | 27 | 26 | 17 | 4.8 | 2250 | 308 |
| 28 | 11 | 10 | 3.0 | .70 | 55 | 64 | 23 | 20 | 11 | 3.5 | 1000 | 246 |
| 29 | 12 | 6.8 | 2.0 | .70 | --- | 264 | 20 | 17 | 7.5 | 3.5 | 989 | 211 |
| 30 | 11 | 6.2 | 1.5 | .70 | --- | 266 | 18 | 16 | 20 | 2.3 | 598 | 191 |
| 31 | 11 | --- | 1.0 | .70 | --- | 131 | --- | 16 | --- | 3.5 | 380 | --- |
| TOTAL | 474.4 | 283.4 | 112.0 | 23.50 | 528.68 | 2431 | 1461 | 1203 | 749.5 | 489.9 | 19595.80 | 13832 |
| MEAN | 15.3 | 9.45 | 3.61 | .76 | 18.9 | 78.4 | 48.7 | 38.8 | 25.0 | 15.8 | 632 | 461 |
| MAX | 29 | 16 | 6.2 | .90 | 74 | 270 | 106 | 177 | 127 | 62 | 3350 | 2720 |
| MIN | 5.5 | 5.5 | 1.0 | .70 | .66 | 28 | 18 | 12 | 4.8 | 2.3 | .80 | 110 |
| CFSM | .03 | .02 | .006 | .001 | .03 | .14 | .09 | .07 | .04 | .03 | 1.10 | .81 |
| IN. | .03 | .02 | .01 | .00 | .03 | .16 | .09 | .08 | .05 | .03 | 1.27 | .90 |
| AC-FT | 941 | 562 | 222 | 47 | 1050 | 4820 | 2900 | 2390 | 1490 | 972 | 38870 | 27440 |

| | | | | | | | | |
|-------------|-------|----------|----------|----------|---------|----------|---------|--------------|
| CAL YR 1976 | TOTAL | 92821.80 | MEAN 254 | MAX 9230 | MIN 1.0 | CFSM .44 | IN 6.03 | AC-FT 184100 |
| WTR YR 1977 | TOTAL | 41184.18 | MEAN 113 | MAX 3350 | MIN .66 | CFSM .20 | IN 2.67 | AC-FT 81690 |

IOWA RIVER BASIN

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) above mean sea level. Prior to Dec. 28, 1956, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, which are poor. 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.--Ten discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--21 years, 2,696 ft³/s (76.35 m³/s), 8.53 in/yr (217 mm/yr), 1,953,000 acre-ft/yr (2,410 hm³/yr). The figure published in the 1976 report was in error; the correct figure is 20 years, 2,793 ft³/s (79.10 m³/s), 8.84 in/yr (225 mm/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, 8,910 ft³/s (252 m³/s) Aug. 16, gage height, 11.91 ft (3.630 m); minimum daily, 69 ft³/s (1.95 m³/s) Aug. 4.

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 | 210 | 188 | 210 | 191 | 162 | 180 | 1300 | 364 | 144 | 392 | 76 | 4160 |
| 2 | 206 | 185 | 210 | 190 | 170 | 200 | 1220 | 343 | 150 | 212 | 76 | 4390 |
| 3 | 201 | 184 | 210 | 186 | 170 | 215 | 1140 | 322 | 144 | 125 | 75 | 5010 |
| 4 | 197 | 186 | 210 | 184 | 170 | 228 | 1140 | 327 | 142 | 105 | 69 | 3490 |
| 5 | 262 | 181 | 210 | 175 | 168 | 213 | 1240 | 370 | 174 | 94 | 71 | 3020 |
| 6 | 284 | 185 | 210 | 165 | 162 | 198 | 1190 | 357 | 172 | 86 | 86 | 2560 |
| 7 | 240 | 187 | 210 | 158 | 160 | 205 | 1120 | 364 | 144 | 83 | 731 | 2190 |
| 8 | 222 | 175 | 220 | 148 | 161 | 221 | 1060 | 377 | 143 | 83 | 5090 | 1920 |
| 9 | 210 | 172 | 215 | 140 | 162 | 247 | 960 | 419 | 143 | 82 | 4840 | 1680 |
| 10 | 206 | 173 | 205 | 136 | 163 | 242 | 910 | 352 | 140 | 79 | 1630 | 1590 |
| 11 | 197 | 167 | 197 | 132 | 185 | 266 | 877 | 328 | 155 | 77 | 695 | 1370 |
| 12 | 197 | 176 | 195 | 128 | 218 | 588 | 840 | 309 | 189 | 77 | 456 | 1300 |
| 13 | 197 | 175 | 200 | 130 | 232 | 690 | 808 | 297 | 176 | 75 | 325 | 1510 |
| 14 | 189 | 186 | 205 | 130 | 215 | 491 | 793 | 294 | 160 | 71 | 264 | 1600 |
| 15 | 189 | 160 | 210 | 132 | 185 | 343 | 752 | 290 | 147 | 78 | 232 | 1370 |
| 16 | 185 | 153 | 208 | 132 | 162 | 284 | 686 | 283 | 141 | 137 | 3670 | 1140 |
| 17 | 185 | 165 | 208 | 131 | 150 | 257 | 508 | 284 | 141 | 1050 | 7550 | 1110 |
| 18 | 181 | 202 | 208 | 138 | 138 | 249 | 417 | 234 | 148 | 985 | 6060 | 2620 |
| 19 | 193 | 204 | 208 | 148 | 130 | 275 | 405 | 217 | 155 | 310 | 3820 | 6960 |
| 20 | 197 | 206 | 205 | 150 | 120 | 465 | 418 | 282 | 215 | 171 | 4330 | 5810 |
| 21 | 186 | 202 | 150 | 152 | 110 | 529 | 612 | 351 | 157 | 141 | 4310 | 4990 |
| 22 | 183 | 204 | 215 | 154 | 102 | 552 | 696 | 428 | 120 | 155 | 4250 | 4810 |
| 23 | 183 | 217 | 205 | 154 | 120 | 568 | 572 | 226 | 109 | 103 | 4200 | 4680 |
| 24 | 186 | 234 | 200 | 158 | 150 | 618 | 493 | 184 | 111 | 90 | 4100 | 5430 |
| 25 | 188 | 207 | 204 | 158 | 134 | 610 | 483 | 184 | 171 | 172 | 3730 | 5640 |
| 26 | 187 | 208 | 200 | 160 | 130 | 761 | 478 | 177 | 122 | 144 | 3690 | 3670 |
| 27 | 185 | 210 | 198 | 160 | 140 | 1010 | 453 | 169 | 104 | 90 | 5880 | 4610 |
| 28 | 181 | 210 | 197 | 160 | 157 | 1090 | 449 | 157 | 102 | 79 | 4410 | 4540 |
| 29 | 182 | 220 | 188 | 156 | --- | 1560 | 400 | 148 | 95 | 80 | 3870 | 3770 |
| 30 | 191 | 220 | 195 | 165 | --- | 1760 | 378 | 147 | 208 | 78 | 4080 | 3640 |
| 31 | 199 | --- | 192 | 162 | --- | 1590 | --- | 146 | --- | 79 | 4160 | --- |
| TOTAL | 6199 | 5742 | 6298 | 4763 | 4426 | 16705 | 22798 | 8730 | 4422 | 5583 | 85826 | 100580 |
| MEAN | 200 | 191 | 203 | 154 | 158 | 539 | 760 | 282 | 147 | 180 | 2801 | 3353 |
| MAX | 284 | 234 | 220 | 191 | 232 | 1760 | 1300 | 428 | 215 | 1050 | 7550 | 6960 |
| MIN | 181 | 153 | 150 | 128 | 102 | 180 | 378 | 146 | 95 | 71 | 69 | 1110 |
| AC-FT | 12300 | 11390 | 12490 | 9450 | 8780 | 33130 | 45220 | 17320 | 8770 | 11070 | 172200 | 199600 |
| CAL YR 1976 | TOTAL | 615139 | MEAN | 1681 | MAX | 14700 | MIN | 150 | AC-FT | 1220000 | | |
| WTR YR 1977 | TOTAL | 273072 | MEAN | 748 | MAX | 7550 | MIN | 69 | AC-FT | 541600 | | |

05457700 CEDAR RIVER AT CHARLES CITY, IA

LOCATION.--Lat 43°03'45", long 92°40'23", in SE1/4 NE1/4, sec.12, T.9S 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) above mean sea level.

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.--13 years, 646 ft³/s (18.29 m³/s), 8.32 in/yr (211 mm/yr), 468,000 acre-ft/yr (577 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.

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.--Maximum discharge, 584 ft³/s (16.5 m³/s) Mar. 13, gage height, 2.73 ft (0.832 m), no peak above base of 2,500 ft³/s (71 m³/s); maximum gage height, 2.97 ft (0.905 m) Feb. 1, backwater from ice; minimum daily discharge, 60 ft³/s (1.70 m³/s) Nov. 23.

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 | 120 | 133 | 70 | 142 | 146 | 106 | 259 | 216 | 140 | 140 | 151 | 154 |
| 2 | 120 | 133 | 68 | 138 | 150 | 106 | 286 | 202 | 146 | 166 | 146 | 162 |
| 3 | 117 | 131 | 66 | 136 | 152 | 110 | 288 | 186 | 166 | 175 | 132 | 162 |
| 4 | 121 | 129 | 67 | 134 | 158 | 118 | 326 | 200 | 163 | 140 | 122 | 158 |
| 5 | 120 | 128 | 70 | 134 | 160 | 130 | 314 | 218 | 150 | 125 | 120 | 154 |
| 6 | 116 | 129 | 72 | 134 | 160 | 150 | 297 | 396 | 135 | 122 | 118 | 149 |
| 7 | 124 | 120 | 73 | 136 | 162 | 190 | 267 | 335 | 131 | 134 | 122 | 144 |
| 8 | 121 | 104 | 74 | 133 | 164 | 230 | 244 | 263 | 131 | 114 | 131 | 140 |
| 9 | 119 | 100 | 74 | 130 | 168 | 250 | 227 | 226 | 126 | 106 | 139 | 144 |
| 10 | 120 | 92 | 74 | 126 | 166 | 320 | 214 | 203 | 124 | 105 | 126 | 136 |
| 11 | 120 | 76 | 75 | 116 | 164 | 400 | 203 | 189 | 150 | 110 | 121 | 132 |
| 12 | 122 | 75 | 76 | 114 | 160 | 506 | 196 | 185 | 129 | 108 | 118 | 128 |
| 13 | 121 | 90 | 76 | 114 | 156 | 558 | 194 | 180 | 122 | 102 | 112 | 132 |
| 14 | 121 | 95 | 76 | 114 | 148 | 532 | 191 | 176 | 120 | 109 | 108 | 128 |
| 15 | 121 | 98 | 77 | 106 | 142 | 408 | 195 | 171 | 116 | 138 | 165 | 128 |
| 16 | 121 | 98 | 80 | 102 | 130 | 343 | 195 | 170 | 114 | 128 | 283 | 132 |
| 17 | 116 | 98 | 86 | 99 | 122 | 300 | 195 | 166 | 116 | 173 | 145 | 140 |
| 18 | 118 | 98 | 95 | 96 | 114 | 278 | 198 | 163 | 128 | 126 | 158 | 154 |
| 19 | 127 | 96 | 104 | 99 | 112 | 255 | 209 | 206 | 145 | 115 | 176 | 172 |
| 20 | 126 | 94 | 116 | 106 | 110 | 243 | 229 | 279 | 144 | 112 | 154 | 176 |
| 21 | 128 | 89 | 128 | 108 | 110 | 225 | 299 | 227 | 134 | 114 | 176 | 160 |
| 22 | 131 | 72 | 136 | 112 | 108 | 211 | 478 | 193 | 127 | 113 | 158 | 158 |
| 23 | 133 | 60 | 140 | 116 | 108 | 204 | 494 | 179 | 122 | 108 | 154 | 171 |
| 24 | 146 | 94 | 134 | 120 | 110 | 195 | 410 | 169 | 120 | 166 | 154 | 179 |
| 25 | 143 | 104 | 124 | 120 | 114 | 193 | 339 | 157 | 112 | 248 | 162 | 178 |
| 26 | 138 | 100 | 118 | 122 | 114 | 190 | 292 | 150 | 109 | 503 | 195 | 186 |
| 27 | 138 | 94 | 118 | 122 | 110 | 198 | 264 | 144 | 106 | 478 | 180 | 178 |
| 28 | 135 | 64 | 120 | 122 | 108 | 233 | 265 | 141 | 110 | 342 | 235 | 162 |
| 29 | 133 | 67 | 132 | 132 | --- | 277 | 235 | 145 | 108 | 250 | 195 | 180 |
| 30 | 140 | 69 | 139 | 136 | --- | 274 | 227 | 138 | 165 | 203 | 172 | 205 |
| 31 | 137 | --- | 142 | 140 | --- | 272 | --- | 137 | --- | 170 | 176 | --- |
| TOTAL | 3913 | 2930 | 3000 | 3759 | 3826 | 8005 | 8020 | 6110 | 3909 | 5243 | 4804 | 4682 |
| MEAN | 126 | 97.7 | 96.8 | 121 | 137 | 258 | 267 | 197 | 130 | 169 | 155 | 156 |
| MAX | 146 | 133 | 142 | 142 | 168 | 558 | 494 | 396 | 166 | 503 | 283 | 205 |
| MIN | 116 | 60 | 66 | 96 | 108 | 106 | 191 | 137 | 106 | 102 | 108 | 128 |
| CFSM | .12 | .09 | .09 | .12 | .13 | .25 | .25 | .19 | .12 | .16 | .15 | .15 |
| IN. | .14 | .10 | .11 | .13 | .14 | .28 | .28 | .22 | .14 | .19 | .17 | .17 |
| AC-FT | 7760 | 5810 | 5950 | 7460 | 7590 | 15880 | 15910 | 12120 | 7750 | 10400 | 9530 | 9290 |

| | | | | | | | | |
|-------------|-------|--------|----------|----------|--------|----------|---------|--------------|
| CAL YR 1976 | TOTAL | 119961 | MEAN 328 | MAX 7050 | MIN 60 | CFSM .31 | IN 4.23 | AC-FT 237900 |
| WTR YR 1977 | TOTAL | 58201 | MEAN 159 | MAX 558 | MIN 60 | CFSM .15 | IN 2.05 | AC-FT 115400 |

IOWA RIVER BASIN

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) above mean sea level.

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.--23 years, 151 ft³/s (4.276 m³/s), 6.70 in/yr (170 mm/yr), 109,400 acre-ft/yr (135 hm³/yr); median of yearly mean discharges, 130 ft³/s (3.68 m³/s), 5.8 in/yr (147 mm/yr), 94,200 acre-ft/yr (116 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.--Maximum discharge, 350 ft³/s (9.91 m³/s) Aug. 16, gage height, 4.69 ft (1.430 m), no peak above base of 1,200 ft³/s (34.0 m³/s); minimum daily, 3.4 ft³/s (0.096 m³/s) Jan. 22-Feb. 8.

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 | 16 | 23 | 11 | 7.5 | 3.4 | 21 | 55 | 40 | 51 | 23 | 23 | 95 |
| 2 | 16 | 22 | 10 | 7.3 | 3.4 | 23 | 63 | 37 | 43 | 20 | 23 | 72 |
| 3 | 16 | 21 | 9.2 | 7.0 | 3.4 | 26 | 88 | 35 | 50 | 24 | 21 | 62 |
| 4 | 16 | 22 | 8.5 | 6.7 | 3.4 | 32 | 106 | 41 | 43 | 33 | 20 | 54 |
| 5 | 16 | 21 | 9.2 | 6.6 | 3.4 | 29 | 100 | 47 | 36 | 21 | 19 | 49 |
| 6 | 16 | 19 | 9.6 | 6.3 | 3.4 | 30 | 86 | 53 | 30 | 16 | 17 | 45 |
| 7 | 16 | 15 | 9.6 | 6.2 | 3.4 | 30 | 74 | 47 | 26 | 21 | 17 | 43 |
| 8 | 16 | 12 | 9.7 | 6.0 | 3.4 | 42 | 64 | 42 | 27 | 22 | 33 | 39 |
| 9 | 17 | 18 | 9.8 | 5.9 | 3.5 | 90 | 58 | 38 | 24 | 21 | 40 | 36 |
| 10 | 17 | 19 | 9.8 | 5.8 | 3.7 | 150 | 53 | 35 | 22 | 16 | 37 | 33 |
| 11 | 18 | 15 | 9.8 | 5.7 | 3.8 | 180 | 50 | 33 | 25 | 14 | 33 | 31 |
| 12 | 20 | 12 | 9.8 | 5.6 | 4.2 | 200 | 46 | 32 | 24 | 13 | 30 | 33 |
| 13 | 22 | 19 | 9.8 | 5.4 | 4.8 | 230 | 47 | 30 | 21 | 11 | 26 | 31 |
| 14 | 21 | 20 | 9.5 | 5.2 | 5.8 | 176 | 43 | 28 | 20 | 11 | 22 | 29 |
| 15 | 17 | 23 | 9.2 | 5.0 | 6.0 | 140 | 42 | 26 | 19 | 16 | 47 | 26 |
| 16 | 16 | 21 | 9.1 | 4.9 | 5.6 | 100 | 41 | 25 | 18 | 14 | 221 | 25 |
| 17 | 16 | 24 | 9.6 | 4.8 | 5.8 | 84 | 40 | 25 | 19 | 47 | 70 | 27 |
| 18 | 17 | 23 | 10 | 4.6 | 6.0 | 72 | 40 | 24 | 19 | 40 | 47 | 30 |
| 19 | 19 | 19 | 10 | 4.4 | 6.2 | 60 | 40 | 23 | 18 | 37 | 51 | 29 |
| 20 | 21 | 17 | 11 | 3.6 | 6.5 | 60 | 41 | 24 | 18 | 34 | 50 | 41 |
| 21 | 22 | 20 | 11 | 3.5 | 7.0 | 54 | 57 | 26 | 16 | 28 | 49 | 44 |
| 22 | 21 | 17 | 10 | 3.4 | 7.6 | 48 | 80 | 36 | 16 | 22 | 44 | 43 |
| 23 | 21 | 15 | 10 | 3.4 | 10 | 47 | 99 | 33 | 16 | 19 | 42 | 46 |
| 24 | 25 | 23 | 9.6 | 3.4 | 15 | 47 | 91 | 30 | 15 | 30 | 39 | 67 |
| 25 | 24 | 28 | 9.4 | 3.4 | 16 | 46 | 71 | 25 | 14 | 74 | 36 | 61 |
| 26 | 23 | 20 | 9.5 | 3.4 | 17 | 43 | 59 | 23 | 13 | 69 | 48 | 64 |
| 27 | 23 | 15 | 9.9 | 3.4 | 18 | 46 | 52 | 25 | 12 | 53 | 62 | 66 |
| 28 | 22 | 14 | 9.6 | 3.4 | 20 | 51 | 49 | 24 | 13 | 48 | 138 | 59 |
| 29 | 22 | 13 | 9.0 | 3.4 | --- | 58 | 45 | 29 | 13 | 39 | 113 | 58 |
| 30 | 24 | 12 | 8.3 | 3.4 | --- | 60 | 42 | 24 | 25 | 33 | 124 | 66 |
| 31 | 23 | --- | 8.0 | 3.4 | --- | 60 | --- | 90 | --- | 27 | 130 | --- |
| TOTAL | 599 | 562 | 298.5 | 152.0 | 199.7 | 2335 | 1822 | 1050 | 706 | 896 | 1672 | 1404 |
| MEAN | 19.3 | 18.7 | 9.63 | 4.90 | 7.13 | 75.3 | 60.7 | 33.9 | 23.5 | 28.9 | 53.9 | 46.8 |
| MAX | 25 | 28 | 11 | 7.5 | 20 | 230 | 106 | 90 | 51 | 74 | 221 | 95 |
| MIN | 16 | 12 | 8.0 | 3.4 | 3.4 | 21 | 40 | 23 | 12 | 11 | 17 | 25 |
| CFSM | .06 | .06 | .03 | .02 | .02 | .25 | .20 | .11 | .08 | .09 | .18 | .15 |
| IN. | .07 | .07 | .04 | .02 | .02 | .28 | .22 | .13 | .09 | .11 | .20 | .17 |
| AC-FT | 1190 | 1110 | 592 | 301 | 396 | 4630 | 3610 | 2080 | 1400 | 1780 | 3320 | 2780 |
| CAL YR 1976 | TOTAL | 31975.5 | MEAN 87.4 | MAX 1460 | MIN 8.0 | CFSM .29 | IN 3.89 | AC-FT 63420 | | | | |
| WTR YR 1977 | TOTAL | 11696.2 | MEAN 32.0 | MAX 230 | MIN 3.4 | CFSM .11 | IN 1.42 | AC-FT 23200 | | | | |

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) above mean sea level. 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.--57 years (1904-6, 1914-27, 1932-42, 1945-77), 771 ft³/s (21.83 m³/s), 6.30 in/yr (160 mm/yr), 558,600 acre-ft/yr (689 hm³/yr); median of yearly mean discharges, 700 ft³/s (19.8 m³/s), 5.7 in/yr (145 mm/yr) 507,000 acre-ft/yr (625 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.--Maximum discharge, 2,460 ft³/s (69.7 m³/s) Sept. 18, gage height, 3.30 ft (1.006 m), no peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 98 ft³/s (2.78 m³/s) Dec. 20.

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 | 189 | 237 | 136 | 144 | 206 | 146 | 401 | 295 | 243 | 175 | 304 | 437 |
| 2 | 184 | 216 | 140 | 144 | 212 | 146 | 398 | 311 | 214 | 154 | 262 | 419 |
| 3 | 144 | 191 | 126 | 154 | 218 | 156 | 416 | 270 | 173 | 185 | 184 | 314 |
| 4 | 215 | 213 | 134 | 180 | 224 | 170 | 470 | 260 | 158 | 193 | 234 | 329 |
| 5 | 233 | 201 | 138 | 190 | 230 | 190 | 452 | 292 | 186 | 201 | 168 | 313 |
| 6 | 218 | 194 | 140 | 198 | 232 | 220 | 498 | 268 | 225 | 191 | 181 | 367 |
| 7 | 178 | 196 | 112 | 198 | 232 | 280 | 487 | 267 | 168 | 266 | 183 | 257 |
| 8 | 197 | 188 | 134 | 190 | 238 | 330 | 401 | 375 | 209 | 207 | 197 | 306 |
| 9 | 161 | 187 | 144 | 186 | 246 | 350 | 365 | 426 | 182 | 156 | 199 | 277 |
| 10 | 189 | 189 | 150 | 174 | 240 | 380 | 344 | 229 | 164 | 147 | 209 | 203 |
| 11 | 303 | 205 | 115 | 166 | 232 | 420 | 356 | 269 | 143 | 161 | 196 | 229 |
| 12 | 296 | 188 | 145 | 162 | 226 | 440 | 315 | 263 | 164 | 148 | 223 | 297 |
| 13 | 167 | 317 | 138 | 162 | 216 | 490 | 309 | 245 | 202 | 153 | 157 | 217 |
| 14 | 199 | 247 | 136 | 162 | 206 | 530 | 301 | 193 | 187 | 130 | 161 | 263 |
| 15 | 203 | 186 | 134 | 152 | 192 | 600 | 279 | 212 | 154 | 162 | 216 | 229 |
| 16 | 179 | 179 | 134 | 146 | 184 | 610 | 268 | 203 | 167 | 134 | 475 | 203 |
| 17 | 195 | 195 | 118 | 142 | 172 | 520 | 282 | 177 | 168 | 286 | 451 | 199 |
| 18 | 216 | 199 | 108 | 140 | 166 | 468 | 312 | 181 | 132 | 325 | 382 | 1780 |
| 19 | 205 | 180 | 114 | 140 | 162 | 406 | 284 | 217 | 149 | 258 | 332 | 1160 |
| 20 | 193 | 160 | 98 | 140 | 156 | 404 | 290 | 199 | 186 | 222 | 249 | 616 |
| 21 | 202 | 168 | 104 | 136 | 156 | 380 | 315 | 224 | 172 | 258 | 287 | 496 |
| 22 | 208 | 162 | 126 | 136 | 152 | 378 | 331 | 291 | 135 | 216 | 328 | 451 |
| 23 | 183 | 230 | 124 | 130 | 156 | 317 | 364 | 319 | 193 | 152 | 289 | 458 |
| 24 | 234 | 260 | 126 | 116 | 158 | 351 | 525 | 299 | 148 | 175 | 267 | 1050 |
| 25 | 224 | 140 | 124 | 106 | 156 | 294 | 575 | 201 | 146 | 214 | 253 | 926 |
| 26 | 223 | 150 | 126 | 126 | 156 | 269 | 503 | 252 | 151 | 188 | 426 | 698 |
| 27 | 231 | 200 | 124 | 142 | 156 | 303 | 433 | 210 | 175 | 281 | 483 | 556 |
| 28 | 212 | 210 | 128 | 162 | 156 | 341 | 387 | 151 | 161 | 448 | 499 | 500 |
| 29 | 215 | 125 | 126 | 176 | --- | 312 | 338 | 185 | 162 | 506 | 616 | 480 |
| 30 | 197 | 130 | 132 | 192 | --- | 357 | 294 | 185 | 163 | 357 | 485 | 517 |
| 31 | 216 | --- | 136 | 200 | --- | 390 | --- | 198 | --- | 322 | 484 | --- |
| TOTAL | 6409 | 5843 | 3970 | 4892 | 5436 | 10948 | 11293 | 7667 | 5180 | 6972 | 9380 | 14547 |
| MEAN | 207 | 195 | 128 | 158 | 194 | 353 | 376 | 247 | 173 | 225 | 303 | 485 |
| MAX | 303 | 317 | 150 | 200 | 246 | 610 | 575 | 426 | 243 | 506 | 616 | 1780 |
| MIN | 144 | 125 | 98 | 106 | 152 | 146 | 268 | 151 | 132 | 130 | 157 | 199 |
| CFSM | .13 | .12 | .08 | .10 | .12 | .21 | .23 | .15 | .10 | .14 | .18 | .29 |
| IN. | .14 | .13 | .09 | .11 | .12 | .25 | .25 | .17 | .12 | .16 | .21 | .33 |
| AC-FT | 12710 | 11590 | 7870 | 9700 | 10780 | 21720 | 22400 | 15210 | 10270 | 13830 | 18610 | 28850 |

CAL YR 1976 TOTAL 197506 MEAN 540 MAX 7820 MIN 98 CFSM .33 IN 4.42 AC-FT 391800
WTR YR 1977 TOTAL 92537 MEAN 254 MAX 1780 MIN 98 CFSM .15 IN 2.07 AC-FT 183500

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) above mean sea level. 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.--32 years, 439 ft³/s (12.43 m³/s), 7.05 in/yr (179 mm/yr), 318,100 acre-ft/yr (392 hm³/yr); median of yearly mean discharges, 350 ft³/s (9.9 m³/s), 5.6 in/yr (142 mm/yr), 254,000 acre-ft/yr (313 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, 387 ft³/s (11.0 m³/s) Sept. 24, gage height, 5.72 ft (1.743 m), no peak above base of 2,500 ft³/s (70.8 m³/s); minimum daily, 12 ft³/s (0.34 m³/s) Jan. 25.

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 | 27 | 29 | 42 | 27 | 18 | 128 | 149 | 120 | 73 | 27 | 17 | 212 |
| 2 | 27 | 29 | 41 | 27 | 18 | 120 | 156 | 115 | 87 | 26 | 18 | 163 |
| 3 | 27 | 31 | 44 | 27 | 19 | 132 | 166 | 111 | 61 | 26 | 19 | 138 |
| 4 | 26 | 30 | 48 | 27 | 19 | 140 | 221 | 113 | 52 | 28 | 20 | 113 |
| 5 | 26 | 30 | 47 | 27 | 21 | 140 | 268 | 114 | 48 | 28 | 20 | 102 |
| 6 | 26 | 30 | 41 | 27 | 22 | 142 | 262 | 123 | 46 | 29 | 18 | 96 |
| 7 | 26 | 30 | 42 | 26 | 23 | 180 | 231 | 135 | 44 | 83 | 20 | 88 |
| 8 | 25 | 30 | 45 | 27 | 24 | 196 | 201 | 140 | 41 | 27 | 20 | 77 |
| 9 | 25 | 42 | 47 | 26 | 25 | 180 | 183 | 127 | 39 | 26 | 20 | 69 |
| 10 | 26 | 42 | 47 | 27 | 27 | 172 | 166 | 115 | 43 | 26 | 20 | 64 |
| 11 | 26 | 40 | 49 | 26 | 29 | 212 | 155 | 107 | 40 | 26 | 20 | 62 |
| 12 | 26 | 37 | 49 | 28 | 30 | 264 | 145 | 101 | 39 | 22 | 20 | 80 |
| 13 | 26 | 41 | 42 | 28 | 36 | 300 | 138 | 90 | 35 | 20 | 20 | 62 |
| 14 | 25 | 30 | 37 | 27 | 40 | 275 | 134 | 84 | 33 | 19 | 20 | 50 |
| 15 | 25 | 38 | 34 | 27 | 41 | 212 | 129 | 79 | 32 | 16 | 22 | 46 |
| 16 | 25 | 36 | 33 | 25 | 42 | 187 | 125 | 75 | 30 | 21 | 34 | 44 |
| 17 | 25 | 43 | 32 | 23 | 41 | 170 | 123 | 71 | 39 | 42 | 62 | 67 |
| 18 | 24 | 34 | 31 | 22 | 43 | 165 | 123 | 68 | 41 | 42 | 343 | 144 |
| 19 | 26 | 27 | 32 | 21 | 45 | 157 | 120 | 64 | 32 | 30 | 279 | 254 |
| 20 | 26 | 30 | 31 | 20 | 46 | 150 | 118 | 62 | 31 | 30 | 158 | 359 |
| 21 | 24 | 28 | 29 | 20 | 48 | 145 | 128 | 69 | 30 | 30 | 110 | 301 |
| 22 | 24 | 26 | 27 | 19 | 50 | 138 | 136 | 68 | 29 | 21 | 91 | 220 |
| 23 | 28 | 25 | 28 | 18 | 56 | 134 | 172 | 65 | 28 | 22 | 76 | 185 |
| 24 | 33 | 30 | 29 | 17 | 68 | 128 | 243 | 63 | 32 | 23 | 58 | 333 |
| 25 | 29 | 34 | 30 | 12 | 75 | 118 | 207 | 60 | 32 | 23 | 46 | 365 |
| 26 | 31 | 29 | 29 | 13 | 79 | 115 | 175 | 54 | 29 | 22 | 87 | 348 |
| 27 | 33 | 26 | 27 | 14 | 100 | 117 | 154 | 58 | 27 | 18 | 69 | 294 |
| 28 | 32 | 31 | 26 | 14 | 120 | 123 | 143 | 62 | 27 | 17 | 154 | 232 |
| 29 | 32 | 35 | 25 | 15 | --- | 126 | 132 | 62 | 26 | 18 | 206 | 195 |
| 30 | 33 | 39 | 24 | 16 | --- | 135 | 125 | 66 | 39 | 19 | 268 | 270 |
| 31 | 32 | --- | 27 | 17 | --- | 147 | --- | 65 | --- | 19 | 281 | --- |
| TOTAL | 846 | 982 | 1115 | 690 | 1205 | 5048 | 4928 | 2706 | 1185 | 826 | 2616 | 5033 |
| MEAN | 27.3 | 32.7 | 36.0 | 22.3 | 43.0 | 163 | 164 | 87.3 | 39.5 | 26.6 | 84.4 | 168 |
| MAX | 33 | 43 | 49 | 28 | 120 | 300 | 268 | 140 | 87 | 83 | 343 | 365 |
| MIN | 24 | 25 | 24 | 12 | 18 | 115 | 118 | 54 | 26 | 16 | 17 | 44 |
| CFSM | .03 | .04 | .04 | .03 | .05 | .19 | .19 | .10 | .05 | .03 | .10 | .20 |
| IN. | .04 | .04 | .05 | .03 | .05 | .22 | .22 | .12 | .05 | .04 | .12 | .22 |
| AC-FT | 1680 | 1950 | 2210 | 1370 | 2390 | 10010 | 9770 | 5370 | 2350 | 1640 | 5190 | 9980 |

CAL YR 1976 TOTAL 98166 MEAN 268 MAX 3040 MIN 24 CFSM .32 IN 4.32 AC-FT 194700
WTR YR 1977 TOTAL 27180 MEAN 74.5 MAX 365 MIN 12 CFSM .09 IN 1.20 AC-FT 53910

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: 1946 (M). WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,176.48 ft (358.591 m) above mean sea level. 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.--32 years, 140 ft³/s (3.965 m³/s), 6.34 in/yr (161 mm/yr), 101,400 acre-ft/yr (125 hm³/yr); median of yearly mean discharges, 120 ft³/s (3.40 m³/s), 5.4 in/yr (137 mm/yr), 86,900 acre-ft/yr (107 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.--Maximum discharge, 327 ft³/s (9.26 m³/s) Mar. 11, affected by ice, no peak above base of 700 ft³/s (19.8 m³/s); maximum gage height, 6.19 ft (1.887 m) Mar. 6, backwater from ice; no flow Jan. 14-19, 26-30.

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 | 8.0 | 9.9 | 10 | 2.4 | .01 | 11 | 66 | 37 | 14 | 34 | 15 | 27 |
| 2 | 8.2 | 9.3 | 9.9 | 1.1 | .01 | 14 | 72 | 34 | 17 | 27 | 17 | 29 |
| 3 | 9.9 | 9.3 | 9.7 | .70 | .02 | 17 | 99 | 33 | 14 | 24 | 13 | 28 |
| 4 | 9.3 | 9.3 | 9.5 | .48 | .02 | 21 | 91 | 35 | 12 | 18 | 12 | 26 |
| 5 | 8.9 | 9.4 | 9.3 | .30 | .03 | 26 | 94 | 49 | 13 | 15 | 12 | 23 |
| 6 | 8.7 | 9.5 | 9.2 | .21 | .03 | 31 | 99 | 57 | 11 | 15 | 11 | 25 |
| 7 | 8.6 | 9.8 | 9.0 | .14 | .03 | 40 | 78 | 52 | 14 | 17 | 10 | 29 |
| 8 | 8.8 | 10 | 8.8 | .08 | .04 | 60 | 69 | 47 | 16 | 16 | 11 | 28 |
| 9 | 8.4 | 11 | 8.6 | .05 | .04 | 76 | 58 | 43 | 13 | 16 | 12 | 23 |
| 10 | 8.9 | 12 | 8.3 | .04 | .08 | 90 | 51 | 39 | 14 | 16 | 11 | 23 |
| 11 | 9.6 | 12 | 8.1 | .03 | .15 | 102 | 47 | 35 | 16 | 14 | 10 | 20 |
| 12 | 8.8 | 12 | 7.9 | .02 | .35 | 108 | 45 | 32 | 12 | 10 | 10 | 19 |
| 13 | 8.5 | 13 | 7.6 | .01 | .64 | 110 | 47 | 29 | 14 | 9.1 | 9.3 | 19 |
| 14 | 8.6 | 13 | 7.3 | .00 | 1.4 | 108 | 53 | 27 | 15 | 8.1 | 8.5 | 19 |
| 15 | 7.4 | 13 | 7.1 | .00 | 1.5 | 107 | 49 | 27 | 12 | 11 | 12 | 19 |
| 16 | 8.3 | 12 | 6.7 | .00 | 1.7 | 77 | 47 | 25 | 18 | 11 | 23 | 17 |
| 17 | 8.3 | 12 | 6.3 | .00 | 1.8 | 63 | 48 | 26 | 18 | 11 | 15 | 13 |
| 18 | 8.7 | 11 | 6.0 | .00 | 1.9 | 60 | 57 | 26 | 18 | 11 | 15 | 40 |
| 19 | 9.1 | 11 | 5.7 | .00 | 2.0 | 55 | 74 | 24 | 18 | 9.4 | 20 | 33 |
| 20 | 9.8 | 12 | 5.5 | .01 | 2.2 | 51 | 85 | 24 | 20 | 8.4 | 19 | 34 |
| 21 | 9.4 | 12 | 5.3 | .01 | 2.4 | 47 | 110 | 27 | 18 | 8.7 | 27 | 32 |
| 22 | 9.4 | 12 | 5.3 | .02 | 3.0 | 46 | 116 | 28 | 17 | 9.4 | 27 | 24 |
| 23 | 9.4 | 12 | 5.1 | .02 | 3.9 | 43 | 94 | 25 | 14 | 9.4 | 29 | 25 |
| 24 | 10 | 12 | 5.0 | .02 | 5.0 | 42 | 83 | 23 | 12 | 15 | 28 | 30 |
| 25 | 10 | 11 | 4.8 | .01 | 5.8 | 40 | 79 | 21 | 12 | 19 | 28 | 27 |
| 26 | 10 | 11 | 4.6 | .00 | 6.6 | 39 | 65 | 20 | 9.5 | 20 | 29 | 26 |
| 27 | 9.8 | 11 | 4.4 | .00 | 7.8 | 46 | 56 | 18 | 9.2 | 20 | 26 | 25 |
| 28 | 9.8 | 11 | 4.2 | .00 | 9.4 | 49 | 50 | 17 | 8.9 | 20 | 24 | 25 |
| 29 | 9.8 | 10 | 3.9 | .00 | --- | 63 | 47 | 17 | 9.1 | 18 | 25 | 24 |
| 30 | 9.8 | 10 | 3.6 | .00 | --- | 64 | 41 | 16 | 35 | 18 | 27 | 31 |
| 31 | 9.8 | --- | 3.0 | .01 | --- | 67 | --- | 15 | --- | 16 | 29 | --- |
| TOTAL | 282.0 | 332.5 | 209.7 | 5.66 | 57.85 | 1773 | 2070 | 928 | 443.8 | 474.5 | 564.8 | 763 |
| MEAN | 9.10 | 11.1 | 5.76 | .18 | 2.07 | 57.2 | 69.0 | 29.9 | 14.8 | 15.3 | 18.2 | 25.4 |
| MAX | 10 | 13 | 10 | 2.4 | 9.4 | 110 | 116 | 57 | 35 | 34 | 29 | 40 |
| MIN | 7.4 | 9.3 | 3.0 | .00 | .01 | 11 | 41 | 15 | 8.9 | 8.1 | 8.5 | 13 |
| CFSM | .03 | .04 | .02 | .001 | .007 | .19 | .23 | .10 | .05 | .05 | .06 | .09 |
| IN. | .03 | .04 | .02 | .00 | .01 | .22 | .26 | .12 | .06 | .06 | .07 | .09 |
| AC-FT | 559 | 660 | 416 | 11 | 115 | 3520 | 4110 | 1840 | 880 | 941 | 1120 | 1510 |

CAL YR 1976 TOTAL 23688.30 MEAN 64.7 MAX 678 MIN 3.0 CFSM .22 IN 2.94 AC-FT 46990
WTR YR 1977 TOTAL 7904.81 MEAN 21.7 MAX 116 MIN .0 CFSM .07 IN .98 AC-FT 15680

IOWA RIVER BASIN

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) above mean sea level. 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.--45 years, 235 ft³/s (6.655 m³/s), 6.07 in/yr (154 mm/yr), 170,300 acre-ft/yr (210 hm³/yr); median of yearly mean discharges, 200 ft³/s (5.66 m³/s), 5.2 in/yr (132 mm/yr), 145,000 acre-ft/yr (179 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.--Maximum discharge, 360 ft³/s (10.2 m³/s) May 5, gage height, 4.26 ft (1.298 m), no peak above base of 2,000 ft³/s (56.6 m³/s); minimum daily, 4.5 ft³/s (0.13 m³/s) Jan. 30, 31.

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 | 17 | 32 | 12 | 9.8 | 4.6 | 16 | 84 | 59 | 22 | 85 | 14 | 15 |
| 2 | 15 | 26 | 12 | 9.5 | 4.7 | 15 | 133 | 50 | 28 | 65 | 14 | 14 |
| 3 | 18 | 22 | 12 | 9.2 | 4.8 | 17 | 183 | 46 | 28 | 46 | 14 | 14 |
| 4 | 20 | 19 | 12 | 9.0 | 5.0 | 20 | 171 | 80 | 22 | 36 | 17 | 13 |
| 5 | 19 | 18 | 13 | 8.8 | 5.3 | 21 | 148 | 282 | 23 | 25 | 19 | 12 |
| 6 | 22 | 20 | 13 | 8.5 | 5.6 | 23 | 117 | 252 | 18 | 27 | 17 | 12 |
| 7 | 20 | 22 | 14 | 8.3 | 5.8 | 25 | 107 | 150 | 15 | 27 | 16 | 12 |
| 8 | 18 | 18 | 14 | 8.2 | 6.0 | 42 | 88 | 109 | 15 | 35 | 17 | 13 |
| 9 | 19 | 26 | 15 | 8.0 | 6.5 | 76 | 79 | 83 | 15 | 25 | 20 | 13 |
| 10 | 20 | 15 | 15 | 7.7 | 7.2 | 96 | 67 | 69 | 24 | 23 | 25 | 13 |
| 11 | 20 | 14 | 15 | 7.4 | 8.0 | 120 | 56 | 58 | 158 | 24 | 21 | 11 |
| 12 | 19 | 20 | 15 | 7.1 | 9.1 | 156 | 51 | 49 | 119 | 23 | 19 | 10 |
| 13 | 20 | 22 | 15 | 6.9 | 9.4 | 154 | 55 | 50 | 59 | 19 | 17 | 15 |
| 14 | 21 | 23 | 15 | 6.7 | 9.4 | 150 | 57 | 50 | 35 | 23 | 15 | 9.8 |
| 15 | 23 | 26 | 15 | 6.6 | 8.7 | 128 | 58 | 49 | 28 | 25 | 31 | 11 |
| 16 | 19 | 24 | 15 | 6.4 | 8.8 | 101 | 58 | 55 | 52 | 20 | 39 | 12 |
| 17 | 21 | 24 | 14 | 6.2 | 9.3 | 93 | 57 | 44 | 48 | 20 | 73 | 22 |
| 18 | 25 | 24 | 14 | 5.8 | 9.7 | 86 | 69 | 39 | 47 | 20 | 29 | 51 |
| 19 | 34 | 24 | 14 | 5.5 | 10 | 80 | 85 | 34 | 37 | 23 | 25 | 91 |
| 20 | 35 | 23 | 13 | 5.4 | 11 | 74 | 118 | 40 | 34 | 24 | 33 | 60 |
| 21 | 39 | 21 | 12 | 5.3 | 11 | 70 | 275 | 46 | 30 | 18 | 28 | 37 |
| 22 | 37 | 18 | 12 | 5.3 | 11 | 67 | 236 | 54 | 32 | 19 | 24 | 26 |
| 23 | 39 | 23 | 12 | 5.2 | 21 | 60 | 164 | 50 | 28 | 22 | 14 | 28 |
| 24 | 48 | 27 | 11 | 5.1 | 32 | 58 | 129 | 105 | 24 | 16 | 14 | 21 |
| 25 | 54 | 31 | 11 | 5.0 | 30 | 60 | 103 | 77 | 19 | 14 | 15 | 27 |
| 26 | 58 | 35 | 11 | 4.9 | 28 | 61 | 91 | 50 | 16 | 13 | 15 | 22 |
| 27 | 54 | 14 | 11 | 4.8 | 23 | 74 | 75 | 39 | 15 | 14 | 15 | 20 |
| 28 | 50 | 13 | 11 | 4.7 | 18 | 78 | 86 | 33 | 16 | 18 | 17 | 18 |
| 29 | 45 | 13 | 10 | 4.6 | --- | 101 | 82 | 27 | 16 | 19 | 15 | 17 |
| 30 | 45 | 12 | 10 | 4.5 | --- | 107 | 70 | 24 | 61 | 17 | 14 | 25 |
| 31 | 40 | --- | 9.9 | 4.5 | --- | 87 | --- | 24 | --- | 16 | 14 | --- |
| TOTAL | 934 | 649 | 397.9 | 204.9 | 322.9 | 2316 | 3152 | 2177 | 1084 | 801 | 660 | 664.8 |
| MEAN | 30.1 | 21.6 | 12.8 | 6.61 | 11.5 | 74.7 | 105 | 70.2 | 36.1 | 25.8 | 21.3 | 22.2 |
| MAX | 58 | 35 | 15 | 9.8 | 32 | 156 | 275 | 282 | 158 | 85 | 73 | 91 |
| MIN | 15 | 12 | 9.9 | 4.5 | 4.6 | 15 | 51 | 24 | 15 | 13 | 14 | 9.8 |
| CFSM | .06 | .04 | .02 | .01 | .02 | .14 | .20 | .13 | .07 | .05 | .04 | .04 |
| IN. | .07 | .05 | .03 | .01 | .02 | .16 | .22 | .15 | .08 | .06 | .05 | .05 |
| AC-FT | 1850 | 1290 | 789 | 406 | 640 | 4590 | 6250 | 4320 | 2150 | 1590 | 1310 | 1320 |

CAL YR 1976 TOTAL 46414.9 MEAN 127 MAX 1550 MIN 9.9 CFSM .24 IN 3.28 AC-FT 92060
WTR YR 1977 TOTAL 13363.5 MEAN 36.6 MAX 282 MIN 4.5 CFSM .07 IN .95 AC-FT 26510

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) above mean sea level, and 4.60 ft (1.40 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) above mean sea level. Dam constructed in 1903. A previous outlet works had been constructed in 1837. 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, 2.99 ft (0.911 m) Apr. 27; minimum, 1.91 ft (0.582 m) Sept. 17.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1 | 2.85 | 2.65 | --- | 2.43 | 2.41 | 2.44 | 2.70 | 2.88 | 2.78 | 2.50 | 2.16 | 2.10 |
| 2 | 2.84 | 2.66 | --- | 2.43 | 2.41 | 2.44 | 2.77 | 2.80 | 2.72 | 2.45 | 2.15 | 2.09 |
| 3 | 2.83 | 2.67 | --- | 2.43 | 2.41 | 2.45 | 2.80 | 2.78 | 2.70 | 2.41 | 2.14 | 2.08 |
| 4 | 2.83 | 2.64 | --- | 2.43 | 2.41 | 2.49 | 2.83 | 2.79 | 2.70 | 2.40 | 2.11 | 2.07 |
| 5 | 2.82 | 2.63 | --- | 2.43 | 2.41 | 2.54 | 2.85 | 2.80 | 2.68 | 2.40 | 2.09 | 2.06 |
| 6 | 2.80 | 2.62 | --- | 2.43 | 2.40 | 2.60 | 2.83 | 2.82 | 2.65 | 2.39 | 2.07 | 2.04 |
| 7 | 2.77 | 2.62 | --- | 2.43 | 2.40 | 2.60 | 2.80 | 2.83 | 2.62 | 2.39 | 2.06 | 2.03 |
| 8 | 2.78 | 2.60 | --- | 2.43 | 2.40 | 2.58 | 2.77 | 2.84 | 2.61 | 2.39 | 2.05 | 2.02 |
| 9 | 2.77 | 2.59 | --- | 2.43 | 2.40 | 2.56 | 2.76 | 2.85 | 2.58 | 2.38 | 2.05 | 2.04 |
| 10 | 2.75 | 2.59 | --- | 2.43 | 2.42 | 2.56 | 2.82 | 2.85 | 2.56 | 2.38 | 2.05 | 2.03 |
| 11 | 2.75 | --- | --- | 2.43 | 2.45 | 2.57 | 2.85 | 2.86 | 2.60 | 2.38 | 2.05 | 2.02 |
| 12 | 2.74 | --- | --- | 2.43 | 2.46 | 2.61 | 2.81 | 2.87 | 2.57 | 2.38 | 2.04 | 1.99 |
| 13 | 2.73 | --- | --- | 2.43 | 2.46 | 2.65 | 2.76 | 2.87 | 2.54 | 2.37 | 2.03 | 1.96 |
| 14 | 2.73 | --- | --- | 2.43 | 2.45 | 2.65 | 2.72 | 2.86 | 2.53 | 2.35 | 2.02 | 1.95 |
| 15 | 2.73 | --- | --- | 2.43 | 2.44 | 2.64 | 2.71 | 2.85 | 2.51 | 2.35 | 2.06 | 1.94 |
| 16 | 2.70 | --- | --- | 2.43 | 2.43 | 2.63 | 2.71 | 2.86 | 2.53 | 2.35 | 2.15 | 1.92 |
| 17 | 2.67 | --- | --- | 2.43 | 2.42 | 2.63 | 2.75 | 2.85 | 2.55 | 2.35 | 2.24 | --- |
| 18 | 2.64 | --- | --- | 2.43 | 2.42 | 2.65 | 2.82 | 2.85 | 2.56 | 2.34 | 2.21 | --- |
| 19 | 2.63 | --- | --- | --- | 2.41 | 2.64 | 2.84 | 2.84 | 2.54 | 2.34 | 2.19 | --- |
| 20 | 2.65 | --- | --- | --- | 2.40 | 2.64 | 2.83 | 2.81 | 2.51 | 2.33 | 2.15 | --- |
| 21 | 2.67 | --- | --- | --- | 2.40 | 2.64 | 2.83 | 2.77 | 2.47 | 2.31 | 2.15 | --- |
| 22 | 2.66 | --- | --- | --- | 2.40 | 2.63 | 2.84 | 2.80 | 2.45 | 2.30 | 2.14 | --- |
| 23 | 2.63 | --- | --- | --- | 2.41 | 2.63 | 2.85 | 2.85 | 2.45 | 2.28 | 2.12 | --- |
| 24 | 2.64 | --- | --- | --- | 2.43 | 2.62 | 2.88 | 2.87 | 2.44 | 2.27 | 2.10 | --- |
| 25 | 2.67 | --- | --- | --- | 2.45 | 2.62 | 2.92 | 2.85 | 2.43 | 2.25 | 2.08 | --- |
| 26 | 2.66 | --- | --- | --- | 2.45 | 2.62 | 2.94 | 2.81 | 2.42 | 2.23 | 2.07 | 2.13 |
| 27 | 2.66 | --- | 2.45 | --- | 2.45 | 2.64 | 2.95 | 2.81 | 2.41 | 2.20 | 2.08 | 2.10 |
| 28 | 2.70 | --- | 2.45 | --- | 2.44 | 2.65 | 2.89 | 2.81 | 2.42 | 2.20 | 2.10 | 2.08 |
| 29 | 2.73 | --- | 2.44 | --- | --- | 2.77 | 2.88 | 2.80 | 2.40 | 2.20 | 2.10 | 2.10 |
| 30 | 2.69 | --- | 2.44 | --- | --- | 2.79 | 2.87 | 2.79 | 2.47 | 2.18 | 2.09 | 2.10 |
| 31 | 2.67 | --- | 2.44 | --- | --- | 2.75 | --- | 2.81 | --- | 2.18 | 2.09 | --- |
| MEAN | 2.72 | --- | --- | --- | 2.42 | 2.61 | 2.82 | 2.83 | 2.55 | 2.33 | 2.10 | --- |
| MAX | 2.85 | --- | --- | --- | 2.46 | 2.79 | 2.95 | 2.88 | 2.78 | 2.50 | 2.24 | --- |
| MIN | 2.63 | --- | --- | --- | 2.40 | 2.44 | 2.70 | 2.77 | 2.40 | 2.18 | 2.02 | --- |

IOWA RIVER BASIN

05462000 SHELL ROCK RIVER AT SHFLL ROCK, IA

LOCATION.--Lat 42°39'10", long 92°35'46", 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 886.34 ft (269.852 m) above mean sea level.

REMARKS.--Records good except those for winter period, which are poor. Diurnal fluctuation at low stages caused by powerplant at Greene. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--24 years, 839 ft³/s (23.76 m³/s), 6.53 in/yr (166 mm/yr), 607,900 acre-ft/yr (750 hm³/yr); median of yearly mean discharges, 680 ft³/s (19.3 m³/s), 5.3 in/yr (135 mm/yr), 493,000 acre-ft/yr (608 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.--Maximum discharge, 1,220 ft³/s (34.6 m³/s) Sept. 18, gage height, 8.49 ft (2.588 m) no peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 38 ft³/s (1.08 m³/s) Feb. 9.

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 | 159 | 160 | 116 | 86 | 48 | 161 | 304 | 275 | 174 | 132 | 112 | 148 |
| 2 | 134 | 162 | 101 | 83 | 45 | 149 | 335 | 257 | 153 | 200 | 97 | 130 |
| 3 | 127 | 170 | 86 | 84 | 45 | 150 | 374 | 230 | 136 | 206 | 98 | 124 |
| 4 | 128 | 160 | 88 | 84 | 49 | 159 | 483 | 229 | 127 | 190 | 93 | 119 |
| 5 | 139 | 158 | 105 | 86 | 47 | 142 | 487 | 262 | 127 | 161 | 99 | 118 |
| 6 | 135 | 152 | 103 | 86 | 45 | 139 | 428 | 596 | 127 | 140 | 84 | 109 |
| 7 | 139 | 146 | 80 | 86 | 43 | 148 | 391 | 644 | 119 | 145 | 64 | 102 |
| 8 | 143 | 142 | 78 | 86 | 40 | 163 | 363 | 469 | 117 | 129 | 84 | 94 |
| 9 | 154 | 137 | 83 | 84 | 38 | 195 | 338 | 377 | 108 | 135 | 108 | 89 |
| 10 | 151 | 135 | 101 | 84 | 42 | 276 | 309 | 328 | 95 | 121 | 100 | 91 |
| 11 | 139 | 140 | 94 | 82 | 55 | 347 | 287 | 289 | 102 | 116 | 93 | 83 |
| 12 | 145 | 150 | 94 | 80 | 66 | 408 | 264 | 264 | 149 | 120 | 84 | 113 |
| 13 | 152 | 155 | 90 | 77 | 71 | 496 | 253 | 239 | 248 | 103 | 80 | 122 |
| 14 | 149 | 162 | 89 | 77 | 87 | 499 | 247 | 221 | 218 | 98 | 83 | 100 |
| 15 | 151 | 172 | 97 | 77 | 66 | 497 | 247 | 207 | 171 | 98 | 108 | 88 |
| 16 | 153 | 160 | 105 | 76 | 79 | 439 | 248 | 199 | 155 | 101 | 367 | 88 |
| 17 | 142 | 165 | 111 | 72 | 73 | 364 | 250 | 190 | 156 | 136 | 193 | 94 |
| 18 | 143 | 162 | 115 | 72 | 72 | 356 | 252 | 186 | 161 | 118 | 197 | 776 |
| 19 | 155 | 165 | 121 | 70 | 68 | 313 | 258 | 174 | 155 | 106 | 193 | 404 |
| 20 | 160 | 168 | 97 | 70 | 91 | 279 | 293 | 175 | 139 | 106 | 163 | 333 |
| 21 | 161 | 162 | 97 | 72 | 116 | 273 | 380 | 180 | 134 | 109 | 143 | 305 |
| 22 | 164 | 101 | 105 | 74 | 123 | 258 | 696 | 173 | 143 | 88 | 127 | 273 |
| 23 | 162 | 103 | 101 | 76 | 143 | 249 | 663 | 173 | 131 | 80 | 127 | 273 |
| 24 | 183 | 170 | 99 | 77 | 185 | 229 | 531 | 181 | 126 | 57 | 127 | 374 |
| 25 | 176 | 170 | 101 | 78 | 192 | 221 | 430 | 177 | 126 | 47 | 115 | 315 |
| 26 | 171 | 148 | 101 | 76 | 208 | 207 | 376 | 235 | 114 | 47 | 210 | 297 |
| 27 | 170 | 140 | 99 | 75 | 210 | 217 | 346 | 217 | 101 | 48 | 185 | 264 |
| 28 | 163 | 133 | 97 | 65 | 183 | 233 | 322 | 186 | 104 | 55 | 249 | 244 |
| 29 | 162 | 127 | 94 | 59 | --- | 259 | 316 | 176 | 99 | 94 | 220 | 237 |
| 30 | 169 | 129 | 94 | 52 | --- | 296 | 299 | 177 | 111 | 118 | 196 | 250 |
| 31 | 171 | --- | 89 | 51 | --- | 322 | --- | 168 | --- | 124 | 159 | --- |
| TOTAL | 4750 | 4504 | 3031 | 2357 | 2530 | 8454 | 10770 | 7854 | 4126 | 3528 | 4358 | 6157 |
| MEAN | 153 | 150 | 97.8 | 76.0 | 90.4 | 273 | 359 | 253 | 138 | 114 | 141 | 205 |
| MAX | 183 | 172 | 121 | 86 | 210 | 499 | 696 | 644 | 248 | 206 | 367 | 776 |
| MIN | 127 | 101 | 78 | 51 | 38 | 139 | 247 | 168 | 95 | 47 | 64 | 83 |
| CFSM | .09 | .09 | .06 | .04 | .05 | .16 | .21 | .15 | .08 | .07 | .08 | .12 |
| IN. | .10 | .10 | .06 | .05 | .05 | .18 | .23 | .17 | .09 | .08 | .09 | .13 |
| AC-FT | 9420 | 8930 | 6010 | 4680 | 5020 | 16770 | 21360 | 15580 | 8180 | 7000 | 8640 | 12210 |

CAL YR 1976 TOTAL 181678 MEAN 496 MAX 6260 MIN 78 CFSM .28 IN 3.87 AC-FT 360400
WTR YR 1977 TOTAL 62419 MEAN 171 MAX 776 MIN 38 CFSM .10 IN 1.33 AC-FT 123800

05453000 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) above mean sea level. 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.--32 years, 183 ft³/s (5.183 m³/s), 7.16 in/yr (182 mm/yr), 132,600 acre-ft/yr (163 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.--Maximum discharge, 172 ft³/s (4.87 m³/s) Aug. 29, gage height, 3.19 ft (0.972 m), no peak above base of 1,400 ft³/s (39.6 m³/s); minimum daily, 2.3 ft³/s (0.065 m³/s) Jan. 24.

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 | 14 | 22 | 12 | 6.0 | 3.1 | 33 | 44 | 28 | 19 | 10 | 4.2 | 85 |
| 2 | 13 | 21 | 11 | 6.2 | 3.5 | 29 | 55 | 27 | 17 | 8.5 | 4.1 | 70 |
| 3 | 14 | 20 | 10 | 6.3 | 3.7 | 25 | 71 | 26 | 16 | 8.8 | 3.8 | 60 |
| 4 | 14 | 19 | 10 | 6.2 | 4.3 | 35 | 73 | 27 | 15 | 8.5 | 3.7 | 50 |
| 5 | 15 | 19 | 10 | 6.0 | 4.9 | 38 | 76 | 31 | 14 | 7.9 | 4.6 | 45 |
| 6 | 16 | 19 | 9.6 | 6.0 | 5.6 | 42 | 69 | 30 | 13 | 8.7 | 5.3 | 42 |
| 7 | 16 | 20 | 9.4 | 6.1 | 6.7 | 47 | 62 | 28 | 12 | 17 | 7.0 | 40 |
| 8 | 16 | 29 | 9.2 | 6.1 | 8.3 | 52 | 56 | 27 | 12 | 12 | 8.5 | 38 |
| 9 | 15 | 20 | 8.8 | 5.8 | 9.6 | 54 | 50 | 25 | 11 | 10 | 8.5 | 35 |
| 10 | 16 | 20 | 8.6 | 5.5 | 11 | 60 | 46 | 24 | 11 | 9.4 | 10 | 33 |
| 11 | 16 | 25 | 8.4 | 5.4 | 12 | 80 | 43 | 24 | 14 | 8.5 | 8.6 | 31 |
| 12 | 16 | 29 | 8.1 | 5.4 | 13 | 94 | 39 | 23 | 12 | 7.7 | 8.0 | 31 |
| 13 | 16 | 28 | 8.0 | 5.3 | 14 | 82 | 38 | 22 | 11 | 7.1 | 7.4 | 30 |
| 14 | 15 | 28 | 7.4 | 5.0 | 15 | 63 | 37 | 21 | 10 | 6.8 | 6.8 | 28 |
| 15 | 15 | 27 | 7.1 | 4.8 | 15 | 55 | 37 | 21 | 9.6 | 6.5 | 7.5 | 27 |
| 16 | 16 | 30 | 6.6 | 4.5 | 17 | 49 | 35 | 21 | 9.5 | 6.4 | 19 | 26 |
| 17 | 15 | 28 | 6.4 | 4.3 | 19 | 46 | 35 | 21 | 13 | 7.1 | 20 | 27 |
| 18 | 16 | 25 | 6.2 | 4.0 | 20 | 45 | 37 | 20 | 12 | 6.6 | 39 | 36 |
| 19 | 18 | 24 | 5.9 | 3.9 | 21 | 44 | 34 | 19 | 14 | 6.6 | 36 | 36 |
| 20 | 18 | 23 | 5.5 | 3.5 | 22 | 43 | 34 | 19 | 13 | 6.7 | 30 | 42 |
| 21 | 19 | 23 | 5.5 | 3.0 | 22 | 41 | 36 | 20 | 12 | 7.6 | 26 | 41 |
| 22 | 18 | 22 | 5.6 | 2.7 | 22 | 39 | 36 | 21 | 10 | 7.2 | 25 | 38 |
| 23 | 19 | 36 | 5.7 | 2.5 | 23 | 37 | 37 | 21 | 10 | 7.5 | 24 | 43 |
| 24 | 24 | 31 | 6.0 | 2.3 | 31 | 36 | 35 | 19 | 11 | 8.5 | 21 | 65 |
| 25 | 25 | 17 | 6.0 | 2.9 | 34 | 34 | 33 | 18 | 13 | 7.8 | 19 | 94 |
| 26 | 25 | 14 | 6.1 | 3.1 | 34 | 32 | 32 | 17 | 14 | 6.9 | 46 | 97 |
| 27 | 22 | 16 | 6.0 | 3.0 | 34 | 33 | 31 | 17 | 13 | 6.4 | 35 | 81 |
| 28 | 21 | 13 | 5.7 | 2.9 | 34 | 37 | 31 | 16 | 11 | 5.9 | 59 | 69 |
| 29 | 21 | 12 | 5.7 | 3.0 | --- | 46 | 30 | 39 | 9.3 | 5.4 | 152 | 63 |
| 30 | 22 | 12 | 5.8 | 2.8 | --- | 51 | 29 | 27 | 14 | 5.1 | 149 | 105 |
| 31 | 23 | --- | 5.9 | 2.9 | --- | 48 | --- | 19 | --- | 4.7 | 110 | --- |
| TOTAL | 549 | 672 | 232.2 | 137.4 | 462.7 | 1450 | 1303 | 718 | 375.4 | 243.8 | 908.0 | 1508 |
| MEAN | 17.7 | 22.4 | 7.49 | 4.43 | 16.5 | 46.8 | 43.4 | 23.2 | 12.5 | 7.86 | 29.3 | 50.3 |
| MAX | 25 | 36 | 12 | 6.3 | 34 | 94 | 76 | 39 | 19 | 17 | 152 | 105 |
| MIN | 13 | 12 | 5.5 | 2.3 | 3.1 | 25 | 29 | 16 | 9.3 | 4.7 | 3.7 | 26 |
| CFSM | .05 | .07 | .02 | .01 | .05 | .14 | .13 | .07 | .04 | .02 | .08 | .15 |
| IN. | .06 | .07 | .02 | .01 | .05 | .16 | .14 | .08 | .04 | .03 | .10 | .16 |
| AC-FT | 1090 | 1330 | 461 | 273 | 918 | 2880 | 2580 | 1420 | 745 | 484 | 1800 | 2990 |

CAL YR 1976 TOTAL 52688.2 MEAN 144 MAX 3980 MIN 5.5 CFSM .42 IN 5.65 AC-FT 104500
WTR YR 1977 TOTAL 8559.5 MEAN 23.5 MAX 152 MIN 2.3 CFSM .07 IN .92 AC-FT 16980

IOWA RIVER BASIN

05463050 CEDAR RIVER AT CEDAR FALLS, IA

WATER-QUALITY RECORDS

LOCATION.--Lat 42°32'20", long 92°26'58", in NW1/4 NE1/4 sec.12, T.89 N., R.14 W., Black Hawk County, Hydrologic Unit 07080205, at bridge on U.S. Highway 20 at Cedar Falls, 1.1 mi (1.8 km) upstream from Dry Run, and at mile 196.0 (315.4 km) above mouth of Iowa River.

DRAINAGE AREA.--4,734 mi² (12,261 km²).

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

REMARKS.--Water discharge estimated on basis of records at gaging station 8.1 mi (13.0 km) downstream at Waterloo. No significant inflow between gaging station and sampling site.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | TOTAL CAL- CIUM (CA) (MG/L) (00916) | TOTAL MAG- NE- SIUM (MG) (MG/L) (00927) | TOTAL SODIUM (NA) (MG/L) (00929) | TOTAL PO- TAS- SIUM (K) (MG/L) (00937) | SICAR- BONATE (CO3) (MG/L) (00440) | CAR- BONATE (CO3) (MG/L) (00445) | ALKA- LITY AS CACO3 (MG/L) (00410) | DIS- SOLVED SULFATE (SO4) (MG/L) (00945) | DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940) |
|-----------|------|--|--|---|--|--|--|--|---|---|--|
| OCT 20... | 1250 | 534 | 46 | 19 | 13 | 2.5 | 200 | 0 | 164 | 38 | 21 |
| NOV 22... | 1310 | 508 | 61 | 22 | 16 | 2.1 | 246 | 0 | 201 | 44 | 25 |
| DEC 21... | 1030 | 412 | 83 | 27 | 19 | 2.7 | 299 | 0 | 246 | 46 | 27 |
| JAN 17... | 1245 | 350 | 86 | 16 | 17 | 2.6 | 311 | 0 | 255 | 44 | 26 |
| FEB 15... | 1240 | 460 | 62 | 18 | 14 | 2.1 | 258 | 0 | 212 | 36 | 23 |
| MAR 22... | 1100 | 1030 | 55 | 10 | 15 | 3.4 | 221 | 0 | 181 | 42 | 25 |
| MAY 04... | 0900 | 800 | 54 | 23 | 17 | 4.9 | 188 | 0 | 150 | 55 | 25 |
| JUN 01... | 0930 | 550 | 62 | 23 | 19 | 6.0 | 240 | 1 | 200 | 45 | 24 |
| JUL 05... | 1140 | 490 | -- | -- | -- | -- | -- | 0 | -- | -- | -- |
| AUG 05... | 1400 | 415 | 38 | 19 | 15 | 2.8 | 100 | 0 | 150 | 34 | 22 |
| SEP 07... | 0920 | 750 | 56 | 19 | 15 | 3.0 | 210 | 8 | 170 | 36 | 22 |

| DATE | TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630) | TOTAL AMMONIA NITRO- GEN (N) (MG/L) (00610) | TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605) | TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625) | TOTAL NITRO- GEN (N) (MG/L) (00600) | TOTAL NITRO- GEN (NO3) (MG/L) (71207) | TOTAL PHOS- PHORUS (P) (MG/L) (00655) | DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300) | DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303) | DIS- SOLVED SOLIDS (TONS PER DAY) (70302) |
|-----------|---|---|---|---|--|--|--|---|---|---|
| OCT 20... | .56 | .62 | 1.3 | 1.9 | 2.5 | 11 | .17 | 275 | .37 | 395 |
| NOV 22... | 2.1 | .10 | 1.3 | 1.4 | 3.6 | 16 | .20 | 317 | .43 | 435 |
| DEC 21... | 3.2 | .34 | .53 | .87 | 4.1 | 18 | .25 | 370 | .50 | 412 |
| JAN 17... | 3.7 | .71 | .25 | .96 | 4.7 | 21 | .33 | 370 | .61 | 357 |
| FEB 15... | 3.1 | .59 | .26 | .86 | 4.0 | 17 | .31 | 337 | .46 | 419 |
| MAR 22... | 1.9 | .88 | 1.0 | 1.9 | 3.8 | 17 | .32 | 360 | .49 | 1000 |
| MAY 04... | .32 | .42 | 1.8 | 2.2 | 2.5 | 11 | .22 | 276 | .37 | 594 |
| JUN 01... | 1.1 | .00 | .95 | .95 | 2.1 | 9.1 | .30 | 316 | .43 | 469 |
| JUL 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG 05... | .46 | .01 | 2.4 | 2.4 | 2.9 | 13 | .21 | 226 | .31 | 254 |
| SEP 07... | .89 | .27 | .93 | 1.2 | 2.1 | 9.3 | .15 | 276 | .38 | 559 |

05463050 CEDAR RIVER AT CEDAR FALLS, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TOTAL RESI- DUE (MG/L) (00500) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) | TUR- BID- ITY (NTU) (00076) | DIS- SOLVED OXYGEN (MG/L) (00300) | PER- CENT SATUR- ATION (00301) | CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340) | CARBON DIOXIDE (CO2) (MG/L) (00405) | FECAL COLI- FORM .7UM-MF (COL./ 100 ML) (31625) |
|--------------|--|---|--------------------------|--|---|---|--|---|---|---|
| OCT 20... | 290 | 420 | 8.3 | 8.0 | 8.0 | 12.2 | 101 | 10 | 1.6 | 100 |
| NOV 22... | 345 | 520 | 8.0 | 1.0 | 4.0 | 13.4 | 94 | 19 | 3.9 | 93 |
| DEC 21... | 377 | 650 | 8.1 | .0 | 2.0 | 12.9 | 88 | 11 | 3.8 | 250 |
| JAN 17... | 395 | 550 | 8.2 | .0 | 1.0 | 13.8 | 95 | 7 | 3.1 | 880 |
| FEB 15... | 344 | 520 | 7.7 | .5 | 2.0 | 10.8 | 75 | 12 | 8.2 | 140 |
| MAR 22... | 380 | 540 | 8.3 | 3.5 | 5.0 | 12.0 | 90 | 3 | 1.8 | 140 |
| MAY 04... | 330 | 430 | 8.8 | 17.5 | 13 | -- | -- | 26 | .5 | -- |
| JUN 01... | 387 | 430 | 8.7 | 21.0 | 17 | -- | -- | 35 | .8 | -- |
| JUL 05... | -- | 440 | 8.8 | 26.0 | -- | -- | -- | -- | -- | -- |
| AUG 05... | 256 | -- | 8.3 | 26.0 | 10 | -- | -- | 35 | 1.4 | -- |
| SEP 07... | 316 | 470 | 8.7 | 22.5 | 17 | -- | -- | 34 | .7 | 140 |

IOWA RIVER BASIN

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) above mean sea level.

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, 155 ft³/s (4.390 m³/s), 6.95 in/yr (177 mm/yr), 112,300 acre-ft/yr (138 hm³/yr); median of yearly mean discharges, 120 ft³/s (3.40 m³/s), 5.4 in/yr (137 mm/yr), 86,900 acre-ft/yr (107 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,300 ft³/s (547 m³/s) July 9, 1969, gage height, 18.23 ft (5.557 m); minimum daily, 0.12 ft³/s (0.003 m³/s) Jan. 26, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 196 ft³/s (5.55 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.

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 | 14 | 16 | 14 | 4.6 | 2.3 | 50 | 29 | 20 | 16 | 28 | 10 | 17 |
| 2 | 15 | 16 | 14 | 4.6 | 2.6 | 55 | 30 | 20 | 16 | 28 | 11 | 15 |
| 3 | 14 | 15 | 13 | 4.8 | 2.9 | 59 | 31 | 19 | 16 | 27 | 10 | 14 |
| 4 | 14 | 15 | 13 | 4.8 | 3.2 | 65 | 32 | 21 | 16 | 28 | 9.9 | 13 |
| 5 | 15 | 14 | 12 | 4.8 | 3.5 | 71 | 32 | 135 | 16 | 27 | 9.8 | 13 |
| 6 | 15 | 15 | 12 | 4.9 | 3.8 | 80 | 33 | 46 | 15 | 27 | 11 | 12 |
| 7 | 15 | 15 | 11 | 5.0 | 4.3 | 86 | 33 | 30 | 15 | 27 | 11 | 12 |
| 8 | 15 | 15 | 10 | 5.0 | 4.7 | 94 | 34 | 26 | 14 | 27 | 11 | 11 |
| 9 | 15 | 15 | 9.7 | 4.6 | 5.4 | 124 | 34 | 23 | 14 | 28 | 14 | 11 |
| 10 | 15 | 16 | 9.0 | 4.4 | 6.0 | 124 | 33 | 21 | 14 | 28 | 14 | 9.9 |
| 11 | 15 | 16 | 8.4 | 4.0 | 6.8 | 120 | 31 | 20 | 14 | 28 | 11 | 9.3 |
| 12 | 14 | 16 | 7.8 | 3.7 | 7.6 | 88 | 30 | 18 | 14 | 28 | 9.9 | 9.5 |
| 13 | 14 | 17 | 7.4 | 3.5 | 8.6 | 58 | 28 | 17 | 14 | 27 | 9.3 | 10 |
| 14 | 14 | 18 | 7.0 | 3.2 | 9.4 | 48 | 27 | 16 | 14 | 27 | 8.5 | 10 |
| 15 | 14 | 18 | 6.5 | 2.9 | 10 | 42 | 27 | 16 | 14 | 27 | 8.7 | 9.3 |
| 16 | 14 | 19 | 6.3 | 2.7 | 11 | 38 | 27 | 16 | 13 | 27 | 21 | 9.7 |
| 17 | 14 | 19 | 6.0 | 2.5 | 13 | 35 | 26 | 16 | 13 | 27 | 28 | 11 |
| 18 | 14 | 18 | 5.7 | 2.3 | 14 | 35 | 25 | 15 | 79 | 59 | 16 | 106 |
| 19 | 14 | 18 | 5.4 | 2.1 | 16 | 35 | 26 | 15 | 29 | 45 | 14 | 152 |
| 20 | 14 | 18 | 5.2 | 1.9 | 18 | 34 | 27 | 15 | 23 | 25 | 14 | 69 |
| 21 | 15 | 17 | 5.1 | 1.2 | 20 | 33 | 27 | 17 | 21 | 19 | 13 | 44 |
| 22 | 15 | 16 | 4.9 | .78 | 22 | 32 | 27 | 20 | 20 | 17 | 11 | 37 |
| 23 | 15 | 17 | 4.8 | .48 | 25 | 30 | 27 | 20 | 19 | 16 | 10 | 34 |
| 24 | 15 | 17 | 4.6 | .30 | 29 | 28 | 27 | 18 | 19 | 18 | 10 | 35 |
| 25 | 16 | 17 | 4.4 | .18 | 33 | 27 | 26 | 17 | 22 | 27 | 9.3 | 42 |
| 26 | 16 | 17 | 4.3 | .12 | 37 | 26 | 25 | 16 | 28 | 16 | 16 | 47 |
| 27 | 16 | 18 | 4.1 | .20 | 41 | 26 | 24 | 16 | 29 | 14 | 17 | 47 |
| 28 | 16 | 16 | 4.0 | .37 | 44 | 26 | 23 | 15 | 29 | 14 | 16 | 46 |
| 29 | 15 | 15 | 4.1 | .60 | --- | 27 | 23 | 15 | 29 | 13 | 17 | 43 |
| 30 | 15 | 14 | 4.4 | 1.2 | --- | 29 | 21 | 15 | 28 | 12 | 18 | 41 |
| 31 | 16 | --- | 4.3 | 2.0 | --- | 29 | --- | 16 | --- | 11 | 17 | --- |
| TOTAL | 458 | 493 | 232.4 | 83.73 | 404.1 | 1654 | 845 | 710 | 623 | 772 | 406.4 | 939.7 |
| MEAN | 14.8 | 16.4 | 7.50 | 2.70 | 14.4 | 53.4 | 28.2 | 22.9 | 20.8 | 24.9 | 13.1 | 31.3 |
| MAX | 16 | 19 | 14 | 5.0 | 44 | 124 | 34 | 135 | 79 | 59 | 28 | 152 |
| MIN | 14 | 14 | 4.0 | .12 | 2.3 | 26 | 21 | 15 | 13 | 11 | 8.5 | 9.3 |
| CFSM | .05 | .05 | .03 | .009 | .05 | .18 | .09 | .08 | .07 | .08 | .04 | .10 |
| IN. | .06 | .06 | .03 | .01 | .05 | .20 | .10 | .09 | .08 | .09 | .05 | .12 |
| AC-FT | 908 | 978 | 461 | 166 | 802 | 3280 | 1680 | 1410 | 1240 | 1530 | 806 | 1860 |

| | | | | | | | | | | | | | | |
|-------------|-------|----------|------|------|-----|------|-----|-----|------|-----|----|------|-------|-------|
| CAL YR 1976 | TOTAL | 38493.50 | MEAN | 105 | MAX | 1980 | MIN | 4.0 | CFSM | .35 | IN | 4.73 | AC-FT | 76350 |
| WTR YR 1977 | TOTAL | 7621.33 | MEAN | 20.9 | MAX | 152 | MIN | .12 | CFSM | .07 | IN | .94 | AC-FT | 15120 |

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) above mean sea level.

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.--37 years, 2,714 ft³/s (76.86 m³/s), 7.16 in/yr (182 mm/yr), 1,966,000 acre-ft/yr (2,420 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.--Maximum discharge, 3,120 ft³/s (88.4 m³/s) Sept. 19, gage height, 6.19 ft (1.887 m), no peak above base of 13,000 ft³/s (368 m³/s); minimum daily, 275 ft³/s (7.79 m³/s) Jan. 23.

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 | 512 | 876 | 457 | 410 | 295 | 595 | 991 | 831 | 549 | 441 | 484 | 1010 |
| 2 | 508 | 608 | 446 | 410 | 300 | 598 | 1080 | 797 | 578 | 423 | 489 | 948 |
| 3 | 486 | 564 | 426 | 410 | 300 | 623 | 1050 | 772 | 554 | 471 | 454 | 859 |
| 4 | 475 | 544 | 422 | 400 | 315 | 609 | 1240 | 809 | 503 | 497 | 404 | 788 |
| 5 | 499 | 549 | 430 | 390 | 315 | 606 | 1270 | 850 | 459 | 490 | 416 | 746 |
| 6 | 496 | 536 | 418 | 390 | 315 | 596 | 1330 | 901 | 459 | 501 | 390 | 726 |
| 7 | 481 | 521 | 397 | 380 | 310 | 625 | 1280 | 1140 | 477 | 588 | 403 | 750 |
| 8 | 470 | 515 | 395 | 360 | 330 | 697 | 1170 | 1130 | 447 | 568 | 412 | 673 |
| 9 | 473 | 519 | 410 | 350 | 350 | 809 | 1060 | 1060 | 450 | 482 | 425 | 666 |
| 10 | 472 | 525 | 413 | 350 | 375 | 904 | 1000 | 934 | 460 | 419 | 429 | 604 |
| 11 | 479 | 514 | 411 | 360 | 390 | 1190 | 949 | 792 | 472 | 402 | 430 | 548 |
| 12 | 626 | 457 | 402 | 360 | 400 | 1580 | 901 | 793 | 417 | 398 | 412 | 623 |
| 13 | 522 | 459 | 414 | 350 | 405 | 1650 | 851 | 745 | 427 | 398 | 413 | 669 |
| 14 | 476 | 446 | 407 | 340 | 440 | 1710 | 825 | 707 | 509 | 385 | 375 | 594 |
| 15 | 481 | 515 | 413 | 330 | 460 | 1670 | 810 | 654 | 500 | 372 | 406 | 565 |
| 16 | 463 | 463 | 412 | 300 | 450 | 1580 | 786 | 673 | 455 | 386 | 669 | 537 |
| 17 | 464 | 330 | 433 | 300 | 480 | 1410 | 770 | 639 | 499 | 433 | 876 | 567 |
| 18 | 483 | 511 | 445 | 290 | 480 | 1250 | 783 | 626 | 507 | 658 | 824 | 1640 |
| 19 | 524 | 529 | 449 | 290 | 475 | 1110 | 809 | 592 | 485 | 611 | 907 | 2650 |
| 20 | 514 | 531 | 420 | 290 | 465 | 1060 | 860 | 596 | 468 | 526 | 835 | 1620 |
| 21 | 502 | 525 | 436 | 285 | 465 | 995 | 934 | 613 | 463 | 482 | 705 | 1330 |
| 22 | 505 | 505 | 442 | 280 | 480 | 954 | 978 | 648 | 446 | 501 | 674 | 1200 |
| 23 | 540 | 436 | 492 | 275 | 570 | 902 | 1270 | 659 | 435 | 449 | 678 | 1160 |
| 24 | 593 | 434 | 452 | 280 | 590 | 838 | 1320 | 665 | 466 | 400 | 613 | 1460 |
| 25 | 590 | 551 | 448 | 300 | 588 | 814 | 1330 | 610 | 447 | 394 | 599 | 1910 |
| 26 | 585 | 823 | 449 | 310 | 605 | 769 | 1220 | 601 | 458 | 406 | 853 | 1600 |
| 27 | 580 | 533 | 460 | 315 | 614 | 762 | 942 | 620 | 457 | 401 | 932 | 1420 |
| 28 | 583 | 578 | 530 | 305 | 600 | 825 | 1020 | 586 | 465 | 460 | 944 | 1260 |
| 29 | 578 | 428 | 440 | 300 | --- | 892 | 926 | 524 | 429 | 629 | 1080 | 1210 |
| 30 | 629 | 460 | 440 | 295 | --- | 888 | 876 | 544 | 475 | 637 | 1140 | 1430 |
| 31 | 590 | --- | 430 | 320 | --- | 937 | --- | 592 | --- | 535 | 1150 | --- |
| TOTAL | 16179 | 15785 | 13439 | 10325 | 12162 | 30448 | 30651 | 22703 | 14216 | 14743 | 19821 | 31763 |
| MEAN | 522 | 526 | 434 | 333 | 434 | 982 | 1022 | 732 | 474 | 476 | 639 | 1059 |
| MAX | 629 | 876 | 530 | 410 | 614 | 1710 | 1330 | 1140 | 578 | 658 | 1150 | 2650 |
| MIN | 463 | 330 | 395 | 275 | 295 | 595 | 770 | 524 | 417 | 372 | 375 | 537 |
| CFSM | .10 | .10 | .08 | .07 | .08 | .19 | .20 | .14 | .09 | .09 | .12 | .21 |
| IN. | .12 | .11 | .10 | .07 | .09 | .22 | .22 | .16 | .10 | .11 | .14 | .23 |
| AC-FT | 32090 | 31310 | 26660 | 20480 | 24120 | 60390 | 60800 | 45030 | 28200 | 29240 | 39310 | 63000 |

| | | | | | | | | | | | | | | |
|-------------|-------|--------|------|------|-----|-------|-----|-----|------|-----|----|------|-------|---------|
| CAL YR 1976 | TOTAL | 632932 | MEAN | 1729 | MAX | 16000 | MIN | 330 | CFSM | .34 | IN | 4.58 | AC-FT | 1255000 |
| WTR YR 1977 | TOTAL | 232235 | MEAN | 636 | MAX | 2650 | MIN | 275 | CFSM | .12 | IN | 1.68 | AC-FT | 460600 |

IOWA RIVER BASIN

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) upstream at Waterloo. No significant inflow between gaging station and sampling site.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | TOTAL CAL- CIUM (CA) (MG/L) (00916) | TOTAL MAG- NE- SIUM (MG) (MG/L) (00927) | TOTAL SODIUM (NA) (MG/L) (00929) | TOTAL PO- TAS- SIUM (K) (MG/L) (00937) | BICAR- BONATE (HCO3) (MG/L) (00440) | CAR- BONATE (CO3) (MG/L) (00445) | ALKA- LINITY AS CACO3 (MG/L) (00410) | DIS- SOLVED SULFATE (SO4) (MG/L) (00945) | DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940) |
|-------|------|--|--|---|--|--|---|--|---|---|--|
| OCT | | | | | | | | | | | |
| 20... | 1130 | 534 | 42 | 20 | 20 | 2.3 | 196 | 0 | 161 | 42 | 33 |
| NOV | | | | | | | | | | | |
| 22... | 1200 | 508 | 62 | 21 | 20 | 2.4 | 200 | 0 | 200 | 47 | 31 |
| DEC | | | | | | | | | | | |
| 21... | 0920 | 412 | 82 | 26 | 26 | 3.1 | 300 | 0 | 246 | 59 | 38 |
| JAN | | | | | | | | | | | |
| 17... | 1145 | 350 | 89 | 25 | 22 | 2.9 | 317 | 0 | 260 | 49 | 34 |
| FEB | | | | | | | | | | | |
| 15... | 1130 | 460 | 64 | 19 | 24 | 2.7 | 260 | 0 | 213 | 42 | 39 |
| MAR | | | | | | | | | | | |
| 22... | 0945 | 1030 | 55 | 17 | 19 | 3.7 | 226 | 0 | 185 | 44 | 32 |
| MAY | | | | | | | | | | | |
| 04... | 0900 | 800 | 44 | 22 | 21 | 4.4 | 170 | 0 | 140 | 55 | 31 |
| JUN | | | | | | | | | | | |
| 01... | 1230 | 550 | 59 | 24 | 27 | 3.7 | 210 | 19 | 200 | 49 | 33 |
| JUL | | | | | | | | | | | |
| 05... | 1300 | 490 | 48 | 21 | 26 | 4.0 | 200 | 1 | 170 | 47 | 38 |
| AUG | | | | | | | | | | | |
| 05... | 1230 | 416 | 45 | 20 | 26 | 3.2 | 190 | 0 | 160 | 43 | 36 |
| SEP | | | | | | | | | | | |
| 07... | 1130 | 750 | 54 | 19 | 21 | 3.7 | 200 | 0 | 160 | 41 | 30 |

| DATE | TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630) | TOTAL AMMONIA NITRO- GEN (N) (MG/L) (00610) | TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605) | TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625) | TOTAL NITRO- GEN (N) (MG/L) (00600) | TOTAL NITRO- GEN (NO3) (MG/L) (71887) | TOTAL PHOS- PHORUS (P) (MG/L) (00655) | DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300) | DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303) | DIS- SOLVED SOLIDS (TONS PER DAY) (70302) |
|-------|---|---|---|---|--|--|--|---|---|---|
| OCT | | | | | | | | | | |
| 20... | 1.1 | .92 | 1.7 | 2.6 | 3.7 | 16 | .49 | 295 | .40 | 425 |
| NOV | | | | | | | | | | |
| 22... | 2.4 | .19 | 1.4 | 1.6 | 4.0 | 18 | .48 | 335 | .46 | 459 |
| DEC | | | | | | | | | | |
| 21... | 3.9 | .68 | .72 | 1.4 | 5.3 | 23 | .79 | 406 | .55 | 451 |
| JAN | | | | | | | | | | |
| 17... | 3.7 | 1.5 | .30 | 1.8 | 5.5 | 24 | .76 | 405 | .55 | 383 |
| FEB | | | | | | | | | | |
| 15... | 3.3 | 1.8 | .90 | 2.7 | 6.0 | 27 | .77 | 370 | .50 | 460 |
| MAR | | | | | | | | | | |
| 22... | 2.6 | 1.3 | .90 | 2.2 | 4.8 | 21 | .62 | 370 | .50 | 1030 |
| MAY | | | | | | | | | | |
| 04... | .86 | 1.3 | .90 | 2.2 | 3.1 | 14 | .45 | 273 | .37 | 590 |
| JUN | | | | | | | | | | |
| 01... | 1.2 | .00 | 1.4 | 1.4 | 2.6 | 12 | .59 | 317 | .43 | 471 |
| JUL | | | | | | | | | | |
| 05... | .82 | .29 | 1.2 | 1.5 | 2.3 | 10 | .48 | 291 | .40 | 385 |
| AUG | | | | | | | | | | |
| 05... | .59 | .03 | 1.7 | 1.7 | 2.3 | 10 | .45 | 232 | .32 | 261 |
| SEP | | | | | | | | | | |
| 07... | .00 | .00 | 1.9 | 1.9 | 1.9 | 8.4 | .17 | 284 | .39 | 576 |

IOWA RIVER BASIN
05464020 CEDAR RIVER NEAR GILBERTVILLE, IA--Continued
WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TOTAL RESI- DUE (MG/L) (00500) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00098) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) | TUR- BID- ITY (NTU) (00076) | DIS- SOLVED OXYGEN (MG/L) (00300) | PER- CENT SATUR- ATION (00301) | CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340) | CARBON DIOXIDE (CO2) (MG/L) (00405) | FECAL COLI- FORM .7UM-MF (COL./ 100 ML) (31625) |
|-------|--|---|--------------------------|--|---|---|--|---|---|---|
| OCT | | | | | | | | | | |
| 20... | 307 | 360 | 8.8 | 7.5 | 6.0 | 11.5 | 96 | 26 | .5 | 700 |
| NOV | | | | | | | | | | |
| 22... | 348 | 660 | 8.3 | 1.0 | 4.0 | 13.8 | 97 | 21 | 1.6 | 710 |
| DEC | | | | | | | | | | |
| 21... | 426 | 700 | 8.3 | .0 | 3.0 | 14.1 | 97 | 13 | 2.4 | 1280 |
| JAN | | | | | | | | | | |
| 17... | 426 | 700 | 8.1 | .0 | 2.0 | 14.0 | 96 | 11 | 4.0 | 85520 |
| FEB | | | | | | | | | | |
| 15... | 383 | 630 | -- | .5 | 2.0 | 12.0 | 83 | 20 | -- | 2650 |
| MAR | | | | | | | | | | |
| 22... | 389 | 540 | 8.4 | 3.5 | 5.0 | 11.8 | 89 | 3 | 1.4 | 4450 |
| MAY | | | | | | | | | | |
| 04... | 314 | 430 | 8.3 | 17.5 | 14 | -- | -- | 30 | 1.4 | 180 |
| JUN | | | | | | | | | | |
| 01... | 382 | 510 | 8.7 | 22.0 | 7.0 | -- | -- | 62 | .8 | -- |
| JUL | | | | | | | | | | |
| 05... | 314 | 430 | 8.7 | 30.6 | 5.8 | -- | -- | 56 | .6 | -- |
| AUG | | | | | | | | | | |
| 05... | 336 | 490 | 8.4 | 26.0 | 17 | -- | -- | 35 | 1.2 | -- |
| SEP | | | | | | | | | | |
| 07... | 332 | 500 | 8.8 | 23.0 | 17 | -- | -- | 41 | .5 | 19000 |

IOWA RIVER BASIN

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 1975 to current year.

GAGE.--Water-stage recorder and concrete control with V-notch sharp-crested weir. Datum of gage is 931.26 ft (283.848 m) above mean sea level.

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

AVERAGE DISCHARGE.--11 years, (1963-67, 1970-74, 76-77), 8.66 ft³/s (0.245 m³/s), 8.53 in/yr (217 mm/yr), 6,270 acre-feet/yr (7.73 hm³/s).

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.--Maximum discharge, 83 ft³/s (2.35 m³/s) Sept. 17, gage height 8.59 ft (2.618 m); no peak above base of 350 ft³/s (9.91 m³/s); no flow Dec. 4 to Feb. 23, July 4, 5, 13, 14.

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 | .06 | .11 | .01 | .00 | .00 | .18 | .32 | .05 | .01 | .01 | .31 | 3.6 |
| 2 | .06 | .08 | .01 | .00 | .00 | .35 | 1.1 | .03 | .02 | .01 | .27 | 1.2 |
| 3 | .06 | .07 | .01 | .00 | .00 | .54 | .66 | .04 | .04 | .01 | .15 | .41 |
| 4 | .10 | .06 | .00 | .00 | .00 | .70 | 1.4 | .17 | .04 | .00 | .03 | .32 |
| 5 | .12 | .06 | .00 | .00 | .00 | .85 | 1.1 | .24 | .07 | .00 | .81 | .26 |
| 6 | .07 | .09 | .00 | .00 | .00 | 1.0 | .64 | .08 | .04 | .04 | .30 | .16 |
| 7 | .07 | .06 | .00 | .00 | .00 | .78 | .53 | .05 | .04 | .17 | .13 | .10 |
| 8 | .08 | .05 | .00 | .00 | .00 | .62 | .41 | .03 | .10 | .06 | .61 | .08 |
| 9 | .08 | .09 | .00 | .00 | .00 | .30 | .34 | .02 | .09 | .01 | .58 | .06 |
| 10 | .08 | .07 | .00 | .00 | .00 | .18 | .28 | .02 | .02 | .01 | .31 | .03 |
| 11 | .09 | .04 | .00 | .00 | .00 | 1.5 | .20 | .02 | .02 | .01 | .12 | .02 |
| 12 | .07 | .03 | .00 | .00 | .00 | 1.8 | .17 | .01 | .03 | .01 | .04 | .02 |
| 13 | .06 | .06 | .00 | .00 | .00 | .40 | .19 | .01 | .03 | .00 | .04 | .02 |
| 14 | .06 | .05 | .00 | .00 | .00 | .21 | .23 | .02 | .02 | .00 | .04 | .01 |
| 15 | .05 | .06 | .00 | .00 | .00 | .23 | .21 | .02 | .01 | .05 | .11 | .01 |
| 16 | .06 | .06 | .00 | .00 | .00 | .22 | .15 | .02 | .02 | .05 | 5.9 | .01 |
| 17 | .06 | .08 | .00 | .00 | .00 | .23 | .11 | .01 | .13 | .01 | 3.5 | 10 |
| 18 | .08 | .10 | .00 | .00 | .00 | .43 | .13 | .01 | .16 | .03 | 1.3 | 50 |
| 19 | .12 | .10 | .00 | .00 | .00 | .15 | .67 | .01 | .02 | .01 | .38 | 35 |
| 20 | .10 | .10 | .00 | .00 | .00 | .27 | .67 | .01 | .01 | .01 | .22 | 6.0 |
| 21 | .09 | .10 | .00 | .00 | .00 | .29 | .64 | .37 | .01 | .02 | .19 | 1.9 |
| 22 | .08 | .07 | .00 | .00 | .00 | .19 | .27 | .14 | .03 | .01 | .11 | 1.2 |
| 23 | .10 | .04 | .00 | .00 | .00 | .21 | .14 | .02 | .02 | .01 | .07 | 1.0 |
| 24 | .15 | .06 | .00 | .00 | .01 | .18 | .09 | .01 | .01 | .01 | .04 | 2.2 |
| 25 | .11 | .12 | .00 | .00 | .02 | .21 | .08 | .01 | .02 | .01 | .03 | 1.7 |
| 26 | .09 | .11 | .00 | .00 | .03 | .25 | .07 | .01 | .01 | .01 | 1.3 | 1.2 |
| 27 | .08 | .04 | .00 | .00 | .05 | .47 | .04 | .01 | .01 | .01 | 1.1 | .88 |
| 28 | .07 | .04 | .00 | .00 | .08 | .56 | .10 | .02 | .01 | 1.1 | 2.4 | .65 |
| 29 | .09 | .01 | .00 | .00 | --- | 1.1 | .05 | .03 | .01 | .28 | 2.9 | .54 |
| 30 | .16 | .01 | .00 | .00 | --- | .48 | .05 | .02 | .01 | .02 | .68 | 1.2 |
| 31 | .13 | --- | .00 | .00 | --- | .30 | --- | .02 | --- | .01 | .46 | --- |
| TOTAL | 2.68 | 2.02 | .03 | .00 | .19 | 15.28 | 11.04 | 1.53 | 1.06 | 1.99 | 24.43 | 119.78 |
| MEAN | .086 | .067 | .001 | .000 | .007 | .49 | .37 | .049 | .035 | .064 | .79 | 3.99 |
| MAX | .16 | .12 | .01 | .00 | .08 | 1.8 | 1.4 | .37 | .16 | 1.1 | 5.9 | 50 |
| MIN | .05 | .01 | .00 | .00 | .00 | .15 | .04 | .01 | .01 | .00 | .03 | .01 |
| CFSM | .006 | .005 | .000 | .000 | .001 | .04 | .03 | .004 | .003 | .005 | .06 | .29 |
| IN. | .01 | .01 | .00 | .00 | .00 | .04 | .03 | .00 | .00 | .01 | .07 | .32 |
| AC-FT | 5.3 | 4.0 | .06 | .00 | .4 | 30 | 22 | 3.0 | 2.1 | 3.9 | 48 | 238 |

WTR YR 1977 TOTAL 180.03 MEAN .49 MAX 50 MIN .00 CFSM .04 IN .49 AC-FT 357

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 current year.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 948.16 ft (288.999 m) above mean sea level.

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

AVERAGE DISCHARGE.--11 years (1963-67, 1970-74, 76-77) 0.76 ft³/s (0.022 m³/s), 7.76 in/yr (197 mm/yr), 551 acre-feet/yr (0.679 hm³/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 307 ft³/s (8.69 m³/s) July 9, 1965, gage height, 9.24 ft (2.816 m); no flow 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 (*):

| Discharge | | | | Gage Height | | Discharge | | | | Gage Height | |
|-----------|------|----------------------|---------------------|-------------|-------|-----------|------|----------------------|---------------------|-------------|-------|
| Date | Time | (ft ³ /s) | (m ³ /s) | (ft) | (m) | Date | Time | (ft ³ /s) | (m ³ /s) | (ft) | (m) |
| Aug. 15 | 2310 | 114 | 3.23 | 6.72 | 2.048 | Sept. 17 | 1025 | *151 | 4.28 | *7.52 | 2.292 |

No flow for many days.

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 | .01 | .00 | .00 | .00 | .01 | .04 | .01 | .00 | .00 | .03 | 3.3 |
| 2 | .00 | .01 | .00 | .00 | .00 | .02 | .12 | .01 | .00 | .00 | .03 | .17 |
| 3 | .00 | .00 | .00 | .00 | .00 | .03 | .06 | .01 | .00 | .00 | .00 | .10 |
| 4 | .00 | .00 | .00 | .00 | .00 | .05 | .19 | .05 | .00 | .00 | .01 | .09 |
| 5 | .00 | .00 | .00 | .00 | .00 | .04 | .12 | .05 | .00 | .00 | .09 | .05 |
| 6 | .00 | .00 | .00 | .00 | .00 | .03 | .05 | .02 | .00 | .33 | .01 | .03 |
| 7 | .00 | .00 | .00 | .00 | .00 | .03 | .04 | .02 | .00 | .29 | .01 | .02 |
| 8 | .00 | .01 | .00 | .00 | .00 | .03 | .04 | .01 | .00 | .00 | 1.4 | .02 |
| 9 | .00 | .01 | .00 | .00 | .00 | .03 | .03 | .00 | .00 | .00 | .20 | .01 |
| 10 | .00 | .00 | .00 | .00 | .00 | .03 | .02 | .00 | .00 | .00 | .01 | .00 |
| 11 | .00 | .00 | .00 | .00 | .00 | .19 | .01 | .00 | .00 | .00 | .01 | .00 |
| 12 | .00 | .00 | .00 | .00 | .00 | .92 | .01 | .00 | .00 | .00 | .01 | .01 |
| 13 | .00 | .00 | .00 | .00 | .00 | .10 | .01 | .00 | .00 | .00 | .01 | .01 |
| 14 | .00 | .00 | .00 | .00 | .00 | .03 | .02 | .00 | .00 | .00 | .01 | .00 |
| 15 | .00 | .00 | .00 | .00 | .00 | .02 | .02 | .00 | .00 | .00 | 3.9 | .00 |
| 16 | .00 | .00 | .00 | .00 | .00 | .02 | .01 | .00 | .00 | .00 | 1.4 | .00 |
| 17 | .00 | .00 | .00 | .00 | .00 | .03 | .01 | .00 | .09 | .00 | .00 | 18 |
| 18 | .00 | .00 | .00 | .00 | .00 | .04 | .01 | .00 | .01 | .00 | .00 | 2.0 |
| 19 | .00 | .00 | .00 | .00 | .00 | .02 | .01 | .00 | .00 | .00 | .00 | 1.0 |
| 20 | .00 | .00 | .00 | .00 | .00 | .02 | .03 | .00 | .00 | .00 | .00 | .75 |
| 21 | .00 | .00 | .00 | .00 | .00 | .02 | .08 | .01 | .00 | .00 | .00 | .50 |
| 22 | .00 | .00 | .00 | .00 | .00 | .02 | .03 | .05 | .00 | .00 | .00 | .27 |
| 23 | .00 | .00 | .00 | .00 | .00 | .02 | .02 | .01 | .00 | .00 | .00 | .58 |
| 24 | .00 | .00 | .00 | .00 | .01 | .01 | .01 | .01 | .00 | .00 | .00 | 1.0 |
| 25 | .00 | .00 | .00 | .00 | .01 | .02 | .01 | .01 | .00 | .00 | .00 | .49 |
| 26 | .00 | .01 | .00 | .00 | .01 | .02 | .01 | .00 | .00 | .00 | .02 | .33 |
| 27 | .00 | .01 | .00 | .00 | .01 | .05 | .01 | .00 | .00 | .00 | .00 | .26 |
| 28 | .00 | .00 | .00 | .00 | .01 | .08 | .02 | .00 | .00 | .11 | .42 | .21 |
| 29 | .00 | .00 | .00 | .00 | --- | .14 | .01 | .00 | .00 | .04 | .05 | .19 |
| 30 | .01 | .00 | .00 | .00 | --- | .05 | .01 | .00 | .00 | .00 | .01 | .97 |
| 31 | .01 | --- | .00 | .00 | --- | .02 | --- | .00 | --- | .00 | 2.1 | --- |
| TOTAL | .02 | .05 | .00 | .00 | .05 | 2.14 | 1.06 | .27 | .10 | .77 | 9.73 | 30.36 |
| MEAN | .001 | .002 | .000 | .000 | .002 | .069 | .035 | .009 | .003 | .025 | .31 | 1.01 |
| MAX | .01 | .01 | .00 | .00 | .01 | .92 | .19 | .05 | .09 | .33 | 3.9 | .18 |
| MIN | .00 | .00 | .00 | .00 | .00 | .01 | .01 | .00 | .00 | .00 | .00 | .00 |
| CFSM | .001 | .002 | .000 | .000 | .002 | .05 | .03 | .007 | .002 | .02 | .23 | .76 |
| IN. | .00 | .00 | .00 | .00 | .00 | .06 | .03 | .01 | .00 | .02 | .27 | .85 |
| AC-FT | .04 | .1 | .00 | .00 | .10 | 4.2 | 2.1 | .5 | .2 | 1.5 | .19 | .60 |

WTR YR 1977 TOTAL 44.56 MEAN .12 MAX 18 MIN .00 CFSM .09 IN 1.25 AC-FT 88

IOWA RIVER BASIN

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.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 905.87 ft (276.109 m) above mean sea level.

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 (water years 1963-74, 76-77), 11.0 ft³/s (0.312 m³/s), 7.66 in/yr (195 mm/yr), 7,970 acre-ft/yr (9.872 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,040 ft³/s (29.5 m³/s) June 22, 1974, gage height, 12.91 ft (3.935 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.--Maximum discharge, 104 ft³/s (2.95 m³/s) Sept. 17, gage height, 8.83 ft (2.691 m), no peak above base of 400 ft³/s (11.3 m³/s); no flow for many days.

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 | .22 | .22 | .02 | .00 | .00 | .22 | 1.3 | .13 | .04 | .00 | .03 | 7.6 |
| 2 | .05 | .24 | .01 | .00 | .00 | .40 | 1.8 | .18 | .02 | .00 | .69 | 2.6 |
| 3 | .07 | .29 | .01 | .00 | .00 | .70 | 1.3 | .13 | .01 | .00 | .49 | 1.6 |
| 4 | .13 | .18 | .01 | .00 | .00 | 1.1 | 2.2 | .32 | .00 | .00 | .11 | 1.0 |
| 5 | .31 | .17 | .00 | .00 | .00 | 1.7 | 1.5 | .58 | .00 | .00 | .15 | .81 |
| 6 | .09 | .22 | .00 | .00 | .00 | 1.9 | 1.1 | .31 | .00 | .00 | 1.2 | .73 |
| 7 | .32 | .21 | .00 | .00 | .00 | 1.4 | .88 | .24 | .00 | 1.0 | .35 | .53 |
| 8 | .06 | .20 | .00 | .00 | .00 | 1.2 | .93 | .14 | .00 | .19 | 1.5 | .41 |
| 9 | .12 | .27 | .00 | .00 | .00 | .97 | .80 | .11 | .01 | .06 | 1.5 | .38 |
| 10 | .11 | .23 | .00 | .00 | .00 | 1.3 | .70 | .07 | .00 | .00 | 1.3 | .26 |
| 11 | .35 | .17 | .00 | .00 | .00 | 2.3 | .58 | .08 | .00 | .00 | .35 | .22 |
| 12 | .08 | .10 | .00 | .00 | .00 | 2.6 | .85 | .07 | .00 | .00 | .18 | .24 |
| 13 | .11 | .13 | .00 | .00 | .00 | .50 | 1.5 | .07 | .00 | .00 | .10 | .23 |
| 14 | .16 | .13 | .00 | .00 | .00 | .31 | .65 | .05 | .00 | .00 | .08 | .18 |
| 15 | .25 | .18 | .00 | .00 | .00 | .48 | .65 | .07 | .00 | .00 | .20 | .16 |
| 16 | .12 | .22 | .00 | .00 | .00 | .45 | .45 | .11 | .00 | .14 | 7.6 | .16 |
| 17 | .14 | .27 | .00 | .00 | .00 | .49 | .38 | .05 | .09 | .13 | 6.8 | 7.9 |
| 18 | .22 | .32 | .00 | .00 | .00 | .68 | .35 | .08 | .44 | .09 | 3.0 | 37 |
| 19 | .21 | .32 | .00 | .00 | .00 | .36 | .36 | .07 | .12 | .12 | 1.3 | 15 |
| 20 | .19 | .33 | .00 | .00 | .00 | .45 | 1.2 | .06 | .02 | .02 | .53 | 7.4 |
| 21 | .22 | .30 | .00 | .00 | .00 | .48 | 1.1 | .27 | .00 | .00 | .37 | 4.6 |
| 22 | .17 | .28 | .00 | .00 | .00 | .44 | .59 | .85 | .00 | .00 | .24 | 3.2 |
| 23 | .24 | .17 | .00 | .00 | .00 | .42 | .38 | .25 | .04 | .00 | .18 | 3.0 |
| 24 | .29 | .21 | .00 | .00 | .01 | .40 | .29 | .10 | .08 | .00 | .15 | 5.6 |
| 25 | .25 | .39 | .00 | .00 | .02 | .50 | .22 | .06 | .06 | .00 | .11 | 4.4 |
| 26 | .20 | .36 | .00 | .00 | .03 | .70 | .20 | .05 | .01 | .00 | .33 | 3.3 |
| 27 | .18 | .09 | .00 | .00 | .06 | 1.1 | .16 | .04 | .00 | .00 | 1.1 | 2.6 |
| 28 | .24 | .05 | .00 | .00 | .11 | 1.6 | .22 | .05 | .00 | .50 | 2.5 | 2.1 |
| 29 | .18 | .03 | .00 | .00 | --- | 1.9 | .21 | .05 | .00 | 4.7 | 2.2 | 1.9 |
| 30 | .26 | .02 | .00 | .00 | --- | .96 | .17 | .12 | .00 | .73 | 1.7 | 3.5 |
| 31 | .29 | --- | .00 | .00 | --- | .60 | --- | .12 | --- | .09 | .97 | --- |
| TOTAL | 5.83 | 6.30 | .05 | .00 | .23 | 28.61 | 23.02 | 4.88 | .94 | 7.77 | 37.31 | 118.61 |
| MEAN | .19 | .21 | .002 | .000 | .008 | .92 | .77 | .16 | .031 | .25 | 1.20 | 3.95 |
| MAX | .35 | .39 | .02 | .00 | .11 | 2.6 | 2.2 | .85 | .44 | 4.7 | 7.6 | 37 |
| MIN | .05 | .02 | .00 | .00 | .00 | .22 | .16 | .04 | .00 | .00 | .03 | .16 |
| CFSM | .01 | .01 | .000 | .000 | .000 | .05 | .04 | .008 | .002 | .01 | .06 | .20 |
| IN. | .01 | .01 | .00 | .00 | .00 | .05 | .04 | .01 | .00 | .01 | .07 | .23 |
| AC-FT | 12 | 12 | .10 | .00 | .5 | 57 | 46 | 9.7 | 1.9 | 15 | 74 | 235 |

CAL YR 1976 TOTAL 2183.57 MEAN 5.97 MAX 111 MIN .00 CFSM .31 IN 4.16 AC-FT 4330
WTR YR 1977 TOTAL 233.55 MEAN .64 MAX 37 MIN .00 CFSM .03 IN .45 AC-FT 463

05464450 CEDAR RIVER NEAR PALO, IA

WATER-QUALITY RECORDS

LOCATION.--Lat 42°03'09", long 91°46'16", in NE1/4 NE1/4 sec.33, T.84 N., R.8 W., Linn County, Hydrologic Unit 07080205, at bridge on county highway E36, 1.2 mi (1.9 km) upstream from Otter Creek, 1.5 mi (2.4 km) southeast of Palo, 2.4 mi (3.9 km) downstream from Bear Creek, and at mile 124.2 (199.8 km) above mouth of Iowa River.

DRAINAGE AREA.--6,380 mi² (16,524 km²).

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

REMARKS.--Water discharge estimated on basis of records at gaging station 11.5 mi (18.5 km) downstream at Cedar Rapids. No significant inflow between gaging station and sampling site.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TIME | INSTANTANEOUS DIS- CHARGE (CFS) (00061) | TOTAL CAL- CIUM (CA) (MG/L) (00916) | TOTAL MAG- NE- SIUM (MG) (MG/L) (00927) | TOTAL SODIUM (NA) (MG/L) (00929) | TOTAL PO- TAS- SIUM (K) (MG/L) (00937) | BICAR- BONATE (HCO3) (MG/L) (00440) | CAR- BONATE (CO3) (MG/L) (00445) | ALKA- LINITY AS CACO3 (MG/L) (00410) | DIS- SOLVED SULFATE (SO4) (MG/L) (00945) | DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940) |
|-----------|------|---|--|---|--|--|---|--|---|---|--|
| OCT 20... | 0945 | 568 | 43 | 19 | 18 | 2.2 | 169 | 0 | 139 | 54 | 29 |
| NOV 22... | 1020 | 622 | 64 | 22 | 21 | 2.6 | 246 | 0 | 202 | 48 | 30 |
| DEC 20... | 1300 | 478 | 77 | 25 | 24 | 2.5 | 288 | 0 | 236 | 58 | 41 |
| JAN 17... | 1015 | 326 | 90 | 26 | 24 | 3.3 | 321 | 0 | 263 | 51 | 39 |
| FEB 15... | 1000 | 406 | 65 | 19 | 33 | 3.0 | 248 | 0 | 203 | 55 | 57 |
| MAR 21... | 1300 | 1590 | 51 | 19 | 18 | 3.6 | 213 | 0 | 175 | 40 | 31 |
| MAY 04... | 1300 | 980 | 45 | 22 | 19 | 4.3 | 160 | 0 | 130 | 55 | 27 |
| 31... | 1200 | 696 | 36 | 21 | 22 | 3.7 | 150 | 1 | 120 | 51 | 29 |
| AUG 04... | 1430 | 550 | 44 | 19 | 21 | 3.1 | 180 | 0 | 150 | 47 | 32 |
| SEP 06... | 1230 | 1130 | 53 | 19 | 16 | 3.2 | 180 | 0 | 150 | 45 | 25 |

| DATE | TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630) | TOTAL AMMONIA NITRO- GEN (N) (MG/L) (00610) | TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605) | TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625) | TOTAL NITRO- GEN (N) (MG/L) (00600) | TOTAL NITRO- GEN (NO3) (MG/L) (71887) | TOTAL PHOS- PHORUS (P) (MG/L) (00665) | DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300) | DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303) | DIS- SOLVED SOLIDS (TONS PER DAY) (70302) |
|-----------|---|---|---|---|--|--|--|---|---|---|
| OCT 20... | .29 | .71 | 1.9 | 2.6 | 2.9 | 13 | .42 | 295 | .40 | 452 |
| NOV 22... | 2.0 | .30 | 1.5 | 1.8 | 3.8 | 17 | .46 | 344 | .47 | 578 |
| DEC 20... | 2.9 | .69 | .91 | 1.6 | 4.5 | 20 | .55 | 421 | .57 | 543 |
| JAN 17... | 3.6 | .00 | 2.7 | 2.7 | 6.3 | 28 | .71 | 437 | .59 | 385 |
| FEB 15... | 2.9 | 1.7 | .80 | 2.5 | 5.4 | 24 | .65 | 405 | .55 | 444 |
| MAR 21... | 1.8 | .94 | 1.3 | 2.2 | 4.0 | 18 | .47 | 344 | .47 | 1480 |
| MAY 04... | .03 | 1.0 | 1.6 | 2.6 | 2.6 | 12 | .42 | 245 | .33 | 648 |
| 31... | .03 | .34 | 1.6 | 1.9 | 1.9 | 8.5 | .36 | 254 | .35 | 477 |
| AUG 04... | .01 | .01 | 1.6 | 1.6 | 1.6 | 7.1 | .39 | 263 | .36 | 391 |
| SEP 06... | .77 | .39 | 1.1 | 1.5 | 2.3 | 10 | .22 | 264 | .36 | 805 |

IOWA RIVER BASIN
05464450 CEDAR RIVER NEAR PALO, IA--Continued
WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TOTAL RESI- DUE (MG/L) (00500) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) | TUR- BID- ITY (NTU) (00075) | DIS- SOLVED OXYGEN (MG/L) (00300) | PER- CENT SATUR- ATION (00301) | CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340) | CARBON DIOXIDE (CO2) (MG/L) (00405) | FECAL COLI- FORM .7UM-MF (COL./ 100 ML) (31625) |
|-------|--|---|--------------------------|--|---|---|--|---|---|---|
| OCT | | | | | | | | | | |
| 20... | 318 | 440 | 8.3 | 5.5 | 5.0 | 11.8 | 94 | 15 | 1.4 | 850 |
| NOV | | | | | | | | | | |
| 22... | 374 | 540 | 8.1 | 2.0 | 5.0 | 12.7 | 92 | 84 | 3.1 | 110 |
| DEC | | | | | | | | | | |
| 20... | 401 | 620 | 8.6 | .0 | 3.0 | 14.0 | 96 | 12 | 1.2 | 330 |
| JAN | | | | | | | | | | |
| 17... | 439 | 540 | 8.1 | .0 | 2.0 | 13.7 | 94 | 12 | 4.1 | 2600 |
| FEB | | | | | | | | | | |
| 15... | 421 | 700 | -- | .0 | 3.0 | 9.6 | 66 | 26 | -- | 280 |
| MAR | | | | | | | | | | |
| 21... | 366 | 500 | 8.0 | 4.5 | 8.0 | 11.2 | 86 | 30 | 3.4 | 970 |
| MAY | | | | | | | | | | |
| 04... | 324 | 478 | 9.1 | 17.0 | 26 | -- | -- | 39 | .2 | -- |
| 31... | 309 | 380 | 9.1 | 23.0 | 14 | -- | -- | 70 | .2 | -- |
| AUG | | | | | | | | | | |
| 04... | 321 | 500 | 8.8 | 26.5 | 18 | -- | -- | 49 | .5 | -- |
| SEP | | | | | | | | | | |
| 06... | 339 | 470 | 8.7 | 23.0 | 24 | -- | -- | 54 | .6 | 170 |

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) above mean sea level. 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.--75 years, 3,262 ft³/s (91.50 m³/s), 6.74 in/yr (171 mm/yr), 2,341,000 acre-ft/yr (2,886 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.--Maximum discharge, 14,600 ft³/s (413 m³/s) Sept. 18, gage height, 7.06 ft (2.152 m) at 2130 hours, no other peak above base of 12,000 ft³/s (340 m³/s); minimum daily, 283 ft³/s (8.01 m³/s) Feb. 3, 4.

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 | 571 | 671 | 486 | 423 | 284 | 710 | 1200 | 1150 | 640 | 519 | 613 | 1650 |
| 2 | 579 | 650 | 510 | 410 | 284 | 690 | 1270 | 1090 | 670 | 509 | 595 | 1590 |
| 3 | 565 | 777 | 534 | 396 | 283 | 752 | 1320 | 1020 | 659 | 517 | 559 | 1440 |
| 4 | 565 | 699 | 510 | 384 | 283 | 776 | 1400 | 1060 | 652 | 513 | 550 | 1360 |
| 5 | 605 | 650 | 494 | 371 | 284 | 800 | 1450 | 1130 | 649 | 541 | 595 | 1250 |
| 6 | 592 | 639 | 486 | 360 | 286 | 800 | 1590 | 1160 | 611 | 538 | 604 | 1130 |
| 7 | 582 | 615 | 486 | 350 | 290 | 848 | 1580 | 1190 | 565 | 537 | 730 | 1050 |
| 8 | 577 | 593 | 478 | 340 | 296 | 986 | 1610 | 1260 | 562 | 558 | 7790 | 1000 |
| 9 | 573 | 600 | 456 | 331 | 302 | 1300 | 1550 | 1330 | 564 | 599 | 4480 | 1000 |
| 10 | 554 | 592 | 470 | 326 | 311 | 1160 | 1430 | 1320 | 560 | 585 | 1770 | 916 |
| 11 | 548 | 586 | 470 | 318 | 321 | 1180 | 1320 | 1260 | 551 | 566 | 1180 | 888 |
| 12 | 545 | 533 | 463 | 313 | 334 | 1360 | 1230 | 1140 | 559 | 514 | 930 | 848 |
| 13 | 548 | 487 | 456 | 310 | 352 | 1650 | 1180 | 996 | 543 | 469 | 788 | 800 |
| 14 | 609 | 468 | 463 | 306 | 380 | 1790 | 1150 | 960 | 519 | 449 | 720 | 812 |
| 15 | 611 | 574 | 449 | 303 | 407 | 1840 | 1100 | 912 | 500 | 437 | 848 | 848 |
| 16 | 541 | 633 | 456 | 300 | 400 | 1860 | 1060 | 880 | 510 | 432 | 2980 | 812 |
| 17 | 542 | 704 | 470 | 298 | 414 | 1750 | 1030 | 834 | 535 | 438 | 1360 | 888 |
| 18 | 539 | 625 | 486 | 296 | 421 | 1790 | 1010 | 821 | 564 | 516 | 1160 | 9260 |
| 19 | 564 | 517 | 486 | 294 | 421 | 1590 | 1060 | 794 | 579 | 716 | 1230 | 12900 |
| 20 | 568 | 570 | 486 | 293 | 449 | 1440 | 1040 | 864 | 582 | 869 | 1210 | 8210 |
| 21 | 589 | 618 | 504 | 292 | 463 | 1340 | 1190 | 924 | 537 | 752 | 1250 | 5170 |
| 22 | 574 | 609 | 502 | 291 | 502 | 1250 | 1200 | 796 | 519 | 640 | 1160 | 3730 |
| 23 | 575 | 478 | 499 | 290 | 550 | 1170 | 1200 | 774 | 505 | 586 | 1020 | 3100 |
| 24 | 594 | 486 | 494 | 289 | 670 | 1130 | 1230 | 782 | 507 | 1030 | 930 | 3460 |
| 25 | 614 | 730 | 489 | 288 | 680 | 1080 | 1410 | 778 | 499 | 800 | 888 | 5620 |
| 26 | 634 | 631 | 482 | 287 | 720 | 1030 | 1490 | 777 | 504 | 568 | 944 | 4480 |
| 27 | 633 | 595 | 475 | 286 | 700 | 1140 | 1490 | 743 | 504 | 502 | 930 | 3760 |
| 28 | 634 | 428 | 465 | 286 | 690 | 1180 | 1400 | 774 | 485 | 486 | 1210 | 3180 |
| 29 | 635 | 330 | 456 | 285 | --- | 1350 | 1230 | 769 | 478 | 478 | 1840 | 2750 |
| 30 | 664 | 449 | 445 | 285 | --- | 1350 | 1220 | 774 | 580 | 510 | 1670 | 2630 |
| 31 | 662 | --- | 434 | 284 | --- | 1210 | --- | 696 | --- | 577 | 1630 | --- |
| TOTAL | 18186 | 17537 | 14840 | 9885 | 11777 | 38302 | 38640 | 29778 | 16692 | 17751 | 44164 | 86532 |
| MEAN | 587 | 585 | 479 | 319 | 421 | 1236 | 1288 | 961 | 556 | 573 | 1425 | 2884 |
| MAX | 664 | 777 | 534 | 423 | 720 | 1860 | 1610 | 1330 | 670 | 1030 | 7790 | 12900 |
| MIN | 539 | 330 | 434 | 284 | 283 | 690 | 1010 | 696 | 478 | 432 | 550 | 800 |
| CFSM | .09 | .09 | .07 | .05 | .07 | .19 | .20 | .15 | .09 | .09 | .22 | .44 |
| IN. | .10 | .10 | .08 | .06 | .07 | .22 | .17 | .17 | .10 | .10 | .25 | .49 |
| AC-FT | 36070 | 34780 | 29440 | 19610 | 23360 | 75970 | 76640 | 59060 | 33110 | 35210 | 87600 | 171600 |
| CAL YR 1976 | TOTAL | 761881 | MEAN | 2082 | MAX | 15600 | MIN | 330 | CFSM | .32 | IN | 4.35 |
| WTR YR 1977 | TOTAL | 344084 | MEAN | 943 | MAX | 12900 | MIN | 283 | CFSM | .15 | IN | 1.97 |
| | | | | | | | | | AC-FT | | 1511000 | 682500 |

IOWA RIVER BASIN

05464640 PRAIRIE CREEK AT FAIRFAX, IA

LOCATION.--Lat 41°55'22", Long 91°47'02", 1n 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) above mean sea level.

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

AVERAGE DISCHARGE.--11 years, 127 ft³/s (3.597 m³/s), 9.69 in/yr (246 mm/yr), 92,010 acre-ft/yr (113 hm³/yr); median of yearly mean discharges, 110 ft³/s (3.12 m³/s), 8.4 in/yr (213 mm/yr), 79,700 ac-ft/yr (98.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,160 ft³/s (174 m³/s) May 16, 1974, gage height, 13.66 ft (4.164 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, 2,220 ft³/s (62.9 m³/s) Aug. 17, gage height, 8.89 ft (2.746 m) at 0200 hours, no other peak above base of 1,200 ft³/s (34.0 m³/s); no flow July 10-15, 30, Aug. 1, 3.

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 | 5.1 | 7.6 | 2.2 | .49 | .11 | 149 | 12 | 6.5 | 2.7 | 4.4 | .00 | 91 |
| 2 | 5.2 | 6.2 | 2.1 | .46 | .11 | 134 | 12 | 6.2 | 2.7 | 3.3 | .17 | 73 |
| 3 | 6.0 | 5.3 | 2.1 | .43 | .11 | 147 | 11 | 5.9 | 2.3 | 2.1 | .00 | 61 |
| 4 | 6.0 | 5.3 | 2.0 | .41 | .11 | 149 | 11 | 7.1 | 2.9 | 1.9 | .17 | 54 |
| 5 | 6.0 | 5.1 | 1.8 | .39 | .11 | 122 | 12 | 11 | 2.5 | 1.9 | 2.3 | 49 |
| 6 | 6.0 | 5.0 | 1.8 | .37 | .12 | 92 | 12 | 8.6 | 2.5 | 1.0 | 1.9 | 43 |
| 7 | 5.3 | 5.0 | 1.7 | .36 | .13 | 80 | 11 | 7.4 | 3.3 | .85 | 2.5 | 38 |
| 8 | 4.4 | 4.8 | 1.6 | .35 | .14 | 61 | 10 | 5.5 | 3.1 | .51 | .51 | .35 |
| 9 | 4.0 | 4.8 | 1.6 | .34 | .17 | 28 | 9.3 | 4.6 | 2.5 | .17 | 275 | 32 |
| 10 | 4.2 | 4.6 | 1.6 | .32 | .20 | 22 | 8.9 | 3.9 | 2.3 | .00 | 104 | 29 |
| 11 | 3.8 | 4.4 | 1.7 | .31 | .30 | 19 | 8.3 | 3.7 | 3.1 | .00 | 46 | 26 |
| 12 | 4.0 | 4.2 | 1.6 | .30 | .55 | 34 | 7.7 | 3.5 | 2.7 | .00 | 23 | 26 |
| 13 | 4.0 | 4.2 | 1.6 | .28 | 1.0 | 29 | 7.7 | 3.1 | 2.3 | .00 | 16 | 26 |
| 14 | 4.6 | 4.2 | 1.7 | .26 | 1.7 | 18 | 7.7 | 3.5 | 2.1 | .00 | 12 | 25 |
| 15 | 4.0 | 4.5 | 1.5 | .23 | 2.8 | 15 | 8.3 | 4.6 | 1.9 | .00 | 31 | 23 |
| 16 | 3.8 | 4.8 | 1.5 | .19 | 5.0 | 13 | 8.3 | 5.0 | 1.9 | .34 | 1860 | 23 |
| 17 | 3.3 | 5.0 | 1.5 | .16 | 15 | 12 | 8.0 | 4.4 | 1.9 | .51 | 1170 | 26 |
| 18 | 4.6 | 5.2 | 1.7 | .14 | 25 | 15 | 7.1 | 4.1 | 2.1 | 1.4 | 291 | 877 |
| 19 | 5.5 | 5.5 | 1.6 | .12 | 50 | 15 | 7.4 | 3.7 | 1.5 | 1.2 | 198 | 629 |
| 20 | 5.5 | 5.3 | 1.8 | .11 | 110 | 12 | 8.9 | 4.6 | 1.4 | 1.9 | 151 | 291 |
| 21 | 5.3 | 5.1 | 1.9 | .11 | 221 | 13 | 13 | 5.5 | 1.7 | 1.4 | 130 | 189 |
| 22 | 5.1 | 4.9 | 1.9 | .11 | 228 | 15 | 12 | 5.2 | 1.5 | .85 | 104 | 143 |
| 23 | 5.5 | 4.5 | 1.9 | .11 | 288 | 12 | 10 | 5.0 | 1.2 | .17 | 83 | 118 |
| 24 | 5.5 | 4.0 | 1.8 | .11 | 346 | 11 | 8.9 | 4.1 | 1.2 | 2.5 | 73 | 140 |
| 25 | 5.5 | 4.8 | 1.7 | .11 | 301 | 9.7 | 8.6 | 3.7 | 1.0 | 1.2 | 70 | 196 |
| 26 | 5.1 | 6.6 | 1.7 | .11 | 228 | 9.3 | 7.7 | 3.5 | 1.7 | .68 | 70 | 138 |
| 27 | 5.1 | 5.0 | 1.6 | .11 | 189 | 12 | 7.4 | 2.9 | .85 | .34 | 65 | 104 |
| 28 | 4.8 | 2.9 | 1.8 | .11 | 167 | 16 | 6.8 | 2.9 | .51 | .85 | 165 | 83 |
| 29 | 5.1 | 2.4 | 1.3 | .11 | --- | 22 | 6.5 | 2.7 | .51 | .34 | 309 | 78 |
| 30 | 5.8 | 2.7 | .70 | .11 | --- | 19 | 6.5 | 3.5 | 3.3 | .00 | 167 | 78 |
| 31 | 6.9 | --- | .54 | .11 | --- | 14 | --- | 3.1 | --- | .17 | 116 | --- |
| TOTAL | 155.0 | 143.4 | 51.54 | 7.23 | 2180.66 | 1319.0 | 276.0 | 149.0 | 61.17 | 29.98 | 5587.04 | 3744 |
| MEAN | 5.00 | 4.78 | 1.65 | .23 | 77.9 | 42.5 | 9.20 | 4.81 | 2.04 | .97 | 180 | 125 |
| MAX | 6.9 | 7.6 | 2.2 | .49 | 346 | 149 | 13 | 11 | 3.3 | 4.4 | 1860 | 877 |
| MIN | 3.3 | 2.2 | .54 | .11 | .11 | 9.3 | 6.5 | 2.7 | .51 | .00 | .00 | 23 |
| CFSM | .03 | .03 | .009 | .001 | .44 | .24 | .05 | .03 | .01 | .005 | 1.01 | .70 |
| IN. | .03 | .03 | .01 | .00 | .46 | .28 | .06 | .03 | .01 | .01 | 1.17 | .78 |
| AC-FT | 307 | 284 | 102 | 14 | 4330 | 2620 | 547 | 296 | 121 | 59 | 11080 | 7430 |

CAL YR 1976 TOTAL 29713.04 MEAN 81.2 MAX 1720 MIN .54 CFSM .46 IN 6.21 AC-FT 58940
 YTR YR 1977 TOTAL 13704.02 MEAN 37.5 MAX 1860 MIN .00 CFSM .21 IN 2.86 AC-FT 27180

IOWA RIVER BASIN

101

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 1976 TO SEPTEMBER 1977

| DATE | TIME | INSTANTANEOUS DIS- CHARGE (CFS) (00061) | TOTAL CAL- CIUM (CA) (MG/L) (00916) | TOTAL MAG- NE- SIUM (MG) (MG/L) (00927) | TOTAL SODIUM (NA) (MG/L) (00929) | TOTAL PO- TAS- SIUM (K) (MG/L) (00937) | BICAR- BONATE (HCO3) (MG/L) (00440) | CAR- BONATE (CO3) (MG/L) (00445) | ALKA- LINITY AS CACO3 (MG/L) (00410) | DIS- SOLVED SULFATE (SO4) (MG/L) (00945) | DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940) |
|-----------|------|---|--|---|--|--|---|--|---|---|--|
| OCT 20... | 0835 | 568 | 46 | 20 | 28 | 4.4 | 201 | 0 | 165 | 51 | 51 |
| NOV 22... | 0900 | 622 | 66 | 23 | 31 | 5.2 | 245 | 0 | 201 | 52 | 53 |
| DEC 20... | 1415 | 478 | 82 | 26 | 44 | 3.8 | 315 | 0 | 258 | 61 | 65 |
| JAN 17... | 0845 | 326 | 93 | 26 | 46 | 5.0 | 360 | 0 | 295 | 67 | 87 |
| FEB 15... | 0820 | 406 | 73 | 21 | 43 | 4.2 | 298 | 0 | 244 | 60 | 82 |
| MAR 21... | 1110 | 1590 | 54 | 17 | 24 | 4.4 | 220 | 0 | 180 | 44 | 41 |
| MAY 04... | 1600 | 980 | 34 | 21 | 27 | 4.9 | 120 | 0 | 98 | 57 | 41 |
| 31... | 1045 | 696 | 36 | 20 | 24 | 3.8 | 140 | 19 | 150 | 54 | 29 |
| AUG 04... | 1230 | 550 | 45 | 20 | 28 | 3.6 | 190 | 0 | 160 | 46 | 39 |
| SEP 06... | 0930 | 1130 | 54 | 18 | 20 | 3.7 | 180 | 0 | 150 | 46 | 32 |

| DATE | TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630) | TOTAL AMMONIA NITRO- GEN (N) (MG/L) (00610) | TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605) | TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625) | TOTAL NITRO- GEN (N) (MG/L) (00600) | TOTAL NITRO- GEN (NO3) (MG/L) (71887) | TOTAL PHOS- PHORUS (P) (MG/L) (00665) | DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300) | DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303) | DIS- SOLVED SOLIDS (TONS PER DAV) (70302) |
|-----------|---|---|---|---|--|--|--|---|---|---|
| OCT 20... | .41 | 3.9 | 7.1 | 11 | 11 | 51 | .53 | 339 | .46 | 520 |
| NOV 22... | 1.2 | 3.6 | 6.4 | 10 | 11 | 50 | .63 | 388 | .53 | 652 |
| DEC 20... | 2.3 | 5.2 | 4.8 | 10 | 12 | 54 | .94 | 439 | .60 | 567 |
| JAN 17... | 2.2 | 11 | 8.0 | 19 | 21 | 94 | 1.2 | 532 | .72 | 468 |
| FEB 15... | 1.7 | 11 | 1.0 | 12 | 14 | 61 | 1.2 | 467 | .64 | 512 |
| MAR 21... | 1.6 | 3.9 | 2.0 | 5.9 | 7.5 | 33 | .62 | 365 | .50 | 1570 |
| MAY 04... | 1.6 | 2.4 | 1.6 | 4.0 | 5.6 | 25 | .69 | 267 | .36 | 706 |
| 31... | .58 | .01 | 1.6 | 1.6 | 2.2 | 9.7 | .46 | 264 | .36 | 496 |
| AUG 04... | .18 | 1.4 | 1.2 | 2.6 | 2.8 | 12 | .66 | 282 | .38 | 419 |
| SEP 06... | 2.1 | .01 | 1.3 | 1.3 | 3.4 | 15 | .34 | 289 | .39 | 882 |

IOWA RIVER BASIN
05454750 CEDAR RIVER NEAR BERTRAM, IA--Continued
WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TOTAL RESI- DUE (MG/L) (00500) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) | TUR- BID- ITY (NTU) (00075) | DIS- SOLVED OXYGEN (MG/L) (00300) | PER- CENT SATUR- ATION (00301) | CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340) | CARBON DIOXIDE (CO2) (MG/L) (00405) | FECAL COLI- FORM .7UM-MF (COL./ 100 ML) (31625) |
|-----------|--|---|--------------------------|--|---|---|--|---|---|---|
| OCT 20... | 376 | 580 | 8.4 | 8.0 | 4.0 | 10.0 | 84 | 23 | 1.3 | 110000 |
| NOV 22... | 441 | 640 | 8.2 | 3.0 | 7.0 | 12.6 | 93 | 36 | 2.5 | 36000 |
| DEC 20... | 605 | 850 | 8.4 | 2.0 | 5.0 | 12.8 | 93 | 29 | 2.0 | 4000 |
| JAN 17... | 636 | 940 | 7.9 | .0 | 3.0 | 13.8 | 95 | 15 | 7.3 | 32000 |
| FEB 15... | 493 | 800 | -- | 2.0 | 5.0 | 5.9 | 43 | 32 | -- | 120000 |
| MAR 21... | 376 | 510 | 7.8 | 5.5 | 6.0 | 12.0 | 95 | 9 | 5.6 | 8000 |
| MAY 04... | 326 | 460 | 8.4 | 17.5 | 19 | -- | -- | 44 | .8 | 72000 |
| 31... | 323 | 420 | 8.6 | 24.5 | 24 | -- | -- | 60 | .7 | -- |
| AUG 04... | 387 | 500 | 8.2 | 27.0 | 14 | 5.0 | 61 | 29 | 1.9 | -- |
| SEP 06... | 357 | 500 | 8.3 | 23.0 | 23 | 8.1 | 96 | 46 | 1.4 | 14000 |

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 628, 3.4 mi (5.5 km) northeast of Conesville, 5.2 mi (8.4 km) downstream from Wapsinoc 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.--7,786 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) above mean sea level. 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, 1953, 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 poor. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

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

AVERAGE DISCHARGE.--38 years, 4,333 ft³/s (122.7 m³/s), 7.56 in/yr (192 mm/yr), 3,139,000 acre-ft/yr (3,870 hm³/yr); median of yearly mean discharges, 3,850 ft³/s (109 m³/s), 6.7 in/yr (170 mm/yr), 2,789,000 acre-ft/yr (3,440 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 (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) |
|---------|------|---|-------------------------|----------|------|---|-------------------------|
| Aug. 9 | 1330 | 12,900 365 | 11.26 3.432 | Sept. 20 | 1430 | *17,200 487 | *12.47 3.801 |
| Aug. 17 | 1000 | 12,700 360 | 11.22 3.420 | | | | |

Minimum daily discharge, 320 ft³/s (9.06 m³/s) Jan. 15.

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 | 688 | 779 | 640 | 490 | 360 | 740 | 1750 | 1450 | 859 | 5850 | 820 | 2220 |
| 2 | 685 | 779 | 540 | 460 | 360 | 760 | 1610 | 1450 | 823 | 2660 | 818 | 2140 |
| 3 | 695 | 774 | 660 | 450 | 360 | 920 | 1600 | 1410 | 783 | 1250 | 820 | 2090 |
| 4 | 690 | 774 | 700 | 440 | 360 | 990 | 1630 | 1380 | 781 | 984 | 825 | 2030 |
| 5 | 752 | 802 | 660 | 430 | 360 | 1030 | 1700 | 1390 | 787 | 888 | 828 | 1940 |
| 6 | 808 | 826 | 660 | 420 | 370 | 1050 | 1810 | 1460 | 787 | 831 | 832 | 1840 |
| 7 | 808 | 790 | 660 | 410 | 370 | 1130 | 1820 | 1500 | 773 | 796 | 1150 | 1740 |
| 8 | 752 | 768 | 650 | 390 | 370 | 1150 | 1860 | 1410 | 767 | 783 | 2620 | 1660 |
| 9 | 725 | 746 | 560 | 380 | 360 | 1160 | 1840 | 1350 | 740 | 769 | 12000 | 1590 |
| 10 | 720 | 735 | 560 | 370 | 360 | 1200 | 1810 | 1390 | 730 | 748 | 8850 | 1570 |
| 11 | 710 | 730 | 560 | 350 | 380 | 1230 | 1760 | 1380 | 792 | 742 | 4590 | 1540 |
| 12 | 695 | 725 | 570 | 340 | 410 | 1630 | 1700 | 1390 | 991 | 747 | 3180 | 1490 |
| 13 | 690 | 720 | 580 | 330 | 450 | 1810 | 1630 | 1350 | 840 | 746 | 2410 | 1480 |
| 14 | 695 | 695 | 580 | 330 | 460 | 1840 | 1580 | 1240 | 747 | 721 | 2190 | 1460 |
| 15 | 690 | 690 | 570 | 320 | 450 | 1920 | 1520 | 1170 | 719 | 678 | 1940 | 1400 |
| 16 | 715 | 666 | 560 | 330 | 470 | 2000 | 1490 | 1120 | 698 | 673 | 4660 | 1380 |
| 17 | 752 | 662 | 550 | 330 | 480 | 2010 | 1440 | 1130 | 688 | 674 | 11600 | 1370 |
| 18 | 705 | 725 | 550 | 330 | 500 | 2000 | 1370 | 1120 | 744 | 679 | 6240 | 3880 |
| 19 | 690 | 762 | 560 | 340 | 520 | 2000 | 1350 | 1050 | 742 | 973 | 3870 | 13800 |
| 20 | 705 | 768 | 550 | 330 | 560 | 1970 | 1310 | 1020 | 714 | 1030 | 2850 | 16800 |
| 21 | 720 | 735 | 500 | 330 | 600 | 1890 | 1430 | 1090 | 702 | 959 | 2560 | 12900 |
| 22 | 715 | 696 | 470 | 330 | 640 | 1700 | 1590 | 1210 | 703 | 1020 | 2340 | 7860 |
| 23 | 715 | 701 | 530 | 330 | 660 | 1660 | 1610 | 1230 | 678 | 980 | 2160 | 5900 |
| 24 | 720 | 736 | 560 | 340 | 720 | 1600 | 1540 | 1260 | 677 | 899 | 1990 | 5310 |
| 25 | 720 | 797 | 560 | 350 | 760 | 1490 | 1550 | 1260 | 688 | 2220 | 1810 | 5350 |
| 26 | 720 | 820 | 560 | 340 | 700 | 1400 | 1560 | 1270 | 694 | 2630 | 1760 | 6200 |
| 27 | 725 | 700 | 570 | 340 | 750 | 1360 | 1610 | 1210 | 668 | 1490 | 1720 | 6040 |
| 28 | 740 | 600 | 560 | 340 | 760 | 1440 | 1670 | 1040 | 652 | 1080 | 1660 | 5130 |
| 29 | 746 | 440 | 540 | 340 | --- | 1790 | 1630 | 923 | 644 | 930 | 1740 | 4520 |
| 30 | 752 | 640 | 510 | 350 | --- | 2090 | 1490 | 904 | 1430 | 859 | 1980 | 4110 |
| 31 | 774 | --- | 500 | 350 | --- | 1970 | --- | 850 | --- | 836 | 2340 | --- |
| TOTAL | 22414 | 21791 | 17880 | 11310 | 13900 | 46930 | 48260 | 38407 | 23041 | 37125 | 95153 | 126740 |
| MEAN | 723 | 726 | 577 | 365 | 496 | 1514 | 1609 | 1239 | 768 | 1198 | 3069 | 4225 |
| MAX | 808 | 826 | 700 | 490 | 760 | 2090 | 1860 | 1500 | 1430 | 5850 | 12000 | 16800 |
| MIN | 685 | 440 | 470 | 320 | 360 | 740 | 1310 | 850 | 644 | 673 | 818 | 1370 |
| CFSM | .09 | .09 | .07 | .05 | .06 | .19 | .21 | .16 | .10 | .15 | .39 | .54 |
| IN. | .11 | .10 | .09 | .05 | .07 | .22 | .23 | .18 | .11 | .18 | .45 | .61 |
| AC-FT | 44460 | 43200 | 35460 | 22430 | 27570 | 93090 | 95720 | 76180 | 45700 | 73640 | 188700 | 251400 |

| CAL YR 1976 | TOTAL | 950331 | MEAN | 2597 | MAX | 20500 | MIN | 440 | CFSM | .33 | IN | 4.54 | AC-FT | 1885000 |
|-------------|-------|--------|------|------|-----|-------|-----|-----|------|-----|----|------|-------|---------|
| WTR YR 1977 | TOTAL | 502941 | MEAN | 1378 | MAX | 16800 | MIN | 320 | CFSM | .18 | IN | 2.40 | AC-FT | 997600 |

IOWA RIVER BASIN

05465500 IOWA RIVER AT WAPELLO, IA

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.

GAGE.--Water-stage recorder. Datum of gage is 538.98 ft (164.281 m) above mean sea level, adjustment of 1912; 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 poor. 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.--Eight discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--63 years, 6,599 ft³/s (186.9 m³/s), 7.17 in/yr (182 mm/yr), 4,781,000 acre-ft/yr (5,890 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 94,000 ft³/s (2,560 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, 21,100 ft³/s (598 m³/s) Sept. 20, gage height, 18.23 ft (5.557 m); minimum daily, 460 ft³/s (13.0 m³/s) Jan. 21, 22.

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 | 930 | 1050 | 780 | 650 | 500 | 1380 | 3700 | 2020 | 1110 | 4710 | 940 | 6520 |
| 2 | 910 | 1060 | 800 | 640 | 500 | 1300 | 3270 | 1910 | 1100 | 4840 | 940 | 6350 |
| 3 | 910 | 1020 | 840 | 620 | 510 | 1400 | 3060 | 1880 | 1050 | 2380 | 940 | 7120 |
| 4 | 910 | 1030 | 890 | 610 | 510 | 1530 | 3050 | 1870 | 1000 | 1430 | 984 | 6580 |
| 5 | 1070 | 1050 | 890 | 600 | 520 | 1510 | 3100 | 1930 | 1010 | 1130 | 966 | 5470 |
| 6 | 1200 | 1130 | 880 | 590 | 520 | 1420 | 3300 | 2030 | 1020 | 987 | 973 | 4950 |
| 7 | 1210 | 1060 | 860 | 580 | 530 | 1350 | 3240 | 2220 | 1040 | 932 | 2650 | 4310 |
| 8 | 1110 | 1030 | 830 | 570 | 540 | 1360 | 3170 | 2070 | 1010 | 934 | 9230 | 3920 |
| 9 | 1030 | 988 | 780 | 560 | 540 | 1390 | 3110 | 2000 | 976 | 930 | 18800 | 3540 |
| 10 | 973 | 951 | 730 | 560 | 540 | 1540 | 2940 | 2010 | 960 | 931 | 14600 | 3240 |
| 11 | 952 | 951 | 750 | 560 | 540 | 1770 | 2830 | 1950 | 1100 | 930 | 8240 | 3120 |
| 12 | 930 | 940 | 740 | 560 | 560 | 2290 | 2700 | 1970 | 1340 | 930 | 5390 | 2940 |
| 13 | 900 | 940 | 740 | 560 | 580 | 2650 | 2550 | 1900 | 1390 | 930 | 3940 | 3010 |
| 14 | 900 | 910 | 740 | 560 | 590 | 2810 | 2450 | 1830 | 1110 | 929 | 3020 | 3150 |
| 15 | 870 | 920 | 700 | 550 | 630 | 2520 | 2350 | 1710 | 973 | 936 | 2800 | 3090 |
| 16 | 870 | 850 | 710 | 540 | 560 | 2480 | 2260 | 1610 | 922 | 1070 | 2960 | 2830 |
| 17 | 940 | 800 | 730 | 520 | 640 | 2490 | 2130 | 1790 | 909 | 1080 | 12800 | 2700 |
| 18 | 951 | 920 | 730 | 500 | 540 | 2430 | 1850 | 1790 | 911 | 1890 | 14100 | 3090 |
| 19 | 920 | 1020 | 740 | 480 | 620 | 2450 | 1770 | 1530 | 950 | 2030 | 9630 | 13800 |
| 20 | 930 | 1060 | 780 | 470 | 610 | 2560 | 1780 | 1390 | 937 | 1700 | 7490 | 20600 |
| 21 | 940 | 962 | 870 | 460 | 600 | 2640 | 1940 | 1600 | 967 | 1410 | 7160 | 20400 |
| 22 | 940 | 890 | 790 | 450 | 620 | 2520 | 2280 | 1650 | 933 | 1350 | 6800 | 15000 |
| 23 | 930 | 900 | 610 | 470 | 650 | 2510 | 2350 | 2070 | 919 | 1360 | 6500 | 11600 |
| 24 | 951 | 951 | 580 | 480 | 810 | 2470 | 2180 | 1610 | 906 | 1180 | 6310 | 10500 |
| 25 | 930 | 1030 | 730 | 480 | 1000 | 2410 | 2070 | 1360 | 910 | 1240 | 5910 | 11400 |
| 26 | 930 | 890 | 700 | 470 | 1220 | 2300 | 2050 | 1320 | 910 | 1540 | 5470 | 10400 |
| 27 | 940 | 920 | 710 | 470 | 1170 | 2510 | 2090 | 1250 | 910 | 1330 | 6460 | 10500 |
| 28 | 962 | 820 | 740 | 480 | 1150 | 2780 | 2170 | 1200 | 914 | 1620 | 7000 | 10200 |
| 29 | 995 | 600 | 750 | 480 | --- | 3340 | 2200 | 1170 | 923 | 1170 | 5910 | 9210 |
| 30 | 1020 | 610 | 690 | 490 | --- | 4090 | 2130 | 1130 | 1560 | 1010 | 5780 | 8270 |
| 31 | 1040 | --- | 670 | 490 | --- | 4140 | --- | 1190 | --- | 1000 | 6330 | --- |
| TOTAL | 30004 | 28273 | 23580 | 15510 | 18510 | 70450 | 76070 | 52970 | 30670 | 45839 | 191023 | 227820 |
| MEAN | 958 | 942 | 761 | 533 | 661 | 2273 | 2536 | 1709 | 1022 | 1479 | 6162 | 7594 |
| MAX | 1210 | 1130 | 890 | 650 | 1220 | 4140 | 3700 | 2220 | 1560 | 4840 | 18800 | 20600 |
| MIN | 870 | 600 | 610 | 460 | 500 | 1300 | 1770 | 1130 | 906 | 929 | 940 | 2700 |
| AC-FT | 59510 | 56080 | 45770 | 32750 | 35710 | 139700 | 150900 | 105100 | 60830 | 90920 | 378900 | 451900 |

| | | | | | | | | | | |
|-------------|-------|---------|------|------|-----|-------|-----|-----|-------|---------|
| CAL YR 1975 | TOTAL | 1675669 | MEAN | 4581 | MAX | 36200 | MIN | 600 | AC-FT | 3326000 |
| WTR YR 1977 | TOTAL | 811719 | MEAN | 2224 | MAX | 20600 | MIN | 460 | AC-FT | 1610000 |

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), WRD 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) above mean sea level (Iowa Highway Commission benchmark). Prior to Aug. 25, 1921, nonrecording gage at same site and datum.

REMARKS.--Records fair except those for winter period and periods of no gage-height record, Oct. 1-19, Oct. 21 to Nov. 28, which are poor. Several diversions for irrigation above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--52 years, 149 ft³/s (4.220 m³/s), 6.42 in/yr (163 mm/yr), 108,000 acre-ft/yr (133 hm³/yr); median of yearly mean discharges, 110 ft³/s (3.12 m³/s) 4.7 in/yr (119 mm/yr), 79,700 acre-ft/yr (98.3 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.

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 | .07 | 2.1 | .00 | .00 | .00 | 13 | 28 | 7.8 | .00 | .02 | .00 | 594 |
| 2 | .22 | 1.8 | .00 | .00 | .00 | 12 | 38 | 8.4 | .00 | .03 | .00 | 376 |
| 3 | .60 | 2.7 | .00 | .00 | .00 | 12 | 34 | 7.7 | .00 | .03 | .00 | 276 |
| 4 | 1.6 | 3.1 | .00 | .00 | .00 | 11 | 35 | 8.0 | .00 | .04 | .00 | 244 |
| 5 | 1.2 | 1.0 | .00 | .00 | .00 | 9.2 | 32 | 57 | .00 | .04 | .00 | 222 |
| 6 | .84 | .30 | .00 | .00 | .00 | 7.2 | 28 | 58 | .00 | .05 | .00 | 183 |
| 7 | .50 | .04 | .00 | .00 | .00 | 5.4 | 21 | 29 | .00 | .02 | .00 | 175 |
| 8 | .27 | .08 | .00 | .00 | .00 | 17 | 18 | 19 | .00 | .00 | 680 | 241 |
| 9 | .15 | .25 | .00 | .00 | .00 | 24 | 13 | 13 | .00 | .00 | 1840 | 484 |
| 10 | .13 | .60 | .00 | .00 | .00 | 25 | 13 | 7.4 | .00 | .00 | 1770 | 399 |
| 11 | .11 | 1.7 | .00 | .00 | .00 | 36 | 12 | 2.2 | .00 | .00 | 896 | 278 |
| 12 | .09 | 3.5 | .00 | .00 | .00 | 47 | 10 | 1.6 | .02 | .02 | 416 | 238 |
| 13 | .08 | 3.2 | .00 | .00 | .00 | 40 | 11 | 1.4 | .02 | .02 | 249 | 786 |
| 14 | .64 | 3.0 | .00 | .00 | .00 | 27 | 11 | .62 | .02 | .01 | 155 | 526 |
| 15 | .86 | 2.8 | .00 | .00 | .00 | 18 | 11 | .24 | .02 | .00 | 229 | 354 |
| 16 | .82 | 2.5 | .00 | .00 | .00 | 14 | 9.7 | .11 | .02 | .02 | 4230 | 271 |
| 17 | .45 | 2.3 | .00 | .00 | .00 | 12 | 11 | .15 | .03 | .04 | 4010 | 231 |
| 18 | .23 | 2.3 | .00 | .00 | .00 | 27 | 12 | .09 | .03 | .03 | 1460 | 237 |
| 19 | .10 | 2.5 | .00 | .00 | .00 | 33 | 13 | .04 | .04 | .02 | 878 | 238 |
| 20 | .05 | 2.7 | .00 | .00 | .00 | 34 | 15 | .67 | .04 | .02 | 585 | 196 |
| 21 | .14 | 3.1 | .00 | .00 | .00 | 32 | 20 | 3.1 | .04 | .07 | 420 | 168 |
| 22 | .35 | 1.5 | .00 | .00 | .00 | 21 | 17 | .60 | .02 | .04 | 316 | 149 |
| 23 | 1.0 | .70 | .00 | .00 | .04 | 28 | 13 | .13 | .01 | .02 | 257 | 185 |
| 24 | 3.1 | .30 | .00 | .00 | .15 | 26 | 11 | .00 | .00 | .00 | 201 | 513 |
| 25 | .38 | .14 | .00 | .00 | 2.0 | 23 | 13 | .00 | .00 | .00 | 158 | 457 |
| 26 | .56 | .06 | .00 | .00 | 14 | 23 | 11 | .00 | .00 | .00 | 165 | 334 |
| 27 | .85 | .03 | .00 | .00 | 16 | 24 | 10 | .00 | .00 | .00 | 192 | 261 |
| 28 | 1.2 | .01 | .00 | .00 | 16 | 29 | 10 | .00 | .00 | .00 | 777 | 213 |
| 29 | 1.8 | .00 | .00 | .00 | --- | 37 | 9.4 | .00 | .01 | .00 | 654 | 194 |
| 30 | 2.8 | .00 | .00 | .00 | --- | 23 | 8.5 | .00 | .02 | .00 | 391 | 264 |
| 31 | 2.5 | --- | .00 | .00 | --- | 26 | --- | .00 | --- | .00 | 355 | --- |
| TOTAL | 23.69 | 44.31 | .00 | .00 | 48.19 | 715.8 | 498.6 | 226.25 | .34 | .54 | 21284.00 | 9287 |
| MEAN | .76 | 1.48 | .000 | .000 | 1.72 | 23.1 | 16.6 | 7.30 | .011 | .017 | 687 | 310 |
| MAX | 3.1 | 3.5 | .00 | .00 | 16 | 47 | 38 | 58 | .04 | .07 | 4230 | 786 |
| MIN | .05 | .00 | .00 | .00 | .00 | 5.4 | 8.5 | .00 | .00 | .00 | .00 | 149 |
| CFSM | .002 | .005 | .000 | .000 | .005 | .07 | .05 | .02 | .000 | .000 | 2.18 | .98 |
| IN. | .00 | .01 | .00 | .00 | .01 | .08 | .06 | .03 | .00 | .00 | 2.51 | 1.10 |
| AC-FT | 47 | 88 | .00 | .00 | 96 | 1420 | 989 | 449 | .7 | 1.1 | 42220 | 18420 |

CAL YR 1976 TOTAL 47605.30 MEAN 130 MAX 3180 MIN .00 CFSM .41 IN 5.62 AC-FT 94430
WTR YR 1977 TOTAL 32128.72 MEAN 88.0 MAX 4230 MIN .00 CFSM .28 IN 3.79 AC-FT 63730

SKUNK RIVER BASIN

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, published in WSP 1308.

REVISED RECORDS.--WSP 1308: Drainage area, 1920-22 (M), 1923, 1924-25 (M), 1926, 1927 (M), WRD Iowa. 1966: 1965, WRD Iowa. 1971: 1970 (M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 881.00 ft (268.529 m) above mean sea level (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 winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--20 years, 116 ft³/s (3.285 m³/s), 7.72 in/yr (196 mm/yr), 84,040 acre-ft/yr (104 hm³/yr); median of yearly mean discharges, 89 ft³/s (2.52 m³/s), 5.9 in/yr (150 mm/yr), 64,500 acre-ft/yr (79.5 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.--Peak discharges above base of 1,000 ft³/s (28.3 m³/s) and maximum (*):

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) |
|--------|------|---|-------------------------|---------|------|---|-------------------------|
| Aug. 8 | 0745 | 2,070 58.6 | 7.09 2.161 | Aug. 16 | 1700 | *2,430 68.8 | *8.01 2.441 |

No flow for many days.

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 | 2.9 | .00 | .00 | .00 | .05 | 15 | .32 | .00 | 9.7 | 3.2 | 210 |
| 2 | .03 | 2.5 | .02 | .00 | .00 | .30 | 16 | 1.7 | .00 | 7.7 | .45 | 132 |
| 3 | .05 | 3.7 | .00 | .00 | .00 | 2.2 | 11 | 2.6 | .00 | 12 | .26 | 120 |
| 4 | 2.3 | 4.4 | .00 | .00 | .00 | 2.7 | 17 | 6.0 | .00 | 8.9 | .00 | 106 |
| 5 | 1.1 | 3.3 | .00 | .00 | .00 | 1.2 | 11 | 66 | .00 | 10 | 1.1 | 89 |
| 6 | 1.1 | 3.9 | .00 | .00 | .00 | 1.3 | 6.0 | 27 | .00 | 18 | .19 | 71 |
| 7 | .99 | 3.6 | .00 | .00 | .00 | 1.7 | 4.7 | 12 | .07 | 2.8 | .11 | 73 |
| 8 | .71 | 3.7 | .00 | .00 | .00 | 2.8 | 3.6 | .98 | .02 | 1260 | | 66 |
| 9 | .17 | 3.5 | .00 | .00 | .00 | 5.8 | 2.5 | 3.2 | .01 | .06 | 334 | 340 |
| 10 | .04 | 3.8 | .00 | .00 | .00 | 6.0 | 1.8 | 1.7 | .01 | .00 | 174 | 194 |
| 11 | .00 | 4.6 | .00 | .00 | .00 | 14 | 1.4 | .90 | .00 | .04 | 84 | 120 |
| 12 | .11 | 4.8 | .00 | .00 | .00 | 25 | 1.5 | .13 | .03 | .00 | 46 | 96 |
| 13 | .11 | 4.5 | .00 | .00 | .00 | 15 | 1.1 | .07 | .12 | .00 | 30 | 80 |
| 14 | .88 | 4.3 | .00 | .00 | .00 | 9.0 | 1.1 | .07 | .78 | .01 | 20 | 60 |
| 15 | 1.2 | 4.5 | .00 | .00 | .00 | 5.6 | 1.7 | 1.5 | .90 | .20 | 107 | 52 |
| 16 | 1.1 | 4.1 | .00 | .00 | .00 | 3.4 | .90 | 4.0 | 3.5 | .25 | 2240 | 44 |
| 17 | 1.4 | 3.9 | .00 | .00 | .00 | 6.2 | 4.0 | 3.8 | 5.0 | 1.5 | 852 | 52 |
| 18 | .90 | 3.2 | .00 | .00 | .00 | 5.0 | 3.2 | 4.1 | 5.5 | 1.2 | 316 | 42 |
| 19 | .87 | 3.3 | .00 | .00 | .00 | 4.4 | 2.0 | 27 | 5.0 | .85 | 182 | 40 |
| 20 | .07 | 4.1 | .00 | .00 | .00 | 3.5 | 4.0 | 13 | 8.3 | .79 | 120 | 39 |
| 21 | .90 | 4.2 | .00 | .00 | .02 | 5.0 | 11 | 3.0 | 8.4 | 3.2 | 89 | 35 |
| 22 | 1.3 | 3.0 | .00 | .00 | .04 | 1.9 | 2.9 | 2.0 | 2.8 | 1.3 | 62 | 32 |
| 23 | 2.2 | .07 | .00 | .00 | .09 | 1.6 | 2.0 | .50 | 5.0 | .60 | 50 | 53 |
| 24 | 4.3 | .43 | .00 | .00 | .22 | 1.5 | 1.3 | .00 | 5.7 | .25 | 40 | 123 |
| 25 | .52 | .90 | .00 | .00 | .44 | 1.3 | .90 | .00 | 3.1 | .10 | 36 | 111 |
| 26 | .68 | 1.1 | .00 | .00 | .58 | 1.0 | .70 | .00 | 3.7 | .05 | 64 | 84 |
| 27 | 1.1 | .80 | .00 | .00 | .60 | 11 | .50 | .05 | 6.7 | .02 | 66 | 66 |
| 28 | 1.6 | .00 | .00 | .00 | .60 | 18 | .50 | .07 | 8.3 | 51 | 485 | 55 |
| 29 | 1.7 | .00 | .00 | .00 | --- | 11 | .32 | .00 | 5.5 | 5.6 | 214 | 55 |
| 30 | 3.9 | .03 | .00 | .00 | --- | 6.1 | .13 | .00 | 9.6 | .00 | 126 | 148 |
| 31 | 3.3 | --- | .00 | .00 | --- | 5.2 | --- | .00 | --- | .00 | 145 | --- |
| TOTAL | 34.63 | 87.13 | .02 | .00 | 2.59 | 178.75 | 129.75 | 184.31 | 89.00 | 136.14 | 7147.31 | 2788 |
| MEAN | 1.12 | 2.90 | .001 | .00 | .093 | 5.77 | 4.33 | 5.95 | 2.97 | 4.39 | 231 | 92.9 |
| MAX | 4.3 | 4.8 | .02 | .00 | .60 | 25 | 17 | 66 | 9.6 | 51 | 2240 | 340 |
| MIN | .00 | .00 | .00 | .00 | .00 | .05 | .13 | .00 | .00 | .00 | .00 | 32 |
| CFSM | .005 | .01 | .000 | .000 | .000 | .03 | .02 | .03 | .02 | .02 | 1.13 | .46 |
| IN. | .01 | .02 | .00 | .00 | .00 | .03 | .02 | .03 | .02 | .02 | 1.30 | .51 |
| AC-FT | 69 | 173 | .04 | .00 | 5.1 | 355 | 257 | 366 | 177 | 270 | 14180 | 5530 |

| CAL YR 1976 | TOTAL | 29969.38 | MEAN 81.9 | MAX 2310 | MIN .00 | CFSM .40 | IN 5.47 | AC-FT 59440 |
|-------------|-------|----------|-----------|----------|---------|----------|---------|-------------|
| WTR YR 1977 | TOTAL | 10777.63 | MEAN 29.5 | MAX 2240 | MIN .00 | CFSM .15 | IN 1.97 | AC-FT 21380 |

05471000 SOUTH SKUNK RIVER BELOW SQUAW CREEK NEAR AMES, IA

LOCATION.--Lat 42°00'31", long 93°35'37", in NE1/4 NW1/4 sec.13, T.83 N., R.24 W., Story County, Hydrological Unit 07080105, on right bank 15 ft (5 m) downstream from bridge on county highway, 0.2 mi (0.3 km) downstream from Squaw Creek, 0.2 mi (0.3 km) upstream from bridge on U.S. Highway 30, 2 mi (3.2 km) southeast of Ames, and at mile 222.6 (358.2 km) upstream from mouth of Skunk River.

DRAINAGE AREA.--556 mi² (1,440 km²).

PERIOD OF RECORD.--October 1952 to current year. Prior to October 1966, published as Skunk River below Squaw Creek near Ames.

REVISED RECORDS.--WSP 438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 857.10 ft (261.244 m) above mean sea level. Prior to Oct. 1, 1973, at datum 10.00 ft higher.

REMARKS.--Records good except those for winter period, which are poor. Low flows are affected by pumpage by City of Ames from surficial aquifer and do not represent the natural flow of the stream. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--25 years, 288 ft³/s (8.156 m³/s), 7.03 in/yr (179 mm/yr), 208,700 acre-ft/yr (257 hm³/yr); median of yearly mean discharges, 230 ft³/s (6.51 m³/s), 5.6 in/yr (142 mm/yr), 167,000 acre-ft/yr (206 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,700 ft³/s (416 m³/s) June 27, 1975, gage height, 25.57 ft (7.794 m); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 19, 1944, reached a stage of 13 ft (4 m), from floodmarks, discharge, 10,000 ft³/s (283 m³/s), datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,400 ft³/s (181 m³/s) Aug. 16, gage height, 22.43 ft (6.837 m) at 2300 hours, no other peak above base of 2,500 ft³/s (70.8 m³/s); no flow for many days.

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 | .08 | .03 | .00 | .00 | .00 | .03 | 34 | 1.6 | .00 | .00 | 4.5 | 894 |
| 2 | .08 | .03 | .00 | .00 | .00 | .02 | 38 | 1.8 | .00 | .00 | 4.9 | 574 |
| 3 | .09 | .02 | .00 | .00 | .00 | .00 | 30 | 2.2 | .00 | .00 | .00 | 456 |
| 4 | .11 | .02 | .00 | .00 | .00 | .02 | 41 | 5.0 | .00 | .00 | .00 | 404 |
| 5 | .10 | .02 | .00 | .00 | .00 | .03 | 29 | 75 | .00 | .00 | .00 | 359 |
| 6 | .12 | .01 | .00 | .00 | .00 | .00 | 25 | 75 | .00 | .03 | .00 | 309 |
| 7 | .16 | .01 | .04 | .00 | .00 | .00 | 19 | 33 | .00 | 1.9 | .00 | 304 |
| 8 | .27 | .01 | .03 | .00 | .00 | .00 | 18 | 16 | .00 | .00 | 1830 | 338 |
| 9 | .30 | .00 | .02 | .00 | .00 | .00 | 12 | 9.6 | .00 | .00 | 2170 | 878 |
| 10 | .31 | .00 | .01 | .00 | .00 | 2.0 | 11 | 5.0 | .00 | .00 | 1910 | 730 |
| 11 | .25 | .00 | .00 | .00 | .00 | 20 | 6.0 | 1.3 | .00 | .00 | 1230 | 510 |
| 12 | .08 | .00 | .00 | .00 | .00 | 26 | 4.3 | .25 | .00 | .00 | 608 | 420 |
| 13 | .08 | .00 | .00 | .00 | .00 | 22 | 5.1 | .06 | .00 | .00 | 470 | 894 |
| 14 | .07 | .00 | .00 | .00 | .00 | 15 | 4.9 | .02 | .00 | .00 | 350 | 650 |
| 15 | .06 | .00 | .00 | .00 | .00 | 6.4 | 5.5 | .00 | .00 | .00 | 531 | 447 |
| 16 | .06 | .00 | .00 | .00 | .00 | 2.3 | 3.7 | .00 | .00 | .00 | 5320 | 350 |
| 17 | .06 | .00 | .00 | .00 | .00 | 1.0 | 7.0 | .00 | .00 | .00 | 5140 | 350 |
| 18 | .05 | .00 | .00 | .00 | .00 | 11 | 5.7 | .00 | .00 | .00 | 1870 | 309 |
| 19 | .05 | .00 | .00 | .00 | .00 | 19 | 8.8 | 9.2 | .00 | .00 | 1030 | 314 |
| 20 | .04 | .00 | .00 | .00 | .00 | 22 | 13 | 11 | .00 | .00 | 686 | 272 |
| 21 | .04 | .00 | .00 | .00 | .00 | 24 | 25 | 2.1 | .00 | .00 | 519 | 240 |
| 22 | .04 | .00 | .00 | .00 | .00 | 18 | 18 | 2.7 | .00 | .00 | 321 | 219 |
| 23 | .03 | .00 | .00 | .00 | .00 | 16 | 13 | .20 | .00 | .00 | 280 | 272 |
| 24 | .03 | .00 | .00 | .00 | .00 | 19 | 10 | .00 | .00 | .00 | 240 | 588 |
| 25 | .03 | .00 | .00 | .00 | .00 | 16 | 11 | .00 | .00 | .00 | 177 | 574 |
| 26 | .03 | .00 | .00 | .00 | .00 | 14 | 13 | .00 | .00 | .00 | 195 | 437 |
| 27 | .03 | .00 | .00 | .00 | .00 | 18 | 9.2 | .00 | .00 | .00 | 208 | 352 |
| 28 | .03 | .00 | .00 | .00 | .00 | 35 | 4.0 | .00 | .00 | 60 | 1120 | 299 |
| 29 | .03 | .00 | .00 | .00 | .00 | 27 | 3.4 | .00 | .00 | 14 | 826 | 286 |
| 30 | .04 | .00 | .00 | .00 | .00 | 18 | 2.9 | .00 | .00 | .00 | 534 | 447 |
| 31 | .04 | --- | .00 | .00 | --- | 16 | --- | .00 | --- | .00 | 570 | --- |
| TOTAL | 2.79 | .15 | .10 | .00 | .00 | 367.80 | 430.5 | 251.03 | .00 | 75.93 | 28144.40 | 13476 |
| MEAN | .090 | .005 | .003 | .000 | .000 | 11.9 | 14.4 | 8.10 | .000 | 2.45 | 908 | 449 |
| MAX | .31 | .03 | .04 | .00 | .00 | .35 | .41 | .75 | .00 | .60 | 5320 | 894 |
| MIN | .03 | .00 | .00 | .00 | .00 | .00 | 2.9 | .00 | .00 | .00 | .00 | 219 |
| CFSM | .000 | .000 | .000 | .000 | .000 | .02 | .03 | .02 | .000 | .004 | 1.63 | .81 |
| IN. | .00 | .00 | .00 | .00 | .00 | .02 | .03 | .02 | .00 | .01 | 1.88 | .90 |
| AC-FT | 5.5 | .3 | .2 | .00 | .00 | 730 | 854 | 498 | .00 | 151 | 55820 | 26730 |

CAL YR 1976 TOTAL 77993.01 MEAN 213 MAX 5530 MIN .00 CFSM .38 IN 5.22 AC-FT 154700
WTR YR 1977 TOTAL 42748.70 MEAN 117 MAX 5320 MIN .00 CFSM .21 IN 2.86 AC-FT 84790

SKUNK RIVER BASIN

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 mi² (4,234 km²).

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) above mean sea level. 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.--32 years, 867 ft³/s (24.55 m³/s), 7.20 in/yr (183 mm/yr), 628,100 acre-ft/yr (774 hm³/yr); median of yearly mean discharges, 790 ft³/s (22.4 m³/s) 6.6 in/yr (168 mm/yr), 572,400 acre-ft/yr (706 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft³/s (566 m³/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 ft³/s (0.051 m³/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 ft³/s (1,050 m³/s), from rating curve extended above 18,000 ft³/s (510 m³/s) on basis of velocity-area study.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,830 ft³/s (165 m³/s) Aug. 18, gage height, 16.43 ft (5.008 m) at 0430 hours, no other peak above base of 5,000 ft³/s (142 m³/s); minimum daily, 4.4 ft³/s (0.12 m³/s) Jan. 16, 17.

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 | 48 | 63 | 27 | 11 | 8.0 | 150 | 117 | 65 | 56 | 28 | 41 | 1660 |
| 2 | 44 | 57 | 27 | 8.4 | 10 | 180 | 117 | 67 | 51 | 28 | 41 | 1740 |
| 3 | 47 | 55 | 26 | 6.2 | 9.3 | 220 | 127 | 67 | 49 | 26 | 33 | 1430 |
| 4 | 50 | 54 | 25 | 6.0 | 8.7 | 200 | 133 | 71 | 48 | 25 | 25 | 2380 |
| 5 | 60 | 50 | 23 | 6.0 | 7.6 | 180 | 166 | 90 | 45 | 24 | 22 | 1400 |
| 6 | 60 | 51 | 22 | 5.8 | 7.2 | 155 | 152 | 96 | 42 | 23 | 25 | 1080 |
| 7 | 50 | 52 | 20 | 5.6 | 7.2 | 135 | 137 | 201 | 40 | 23 | 54 | 933 |
| 8 | 50 | 55 | 19 | 5.5 | 7.0 | 125 | 119 | 215 | 42 | 31 | 44 | 827 |
| 9 | 48 | 48 | 19 | 5.3 | 6.8 | 121 | 108 | 149 | 43 | 27 | 64 | 945 |
| 10 | 46 | 49 | 20 | 5.0 | 13 | 125 | 99 | 117 | 43 | 23 | 730 | 1100 |
| 11 | 44 | 53 | 20 | 5.0 | 31 | 158 | 90 | 99 | 41 | 21 | 1390 | 1010 |
| 12 | 43 | 57 | 20 | 5.0 | 60 | 286 | 83 | 93 | 39 | 20 | 1380 | 995 |
| 13 | 43 | 51 | 20 | 5.0 | 116 | 214 | 80 | 85 | 37 | 20 | 792 | 896 |
| 14 | 42 | 56 | 20 | 4.8 | 88 | 168 | 80 | 79 | 37 | 19 | 545 | 797 |
| 15 | 42 | 57 | 20 | 4.6 | 47 | 144 | 80 | 70 | 37 | 30 | 399 | 843 |
| 16 | 42 | 61 | 19 | 4.4 | 35 | 123 | 79 | 68 | 37 | 46 | 333 | 838 |
| 17 | 43 | 63 | 18 | 4.4 | 37 | 108 | 76 | 69 | 36 | 39 | 3940 | 759 |
| 18 | 43 | 67 | 18 | 4.6 | 38 | 102 | 73 | 68 | 45 | 35 | 5490 | 866 |
| 19 | 42 | 57 | 23 | 5.0 | 39 | 105 | 73 | 64 | 41 | 38 | 3200 | 1120 |
| 20 | 42 | 58 | 25 | 5.2 | 40 | 104 | 77 | 64 | 33 | 28 | 1840 | 974 |
| 21 | 42 | 56 | 25 | 5.3 | 41 | 105 | 90 | 76 | 31 | 38 | 1900 | 838 |
| 22 | 40 | 52 | 25 | 5.5 | 62 | 113 | 102 | 88 | 30 | 21 | 1340 | 747 |
| 23 | 42 | 45 | 24 | 5.6 | 110 | 117 | 96 | 103 | 34 | 19 | 901 | 708 |
| 24 | 44 | 54 | 24 | 5.6 | 180 | 105 | 87 | 90 | 37 | 23 | 730 | 658 |
| 25 | 46 | 47 | 24 | 5.6 | 210 | 99 | 79 | 74 | 42 | 20 | 619 | 764 |
| 26 | 48 | 42 | 24 | 5.6 | 220 | 93 | 73 | 67 | 43 | 18 | 863 | 988 |
| 27 | 50 | 38 | 23 | 5.6 | 160 | 95 | 74 | 61 | 37 | 17 | 684 | 1030 |
| 28 | 50 | 35 | 23 | 5.6 | 145 | 119 | 72 | 60 | 30 | 17 | 2030 | 940 |
| 29 | 51 | 32 | 22 | 5.6 | --- | 175 | 69 | 63 | 28 | 17 | 3300 | 806 |
| 30 | 55 | 30 | 20 | 6.0 | --- | 168 | 66 | 65 | 27 | 58 | 2200 | 727 |
| 31 | 61 | --- | 15 | 6.6 | --- | 134 | --- | 59 | --- | 43 | 1450 | --- |
| TOTAL | 1458 | 1545 | 680 | 75.4 | 1743.8 | 4426 | 2874 | 2703 | 1181 | 845 | 36405 | 30799 |
| MEAN | 47.0 | 51.5 | 21.9 | 5.66 | 62.3 | 143 | 95.8 | 87.2 | 39.4 | 27.3 | 1174 | 1027 |
| MAX | 61 | 67 | 27 | 11 | 220 | 286 | 166 | 215 | 56 | 58 | 5490 | 2380 |
| MIN | 40 | 30 | 15 | 4.4 | 6.8 | 93 | 66 | 59 | 27 | 17 | 22 | 658 |
| CFSM | .03 | .03 | .01 | .003 | .04 | .09 | .06 | .05 | .02 | .02 | .72 | .63 |
| IN. | .03 | .04 | .02 | .00 | .04 | .10 | .07 | .06 | .03 | .02 | .83 | .70 |
| AC-FT | 2890 | 3060 | 1350 | 348 | 3460 | 8780 | 5700 | 5360 | 2340 | 1680 | 72210 | 61090 |

CAL YR 1976 TOTAL 297925.0 MEAN 814 MAX 12400 MIN 15 CFSM .50 IN 6.78 AC-FT 590900
WTR YR 1977 TOTAL 84835.2 MEAN 232 MAX 5490 MIN 4.4 CFSM .14 IN 1.93 AC-FT 168300

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 (198.585 m) above mean sea level. Prior to June 10, 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. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--32 years, 424 ft³/s (12.01 m³/s), 7.89 in/yr (200 mm/yr), 307,200 acre-ft/yr (379 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 (2.8 dm³/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, 1,800 ft³/s (51.0 m³/s) Sept. 19, gage height, 11.47 ft (3.496 m) at 2100 hours, no peak above base of 3,800 ft³/s (108 m³/s); minimum daily, 2.0 ft³/s (0.057 m³/s) Jan 3.

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 | 15 | 18 | 12 | 3.5 | 3.5 | 55 | 96 | 25 | 20 | 11 | 9.0 | 385 | | |
| 2 | 11 | 19 | 10 | 2.6 | 4.4 | 50 | 74 | 24 | 18 | 9.9 | 10 | 507 | | |
| 3 | 12 | 23 | 9.0 | 2.0 | 4.1 | 52 | 62 | 51 | 22 | 8.3 | 13 | 513 | | |
| 4 | 12 | 20 | 9.0 | 2.3 | 3.8 | 47 | 69 | 37 | 33 | 7.4 | 15 | 474 | | |
| 5 | 22 | 18 | 8.6 | 2.7 | 3.9 | 42 | 84 | 62 | 47 | 8.8 | 11 | 441 | | |
| 6 | 22 | 16 | 9.0 | 2.9 | 3.9 | 35 | 82 | 78 | 22 | 8.5 | 9.7 | 385 | | |
| 7 | 16 | 14 | 9.0 | 2.9 | 3.9 | 36 | 88 | 400 | 15 | 6.3 | 18 | 266 | | |
| 8 | 17 | 13 | 8.2 | 2.9 | 3.9 | 48 | 76 | 282 | 14 | 5.7 | 205 | 203 | | |
| 9 | 19 | 12 | 7.4 | 2.9 | 3.5 | 54 | 60 | 153 | 13 | 5.4 | 314 | 185 | | |
| 10 | 16 | 12 | 7.8 | 2.9 | 3.3 | 48 | 47 | 91 | 12 | 4.7 | 195 | 181 | | |
| 11 | 13 | 15 | 7.0 | 3.1 | 7.0 | 68 | 46 | 66 | 13 | 5.5 | 150 | 176 | | |
| 12 | 12 | 14 | 6.6 | 3.1 | 28 | 248 | 40 | 53 | 13 | 5.6 | 89 | 150 | | |
| 13 | 11 | 14 | 5.8 | 2.9 | 26 | 283 | 37 | 45 | 17 | 6.7 | 60 | 145 | | |
| 14 | 12 | 10 | 5.4 | 2.7 | 20 | 207 | 35 | 39 | 14 | 6.9 | 45 | 131 | | |
| 15 | 12 | 14 | 6.6 | 2.7 | 18 | 121 | 34 | 35 | 12 | 6.2 | 36 | 116 | | |
| 16 | 11 | 12 | 7.4 | 2.7 | 18 | 83 | 33 | 31 | 12 | 5.9 | 38 | 104 | | |
| 17 | 12 | 13 | 8.6 | 2.9 | 36 | 69 | 31 | 27 | 12 | 5.4 | 440 | 106 | | |
| 18 | 12 | 13 | 9.0 | 3.1 | 39 | 56 | 32 | 25 | 11 | 20 | 1310 | 116 | | |
| 19 | 11 | 15 | 10 | 2.9 | 39 | 48 | 31 | 24 | 15 | 16 | 474 | 1490 | | |
| 20 | 12 | 15 | 12 | 2.9 | 36 | 48 | 31 | 24 | 91 | 12 | 200 | 1160 | | |
| 21 | 12 | 18 | 10 | 2.7 | 32 | 54 | 35 | 25 | 40 | 9.4 | 135 | 529 | | |
| 22 | 11 | 19 | 8.5 | 2.7 | 37 | 63 | 48 | 42 | 24 | 6.9 | 102 | 278 | | |
| 23 | 10 | 17 | 8.2 | 2.7 | 58 | 66 | 49 | 49 | 18 | 6.6 | 112 | 285 | | |
| 24 | 13 | 20 | 7.0 | 2.7 | 81 | 66 | 45 | 37 | 17 | 7.7 | 95 | 268 | | |
| 25 | 14 | 18 | 7.4 | 2.9 | 78 | 62 | 42 | 32 | 14 | 9.1 | 71 | 395 | | |
| 26 | 16 | 18 | 8.2 | 2.9 | 96 | 51 | 36 | 29 | 15 | 6.9 | 113 | 460 | | |
| 27 | 15 | 15 | 8.6 | 2.9 | 77 | 51 | 30 | 31 | 12 | 6.0 | 293 | 303 | | |
| 28 | 14 | 14 | 9.0 | 2.9 | 65 | 88 | 27 | 26 | 13 | 5.8 | 313 | 235 | | |
| 29 | 14 | 13 | 8.6 | 2.9 | --- | 257 | 26 | 24 | 11 | 5.7 | 787 | 195 | | |
| 30 | 16 | 12 | 7.0 | 2.9 | --- | 181 | 24 | 21 | 12 | 6.7 | 1430 | 169 | | |
| 31 | 19 | --- | 5.0 | 2.9 | --- | 136 | --- | 26 | --- | 8.5 | 632 | --- | | |
| TOTAL | 434 | 464 | 256.0 | 87.7 | 829.2 | 2773 | 1450 | 1904 | 602 | 347.2 | 7724.7 | 10351 | | |
| MEAN | 14.0 | 15.5 | 8.26 | 2.83 | 29.6 | 89.5 | 48.3 | 61.4 | 20.1 | 11.2 | 249 | 345 | | |
| MAX | 22 | 23 | 12 | 3.5 | 96 | 283 | 96 | 400 | 91 | 59 | 1430 | 1490 | | |
| MIN | 10 | 10 | 5.0 | 2.0 | 3.3 | 35 | 24 | 21 | 11 | 4.7 | 9.0 | 104 | | |
| CFSM | .02 | .02 | .01 | .004 | .04 | .12 | .07 | .08 | .03 | .02 | .34 | .47 | | |
| IN. | .02 | .02 | .01 | .00 | .04 | .14 | .07 | .10 | .03 | .02 | .39 | .53 | | |
| AC-FT | 861 | 920 | 508 | 174 | 1640 | 5500 | 2880 | 3780 | 1190 | 689 | 15320 | 20530 | | |
| CAL YR 1976 | TOTAL | 141737.1 | MEAN | 387 | MAX | 14000 | MIN | 5.0 | CFSM | .53 | IN | 7.22 | AC-FT | 281100 |
| WTR YR 1977 | TOTAL | 27222.8 | MEAN | 74.6 | MAX | 1490 | MIN | 2.0 | CFSM | .10 | IN | 1.39 | AC-FT | 54000 |

SKUNK RIVER BASIN

05473500 BIG CREEK NEAR MOUNT PLEASANT, IA

LOCATION.--Lat 41°00'52", long 91°34'49", in NW1/4 NW1/4 sec.29, T.72 N., R.6 W., Henry County, Hydrologic Unit 07080107, on left bank 12 ft (4 m) downstream from bridge on county highway, 100 ft (30 m) downstream from Lynn Creek, 0.7 mi (1.1 km) downstream from Brandywine Creek, and 3.7 mi (6.0 km) northwest of Court House at Mount Pleasant.

DRAINAGE AREA.--106 mi² (275 km²).

PERIOD OF RECORD.--October 1955 to current year.

REVISED RECORDS.--WSP 1628: 1958 (M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 630.53 ft (192.186 m) above mean sea level.

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

AVERAGE DISCHARGE.--22 years, 64.3 ft³/s (1.821 m³/s), 8.24 in/yr (209 mm/yr), 46,590 acre-ft/yr (57.4 hm³/yr); median of yearly mean discharges, 47.0 ft³/s (1.33 m³/s), 6.0 in/yr (153 mm/yr), 34,100 acre-ft/yr (42.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,500 ft³/s (297 m³/s) Apr. 22, 1973, gage height, 25.58 ft (7.797 m), on basis of contracted-opening measurement at gage at gage height 18.51 ft (5.642 m) and contracted-opening measurements of the 1973 peak flow at sites 2 mi (3 km) upstream [63 m³ (163 km³)] and 6 mi (10 km) downstream [115 m³ (298 km³)] no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 3, 1948, reached a stage of about 27 ft (8.2 m), from floodmarks established by local residents, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 719 ft³/s (20.36 m³/s) Aug. 8, gage height, 6.12 ft (1.865 m), no peak above base of 900 ft³/s (25.5 m³/s); no flow Oct. 12-18, Jan. 21-Feb. 7.

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 | .19 | 5.4 | .35 | .07 | .00 | 1.9 | 107 | 10 | 5.3 | 3.3 | .02 | 1.5 |
| 2 | .10 | 6.0 | .35 | .05 | .00 | 1.7 | 93 | 13 | 4.6 | 4.3 | .02 | 3.0 |
| 3 | .06 | 4.5 | .33 | .04 | .00 | 2.9 | 63 | 12 | 4.4 | 2.3 | .03 | 7.3 |
| 4 | .05 | 3.0 | .33 | .04 | .00 | 3.3 | 82 | 21 | 4.0 | .82 | .02 | 23 |
| 5 | 13 | 2.1 | .33 | .03 | .00 | 2.8 | 120 | 236 | 4.0 | .50 | .01 | 9.1 |
| 6 | 14 | 1.7 | .32 | .03 | .00 | 2.4 | 87 | 165 | 3.9 | .34 | 4.9 | 5.9 |
| 7 | 3.1 | 1.5 | .23 | .03 | .00 | 2.5 | 69 | 163 | 3.3 | .22 | 6.5 | 3.5 |
| 8 | .14 | 1.2 | .22 | .02 | .01 | 3.0 | 55 | 113 | 3.8 | .15 | 363 | 1.7 |
| 9 | .07 | 1.1 | .21 | .02 | .10 | 3.7 | 48 | 80 | 5.0 | .10 | 138 | 1.1 |
| 10 | .03 | 1.2 | .23 | .02 | 5.0 | 3.9 | 45 | 61 | 5.3 | .06 | 51 | .55 |
| 11 | .02 | 1.4 | .21 | .02 | 10 | 19 | 39 | 51 | 6.5 | .04 | 23 | .35 |
| 12 | .00 | 1.3 | .18 | .02 | 16 | 134 | 33 | 42 | 5.8 | .06 | 8.6 | 7.7 |
| 13 | .00 | 1.2 | .18 | .02 | 15 | 66 | 31 | 37 | 4.9 | .04 | 5.4 | 218 |
| 14 | .00 | .86 | .16 | .02 | 13 | 41 | 30 | 35 | 3.7 | .03 | 2.6 | 119 |
| 15 | .00 | .73 | .21 | .01 | 10 | 29 | 27 | 31 | 2.7 | .02 | 2.1 | 61 |
| 16 | .00 | .88 | .24 | .01 | 9.0 | 18 | 24 | 26 | 2.0 | 6.8 | 1.7 | 50 |
| 17 | .00 | .92 | .31 | .01 | 7.7 | 14 | 22 | 22 | 1.6 | 1.3 | 2.9 | 49 |
| 18 | .00 | .90 | .35 | .01 | 8.0 | 15 | 20 | 21 | 1.4 | 2.4 | 3.6 | 72 |
| 19 | .02 | .82 | .36 | .01 | 9.4 | 12 | 20 | 18 | .99 | .55 | 2.7 | 124 |
| 20 | .24 | .75 | .34 | .01 | 9.2 | 11 | 20 | 17 | .86 | .33 | 2.4 | 85 |
| 21 | .88 | .78 | .25 | .00 | 8.8 | 15 | 24 | 18 | .73 | 3.0 | 2.5 | 57 |
| 22 | 1.7 | .69 | .22 | .00 | 11 | 26 | 22 | 16 | .49 | 9.3 | 2.7 | 46 |
| 23 | 1.2 | .62 | .25 | .00 | 19 | 59 | 18 | 12 | .42 | .60 | 1.7 | 38 |
| 24 | 1.1 | .52 | .23 | .00 | 15 | 75 | 17 | 10 | .60 | .36 | 1.0 | 87 |
| 25 | 1.3 | .48 | .26 | .00 | 6.6 | 58 | 15 | 9.4 | .60 | .21 | .31 | 78 |
| 26 | 1.5 | .42 | .26 | .00 | 3.3 | 41 | 15 | 9.0 | .42 | .13 | .64 | 55 |
| 27 | 1.8 | .48 | .24 | .00 | 2.7 | 34 | 14 | 8.5 | .29 | .08 | 3.5 | 40 |
| 28 | 1.6 | .45 | .25 | .00 | 2.0 | 97 | 13 | 8.3 | .19 | .05 | 2.7 | 31 |
| 29 | 1.8 | .40 | .23 | .00 | --- | 372 | 11 | 8.2 | .14 | .03 | 2.1 | 28 |
| 30 | 3.2 | .33 | .15 | .00 | --- | 235 | 9.3 | 7.6 | 1.1 | .02 | 1.2 | 27 |
| 31 | 4.6 | --- | .10 | .00 | --- | 154 | --- | 6.5 | --- | .03 | .65 | --- |
| TOTAL | 51.70 | 42.63 | 7.88 | .49 | 180.81 | 1553.1 | 1193.3 | 1287.5 | 79.03 | 37.48 | 637.50 | 1329.70 |
| MEAN | 1.67 | 1.42 | .25 | .016 | 6.46 | 50.1 | 39.8 | 41.5 | 2.63 | 1.21 | 20.6 | 44.3 |
| MAX | 14 | 6.0 | .36 | .07 | 19 | 372 | 120 | 236 | 6.5 | 9.3 | 363 | 218 |
| MIN | .00 | .33 | .10 | .00 | .00 | 1.7 | 9.3 | 6.5 | .14 | .02 | .01 | .35 |
| CFSM | .02 | .01 | .002 | .000 | .06 | .47 | .38 | .39 | .03 | .01 | .19 | .42 |
| IN. | .02 | .01 | .00 | .00 | .06 | .55 | .42 | .45 | .03 | .01 | .22 | .47 |
| AC-FT | 103 | 85 | 16 | 1.0 | 359 | 3080 | 2370 | 2550 | 157 | 74 | 1260 | 2640 |

CAL YR 1976 TOTAL 18593.86 MEAN 50.8 MAX 3800 MIN .00 CFSM .48 IN 6.53 AC-FT 35880
WTR YR 1977 TOTAL 6401.12 MEAN 17.5 MAX 372 MIN .00 CFSM .17 IN 2.25 AC-FT 12700

05474000 SKUNK RIVER AT AUGUSTA, IA

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, WRD Iowa 1971: 1956 (M).

GAGE.--Water-stage recorder. Datum of gage is 521.24 ft (158.874 m) above mean sea level. Prior to Nov. 15, 1913, nonrecording gage at site 400 ft (122 m) upstream at datum about 0.7 ft (0.2 m) 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 Aug. 1-15 which are fair and the 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.--63 years (1914-77), 2,323 ft³/s (65.79 m³/s), 7.33 in/yr (186 mm/yr), 1,583,000 acre-ft/yr (2,080 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 (198 dm³/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 46,000 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.--Maximum discharge, 9,020 ft³/s (2.55 m³/s) Aug. 9, gage height, 9.23 ft (2.813 m) at 0800 hours, no peak above base of 15,000 ft³/s (425 m³/s); minimum daily, 22 ft³/s (0.62 m³/s) Feb. 6-8.

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 | 155 | 128 | 111 | 51 | 23 | 320 | 1500 | 238 | 170 | 95 | 130 | 3850 |
| 2 | 142 | 138 | 103 | 48 | 23 | 360 | 1160 | 254 | 148 | 97 | 144 | 3110 |
| 3 | 128 | 128 | 92 | 46 | 23 | 406 | 960 | 289 | 143 | 129 | 103 | 5240 |
| 4 | 116 | 123 | 105 | 40 | 23 | 437 | 860 | 417 | 139 | 118 | 84 | 6410 |
| 5 | 290 | 123 | 93 | 35 | 23 | 392 | 1010 | 2840 | 141 | 98 | 137 | 6010 |
| 6 | 516 | 134 | 94 | 31 | 22 | 337 | 1220 | 3560 | 136 | 89 | 178 | 3690 |
| 7 | 460 | 134 | 76 | 28 | 22 | 323 | 1080 | 3380 | 130 | 77 | 468 | 3080 |
| 8 | 325 | 127 | 68 | 26 | 22 | 316 | 883 | 2470 | 260 | 72 | 2140 | 2270 |
| 9 | 240 | 127 | 84 | 29 | 23 | 323 | 756 | 1530 | 234 | 69 | 8230 | 1940 |
| 10 | 202 | 134 | 84 | 29 | 33 | 343 | 683 | 1230 | 171 | 73 | 5270 | 1680 |
| 11 | 169 | 123 | 73 | 33 | 76 | 408 | 602 | 996 | 148 | 69 | 2890 | 1520 |
| 12 | 150 | 116 | 76 | 32 | 450 | 1610 | 529 | 817 | 145 | 69 | 1400 | 1880 |
| 13 | 139 | 110 | 73 | 28 | 700 | 2210 | 473 | 664 | 164 | 72 | 897 | 3710 |
| 14 | 120 | 104 | 70 | 27 | 610 | 1690 | 427 | 558 | 162 | 64 | 1040 | 5140 |
| 15 | 109 | 118 | 73 | 28 | 390 | 1210 | 391 | 478 | 141 | 61 | 1410 | 3900 |
| 16 | 106 | 114 | 76 | 28 | 260 | 949 | 361 | 434 | 132 | 119 | 1340 | 2350 |
| 17 | 100 | 118 | 78 | 27 | 220 | 719 | 340 | 388 | 123 | 120 | 1120 | 2240 |
| 18 | 100 | 117 | 84 | 27 | 210 | 604 | 312 | 349 | 113 | 92 | 855 | 2670 |
| 19 | 103 | 123 | 90 | 27 | 200 | 516 | 292 | 315 | 106 | 283 | 950 | 3410 |
| 20 | 106 | 123 | 90 | 26 | 160 | 500 | 282 | 285 | 102 | 549 | 3250 | 2820 |
| 21 | 107 | 127 | 70 | 26 | 130 | 492 | 320 | 279 | 91 | 325 | 3470 | 3660 |
| 22 | 103 | 124 | 70 | 26 | 160 | 524 | 417 | 275 | 87 | 325 | 3530 | 2870 |
| 23 | 102 | 113 | 87 | 26 | 300 | 692 | 721 | 366 | 89 | 310 | 3180 | 2160 |
| 24 | 111 | 128 | 76 | 26 | 420 | 820 | 605 | 385 | 90 | 144 | 2310 | 2090 |
| 25 | 114 | 136 | 78 | 25 | 460 | 830 | 487 | 289 | 90 | 123 | 1760 | 2080 |
| 26 | 117 | 141 | 81 | 25 | 465 | 773 | 410 | 280 | 90 | 106 | 1400 | 1950 |
| 27 | 126 | 164 | 81 | 25 | 380 | 674 | 360 | 267 | 90 | 103 | 1260 | 1910 |
| 28 | 115 | 99 | 81 | 25 | 330 | 880 | 325 | 243 | 90 | 95 | 1260 | 2020 |
| 29 | 110 | 108 | 70 | 24 | --- | 3220 | 288 | 250 | 92 | 98 | 1660 | 1960 |
| 30 | 116 | 98 | 66 | 24 | --- | 3370 | 254 | 241 | 93 | 90 | 1560 | 1750 |
| 31 | 123 | --- | 60 | 23 | --- | 2270 | --- | 204 | --- | 282 | 3070 | --- |
| TOTAL | 5020 | 3700 | 2513 | 921 | 6158 | 28518 | 18308 | 24571 | 3910 | 4416 | 56496 | 88370 |
| MEAN | 162 | 123 | 81.1 | 29.7 | 220 | 920 | 610 | 793 | 130 | 142 | 1822 | 2946 |
| MAX | 516 | 164 | 111 | 51 | 700 | 3370 | 1500 | 3560 | 260 | 549 | 8230 | 6410 |
| MIN | 100 | 98 | 60 | 23 | 22 | 316 | 254 | 204 | 87 | 61 | 84 | 1520 |
| CFSM | .04 | .03 | .02 | .007 | .05 | .21 | .14 | .18 | .03 | .03 | .42 | .69 |
| IN. | .04 | .03 | .02 | .01 | .05 | .26 | .16 | .21 | .03 | .04 | .49 | .76 |
| AC-FT | 9960 | 7340 | 4980 | 1830 | 12210 | 56570 | 36310 | 48740 | 7760 | 8760 | 112100 | 175300 |

CAL YR 1976 TOTAL 783269 MEAN 2140 MAX 40000 MIN 60 CFSM .50 IN 6.77 AC-FT 1554000
WTR YR 1977 TOTAL 242901 MEAN 665 MAX 8230 MIN 22 CFSM .16 IN 2.10 AC-FT 481800

SKUNK RIVER BASIN

0547400 SKUNK RIVER AT AUGUSTA, IA--Continued

WATER QUALITY RECORDS

LOCATION.--Samples collected at bridge on State Highway 394 300 ft (91 m) downstream from gage.

PERIOD OF RECORD.--October 1975 to September 1976.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1975 to current year.

WATER TEMPERATURE: October 1975 to current year.

SUSPENDED-SEDIMENT: October 1975 to current year.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

TEMPERATURE: Maximum observed, 33.0°C July 14, 15, 19, 20, 1977; minimum, 0.0°C many days.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 7,010 mg/L July 21, 1976; minimum daily mean, 14 mg/L Feb. 21-23, 1977.

SEDIMENT LOADS: Maximum daily, 276,000 tons (250,000 tonnes) Apr. 24, 1976; minimum daily, 1.5 tons (1.4 tonnes) Feb. 8, 1977.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 4,040 mg/L Aug. 9; minimum daily mean, 14 mg/L Feb. 21-23.

SEDIMENT LOADS: Maximum daily, 91,000 tons (82,600 tonnes) Aug. 9; minimum daily, 1.5 tons (1.4 tonnes), Feb. 8.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | 540 | --- | 480 | --- | --- | 480 | --- | 540 | 550 | 610 | 360 | 270 |
| 2 | 540 | --- | 490 | --- | 700 | --- | --- | 540 | 480 | 490 | 470 | 340 |
| 3 | 540 | --- | 450 | 650 | --- | --- | --- | 550 | 470 | 520 | 500 | 340 |
| 4 | 560 | 575 | 620 | --- | --- | --- | --- | 500 | 500 | 510 | 390 | 330 |
| 5 | 460 | --- | 420 | 560 | 700 | --- | --- | 280 | 480 | 590 | 460 | 390 |
| 6 | 440 | --- | 530 | --- | --- | --- | --- | 360 | 520 | 500 | 480 | 420 |
| 7 | 570 | --- | --- | --- | 750 | --- | --- | 360 | 510 | 580 | 400 | 510 |
| 8 | 500 | --- | --- | --- | --- | --- | --- | 400 | 460 | 500 | 390 | 400 |
| 9 | --- | --- | --- | --- | --- | --- | --- | 405 | 500 | 510 | 330 | 490 |
| 10 | 450 | --- | --- | --- | 700 | --- | --- | 470 | 490 | 510 | 190 | 530 |
| 11 | --- | --- | --- | --- | --- | --- | --- | 500 | 530 | 510 | 250 | 510 |
| 12 | --- | --- | --- | 600 | 420 | --- | --- | 510 | 560 | 510 | 260 | 540 |
| 13 | --- | --- | --- | 810 | 490 | --- | --- | 510 | 610 | 600 | 290 | 480 |
| 14 | --- | --- | --- | 600 | 380 | --- | --- | 540 | 560 | 590 | 330 | 340 |
| 15 | --- | --- | --- | --- | 350 | --- | --- | 540 | 540 | 440 | 330 | 400 |
| 16 | --- | --- | --- | 650 | 350 | --- | --- | 550 | 540 | 610 | 320 | 500 |
| 17 | --- | --- | --- | --- | 400 | --- | --- | 530 | 510 | 530 | 360 | 540 |
| 18 | --- | --- | --- | 700 | 400 | --- | --- | --- | 500 | 500 | 340 | 560 |
| 19 | --- | 420 | 480 | --- | 410 | --- | --- | 510 | 500 | 520 | 360 | 500 |
| 20 | --- | 440 | --- | 750 | 455 | --- | --- | 540 | 470 | 550 | 320 | 500 |
| 21 | --- | 495 | --- | --- | 400 | --- | --- | 570 | 510 | 440 | 240 | 560 |
| 22 | --- | 415 | --- | 690 | 420 | --- | --- | 570 | 510 | 410 | 320 | 390 |
| 23 | --- | 525 | --- | --- | 450 | --- | --- | 580 | 460 | 410 | 300 | 440 |
| 24 | --- | 575 | 650 | 740 | 400 | --- | --- | 570 | 500 | 420 | 365 | 420 |
| 25 | --- | 555 | --- | --- | 360 | --- | --- | 550 | 500 | 370 | 370 | 430 |
| 26 | --- | 480 | 560 | --- | 360 | --- | --- | 560 | 530 | --- | 410 | 570 |
| 27 | --- | 420 | --- | 690 | 360 | --- | --- | 560 | 480 | 380 | 400 | 600 |
| 28 | --- | 570 | 500 | --- | 400 | --- | --- | 560 | 500 | 370 | 450 | 560 |
| 29 | --- | 420 | --- | --- | --- | --- | --- | 520 | 480 | 360 | 500 | 510 |
| 30 | --- | 600 | --- | 670 | --- | --- | --- | --- | 500 | 380 | 450 | 580 |
| 31 | --- | --- | 490 | --- | --- | --- | --- | --- | --- | 340 | 270 | --- |

0547400 SKUNK RIVER AT AUGUSTA, IA--Continued

WATER QUALITY RECORDS

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-----|------|-----|-----|-----|-----|------|------|------|------|------|------|------|
| 1 | 20.0 | 9.0 | 0.0 | --- | --- | 0.5 | 10.0 | 18.0 | 25.0 | 27.0 | 27.0 | 23.0 |
| 2 | 20.0 | 9.0 | 0.0 | --- | 0.0 | 2.0 | 10.0 | 20.0 | 26.0 | 28.0 | 26.0 | 24.0 |
| 3 | 18.0 | 8.0 | 0.0 | 0.0 | --- | 3.0 | 11.0 | 20.0 | 27.0 | 29.0 | 29.0 | 22.0 |
| 4 | 18.0 | 4.0 | 0.0 | --- | --- | 0.0 | 11.0 | 19.0 | 25.0 | 31.0 | 26.0 | 22.0 |
| 5 | 12.0 | 6.0 | 0.0 | 0.0 | 0.0 | 0.0 | 7.0 | 17.0 | 30.0 | 32.0 | 24.0 | 22.0 |
| 6 | 13.0 | 6.0 | 0.0 | --- | --- | 1.0 | 9.0 | 18.0 | 24.0 | 30.0 | 25.0 | 22.0 |
| 7 | 13.0 | 5.0 | --- | --- | 0.0 | 4.0 | 11.0 | 19.0 | 24.0 | 30.0 | 26.0 | 23.0 |
| 8 | 13.0 | 6.0 | --- | --- | --- | 6.0 | 11.0 | 20.0 | 22.0 | 29.0 | 22.0 | 25.0 |
| 9 | 15.0 | 5.0 | 0.0 | --- | --- | 7.0 | 15.0 | 19.0 | 23.0 | 29.0 | 21.0 | 25.0 |
| 10 | 15.0 | 5.0 | --- | --- | 0.0 | 11.0 | 18.0 | 20.0 | 25.0 | 29.0 | 24.0 | 23.0 |
| 11 | 16.0 | 2.0 | --- | --- | --- | 10.0 | 19.0 | 20.0 | 25.0 | 30.0 | 24.0 | 27.0 |
| 12 | 18.0 | 1.0 | --- | 0.0 | 0.0 | 7.0 | 20.0 | 20.0 | 25.0 | 28.0 | 20.0 | 20.0 |
| 13 | 18.0 | 1.0 | --- | 0.0 | 0.0 | 7.0 | 19.0 | 23.0 | 24.0 | 30.0 | 26.0 | 19.0 |
| 14 | 15.0 | 2.0 | --- | 0.0 | 0.0 | 10.0 | 20.0 | 24.0 | 25.0 | 33.0 | 24.0 | 18.0 |
| 15 | 14.0 | 2.0 | --- | --- | 0.0 | 10.0 | 18.0 | 25.0 | 28.0 | 33.0 | 20.0 | 18.0 |
| 16 | 10.0 | 3.0 | --- | 0.0 | 0.0 | 11.0 | 19.0 | 25.0 | 27.0 | 31.0 | 25.0 | 18.0 |
| 17 | 10.0 | 3.0 | --- | --- | 0.0 | 8.0 | 19.0 | 25.0 | 29.0 | 30.0 | 25.0 | 18.0 |
| 18 | 8.0 | 8.0 | --- | 0.0 | 0.0 | 6.0 | 21.0 | 27.0 | 27.0 | 30.0 | 25.0 | 21.0 |
| 19 | 8.0 | 5.0 | 1.0 | --- | 0.0 | 6.0 | 21.0 | 25.0 | 28.0 | 33.0 | 26.0 | 19.0 |
| 20 | 8.0 | 5.0 | --- | 0.0 | 0.0 | 6.0 | 22.0 | 25.0 | 27.0 | 33.0 | 22.0 | 19.0 |
| 21 | 7.0 | 3.0 | --- | --- | 0.0 | 6.0 | 18.0 | 25.0 | 25.0 | 31.0 | 23.0 | 19.0 |
| 22 | 7.0 | 3.0 | --- | 0.0 | 0.0 | 6.0 | 18.0 | 26.0 | 25.0 | 29.0 | 20.0 | 19.0 |
| 23 | 7.0 | 1.0 | --- | --- | 0.0 | 7.0 | 17.0 | 26.0 | 26.0 | 30.0 | 23.0 | 20.0 |
| 24 | 7.0 | 3.0 | 1.0 | 0.0 | 0.0 | 9.0 | 17.0 | 29.0 | 26.0 | 30.0 | 23.0 | 20.0 |
| 25 | 7.0 | 5.0 | --- | --- | 0.0 | 9.0 | 17.0 | 30.0 | 30.0 | 29.0 | 23.0 | 20.0 |
| 26 | 7.0 | 4.0 | 1.0 | --- | 0.0 | 9.0 | 18.0 | 29.0 | 31.0 | 28.0 | 24.0 | 20.0 |
| 27 | 7.0 | 0.0 | --- | 0.0 | 0.0 | 12.0 | 21.0 | 29.0 | 31.0 | 27.0 | 27.0 | 20.0 |
| 28 | 7.0 | 0.0 | 1.0 | --- | 0.0 | 11.0 | 19.0 | 26.0 | 27.0 | 27.0 | 23.0 | 20.0 |
| 29 | 7.0 | 0.0 | --- | --- | --- | 12.0 | 19.0 | 26.0 | 29.0 | 30.0 | 24.0 | 20.0 |
| 30 | 7.0 | 0.0 | --- | 0.0 | --- | 10.0 | 16.0 | 27.0 | 25.0 | 30.0 | 23.0 | 18.0 |
| 31 | 9.0 | --- | 0.0 | --- | --- | 10.0 | --- | 27.0 | --- | 28.0 | 23.0 | --- |

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DAY | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) |
|-------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|
| | OCTOBER | | NOVEMBER | | DECEMBER | | JANUARY | | FEBRUARY | | MARCH | |
| 1 | 70 | 29 | 75 | 26 | 17 | 5.1 | 30 | 4.1 | 70 | 4.3 | 53 | 46 |
| 2 | 63 | 24 | 80 | 30 | 20 | 5.6 | 30 | 3.9 | 64 | 4.0 | 82 | 80 |
| 3 | 98 | 34 | 83 | 29 | 29 | 7.2 | 95 | 12 | 61 | 3.8 | 65 | 71 |
| 4 | 129 | 40 | 52 | 17 | 25 | 7.1 | 90 | 9.7 | 60 | 3.7 | 57 | 67 |
| 5 | 235 | 184 | 60 | 20 | 21 | 5.3 | 57 | 5.4 | 61 | 3.8 | 62 | 66 |
| 6 | 290 | 404 | 56 | 20 | 47 | 12 | 54 | 4.5 | 52 | 3.1 | 87 | 79 |
| 7 | 97 | 120 | 55 | 20 | 50 | 10 | 48 | 3.6 | 32 | 1.9 | 52 | 45 |
| 8 | 86 | 75 | 37 | 13 | 37 | 6.8 | 51 | 3.6 | 26 | 1.5 | 66 | 56 |
| 9 | 73 | 47 | 57 | 20 | 26 | 5.9 | 45 | 3.5 | 35 | 2.2 | 54 | 47 |
| 10 | 87 | 47 | 51 | 18 | 23 | 5.2 | 46 | 3.6 | 46 | 4.1 | 82 | 76 |
| 11 | 95 | 43 | 30 | 10 | 24 | 4.7 | 47 | 4.2 | 50 | 10 | 360 | 397 |
| 12 | 89 | 36 | 31 | 9.7 | 22 | 4.5 | 43 | 3.7 | 80 | 97 | 3000 | 13000 |
| 13 | 87 | 33 | 33 | 9.8 | 20 | 3.9 | 36 | 2.7 | 112 | 212 | 2040 | 12200 |
| 14 | 84 | 27 | 23 | 8.6 | 20 | 3.8 | 68 | 5.0 | 94 | 155 | 800 | 3650 |
| 15 | 94 | 28 | 28 | 8.9 | 20 | 3.9 | 95 | 7.2 | 72 | 76 | 57 | 186 |
| 16 | 82 | 23 | 16 | 4.9 | 17 | 3.5 | 94 | 7.1 | 52 | 37 | 239 | 612 |
| 17 | 49 | 13 | 23 | 7.3 | 22 | 4.6 | 104 | 7.6 | 36 | 21 | 212 | 412 |
| 18 | 46 | 12 | 29 | 9.2 | 47 | 11 | 109 | 7.9 | 32 | 18 | 214 | 349 |
| 19 | 45 | 13 | 35 | 12 | 77 | 19 | 109 | 7.9 | 29 | 16 | 162 | 226 |
| 20 | 45 | 13 | 41 | 14 | 63 | 15 | 101 | 7.1 | 21 | 9.1 | 121 | 163 |
| 21 | 45 | 13 | 31 | 11 | 31 | 5.9 | 94 | 6.6 | 14 | 4.9 | 103 | 137 |
| 22 | 49 | 14 | 22 | 7.4 | 46 | 8.7 | 84 | 5.9 | 14 | 6.0 | 78 | 110 |
| 23 | 44 | 12 | 25 | 7.6 | 119 | 28 | 73 | 5.1 | 14 | 11 | 61 | 114 |
| 24 | 55 | 16 | 18 | 6.2 | 118 | 24 | 59 | 4.1 | 74 | 84 | 152 | 337 |
| 25 | 75 | 23 | 21 | 7.7 | 109 | 23 | 50 | 3.4 | 50 | 62 | 132 | 296 |
| 26 | 98 | 31 | 20 | 7.6 | 116 | 25 | 54 | 3.6 | 55 | 69 | 111 | 232 |
| 27 | 97 | 33 | 24 | 11 | 122 | 27 | 64 | 4.3 | 60 | 62 | 88 | 160 |
| 28 | 54 | 17 | 25 | 6.7 | 124 | 27 | 71 | 4.8 | 53 | 47 | 347 | 824 |
| 29 | 38 | 11 | 25 | 7.3 | 101 | 19 | 90 | 5.8 | --- | --- | 2140 | 18600 |
| 30 | 55 | 17 | 26 | 6.9 | 68 | 12 | 102 | 6.6 | --- | --- | 640 | 5820 |
| 31 | 71 | 24 | --- | --- | 43 | 7.0 | 90 | 5.6 | --- | --- | 470 | 2880 |
| TOTAL | --- | 1456 | --- | 384.7 | --- | 350.7 | --- | 170.1 | --- | 1029.4 | --- | 61338 |

SKUNK RIVER BASIN

0547400 SKUNK RIVER AT AUGUSTA, IA--Continued

WATER QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| 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 | 263 | 1070 | 117 | 75 | 51 | 23 | 57 | 15 | 138 | 48 | 1120 | 11600 |
| 2 | 221 | 692 | 133 | 91 | 50 | 20 | 58 | 15 | 116 | 45 | 975 | 8190 |
| 3 | 174 | 451 | 132 | 103 | 50 | 19 | 54 | 19 | 74 | 21 | 1840 | 28600 |
| 4 | 142 | 329 | 201 | 226 | 49 | 18 | 26 | 8.3 | 66 | 15 | 1760 | 30500 |
| 5 | 157 | 428 | 348 | 2670 | 47 | 18 | 31 | 8.2 | 92 | 34 | 1060 | 14300 |
| 6 | 126 | 415 | 962 | 9250 | 52 | 19 | 45 | 11 | 103 | 50 | 745 | 7420 |
| 7 | 96 | 280 | 1740 | 15900 | 53 | 19 | 36 | 7.5 | 262 | 331 | 515 | 4280 |
| 8 | 87 | 207 | 1040 | 6940 | 58 | 41 | 50 | 9.7 | 1740 | 17000 | 448 | 2750 |
| 9 | 75 | 153 | 585 | 2420 | 39 | 25 | 49 | 9.1 | 4040 | 91000 | 319 | 1670 |
| 10 | 96 | 177 | 335 | 1110 | 44 | 20 | 32 | 6.3 | 1620 | 24300 | 222 | 1010 |
| 11 | 89 | 145 | 189 | 508 | 38 | 15 | 35 | 6.5 | 650 | 5070 | 188 | 772 |
| 12 | 92 | 131 | 157 | 346 | 35 | 14 | 37 | 6.9 | 392 | 1480 | 394 | 2000 |
| 13 | 91 | 116 | 154 | 276 | 49 | 22 | 32 | 6.2 | 214 | 518 | 678 | 6790 |
| 14 | 71 | 82 | 120 | 181 | 43 | 19 | 28 | 4.8 | 193 | 542 | 1060 | 14700 |
| 15 | 96 | 101 | 83 | 107 | 29 | 11 | 28 | 4.6 | 236 | 898 | 657 | 7360 |
| 16 | 78 | 76 | 50 | 59 | 41 | 15 | 35 | 11 | 228 | 825 | 286 | 1810 |
| 17 | 52 | 48 | 45 | 47 | 51 | 17 | 39 | 13 | 210 | 635 | 246 | 1490 |
| 18 | 80 | 67 | 54 | 51 | 58 | 18 | 45 | 11 | 130 | 300 | 579 | 4430 |
| 19 | 118 | 93 | 53 | 45 | 53 | 15 | 54 | 41 | 153 | 392 | 744 | 6850 |
| 20 | 100 | 76 | 96 | 74 | 40 | 11 | 31 | 46 | 650 | 5930 | 356 | 2710 |
| 21 | 83 | 72 | 78 | 59 | 37 | 9.1 | 38 | 33 | 631 | 5910 | 579 | 5720 |
| 22 | 119 | 134 | 65 | 48 | 42 | 9.9 | 137 | 120 | 620 | 5910 | 594 | 4600 |
| 23 | 115 | 224 | 83 | 82 | 34 | 8.2 | 137 | 115 | 802 | 6890 | 405 | 2360 |
| 24 | 73 | 119 | 63 | 65 | 36 | 8.7 | 43 | 17 | 579 | 3610 | 298 | 1680 |
| 25 | 92 | 121 | 115 | 90 | 53 | 13 | 51 | 17 | 408 | 1940 | 278 | 1560 |
| 26 | 122 | 135 | 110 | 83 | 49 | 12 | 69 | 20 | 326 | 1230 | 198 | 1040 |
| 27 | 95 | 92 | 86 | 62 | 40 | 9.7 | 88 | 24 | 231 | 786 | 175 | 902 |
| 28 | 107 | 94 | 70 | 46 | 52 | 13 | 75 | 19 | 198 | 674 | 153 | 834 |
| 29 | 114 | 89 | 41 | 28 | 56 | 14 | 55 | 15 | 228 | 1020 | 303 | 1600 |
| 30 | 109 | 75 | 58 | 38 | 64 | 16 | 48 | 12 | 210 | 885 | 272 | 1290 |
| 31 | --- | --- | 62 | 34 | --- | --- | 458 | 349 | 938 | 8450 | --- | --- |
| TOTAL | --- | 6292 | --- | 41114 | --- | 492.6 | --- | 1001.1 | --- | 186739 | --- | 180818 |

TOTAL LOAD FOR YEAR: 481185.6 TONS.

| DATE | TIME | TEMPER- ATURE (DEG C) (00010) | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | SUS- PENDE SEDI- MENT CHARGE (MG/L) (80154) | SUS- PENDE SEDI- MENT CHARGE (T/DAY) (80155) | SUS- SED. FALL DIAM. % FINER THAN (70337) | SUS- SED. FALL DIAM. % FINER THAN (70338) | SUS- SED. FALL DIAM. % FINER THAN (70339) | SUS- SED. FALL DIAM. % FINER THAN (70340) | SUS- SED. FALL DIAM. % FINER THAN (70342) | SUS- SED. FALL DIAM. % FINER THAN (70343) | SUS- SED. FALL DIAM. % FINER THAN (70344) |
|-----------|------|--|--|---|--|---|---|---|---|---|---|---|
| AUG 09... | 1900 | 21.0 | 7780 | 3270 | 68700 | 51 | 57 | 71 | 82 | 99 | 99 | 100 |
| SEP 03... | 1900 | 22.0 | 6740 | 2520 | 45900 | 51 | 57 | 64 | 75 | 98 | 99 | 100 |

MISSISSIPPI RIVER MAIN STEM

115

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) above mean sea level (levels by Corps of Engineers); 477.83 ft (145.643 m) above mean sea level, adjustment of 1912; 477.34 ft (145.493 m) above mean gulf level; and 484.65 ft (147.721 m) above Memphis datum. 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 496.94 ft (151.467 m) above mean sea level, adjustment of 1912.

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.--99 years, 62,170 ft³/s (1,761 m³/s), 7.09 in/yr (180 mm/yr), 45,040,000 acre-ft/yr (55,500 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, 79,800 ft³/s (2,260 m³/s) Aug. 9; minimum daily, 10,700 ft³/s (303 m³/s) Nov. 11.

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 | 12300 | 21000 | 14600 | 17900 | 16900 | 34700 | 61200 | 50900 | 18000 | 46100 | 16600 | 35600 |
| 2 | 12200 | 21400 | 14100 | 17600 | 16700 | 34400 | 56300 | 47100 | 23800 | 41400 | 16300 | 42700 |
| 3 | 14600 | 18500 | 15700 | 17900 | 16700 | 31800 | 48300 | 45600 | 28500 | 40700 | 20700 | 52500 |
| 4 | 13000 | 20100 | 15600 | 16200 | 14200 | 29800 | 54600 | 38400 | 26600 | 34800 | 23100 | 61900 |
| 5 | 15300 | 21400 | 11200 | 16900 | 14100 | 28800 | 55600 | 34100 | 25400 | 30000 | 23000 | 63700 |
| 6 | 18800 | 20500 | 12800 | 18600 | 15300 | 33000 | 59000 | 42900 | 27300 | 30400 | 26200 | 59900 |
| 7 | 20200 | 20200 | 13000 | 17300 | 15400 | 34300 | 61800 | 44400 | 26200 | 27600 | 30100 | 54200 |
| 8 | 22200 | 17200 | 14100 | 17700 | 16700 | 33400 | 63900 | 43600 | 28400 | 26700 | 46200 | 51700 |
| 9 | 19200 | 12000 | 14100 | 18400 | 17300 | 30500 | 59900 | 37500 | 41900 | 27500 | 79800 | 48800 |
| 10 | 18900 | 11100 | 15000 | 18800 | 16000 | 33900 | 56000 | 29800 | 41100 | 37300 | 65300 | 47200 |
| 11 | 12700 | 10700 | 17200 | 17400 | 15700 | 36400 | 47600 | 25900 | 36100 | 39100 | 53500 | 47300 |
| 12 | 12500 | 12500 | 16900 | 16800 | 20200 | 45400 | 44000 | 28100 | 36200 | 37600 | 40300 | 46800 |
| 13 | 16400 | 15100 | 14400 | 17100 | 22800 | 54300 | 41800 | 27300 | 31100 | 37000 | 37500 | 53000 |
| 14 | 17300 | 17800 | 14900 | 17600 | 25100 | 58100 | 41800 | 27100 | 24000 | 32800 | 33700 | 52400 |
| 15 | 16700 | 19500 | 17400 | 17200 | 22800 | 60600 | 36600 | 23900 | 17700 | 30400 | 32900 | 53300 |
| 16 | 16900 | 18800 | 15600 | 17700 | 19700 | 53000 | 31400 | 22600 | 17900 | 24400 | 18700 | 48300 |
| 17 | 16200 | 17600 | 16500 | 16700 | 19500 | 54700 | 32200 | 22800 | 19700 | 20600 | 34800 | 47800 |
| 18 | 15600 | 17400 | 17700 | 16200 | 20000 | 59000 | 30700 | 23300 | 20800 | 25000 | 36700 | 49900 |
| 19 | 16200 | 17900 | 21000 | 17200 | 19800 | 60100 | 34400 | 23100 | 27700 | 45700 | 38800 | 63900 |
| 20 | 18400 | 18500 | 21400 | 17700 | 19700 | 60100 | 41700 | 25400 | 33500 | 60600 | 31700 | 75100 |
| 21 | 18100 | 18700 | 17800 | 17400 | 20300 | 57500 | 44300 | 30800 | 32900 | 56200 | 29100 | 74200 |
| 22 | 16300 | 17600 | 17500 | 16000 | 20500 | 55200 | 54700 | 34900 | 34600 | 30300 | 29400 | 60000 |
| 23 | 16700 | 21400 | 20300 | 16200 | 21100 | 54600 | 54800 | 34400 | 30100 | 18700 | 31700 | 53300 |
| 24 | 17800 | 21300 | 17700 | 17000 | 28600 | 49000 | 52500 | 33400 | 26800 | 16800 | 31400 | 47500 |
| 25 | 18100 | 20400 | 16700 | 17400 | 40400 | 44400 | 55300 | 33100 | 24700 | 20200 | 31200 | 52400 |
| 26 | 17600 | 18700 | 15900 | 18100 | 53400 | 36400 | 55400 | 30400 | 25800 | 21800 | 30800 | 58200 |
| 27 | 17000 | 18800 | 16000 | 18400 | 52300 | 35000 | 50500 | 26700 | 25100 | 30900 | 28500 | 60100 |
| 28 | 15900 | 15400 | 16100 | 16800 | 42000 | 35600 | 51000 | 25200 | 23100 | 29500 | 26900 | 64000 |
| 29 | 14800 | 12400 | 16500 | 16400 | --- | 46600 | 49800 | 20600 | 23400 | 28100 | 32500 | 64500 |
| 30 | 15800 | 13300 | 16600 | 17100 | --- | 60100 | 51200 | 21000 | 26900 | 21200 | 31200 | 65200 |
| 31 | 17400 | --- | 17600 | 18000 | --- | 60400 | --- | 19600 | --- | 20000 | 32300 | --- |
| TOTAL | 511100 | 527200 | 502300 | 535700 | 643400 | 1404200 | 1478600 | 974100 | 825300 | 989400 | 1042900 | 1655400 |
| MEAN | 16490 | 17670 | 16200 | 17280 | 20980 | 45300 | 49290 | 31420 | 27510 | 31920 | 33640 | 55180 |
| MAX | 22200 | 21400 | 21400 | 18800 | 53400 | 63600 | 63900 | 50900 | 41900 | 60600 | 79800 | 75100 |
| MIN | 12200 | 10700 | 11200 | 16000 | 14100 | 20800 | 30700 | 19600 | 17200 | 16800 | 16300 | 35600 |
| CFSM | .14 | .15 | .14 | .15 | .19 | .38 | .41 | .26 | .23 | .27 | .28 | .46 |
| 7d. | .76 | .76 | .76 | .76 | .76 | .76 | .76 | .76 | .76 | .76 | .76 | .76 |
| AC-FT | 1014000 | 1046000 | 996000 | 1063000 | 1276000 | 2785000 | 2933000 | 1932000 | 1637000 | 1962000 | 2069000 | 3283000 |

| | | | | | | | | | | | | | | |
|-------------|-------|----------|------|-------|-----|--------|-----|-------|------|-----|----|------|-------|----------|
| CAL YR 1976 | TOTAL | 17922300 | MEAN | 46970 | MAX | 214000 | MIN | 10700 | CFSM | .41 | IN | 5.60 | AC-FT | 35550000 |
| WTR YR 1977 | TOTAL | 11089600 | MEAN | 30380 | MAX | 79800 | MIN | 10700 | CFSM | .26 | IN | 3.47 | AC-FT | 22000000 |

MISSISSIPPI RIVER MAIN STEM

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Samples collected at 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.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | DIS- SOLVED SILICA (SI02) (MG/L) (00955) | TOTAL IRON (FE) (UG/L) (01045) | DIS- SOLVED IRON (FE) (UG/L) (01046) | TOTAL MANGANESE (MN) (UG/L) (01055) | SUS- PENDE MAN- GANESE (MN) (UG/L) (01054) | DIS- SOLVED MAN- GANESE (MN) (UG/L) (01056) | DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915) | DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925) |
|-------|------|--|---|--|---|---|--|---|---|--|
| OCT | | | | | | | | | | |
| 26... | 1100 | 37000 | .4 | -- | -- | -- | -- | -- | 40 | 21 |
| JAN | | | | | | | | | | |
| 26... | 1200 | 25500 | 4.2 | 1500 | 120 | 120 | 60 | 60 | 52 | 25 |
| FEB | | | | | | | | | | |
| 16... | 1300 | 26000 | 8.0 | -- | -- | -- | -- | -- | 53 | 22 |
| MAR | | | | | | | | | | |
| 08... | 1130 | 38000 | 8.2 | -- | -- | -- | -- | -- | 44 | 20 |
| APR | | | | | | | | | | |
| 12... | 1300 | 55500 | .1 | -- | -- | -- | -- | -- | 45 | 19 |
| MAY | | | | | | | | | | |
| 10... | 1300 | 48000 | 1.6 | -- | -- | -- | -- | -- | 37 | 16 |
| JUL | | | | | | | | | | |
| 12... | 1400 | 48000 | .8 | -- | -- | -- | -- | -- | 38 | 17 |
| AUG | | | | | | | | | | |
| 09... | 1130 | 84000 | 1.0 | -- | -- | -- | -- | -- | 37 | 16 |
| SEP | | | | | | | | | | |
| 13... | 1130 | 59000 | 4.3 | 840 | 30 | 80 | 80 | 0 | 43 | 18 |

| DATE | DIS- SOLVED SODIUM (NA) (MG/L) (00930) | DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935) | BICAR- BONATE (HCO3) (MG/L) (00440) | CAR- BONATE (CO3) (MG/L) (00445) | ALKA- LINITY AS CAC03 (MG/L) (00410) | DIS- SOLVED SULFATE (SO4) (MG/L) (00945) | DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940) | DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950) | TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630) | TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625) |
|-------|---|---|---|--|---|---|--|---|---|---|
| OCT | | | | | | | | | | |
| 26... | 14 | 2.4 | 201 | 0 | 165 | 28 | 17 | .2 | .20 | 1.1 |
| JAN | | | | | | | | | | |
| 26... | 18 | 2.6 | 249 | 0 | 200 | 33 | 24 | .2 | .60 | 1.4 |
| FEB | | | | | | | | | | |
| 16... | 18 | 3.2 | 230 | 0 | 190 | 31 | 24 | .2 | .93 | 1.6 |
| MAR | | | | | | | | | | |
| 08... | 15 | 4.7 | 200 | 0 | 160 | 21 | 22 | .2 | 1.3 | 2.0 |
| APR | | | | | | | | | | |
| 12... | 18 | 3.4 | 150 | -- | 120 | 32 | 22 | .1 | .35 | 2.2 |
| MAY | | | | | | | | | | |
| 10... | 12 | 3.4 | 150 | 0 | 120 | 37 | 15 | .2 | .80 | 1.6 |
| JUL | | | | | | | | | | |
| 12... | 13 | 3.0 | 160 | 0 | 130 | 36 | 19 | .2 | -- | -- |
| AUG | | | | | | | | | | |
| 09... | 12 | 3.5 | 160 | 0 | 130 | 29 | 16 | .2 | .34 | 1.4 |
| SEP | | | | | | | | | | |
| 13... | 10 | 3.1 | 180 | 0 | 150 | 31 | 16 | .2 | 1.1 | -- |

| DATE | TOTAL NITRO- GEN (N) (MG/L) (00600) | TOTAL NITRO- GEN (NO3) (MG/L) (71887) | TOTAL PHOS- PHORUS (P) (MG/L) (00665) | DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300) | DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L) (70301) | DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303) | DIS- SOLVED SOLIDS (TONS PER DAY) (70302) | HARD- NESS (CA, MG) (MG/L) (00900) | NON- CAR- BONATE HARD- NESS (MG/L) (00902) | PERCENT SODIUM (00932) |
|-------|--|--|--|---|--|---|---|--|--|------------------------------|
| OCT | | | | | | | | | | |
| 26... | 1.3 | 5.8 | .17 | 216 | 222 | .29 | 21600 | 190 | 21 | 14 |
| JAN | | | | | | | | | | |
| 26... | 2.0 | 8.9 | .23 | 297 | 282 | .40 | 20400 | 230 | 29 | 14 |
| FEB | | | | | | | | | | |
| 16... | 2.5 | 11 | .26 | 288 | 273 | .39 | 20200 | 220 | 34 | 15 |
| MAR | | | | | | | | | | |
| 08... | 3.3 | 15 | .34 | 284 | 234 | .39 | 29100 | 190 | 28 | 14 |
| APR | | | | | | | | | | |
| 12... | 2.6 | 11 | .19 | 256 | 214 | .35 | 38400 | 190 | 68 | 17 |
| MAY | | | | | | | | | | |
| 10... | 2.4 | 11 | .26 | 216 | 196 | .29 | 28000 | 160 | 35 | 14 |
| JUL | | | | | | | | | | |
| 12... | -- | -- | -- | 216 | 206 | .29 | 28000 | 160 | 34 | 14 |
| AUG | | | | | | | | | | |
| 09... | 1.7 | 7.7 | .40 | 211 | 194 | .29 | 47900 | 160 | 27 | 14 |
| SEP | | | | | | | | | | |
| 13... | -- | -- | .23 | 214 | 214 | .29 | 34100 | 180 | 34 | 11 |

MISSISSIPPI RIVER MAIN STEM

117

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | SODIUM AD- SORP- TION RATIO (00931) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) | TUR- BID- ITY (JTU) (00070) | CARBON DIOXIDE (CO2) (MG/L) (00405) | TOTAL PHYTO- PLANK- TON (CELLS PER ML) (60050) | FECAL COLI- FORM (COL./ 100 ML) (31625) | FECAL STREP- TOCOCCI KF AGAR (COL. PER 100 ML) (31673) | TOTAL ORGANIC CARBON (C) (00680) |
|-----------|--|---|--------------------------|--|---|---|---|--|---|--|
| OCT 26... | .4 | 410 | 8.1 | 9.0 | 4 | 2.6 | 5300 | 45 | 57 | -- |
| JAN 26... | .5 | 460 | 8.2 | 2.0 | 3 | 2.5 | -- | 42 | 150 | 6.9 |
| FEB 16... | .5 | 460 | 8.6 | 1.0 | 4 | .9 | 1200 | 826 | 220 | -- |
| MAR 08... | .5 | 410 | 8.1 | 4.5 | 6 | 2.5 | -- | 46 | 120 | -- |
| APR 12... | .6 | 400 | -- | 13.5 | 15 | -- | -- | 200 | 160 | -- |
| MAY 10... | .4 | 340 | 8.2 | 21.5 | 25 | 1.5 | 20000 | 170 | 130 | -- |
| JUL 12... | .4 | 390 | 7.6 | -- | 8 | 6.4 | 43000 | 210 | 120 | -- |
| AUG 09... | .4 | 347 | 7.6 | 25.5 | 60 | 6.4 | -- | 140 | -- | -- |
| SEP 13... | .3 | 380 | 8.3 | 22.0 | 15 | 1.4 | 3400 | 160 | 120 | 6.9 |

| DATE | TOTAL ARSENIC (AS) (UG/L) (01002) | SUS- PENDE D ARSENIC (AS) (UG/L) (01001) | DIS- SOLVED ARSENIC (AS) (UG/L) (01000) | TOTAL CAD- MIUM (CD) (UG/L) (01027) | SUS- PENDE D CAD- MIUM (CD) (UG/L) (01026) | DIS- SOLVED CAD- MIUM (CD) (UG/L) (01025) | TOTAL CHRO- MIUM (CR) (UG/L) (01034) | SUS- PENDE D CHRO- MIUM (CR) (UG/L) (01031) | DIS- SOLVED CHRO- MIUM (CR) (UG/L) (01030) | TOTAL COBALT (CO) (UG/L) (01037) |
|-----------|---|---|--|--|--|---|---|---|--|--|
| OCT 26... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN 26... | 1 | 0 | 1 | 3 | 1 | 2 | <10 | <7 | 3 | 0 |
| FEB 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP 13... | 2 | 0 | 5 | <10 | <9 | 1 | 10 | 10 | 0 | <50 |

| DATE | SUS- PENDE D COBALT (CO) (UG/L) (01036) | DIS- SOLVED COBALT (CO) (UG/L) (01035) | TOTAL COPPER (CU) (UG/L) (01042) | SUS- PENDE D COPPER (CU) (UG/L) (01041) | DIS- SOLVED COPPER (CU) (UG/L) (01040) | TOTAL LEAD (PB) (UG/L) (01051) | SUS- PENDE D LEAD (PB) (UG/L) (01050) | DIS- SOLVED LEAD (PB) (UG/L) (01049) | TOTAL MERCURY (HG) (UG/L) (71900) | SUS- PENDE D MERCURY (HG) (UG/L) (71895) |
|-----------|--|---|--|--|---|--|--|---|---|---|
| OCT 26... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JAN 26... | 0 | 0 | 14 | 8 | 6 | 8 | 0 | 9 | 1.2 | .0 |
| FEB 16... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUL 12... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP 13... | <50 | 0 | <10 | <7 | 3 | <100 | <92 | 8 | .4 | .4 |

MISSISSIPPI RIVER MAIN STEM

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued
(National stream-quality accounting network stations)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | DIS- SOLVED MERCURY (HG) (UG/L) (71890) | TOTAL SELE- NIUM (SE) (UG/L) (01147) | SUS- PENDE SELE- NIUM (SE) (UG/L) (01146) | DIS- SOLVED SELE- NIUM (SE) (UG/L) (01145) | TOTAL ZINC (ZN) (UG/L) (01092) | SUS- PENDE ZINC (ZN) (UG/L) (01091) | DIS- SOLVED ZINC (ZN) (UG/L) (01090) | SUS- PENDE SEDI- MENT (MG/L) (80154) | SUS- PENDE SEDI- MENT DIS- CHARGE (T/DAY) (80155) |
|-----------|--|---|---|--|--|--|---|---|--|
| OCT 26... | -- | -- | -- | -- | -- | -- | -- | 12 | 1200 |
| JAN 26... | 1.2 | 0 | 0 | 0 | 20 | 0 | 50 | -- | -- |
| FEB 16... | -- | -- | -- | -- | -- | -- | -- | 18 | 1260 |
| MAR 08... | -- | -- | -- | -- | -- | -- | -- | 27 | 2770 |
| JUL 12... | -- | -- | -- | -- | -- | -- | -- | 29 | 3760 |
| AUG 09... | -- | -- | -- | -- | -- | -- | -- | 400 | 90700 |
| SEP 13... | .0 | 0 | 0 | 0 | 30 | 20 | 10 | -- | -- |

| DATE | TIME | TEMPER- ATURE (DEG C) (00010) | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | SUS- PENDE SEDI- MENT (MG/L) (80154) | SUS- PENDE SEDI- MENT DIS- CHARGE (T/DAY) (80155) | SUS. SED. SIEVE DIAM. % FINER THAN .062 MM (70331) |
|-----------|------|--|--|---|--|---|
| OCT 26... | 1100 | 9.0 | 37000 | 12 | 1200 | -- |
| FEB 16... | 1300 | 1.0 | 26000 | 18 | 1260 | 74 |
| MAR 08... | 1130 | 4.5 | 38000 | 27 | 2770 | 94 |
| JUN 21... | 1330 | -- | 32900 | 37 | 3290 | 85 |
| JUL 12... | 1400 | -- | 48000 | 29 | 3760 | 74 |
| AUG 09... | 1130 | 25.5 | 84000 | 400 | 90700 | 84 |

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

| DATE TIME | OCT 26,76 1100 | FEB 16,77 1300 | MAY 10,77 1300 | JUL 12,77 1400 | SEP 13,77 1130 |
|---------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| TOTAL CELLS/ML | 5300 | 1200 | 20000 | 43000 | 3400 |
| DIVERSITY: DIVISION | 1.3 | 1.0 | 1.2 | 1.1 | 1.6 |
| ..CLASS | 1.3 | 1.1 | 1.2 | 1.1 | 1.6 |
| ..ORDER | 1.9 | 1.3 | 1.7 | 1.2 | 1.6 |
| ...FAMILY | 2.1 | 1.3 | 2.2 | 1.2 | 2.2 |
|GENUS | 2.5 | 1.4 | 2.8 | 0.0 | 2.5 |

| 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 | -- | - | -- | - | * 0 | | * 0 | | -- | - |
| ...COELASTRACEAE | | | | | | | | | | |
| ...COELASTRUM | -- | - | -- | - | 180 | 1 | -- | - | -- | - |
| ...HYDRODICTYACEAE | | | | | | | | | | |
| ...PEDIASTRUM | -- | - | -- | - | 280 | 1 | -- | - | -- | - |
| ...MICRACTINIACEAE | | | | | | | | | | |
| ...MICRACTINIUM | 37 | 1 | -- | - | * 0 | | -- | - | -- | - |
| ...OOCYSTACEAE | | | | | | | | | | |
| ...ANKISTRODESMUS | 37 | 1 | 15 | 1 | * 0 | | -- | - | 28 | 1 |
| ...CHODATELLA | -- | - | -- | - | -- | | * 0 | | -- | - |
| ...DICTYOSPHAERIUM | -- | - | -- | - | 910 | 4 | * 0 | | -- | - |
| ...FRANCEIA | -- | - | -- | - | -- | | * 0 | | 28 | 1 |
| ...KIRCHNERIELLA | 37 | 1 | -- | - | * 0 | | -- | - | 57 | 2 |
| ...OOCYSTIS | -- | - | -- | - | 1600 | 8 | 260 | 1 | -- | - |
| ...SELENASTRUM | 150 | 3 | -- | - | 350 | 2 | * 0 | | -- | - |
| ...TETRAEDRON | 37 | 1 | -- | - | * 0 | | * 0 | | -- | - |
| ...WESTELLA | 150 | 3 | -- | - | -- | | -- | - | -- | - |
| ...SCENEDESMACEAE | -- | - | -- | - | -- | | 810 | 2 | -- | - |
| ...ACTINASTRUM | -- | - | -- | - | * 0 | | -- | - | -- | - |
| ...CRUCIGENIA | -- | - | -- | - | 280 | 1 | 290 | 1 | -- | - |
| ...SCENEDESMUS | 440 | 8 | 9 | 1 | 2100 | 11 | * 0 | | 400 | 12 |
| ...TETRASTRUM | -- | - | -- | - | 1600 | 8 | 260 | 1 | 230 | 7 |
| ..TETRASPOALES | | | | | | | | | | |
| ...COCCOMYXACEAE | | | | | | | | | | |
| ...ELAKATOTHRIX | -- | - | -- | - | 140 | 1 | -- | - | -- | - |
| ...PALMELLACEAE | | | | | | | | | | |
| ...GLOEOCYSTIS | -- | - | -- | - | -- | | 220 | 1 | -- | - |
| ..ULOTRICHALES | | | | | | | | | | |
| ...ULOTRICHACEAE | -- | - | -- | - | -- | | 220 | 1 | -- | - |
| ...CHLOROCOCCALES | | | | | | | | | | |
| ...OOCYSTACEAE | | | | | | | | | | |
| ...GLOEOACTINIUM | -- | - | -- | - | 530 | 3 | -- | - | -- | - |
| CHRYSTOPHYTA | | | | | | | | | | |
| ..BACILLARIOPHYCEAE | | | | | | | | | | |
| ...CENTRALES | | | | | | | | | | |
| ...COSCINODISCACEAE | | | | | | | | | | |
| ...CYCLOTELLA | 370 | 7 | 220# 18 | | 560 | 3 | 740 | 2 | 57 | 2 |
| ...MELOSIRA | 440 | 8 | -- | - | * 0 | | 11000# 26 | | 880# 26 | |
| ...STEPHANODISCUS | -- | - | -- | - | * 0 | | -- | - | -- | - |
| ..PENNALES | | | | | | | | | | |
| ...FRAGILARIACEAE | | | | | | | | | | |
| ...ASTERIONELLA | -- | - | 77 | 6 | -- | | -- | - | -- | - |
| ...FRAGILARIA | -- | - | -- | - | * 0 | | -- | - | -- | - |
| ...SYNEDRA | -- | - | 6 | 1 | -- | | -- | - | -- | - |
| ...NITZSCHIA | 110 | 2 | * 0 | | * 0 | | -- | - | 28 | 1 |
| ..CHRYSTOPHYCEAE | | | | | | | | | | |
| ...CHRYSONOMADALES | | | | | | | | | | |
| ...CHROMULINACEAE | | | | | | | | | | |
| ...CHRYSOCOCCLUS | -- | - | 9 | 1 | -- | | -- | - | -- | - |
| CYANOPHYTA (BLUE-GREEN ALGAE) | | | | | | | | | | |
| ..CYANOPHYCEAE | | | | | | | | | | |
| ...CHROCOCCOCCALES | | | | | | | | | | |
| ...CHROCOCCOCCAEAE | | | | | | | | | | |
| ...AGMENEILLUM | -- | - | -- | - | -- | | 2400 | 6 | -- | - |
| ...ANACYSTIS | 2700# 51 | | -- | - | 9200# 45 | | 25000# 59 | | -- | - |
| ...HORMOGONALES | | | | | | | | | | |
| ...NOSTOCAEAE | | | | | | | | | | |
| ...ANABAENA | -- | - | -- | - | -- | | -- | - | 1100# 32 | |
| ...OSCILLATORIACEAE | | | | | | | | | | |
| ...LYNGBYA | 370 | 7 | -- | - | -- | | -- | - | -- | - |
| ...OSCILLATORIA | 370 | 7 | 850# 71 | | 2000 | 10 | -- | - | 570# 17 | |
| ...CHROCOCCOCCALES | | | | | | | | | | |
| ...CHROCOCCOCCAEAE | | | | | | | | | | |
| ...GOMPHOSPHERIA | -- | - | -- | - | -- | | 810 | 2 | -- | - |
| EUGLENOPHYTA (EUGLENOIDS) | | | | | | | | | | |
| ..CRYPTOPHYCEAE | | | | | | | | | | |
| ...CRYPTOMONIDALES | | | | | | | | | | |
| ...CRYPTOMONODACEAE | | | | | | | | | | |
| ...CRYPTOMONAS | -- | - | * 0 | | -- | | -- | - | -- | - |
| ..EUGLENOPHYCEAE | | | | | | | | | | |
| ...EUGLENALES | | | | | | | | | | |
| ...EUGLENACEAE | | | | | | | | | | |
| ...TRACHELOMONAS | 37 | 1 | -- | - | 110 | 1 | -- | - | 28 | 1 |

DES MOINES RIVER BASIN

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) above mean sea level.

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

AVERAGE DISCHARGE.--26 years, 278 ft³/s (7.873 m³/s), 2.75 in/yr (70 mm/yr), 201,400 acre-ft/yr (248 hm³/yr); median of yearly mean discharges, 210 ft³/s (5.95 m³/s), 2.1 in/yr (53 mm/yr), 152,000 acre-ft/yr (187 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.--Maximum discharge, 380 ft³/s (10.8 m³/s) Mar. 19, gage height, 3.35 ft (1.021 m), no peak above base of 1,500 ft³/s (42.5 m³/s); maximum gage height, 3.37 ft (1.027 m) Mar. 12, backwater from ice; no flow Jan. 16-18.

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 | 1.2 | .90 | 2.0 | 1.2 | .30 | 19 | 94 | 36 | 19 | 170 | 9.0 | 5.4 |
| 2 | .98 | 1.3 | 1.9 | 1.2 | .29 | 15 | 94 | 32 | 18 | 144 | 6.8 | 3.9 |
| 3 | .78 | 1.9 | 1.9 | 1.2 | .28 | 10 | 90 | 29 | 17 | 132 | 4.9 | 5.2 |
| 4 | 1.1 | 1.8 | 1.9 | 1.1 | .28 | 7.5 | 83 | 35 | 16 | 109 | 4.9 | 8.2 |
| 5 | 1.1 | 1.8 | 1.8 | 1.0 | .28 | 6.8 | 83 | 41 | 13 | 91 | 4.4 | 9.7 |
| 6 | 1.3 | 1.8 | 1.8 | .92 | .28 | 7.5 | 80 | 103 | 11 | 84 | 2.3 | 10 |
| 7 | 1.0 | 1.1 | 1.8 | .82 | .29 | 12 | 71 | 213 | 10 | 80 | 1.7 | 9.3 |
| 8 | 1.0 | 1.5 | 1.8 | .74 | .32 | 65 | 68 | 131 | 12 | 82 | 2.3 | 7.2 |
| 9 | 1.0 | 2.5 | 1.8 | .66 | .50 | 183 | 63 | 88 | 11 | 70 | 3.6 | 7.4 |
| 10 | .71 | 4.5 | 1.8 | .58 | .80 | 204 | 53 | 68 | 10 | 71 | 3.2 | 5.6 |
| 11 | .96 | 4.0 | 1.8 | .52 | 1.3 | 220 | 49 | 54 | 8.7 | 72 | 3.2 | 4.6 |
| 12 | 2.5 | 2.8 | 1.8 | .45 | 1.7 | 290 | 55 | 49 | 7.6 | 64 | 2.1 | 4.5 |
| 13 | 1.7 | 2.3 | 1.8 | .38 | 1.7 | 335 | 61 | 46 | 8.7 | 58 | 1.8 | 5.9 |
| 14 | 1.0 | 2.3 | 1.9 | .06 | 1.6 | 270 | 54 | 42 | 8.0 | 54 | .96 | 7.9 |
| 15 | .98 | 3.2 | 1.9 | .02 | 1.8 | 206 | 57 | 40 | 12 | 47 | 8.1 | 6.4 |
| 16 | .61 | 3.7 | 1.9 | .00 | 1.2 | 146 | 59 | 36 | 22 | 41 | 15 | 5.1 |
| 17 | .49 | 4.2 | 1.9 | .00 | 1.3 | 109 | 66 | 28 | 64 | 36 | 24 | 5.2 |
| 18 | .67 | 5.0 | 1.9 | .00 | 1.3 | 206 | 66 | 27 | 86 | 34 | 32 | 5.2 |
| 19 | 1.1 | 5.2 | 1.9 | .03 | 1.2 | 341 | 66 | 31 | 104 | 29 | 21 | 5.7 |
| 20 | .99 | 5.2 | 1.9 | .10 | 1.2 | 323 | 71 | 31 | 85 | 26 | 16 | 5.2 |
| 21 | .98 | 4.9 | 1.9 | .26 | 1.5 | 219 | 76 | 28 | 69 | 24 | 14 | 5.4 |
| 22 | .85 | 4.3 | 1.8 | .30 | 1.8 | 167 | 69 | 31 | 81 | 23 | 12 | 5.6 |
| 23 | 1.4 | 3.9 | 1.8 | .30 | 7.0 | 155 | 65 | 30 | 91 | 23 | 13 | 9.1 |
| 24 | 1.3 | 3.6 | 1.8 | .30 | 8.4 | 133 | 59 | 29 | 103 | 22 | 12 | 11 |
| 25 | .84 | 3.6 | 1.7 | .30 | 11 | 109 | 57 | 28 | 112 | 19 | 11 | 19 |
| 26 | .71 | 3.4 | 1.7 | .30 | 15 | 90 | 52 | 28 | 114 | 16 | 9.1 | 20 |
| 27 | .79 | 3.0 | 1.7 | .30 | 19 | 83 | 48 | 26 | 113 | 13 | 8.4 | 16 |
| 28 | .64 | 2.7 | 1.6 | .30 | 21 | 86 | 43 | 24 | 119 | 12 | 7.7 | 13 |
| 29 | .67 | 2.3 | 1.6 | .30 | --- | 99 | 39 | 21 | 121 | 9.3 | 7.3 | 13 |
| 30 | .75 | 2.1 | 1.5 | .30 | --- | 94 | 38 | 20 | 175 | 6.9 | 6.2 | 71 |
| 31 | .95 | --- | 1.3 | .30 | --- | 86 | --- | 19 | --- | 7.4 | 6.1 | --- |
| TOTAL | 31.05 | 90.80 | 55.6 | 14.24 | 102.62 | 4296.8 | 1929 | 1444 | 1641.0 | 1669.6 | 274.06 | 310.7 |
| MEAN | 1.00 | 3.03 | 1.79 | .46 | 3.67 | 139 | 64.3 | 46.6 | 54.7 | 53.9 | 8.84 | 10.4 |
| MAX | 2.5 | 5.2 | 2.0 | 1.2 | 21 | 341 | 94 | 213 | 175 | 170 | 32 | 71 |
| MIN | .49 | .90 | 1.3 | .00 | .28 | 6.8 | 38 | 19 | 7.6 | 6.9 | .96 | 3.9 |
| CFSM | .001 | .002 | .001 | .000 | .003 | .10 | .05 | .03 | .04 | .04 | .006 | .008 |
| IN. | .00 | .00 | .00 | .00 | .00 | .12 | .05 | .04 | .04 | .05 | .01 | .01 |
| AC-FT | 62 | 180 | 110 | 28 | 204 | 8520 | 3830 | 2860 | 3250 | 3310 | 544 | 616 |

CAL YR 1976 TOTAL 32498.02 MEAN 88.8 MAX 900 MIN .30 CFSM .07 IN .88 AC-FT 54460
WTR YR 1977 TOTAL 11859.47 MEAN 32.5 MAX 341 MIN .00 CFSM .02 IN .32 AC-FT 23520

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) above mean sea level. 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.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--13 years, 705 ft³/s (19.97 m³/s), 4.24 in/yr (108 mm/yr), 510,800 acre-ft/yr (630 hm³/yr); median of yearly mean discharges, 590 ft³/s (16.7 m³/s) 3.6 in/yr (91 mm/yr), 427,000 acre-ft/yr (526 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.--Maximum discharge, 636 ft³/s (18.0 m³/s) Mar. 12, gage height, 4.17 ft (1.271 m), no peak above base of 2,800 ft³/s (79.3 m³/s); minimum daily, 13 ft³/s (0.37 m³/s) Nov. 12, Jan. 12 to Feb. 2.

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 | 31 | 21 | 25 | 15 | 13 | 35 | 196 | 123 | 70 | 110 | 41 | 74 |
| 2 | 29 | 21 | 24 | 15 | 13 | 35 | 235 | 110 | 65 | 124 | 40 | 75 |
| 3 | 27 | 20 | 23 | 15 | 14 | 36 | 250 | 106 | 61 | 151 | 39 | 62 |
| 4 | 26 | 17 | 23 | 14 | 14 | 36 | 258 | 115 | 60 | 148 | 34 | 59 |
| 5 | 22 | 20 | 22 | 14 | 14 | 36 | 216 | 213 | 60 | 136 | 28 | 52 |
| 6 | 20 | 21 | 22 | 14 | 14 | 36 | 141 | 178 | 55 | 129 | 30 | 49 |
| 7 | 19 | 20 | 21 | 14 | 15 | 43 | 156 | 158 | 51 | 124 | 31 | 48 |
| 8 | 19 | 18 | 21 | 14 | 15 | 50 | 177 | 136 | 51 | 111 | 34 | 48 |
| 9 | 18 | 21 | 21 | 14 | 15 | 60 | 175 | 223 | 51 | 96 | 35 | 54 |
| 10 | 18 | 18 | 21 | 14 | 16 | 74 | 175 | 197 | 51 | 92 | 34 | 47 |
| 11 | 17 | 15 | 20 | 14 | 16 | 184 | 130 | 161 | 39 | 103 | 38 | 46 |
| 12 | 17 | 13 | 20 | 13 | 17 | 520 | 143 | 144 | 31 | 96 | 41 | 59 |
| 13 | 16 | 17 | 20 | 13 | 17 | 560 | 158 | 126 | 31 | 90 | 36 | 54 |
| 14 | 16 | 19 | 20 | 13 | 18 | 480 | 167 | 115 | 35 | 93 | 31 | 49 |
| 15 | 16 | 20 | 20 | 13 | 18 | 420 | 210 | 104 | 35 | 86 | 43 | 43 |
| 16 | 15 | 20 | 20 | 13 | 18 | 370 | 194 | 109 | 45 | 83 | 66 | 39 |
| 17 | 15 | 99 | 20 | 13 | 19 | 308 | 206 | 102 | 56 | 80 | 116 | 38 |
| 18 | 15 | 66 | 20 | 13 | 20 | 280 | 188 | 93 | 61 | 75 | 93 | 38 |
| 19 | 15 | 41 | 20 | 13 | 20 | 222 | 189 | 89 | 88 | 65 | 78 | 39 |
| 20 | 16 | 40 | 20 | 13 | 21 | 264 | 192 | 94 | 100 | 59 | 71 | 35 |
| 21 | 19 | 35 | 19 | 13 | 22 | 358 | 213 | 83 | 105 | 56 | 70 | 33 |
| 22 | 18 | 32 | 19 | 13 | 23 | 349 | 203 | 102 | 115 | 53 | 68 | 33 |
| 23 | 22 | 32 | 19 | 13 | 25 | 297 | 232 | 93 | 112 | 51 | 60 | 52 |
| 24 | 28 | 34 | 18 | 13 | 28 | 261 | 200 | 89 | 98 | 56 | 55 | 52 |
| 25 | 25 | 36 | 18 | 13 | 30 | 249 | 174 | 92 | 96 | 97 | 53 | 54 |
| 26 | 24 | 37 | 18 | 13 | 32 | 242 | 165 | 89 | 98 | 96 | 54 | 53 |
| 27 | 23 | 29 | 17 | 13 | 33 | 220 | 150 | 86 | 101 | 76 | 54 | 49 |
| 28 | 21 | 28 | 17 | 13 | 34 | 217 | 147 | 85 | 125 | 78 | 52 | 47 |
| 29 | 21 | 27 | 16 | 13 | --- | 224 | 135 | 89 | 110 | 62 | 49 | 46 |
| 30 | 22 | 26 | 16 | 13 | --- | 220 | 130 | 82 | 114 | 53 | 46 | 48 |
| 31 | 22 | --- | 16 | 13 | --- | 206 | --- | 82 | --- | 46 | 49 | --- |
| TOTAL | 632 | 863 | 616 | 417 | 554 | 6893 | 5505 | 3668 | 2170 | 2775 | 1569 | 1475 |
| MEAN | 20.4 | 28.8 | 19.9 | 13.5 | 19.8 | 222 | 184 | 118 | 72.3 | 89.5 | 50.6 | 49.2 |
| MAX | 31 | 99 | 25 | 15 | 34 | 560 | 258 | 223 | 125 | 151 | 116 | 75 |
| MIN | 15 | 13 | 16 | 13 | 13 | 35 | 130 | 82 | 31 | 46 | 28 | 33 |
| CFSM | .009 | .01 | .009 | .006 | .009 | .10 | .08 | .05 | .03 | .04 | .02 | .02 |
| IN. | .01 | .01 | .01 | .01 | .01 | .11 | .09 | .06 | .04 | .05 | .03 | .02 |
| AC-FT | 1250 | 1710 | 1220 | 827 | 1100 | 13670 | 10920 | 7280 | 4300 | 5500 | 3110 | 2930 |
| CAL YR 1976 | TOTAL | 69015 | MEAN 189 | MAX 2000 | MIN 13 | CFSM .08 | IN 1.14 | AC-FT | 136900 | | | |
| WTR YR 1977 | TOTAL | 27137 | MEAN 74.3 | MAX 560 | MIN 13 | CFSM .03 | IN .45 | AC-FT | 53830 | | | |

DES MOINES RIVER BASIN

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) above mean sea level. 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.--37 years, 475 ft³/s (13.45 m³/s), 4.93 in/yr (125 mm/yr), 344,100 acre-ft/yr (424 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.--Maximum discharge, about 520 ft³/s (14.7 m³/s) May 29, gage height, 8.96 ft (2.731 m), no peak above base of 1,500 ft³/s (42.5 m³/s); maximum gage height, 9.20 ft (2.804 m) Mar. 14, backwater from ice; minimum daily discharge, 4.8 ft³/s (0.14 m³/s) Jan. 11-14.

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 | 7.8 | 16 | 10 | 5.2 | 7.1 | 34 | 44 | 41 | 180 | 21 | 6.2 | 12 |
| 2 | 8.1 | 18 | 10 | 5.0 | 7.6 | 33 | 59 | 37 | 101 | 18 | 6.9 | 13 |
| 3 | 6.6 | 17 | 10 | 5.0 | 8.0 | 34 | 71 | 35 | 68 | 19 | 8.0 | 16 |
| 4 | 7.4 | 17 | 9.8 | 4.9 | 9.0 | 35 | 91 | 39 | 51 | 17 | 7.6 | 20 |
| 5 | 10 | 17 | 9.7 | 4.9 | 9.7 | 36 | 81 | 55 | 38 | 14 | 7.6 | 16 |
| 6 | 9.5 | 18 | 9.6 | 4.9 | 10 | 37 | 72 | 60 | 29 | 13 | 6.8 | 13 |
| 7 | 8.2 | 18 | 9.6 | 4.9 | 11 | 38 | 66 | 133 | 24 | 16 | 6.0 | 17 |
| 8 | 9.9 | 17 | 9.6 | 4.9 | 12 | 43 | 59 | 172 | 23 | 16 | 10 | 16 |
| 9 | 11 | 20 | 9.6 | 4.9 | 13 | 49 | 50 | 128 | 21 | 12 | 11 | 16 |
| 10 | 9.8 | 19 | 9.6 | 4.9 | 13 | 58 | 45 | 91 | 18 | 12 | 11 | 13 |
| 11 | 9.3 | 11 | 9.6 | 4.8 | 14 | 107 | 42 | 70 | 17 | 17 | 9.3 | 12 |
| 12 | 9.4 | 17 | 9.6 | 4.8 | 15 | 162 | 41 | 57 | 15 | 18 | 7.4 | 15 |
| 13 | 10 | 22 | 9.6 | 4.8 | 16 | 188 | 40 | 48 | 14 | 15 | 6.3 | 15 |
| 14 | 8.8 | 19 | 9.4 | 4.8 | 16 | 210 | 39 | 42 | 13 | 15 | 5.4 | 12 |
| 15 | 11 | 19 | 9.4 | 4.9 | 17 | 208 | 41 | 37 | 11 | 19 | 19 | 12 |
| 16 | 13 | 19 | 9.2 | 4.9 | 17 | 192 | 41 | 35 | 15 | 15 | 71 | 9.7 |
| 17 | 12 | 17 | 9.0 | 4.9 | 18 | 145 | 62 | 33 | 20 | 15 | 52 | 8.8 |
| 18 | 14 | 14 | 8.8 | 4.9 | 18 | 110 | 69 | 66 | 20 | 14 | 56 | 9.6 |
| 19 | 18 | 13 | 8.4 | 4.9 | 19 | 85 | 53 | 75 | 22 | 12 | 39 | 11 |
| 20 | 17 | 13 | 8.0 | 4.9 | 20 | 71 | 61 | 61 | 19 | 11 | 27 | 11 |
| 21 | 19 | 13 | 7.9 | 4.9 | 21 | 61 | 80 | 52 | 16 | 13 | 23 | 9.7 |
| 22 | 24 | 13 | 7.7 | 4.9 | 24 | 53 | 67 | 45 | 39 | 11 | 20 | 9.4 |
| 23 | 26 | 13 | 7.6 | 5.0 | 28 | 48 | 66 | 39 | 62 | 9.1 | 18 | 14 |
| 24 | 33 | 13 | 7.3 | 5.2 | 33 | 44 | 86 | 37 | 55 | 13 | 15 | 19 |
| 25 | 28 | 13 | 7.0 | 5.4 | 35 | 41 | 75 | 33 | 44 | 15 | 14 | 16 |
| 26 | 27 | 13 | 6.7 | 5.5 | 35 | 38 | 64 | 30 | 37 | 10 | 15 | 15 |
| 27 | 22 | 12 | 6.4 | 5.6 | 35 | 39 | 56 | 26 | 31 | 8.9 | 13 | 18 |
| 28 | 22 | 12 | 6.2 | 5.7 | 34 | 42 | 52 | 24 | 33 | 9.5 | 13 | 17 |
| 29 | 20 | 11 | 5.8 | 5.9 | --- | 47 | 47 | 263 | 29 | 9.8 | 11 | 15 |
| 30 | 19 | 11 | 5.6 | 6.1 | --- | 46 | 43 | 274 | 25 | 8.3 | 11 | 14 |
| 31 | 18 | --- | 5.4 | 6.5 | --- | 47 | --- | 210 | --- | 6.9 | 13 | --- |
| TOTAL | 468.8 | 465 | 262.1 | 158.8 | 515.4 | 2381 | 1763 | 2348 | 1090 | 423.5 | 539.5 | 415.2 |
| MEAN | 15.1 | 15.5 | 8.45 | 5.12 | 18.4 | 76.8 | 58.8 | 75.7 | 36.3 | 13.7 | 17.4 | 13.8 |
| MAX | 33 | 22 | 10 | 6.5 | 35 | 210 | 91 | 274 | 180 | 21 | 71 | 20 |
| MIN | 6.6 | 11 | 5.4 | 4.8 | 7.1 | 33 | 39 | 24 | 11 | 6.9 | 5.4 | 8.8 |
| CFSM | .01 | .01 | .006 | .004 | .01 | .06 | .05 | .06 | .03 | .01 | .01 | .01 |
| IN. | .01 | .01 | .01 | .00 | .01 | .07 | .05 | .07 | .03 | .01 | .02 | .01 |
| AC-FT | .930 | .922 | .520 | .315 | 1020 | 4720 | 3500 | 4660 | 2160 | .840 | 1070 | .824 |

CAL YR 1976 TOTAL 35239.1 MEAN 96.3 MAX 717 MIN 5.1 CFSM .07 IN 1.00 AC-FT 69900
WTR YR 1977 TOTAL 10830.3 MEAN 29.7 MAX 274 MIN 4.8 CFSM .02 IN .31 AC-FT 21480

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) above mean sea level. 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.--Three discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--37 years, 93.9 ft³/s (2.659 m³/s), 4.96 in/yr (126 mm/yr) 68,030 acre-ft/yr (83.9 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, 975 ft³/s (27.6 m³/s) May 5, gage height, 6.08 ft (1.853 m), at 1045 hours, no other peak above base of 800 ft³/s (22.7 m³/s); no flow Dec. 29 to Feb. 10.

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 | .18 | 2.9 | .19 | .00 | .00 | 3.3 | 13 | 8.2 | 3.7 | .63 | .03 | .52 |
| 2 | .12 | 2.8 | .16 | .00 | .00 | 3.3 | 21 | 5.9 | 3.7 | .56 | .04 | .52 |
| 3 | .11 | 2.6 | .15 | .00 | .00 | 3.4 | 35 | 4.5 | 3.1 | .40 | .03 | 1.6 |
| 4 | .15 | 1.7 | .16 | .00 | .00 | 3.6 | 36 | 11 | 1.6 | .41 | .01 | 9.1 |
| 5 | .17 | 1.4 | .14 | .00 | .00 | 3.6 | 27 | 494 | 1.0 | .35 | .03 | 5.8 |
| 6 | .14 | 2.0 | .15 | .00 | .00 | 3.6 | 20 | 180 | .63 | .81 | .05 | 4.2 |
| 7 | .15 | 2.0 | .13 | .00 | .00 | 3.5 | 17 | 90 | .65 | 1.9 | .21 | 9.6 |
| 8 | .27 | 1.4 | .11 | .00 | .00 | 3.9 | 16 | 53 | .69 | 1.6 | 13 | 9.5 |
| 9 | .37 | 1.4 | .10 | .00 | .00 | 4.5 | 12 | 36 | .49 | .82 | 14 | 13 |
| 10 | .40 | 1.6 | .09 | .00 | .00 | 6.4 | 9.5 | 26 | .38 | .60 | 5.5 | 13 |
| 11 | .36 | 1.4 | .08 | .00 | .01 | 12 | 8.8 | 20 | .29 | .70 | 1.2 | 12 |
| 12 | .42 | 1.3 | .07 | .00 | .03 | 19 | 12 | 17 | .27 | 1.6 | .39 | 35 |
| 13 | .47 | 1.5 | .06 | .00 | .06 | 15 | 13 | 15 | .26 | 1.6 | .23 | 27 |
| 14 | .52 | 1.9 | .05 | .00 | 1.7 | 11 | 15 | 13 | .25 | 1.1 | .15 | 17 |
| 15 | .67 | 2.1 | .05 | .00 | 1.8 | 8.4 | 17 | 11 | .22 | 7.9 | 4.5 | 21 |
| 16 | .52 | 1.5 | .05 | .00 | 1.9 | 7.6 | 15 | 9.9 | .46 | 3.8 | 22 | 15 |
| 17 | .60 | 1.4 | .05 | .00 | 2.1 | 7.0 | 16 | 9.9 | .78 | 2.0 | 20 | 11 |
| 18 | .74 | 1.1 | .05 | .00 | 2.2 | 6.2 | 17 | 9.1 | 1.0 | 2.0 | 7.5 | 8.4 |
| 19 | 1.0 | 1.3 | .05 | .00 | 2.3 | 5.8 | 16 | 9.3 | 4.8 | 1.0 | 3.9 | 5.9 |
| 20 | 1.6 | 2.0 | .03 | .00 | 2.3 | 5.6 | 17 | 9.6 | 1.5 | .47 | 4.3 | 4.6 |
| 21 | 1.5 | 1.8 | .02 | .00 | 2.4 | 5.4 | 18 | 23 | .98 | .33 | 2.3 | 2.9 |
| 22 | 2.9 | 1.1 | .02 | .00 | 2.5 | 5.4 | 17 | 18 | 1.4 | .24 | 1.0 | 2.4 |
| 23 | 7.2 | .80 | .02 | .00 | 2.6 | 5.6 | 18 | 20 | 2.7 | .18 | .66 | 6.2 |
| 24 | 9.1 | .70 | .02 | .00 | 2.7 | 5.8 | 14 | 17 | 2.8 | .35 | .48 | 17 |
| 25 | 11 | .84 | .01 | .00 | 2.8 | 6.0 | 13 | 13 | 2.1 | .33 | .53 | 14 |
| 26 | 7.3 | .68 | .01 | .00 | 3.0 | 6.4 | 11 | 10 | 1.6 | .20 | .64 | 15 |
| 27 | 6.8 | .44 | .01 | .00 | 3.1 | 8.0 | 9.8 | 8.8 | 1.1 | .15 | .52 | 13 |
| 28 | 5.9 | .30 | .01 | .00 | 3.2 | 11 | 13 | 8.0 | 1.0 | .29 | .60 | 10 |
| 29 | 4.6 | .25 | .00 | .00 | --- | 18 | 11 | 8.0 | .78 | .23 | .52 | 9.7 |
| 30 | 4.5 | .22 | .00 | .00 | --- | 18 | 8.5 | 16 | .75 | .14 | .32 | 10 |
| 31 | 3.7 | --- | .00 | .00 | --- | 16 | --- | 10 | --- | .07 | .45 | --- |
| TOTAL | 73.46 | 42.43 | 2.04 | .00 | 36.70 | 242.3 | 486.6 | 1184.2 | 40.98 | 32.77 | 105.09 | 323.94 |
| MEAN | 2.37 | 1.41 | .066 | .000 | 1.31 | 7.82 | 16.2 | 38.2 | 1.37 | 1.06 | 3.39 | 10.8 |
| MAX | 11 | 2.9 | .19 | .00 | 3.2 | 19 | 36 | 494 | 4.8 | 7.9 | 22 | 35 |
| MIN | .11 | .22 | .00 | .00 | .00 | 3.3 | 8.5 | 4.5 | .22 | .07 | .01 | .52 |
| CFSM | .009 | .005 | .000 | .000 | .005 | .03 | .06 | .15 | .005 | .004 | .01 | .04 |
| IN. | .01 | .01 | .00 | .00 | .01 | .04 | .07 | .17 | .01 | .00 | .02 | .05 |
| AC-FT | 146 | 84 | 4.0 | .00 | 73 | 481 | 965 | 2350 | 81 | 65 | 208 | 643 |

| | | | | | | | | |
|-------------|-------|---------|-----------|---------|---------|----------|--------|-------------|
| CAL YR 1976 | TOTAL | 6761.04 | MEAN 18.5 | MAX 177 | MIN .00 | CFSM .07 | IN .98 | AC-FT 13410 |
| WTR YR 1977 | TOTAL | 2570.51 | MEAN 7.04 | MAX 494 | MIN .00 | CFSM .03 | IN .37 | AC-FT 5100 |

DES MOINES RIVER BASIN

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 Kato"), 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) above mean sea level. 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.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--45 years (1913-27, 1946-77), 1,338 ft³/s (37.89 m³/s) 4.34 in/yr (110 mm/yr), 969,400 acre-ft/yr (1,200 hm³/yr); median of yearly mean discharges, 1,170 ft³/s (33.1 m³/s), 3.8 in/yr (96 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.--Maximum discharge, 3,520 ft³/s (99.7 m³/s) May 4, gage height, 5.41 ft (1.649 m), no peak above base of 6,000 ft³/s (170 m³/s); minimum daily, 23 ft³/s (0.65 m³/s) Jan. 13-26.

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 | 47 | 54 | 46 | 27 | 28 | 94 | 266 | 238 | 382 | 149 | 54 | 90 |
| 2 | 48 | 53 | 45 | 26 | 30 | 99 | 340 | 228 | 274 | 141 | 51 | 111 |
| 3 | 48 | 55 | 44 | 26 | 31 | 105 | 359 | 212 | 208 | 166 | 48 | 119 |
| 4 | 54 | 53 | 42 | 25 | 31 | 112 | 403 | 491 | 171 | 176 | 48 | 105 |
| 5 | 51 | 46 | 42 | 24 | 32 | 135 | 381 | 1980 | 143 | 159 | 52 | 105 |
| 6 | 46 | 48 | 40 | 24 | 32 | 95 | 327 | 955 | 121 | 155 | 44 | 95 |
| 7 | 45 | 53 | 38 | 24 | 32 | 103 | 245 | 579 | 102 | 207 | 43 | 114 |
| 8 | 42 | 52 | 37 | 24 | 32 | 130 | 260 | 503 | 103 | 161 | 72 | 117 |
| 9 | 40 | 50 | 37 | 24 | 32 | 160 | 260 | 457 | 97 | 145 | 225 | 137 |
| 10 | 40 | 55 | 35 | 24 | 33 | 199 | 241 | 428 | 90 | 120 | 147 | 126 |
| 11 | 40 | 50 | 36 | 24 | 33 | 338 | 224 | 355 | 88 | 124 | 93 | 111 |
| 12 | 39 | 42 | 35 | 24 | 34 | 656 | 187 | 303 | 71 | 131 | 75 | 211 |
| 13 | 38 | 47 | 35 | 23 | 35 | 825 | 225 | 266 | 63 | 116 | 69 | 253 |
| 14 | 38 | 49 | 35 | 23 | 36 | 755 | 226 | 236 | 65 | 108 | 60 | 167 |
| 15 | 37 | 55 | 35 | 23 | 37 | 684 | 264 | 214 | 67 | 126 | 129 | 136 |
| 16 | 36 | 131 | 34 | 23 | 39 | 593 | 271 | 203 | 78 | 115 | 464 | 125 |
| 17 | 38 | 62 | 34 | 23 | 42 | 479 | 257 | 204 | 97 | 107 | 277 | 111 |
| 18 | 40 | 135 | 34 | 23 | 45 | 435 | 370 | 185 | 103 | 104 | 253 | 104 |
| 19 | 45 | 84 | 34 | 23 | 49 | 353 | 303 | 233 | 104 | 90 | 202 | 95 |
| 20 | 44 | 70 | 33 | 23 | 53 | 319 | 262 | 252 | 131 | 78 | 161 | 90 |
| 21 | 42 | 75 | 32 | 23 | 56 | 396 | 397 | 230 | 138 | 74 | 141 | 84 |
| 22 | 45 | 68 | 32 | 23 | 62 | 406 | 363 | 270 | 146 | 70 | 127 | 80 |
| 23 | 49 | 56 | 31 | 23 | 66 | 356 | 372 | 269 | 192 | 65 | 118 | 120 |
| 24 | 79 | 68 | 31 | 23 | 70 | 317 | 366 | 241 | 186 | 79 | 104 | 205 |
| 25 | 75 | 70 | 30 | 23 | 75 | 286 | 338 | 213 | 163 | 78 | 97 | 183 |
| 26 | 69 | 78 | 29 | 23 | 80 | 272 | 308 | 198 | 154 | 106 | 100 | 165 |
| 27 | 65 | 58 | 29 | 24 | 85 | 268 | 286 | 172 | 146 | 90 | 94 | 147 |
| 28 | 60 | 54 | 28 | 24 | 91 | 269 | 289 | 168 | 151 | 88 | 90 | 136 |
| 29 | 57 | 48 | 28 | 25 | --- | 306 | 265 | 187 | 159 | 79 | 84 | 136 |
| 30 | 59 | 44 | 28 | 26 | --- | 275 | 246 | 484 | 152 | 65 | 79 | 159 |
| 31 | 56 | --- | 27 | 27 | --- | 275 | --- | 470 | --- | 58 | 98 | --- |
| TOTAL | 1512 | 1863 | 1077 | 744 | 1301 | 10097 | 8901 | 11424 | 4145 | 3541 | 3599 | 3938 |
| MEAN | 48.8 | 62.1 | 34.7 | 24.0 | 46.5 | 326 | 297 | 369 | 138 | 114 | 119 | 131 |
| MAX | 79 | 135 | 46 | 27 | 91 | 825 | 403 | 1980 | 382 | 207 | 464 | 253 |
| MIN | 36 | 42 | 27 | 23 | 28 | 94 | 187 | 168 | 63 | 58 | 43 | 80 |
| CFSM | .01 | .02 | .008 | .006 | .01 | .08 | .07 | .09 | .03 | .03 | .03 | .03 |
| IN. | .01 | .02 | .01 | .01 | .01 | .09 | .08 | .10 | .04 | .03 | .03 | .03 |
| AC-FT | 3000 | 3700 | 2140 | 1480 | 2580 | 20030 | 17660 | 22660 | 8220 | 7020 | 7340 | 7810 |

| | | | | | | | | | | | | | | |
|-------------|-------|--------|------|-----|-----|------|-----|----|------|-----|----|------|-------|--------|
| CAL YR 1976 | TOTAL | 128438 | MEAN | 351 | MAX | 2380 | MIN | 27 | CFSM | .08 | IN | 1.14 | AC-FT | 254800 |
| WTR YR 1977 | TOTAL | 52242 | MEAN | 143 | MAX | 1980 | MIN | 23 | CFSM | .03 | IN | .46 | AC-FT | 103600 |

05481000 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, 1.0 mi (1.6 km) southeast of junction of U.S. Highway 20 and State Highway 17 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) above mean sea level. Prior to June 26, 1940, 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 rain gage and gage height telemeters at station.

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

AVERAGE DISCHARGE.--37 years, 371 ft³/s (10.51 m³/s), 5.97 in/yr (152 mm/yr), 268,800 acre-ft/yr (331 hm³/yr); median of yearly mean discharges, 280 ft³/s (7.93 m³/s), 4.5 in/yr (114 mm/yr), 203,000 acre-ft/yr (250 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 1896, 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, 1,760 ft³/s (49.8 m³/s) Aug. 16, gage height, 5.46 ft (1.664 m), no peak above base of 2,200 ft³/s (62.3 m³/s); no flow Feb. 7.

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 | 6.2 | 14 | 9.0 | .96 | .02 | 26 | 44 | 31 | 40 | 4.5 | 2.8 | 67 |
| 2 | 5.8 | 14 | 8.8 | .90 | .02 | 29 | 59 | 29 | 38 | 3.7 | 2.8 | 44 |
| 3 | 4.8 | 12 | 8.4 | .82 | .02 | 32 | 68 | 27 | 32 | 3.4 | 2.7 | 43 |
| 4 | 6.2 | 14 | 8.1 | .74 | .01 | 35 | 74 | 34 | 26 | 3.1 | 2.8 | 89 |
| 5 | 6.5 | 14 | 7.8 | .70 | .01 | 37 | 75 | 859 | 20 | 3.2 | 12 | 74 |
| 6 | 6.0 | 13 | 7.4 | .62 | .01 | 41 | 66 | 708 | 15 | 7.8 | 12 | 63 |
| 7 | 5.8 | 16 | 7.3 | .56 | .00 | 44 | 55 | 338 | 12 | 39 | 9.1 | 65 |
| 8 | 6.4 | 16 | 7.1 | .52 | .02 | 48 | 45 | 221 | 13 | 33 | 97 | 76 |
| 9 | 4.6 | 19 | 6.9 | .47 | .02 | 50 | 36 | 134 | 12 | 13 | 121 | 79 |
| 10 | 6.0 | 15 | 6.7 | .43 | .03 | 54 | 33 | 91 | 10 | 8.6 | 72 | 62 |
| 11 | 6.8 | 13 | 6.4 | .39 | .05 | 59 | 30 | 68 | 10 | 7.5 | 55 | 48 |
| 12 | 6.2 | 11 | 6.1 | .35 | .07 | 62 | 27 | 54 | 9.2 | 6.0 | 42 | 171 |
| 13 | 6.7 | 10 | 5.8 | .33 | .10 | 64 | 26 | 45 | 7.9 | 5.5 | 31 | 204 |
| 14 | 6.9 | 9.7 | 5.4 | .31 | .15 | 62 | 29 | 38 | 7.4 | 4.6 | 21 | 131 |
| 15 | 4.9 | 10 | 5.0 | .27 | .22 | 58 | 27 | 38 | 8.0 | 4.7 | 76 | 88 |
| 16 | 3.6 | 11 | 4.5 | .24 | .35 | 56 | 26 | 32 | 9.0 | 4.5 | 1030 | 64 |
| 17 | 4.0 | 11 | 4.0 | .21 | .60 | 52 | 27 | 28 | 22 | 7.7 | 338 | 57 |
| 18 | 5.2 | 13 | 3.6 | .18 | 1.3 | 48 | 29 | 28 | 26 | 7.9 | 185 | 50 |
| 19 | 9.0 | 11 | 3.3 | .16 | 2.5 | 45 | 50 | 347 | 16 | 7.2 | 151 | 42 |
| 20 | 7.6 | 11 | 3.0 | .14 | 5.0 | 44 | 76 | 107 | 11 | 10 | 118 | 36 |
| 21 | 8.1 | 11 | 2.7 | .12 | 6.8 | 41 | 75 | 64 | 9.0 | 30 | 87 | 31 |
| 22 | 11 | 11 | 2.3 | .10 | 9.0 | 37 | 130 | 56 | 8.3 | 9.5 | 65 | 28 |
| 23 | 14 | 11 | 2.2 | .09 | 11 | 33 | 112 | 44 | 8.9 | 5.8 | 52 | 60 |
| 24 | 19 | 10 | 1.9 | .08 | 13 | 30 | 75 | 38 | 9.4 | 5.3 | 34 | 212 |
| 25 | 20 | 11 | 1.8 | .07 | 15 | 30 | 57 | 33 | 9.5 | 4.3 | 28 | 204 |
| 26 | 25 | 11 | 1.6 | .06 | 17 | 27 | 47 | 26 | 9.0 | 4.0 | 43 | 139 |
| 27 | 17 | 12 | 1.5 | .05 | 21 | 29 | 42 | 27 | 7.4 | 5.7 | 39 | 98 |
| 28 | 14 | 11 | 1.4 | .04 | 24 | 34 | 42 | 31 | 7.2 | 6.8 | 62 | 76 |
| 29 | 12 | 10 | 1.2 | .04 | --- | 46 | 38 | 24 | 5.9 | 4.9 | 47 | 68 |
| 30 | 12 | 9.4 | 1.1 | .03 | --- | 48 | 33 | 21 | 5.1 | 3.8 | 34 | 102 |
| 31 | 11 | --- | 1.0 | .03 | --- | 48 | --- | 20 | --- | 3.6 | 81 | --- |
| TOTAL | 282.3 | 365.1 | 143.3 | 10.01 | 127.30 | 1349 | 1553 | 3641 | 424.2 | 268.6 | 2953.2 | 2571 |
| MEAN | 9.11 | 12.2 | 4.62 | .32 | 4.55 | 43.5 | 51.8 | 117 | 14.1 | 8.66 | 95.3 | 85.7 |
| MAX | 25 | 19 | 9.0 | .96 | 24 | 64 | 130 | 859 | 40 | 39 | 1030 | 212 |
| MIN | 3.6 | 9.4 | 1.0 | .03 | .00 | 26 | 26 | 20 | 5.1 | 3.1 | 2.7 | 28 |
| CFSM | .01 | .01 | .005 | .000 | .005 | .05 | .06 | .14 | .02 | .01 | .11 | .10 |
| IN. | .01 | .02 | .01 | .00 | .01 | .06 | .07 | .16 | .02 | .01 | .13 | .11 |
| AC-FT | 560 | 724 | 284 | 20 | 252 | 2680 | 3080 | 7220 | 841 | 533 | 5860 | 5100 |

CAL YR 1976 TOTAL 62232.00 MEAN 170 MAX 1730 MIN 1.0 CFSM .20 IN 2.74 AC-FT 123400
WTR YR 1977 TOTAL 13688.01 MEAN 37.5 MAX 1030 MIN .0 CFSM .04 IN .60 AC-FT 27150

DES MOINES RIVER BASIN

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) above mean sea level. 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.--Eight discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--57 years, 1,734 ft³/s (49.11 m³/s), 4.32 in/yr (110 mm/yr), 1,256,000 acre-ft/yr (1,550 hm³/yr); median of yearly mean discharges, 1,470 ft³/s (41.6 m³/s), 3.7 in/yr (94 mm/yr), 1,065,000 acre-ft/yr (1,310 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.--Maximum discharge, 4,240 ft³/s (120 m³/s) May 6, gage height, 9.02 ft (2.749 m); no peak above base of 7,000 ft³/s (198.2 m³/s); maximum gage height, 9.28 ft (2.828 m) Aug 16; minimum daily discharge, 13 ft³/s (0.37 m³/s) Jan. 23, 24.

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 | 65 | 95 | 66 | 23 | 18 | 190 | 356 | 258 | 480 | 173 | 66 | 376 |
| 2 | 63 | 95 | 65 | 22 | 19 | 216 | 387 | 240 | 441 | 170 | 57 | 269 |
| 3 | 63 | 95 | 63 | 22 | 20 | 234 | 501 | 223 | 352 | 162 | 53 | 240 |
| 4 | 59 | 88 | 61 | 21 | 21 | 260 | 508 | 228 | 275 | 166 | 47 | 296 |
| 5 | 66 | 78 | 60 | 21 | 24 | 300 | 540 | 1350 | 225 | 187 | 58 | 301 |
| 6 | 79 | 65 | 58 | 21 | 26 | 350 | 510 | 3600 | 184 | 187 | 84 | 254 |
| 7 | 66 | 55 | 57 | 20 | 30 | 370 | 445 | 1810 | 161 | 318 | 74 | 256 |
| 8 | 55 | 68 | 56 | 20 | 32 | 350 | 352 | 1130 | 146 | 334 | 1330 | 315 |
| 9 | 45 | 80 | 54 | 21 | 30 | 270 | 345 | 837 | 135 | 232 | 1590 | 419 |
| 10 | 49 | 82 | 53 | 21 | 28 | 330 | 332 | 695 | 130 | 187 | 1060 | 408 |
| 11 | 43 | 65 | 52 | 21 | 26 | 515 | 300 | 603 | 115 | 152 | 594 | 312 |
| 12 | 42 | 106 | 48 | 22 | 25 | 750 | 279 | 497 | 103 | 166 | 372 | 618 |
| 13 | 45 | 138 | 44 | 22 | 27 | 958 | 243 | 419 | 95 | 161 | 268 | 1230 |
| 14 | 42 | 140 | 44 | 22 | 30 | 1050 | 272 | 361 | 76 | 142 | 215 | 873 |
| 15 | 41 | 152 | 43 | 21 | 33 | 951 | 270 | 314 | 69 | 136 | 208 | 563 |
| 16 | 40 | 160 | 42 | 20 | 38 | 862 | 297 | 287 | 72 | 168 | 3560 | 413 |
| 17 | 42 | 170 | 44 | 20 | 43 | 746 | 312 | 263 | 100 | 141 | 2150 | 347 |
| 18 | 45 | 145 | 46 | 19 | 49 | 637 | 290 | 251 | 119 | 143 | 1130 | 315 |
| 19 | 43 | 115 | 43 | 19 | 57 | 572 | 400 | 345 | 131 | 124 | 793 | 256 |
| 20 | 65 | 106 | 41 | 18 | 66 | 489 | 381 | 505 | 114 | 112 | 639 | 222 |
| 21 | 63 | 102 | 37 | 16 | 76 | 438 | 478 | 370 | 129 | 151 | 519 | 199 |
| 22 | 65 | 94 | 35 | 15 | 85 | 502 | 507 | 310 | 147 | 149 | 400 | 179 |
| 23 | 68 | 84 | 34 | 13 | 92 | 503 | 520 | 315 | 188 | 118 | 334 | 225 |
| 24 | 100 | 80 | 34 | 13 | 117 | 445 | 472 | 315 | 211 | 103 | 292 | 620 |
| 25 | 115 | 76 | 32 | 14 | 130 | 403 | 433 | 282 | 217 | 110 | 247 | 848 |
| 26 | 121 | 74 | 30 | 14 | 144 | 364 | 393 | 259 | 190 | 108 | 242 | 653 |
| 27 | 136 | 73 | 29 | 15 | 160 | 341 | 351 | 227 | 176 | 104 | 254 | 499 |
| 28 | 124 | 71 | 28 | 15 | 170 | 344 | 328 | 214 | 170 | 136 | 244 | 397 |
| 29 | 110 | 69 | 27 | 15 | --- | 385 | 321 | 208 | 173 | 114 | 249 | 358 |
| 30 | 102 | 67 | 25 | 16 | --- | 390 | 287 | 200 | 184 | 107 | 211 | 364 |
| 31 | 90 | --- | 24 | 17 | --- | 359 | --- | 460 | --- | 81 | 296 | --- |
| TOTAL | 2152 | 2888 | 1375 | 579 | 1616 | 14874 | 11410 | 17376 | 5308 | 4842 | 17636 | 12525 |
| MEAN | 69.4 | 96.3 | 44.4 | 18.7 | 57.7 | 480 | 380 | 561 | 177 | 156 | 569 | 418 |
| MAX | 136 | 170 | 66 | 23 | 170 | 1050 | 540 | 3600 | 480 | 334 | 3560 | 1230 |
| MIN | 40 | 55 | 24 | 13 | 18 | 190 | 243 | 200 | 69 | 81 | 47 | 179 |
| CFSM | .01 | .02 | .008 | .003 | .01 | .09 | .07 | .10 | .03 | .03 | .10 | .08 |
| IN. | .01 | .02 | .01 | .00 | .01 | .10 | .08 | .12 | .04 | .03 | .12 | .09 |
| AC-FT | 4270 | 5730 | 2730 | 1150 | 3210 | 29500 | 22630 | 34470 | 10530 | 9500 | 34980 | 24840 |
| CAL YR 1976 | TOTAL | 242349 | MEAN 662 | MAX 5590 | MIN 24 | CFSM .12 | IN 1.65 | AC-FT 480700 | | | | |
| WTR YR 1977 | TOTAL | 92581 | MEAN 254 | MAX 3600 | MIN 13 | CFSM .05 | IN .63 | AC-FT 183600 | | | | |

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 km) 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 Sept. 30, 1977.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level (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, 76,900 acre-ft (94.6 hm³) Sept. 24, 1977, elevation, 833.58 ft (254.075 m).

EXTREMES FOR CURRENT YEAR.--Maximum daily contents during period April to September, 76,900 acre-ft (94.6 hm³) Sept. 24, elevation, 833.58 ft (254.075 m). Pool reached conservation elevation on Sept. 9 since closure Apr. 12.

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 |

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS AT 2400

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-----|-----|-----|-----|-----|-----|-----|-----|-------|-------|-------|-------|-------|
| 1 | | | | | | | --- | 5960 | 26300 | 26400 | 28600 | 68900 |
| 2 | | | | | | | --- | 6040 | 26700 | 26400 | 28600 | 69700 |
| 3 | | | | | | | --- | 6120 | 27000 | 26700 | 28600 | 70800 |
| 4 | | | | | | | --- | 6220 | 27300 | 26700 | 28500 | 71600 |
| 5 | | | | | | | --- | 6440 | 27400 | 26900 | 28900 | 72000 |
| 6 | | | | | | | --- | 7620 | 27300 | 27000 | 28900 | 72500 |
| 7 | | | | | | | --- | 13600 | 27200 | 27200 | 28800 | 73000 |
| 8 | | | | | | | --- | 16300 | 27100 | 27400 | 29700 | 73700 |
| 9 | | | | | | | --- | 17800 | 27000 | 27700 | 32100 | 74500 |
| 10 | | | | | | | --- | 18900 | 26800 | 28000 | 34600 | 75000 |
| 11 | | | | | | | --- | 19800 | 26600 | 28100 | 36200 | 75400 |
| 12 | | | | | | | --- | 410 | 20600 | 26400 | 28100 | 37200 |
| 13 | | | | | | | --- | 660 | 21100 | 26200 | 28200 | 38000 |
| 14 | | | | | | | --- | 900 | 21600 | 26000 | 28200 | 38300 |
| 15 | | | | | | | --- | 1080 | 21900 | 25700 | 28100 | 39500 |
| 16 | | | | | | | --- | 1240 | 22100 | 25500 | 28500 | 43500 |
| 17 | | | | | | | --- | 1400 | 22400 | 25200 | 28600 | 50000 |
| 18 | | | | | | | --- | 1580 | 22600 | 25200 | 28700 | 53600 |
| 19 | | | | | | | --- | 1780 | 22900 | 25100 | 28700 | 55900 |
| 20 | | | | | | | --- | 2040 | 23100 | 25000 | 28700 | 57300 |
| 21 | | | | | | | --- | 2500 | 23600 | 25100 | 28700 | 59100 |
| 22 | | | | | | | --- | 3000 | 24100 | 25100 | 28600 | 60200 |
| 23 | | | | | | | --- | 3440 | 24500 | 25300 | 28700 | 60800 |
| 24 | | | | | | | --- | 3860 | 24900 | 25500 | 28800 | 61200 |
| 25 | | | | | | | --- | 4240 | 25200 | 25700 | 28700 | 61700 |
| 26 | | | | | | | --- | 4600 | 25400 | 26100 | 28600 | 62400 |
| 27 | | | | | | | --- | 4900 | 25600 | 26200 | 28500 | 65100 |
| 28 | | | | | | | --- | 5380 | 25800 | 26300 | 28500 | 66000 |
| 29 | | | | | | | --- | 5820 | 25900 | 26300 | 28600 | 66800 |
| 30 | | | | | | | --- | 5780 | 26000 | 26500 | 28700 | 67300 |
| 31 | | | | | | | --- | --- | 26000 | --- | 28600 | 68600 |
| MAX | | | | | | | --- | 26000 | 27400 | 28800 | 68600 | 76900 |
| MIN | | | | | | | --- | 5960 | 25000 | 26400 | 28500 | 68900 |

DES MOINES RIVER BASIN

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) above mean sea level (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. Several observations of water temperature were made during the year. Flow regulated by Saylorville Lake (Station 05481630) 2.1 mi (3.4 km) upstream since Apr. 12, 1977. Corps of Engineers gage height telemeter at station.

COOPERATION.--Thirty-one discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--16 years, 2,398 ft³/s (67.91 m³/s), 5.58 in/yr (142 mm/yr), 1,737,000 acre-ft/yr (2,140 hm³/yr); median of yearly mean discharges, 2,050 ft³/s (58.1 m³/s) 4.8 in/yr (122 mm/yr), 1,485,000 acre-ft/yr (1,830 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, 1,070 ft³/s (30.3 m³/s) Sept. 14, gage height, 6.67 ft (2.033 m), no peak above base of 8,000 ft³/s (226 m³/s); minimum daily, 13 ft³/s (0.37 m³/s) Jan. 25.

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 | 77 | 133 | 68 | 25 | 15 | 200 | 435 | 216 | 205 | 100 | 90 | 93 |
| 2 | 75 | 123 | 66 | 25 | 15 | 210 | 456 | 216 | 203 | 100 | 90 | 87 |
| 3 | 73 | 119 | 65 | 25 | 16 | 220 | 448 | 219 | 205 | 100 | 87 | 123 |
| 4 | 75 | 112 | 64 | 25 | 19 | 230 | 483 | 217 | 189 | 100 | 90 | 101 |
| 5 | 79 | 107 | 62 | 25 | 19 | 240 | 530 | 210 | 178 | 100 | 94 | 88 |
| 6 | 82 | 110 | 64 | 24 | 22 | 260 | 531 | 207 | 185 | 100 | 96 | 87 |
| 7 | 73 | 104 | 66 | 23 | 27 | 290 | 533 | 202 | 186 | 100 | 97 | 110 |
| 8 | 66 | 90 | 69 | 23 | 30 | 330 | 492 | 208 | 190 | 100 | 97 | 123 |
| 9 | 77 | 120 | 67 | 23 | 30 | 360 | 455 | 210 | 190 | 100 | 88 | 221 |
| 10 | 73 | 105 | 65 | 22 | 30 | 397 | 396 | 211 | 198 | 100 | 86 | 239 |
| 11 | 68 | 86 | 63 | 22 | 30 | 432 | 377 | 215 | 198 | 100 | 84 | 210 |
| 12 | 64 | 67 | 62 | 22 | 30 | 555 | 285 | 215 | 195 | 100 | 88 | 280 |
| 13 | 64 | 72 | 60 | 23 | 30 | 593 | 201 | 219 | 193 | 100 | 86 | 748 |
| 14 | 60 | 81 | 58 | 22 | 30 | 765 | 195 | 215 | 209 | 100 | 82 | 967 |
| 15 | 62 | 71 | 56 | 22 | 31 | 937 | 215 | 215 | 201 | 100 | 83 | 796 |
| 16 | 62 | 75 | 54 | 22 | 31 | 917 | 217 | 203 | 200 | 100 | 128 | 793 |
| 17 | 64 | 104 | 50 | 21 | 33 | 851 | 217 | 177 | 200 | 100 | 76 | 810 |
| 18 | 68 | 121 | 47 | 21 | 47 | 778 | 202 | 176 | 100 | 100 | 76 | 756 |
| 19 | 71 | 150 | 44 | 21 | 58 | 682 | 197 | 175 | 100 | 100 | 76 | 335 |
| 20 | 73 | 187 | 42 | 20 | 61 | 609 | 208 | 172 | 100 | 100 | 73 | 299 |
| 21 | 77 | 180 | 39 | 18 | 65 | 563 | 207 | 182 | 100 | 100 | 91 | 220 |
| 22 | 77 | 193 | 37 | 17 | 74 | 499 | 210 | 185 | 100 | 100 | 77 | 222 |
| 23 | 75 | 145 | 35 | 15 | 94 | 472 | 215 | 184 | 100 | 100 | 75 | 228 |
| 24 | 82 | 107 | 33 | 14 | 100 | 508 | 217 | 175 | 100 | 100 | 74 | 330 |
| 25 | 84 | 102 | 32 | 13 | 110 | 504 | 221 | 154 | 100 | 100 | 75 | 408 |
| 26 | 84 | 100 | 30 | 14 | 130 | 471 | 225 | 173 | 100 | 100 | 80 | 536 |
| 27 | 98 | 82 | 29 | 15 | 150 | 462 | 231 | 197 | 100 | 100 | 87 | 748 |
| 28 | 131 | 79 | 27 | 15 | 170 | 458 | 213 | 202 | 100 | 94 | 292 | 742 |
| 29 | 142 | 81 | 26 | 15 | --- | 468 | 206 | 206 | 100 | 92 | 108 | 738 |
| 30 | 145 | 70 | 25 | 15 | --- | 433 | 210 | 209 | 100 | 94 | 88 | 547 |
| 31 | 145 | --- | 24 | 15 | --- | 435 | --- | 207 | --- | 89 | 116 | --- |
| TOTAL | 2546 | 3276 | 1529 | 622 | 1497 | 15129 | 9228 | 6172 | 4625 | 3069 | 2930 | 11985 |
| MEAN | 82.1 | 109 | 49.3 | 20.1 | 53.5 | 488 | 308 | 199 | 154 | 99.0 | 94.5 | 400 |
| MAX | 145 | 193 | 69 | 25 | 170 | 937 | 533 | 219 | 209 | 100 | 292 | 967 |
| MIN | 60 | 67 | 24 | 13 | 15 | 200 | 195 | 154 | 100 | 89 | 73 | 87 |
| CFSM | .01 | .02 | .008 | .003 | .009 | .08 | .05 | .03 | .03 | .02 | .02 | .07 |
| IN. | .02 | .02 | .01 | .00 | .01 | .10 | .06 | .04 | .03 | .02 | .02 | .08 |
| AC-FT | 5050 | 6500 | 3030 | 1230 | 2970 | 30010 | 18300 | 12240 | 9170 | 6090 | 5810 | 23770 |

| | | | | | | | | |
|-------------|-------|--------|----------|----------|--------|----------|---------|--------------|
| CAL YR 1976 | TOTAL | 293982 | MEAN 803 | MAX 4780 | MIN 24 | CFSM .14 | IN 1.87 | AC-FT 583100 |
| WTR YR 1977 | TOTAL | 62608 | MEAN 172 | MAX 967 | MIN 13 | CFSM .03 | IN .40 | AC-FT 124200 |

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT DISCHARGE: October 1961 to current year.

SEDIMENT LOADS: Maximum daily, 552 tons (501 tonnes) Mar. 16; minimum daily, 2.3 tons (2.1 tonnes) Dec. 27.

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-----|-----|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|
| 1 | 580 | --- | --- | --- | --- | --- | 520 | --- | --- | --- | 630 | --- |
| 2 | --- | 800 | 740 | 1100 | 1150 | 650 | --- | 720 | --- | 650 | 620 | --- |
| 3 | 660 | 590 | --- | --- | --- | --- | 500 | 720 | 640 | --- | --- | --- |
| 4 | --- | 560 | 900 | 1200 | 1150 | 540 | --- | 680 | 570 | --- | 610 | --- |
| 5 | 725 | 580 | --- | --- | --- | --- | 600 | --- | 650 | 700 | --- | --- |
| 6 | --- | 600 | 900 | --- | 1150 | --- | --- | 500 | 660 | --- | --- | --- |
| 7 | 565 | --- | --- | 1180 | 1200 | 480 | 600 | --- | 590 | --- | --- | --- |
| 8 | --- | 590 | 800 | --- | 1150 | --- | --- | 520 | 660 | --- | 750 | --- |
| 9 | 550 | --- | --- | 1300 | --- | 580 | 650 | 520 | 650 | --- | --- | --- |
| 10 | --- | 720 | --- | --- | 1200 | --- | --- | 520 | --- | --- | --- | --- |
| 11 | 560 | 590 | --- | 1250 | --- | 510 | 700 | --- | 440 | --- | --- | --- |
| 12 | 560 | 600 | --- | --- | 1150 | --- | --- | --- | 460 | --- | 640 | --- |
| 13 | --- | --- | --- | --- | --- | --- | 700 | 570 | --- | --- | --- | --- |
| 14 | 550 | 520 | 800 | 1250 | 1200 | --- | 700 | --- | --- | 740 | 700 | --- |
| 15 | --- | --- | 1080 | --- | 1180 | 510 | --- | 560 | 680 | --- | 790 | --- |
| 16 | 710 | 600 | 850 | 1350 | 1150 | --- | 700 | --- | --- | 730 | 750 | --- |
| 17 | --- | --- | 800 | --- | 1150 | 480 | --- | 560 | --- | --- | 740 | --- |
| 18 | 630 | 630 | 800 | --- | 1400 | --- | 750 | --- | --- | 700 | 740 | --- |
| 19 | --- | --- | 830 | 1180 | 1150 | 540 | --- | 560 | --- | --- | --- | --- |
| 20 | 750 | 800 | 1120 | --- | 1000 | --- | 770 | --- | --- | 710 | 700 | --- |
| 21 | --- | --- | 1120 | --- | 1200 | 500 | 790 | --- | 670 | --- | 700 | --- |
| 22 | --- | 690 | 850 | 1300 | 1150 | 500 | --- | --- | 690 | --- | --- | --- |
| 23 | --- | --- | --- | --- | --- | 520 | 710 | --- | 510 | 710 | 690 | --- |
| 24 | --- | 620 | --- | --- | --- | 550 | --- | 570 | --- | 620 | --- | --- |
| 25 | --- | --- | --- | --- | --- | 650 | 710 | --- | 700 | --- | 650 | --- |
| 26 | --- | 620 | --- | 1280 | 700 | 625 | 700 | --- | --- | 720 | 690 | --- |
| 27 | --- | --- | --- | --- | --- | --- | 660 | --- | --- | --- | 680 | 540 |
| 28 | --- | 1100 | --- | --- | 675 | 600 | 660 | 625 | --- | 730 | --- | --- |
| 29 | --- | --- | --- | --- | --- | 670 | 660 | --- | --- | --- | --- | --- |
| 30 | --- | 760 | --- | --- | --- | --- | 720 | --- | 700 | 640 | 530 | --- |
| 31 | 620 | --- | --- | 1200 | --- | --- | --- | --- | --- | --- | 570 | --- |

DES MOINES RIVER BASIN

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-----|------|-----|-----|-----|-----|------|------|------|------|------|------|------|
| 1 | 16.0 | --- | --- | --- | --- | --- | 11.0 | --- | --- | --- | 28.0 | --- |
| 2 | --- | 8.5 | 0.0 | 0.0 | 0.0 | 0.0 | --- | 18.0 | --- | 26.0 | 28.0 | --- |
| 3 | 16.0 | 4.5 | --- | --- | --- | --- | 10.5 | 19.0 | 25.0 | --- | --- | --- |
| 4 | --- | 5.0 | 0.0 | 0.0 | 0.0 | 0.0 | --- | 19.0 | 25.0 | --- | 28.0 | --- |
| 5 | 14.0 | 5.0 | --- | --- | --- | --- | 10.0 | --- | 25.5 | 27.0 | --- | --- |
| 6 | --- | 6.5 | 0.0 | --- | 0.0 | --- | --- | 19.0 | 25.5 | --- | --- | --- |
| 7 | 14.0 | --- | --- | 0.0 | 0.0 | 0.0 | 10.0 | --- | 24.0 | --- | --- | --- |
| 8 | --- | 4.5 | 2.0 | --- | 0.0 | --- | --- | 18.5 | 24.0 | --- | 27.0 | --- |
| 9 | 15.0 | --- | --- | 0.0 | --- | 3.0 | 11.0 | 18.0 | 23.0 | --- | --- | --- |
| 10 | --- | 3.0 | --- | --- | 0.0 | --- | 13.0 | 18.0 | --- | --- | --- | --- |
| 11 | 16.0 | 1.0 | --- | 0.0 | --- | 0.5 | --- | --- | 23.0 | --- | --- | --- |
| 12 | --- | 0.0 | --- | --- | 0.0 | --- | --- | --- | 24.0 | --- | 24.0 | --- |
| 13 | 16.0 | --- | --- | --- | --- | --- | 18.0 | 19.5 | --- | --- | --- | --- |
| 14 | 15.0 | 0.0 | 0.0 | 0.0 | 0.0 | --- | 19.0 | --- | --- | 31.0 | 23.0 | --- |
| 15 | --- | --- | 0.0 | --- | 0.0 | 4.5 | --- | 20.0 | 24.0 | --- | 23.0 | --- |
| 16 | 9.0 | 4.0 | 0.0 | 0.0 | 0.0 | --- | 20.0 | --- | --- | 30.0 | 23.0 | --- |
| 17 | --- | --- | 0.0 | --- | 0.0 | 2.0 | --- | 20.0 | --- | --- | 24.0 | --- |
| 18 | 6.0 | 5.0 | 0.0 | --- | 0.0 | --- | 20.0 | --- | --- | 31.0 | 24.0 | --- |
| 19 | --- | --- | 0.0 | 0.0 | 0.0 | 3.0 | --- | 20.0 | --- | --- | --- | --- |
| 20 | 7.0 | 4.0 | 0.0 | --- | 0.0 | --- | 21.0 | 20.0 | --- | 30.0 | 25.0 | --- |
| 21 | --- | --- | 0.0 | --- | 0.0 | 4.0 | 20.0 | --- | 24.0 | --- | 27.0 | --- |
| 22 | --- | 3.0 | 0.0 | 0.0 | 0.0 | 5.0 | --- | --- | 24.0 | --- | --- | --- |
| 23 | --- | --- | --- | --- | --- | 7.0 | 19.0 | --- | 24.0 | 31.0 | 26.0 | --- |
| 24 | --- | 3.0 | --- | --- | --- | 10.0 | --- | 26.0 | --- | 31.0 | --- | --- |
| 25 | --- | --- | --- | --- | --- | 10.0 | 17.0 | --- | 25.0 | --- | 25.0 | --- |
| 26 | --- | 3.0 | --- | 0.0 | 0.0 | 10.0 | 18.5 | --- | --- | 31.0 | 25.0 | --- |
| 27 | --- | --- | --- | --- | --- | --- | 17.0 | --- | --- | --- | 24.0 | 20.5 |
| 28 | --- | 2.0 | --- | --- | 0.0 | 11.5 | 17.0 | 20.0 | --- | 30.0 | --- | --- |
| 29 | --- | --- | --- | --- | --- | 11.5 | 16.5 | --- | --- | --- | --- | --- |
| 30 | --- | 0.0 | --- | --- | --- | --- | 17.0 | --- | 25.0 | 29.0 | 24.0 | --- |
| 31 | 8.0 | --- | --- | 0.0 | --- | --- | --- | --- | --- | --- | 24.0 | --- |

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DAY | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) |
|---------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|
| OCTOBER | | NOVEMBER | | DECEMBER | | JANUARY | | FEBRUARY | | MARCH | | |
| 1 | 42 | 8.7 | 56 | 20 | 39 | 7.2 | 93 | 6.3 | 159 | 6.4 | 15 | 8.1 |
| 2 | 40 | 8.1 | 70 | 23 | 37 | 6.6 | 91 | 6.1 | 163 | 6.6 | 20 | 11 |
| 3 | 44 | 8.7 | 37 | 12 | 34 | 6.0 | 77 | 5.2 | 168 | 7.3 | 20 | 12 |
| 4 | 50 | 10 | 22 | 6.7 | 31 | 5.4 | 62 | 4.2 | 154 | 7.9 | 20 | 12 |
| 5 | 53 | 11 | 20 | 5.8 | 30 | 5.0 | 54 | 3.6 | 153 | 7.8 | 20 | 13 |
| 6 | 53 | 12 | 24 | 7.1 | 28 | 4.8 | 53 | 3.4 | 151 | 9.0 | 20 | 14 |
| 7 | 58 | 11 | 29 | 8.1 | 27 | 4.8 | 53 | 3.3 | 137 | 10 | 57 | 45 |
| 8 | 68 | 12 | 44 | 11 | 27 | 5.0 | 54 | 3.4 | 138 | 11 | 78 | 69 |
| 9 | 75 | 16 | 69 | 22 | 29 | 5.2 | 172 | 11 | 128 | 10 | 70 | 68 |
| 10 | 75 | 15 | 32 | 9.1 | 30 | 5.3 | 165 | 9.8 | 118 | 9.6 | 53 | 57 |
| 11 | 58 | 11 | 30 | 7.0 | 31 | 5.3 | 143 | 8.5 | 130 | 11 | 82 | 96 |
| 12 | 55 | 9.5 | 75 | 14 | 34 | 5.7 | 152 | 9.0 | 141 | 11 | 143 | 214 |
| 13 | 61 | 11 | 82 | 16 | 51 | 8.3 | 187 | 12 | 115 | 9.3 | 157 | 251 |
| 14 | 46 | 7.5 | 30 | 6.6 | 106 | 17 | 182 | 11 | 84 | 6.8 | 198 | 409 |
| 15 | 34 | 5.7 | 16 | 3.1 | 54 | 8.2 | 171 | 10 | 83 | 6.9 | 202 | 511 |
| 16 | 30 | 5.0 | 28 | 5.7 | 28 | 4.1 | 171 | 10 | 87 | 7.3 | 223 | 552 |
| 17 | 30 | 5.2 | 61 | 17 | 39 | 5.3 | 140 | 7.9 | 83 | 7.4 | 95 | 218 |
| 18 | 34 | 6.2 | 57 | 19 | 76 | 9.6 | 100 | 5.7 | 30 | 3.8 | 80 | 168 |
| 19 | 40 | 7.7 | 57 | 23 | 54 | 6.4 | 62 | 3.5 | 21 | 3.3 | 77 | 142 |
| 20 | 44 | 8.7 | 37 | 19 | 37 | 4.2 | 64 | 3.5 | 23 | 3.8 | 76 | 125 |
| 21 | 44 | 9.1 | 40 | 19 | 42 | 4.4 | 139 | 6.8 | 17 | 3.0 | 75 | 114 |
| 22 | 44 | 9.1 | 49 | 26 | 42 | 4.2 | 198 | 9.1 | 15 | 3.0 | 53 | 71 |
| 23 | 42 | 8.5 | 50 | 20 | 39 | 3.7 | 213 | 8.6 | 15 | 3.8 | 65 | 83 |
| 24 | 41 | 9.1 | 48 | 14 | 37 | 3.3 | 191 | 7.2 | 17 | 4.6 | 98 | 134 |
| 25 | 43 | 9.8 | 48 | 13 | 35 | 3.0 | 139 | 4.9 | 20 | 5.9 | 110 | 150 |
| 26 | 45 | 10 | 46 | 12 | 33 | 2.7 | 156 | 5.9 | 22 | 7.7 | 118 | 150 |
| 27 | 55 | 15 | 45 | 10 | 30 | 2.3 | 184 | 7.5 | 17 | 6.9 | 140 | 175 |
| 28 | 73 | 26 | 45 | 9.6 | 34 | 2.5 | 192 | 7.8 | 12 | 5.5 | 207 | 256 |
| 29 | 93 | 36 | 42 | 9.2 | 67 | 4.7 | 185 | 7.5 | --- | --- | 188 | 238 |
| 30 | 104 | 41 | 41 | 7.7 | 85 | 5.7 | 173 | 7.0 | --- | --- | 118 | 138 |
| 31 | 84 | 33 | --- | --- | 89 | 5.8 | 161 | 6.5 | --- | --- | 123 | 144 |
| TOTAL | --- | 396.6 | --- | 395.7 | --- | 171.7 | --- | 216.2 | --- | 196.6 | --- | 4648.1 |

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DAY | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) | MEAN CONCENTRATION (MG/L) | LOADS (T/DAY) |
|-------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|
| APRIL | | | MAY | | JUNE | | JULY | | AUGUST | | SEPTEMBER | |
| 1 | 140 | 164 | 30 | 17 | 56 | 31 | 39 | 11 | 19 | 4.6 | 135 | 34 |
| 2 | 118 | 145 | 32 | 19 | 56 | 31 | 40 | 11 | 38 | 9.2 | 119 | 28 |
| 3 | 112 | 135 | 30 | 18 | 51 | 28 | 45 | 12 | 45 | 11 | 160 | 53 |
| 4 | 114 | 149 | 34 | 20 | 45 | 23 | 38 | 10 | 52 | 13 | 155 | 42 |
| 5 | 129 | 185 | 43 | 24 | 34 | 16 | 18 | 4.9 | 54 | 14 | 124 | 29 |
| 6 | 119 | 171 | 67 | 37 | 27 | 13 | 15 | 4.1 | 52 | 13 | 105 | 25 |
| 7 | 115 | 165 | 74 | 40 | 46 | 23 | 14 | 3.8 | 44 | 12 | 102 | 30 |
| 8 | 108 | 143 | 79 | 44 | 68 | 35 | 15 | 4.1 | 32 | 8.4 | 94 | 31 |
| 9 | 101 | 124 | 75 | 43 | 28 | 14 | 15 | 4.1 | 28 | 6.7 | 124 | 74 |
| 10 | 78 | 83 | 85 | 48 | 22 | 12 | 15 | 4.1 | 32 | 7.4 | 91 | 59 |
| 11 | 38 | 39 | 70 | 41 | 21 | 11 | 16 | 4.3 | 43 | 9.8 | 82 | 46 |
| 12 | 28 | 22 | 49 | 28 | 34 | 18 | 17 | 4.6 | 63 | 15 | 115 | 87 |
| 13 | 38 | 21 | 27 | 16 | 48 | 25 | 24 | 6.5 | 51 | 12 | 145 | 29.3 |
| 14 | 53 | 28 | 28 | 16 | 29 | 16 | 25 | 6.8 | 39 | 8.6 | 140 | 366 |
| 15 | 52 | 30 | 41 | 24 | 20 | 11 | 30 | 6.1 | 62 | 14 | 122 | 262 |
| 16 | 43 | 25 | 49 | 27 | 17 | 9.2 | 46 | 12 | 69 | 24 | 117 | 251 |
| 17 | 48 | 28 | 47 | 22 | 17 | 9.2 | 45 | 12 | 39 | 8.0 | 112 | 245 |
| 18 | 55 | 30 | 43 | 20 | 17 | 4.6 | 32 | 8.6 | 55 | 11 | 105 | 214 |
| 19 | 47 | 25 | 38 | 18 | 17 | 4.6 | 31 | 8.4 | 73 | 15 | 97 | 88 |
| 20 | 45 | 25 | 47 | 22 | 16 | 4.3 | 55 | 15 | 81 | 16 | 88 | 71 |
| 21 | 57 | 32 | 72 | 35 | 14 | 3.8 | 66 | 18 | 140 | 34 | 79 | 47 |
| 22 | 49 | 28 | 72 | 36 | 33 | 8.9 | 64 | 17 | 78 | 16 | 71 | 43 |
| 23 | 31 | 18 | 63 | 31 | 31 | 8.4 | 53 | 14 | 40 | 8.1 | 62 | 38 |
| 24 | 27 | 16 | 59 | 28 | 24 | 6.5 | 36 | 9.7 | 30 | 6.0 | 72 | 64 |
| 25 | 28 | 17 | 42 | 17 | 19 | 5.1 | 29 | 7.8 | 47 | 9.5 | 86 | 95 |
| 26 | 49 | 30 | 36 | 17 | 16 | 4.3 | 39 | 11 | 56 | 12 | 84 | 177 |
| 27 | 67 | 42 | 34 | 18 | 22 | 5.9 | 42 | 11 | 49 | 12 | 114 | 230 |
| 28 | 60 | 35 | 29 | 16 | 37 | 10 | 28 | 7.1 | 233 | 184 | 107 | 214 |
| 29 | 64 | 36 | 28 | 16 | 44 | 12 | 26 | 6.5 | 106 | 40 | 103 | 105 |
| 30 | 42 | 24 | 55 | 31 | 42 | 11 | 35 | 8.9 | 116 | 28 | 98 | 145 |
| 31 | --- | --- | 60 | 34 | --- | --- | 35 | 8.4 | 169 | 53 | --- | --- |
| TOTAL | --- | 2015 | --- | 823 | --- | 414.8 | --- | 274.8 | --- | 635.3 | --- | 3531 |

TOTAL LOAD FOR YEAR: 13718.8 TONS.

| DATE | TIME | TEMPER- ATURE (DEG C) (00010) | NUMBER OF SAM- PLING POINTS (00063) | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | 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) |
|--------------|------|--|--|--|--|--|--|--|--|--|--|--|
| MAY 24... | 1545 | 26.0 | 4 | 290 | 6 | 12 | 22 | 61 | 89 | 97 | 99 | 100 |

DES MOINES RIVER BASIN

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TIME | INSTANTANEOUS DIS- CHARGE (CFS) (00061) | TOTAL CAL- CIUM (CA) (MG/L) (00916) | TOTAL MAG- NE- SIUM (MG) (MG/L) (00927) | TOTAL SODIUM (NA) (MG/L) (00929) | TOTAL PO- TAS- SIUM (K) (MG/L) (00937) | BICAR- BONATE (HCO3) (MG/L) (00440) | CAR- BONATE (CO3) (MG/L) (00445) | ALKA- LINITY AS CACO3 (MG/L) (00410) | DIS- SOLVED SULFATE (SO4) (MG/L) (00945) | DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940) |
|--------------|------|---|--|---|--|--|---|--|---|---|--|
| OCT 27... | 1025 | 95 | -- | 35 | 55 | 4.1 | 256 | -- | 210 | 120 | 73 |
| NOV 30... | 1030 | E40 | 83 | 45 | 67 | 5.0 | 100 | -- | 82 | 160 | 83 |
| DEC 29... | 1100 | E60 | 97 | 41 | 70 | 4.9 | 467 | 0 | 383 | 180 | 110 |
| JAN 26... | 0800 | E20 | 150 | 55 | 95 | 7.0 | 607 | 0 | 498 | 180 | 120 |
| MAR 01... | 0840 | E175 | 68 | 26 | 54 | 6.2 | 266 | -- | 218 | 90 | 51 |
| 29... | 0800 | 465 | 71 | 23 | 28 | 5.2 | 214 | -- | 180 | 110 | 41 |
| APR 26... | 1230 | 225 | 40 | 30 | 35 | 5.4 | 170 | 0 | 140 | 130 | 53 |
| MAY 24... | 1230 | 250 | 56 | 23 | 23 | 5.6 | 180 | 0 | 150 | 87 | 35 |
| AUG 02... | 1430 | 90 | 62 | 29 | 42 | 7.0 | 230 | 0 | 190 | 92 | 56 |
| 23... | 1800 | 75 | 61 | 29 | 43 | 5.9 | 230 | -- | 190 | 90 | 52 |
| SEP 27... | 1600 | 748 | 47 | 22 | 27 | 5.8 | 190 | 0 | 160 | 68 | 37 |

| DATE | TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630) | TOTAL AMMONIA NITRO- GEN (N) (MG/L) (00610) | TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605) | TOTAL KJEL- DAHL- NITRO- GEN (N) (MG/L) (00625) | TOTAL NITRO- GEN (N) (MG/L) (00600) | TOTAL NITRO- GEN (NO3) (MG/L) (71887) | TOTAL PHOS- PHORUS (P) (MG/L) (00665) | DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300) | DIS- SOLVED SOLIDS (TONS PER DAY) (70303) | DIS- SOLVED SOLIDS (TONS PER DAY) (70302) |
|--------------|---|---|---|--|--|--|--|---|---|---|
| OCT 27... | .00 | .03 | 1.3 | 1.3 | 1.3 | 5.8 | .20 | 547 | .74 | 140 |
| NOV 30... | .06 | .25 | 3.2 | 3.4 | 3.5 | 15 | .46 | 644 | .88 | -- |
| DEC 29... | 1.2 | 1.2 | 2.2 | 3.4 | 4.6 | 20 | .70 | 829 | 1.13 | -- |
| JAN 26... | .70 | 3.5 | 1.2 | 4.7 | 5.4 | 24 | .61 | 966 | 1.31 | -- |
| MAR 01... | 1.0 | 5.1 | 3.6 | 8.7 | 9.7 | 43 | 1.8 | 364 | .50 | -- |
| 29... | 1.3 | .19 | 2.0 | 2.2 | 3.5 | 16 | .38 | 428 | .58 | 537 |
| APR 26... | .00 | .15 | 1.7 | 1.8 | 1.8 | 8.0 | .24 | 414 | .56 | 252 |
| MAY 24... | .72 | .49 | 1.4 | 1.9 | 2.6 | 12 | .33 | 353 | .48 | 238 |
| AUG 02... | .04 | .05 | .95 | 1.0 | 1.0 | 4.6 | .24 | 426 | .58 | 104 |
| 23... | .16 | .09 | .58 | .67 | .83 | 3.7 | .21 | 415 | .56 | 84.0 |
| SEP 27... | .06 | .02 | -- | -- | -- | -- | .21 | 335 | .46 | 677 |

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TOTAL RESI- DUE (MG/L) (00500) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) | TUR- BID- ITY (NTU) (00076) | DIS- SOLVED OXYGEN (MG/L) (00300) | PER- CENT SATUR- ATION (00301) | CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340) | CARBON DIOXIDE (CO2) (MG/L) (00405) | FECAL COLI- FORM .7UM-MF (COL./ 100 ML) (31625) |
|--------------|--|---|--------------------------|--|---|---|--|---|---|---|
| OCT 27... | 545 | 820 | 8.7 | 4.5 | 7.0 | 12.0 | 90 | 26 | .8 | -- |
| NOV 30... | 696 | 960 | 8.6 | .0 | 10 | 19.7 | 137 | 30 | .4 | 0 |
| DEC 29... | 838 | 1400 | 8.3 | .0 | 6.0 | -- | -- | 20 | 3.7 | -- |
| JAN 26... | 985 | 1400 | 7.2 | .0 | 8.0 | 12.2 | 86 | 21 | 61 | 1600 |
| MAR 01... | 462 | 910 | -- | .0 | 9.0 | 16.6 | 114 | 39 | -- | 0 |
| 29... | 562 | 660 | 8.7 | 10.5 | 30 | 9.0 | 88 | 60 | .7 | 1200 |
| APR 26... | 470 | 740 | 8.5 | 20.0 | 4.0 | -- | -- | 34 | .9 | 270 |
| MAY 24... | 397 | 480 | 8.4 | 26.0 | 18 | -- | -- | 38 | 1.1 | 580 |
| AUG 02... | 467 | -- | 7.7 | 27.0 | 23 | -- | -- | 31 | 7.3 | 180 |
| 23... | 474 | 700 | -- | 26.5 | 22 | 10.6 | -- | 50 | -- | 140 |
| SEP 27... | 357 | 540 | 7.8 | 20.5 | 12 | -- | -- | 27 | 4.8 | 490 |

DES MOINES RIVER BASIN

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, 2.5 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.

GAGE.--Water-stage recorder and concrete and steel sheeting broad-crested control. Datum of gage is 806.98 ft (245.968 m) above mean sea level. Prior to Aug. 31, 1966, 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.--Six discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--17 years, 193 ft³/s (5.466 m³/s), 7.32 in/yr (186 mm/yr), 139,800 acre-ft/yr (172 hm³/yr); median of yearly mean discharges, 160 ft³/s (4.50 m³/s) 6.1 in/yr (155 mm/yr), 116,000 acre-ft/yr (143 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; many days in 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 852 ft³/s (24.1 m³/s) Aug. 28, gage height, 7.81 ft (2.380 m), no peak above base of 1,500 ft³/s (42.5 m³/s); no flow for many days.

REVISIONS.--The peak discharge of Oct. 12, 1973 (1545 hours) has been revised to 2,950 ft³/s (83.5 m³/s), gage height, 11.79 ft (3.594 m).

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 | .41 | 2.7 | 1.2 | .05 | .00 | 2.5 | 28 | 2.9 | 1.7 | .04 | .00 | 232 |
| 2 | .22 | 1.0 | 1.0 | .02 | .00 | 3.2 | 37 | 2.8 | 1.0 | .00 | .00 | 219 |
| 3 | .22 | 1.0 | .80 | .00 | .00 | 4.2 | 31 | 2.8 | .70 | .04 | .00 | 259 |
| 4 | 4.6 | 1.1 | .70 | .00 | .00 | 5.0 | 61 | 3.1 | .60 | .00 | .00 | 420 |
| 5 | 2.4 | 2.0 | .60 | .00 | .00 | 6.6 | 57 | 5.1 | .60 | .00 | .04 | 257 |
| 6 | .62 | 2.7 | .54 | .00 | .00 | 8.2 | 31 | 26 | .28 | .12 | .00 | 179 |
| 7 | .22 | 1.1 | .50 | .00 | .00 | 10 | 24 | 68 | .20 | 1.0 | .00 | 141 |
| 8 | .51 | 1.9 | .50 | .00 | .01 | 13 | 18 | 22 | .28 | .16 | .00 | 123 |
| 9 | .51 | 3.7 | .50 | .00 | .02 | 16 | 15 | 11 | .20 | .00 | .00 | 212 |
| 10 | .31 | 1.9 | .50 | .00 | .02 | 20 | 12 | 7.8 | .08 | .00 | .74 | 232 |
| 11 | .41 | 1.1 | .50 | .00 | .03 | 62 | 8.8 | 6.0 | .12 | .04 | 107 | 155 |
| 12 | .31 | .84 | .50 | .00 | .04 | 62 | 7.8 | 4.6 | .12 | .00 | .74 | 122 |
| 13 | .22 | 1.6 | .50 | .00 | .06 | 45 | 7.8 | 3.4 | .16 | .00 | .41 | 107 |
| 14 | 1.2 | 2.7 | .52 | .00 | .07 | 26 | 7.8 | 2.6 | .12 | .00 | .25 | 91 |
| 15 | .41 | 3.7 | .60 | .00 | .10 | 18 | 6.7 | 2.3 | .04 | .00 | .16 | 79 |
| 16 | .41 | 4.3 | .80 | .00 | .13 | 13 | 6.0 | 2.3 | .00 | .12 | 131 | 68 |
| 17 | .51 | 6.0 | 1.0 | .00 | .18 | 18 | 6.0 | 2.1 | .08 | 3.4 | 474 | 70 |
| 18 | .73 | 5.7 | 1.5 | .00 | .21 | 20 | 5.1 | 1.7 | .00 | 2.1 | 447 | 76 |
| 19 | .73 | 4.6 | 1.7 | .00 | .25 | 15 | 6.3 | 2.9 | .00 | .40 | 191 | 62 |
| 20 | .31 | 4.3 | 1.4 | .00 | .32 | 17 | 7.0 | 2.6 | .00 | .08 | 129 | 53 |
| 21 | .14 | 4.6 | 1.3 | .00 | .40 | 21 | 11 | 2.6 | .00 | .04 | 134 | 46 |
| 22 | .00 | 4.3 | 1.1 | .00 | .50 | 15 | 7.0 | 2.9 | .00 | .00 | 387 | 43 |
| 23 | .73 | 3.4 | 1.0 | .00 | .65 | 13 | 5.4 | 8.1 | 12 | .00 | 203 | 49 |
| 24 | 1.4 | 6.4 | .94 | .00 | .84 | 11 | 4.1 | 4.1 | 16 | .00 | 116 | 129 |
| 25 | 1.1 | 7.7 | .85 | .00 | 1.0 | 9.2 | 9.7 | 2.3 | 4.9 | .00 | 76 | 171 |
| 26 | 1.0 | 5.3 | .80 | .00 | 1.3 | 8.8 | 8.1 | 1.6 | 1.4 | .00 | 127 | 145 |
| 27 | .84 | 3.7 | .75 | .00 | 1.6 | 26 | 6.0 | 2.9 | .80 | .00 | 234 | 122 |
| 28 | 1.2 | 3.5 | .72 | .00 | 2.1 | 55 | 4.6 | 14 | .40 | .00 | 603 | 101 |
| 29 | 1.9 | 2.8 | .40 | .00 | --- | 57 | 3.6 | 8.5 | .28 | .00 | 585 | 88 |
| 30 | 4.0 | 1.6 | .20 | .00 | --- | 28 | 3.1 | 5.1 | .16 | .00 | 215 | 81 |
| 31 | 2.9 | --- | .10 | .00 | --- | 19 | --- | 2.9 | --- | .00 | 171 | --- |
| TOTAL | 30.47 | 97.24 | 24.02 | .07 | 9.83 | 647.7 | 445.9 | 237.0 | 42.22 | 7.54 | 4560.04 | 4132 |
| MEAN | .98 | 3.24 | .77 | .002 | .35 | 20.9 | 14.9 | 7.55 | 1.41 | .24 | 147 | 138 |
| MAX | 4.6 | 7.7 | 1.7 | .05 | 2.1 | 62 | 61 | 68 | 16 | 3.4 | 603 | 420 |
| MIN | .00 | .84 | .10 | .00 | .00 | 2.5 | 3.1 | 1.6 | .00 | .00 | .00 | 43 |
| CFSM | .003 | .009 | .002 | .000 | .001 | .06 | .04 | .02 | .004 | .001 | .41 | .39 |
| IN. | .00 | .01 | .00 | .00 | .00 | .07 | .05 | .02 | .00 | .00 | .47 | .43 |
| AC-FT | 60 | 193 | 48 | .1 | 19 | 1280 | 884 | 470 | 84 | 15 | 9040 | 8200 |

| | | | | | | | | | | | | | | |
|-------------|-------|----------|------|------|-----|------|-----|-----|------|-----|----|------|-------|--------|
| CAL YR 1976 | TOTAL | 55272.05 | MEAN | 151 | MAX | 1630 | MIN | .00 | CFSM | .42 | IN | 5.74 | AC-FT | 109600 |
| WTR YR 1977 | TOTAL | 10234.03 | MEAN | 28.0 | MAX | 603 | MIN | .00 | CFSM | .08 | IN | 1.06 | AC-FT | 20300 |

D548217D 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 071000D6, 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 mi² (207 km²).

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,225.12 ft (373.417 m) above mean sea level.

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

AVERAGE DISCHARGE.--18 years, 32.8 ft³/s (0.929 m³/s), 5.57 in/yr (141 mm/yr), 23,760 acre-ft/yr (29.3 hm³/yr); median of yearly mean discharges, 25 ft³/s (0.708 m³/s), 4.2 in/yr (107 mm/yr), 18,100 acre-ft/yr (22.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,080 ft³/s (58.9 m³/s) Aug. 31, 1962, gage height, 13.68 ft (4.17D m); maximum gage height, 15.05 ft (4.587 m) Apr. 6, 1965, backwater from ice; no flow at times in 1964, 1967, 1968, 1972, 1975, 1976.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 64 ft³/s (1.81 m³/s) March 9, gage height, 3.91 ft (1.192 m) backwater from ice, no peak above base of 400 ft³/s (11.3 m³/s); no flow for many days during ice period.

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 | .25 | .24 | .00 | .00 | .00 | 1.4 | 1.3 | .78 | .49 | .74 | .17 | 9.6 |
| 2 | .24 | .23 | .00 | .00 | .00 | 4.0 | 11 | .71 | .52 | .27 | .19 | 6.5 |
| 3 | .23 | .21 | .00 | .00 | .00 | 12 | 13 | .67 | .38 | .12 | .18 | 4.0 |
| 4 | .46 | .19 | .00 | .00 | .00 | 13 | 7.2 | 1.0 | .34 | .10 | .12 | 2.4 |
| 5 | .95 | .18 | .00 | .00 | .00 | 14 | 4.8 | 2.7 | .32 | .08 | .11 | 2.2 |
| 6 | .30 | .19 | .00 | .00 | .00 | 20 | 3.2 | 1.2 | .27 | .10 | .08 | 1.9 |
| 7 | .21 | .18 | .00 | .00 | .00 | 28 | 2.8 | .66 | .23 | .19 | .07 | 2.1 |
| 8 | .21 | .17 | .00 | .00 | .00 | 37 | 1.7 | .53 | .22 | 1.5 | .08 | 22 |
| 9 | .21 | .20 | .00 | .00 | .00 | 40 | 1.3 | .44 | .25 | .21 | .12 | 33 |
| 10 | .21 | .23 | .00 | .00 | .00 | 38 | 1.0 | .36 | .24 | .15 | .12 | 15 |
| 11 | .21 | .10 | .00 | .00 | .00 | 36 | .83 | .37 | .23 | .26 | .11 | 11 |
| 12 | .21 | .07 | .00 | .00 | .00 | 23 | .86 | .34 | .26 | .75 | .08 | 11 |
| 13 | .20 | .08 | .00 | .00 | .00 | 16 | 5.1 | .32 | .29 | .42 | .07 | 52 |
| 14 | .19 | .07 | .00 | .00 | .00 | 10 | 3.5 | .32 | .34 | .20 | .08 | 32 |
| 15 | .17 | .06 | .00 | .00 | .00 | 5.6 | 2.8 | .46 | .31 | .17 | .22 | 17 |
| 16 | .16 | .07 | .00 | .00 | .00 | 3.7 | 2.3 | .93 | .55 | .17 | .33 | 10 |
| 17 | .16 | .09 | .00 | .00 | .00 | 3.1 | 2.1 | .38 | 3.1 | .25 | 7.4 | 8.2 |
| 18 | .24 | .11 | .00 | .00 | .00 | 2.7 | 1.8 | .31 | .45 | .25 | 4.0 | 5.9 |
| 19 | .46 | .24 | .00 | .00 | .00 | 2.4 | 2.0 | .39 | .24 | .20 | 8.1 | 6.0 |
| 20 | .54 | .28 | .00 | .00 | .00 | 1.9 | 1.6 | .70 | .17 | .24 | 4.7 | 4.4 |
| 21 | .33 | .15 | .00 | .00 | .00 | 1.6 | 1.8 | .89 | .16 | .24 | 2.5 | 3.2 |
| 22 | .21 | .08 | .00 | .00 | .00 | 1.5 | 1.7 | .68 | .16 | .29 | 1.7 | 2.6 |
| 23 | .35 | .05 | .00 | .00 | .00 | 1.5 | 1.2 | .66 | .27 | .48 | 1.3 | 2.8 |
| 24 | 2.7 | .04 | .00 | .00 | .00 | 1.4 | .93 | .38 | .26 | .30 | .87 | 3.2 |
| 25 | 1.1 | .03 | .00 | .00 | .00 | 1.3 | .79 | .33 | .21 | .20 | .69 | 3.6 |
| 26 | .42 | .02 | .00 | .00 | .01 | 1.3 | .74 | .38 | .18 | .13 | .60 | 3.6 |
| 27 | .32 | .01 | .00 | .00 | .01 | 1.2 | .79 | .45 | .15 | .10 | .50 | 2.5 |
| 28 | .22 | .00 | .00 | .00 | .24 | 1.9 | 2.1 | .60 | .18 | .19 | .43 | 2.1 |
| 29 | .26 | .00 | .00 | .00 | --- | 6.7 | .98 | .52 | .19 | .18 | .34 | 2.1 |
| 30 | .28 | .00 | .00 | .00 | --- | 3.4 | .82 | .61 | .26 | .22 | 1.2 | 2.6 |
| 31 | .25 | --- | .00 | .00 | --- | 1.8 | --- | .99 | --- | .23 | 11 | --- |
| TOTAL | 12.25 | 3.57 | .00 | .00 | .26 | 335.4 | 82.04 | 20.06 | 11.22 | 8.93 | 47.46 | 284.5 |
| MEAN | .40 | .12 | .000 | .000 | .009 | 10.8 | 2.73 | .65 | .37 | .29 | 1.53 | 9.48 |
| MAX | 2.7 | .28 | .00 | .00 | .24 | 40 | 13 | 2.7 | 3.1 | 1.5 | 11 | 52 |
| MIN | .16 | .00 | .00 | .00 | .00 | 1.2 | .74 | .31 | .15 | .08 | .07 | 1.9 |
| CFSM | .005 | .002 | .000 | .000 | .000 | .14 | .03 | .008 | .005 | .004 | .02 | .12 |
| IN. | .01 | .00 | .00 | .00 | .00 | .16 | .04 | .01 | .01 | .00 | .02 | .13 |
| AC-FT | 24 | 7.1 | .00 | .00 | .5 | 665 | 163 | 40 | 22 | 18 | 94 | 564 |

CAL YR 1976 TOTAL 1761.94 MEAN 4.81 MAX 88 MIN .00 CFSM .06 IN .82 AC-FT 3490
WTR YR 1977 TOTAL 805.69 MEAN 2.21 MAX 52 MIN .00 CFSM .03 IN .37 AC-FT 1600

DES MOINES RIVER BASIN

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, and 5.6 mi (9.0 km) south of Sac City.

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) above mean sea level (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.--19 years, 274 ft³/s (7.760 m³/s), 5.22 in/yr (133 mm/yr), 198,500 acre-ft/yr (245 hm³/yr); median of yearly mean discharges, 240 ft³/s (6.80 m³/s), 4.6 in/yr (117 mm/yr), 174,000 acre-ft/yr (215 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s (306 m³/s) Sept. 1, 1962, gage height, 18.12 ft (5.523 m); 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, 479 ft³/s (13.6 m³/s) Aug. 9, gage height, 5.43 ft (1.655 m), no peak above base of 2,000 ft³/s (56.6 m³/s); maximum gage height, 5.94 ft (1.810 m) Mar. 12, backwater from ice; no flow Jan. 30 to Feb. 4.

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 | 7.3 | 10 | 9.3 | 2.0 | .00 | 12 | 41 | 39 | 20 | 11 | 10 | 36 |
| 2 | 6.1 | 10 | 9.0 | 1.9 | .00 | 15 | 73 | 35 | 19 | 11 | 9.6 | 47 |
| 3 | 5.3 | 9.4 | 8.6 | 1.8 | .00 | 20 | 136 | 37 | 16 | 10 | 7.7 | 43 |
| 4 | 7.5 | 8.4 | 8.4 | 1.7 | .00 | 24 | 163 | 39 | 14 | 8.8 | 7.3 | 33 |
| 5 | 7.9 | 9.9 | 8.0 | 1.6 | .50 | 32 | 118 | 45 | 12 | 7.9 | 7.7 | 23 |
| 6 | 8.6 | 8.6 | 7.8 | 1.6 | .94 | 40 | 89 | 45 | 12 | 6.6 | 7.7 | 24 |
| 7 | 7.6 | 8.7 | 7.5 | 1.5 | 1.2 | 51 | 72 | 44 | 11 | 8.8 | 9.1 | 29 |
| 8 | 6.4 | 8.9 | 7.2 | 1.4 | 1.4 | 65 | 60 | 38 | 11 | 10 | 8.6 | 23 |
| 9 | 6.2 | 8.6 | 6.9 | 1.4 | 1.7 | 80 | 50 | 33 | 10 | 13 | 206 | 34 |
| 10 | 7.9 | 8.5 | 6.5 | 1.3 | 2.1 | 120 | 44 | 31 | 9.3 | 13 | 48 | 52 |
| 11 | 7.0 | 9.4 | 6.2 | 1.2 | 2.4 | 170 | 39 | 28 | 9.3 | 12 | 15 | 54 |
| 12 | 6.7 | 10 | 6.0 | 1.2 | 2.7 | 232 | 36 | 25 | 10 | 13 | 10 | 47 |
| 13 | 6.0 | 11 | 5.8 | 1.1 | 2.8 | 190 | 39 | 23 | 10 | 14 | 8.7 | 32 |
| 14 | 5.4 | 12 | 5.5 | 1.0 | 2.9 | 148 | 72 | 21 | 9.3 | 12 | 12 | 29 |
| 15 | 5.3 | 11 | 5.3 | .94 | 3.1 | 108 | 107 | 23 | 8.8 | 10 | 20 | 31 |
| 16 | 5.0 | 11 | 5.0 | .85 | 3.3 | 73 | 86 | 24 | 13 | 9.6 | 46 | 34 |
| 17 | 5.2 | 10 | 4.8 | .75 | 3.4 | 53 | 76 | 23 | 16 | 15 | 84 | 27 |
| 18 | 5.7 | 9.8 | 4.6 | .65 | 3.6 | 46 | 68 | 21 | 33 | 26 | 117 | 20 |
| 19 | 7.0 | 9.2 | 4.3 | .57 | 3.7 | 41 | 64 | 31 | 67 | 22 | 53 | 33 |
| 20 | 7.7 | 10 | 4.1 | .50 | 4.0 | 35 | 63 | 69 | 79 | 18 | 33 | 30 |
| 21 | 7.9 | 13 | 3.9 | .42 | 4.2 | 32 | 65 | 65 | 48 | 15 | 67 | 23 |
| 22 | 8.4 | 14 | 3.7 | .36 | 4.4 | 28 | 60 | 47 | 34 | 24 | 44 | 24 |
| 23 | 11 | 14 | 3.6 | .31 | 4.7 | 28 | 56 | 41 | 105 | 130 | 34 | 34 |
| 24 | 11 | 12 | 3.4 | .24 | 5.1 | 27 | 51 | 36 | 50 | 89 | 24 | 40 |
| 25 | 11 | 11 | 3.2 | .20 | 5.6 | 25 | 48 | 29 | 32 | 52 | 18 | 29 |
| 26 | 17 | 10 | 3.0 | .17 | 5.6 | 24 | 44 | 26 | 23 | 43 | 15 | 24 |
| 27 | 17 | 10 | 2.9 | .14 | 8.0 | 24 | 42 | 22 | 18 | 36 | 13 | 22 |
| 28 | 12 | 10 | 2.7 | .12 | 10 | 29 | 40 | 22 | 15 | 25 | 13 | 25 |
| 29 | 11 | 9.8 | 2.5 | .10 | --- | 41 | 44 | 23 | 14 | 20 | 9.6 | 64 |
| 30 | 10 | 9.5 | 2.3 | .00 | --- | 47 | 48 | 22 | 12 | 15 | 8.6 | 44 |
| 31 | 9.7 | --- | 2.2 | .00 | --- | 50 | --- | 22 | --- | 13 | 28 | --- |
| TOTAL | 257.8 | 307.7 | 164.1 | 27.02 | 88.34 | 1910 | 1994 | 1029 | 740.7 | 713.7 | 994.6 | 1010 |
| MEAN | 8.32 | 10.3 | 5.29 | .87 | 3.16 | 61.6 | 66.5 | 33.2 | 24.7 | 23.0 | 32.1 | 33.7 |
| MAX | 17 | 14 | 9.3 | 2.0 | 10 | 232 | 163 | 69 | 105 | 130 | 206 | 64 |
| MIN | 5.0 | 8.4 | 2.2 | .00 | .00 | 12 | 36 | 21 | 8.8 | 6.6 | 7.3 | 20 |
| CFSM | .01 | .01 | .007 | .001 | .004 | .09 | .09 | .05 | .04 | .03 | .05 | .05 |
| IN- | .01 | .02 | .01 | .00 | .00 | .10 | .10 | .05 | .04 | .04 | .05 | .05 |
| AC-FT | 511 | 610 | 325 | 54 | 175 | 3790 | 3960 | 2040 | 1470 | 1420 | 1970 | 2000 |

CAL YR 1976 TOTAL 22314.40 MEAN 61.0 MAX 528 MIN 2.2 CFSM .09 IN 1.16 AC-FT 44260
WTR YR 1977 TOTAL 9236.96 MEAN 25.3 MAX 232 MIN .0 CFSM .04 IN .48 AC-FT 18320

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 07100006, 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, and 4.2 mi (6.8 km) upstream from Hardin Creek.

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 1408: Drainage area. WSP 1506: 1940 (M), 1950-51.

GAGE.--Water-stage recorder. Datum of gage is 967.09 ft (294.769 m) above mean sea level. 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 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.--37 years, 654 ft³/s (18.52 m³/s), 5.49 in/yr (139 mm/yr), 473,800 acre-ft/yr (584 hm³/yr); median of yearly mean discharges, 570 ft³/s (16.1 m³/s), 4.8 in/yr (122 mm/yr), 413,000 acre-ft/yr (509 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, 1950.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 404 ft³/s (11.4 m³/s) Aug. 26, gage height, 5.29 ft (1.612 m), no peak above base of 4,000 ft³/s (113 m³/s); maximum gage height, 5.71 ft (1.740 m) Feb. 23, backwater from ice; minimum daily discharge, 2.4 ft³/s (0.068 m³/s) Jan. 29, 30.

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 | 24 | 36 | 21 | 5.9 | 2.5 | 18 | 89 | 66 | 106 | 36 | 35 | 83 |
| 2 | 24 | 31 | 21 | 5.5 | 2.5 | 21 | 95 | 65 | 159 | 33 | 31 | 70 |
| 3 | 24 | 30 | 20 | 5.3 | 2.6 | 25 | 98 | 64 | 129 | 31 | 29 | 81 |
| 4 | 28 | 29 | 20 | 5.1 | 2.8 | 31 | 115 | 63 | 95 | 28 | 26 | 87 |
| 5 | 27 | 28 | 19 | 4.9 | 3.3 | 38 | 156 | 68 | 74 | 23 | 36 | 84 |
| 6 | 24 | 27 | 18 | 4.7 | 3.9 | 50 | 187 | 70 | 58 | 22 | 26 | 73 |
| 7 | 24 | 27 | 18 | 4.6 | 4.6 | 64 | 163 | 69 | 50 | 21 | 23 | 72 |
| 8 | 23 | 27 | 17 | 4.4 | 5.2 | 68 | 142 | 72 | 44 | 19 | 22 | 66 |
| 9 | 23 | 27 | 17 | 4.3 | 5.4 | 100 | 126 | 72 | 38 | 18 | 29 | 68 |
| 10 | 24 | 28 | 16 | 4.2 | 5.6 | 130 | 113 | 67 | 35 | 17 | 30 | 64 |
| 11 | 25 | 30 | 16 | 4.1 | 5.7 | 164 | 101 | 60 | 34 | 20 | 39 | 57 |
| 12 | 28 | 32 | 15 | 3.9 | 5.8 | 216 | 91 | 55 | 32 | 19 | 124 | 54 |
| 13 | 25 | 33 | 15 | 3.8 | 6.0 | 283 | 87 | 51 | 30 | 18 | 89 | 64 |
| 14 | 22 | 34 | 14 | 3.6 | 6.1 | 320 | 85 | 48 | 28 | 18 | 60 | 71 |
| 15 | 22 | 35 | 14 | 3.5 | 6.3 | 308 | 85 | 46 | 28 | 22 | 61 | 73 |
| 16 | 22 | 36 | 13 | 3.4 | 6.5 | 207 | 85 | 44 | 29 | 26 | 66 | 68 |
| 17 | 22 | 37 | 13 | 3.2 | 6.7 | 166 | 105 | 42 | 31 | 28 | 64 | 68 |
| 18 | 22 | 33 | 12 | 3.0 | 6.9 | 140 | 105 | 43 | 30 | 25 | 63 | 65 |
| 19 | 25 | 27 | 12 | 2.9 | 7.3 | 124 | 106 | 47 | 32 | 21 | 68 | 62 |
| 20 | 24 | 25 | 11 | 2.8 | 7.7 | 112 | 106 | 88 | 32 | 20 | 114 | 57 |
| 21 | 25 | 25 | 11 | 2.7 | 8.3 | 105 | 103 | 100 | 31 | 21 | 152 | 52 |
| 22 | 25 | 26 | 10 | 2.7 | 8.8 | 99 | 101 | 88 | 44 | 26 | 241 | 52 |
| 23 | 26 | 29 | 10 | 2.6 | 9.4 | 89 | 110 | 106 | 67 | 24 | 165 | 70 |
| 24 | 28 | 30 | 9.7 | 2.6 | 10 | 84 | 99 | 102 | 78 | 24 | 123 | 78 |
| 25 | 29 | 28 | 8.9 | 2.5 | 11 | 77 | 92 | 93 | 136 | 20 | 97 | 104 |
| 26 | 28 | 26 | 8.5 | 2.5 | 12 | 73 | 86 | 84 | 142 | 48 | 238 | 108 |
| 27 | 30 | 24 | 8.0 | 2.5 | 14 | 73 | 83 | 71 | 94 | 60 | 102 | 95 |
| 28 | 31 | 23 | 7.5 | 2.5 | 16 | 78 | 78 | 64 | 70 | 52 | 87 | 82 |
| 29 | 31 | 22 | 7.1 | 2.4 | --- | 83 | 67 | 57 | 54 | 47 | 68 | 79 |
| 30 | 34 | 22 | 6.6 | 2.4 | --- | 87 | 65 | 54 | 46 | 44 | 60 | 96 |
| 31 | 36 | --- | 6.3 | 2.5 | --- | 88 | --- | 73 | --- | 37 | 120 | --- |
| TOTAL | 805 | 867 | 415.6 | 111.0 | 192.9 | 3521 | 3124 | 2092 | 1856 | 866 | 2488 | 2203 |
| MEAN | 26.0 | 28.9 | 13.4 | 3.58 | 6.89 | 114 | 104 | 67.5 | 61.9 | 27.9 | 80.3 | 73.4 |
| MAX | 36 | 37 | 21 | 5.9 | 16 | 320 | 187 | 106 | 159 | 60 | 241 | 108 |
| MIN | 22 | 22 | 6.3 | 2.4 | 2.5 | 18 | 65 | 42 | 28 | 17 | 22 | 52 |
| CFSM | .02 | .02 | .008 | .002 | .004 | .07 | .06 | .04 | .04 | .02 | .05 | .05 |
| IN. | .02 | .02 | .01 | .00 | .00 | .08 | .07 | .05 | .04 | .02 | .06 | .05 |
| AC-FT | 1600 | 1720 | 824 | 220 | 383 | 6980 | 6200 | 4150 | 3680 | 1720 | 4930 | 4370 |

CAL YR 1976 TOTAL 73060.6 MEAN 200 MAX 3220 MIN 6.3 CFSM .12 IN 1.68 AC-FT 144900
WTR YR 1977 TOTAL 18541.5 MEAN 50.8 MAX 320 MIN 2.4 CFSM .03 IN .43 AC-FT 36780

DES MOINES RIVER BASIN

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: 1954-55, 1957 (M).

GAGE.--Water-stage recorder. Datum of gage is 1,050.90 ft (320.314 m) above mean sea level.

REMARKS.--Records good except those for winter period or those below 2.0 ft³/s (0.057 m³/s), which are poor. Small diversion for irrigation above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--25 years, 9.28 ft³/s (0.263 m³/s), 5.25 in/yr (133 mm/yr), 6,720 acre-ft/yr (8.29 hm³/yr); median of yearly mean discharges, 7.0 ft³/s (0.198 m³/s), 4.0 in/yr (102 mm/yr), 5,100 acre-ft/yr (6.29 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 270 ft³/s (7.65 m³/s); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 197 ft³/s (5.58 m³/s) Sept. 30, gage height, 6.02 ft (1.835 m), at 2245 hours, no other peak above base of 150 ft³/s (4.25 m³/s); no flow on many days.

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 | 14 |
| 2 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | 6.5 |
| 3 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | 6.5 |
| 4 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | 10 |
| 5 | .00 | .00 | .00 | .00 | .00 | .01 | .01 | .00 | .00 | .00 | .00 | 7.4 |
| 6 | .00 | .00 | .00 | .00 | .00 | .02 | .00 | .00 | .00 | .00 | .00 | 4.0 |
| 7 | .00 | .00 | .00 | .00 | .00 | .02 | .00 | .00 | .00 | .00 | .00 | 2.4 |
| 8 | .00 | .00 | .00 | .00 | .00 | .02 | .00 | .00 | .00 | .00 | .12 | 2.0 |
| 9 | .00 | .00 | .00 | .00 | .00 | .02 | .00 | .00 | .00 | .00 | 1.4 | 1.9 |
| 10 | .00 | .00 | .00 | .00 | .00 | .02 | .00 | .00 | .00 | .00 | .57 | 1.3 |
| 11 | .00 | .00 | .00 | .00 | .01 | .03 | .00 | .00 | .00 | .00 | .43 | .83 |
| 12 | .00 | .00 | .00 | .00 | .02 | .03 | .00 | .00 | .00 | .00 | .16 | .61 |
| 13 | .00 | .00 | .00 | .00 | .02 | .04 | .00 | .00 | .00 | .00 | .02 | .51 |
| 14 | .00 | .00 | .00 | .00 | .01 | .04 | .00 | .00 | .00 | .00 | .00 | .38 |
| 15 | .00 | .00 | .00 | .00 | .01 | .02 | .00 | .00 | .00 | .00 | .64 | .28 |
| 16 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | 16 | .21 |
| 17 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | 6.7 | .19 |
| 18 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | 1.2 | .17 |
| 19 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .20 | .11 |
| 20 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .41 | .09 |
| 21 | .00 | .00 | .00 | .00 | .00 | .00 | .15 | .00 | .00 | .00 | 47 | .06 |
| 22 | .00 | .00 | .00 | .00 | .00 | .00 | .03 | .00 | .00 | .00 | 12 | .07 |
| 23 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | 3.0 | .24 |
| 24 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .52 | 4.5 |
| 25 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .04 | 5.9 |
| 26 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | 9.7 | 3.2 |
| 27 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .26 | 1.8 |
| 28 | .00 | .00 | .00 | .00 | .00 | .01 | .00 | .00 | .00 | .00 | .03 | 1.1 |
| 29 | .00 | .00 | .00 | .00 | --- | .01 | .00 | .00 | .00 | .00 | .00 | 3.4 |
| 30 | .00 | .00 | .00 | .00 | --- | .00 | .00 | .00 | .00 | .00 | .00 | 65 |
| 31 | .00 | --- | .00 | .00 | --- | .00 | --- | .00 | --- | .00 | 15 | --- |
| TOTAL | .00 | .00 | .00 | .00 | .07 | .29 | .19 | .00 | .00 | .00 | 115.40 | 144.55 |
| MEAN | .000 | .000 | .000 | .000 | .003 | .009 | .006 | .000 | .000 | .000 | 3.72 | 4.82 |
| MAX | .00 | .00 | .00 | .00 | .02 | .04 | .15 | .00 | .00 | .00 | .47 | .65 |
| MIN | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .06 |
| CFSM | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .16 | .20 |
| IN. | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .00 | .18 | .22 |
| AC-FT | .00 | .00 | .00 | .00 | .1 | .6 | .4 | .00 | .00 | .00 | 229 | 287 |

| | | | | | | | | | | | | | | |
|-------------|-------|---------|------|------|-----|-----|-----|-----|------|-----|----|------|-------|------|
| CAL YR 1976 | TOTAL | 1261.56 | MEAN | 3.45 | MAX | 124 | MIN | .00 | CFSM | .14 | IN | 1.96 | AC-FT | 2500 |
| WTR YR 1977 | TOTAL | 260.60 | MEAN | .71 | MAX | 65 | MIN | .00 | CFSM | .03 | IN | .40 | AC-FT | 517 |

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, and 1.7 mi (2.7 km) downstream from Lake Panorama.

DRAINAGE AREA.--440 mi² (1,139 km²).

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

REVISED RECORDS.--WRD IOWA 1974: 1973 (P).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 991.20 ft (302.118 m) above mean sea level.

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

AVERAGE DISCHARGE.--19 years, 212 ft³/s (6.004 m³/s), 6.54 in/yr (166 mm/yr), 153,600 acre-ft/yr (189 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 (4.51 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, 2,690 ft³/s (76.2 m³/s) Aug. 26, gage height, 7.75 ft (2.362 m) at 0830 hours, no other peak above base of 2,500 ft³/s (70.8 m³/s); minimum daily, no flow June 9, 10, 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.

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 | 30 | 35 | 40 | 29 | 33 | 25 | 36 | 18 | 20 | 4.2 | 4.8 | 174 | | |
| 2 | 30 | 40 | 39 | 29 | 34 | 25 | 37 | 18 | 18 | 4.2 | 4.5 | 160 | | |
| 3 | 31 | 50 | 39 | 28 | 35 | 25 | 35 | 18 | 17 | 4.2 | 4.7 | 710 | | |
| 4 | 32 | 49 | 40 | 28 | 35 | 25 | 36 | 19 | 16 | 4.2 | 4.8 | 391 | | |
| 5 | 32 | 49 | 41 | 28 | 35 | 25 | 34 | 20 | 16 | 4.4 | 7.4 | 114 | | |
| 6 | 32 | 49 | 41 | 28 | 34 | 25 | 33 | 21 | 15 | 3.9 | 5.0 | 110 | | |
| 7 | 32 | 49 | 40 | 27 | 32 | 26 | 33 | 21 | 16 | 3.7 | 4.9 | 101 | | |
| 8 | 32 | 47 | 39 | 27 | 29 | 33 | 33 | 21 | 8.8 | 3.1 | 4.0 | 108 | | |
| 9 | 33 | 47 | 39 | 27 | 26 | 32 | 32 | 21 | .00 | 3.0 | 5.7 | 113 | | |
| 10 | 33 | 47 | 39 | 27 | 26 | 34 | 32 | 21 | .00 | 3.1 | 5.1 | 101 | | |
| 11 | 33 | 47 | 38 | 27 | 26 | 65 | 32 | 19 | 9.3 | 3.5 | 4.9 | 89 | | |
| 12 | 33 | 46 | 37 | 27 | 26 | 121 | 32 | 20 | 9.3 | 3.1 | 6.0 | 77 | | |
| 13 | 33 | 46 | 37 | 27 | 27 | 143 | 31 | 21 | 9.8 | 3.1 | 5.9 | 70 | | |
| 14 | 33 | 45 | 36 | 28 | 27 | 66 | 30 | 20 | 9.8 | 3.0 | 6.2 | 58 | | |
| 15 | 33 | 45 | 35 | 28 | 27 | 35 | 30 | 20 | 9.8 | 3.2 | 6.6 | 51 | | |
| 16 | 32 | 44 | 35 | 28 | 28 | 36 | 30 | 19 | 9.8 | 3.6 | 7.7 | 46 | | |
| 17 | 32 | 43 | 35 | 28 | 28 | 36 | 26 | 19 | 9.8 | 9.6 | 5.7 | 46 | | |
| 18 | 32 | 43 | 35 | 28 | 28 | 37 | 18 | 19 | 9.3 | 3.7 | 5.4 | 47 | | |
| 19 | 32 | 43 | 34 | 28 | 28 | 37 | 18 | 18 | 9.3 | 3.2 | 7.6 | 43 | | |
| 20 | 32 | 43 | 34 | 28 | 28 | 37 | 19 | 19 | 8.8 | 3.1 | 9.3 | 36 | | |
| 21 | 33 | 43 | 33 | 28 | 28 | 38 | 21 | 19 | 9.8 | 3.2 | 6.2 | 33 | | |
| 22 | 34 | 43 | 33 | 28 | 29 | 38 | 21 | 21 | 9.3 | 3.0 | 4.7 | 41 | | |
| 23 | 34 | 42 | 32 | 29 | 29 | 38 | 21 | 21 | 8.2 | 3.0 | 4.8 | 314 | | |
| 24 | 34 | 42 | 32 | 29 | 28 | 36 | 20 | 21 | 5.2 | 3.4 | 4.0 | 100 | | |
| 25 | 34 | 42 | 32 | 29 | 26 | 35 | 20 | 21 | 4.8 | 3.2 | 4.4 | 90 | | |
| 26 | 34 | 42 | 31 | 29 | 25 | 35 | 18 | 20 | 4.8 | 3.4 | 1140 | 82 | | |
| 27 | 34 | 42 | 31 | 29 | 25 | 36 | 14 | 20 | 4.8 | 3.5 | 205 | 71 | | |
| 28 | 34 | 40 | 31 | 29 | 25 | 42 | 14 | 21 | 4.5 | 49 | 298 | 59 | | |
| 29 | 34 | 40 | 30 | 30 | --- | 38 | 16 | 21 | 4.5 | 11 | 196 | 52 | | |
| 30 | 35 | 40 | 30 | 31 | --- | 36 | 19 | 21 | 4.2 | 7.2 | 133 | 48 | | |
| 31 | 35 | --- | 29 | 32 | --- | 35 | --- | 22 | --- | 5.4 | 158 | --- | | |
| TOTAL | 1017 | 1323 | 1097 | 878 | 807 | 1295 | 791 | 620 | 281.90 | 172.4 | 2270.3 | 3535 | | |
| MEAN | 32.8 | 44.1 | 35.4 | 28.3 | 28.8 | 41.8 | 26.4 | 20.0 | 9.40 | 5.56 | 73.2 | 118 | | |
| MAX | 35 | 50 | 41 | 32 | 35 | 143 | 37 | 22 | 20 | 49 | 1140 | 710 | | |
| MIN | 30 | 35 | 29 | 27 | 25 | 25 | 14 | 18 | .00 | 3.0 | 4.0 | 33 | | |
| CFSM | .08 | .10 | .08 | .06 | .07 | .10 | .06 | .05 | .02 | .01 | .17 | .27 | | |
| IN. | .09 | .11 | .09 | .07 | .07 | .11 | .07 | .05 | .02 | .01 | .19 | .30 | | |
| AC-FT | 2020 | 2620 | 2180 | 1740 | 1600 | 2570 | 1570 | 1230 | 559 | 342 | 4500 | 7010 | | |
| CAL YR 1976 | TOTAL | 57503.00 | MEAN | 157 | MAX | 3860 | MIN | 28 | CFSM | .36 | IN | 4.86 | AC-FT | 114100 |
| WTR YR 1977 | TOTAL | 14087.60 | MEAN | 38.6 | MAX | 1140 | MIN | .00 | CFSM | .09 | IN | 1.19 | AC-FT | 27940 |

DES MOINES RIVER BASIN

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, and 15.6 mi (25.1 km) upstream from mouth.

DRAINAGE AREA.--988 mi² (2,558 km²).

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1940.

GAGE.--Water-stage recorder. Datum of gage is 895.43 ft (273.232 m) above mean sea level. 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.

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

AVERAGE DISCHARGE.--37 years, 442 ft³/s (12.52 m³/s), 6.08 in/yr (154 mm/yr), 320,200 acre-ft/yr (395 hm³/yr); median of yearly mean discharges, 380 ft³/s (10.8 m³/s), 5.2 in/yr (132 mm/yr), 275,000 acre-ft/yr (339 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.--Peak discharges above base of 5,000 ft³/s (142 m³/s) and maximum (*):

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) |
|---------|------|---|-------------------------|---------|------|---|-------------------------|
| Aug. 26 | 0930 | *11,300 319 | *15.90 4.846 | Sept. 3 | 2215 | 7,870 223 | 12.97 3.953 |
| Aug. 28 | 0215 | 8,740 248 | 13.76 4.194 | | | | |

Minimum daily discharge, 17 ft³/s (0.48 m³/s) Aug. 4.

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 | 75 | 81 | 71 | 48 | 55 | 118 | 99 | 65 | 51 | 27 | 22 | 1120 |
| 2 | 75 | 82 | 69 | 50 | 55 | 120 | 178 | 67 | 48 | 27 | 20 | 621 |
| 3 | 70 | 90 | 68 | 52 | 55 | 122 | 180 | 65 | 48 | 27 | 20 | 3130 |
| 4 | 80 | 99 | 66 | 53 | 55 | 124 | 184 | 84 | 44 | 28 | 17 | 2580 |
| 5 | 89 | 98 | 66 | 54 | 55 | 128 | 171 | 88 | 43 | 26 | 60 | 1090 |
| 6 | 79 | 101 | 64 | 55 | 56 | 132 | 126 | 104 | 42 | 24 | 275 | 630 |
| 7 | 72 | 102 | 63 | 53 | 57 | 138 | 108 | 103 | 36 | 28 | 81 | 433 |
| 8 | 65 | 77 | 62 | 52 | 59 | 146 | 90 | 84 | 37 | 28 | 36 | 380 |
| 9 | 66 | 90 | 62 | 51 | 62 | 154 | 85 | 68 | 38 | 27 | 45 | 946 |
| 10 | 66 | 94 | 62 | 50 | 64 | 158 | 80 | 61 | 36 | 24 | 54 | 524 |
| 11 | 68 | 80 | 62 | 50 | 67 | 212 | 75 | 58 | 36 | 31 | 37 | 340 |
| 12 | 71 | 62 | 62 | 51 | 70 | 430 | 70 | 57 | 31 | 44 | 23 | 260 |
| 13 | 67 | 74 | 62 | 51 | 73 | 332 | 84 | 50 | 31 | 40 | 21 | 252 |
| 14 | 65 | 89 | 61 | 52 | 76 | 250 | 93 | 49 | 41 | 31 | 20 | 209 |
| 15 | 65 | 100 | 60 | 53 | 81 | 154 | 93 | 49 | 44 | 27 | 20 | 177 |
| 16 | 63 | 104 | 58 | 54 | 85 | 105 | 84 | 55 | 38 | 47 | 35 | 159 |
| 17 | 64 | 104 | 57 | 54 | 88 | 111 | 80 | 57 | 46 | 64 | 125 | 144 |
| 18 | 70 | 98 | 55 | 54 | 93 | 90 | 77 | 57 | 44 | 142 | 59 | 155 |
| 19 | 83 | 90 | 54 | 55 | 98 | 108 | 70 | 62 | 38 | 85 | 35 | 140 |
| 20 | 85 | 83 | 53 | 55 | 104 | 106 | 75 | 52 | 38 | 40 | 226 | 106 |
| 21 | 78 | 74 | 52 | 56 | 110 | 123 | 103 | 60 | 36 | 32 | 72 | 93 |
| 22 | 74 | 68 | 50 | 55 | 120 | 117 | 106 | 90 | 35 | 32 | 38 | 101 |
| 23 | 79 | 70 | 49 | 53 | 136 | 111 | 86 | 70 | 78 | 33 | 28 | 495 |
| 24 | 84 | 76 | 48 | 52 | 144 | 74 | 74 | 57 | 87 | 34 | 24 | 1320 |
| 25 | 81 | 80 | 48 | 55 | 138 | 74 | 65 | 53 | 60 | 35 | 22 | 542 |
| 26 | 78 | 80 | 48 | 54 | 130 | 81 | 64 | 51 | 53 | 27 | 6080 | 354 |
| 27 | 78 | 78 | 48 | 54 | 124 | 120 | 64 | 50 | 40 | 20 | 1620 | 291 |
| 28 | 77 | 75 | 48 | 54 | 120 | 171 | 61 | 49 | 34 | 150 | 4090 | 236 |
| 29 | 79 | 74 | 48 | 54 | --- | 322 | 58 | 84 | 33 | 660 | 1150 | 202 |
| 30 | 84 | 73 | 48 | 55 | --- | 202 | 60 | 72 | 30 | 195 | 649 | 193 |
| 31 | 87 | --- | 48 | 55 | --- | 129 | --- | 56 | --- | 64 | 1370 | --- |
| TOTAL | 2317 | 2546 | 1772 | 1644 | 2430 | 4762 | 2843 | 2017 | 1297 | 2100 | 16374 | 17223 |
| MEAN | 74.7 | 84.9 | 57.2 | 53.0 | 86.8 | 154 | 94.8 | 65.1 | 43.2 | 67.7 | 528 | 574 |
| MAX | 89 | 104 | 71 | 56 | 144 | 430 | 184 | 104 | 87 | 560 | 6080 | 3130 |
| MIN | 63 | 62 | 48 | 48 | 55 | 74 | 58 | 49 | 30 | 20 | 17 | 93 |
| CFSM | .08 | .09 | .06 | .05 | .09 | .16 | .10 | .07 | .04 | .07 | .53 | .58 |
| IN. | .09 | .10 | .07 | .06 | .09 | .18 | .11 | .08 | .05 | .08 | .62 | .65 |
| AC-FT | 4600 | 5050 | 3510 | 3260 | 4820 | 9450 | 5640 | 4000 | 2570 | 4170 | 32480 | 34160 |

| | | | | | | | | |
|-------------|-------|--------|----------|----------|--------|----------|---------|--------------|
| CAL YR 1976 | TOTAL | 142285 | MEAN 389 | MAX 5370 | MIN 48 | CFSM .39 | IN 5.36 | AC-FT 282200 |
| WTR YR 1977 | TOTAL | 57325 | MEAN 157 | MAX 6080 | MIN 17 | CFSM .16 | IN 2.16 | AC-FT 113700 |

05484500 RACCOON RIVER AT VAN METER, 1A

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, 1.2 mi (1.9 km) downstream from confluence of North and South Raccoon River, and 30 mi (48.3 km) upstream from mouth.

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) above mean sea level. 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.--Ten discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--62 years, 1,291 ft³/s (36.56 m³/s), 5.09 in/yr (129 mm/yr), 935,300 acre-ft/yr (1,150 hm³/yr); median of yearly mean discharges, 1,100 ft³/s (31.2 m³/s), 4.3 in/yr (109 mm/yr), 797,000 acre-ft/yr (983 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.--Peak discharges above base of 8,500 ft³/s (241 m³/s) and maximum (*):

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) |
|---------|------|---|-------------------------|---------|------|---|-------------------------|
| Aug. 26 | 1345 | 11,600 329 | 12.50 3.810 | Aug. 28 | 0500 | *11,900 337 | *12.79 3.898 |

Minimum daily discharge, 43 ft³/s (1.22 m³/s) Jul. 10, 14.

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 | 119 | 141 | 112 | 58 | 57 | 149 | 236 | 161 | 127 | 75 | 74 | 1750 |
| 2 | 115 | 140 | 106 | 62 | 56 | 160 | 296 | 161 | 167 | 82 | 64 | 1040 |
| 3 | 116 | 137 | 104 | 70 | 56 | 178 | 320 | 154 | 202 | 73 | 52 | 2540 |
| 4 | 141 | 145 | 102 | 70 | 57 | 210 | 347 | 159 | 233 | 81 | 55 | 4230 |
| 5 | 151 | 145 | 102 | 71 | 58 | 230 | 350 | 189 | 217 | 64 | 58 | 1540 |
| 6 | 144 | 144 | 102 | 72 | 60 | 238 | 310 | 178 | 168 | 64 | 256 | 981 |
| 7 | 136 | 140 | 102 | 70 | 61 | 259 | 333 | 199 | 125 | 88 | 210 | 719 |
| 8 | 134 | 134 | 102 | 68 | 67 | 314 | 339 | 178 | 107 | 64 | 106 | 614 |
| 9 | 130 | 132 | 104 | 66 | 70 | 350 | 307 | 150 | 97 | 53 | 118 | 1560 |
| 10 | 128 | 130 | 104 | 66 | 73 | 380 | 272 | 139 | 78 | 43 | 144 | 989 |
| 11 | 128 | 124 | 104 | 61 | 73 | 420 | 243 | 139 | 74 | 62 | 230 | 628 |
| 12 | 131 | 114 | 102 | 57 | 74 | 620 | 220 | 130 | 74 | 60 | 144 | 496 |
| 13 | 140 | 102 | 100 | 60 | 76 | 674 | 204 | 119 | 78 | 57 | 74 | 444 |
| 14 | 128 | 134 | 98 | 61 | 77 | 636 | 199 | 114 | 74 | 43 | 127 | 393 |
| 15 | 110 | 148 | 96 | 62 | 86 | 600 | 199 | 105 | 71 | 47 | 143 | 328 |
| 16 | 106 | 160 | 93 | 63 | 87 | 562 | 190 | 108 | 64 | 71 | 127 | 305 |
| 17 | 100 | 164 | 90 | 62 | 85 | 474 | 181 | 110 | 81 | 141 | 220 | 300 |
| 18 | 101 | 158 | 84 | 63 | 86 | 403 | 185 | 91 | 91 | 239 | 316 | 298 |
| 19 | 116 | 156 | 80 | 65 | 90 | 362 | 203 | 99 | 58 | 214 | 305 | 277 |
| 20 | 135 | 151 | 78 | 66 | 96 | 322 | 208 | 115 | 71 | 106 | 288 | 225 |
| 21 | 130 | 146 | 74 | 66 | 100 | 300 | 222 | 127 | 61 | 73 | 381 | 199 |
| 22 | 119 | 134 | 72 | 65 | 104 | 278 | 262 | 262 | 58 | 57 | 283 | 215 |
| 23 | 122 | 120 | 70 | 62 | 128 | 253 | 282 | 301 | 78 | 59 | 363 | 357 |
| 24 | 134 | 110 | 68 | 61 | 150 | 226 | 238 | 241 | 133 | 61 | 516 | 1930 |
| 25 | 134 | 122 | 66 | 60 | 160 | 208 | 210 | 227 | 148 | 62 | 418 | 1000 |
| 26 | 127 | 138 | 64 | 60 | 154 | 196 | 190 | 219 | 118 | 59 | 6500 | 663 |
| 27 | 126 | 95 | 63 | 60 | 144 | 231 | 186 | 211 | 151 | 50 | 3410 | 548 |
| 28 | 123 | 120 | 63 | 60 | 140 | 285 | 178 | 181 | 159 | 52 | 7440 | 496 |
| 29 | 123 | 124 | 62 | 59 | --- | 455 | 167 | 161 | 114 | 246 | 2470 | 424 |
| 30 | 139 | 120 | 61 | 58 | --- | 383 | 163 | 195 | 86 | 476 | 1180 | 393 |
| 31 | 142 | --- | 60 | 57 | --- | 282 | --- | 153 | --- | 144 | 2620 | --- |
| TOTAL | 3928 | 4028 | 2688 | 1961 | 2525 | 10638 | 7240 | 5076 | 3363 | 3056 | 28692 | 25882 |
| MEAN | 127 | 134 | 85.7 | 63.3 | 90.2 | 343 | 241 | 164 | 112 | 98.9 | 926 | 863 |
| MAX | 151 | 164 | 112 | 72 | 160 | 674 | 350 | 301 | 233 | 476 | 7440 | 4230 |
| MIN | 100 | 95 | 60 | 57 | 56 | 149 | 163 | 91 | 58 | 43 | 52 | 199 |
| CFSM | .04 | .04 | .03 | .02 | .03 | .10 | .07 | .05 | .03 | .03 | .27 | .25 |
| IN. | .04 | .04 | .03 | .02 | .03 | .12 | .08 | .05 | .04 | .03 | .31 | .28 |
| AC-FT | 7790 | 7990 | 5330 | 3890 | 5010 | 21100 | 14360 | 10070 | 6670 | 6080 | 56910 | 51340 |

| | | | | | | | | |
|-------------|-------|--------|----------|-----------|--------|----------|---------|--------------|
| CAL YR 1976 | TOTAL | 344310 | MEAN 941 | MAX 11300 | MIN 60 | CFSM .27 | IN 3.72 | AC-FT 682900 |
| WTR YR 1977 | TOTAL | 99087 | MEAN 271 | MAX 7440 | MIN 43 | CFSM .08 | IN 1.07 | AC-FT 196500 |

DES MOINES RIVER BASIN

05484500 RACCOON RIVER AT VAN METER, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969-73, 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TIME | INSTANTANEOUS DIS- CHARGE (CFS) (00061) | TOTAL CAL- CIUM (CA) (MG/L) (00916) | TOTAL MAG- NE- SIUM (MG) (MG/L) (00927) | TOTAL SODIUM (NA) (MG/L) (00929) | TOTAL PO- TAS- SIUM (K) (MG/L) (00937) | BICAR- BONATE (HCO3) (MG/L) (00440) | CAR- BONATE (CO3) (MG/L) (00445) | ALKA- LINITY AS CACO3 (MG/L) (00410) | DIS- SOLVED SULFATE (SO4) (MG/L) (00945) | DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940) |
|-------|------|---|--|---|--|--|---|--|---|---|--|
| OCT | | | | | | | | | | | |
| 27... | 1155 | 131 | 56 | 24 | 17 | 2.6 | 250 | -- | 205 | 50 | 22 |
| NOV | | | | | | | | | | | |
| 30... | 1135 | E40 | 83 | 38 | 22 | 3.2 | 359 | -- | 294 | 71 | 29 |
| DEC | | | | | | | | | | | |
| 29... | 0855 | E60 | 78 | 30 | 21 | 3.0 | 327 | 0 | 268 | 62 | 23 |
| JAN | | | | | | | | | | | |
| 26... | 0920 | E50 | 70 | 25 | 20 | 2.9 | 315 | 0 | 258 | 51 | 25 |
| MAR | | | | | | | | | | | |
| 01... | 0940 | 149 | 55 | 21 | 16 | 3.0 | 241 | -- | 198 | 48 | 16 |
| 29... | 0940 | 490 | 55 | 25 | 19 | 8.0 | 243 | -- | 200 | 52 | 24 |
| APR | | | | | | | | | | | |
| 26... | 1745 | 190 | 40 | 25 | 25 | 4.6 | 160 | 0 | 130 | 72 | 38 |
| MAY | | | | | | | | | | | |
| 25... | 0945 | 245 | 54 | 21 | 20 | 5.2 | 190 | 0 | 160 | 51 | 27 |
| AUG | | | | | | | | | | | |
| 02... | 1730 | 64 | 54 | 21 | 49 | 7.5 | 200 | 0 | 160 | 90 | 54 |
| 24... | 0915 | 616 | 44 | 16 | 17 | 5.2 | 150 | -- | 120 | 37 | 21 |
| SEP | | | | | | | | | | | |
| 28... | 1030 | 496 | 55 | 26 | 18 | 5.7 | 260 | 0 | 210 | 46 | 27 |

| DATE | TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630) | TOTAL AMMONIA NITRO- GEN (N) (MG/L) (00610) | TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605) | TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625) | TOTAL NITRO- GEN (N) (MG/L) (00600) | TOTAL NITRO- GEN (NO3) (MG/L) (71887) | TOTAL PHOS- PHORUS (P) (MG/L) (00665) | DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300) | DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303) | DIS- SOLVED SOLIDS (TONS PER DAY) (70302) |
|-------|---|---|---|---|--|--|--|---|---|---|
| OCT | | | | | | | | | | |
| 27... | 1.2 | .09 | 1.2 | 1.3 | 2.5 | 11 | .15 | 312 | .42 | 110 |
| NOV | | | | | | | | | | |
| 30... | 2.3 | .39 | 1.0 | 1.4 | 3.7 | 16 | .17 | 481 | .65 | -- |
| DEC | | | | | | | | | | |
| 29... | 2.1 | 1.6 | .30 | 1.9 | 4.0 | 18 | .20 | 409 | .56 | -- |
| JAN | | | | | | | | | | |
| 26... | 2.0 | 1.4 | .50 | 1.9 | 3.9 | 17 | .17 | 395 | .54 | -- |
| MAR | | | | | | | | | | |
| 01... | 1.2 | 1.4 | .60 | 2.0 | 3.2 | 14 | .21 | 303 | .41 | 122 |
| 29... | 1.3 | .52 | 2.6 | 3.1 | 4.4 | 19 | .60 | 345 | .47 | 456 |
| APR | | | | | | | | | | |
| 26... | .04 | .66 | 1.7 | 2.3 | 2.3 | 10 | .25 | 321 | .44 | 165 |
| MAY | | | | | | | | | | |
| 25... | 1.9 | .37 | 2.1 | 2.5 | 4.4 | 19 | .37 | 319 | .43 | 211 |
| AUG | | | | | | | | | | |
| 02... | .80 | 4.5 | 8.5 | 13 | 14 | 61 | 4.4 | 397 | .54 | 68.6 |
| 24... | 2.1 | .30 | .80 | 1.1 | 3.2 | 14 | .34 | 232 | .32 | 323 |
| SEP | | | | | | | | | | |
| 28... | 3.5 | .02 | 1.7 | 1.7 | 5.2 | 23 | .27 | 360 | .49 | 482 |

DES MOINES RIVER BASIN

143

05484500 RACCOON RIVER AT VAN METER, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TOTAL RESI- DUE (MG/L) (00500) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) | TUR- BID- ITY (NTU) (00076) | DIS- SOLVED OXYGEN (MG/L) (00300) | PER- CENT SATUR- ATION (00301) | CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340) | CARBON DIOXIDE (CO2) (MG/L) (00405) | FECAL COLI- FORM .7UM-MF (COL./ 100 ML) (31625) |
|-----------|--|---|--------------------------|--|---|---|--|---|---|---|
| OCT 27... | 340 | 540 | 8.6 | 5.0 | 5.0 | 13.4 | 102 | 17 | 1.0 | 30 |
| NOV 30... | 482 | 520 | 8.4 | .0 | 6.0 | 12.3 | 86 | 2 | 2.3 | 210 |
| DEC 29... | 417 | 660 | 8.0 | .0 | 5.0 | 11.5 | 79 | 10 | 5.2 | -- |
| JAN 26... | 390 | 640 | 7.5 | .0 | 5.0 | 10.5 | 74 | 8 | 16 | 1300 |
| MAR 01... | 310 | 510 | -- | .0 | 5.0 | 16.4 | 110 | 17 | -- | 100 |
| 29... | 940 | 540 | 8.4 | 10.0 | 70 | 9.8 | 95 | 50 | 1.5 | 32000 |
| APR 26... | 361 | 440 | 8.8 | 23.0 | 10 | -- | -- | 32 | .4 | 240 |
| MAY 25... | 445 | 500 | 8.3 | 24.0 | 55 | -- | -- | 38 | 1.5 | 480 |
| AUG 02... | 457 | -- | 7.6 | 28.5 | 28 | -- | -- | 40 | 8.0 | 200 |
| 24... | 385 | 420 | -- | 19.0 | 37 | 7.9 | 88 | 62 | -- | 160 |
| SEP 28... | 477 | 580 | 8.7 | 15.5 | 41 | -- | -- | 31 | .8 | 190 |

DES MOINES RIVER BASIN

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.--80.9 mi² (210 km²).

PERIOD OF RECORD.--October 1971 to current year.

REVISED RECORDS.--WRD Iowa 1973: 1972; WRD Iowa 1975: 1973-74.

GAGE.--Water-stage recorder. Datum of gage is 801.04 ft (244.157 m) above mean sea level (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.--6 years, 71.5 ft³/s (2.025 m³/s), 12.00 in/yr (305 mm/yr), 51,800 acre-ft/yr (63.9 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 (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) |
|---------|------|---|-------------------------|----------|-------|---|-------------------------|
| Aug. 26 | 0415 | 1,400 39.6 | 11.84 3.609 | Aug. 31 | 0715 | 746 21.1 | 9.43 2.874 |
| Aug. 28 | 0145 | *2,590 73.3 | *14.48 4.414 | Sept. 17 | 21.00 | 602 17.0 | 8.70 2.652 |

No flow Jan. 3-Feb. 7, June 11-22, July 30-Aug. 4, Aug. 20.

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 | 1.1 | 1.1 | .16 | .02 | .00 | 3.3 | 29 | 14 | 1.8 | 8.7 | .00 | 106 |
| 2 | 1.1 | .99 | .15 | .01 | .00 | 3.0 | 30 | 14 | 1.3 | 7.3 | .00 | 56 |
| 3 | 1.0 | .94 | .14 | .00 | .00 | 2.8 | 30 | 9.1 | 1.3 | 9.1 | .00 | 122 |
| 4 | 10 | .78 | .13 | .00 | .00 | 2.7 | 46 | 14 | 1.3 | 7.8 | .00 | 145 |
| 5 | 3.1 | .78 | .13 | .00 | .00 | 3.7 | 23 | 15 | 1.0 | 7.8 | 25 | 79 |
| 6 | 1.0 | .82 | .12 | .00 | .00 | 5.0 | 19 | 12 | .20 | 14 | 4.1 | 49 |
| 7 | 1.1 | .69 | .12 | .00 | .00 | 7.0 | 12 | 8.2 | .20 | 30 | 1.3 | 48 |
| 8 | 1.0 | .63 | .12 | .00 | .01 | 6.0 | 10 | 6.9 | .20 | 6.9 | .25 | 36 |
| 9 | 1.0 | .71 | .12 | .00 | .02 | 4.5 | 8.7 | 5.5 | .15 | 4.8 | 44 | 149 |
| 10 | 1.2 | .65 | .13 | .00 | .02 | 12 | 6.9 | 5.2 | .10 | 4.5 | 3.1 | 80 |
| 11 | 1.7 | .55 | .13 | .00 | .02 | 30 | 5.5 | 4.5 | .00 | 9.1 | 5.2 | 50 |
| 12 | 1.2 | .54 | .14 | .00 | .03 | 75 | 4.8 | 4.5 | .00 | 6.0 | .75 | 42 |
| 13 | .86 | .61 | .15 | .00 | .04 | 23 | 4.8 | 4.1 | .00 | 3.8 | .40 | 42 |
| 14 | 1.0 | .71 | .19 | .00 | .05 | 7.8 | 4.5 | 4.1 | .00 | 1.3 | .20 | 37 |
| 15 | 1.9 | .76 | .23 | .00 | .08 | 4.5 | 4.8 | 5.5 | .00 | 21 | 1.5 | 30 |
| 16 | 2.3 | .76 | .28 | .00 | .10 | 4.1 | 4.1 | 4.1 | .00 | 21 | 24 | 22 |
| 17 | 3.5 | .87 | .32 | .00 | .13 | 14 | 3.8 | 3.8 | .00 | 56 | .75 | 125 |
| 18 | 5.6 | .75 | .35 | .00 | .17 | 20 | 3.8 | 3.4 | .00 | 32 | .40 | 110 |
| 19 | 6.9 | 2.0 | .30 | .00 | .23 | 15 | 3.4 | 2.0 | .00 | 18 | .10 | 51 |
| 20 | 4.4 | 2.1 | .25 | .00 | .30 | 11 | 17 | 6.4 | .00 | 8.7 | .00 | 39 |
| 21 | 5.3 | 1.1 | .23 | .00 | .42 | 18 | 22 | 6.0 | .00 | 5.2 | 64 | 32 |
| 22 | 4.6 | 1.4 | .21 | .00 | .56 | 7.8 | 9.6 | 5.5 | .00 | 3.1 | 2.4 | 51 |
| 23 | 7.3 | .86 | .20 | .00 | .76 | 8.2 | 6.4 | 5.0 | 120 | 1.8 | .50 | 88 |
| 24 | 7.8 | 1.2 | .18 | .00 | 1.0 | 12 | 7.8 | 4.5 | 32 | 3.1 | .30 | 99 |
| 25 | 4.0 | 1.8 | .17 | .00 | 1.4 | 11 | 8.7 | 4.0 | 20 | 1.0 | 29 | 79 |
| 26 | 3.2 | 1.2 | .16 | .00 | 1.9 | 11 | 7.3 | 3.5 | 14 | .75 | 326 | 59 |
| 27 | 2.6 | .57 | .15 | .00 | 2.6 | 36 | 7.3 | 5.2 | 9.6 | .25 | 169 | 44 |
| 28 | 2.3 | .20 | .10 | .00 | 3.5 | 82 | 13 | 7.8 | 8.2 | .75 | 734 | 36 |
| 29 | 2.1 | .18 | .07 | .00 | --- | 42 | 23 | 3.1 | 8.7 | 2.4 | 124 | 34 |
| 30 | 4.7 | .17 | .05 | .00 | --- | 26 | 13 | 3.8 | 8.7 | .00 | 55 | 35 |
| 31 | 2.3 | --- | .03 | .00 | --- | 19 | --- | 2.4 | --- | .00 | 217 | --- |
| TOTAL | 97.16 | 26.42 | 5.21 | .03 | 13.34 | 527.4 | 389.2 | 197.1 | 228.75 | 296.15 | 1832.25 | 1975 |
| MEAN | 3.13 | .88 | .17 | .001 | .48 | 17.0 | 13.0 | 6.36 | 7.63 | 9.55 | 59.1 | 66.8 |
| MAX | 10 | 2.1 | .35 | .02 | 3.5 | 82 | 46 | 15 | 120 | 56 | 734 | 149 |
| MIN | .86 | .17 | .03 | .00 | .00 | 2.7 | 3.4 | 2.0 | .00 | .00 | .00 | 22 |
| CFSM | .04 | .01 | .002 | .000 | .006 | .21 | .16 | .08 | .09 | .12 | .73 | .81 |
| IN. | .04 | .01 | .00 | .00 | .01 | .24 | .18 | .09 | .11 | .14 | .84 | .91 |
| AC-FT | 193 | 52 | 10 | .06 | 26 | 1050 | 772 | 391 | 454 | 587 | 3630 | 3920 |

| CAL YR 1976 | TOTAL | 21714.10 | MEAN 59.3 | MAX 1660 | MIN .02 | CFSM .73 | IN 9.98 | AC-FT 43070 |
|-------------|-------|----------|-----------|----------|---------|----------|---------|-------------|
| WTR YR 1977 | TOTAL | 5588.01 | MEAN 15.3 | MAX 734 | MIN .00 | CFSM .19 | IN 2.57 | AC-FT 11080 |

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) above mean sea level. 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.--Fourteen discharge measurements furnished by Corps of Engineers. Average monthly pumpage from galleries furnished by Des Moines Water Works.

AVERAGE DISCHARGE.--37 years, 3,982 ft³/s (113 m³/s), 5.47 in/yr (139 mm/yr), 2,885,000 acre-ft/yr (3,557 hm³/yr); median of yearly mean discharges, 3,420 ft³/s (96.8 m³/s) 4.7 in/yr (119 mm/yr), 2,500,000 acre-ft/yr (3,082 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, 13,600 cfs (385 m³/s) Aug. 28, gage height, 16.98 ft (5.176 m); minimum daily, 26 ft³/s (0.74 m³/s) Jan. 16-29.

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 | 174 | 328 | 155 | 52 | 27 | 346 | 735 | 371 | 282 | 218 | 154 | 3120 |
| 2 | 233 | 426 | 150 | 43 | 27 | 326 | 805 | 367 | 263 | 268 | 123 | 1830 |
| 3 | 339 | 269 | 140 | 36 | 27 | 381 | 848 | 379 | 272 | 275 | 98 | 1510 |
| 4 | 222 | 104 | 130 | 34 | 27 | 387 | 999 | 411 | 295 | 284 | 91 | 5670 |
| 5 | 223 | 162 | 120 | 33 | 27 | 381 | 1010 | 430 | 316 | 288 | 174 | 2670 |
| 6 | 204 | 220 | 120 | 32 | 27 | 397 | 963 | 413 | 295 | 178 | 137 | 1790 |
| 7 | 197 | 214 | 120 | 31 | 27 | 371 | 938 | 445 | 266 | 92 | 231 | 1290 |
| 8 | 186 | 204 | 115 | 30 | 27 | 422 | 912 | 415 | 262 | 63 | 211 | 1060 |
| 9 | 193 | 213 | 110 | 29 | 45 | 474 | 845 | 374 | 238 | 89 | 300 | 1770 |
| 10 | 192 | 209 | 105 | 29 | 55 | 503 | 721 | 347 | 233 | 93 | 165 | 2350 |
| 11 | 179 | 201 | 100 | 28 | 63 | 749 | 641 | 342 | 224 | 92 | 207 | 1460 |
| 12 | 176 | 125 | 97 | 28 | 75 | 839 | 577 | 336 | 254 | 92 | 288 | 1150 |
| 13 | 152 | 120 | 92 | 28 | 85 | 1010 | 457 | 327 | 273 | 85 | 244 | 1290 |
| 14 | 83 | 130 | 87 | 27 | 95 | 1120 | 397 | 321 | 259 | 87 | 202 | 1680 |
| 15 | 72 | 164 | 84 | 27 | 105 | 1300 | 409 | 321 | 251 | 108 | 201 | 1370 |
| 16 | 76 | 175 | 80 | 26 | 120 | 1290 | 409 | 305 | 258 | 142 | 346 | 1280 |
| 17 | 101 | 213 | 70 | 26 | 130 | 1190 | 409 | 270 | 252 | 217 | 376 | 1410 |
| 18 | 103 | 240 | 66 | 26 | 150 | 1100 | 379 | 258 | 182 | 198 | 668 | 1690 |
| 19 | 116 | 245 | 80 | 26 | 170 | 965 | 387 | 258 | 170 | 202 | 537 | 896 |
| 20 | 128 | 272 | 110 | 26 | 190 | 839 | 424 | 274 | 154 | 173 | 432 | 697 |
| 21 | 133 | 285 | 95 | 26 | 215 | 782 | 511 | 285 | 143 | 125 | 749 | 535 |
| 22 | 133 | 297 | 78 | 26 | 274 | 694 | 424 | 305 | 170 | 94 | 612 | 499 |
| 23 | 143 | 284 | 72 | 26 | 273 | 628 | 446 | 334 | 675 | 87 | 587 | 633 |
| 24 | 163 | 211 | 68 | 26 | 306 | 621 | 453 | 370 | 445 | 100 | 495 | 1460 |
| 25 | 171 | 262 | 66 | 26 | 316 | 642 | 394 | 334 | 214 | 98 | 568 | 2490 |
| 26 | 176 | 292 | 78 | 26 | 349 | 607 | 269 | 313 | 227 | 90 | 1950 | 1620 |
| 27 | 173 | 243 | 92 | 26 | 343 | 694 | 381 | 329 | 164 | 90 | 7200 | 1700 |
| 28 | 197 | 210 | 115 | 26 | 312 | 813 | 387 | 344 | 219 | 83 | 11000 | 1560 |
| 29 | 215 | 185 | 95 | 26 | --- | 865 | 354 | 335 | 197 | 75 | 5210 | 1420 |
| 30 | 241 | 170 | 75 | 27 | --- | 847 | 367 | 309 | 152 | 168 | 2170 | 1210 |
| 31 | 242 | --- | 61 | 27 | --- | 755 | --- | 310 | --- | 331 | 2670 | --- |
| TOTAL | 5336 | 6673 | 3026 | 905 | 3887 | 22339 | 17252 | 10532 | 7605 | 4585 | 38376 | 49110 |
| MEAN | 172 | 222 | 97.6 | 29.2 | 139 | 721 | 575 | 340 | 254 | 148 | 1238 | 1637 |
| MAX | 339 | 426 | 155 | 52 | 349 | 1300 | 1010 | 445 | 675 | 331 | 11000 | 5670 |
| MIN | 72 | 104 | 61 | 26 | 27 | 326 | 269 | 258 | 143 | 63 | 91 | 499 |
| CFSM | .02 | .02 | .01 | .003 | .01 | .07 | .06 | .03 | .03 | .02 | .13 | .17 |
| IN. | .02 | .03 | .01 | .00 | .01 | .08 | .06 | .04 | .03 | .02 | .14 | .18 |
| AC-FT | 10580 | 13240 | 6000 | 1800 | 7710 | 44310 | 34220 | 20890 | 15080 | 9090 | 76120 | 97410 |

CAL YR 1976 TOTAL 764785 MEAN 2090 MAX 16300 MIN 61 CFSM .21 IN 2.88 AC-FT 1517000
WTR YR 1977 TOTAL 169626 MEAN 465 MAX 11000 MIN 26 CFSM .05 IN .64 AC-FT 336500

DES MOINES RIVER BASIN

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 (315.2 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 1976 TO SEPTEMBER 1977

| DATE | TIME | INSTANTANEOUS DIS- CHARGE (CFS) (00061) | TOTAL CAL- CIUM (CA) (MG/L) (00916) | TOTAL MAG- NE- SIUM (MG) (MG/L) (00927) | TOTAL SODIUM (NA) (MG/L) (00929) | TOTAL PO- TAS- SIUM (K) (MG/L) (00937) | BICAR- BONATE (HCO3) (MG/L) (00440) | CAR- BONATE (CO3) (MG/L) (00445) | ALKA- LILITY AS CACO3 (MG/L) (00410) | DIS- SOLVED SULFATE (SO4) (MG/L) (00945) | DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940) |
|-----------|------|---|--|---|--|--|---|--|---|---|--|
| OCT 27... | 1250 | 158 | 58 | 27 | 34 | 4.8 | 243 | -- | 199 | 74 | 47 |
| NOV 30... | 1230 | E70 | 70 | 31 | 53 | 9.5 | 113 | -- | 93 | 120 | 57 |
| DEC 29... | 1015 | 117 | 85 | 37 | 68 | 8.0 | 353 | 0 | 290 | 150 | 75 |
| JAN 26... | 1020 | E26 | 92 | 33 | 95 | 14 | 396 | 0 | 325 | 150 | 110 |
| MAR 01... | 1110 | E300 | -- | -- | -- | -- | 304 | -- | 249 | 110 | 66 |
| 29... | 1100 | 568 | 63 | 21 | 27 | 5.7 | 199 | -- | 160 | 81 | 37 |
| APR 26... | 1530 | 195 | 41 | 27 | 40 | 6.7 | 200 | 0 | 160 | 110 | 55 |
| MAY 24... | 1545 | 190 | 58 | 25 | 30 | 6.0 | 200 | 0 | 160 | 90 | 42 |
| AUG 02... | 1145 | 123 | 43 | 23 | 27 | 6.7 | 200 | 0 | 160 | 55 | 33 |
| 23... | 1230 | 567 | 51 | 17 | 24 | 5.9 | 160 | -- | 130 | 52 | 26 |
| SEP 27... | 1345 | 1700 | 63 | 25 | 22 | 6.4 | 240 | 0 | 200 | 58 | 34 |

| DATE | TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630) | TOTAL AMMONIA NITRO- GEN (N) (MG/L) (00610) | TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605) | TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625) | TOTAL NITRO- GEN (N) (MG/L) (00600) | TOTAL NITRO- GEN (NO3) (MG/L) (71887) | TOTAL PHOS- PHORUS (P) (MG/L) (00665) | DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300) | DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303) | DIS- SOLVED SOLIDS (TONS PER DAY) (70302) |
|-----------|---|---|---|---|--|--|--|---|---|---|
| OCT 27... | 2.0 | 1.5 | 1.8 | 3.3 | 5.3 | 23 | 1.3 | 425 | .58 | 181 |
| NOV 30... | 4.2 | 2.6 | 5.3 | 7.9 | 12 | 54 | 2.0 | 510 | .69 | -- |
| DEC 29... | 1.8 | 7.6 | 7.4 | 15 | 17 | 74 | 2.9 | 611 | .83 | 193 |
| JAN 26... | 2.3 | 16 | 6.0 | 22 | 24 | 110 | 5.0 | 704 | .96 | -- |
| MAR 01... | .72 | 3.0 | 1.6 | 4.6 | 5.3 | 24 | .73 | 369 | .50 | -- |
| 29... | 1.3 | 1.1 | 2.2 | 3.3 | 4.6 | 20 | .71 | 354 | .48 | 543 |
| APR 26... | 1.2 | 3.7 | 3.0 | 6.7 | 7.9 | 35 | 2.2 | 419 | .57 | 221 |
| MAY 24... | .31 | .19 | 2.3 | 2.5 | 2.8 | 12 | .31 | 372 | .51 | 191 |
| AUG 02... | .80 | .02 | 1.4 | 1.4 | 2.2 | 9.7 | .32 | 309 | .42 | 103 |
| 23... | 3.7 | .23 | .58 | .81 | 4.5 | 20 | .92 | 288 | .39 | 441 |
| SEP 27... | 4.0 | .48 | 1.2 | 1.7 | 5.7 | 25 | .60 | 377 | .51 | 1730 |

05485520 DES MOINES RIVER BELOW DES MOINES, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TOTAL RESI- DUE (MG/L) (00500) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) | TUR- BID- ITY (NTU) (00076) | DIS- SOLVED OXYGEN (MG/L) (00300) | PER- CENT SATUR- ATION (00301) | CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340) | CARBON DIOXIDE (CO2) (MG/L) (00405) | FECAL COLI- FORM .7UM-MF (COL./ 100 ML) (31625) |
|-----------|--|---|--------------------------|--|---|---|--|---|---|---|
| OCT 27... | 478 | 720 | 8.4 | 16.0 | 5.0 | 9.8 | 95 | 26 | 1.5 | -- |
| NOV 30... | 576 | 640 | 8.5 | 10.5 | 8.0 | 9.2 | 83 | 29 | .6 | 24000 |
| DEC 29... | 668 | 980 | 8.2 | 2.0 | 15 | 12.2 | 88 | 33 | 3.6 | -- |
| JAN 26... | 752 | 1200 | 7.4 | 14.0 | 20 | 10.1 | 100 | 56 | 25 | 95000 |
| MAR 01... | 542 | 800 | -- | .5 | 6.0 | 16.4 | 110 | 28 | -- | 34000 |
| 29... | 564 | 580 | 8.6 | 11.5 | 30 | -- | -- | 50 | .8 | 10000 |
| APR 26... | 445 | -- | 8.5 | 21.0 | 9.0 | -- | -- | 53 | 1.0 | 680000 |
| MAY 24... | 443 | 650 | 8.4 | 27.0 | 29 | -- | -- | 42 | 1.3 | 140000 |
| AUG 02... | 441 | -- | 7.2 | 26.0 | 55 | -- | -- | 97 | 20 | 440000 |
| 23... | 452 | 500 | -- | 23.0 | 80 | -- | -- | 54 | -- | 16000 |
| SEP 27... | 558 | 610 | 8.4 | 20.0 | 85 | -- | -- | -- | 1.5 | 14000 |

DES MOINES RIVER BASIN

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 Muchiknock 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.--WRD IA-75-1: 1974 (P).

GAGE.--Water-stage recorder. Datum of gage is 795.87 ft (242.581 m) above mean sea level.

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

AVERAGE DISCHARGE.--6 years, 75.5 ft³/s (2.138 m³/s), 11.1 in/yr (282 mm/yr), 54,700 acre-ft/yr (67.4 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.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximum (*):

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) |
|---------|------|---|-------------------------|----------|------|---|-------------------------|
| Aug. 26 | 0345 | 854 24.2 | 8.18 2.493 | Sept. 3 | 1430 | 668 18.9 | 7.51 2.289 |
| Aug. 28 | 0615 | *5,380 152 | *14.64 4.462 | Sept. 17 | 2400 | 612 17.3 | 7.26 2.213 |

No flow for many days during both winter period and the period June - Aug.

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 | 1.4 | 1.9 | .40 | .03 | .00 | 4.2 | 5.9 | 7.8 | 1.5 | .00 | .00 | 92 |
| 2 | 1.4 | 1.7 | .31 | .00 | .00 | 4.0 | 10 | 4.6 | .75 | .00 | .00 | 57 |
| 3 | 1.4 | 1.5 | .24 | .00 | .00 | 3.5 | 7.8 | 6.5 | 1.2 | .00 | .00 | 226 |
| 4 | 3.9 | 1.2 | .19 | .00 | .00 | 3.0 | 17 | 9.1 | 2.5 | .00 | .00 | 164 |
| 5 | 3.7 | 1.5 | .15 | .00 | .00 | 5.0 | 9.4 | 9.4 | 1.9 | .00 | .00 | 73 |
| 6 | 1.3 | 1.4 | .14 | .00 | .00 | 7.0 | 6.5 | 44 | 1.5 | 1.4 | .00 | 44 |
| 7 | 1.1 | 1.2 | .13 | .00 | .00 | 6.8 | 4.9 | 27 | .90 | .00 | .00 | 43 |
| 8 | .92 | 1.4 | .16 | .00 | .01 | 7.9 | 4.0 | 13 | 1.4 | .00 | .00 | 34 |
| 9 | 1.0 | 1.5 | .20 | .00 | .02 | 5.1 | 3.3 | 7.8 | 1.5 | .00 | .00 | 182 |
| 10 | 1.0 | 1.5 | .26 | .00 | .03 | 7.4 | 3.1 | 5.7 | .90 | .00 | .00 | 91 |
| 11 | .63 | 1.0 | .32 | .00 | .03 | 28 | 2.5 | 4.9 | .00 | .00 | .00 | 56 |
| 12 | .72 | 1.1 | .40 | .00 | .04 | 23 | 2.5 | 4.6 | .00 | .00 | .00 | 44 |
| 13 | .55 | 1.1 | .51 | .00 | .05 | 10 | 2.7 | 3.8 | .75 | .00 | .00 | 35 |
| 14 | .57 | 1.8 | .32 | .00 | .07 | 6.5 | 2.7 | 3.8 | 1.4 | .00 | .00 | 27 |
| 15 | .51 | 3.5 | .20 | .00 | .09 | 5.4 | 2.7 | 3.8 | 1.4 | .90 | .00 | 24 |
| 16 | .68 | 2.8 | .22 | .00 | .13 | 3.8 | 2.3 | 5.1 | .00 | .00 | 112 | 22 |
| 17 | .77 | 1.5 | .27 | .00 | .18 | 4.9 | 2.3 | 4.6 | .00 | .00 | 26 | 74 |
| 18 | 1.1 | 2.0 | .33 | .00 | .23 | 6.8 | 2.3 | 4.0 | .00 | .00 | 14 | 236 |
| 19 | 1.5 | 2.2 | .43 | .00 | .30 | 4.3 | 3.1 | 4.0 | .00 | .00 | 10 | 83 |
| 20 | 1.7 | 2.2 | .39 | .00 | .39 | 3.3 | 6.8 | 4.6 | .00 | .00 | 12 | 50 |
| 21 | 1.4 | 2.8 | .36 | .00 | .52 | 4.6 | 12 | 6.5 | .00 | .00 | 58 | 36 |
| 22 | 1.4 | 1.5 | .32 | .00 | .70 | 5.4 | 4.0 | 6.2 | .00 | .00 | 38 | 38 |
| 23 | 1.7 | 1.5 | .29 | .00 | .90 | 2.9 | 4.0 | 2.1 | 3.1 | .00 | 135 | 51 |
| 24 | 1.9 | 1.5 | .26 | .00 | 1.2 | 2.3 | 3.5 | 2.9 | 1.1 | .00 | 131 | 112 |
| 25 | 2.1 | 1.6 | .24 | .00 | 1.6 | 2.1 | 4.3 | 2.7 | .00 | .00 | 268 | 78 |
| 26 | 1.9 | 1.3 | .21 | .00 | 2.2 | 1.9 | 4.6 | 1.7 | .00 | .00 | 527 | 56 |
| 27 | 2.1 | 1.0 | .19 | .00 | 2.9 | 10 | 5.4 | .15 | .00 | .00 | 115 | 43 |
| 28 | 1.9 | .82 | .18 | .00 | 3.8 | 24 | 7.2 | 1.4 | .00 | .00 | 959 | 38 |
| 29 | 1.9 | .64 | .12 | .00 | --- | 19 | 7.8 | 1.9 | .00 | .00 | 196 | 38 |
| 30 | 2.9 | .50 | .07 | .00 | --- | 7.2 | 8.8 | 1.5 | .00 | .00 | 55 | 35 |
| 31 | 1.9 | --- | .05 | .00 | --- | 5.4 | --- | 1.7 | --- | .00 | 121 | --- |
| TOTAL | 46.95 | 47.16 | 7.86 | .03 | 15.39 | 234.7 | 163.4 | 206.85 | 21.80 | 2.30 | 2776.00 | 2182 |
| MEAN | 1.51 | 1.57 | .25 | .001 | .55 | 7.57 | 5.45 | 6.67 | .73 | .074 | 89.5 | 72.7 |
| MAX | 3.9 | 3.5 | .51 | .03 | 3.8 | 28 | 17 | 44 | 3.1 | 1.4 | 959 | 236 |
| MIN | .51 | .50 | .05 | .00 | .00 | 1.9 | 2.3 | .16 | .00 | .00 | .00 | 22 |
| CFSM | .02 | .02 | .003 | .000 | .006 | .08 | .06 | .07 | .008 | .001 | .97 | .78 |
| IN. | .02 | .02 | .00 | .00 | .01 | .09 | .07 | .08 | .01 | .00 | 1.11 | .88 |
| AC-FT | 93 | 94 | 16 | .06 | 31 | 466 | 324 | 410 | 43 | 4.6 | 5510 | 4330 |

| | | | | | | | | |
|-------------|-------|----------|-----------|----------|---------|----------|---------|-------------|
| CAL YR 1976 | TOTAL | 19788.32 | MEAN 54.1 | MAX 3150 | MIN .05 | CFSM .58 | IN 7.94 | AC-FT 39260 |
| WTR YR 1977 | TOTAL | 5704.44 | MEAN 15.6 | MAX 959 | MIN .00 | CFSM .17 | IN 2.29 | AC-FT 11310 |

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. WRD IA-76-1: 1975 (P).

GAGE.--Water-stage recorder. Datum of gage is 788.45 ft (240.320 m) above mean sea level (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.--Three discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--37 years, 177 ft³/s (5.013 m³/s), 6.89 in/yr (175 mm/yr), 128,200 acre-ft/yr (158 hm³/s/yr); median of yearly mean discharges, 150 ft³/s (4.25 m³/s), 5.8 in/yr (147 mm/yr), 109,000 acre-ft/yr (134 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.--Peak discharges above base of 1,700 ft³/s (48.1 m³/s) and maximum (*):

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) |
|---------|------|---|-------------------------|---------|------|---|-------------------------|
| Aug. 27 | 0815 | 1,650 46.7 | 19.90 6.066 | Sept. 2 | 1530 | *2,860 81.0 | *21.28 6.486 |
| Aug. 29 | 1630 | 2,480 70.2 | 21.03 6.410 | | | | |

Minimum daily discharge, 0.05 ft³/s (0.001 m³/s) Aug. 3, 4.

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 | .65 | .94 | 2.3 | 1.2 | .84 | 12 | 37 | 3.9 | 2.9 | 1.2 | .14 | 2200 |
| 2 | .57 | 1.0 | 2.3 | 1.1 | .84 | 12 | 28 | 3.6 | 2.9 | .87 | .06 | 3600 |
| 3 | .57 | 1.1 | 2.3 | 1.1 | .83 | 13 | 27 | 3.2 | 2.9 | .83 | .05 | 2000 |
| 4 | .42 | 1.1 | 2.3 | 1.1 | .83 | 14 | 30 | 3.4 | 2.8 | .80 | .05 | 621 |
| 5 | .62 | 1.3 | 2.3 | 1.1 | .82 | 17 | 44 | 8.1 | 2.3 | .43 | .27 | 575 |
| 6 | .66 | 1.3 | 2.3 | 1.1 | .85 | 20 | 49 | 9.4 | 2.0 | .22 | .81 | 260 |
| 7 | .66 | 1.3 | 2.2 | 1.1 | .90 | 24 | 43 | 8.8 | 1.3 | .82 | 1.1 | 148 |
| 8 | .71 | 1.4 | 2.2 | 1.1 | .95 | 30 | 28 | 5.5 | .80 | 1.2 | 1.2 | 103 |
| 9 | .71 | 1.4 | 2.2 | 1.1 | 1.0 | 33 | 24 | 4.7 | .28 | .92 | 1.1 | 85 |
| 10 | .70 | 1.8 | 2.2 | 1.1 | 1.1 | 32 | 23 | 4.4 | .47 | .20 | 1.1 | 78 |
| 11 | .82 | 2.1 | 2.1 | 1.0 | 1.2 | 33 | 22 | 3.5 | .52 | .20 | .83 | 135 |
| 12 | .83 | 2.1 | 2.1 | 1.0 | 1.3 | 44 | 21 | 3.0 | 1.0 | .15 | .70 | 87 |
| 13 | .98 | 2.1 | 2.1 | .97 | 1.5 | 62 | 17 | 3.2 | .88 | .15 | .70 | 72 |
| 14 | .94 | 2.2 | 2.0 | .96 | 1.8 | 63 | 15 | 3.3 | .96 | .10 | .70 | 70 |
| 15 | .98 | 2.2 | 2.0 | .95 | 2.0 | 40 | 13 | 3.0 | .78 | .87 | .57 | 68 |
| 16 | .95 | 2.2 | 1.9 | .95 | 2.1 | 27 | 13 | 3.7 | 1.2 | 6.5 | .98 | 73 |
| 17 | .83 | 2.2 | 1.9 | .94 | 2.1 | 23 | 12 | 4.0 | 1.4 | 3.4 | .98 | 78 |
| 18 | .70 | 2.4 | 1.9 | .92 | 2.3 | 20 | 11 | 3.6 | 1.5 | 2.3 | .83 | 86 |
| 19 | .66 | 2.5 | 2.0 | .90 | 2.5 | 17 | 11 | 3.4 | 1.5 | 1.3 | .83 | 114 |
| 20 | .66 | 2.5 | 2.0 | .88 | 2.7 | 17 | 11 | 3.1 | .84 | 1.3 | .83 | 78 |
| 21 | .71 | 2.5 | 1.9 | .87 | 3.1 | 16 | 12 | 2.9 | .46 | .84 | .98 | 72 |
| 22 | .73 | 2.6 | 1.8 | .86 | 4.0 | 16 | 12 | 2.9 | .30 | .88 | 1.1 | 64 |
| 23 | .75 | 2.6 | 1.8 | .85 | 5.5 | 16 | 11 | 2.7 | 1.0 | 1.1 | 1.1 | 66 |
| 24 | .90 | 2.7 | 1.8 | .84 | 8.6 | 16 | 9.6 | 2.4 | 3.9 | 1.3 | 1.3 | 75 |
| 25 | .83 | 2.9 | 1.8 | .84 | 10 | 16 | 7.8 | 2.5 | 2.5 | 1.6 | 1.1 | 347 |
| 26 | 3.0 | 2.8 | 1.7 | .85 | 11 | 16 | 6.7 | 2.9 | 2.2 | 1.4 | 1500 | 210 |
| 27 | 1.8 | 2.7 | 1.7 | .85 | 11 | 16 | 5.9 | 3.2 | 2.3 | 1.1 | 1410 | 140 |
| 28 | 1.4 | 2.6 | 1.6 | .86 | 12 | 19 | 5.0 | 3.4 | 2.1 | .78 | 1780 | 110 |
| 29 | 1.2 | 2.5 | 1.4 | .86 | --- | 64 | 4.3 | 3.5 | 1.9 | .57 | 3120 | 92 |
| 30 | 1.0 | 2.4 | 1.4 | .85 | --- | 128 | 4.0 | 3.2 | 1.6 | .54 | 2930 | 84 |
| 31 | .90 | --- | 1.3 | .85 | --- | 81 | --- | 2.9 | --- | .37 | 1380 | --- |
| TOTAL | 27.84 | 61.44 | 60.8 | 29.95 | 93.66 | 957 | 557.3 | 121.3 | 47.49 | 34.24 | 12139.41 | 11791 |
| MEAN | .90 | 2.05 | 1.96 | .97 | 3.35 | 30.9 | 18.6 | 3.91 | 1.58 | 1.10 | 392 | 393 |
| MAX | 3.0 | 2.9 | 2.3 | 1.2 | 12 | 128 | 49 | 9.4 | 3.9 | 6.5 | 3120 | 3600 |
| MIN | .42 | .94 | 1.3 | .84 | .82 | 12 | 4.0 | 2.4 | .28 | .10 | .05 | 64 |
| CFSM | .003 | .006 | .006 | .003 | .01 | .09 | .05 | .01 | .005 | .003 | 1.12 | 1.13 |
| IN. | .00 | .01 | .01 | .00 | .01 | .10 | .06 | .01 | .01 | .00 | 1.29 | 1.26 |
| AC-FT | 55 | 122 | 121 | 59 | 186 | 1900 | 1110 | 241 | 94 | 68 | 24080 | 23390 |

| CAL YR 1976 | TOTAL | 69653.51 | MEAN | 190 | MAX | 8000 | MIN | .42 | CFSM | .54 | IN | 7.42 | AC-FT | 138200 |
|-------------|-------|----------|------|------|-----|------|-----|-----|------|-----|----|------|-------|--------|
| WTR YR 1977 | TOTAL | 25921.43 | MEAN | 71.0 | MAX | 3600 | MIN | .05 | CFSM | .20 | IN | 2.76 | AC-FT | 51420 |

DES MOINES RIVER BASIN

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) above mean sea level (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.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--37 years, 252 ft³/s (7.137 m³/s) 6.80 in/yr (173 mm/yr), 182,600 acre-ft/yr (225 hm³/yr); median of yearly mean discharges, 240 ft³/s (6.80 m³/s) 6.5 in/yr (165 mm/yr), 174,000 acre-ft/yr (215 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,000 ft³/s (953 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.--Peak discharges above base of 4,500 ft³/s (127 m³/s) and maximum (*):

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) |
|---------|------|---|-------------------------|---------|------|---|-------------------------|
| Aug. 26 | 1030 | *12,800 362 | *23.04 7.023 | Sept. 1 | 0445 | 5,100 144 | 17.14 5.224 |
| Aug. 28 | 1030 | 6,420 182 | 18.85 5.745 | | | | |

Minimum daily discharge, 0.11 ft³/s (0.003 m³/s) July 2.

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 | 7.8 | 9.6 | 5.8 | 1.3 | .96 | 18 | 43 | 19 | 5.5 | .17 | .45 | 3960 |
| 2 | 7.2 | 9.0 | 5.3 | 1.3 | 1.0 | 19 | 43 | 18 | 4.8 | .11 | .45 | 1020 |
| 3 | 6.6 | 10 | 4.9 | 1.2 | 1.0 | 20 | 47 | 21 | 4.9 | .57 | .59 | 545 |
| 4 | 9.0 | 7.2 | 4.7 | 1.2 | 1.0 | 22 | 48 | 22 | 4.6 | .47 | .66 | 681 |
| 5 | 11 | 7.2 | 4.6 | 1.2 | 1.1 | 25 | 153 | 43 | 4.0 | .81 | 1.8 | 896 |
| 6 | 11 | 7.2 | 4.5 | 1.2 | 1.2 | 30 | 138 | 42 | 4.0 | .98 | 2.2 | 373 |
| 7 | 11 | 7.2 | 4.5 | 1.1 | 1.2 | 35 | 108 | 43 | 4.7 | 2.4 | 4.9 | 278 |
| 8 | 11 | 9.6 | 4.4 | 1.1 | 1.3 | 40 | 92 | 34 | 4.0 | 1.1 | 2.0 | 209 |
| 9 | 11 | 8.4 | 4.4 | 1.1 | 1.4 | 45 | 67 | 28 | 4.0 | 1.3 | 1.9 | 175 |
| 10 | 11 | 7.8 | 4.4 | 1.1 | 1.5 | 50 | 67 | 25 | 4.0 | 1.9 | 1.9 | 150 |
| 11 | 11 | 9.0 | 4.3 | 1.1 | 1.7 | 57 | 57 | 22 | 3.6 | 1.9 | 1.9 | 166 |
| 12 | 11 | 9.6 | 4.3 | 1.0 | 1.9 | 82 | 52 | 19 | 4.0 | 1.3 | 1.9 | 142 |
| 13 | 16 | 11 | 4.3 | 1.0 | 2.2 | 129 | 47 | 17 | 5.0 | 1.6 | 1.9 | 135 |
| 14 | 10 | 13 | 4.2 | .98 | 2.5 | 115 | 44 | 15 | 5.0 | 1.3 | 1.9 | 141 |
| 15 | 6.6 | 14 | 4.2 | .97 | 2.8 | 76 | 42 | 14 | 6.1 | 3.1 | 1.9 | 125 |
| 16 | 6.0 | 18 | 4.1 | .96 | 3.1 | 68 | 38 | 12 | 10 | 91 | 1.9 | 104 |
| 17 | 6.0 | 15 | 4.0 | .95 | 3.3 | 52 | 33 | 10 | 7.2 | 16 | 1.9 | 391 |
| 18 | 5.0 | 11 | 3.8 | .93 | 3.8 | 47 | 28 | 9.0 | 5.4 | 6.2 | 1.9 | 983 |
| 19 | 5.5 | 11 | 3.7 | .92 | 4.1 | 43 | 26 | 7.2 | 4.0 | 3.1 | 1.9 | 279 |
| 20 | 6.0 | 11 | 3.5 | .90 | 4.5 | 42 | 28 | 7.7 | 2.0 | 2.8 | 1.9 | 186 |
| 21 | 6.0 | 10 | 3.3 | .90 | 5.0 | 41 | 36 | 10 | 1.6 | 2.7 | 1.9 | 167 |
| 22 | 5.5 | 11 | 3.1 | .90 | 6.0 | 41 | 38 | 13 | 1.7 | 2.5 | 1.9 | 135 |
| 23 | 5.5 | 11 | 2.8 | .90 | 7.4 | 41 | 36 | 9.5 | 4.5 | 1.8 | 1.9 | 119 |
| 24 | 8.4 | 12 | 2.6 | .90 | 10 | 42 | 32 | 7.2 | 2.7 | 3.6 | 1.9 | 214 |
| 25 | 25 | 11 | 2.3 | .90 | 13 | 44 | 37 | 6.4 | 1.5 | 3.7 | 1.9 | 618 |
| 26 | 17 | 10 | 2.1 | .90 | 15 | 44 | 30 | 5.8 | 1.3 | 2.4 | 7990 | 306 |
| 27 | 12 | 9.6 | 1.9 | .90 | 16 | 46 | 26 | 7.2 | 1.6 | 2.3 | 1210 | 205 |
| 28 | 11 | 8.2 | 1.7 | .90 | 17 | 49 | 22 | 9.3 | 1.1 | 1.7 | 4970 | 160 |
| 29 | 8.4 | 7.3 | 1.6 | .90 | --- | 48 | 22 | 8.5 | .78 | 1.5 | 1750 | 137 |
| 30 | 7.2 | 6.6 | 1.5 | .92 | --- | 45 | 20 | 7.7 | .69 | .43 | 444 | 121 |
| 31 | 9.0 | --- | 1.4 | .95 | --- | 43 | --- | 6.0 | --- | .61 | 1540 | --- |
| TOTAL | 294.7 | 302.5 | 112.2 | 31.48 | 130.96 | 1499 | 1500 | 518.5 | 114.27 | 161.35 | 17959.35 | 13121 |
| MEAN | 9.51 | 10.1 | 3.62 | 1.02 | 4.68 | 48.4 | 50.0 | 16.7 | 3.81 | 5.20 | 579 | 437 |
| MAX | 25 | 18 | 5.8 | 1.3 | 17 | 129 | 153 | 43 | 10 | 91 | 7990 | 3960 |
| MIN | 5.0 | 6.6 | 1.4 | .90 | .96 | 18 | 20 | 5.8 | .69 | .11 | .45 | 104 |
| CFSM | .02 | .02 | .007 | .002 | .009 | .10 | .10 | .03 | .008 | .01 | 1.15 | .87 |
| IN. | .02 | .02 | .01 | .00 | .01 | .11 | .11 | .04 | .01 | .01 | 1.33 | .97 |
| AC-FT | 585 | 600 | 223 | 62 | 260 | 2970 | 2980 | 1030 | 227 | 320 | 35620 | 26030 |

| CAL YR 1976 | TOTAL | 77539.00 | MEAN | 212 | MAX | 7210 | MIN | 1.4 | CFSM | .42 | IN | 5.73 | AC-FT | 153800 |
|-------------|-------|----------|------|------|-----|------|-----|-----|------|-----|----|------|-------|--------|
| WTR YR 1977 | TOTAL | 35745.31 | MEAN | 97.9 | MAX | 7990 | MIN | .11 | CFSM | .20 | IN | 2.64 | AC-FT | 70900 |

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) above mean sea level (levels by Corps of Engineers). Prior to June 12, 1945, nonrecording gage, June 13, 1945, to Apr. 13, 1950, water-stage recorder, and Apr. 14, 1950, to Sept. 30, 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.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--37 years, 239 ft³/s (6.768 m³/s), 7.06 in/yr (179 mm/yr), 173,200 acre-ft/yr (214 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, 15,800 ft³/s (447 m³/s) Aug. 26, gage height, 26.99 ft (8.227 m) at 1030 hours, no other peak above base of 5,000 ft³/s (142 m³/s); minimum daily, 0.15 ft³/s (.004 m³/s) June 27, 28.

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 | 2.6 | 7.3 | 1.4 | 1.5 | 1.4 | 16 | 31 | 6.9 | 4.0 | .55 | .40 | 903 |
| 2 | 2.9 | 7.3 | 2.0 | 1.4 | 1.4 | 17 | 39 | 8.5 | 4.0 | .55 | .55 | 340 |
| 3 | 3.4 | 6.6 | 2.5 | 1.4 | 1.4 | 18 | 44 | 10 | 4.0 | .55 | 1.5 | 703 |
| 4 | 4.0 | 6.3 | 2.7 | 1.3 | 1.4 | 20 | 53 | 15 | 4.0 | .40 | 1.7 | 1380 |
| 5 | 7.3 | 5.4 | 2.9 | 1.3 | 1.5 | 22 | 74 | 71 | 4.0 | .55 | 2.7 | 288 |
| 6 | 6.3 | 5.4 | 3.1 | 1.3 | 1.5 | 21 | 78 | 40 | 2.7 | .85 | 4.0 | 145 |
| 7 | 3.7 | 2.4 | 3.0 | 1.3 | 1.5 | 20 | 46 | 25 | 2.7 | .85 | 26 | 90 |
| 8 | 3.4 | 3.4 | 2.9 | 1.3 | 1.6 | 20 | 34 | 15 | 2.1 | 1.0 | 37 | 59 |
| 9 | 3.1 | 4.0 | 2.9 | 1.3 | 1.6 | 19 | 25 | 12 | 1.7 | .55 | 37 | 43 |
| 10 | 2.6 | 4.0 | 2.8 | 1.3 | 1.7 | 19 | 18 | 11 | 2.1 | .30 | 66 | 28 |
| 11 | 2.6 | 4.2 | 2.7 | 1.2 | 1.8 | 27 | 14 | 9.8 | 2.5 | .40 | 40 | 16 |
| 12 | 2.4 | 4.5 | 2.6 | 1.2 | 2.0 | 56 | 7.3 | 9.4 | 2.7 | .55 | 14 | 18 |
| 13 | 2.4 | 5.4 | 2.5 | 1.2 | 2.2 | 75 | 8.1 | 8.9 | 2.1 | .55 | 5.8 | 216 |
| 14 | 4.0 | 6.0 | 2.4 | 1.1 | 2.4 | 45 | 8.1 | 8.1 | 2.1 | .40 | 2.7 | 184 |
| 15 | 2.6 | 5.7 | 2.4 | 1.1 | 2.6 | 19 | 7.3 | 8.1 | 1.7 | .70 | 1.9 | 74 |
| 16 | 2.9 | 5.1 | 2.2 | 1.1 | 2.8 | 16 | 6.2 | 7.6 | 1.7 | 11 | 4.8 | 44 |
| 17 | 2.9 | 4.8 | 2.2 | .90 | 3.0 | 12 | 5.1 | 6.5 | 1.2 | 10 | 3.7 | 1520 |
| 18 | 2.4 | 4.5 | 2.3 | .72 | 3.2 | 9.4 | 5.1 | 6.2 | .40 | 4.0 | 1.7 | 1110 |
| 19 | 4.2 | 4.2 | 2.4 | .50 | 3.4 | 9.4 | 6.5 | 5.8 | .40 | 1.5 | 1.7 | 258 |
| 20 | 4.0 | 5.4 | 2.5 | .43 | 3.7 | 9.1 | 8.1 | 5.4 | .40 | .85 | 1.9 | 130 |
| 21 | 2.9 | 7.3 | 2.5 | .58 | 4.5 | 9.1 | 72 | 4.8 | .55 | .30 | 1.9 | 123 |
| 22 | 2.4 | 6.9 | 2.4 | .70 | 5.6 | 11 | 126 | 4.8 | 1.3 | .30 | 1.7 | 83 |
| 23 | 3.1 | 5.7 | 2.3 | .95 | 9.0 | 9.4 | 56 | 4.5 | 1.3 | .40 | 1.7 | 74 |
| 24 | 5.1 | 5.4 | 2.2 | 1.1 | 12 | 10 | 33 | 4.2 | 2.0 | 1.7 | .85 | 172 |
| 25 | 4.8 | 5.0 | 2.1 | 1.2 | 13 | 9.4 | 23 | 3.7 | .55 | 2.0 | 1.5 | 180 |
| 26 | 5.4 | 4.5 | 2.0 | 1.2 | 14 | 9.1 | 16 | 3.7 | .40 | 1.3 | 11900 | 102 |
| 27 | 4.5 | 3.5 | 1.9 | 1.2 | 15 | 9.4 | 12 | 3.7 | .15 | 1.0 | 2780 | 62 |
| 28 | 4.8 | 2.3 | 1.8 | 1.3 | 15 | 42 | 7.6 | 3.7 | .15 | .85 | 2180 | 42 |
| 29 | 5.7 | 1.5 | 1.7 | 1.3 | --- | 270 | 6.9 | 3.6 | .30 | .85 | 690 | 39 |
| 30 | 5.7 | 1.1 | 1.6 | 1.3 | --- | 141 | 6.9 | 3.8 | .55 | .70 | 216 | 36 |
| 31 | 6.9 | --- | 1.5 | 1.4 | --- | 50 | --- | 3.8 | --- | .40 | 723 | --- |
| TOTAL | 121.0 | 145.1 | 72.4 | 35.08 | 130.2 | 1040.3 | 877.2 | 334.5 | 53.75 | 45.90 | 18751.70 | 8462 |
| MEAN | 3.90 | 4.84 | 2.34 | 1.13 | 4.65 | 33.6 | 29.2 | 10.8 | 1.79 | 1.48 | 605 | 282 |
| MAX | 7.3 | 7.3 | 3.1 | 1.5 | 15 | 270 | 126 | 71 | 4.0 | 11 | 11900 | 1520 |
| MIN | 2.4 | 1.1 | 1.4 | .43 | 1.4 | 9.1 | 5.1 | 3.6 | .15 | .30 | .40 | 16 |
| CFSM | .008 | .01 | .005 | .002 | .01 | .07 | .06 | .02 | .004 | .003 | 1.32 | .61 |
| IN. | .01 | .01 | .01 | .00 | .01 | .08 | .07 | .03 | .00 | .00 | 1.52 | .68 |
| AC-FT | 240 | 288 | 144 | 70 | 258 | 2060 | 1740 | 663 | 107 | 91 | 37190 | 16780 |

| | | | | | | | | | | | | | | |
|-------------|-------|----------|------|------|-----|-------|-----|-----|------|-----|----|------|-------|--------|
| CAL YR 1976 | TOTAL | 60248.90 | MEAN | 165 | MAX | 9200 | MIN | 1.1 | CFSM | .36 | IN | 4.87 | AC-FT | 119500 |
| WTR YR 1977 | TOTAL | 30069.13 | MEAN | 82.4 | MAX | 11900 | MIN | .15 | CFSM | .18 | IN | 2.43 | AC-FT | 59640 |

DES MOINES RIVER BASIN

054B7980 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) above mean sea level, (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.--Four discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--15 years, 180 ft³/s (5.097 m³/s), 7.15 in/yr (182 mm/yr), 130,400 acre-ft/yr (161 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.--Maximum discharge, 7,140 ft³/s (202 m³/s) Aug. 26, gage height, 22.73 ft (6.928 m) at 1430 hours, no other peak above base of 3,000 ft³/s (85.0 m³/s); minimum daily, 0.20 ft³/s (0.006 m³/s) Jan. 20 and June 22.

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 | 1.7 | 1.5 | .85 | .57 | .53 | 9.4 | 47 | 6.6 | 4.0 | 5.0 | 17 | 418 |
| 2 | 1.7 | 1.4 | .98 | .56 | .64 | 8.7 | 37 | 5.9 | 3.0 | 4.5 | 16 | 448 |
| 3 | 1.7 | 1.3 | 1.1 | .54 | .66 | 13 | 37 | 14 | 2.9 | 5.3 | 15 | 1350 |
| 4 | 1.4 | 1.3 | 1.2 | .53 | .67 | 17 | 64 | 14 | 4.0 | 5.9 | 15 | 791 |
| 5 | 1.9 | 1.3 | 1.2 | .52 | .68 | 18 | 154 | 32 | 6.0 | 5.3 | 16 | 305 |
| 6 | 1.7 | 1.2 | 1.2 | .52 | .69 | 15 | 172 | 8.9 | 2.0 | 5.0 | 20 | 137 |
| 7 | 1.7 | 1.2 | 1.2 | .52 | .70 | 14 | 98 | 4.5 | 1.7 | 6.2 | 869 | 85 |
| 8 | 1.6 | 1.2 | 1.2 | .52 | .70 | 16 | 42 | 4.2 | 6.9 | 7.2 | 169 | 59 |
| 9 | 1.6 | 1.0 | 1.2 | .53 | .71 | 15 | 31 | 6.9 | 9.3 | 7.8 | 368 | 46 |
| 10 | 1.4 | 1.2 | 1.2 | .53 | 1.3 | 11 | 24 | 12 | 11 | 7.8 | 174 | 35 |
| 11 | 1.5 | 1.4 | 1.1 | .52 | 2.8 | 14 | 16 | 15 | 11 | 8.1 | 55 | 29 |
| 12 | 1.3 | 1.6 | 1.1 | .51 | 6.5 | 90 | 14 | 17 | 9.3 | 10 | 19 | 49 |
| 13 | 1.2 | 1.5 | 1.0 | .51 | 17 | 127 | 11 | 19 | 10 | 10 | 6.9 | 314 |
| 14 | 1.0 | 1.5 | 1.0 | .50 | 25 | 85 | 9.3 | 22 | 10 | 9.7 | 8.1 | 176 |
| 15 | 1.2 | 1.5 | 1.0 | .48 | 23 | 34 | 7.8 | 22 | 9.7 | 10 | 8.1 | 101 |
| 16 | 1.1 | 1.5 | 1.0 | .44 | 21 | 16 | 7.2 | 22 | 8.9 | 15 | 66 | 65 |
| 17 | 1.3 | 1.5 | 1.0 | .42 | 20 | 7.5 | 7.2 | 22 | 8.5 | 24 | 68 | 105 |
| 18 | 1.4 | 1.5 | 1.0 | .31 | 15 | 5.3 | 7.8 | 18 | 7.8 | 24 | 17 | 124 |
| 19 | 1.7 | 1.5 | 1.0 | .25 | 14 | 4.0 | 8.1 | 16 | 4.7 | 22 | 7.5 | 124 |
| 20 | 1.7 | 1.5 | 1.0 | .20 | 11 | 3.7 | 9.3 | 20 | 1.9 | 22 | 5.9 | 109 |
| 21 | 1.9 | 1.5 | .98 | .25 | 15 | 5.6 | 167 | 22 | .74 | 21 | 10 | 90 |
| 22 | 1.4 | 1.5 | .95 | .34 | 20 | 8.1 | 420 | 37 | .20 | 21 | 22 | 65 |
| 23 | 1.5 | 1.5 | .90 | .43 | 31 | 9.7 | 139 | 17 | .74 | 21 | 33 | 52 |
| 24 | 1.5 | 1.5 | .86 | .50 | 36 | 9.7 | 76 | 9.7 | 1.5 | 21 | 39 | 136 |
| 25 | 1.4 | 1.5 | .83 | .55 | 35 | 6.6 | 45 | 7.2 | 1.5 | 22 | 44 | 108 |
| 26 | 1.4 | 1.5 | .77 | .57 | 30 | 7.2 | 29 | 5.3 | 1.5 | 21 | 4230 | 82 |
| 27 | 1.3 | 1.4 | .73 | .58 | 18 | 7.5 | 19 | 5.6 | 1.5 | 21 | 878 | 45 |
| 28 | 1.3 | 1.0 | .67 | .59 | 12 | 48 | 14 | 6.6 | 2.7 | 20 | 1060 | 32 |
| 29 | 1.4 | .70 | .64 | .60 | --- | 446 | 9.7 | 8.9 | 4.7 | 19 | 396 | 28 |
| 30 | 1.5 | .68 | .61 | .61 | --- | 275 | 7.8 | 8.0 | 6.2 | 17 | 198 | 27 |
| 31 | 1.5 | --- | .59 | .62 | --- | 92 | --- | 6.0 | --- | 17 | 398 | --- |
| TOTAL | 45.9 | 40.38 | 30.06 | 15.12 | 360.68 | 1439.0 | 1730.2 | 435.3 | 153.88 | 435.8 | 9248.5 | 5535 |
| MEAN | 1.48 | 1.35 | .97 | .49 | 12.9 | 46.4 | 57.7 | 14.0 | 5.13 | 14.1 | 298 | 185 |
| MAX | 1.9 | 1.6 | 1.2 | .62 | 36 | 446 | 420 | 37 | 11 | 24 | 4230 | 1350 |
| MIN | 1.0 | .68 | .59 | .20 | .63 | 3.7 | 7.2 | 4.2 | .20 | 4.5 | 5.9 | 27 |
| CFSM | .004 | .004 | .003 | .001 | .04 | .14 | .17 | .04 | .02 | .04 | .87 | .54 |
| IN- | .00 | .00 | .00 | .00 | .04 | .16 | .19 | .05 | .02 | .05 | 1.01 | .60 |
| AC-FT | 91 | 80 | 60 | 30 | 715 | 2850 | 3430 | 863 | 305 | 864 | 18340 | 10980 |

| | | | | | | | | | | | | | |
|-------------|-------|----------|------|------|-----|------|-----|-----|------|-----|---------|-------|--------|
| CAL YR 1976 | TOTAL | 55600.44 | MEAN | 152 | MAX | 7580 | MIN | .59 | CFSM | .44 | IN 6.05 | AC-FT | 110300 |
| WTR YR 1977 | TOTAL | 19469.82 | MEAN | 53.3 | MAX | 4230 | MIN | .20 | CFSM | .16 | IN 2.12 | AC-FT | 38620 |

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 mean sea level (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) above mean sea level. 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 736 ft (224 m). The storage capacity of the reservoir at full flood-control pool level, 780 ft (238 m), is 1,830,000 acre-ft (2,260 hm³) and that of conservation pool level, 725 feet (221 m), is 90,000 acre-feet (111 hm³). Reservoir is used for flood control, low-flow augmentation, conservation and recreation. Normal operation will maintain an elevation of 725 ft (221 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 contents, 1,700,000 acre-ft (2,100 hm³) May 14, 1973, elevation, 777.95 ft (237.119 m); minimum daily contents, 58,000 acre-ft (71.5 hm³) Feb. 16, 1977; elevation, 719.68 ft (219.358 m) Feb. 17, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 189,000 acre-ft (233 hm³) Aug. 29, elevation, 733.10 ft (223.449 m); minimum daily contents, 58,000 acre-ft (71.5 hm³) Feb. 16, minimum observed elevation, 719.68 ft (219.358 m) Feb. 17.

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

| | | | | | |
|-----|---------|-----|---------|-----|-----------|
| 722 | 66,200 | 740 | 292,000 | 760 | 825,000 |
| 725 | 90,000 | 745 | 392,000 | 765 | 1,020,000 |
| 730 | 142,000 | 750 | 517,000 | 770 | 1,250,000 |
| 735 | 208,400 | 755 | 653,000 | | |

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS AT 2400

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-----|--------|--------|--------|---------|--------|---------|--------|--------|--------|--------|---------|---------|
| 1 | 90000 | 88800 | 88400 | 78800 | 64100 | 68200 | 99400 | 97800 | 102000 | 102000 | 100000 | 176000 |
| 2 | 90000 | 89200 | 88100 | 78400 | 63700 | 69200 | 98800 | 97900 | 102000 | 102000 | 100000 | 166000 |
| 3 | 89900 | 89800 | 87800 | 78100 | 62900 | 70300 | 98600 | 98100 | 102000 | 101000 | 100000 | 161000 |
| 4 | 90500 | 89900 | 87600 | 77700 | 62900 | 71500 | 98400 | 98600 | 102000 | 101000 | 100000 | 164000 |
| 5 | 91000 | 89900 | 87300 | 77300 | 62500 | 72600 | 98100 | 99200 | 102000 | 101000 | 100000 | 161000 |
| 6 | 91000 | 89800 | 87000 | 76900 | 62100 | 73800 | 97800 | 99800 | 102000 | 101000 | 101000 | 155000 |
| 7 | 91000 | 89700 | 86700 | 76600 | 61700 | 75000 | 97300 | 100000 | 102000 | 101000 | 103000 | 148000 |
| 8 | 90800 | 89600 | 86400 | 76200 | 61200 | 76200 | 96700 | 101000 | 102000 | 101000 | 104000 | 142000 |
| 9 | 90600 | 89600 | 86100 | 75800 | 60700 | 77700 | 96100 | 101000 | 102000 | 100000 | 105000 | 141000 |
| 10 | 90500 | 89500 | 85800 | 75400 | 60300 | 79600 | 95800 | 101000 | 102000 | 100000 | 106000 | 139000 |
| 11 | 90400 | 89400 | 85500 | 75000 | 59800 | 82700 | 95700 | 100000 | 102000 | 99900 | 106000 | 136000 |
| 12 | 90300 | 89300 | 85200 | 74500 | 59400 | 86000 | 95800 | 100000 | 102000 | 99700 | 106000 | 135000 |
| 13 | 90100 | 89200 | 85000 | 74100 | 59000 | 89300 | 95900 | 99800 | 101000 | 99400 | 106000 | 135000 |
| 14 | 89900 | 89000 | 84700 | 73600 | 58600 | 92800 | 95900 | 99500 | 101000 | 99200 | 106000 | 135000 |
| 15 | 89700 | 88900 | 84400 | 73000 | 58300 | 96300 | 95800 | 99100 | 101000 | 99200 | 106000 | 135000 |
| 16 | 89500 | 88800 | 84100 | 72500 | 58000 | 99900 | 95600 | 99000 | 101000 | 99800 | 107000 | 136000 |
| 17 | 89400 | 88700 | 83800 | 72000 | 58100 | 103000 | 95300 | 99000 | 101000 | 100000 | 107000 | 140000 |
| 18 | 89200 | 88700 | 83500 | 71400 | 58300 | 104000 | 95200 | 99100 | 101000 | 100000 | 107000 | 148000 |
| 19 | 89000 | 88700 | 83200 | 70900 | 58700 | 104000 | 95400 | 99200 | 101000 | 101000 | 108000 | 148000 |
| 20 | 88900 | 88800 | 82900 | 70400 | 59400 | 103000 | 96100 | 99300 | 101000 | 101000 | 109000 | 145000 |
| 21 | 88800 | 88900 | 82600 | 69800 | 60200 | 101000 | 97100 | 99500 | 100000 | 101000 | 111000 | 143000 |
| 22 | 88600 | 88900 | 82200 | 69300 | 61100 | 99700 | 98000 | 99900 | 100000 | 101000 | 112000 | 142000 |
| 23 | 88600 | 89000 | 81800 | 68800 | 62100 | 98900 | 98300 | 100000 | 101000 | 100000 | 112000 | 141000 |
| 24 | 88400 | 89000 | 81500 | 68200 | 63200 | 98800 | 98400 | 101000 | 102000 | 100000 | 113000 | 141000 |
| 25 | 88300 | 89000 | 81200 | 67700 | 64200 | 99400 | 98500 | 101000 | 102000 | 100000 | 113000 | 143000 |
| 26 | 88200 | 89000 | 80800 | 67200 | 65200 | 100000 | 98500 | 101000 | 102000 | 100000 | 136000 | 145000 |
| 27 | 88200 | 89000 | 80500 | 66600 | 66300 | 101000 | 98300 | 102000 | 102000 | 99900 | 161000 | 145000 |
| 28 | 88200 | 89000 | 80200 | 66100 | 67200 | 102000 | 98200 | 102000 | 102000 | 99800 | 177000 | 144000 |
| 29 | 88300 | 88900 | 79900 | 65500 | --- | 102000 | 98100 | 102000 | 102000 | 99700 | 189000 | 143000 |
| 30 | 88400 | 88600 | 79500 | 65000 | --- | 102000 | 98000 | 102000 | 102000 | 99800 | 180000 | 141000 |
| 31 | 88500 | --- | 79200 | 64500 | --- | 100000 | --- | 103000 | --- | 100000 | 176000 | --- |
| MAX | 91000 | 89900 | 88400 | 78800 | 67200 | 104000 | 99400 | 103000 | 102000 | 102000 | 189000 | 176000 |
| MIN | 88200 | 88600 | 79200 | 64500 | 58000 | 68200 | 95200 | 97800 | 100000 | 99200 | 100000 | 135000 |
| + | 724.74 | 724.69 | 723.50 | 720.92 | 720.99 | 725.36 | 725.35 | 725.80 | 725.64 | 725.19 | 731.77 | 728.80 |
| * | -1,500 | +300 | -9,400 | -14,700 | +2,700 | +32,800 | -2,000 | +5,000 | -1,000 | -2,000 | +76,000 | -35,000 |

CAL YR 1976.....MAX 504,000 MIN 77,400 *+10,000
WTR YR 1977.....MAX 189,000 MIN 58,000 *+51,000

+ Elevation, in feet, at end of month.

* Change in contents, in acre-feet.

DES MOINES RIVER BASIN

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 Bellefontaine Bridge, 0.5 mi (0.8 km) downstream from bridge on State Highway 92, 0.8 mi (1.3 km) east of Tracy, 3.1 mi (5.0 km) upstream from Cedar Creek, 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) above mean sea level. 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, 1959. Several observations of water temperature were made during the year. Corps of Engineers gage height telemeter at station.

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

AVERAGE DISCHARGE.--57 years, 4,575 ft³/s (129.6 m³/s), 4.98 in/yr (126 mm/yr), 3,315,000 acre-ft/yr (4,087 hm³/yr); median of yearly mean discharges, 3,950 ft³/s (112 m³/s), 4.3 in/yr (109 mm/yr), 2,862,000 acre-ft/yr (3,530 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, 14,300 ft³/s (405 m³/s) Sept. 3, gage height, 10.03 ft (3.057 m); minimum daily, 165 ft³/s (4.67 m³/s) Feb. 20.

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 | 320 | 329 | 355 | 310 | 300 | 220 | 1410 | 511 | 304 | 218 | 217 | 9970 |
| 2 | 311 | 339 | 350 | 305 | 305 | 222 | 1380 | 511 | 317 | 218 | 218 | 14000 |
| 3 | 311 | 329 | 385 | 285 | 310 | 236 | 1380 | 514 | 315 | 218 | 218 | 12200 |
| 4 | 311 | 329 | 300 | 285 | 310 | 231 | 1380 | 525 | 332 | 218 | 218 | 9530 |
| 5 | 377 | 329 | 290 | 285 | 300 | 224 | 1360 | 559 | 318 | 218 | 218 | 11200 |
| 6 | 320 | 339 | 300 | 290 | 310 | 228 | 1360 | 517 | 319 | 218 | 218 | 7950 |
| 7 | 311 | 329 | 360 | 290 | 315 | 230 | 1370 | 506 | 321 | 218 | 219 | 6920 |
| 8 | 311 | 329 | 360 | 295 | 315 | 230 | 1370 | 509 | 325 | 218 | 797 | 5890 |
| 9 | 311 | 339 | 360 | 295 | 315 | 237 | 1370 | 503 | 325 | 218 | 843 | 4100 |
| 10 | 311 | 339 | 360 | 300 | 320 | 241 | 1240 | 505 | 332 | 217 | 440 | 4040 |
| 11 | 311 | 339 | 400 | 350 | 315 | 287 | 1000 | 505 | 329 | 217 | 296 | 4010 |
| 12 | 311 | 339 | 405 | 380 | 310 | 300 | 888 | 506 | 323 | 214 | 225 | 3480 |
| 13 | 311 | 329 | 410 | 340 | 290 | 260 | 695 | 506 | 326 | 210 | 218 | 2680 |
| 14 | 311 | 329 | 420 | 330 | 305 | 258 | 681 | 511 | 325 | 210 | 218 | 2740 |
| 15 | 311 | 329 | 410 | 300 | 300 | 269 | 671 | 511 | 329 | 213 | 218 | 2370 |
| 16 | 311 | 329 | 395 | 270 | 310 | 246 | 661 | 464 | 325 | 350 | 223 | 1990 |
| 17 | 311 | 329 | 375 | 280 | 315 | 262 | 651 | 351 | 321 | 221 | 220 | 2110 |
| 18 | 311 | 320 | 350 | 290 | 270 | 794 | 613 | 353 | 224 | 215 | 228 | 3320 |
| 19 | 320 | 329 | 290 | 295 | 175 | 1760 | 526 | 352 | 205 | 213 | 259 | 3480 |
| 20 | 320 | 329 | 325 | 310 | 165 | 1770 | 462 | 359 | 200 | 209 | 265 | 3350 |
| 21 | 320 | 329 | 350 | 305 | 238 | 1790 | 406 | 353 | 217 | 209 | 261 | 3050 |
| 22 | 320 | 329 | 375 | 305 | 242 | 1700 | 399 | 362 | 218 | 209 | 255 | 2020 |
| 23 | 320 | 329 | 350 | 310 | 269 | 1200 | 470 | 351 | 225 | 209 | 265 | 2010 |
| 24 | 320 | 329 | 360 | 310 | 245 | 1150 | 643 | 349 | 225 | 217 | 320 | 2020 |
| 25 | 320 | 329 | 340 | 315 | 221 | 740 | 644 | 314 | 219 | 214 | 319 | 2040 |
| 26 | 320 | 329 | 325 | 310 | 224 | 727 | 651 | 307 | 218 | 209 | 971 | 2140 |
| 27 | 320 | 380 | 310 | 310 | 220 | 832 | 655 | 304 | 218 | 210 | 8250 | 2700 |
| 28 | 311 | 460 | 270 | 320 | 218 | 1080 | 615 | 311 | 222 | 218 | 10900 | 2700 |
| 29 | 329 | 390 | 240 | 295 | --- | 1520 | 521 | 314 | 218 | 218 | 11200 | 2700 |
| 30 | 339 | 380 | 235 | 295 | --- | 1970 | 521 | 319 | 222 | 216 | 12600 | 2700 |
| 31 | 329 | --- | 300 | 290 | --- | 1910 | --- | 317 | --- | 234 | 11300 | --- |
| TOTAL | 9870 | 10215 | 10655 | 9450 | 7732 | 23124 | 25993 | 13179 | 8317 | 6814 | 62617 | 139810 |
| MEAN | 318 | 341 | 344 | 305 | 276 | 746 | 866 | 425 | 277 | 220 | 2020 | 4560 |
| MAX | 377 | 460 | 420 | 380 | 320 | 1970 | 1410 | 559 | 332 | 350 | 12600 | 14000 |
| MIN | 311 | 320 | 235 | 270 | 165 | 220 | 399 | 304 | 200 | 209 | 217 | 1990 |
| AC-FT | 19580 | 20260 | 21130 | 18740 | 15340 | 45870 | 51560 | 26140 | 16500 | 13520 | 124200 | 277300 |
| CAL YR 1976 | TOTAL | 1250870 | MEAN | 3418 | MAX | 19000 | MIN | 235 | AC-FT | 2481000 | | |
| WTR YR 1977 | TOTAL | 327776 | MEAN | 898 | MAX | 14000 | MIN | 165 | AC-FT | 650100 | | |

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) above mean sea level (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.--Three discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--30 years, 193 ft³/s (5.466 m³/s), 7.01 in/yr (178 mm/yr), 139,800 acre-ft/yr (172 hm³/yr); median of yearly mean discharges, 170 ft³/s (4.81 m³/s), 6.2 in/yr (157 mm/yr), 123,000 acre-ft/yr (152 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 (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) |
|--------|------|---|-------------------------|----------|------|---|-------------------------|
| Aug. 9 | 0045 | *6,870 195 | *21.37 6.514 | Sept. 18 | 0145 | 4,190 119 | 17.98 5.480 |

Minimum daily discharge, 0.15 ft³/s (0.004 m³/s) Jan. 24, 25.

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 | 2.5 | 3.6 | 1.8 | 1.2 | .44 | 4.6 | 50 | 9.8 | 4.6 | .84 | 1.8 | 928 |
| 2 | 2.1 | 3.4 | 2.2 | 1.1 | .60 | 5.0 | 42 | 12 | 3.1 | .67 | 2.7 | 748 |
| 3 | 1.9 | 3.9 | 2.0 | .92 | .50 | 5.4 | 42 | 12 | 3.0 | .59 | 3.1 | 507 |
| 4 | 3.0 | 3.0 | 2.0 | .76 | .29 | 9.6 | 51 | 15 | 3.3 | .50 | 1.2 | 658 |
| 5 | 36 | 2.5 | 2.0 | .57 | .23 | 12 | 168 | 60 | 5.1 | .50 | .84 | 243 |
| 6 | 27 | 3.0 | 2.2 | .47 | .29 | 10 | 111 | 42 | 5.8 | .42 | 23 | 142 |
| 7 | 16 | 3.1 | 2.0 | .36 | .46 | 9.8 | 63 | 32 | 2.2 | .36 | 2800 | 107 |
| 8 | 8.3 | 2.5 | 1.8 | .29 | .78 | 13 | 47 | 20 | 2.4 | .50 | 6270 | 85 |
| 9 | 5.1 | 2.4 | 1.7 | .33 | .85 | 15 | 35 | 15 | 2.1 | .50 | 3890 | 71 |
| 10 | 4.2 | 2.5 | 2.0 | .24 | 1.3 | 17 | 29 | 11 | 1.8 | .30 | 1080 | 61 |
| 11 | 3.6 | 2.4 | 1.7 | .29 | 2.8 | 28 | 28 | 8.7 | 1.8 | .24 | 196 | 45 |
| 12 | 3.0 | 2.5 | 1.7 | .30 | 12 | 122 | 20 | 6.9 | 15 | .42 | 122 | 169 |
| 13 | 2.8 | 2.4 | 1.5 | .29 | 19 | 134 | 19 | 6.1 | 8.0 | .50 | 84 | 2280 |
| 14 | 2.4 | 2.2 | 1.6 | .26 | 13 | 65 | 17 | 5.0 | 3.3 | .42 | 57 | 1050 |
| 15 | 2.1 | 2.5 | 1.8 | .29 | 8.6 | 41 | 18 | 4.5 | 1.9 | .42 | 40 | 243 |
| 16 | 2.0 | 3.0 | 1.9 | .58 | 7.2 | 28 | 17 | 4.5 | 1.7 | 102 | 675 | 162 |
| 17 | 1.8 | 2.8 | 2.2 | 1.1 | 4.2 | 20 | 15 | 5.4 | 1.5 | 129 | 443 | 1540 |
| 18 | 1.8 | 3.3 | 2.2 | .46 | 3.0 | 17 | 14 | 5.0 | 1.5 | 35 | 120 | 2530 |
| 19 | 2.1 | 3.4 | 2.8 | .31 | 2.3 | 15 | 13 | 4.7 | 1.4 | 17 | 69 | 360 |
| 20 | 2.2 | 3.1 | 3.3 | 1.6 | 1.7 | 15 | 14 | 3.9 | 1.1 | 7.3 | 48 | 192 |
| 21 | 2.1 | 3.0 | 2.0 | .32 | 1.7 | 17 | 27 | 5.5 | 1.1 | 3.3 | 71 | 144 |
| 22 | 2.1 | 3.0 | 1.7 | .16 | 1.8 | 25 | 56 | 6.7 | 1.2 | 2.0 | 40 | 126 |
| 23 | 2.8 | 3.0 | 1.7 | .16 | 4.8 | 44 | 41 | 9.0 | 1.0 | 1.6 | 29 | 109 |
| 24 | 2.8 | 3.1 | 1.6 | .15 | 15 | 58 | 40 | 10 | 1.3 | 1.6 | 23 | 351 |
| 25 | 3.3 | 3.6 | 1.7 | .15 | 13 | 46 | 32 | 8.6 | 1.2 | 2.2 | 18 | 204 |
| 26 | 2.8 | 4.2 | 1.9 | .17 | 8.9 | 31 | 24 | 6.0 | 1.2 | 1.5 | 1330 | 113 |
| 27 | 3.1 | 3.3 | 1.9 | .17 | 6.0 | 26 | 18 | 4.8 | 1.6 | 1.1 | 1320 | 87 |
| 28 | 2.5 | 2.7 | 2.5 | .16 | 6.9 | 88 | 17 | 3.9 | 1.3 | .67 | 350 | 72 |
| 29 | 2.2 | 2.4 | 2.1 | .22 | --- | 578 | 12 | 3.6 | .92 | .59 | 558 | 64 |
| 30 | 3.0 | 2.0 | 1.6 | .26 | --- | 175 | 11 | 3.2 | .84 | .75 | 158 | 61 |
| 31 | 4.2 | --- | 1.3 | .38 | --- | 76 | --- | 4.2 | --- | 1.2 | 313 | --- |
| TOTAL | 160.8 | 87.8 | 60.4 | 14.02 | 137.64 | 1760.4 | 1091 | 349.0 | 82.26 | 313.99 | 20136.64 | 13452 |
| MEAN | 5.19 | 2.93 | 1.95 | .45 | 4.92 | 56.5 | 36.4 | 11.3 | 2.74 | 10.1 | 650 | 448 |
| MAX | 36 | 4.2 | 3.3 | 1.6 | 19 | 578 | 168 | 60 | 15 | 129 | 6270 | 2530 |
| MIN | 1.8 | 2.0 | 1.3 | .15 | .23 | 4.6 | 11 | 3.2 | .84 | .24 | .84 | 45 |
| CFSM | .01 | .008 | .005 | .001 | .01 | .15 | .10 | .03 | .007 | .03 | 1.74 | 1.20 |
| IN. | .02 | .01 | .01 | .00 | .01 | .17 | .11 | .03 | .01 | .03 | 2.00 | 1.34 |
| AC-FT | 319 | 174 | 120 | 28 | 273 | 3470 | 2160 | 692 | 163 | 623 | 39940 | 26680 |

| | | | | | | | | |
|-------------|-------|----------|----------|----------|---------|----------|---------|--------------|
| CAL YR 1976 | TOTAL | 64846.80 | MEAN 177 | MAX 6830 | MIN 1.3 | CFSM .47 | IN 6.45 | AC-FT 128600 |
| WTR YR 1977 | TOTAL | 37635.95 | MEAN 103 | MAX 6270 | MIN .15 | CFSM .28 | IN 3.74 | AC-FT 74650 |

DES MOINES RIVER BASIN

05489190 MUCHAKINOCK CREEK NEAR EDDYVILLE, IA

LOCATION.--Lat. 41°12'04", long 92°38'24", in SW1/4 NW1/4 sec.19, T.74 N., R.15 W., Mahaska County, Hydrologic Unit 07100009, on left bank 20 ft (6.1 m) downstream from bridge on state highway 137, 3.0 mi (4.8 km) north of Eddyville and 4.0 mi (6.4 km) upstream from mouth.

DRAINAGE AREA.--70.2 mi² (181.8 km²).

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

GAGE.--Water-stage recorder. Datum of gage is 664.4 ft (202.51 m) above mean sea level.

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

EXTREMES FOR CURRENT PERIOD.--July to September 1975: Maximum discharge during period, 162 ft³/s (4.59 m³/s), Aug. 29, gage height, 6.35 ft (1.935 m); no peak above base of 1,000 ft³/s (28.3 m³/s); minimum daily, 0.33 ft³/s (0.009 m³/s) Aug. 8, 9.

Water year 1976: Peak discharges above base of 1,000 ft³/s (28.3 m³/s); 1,110 ft³/s (31.4 m³/s) Nov. 30, gage height, 13.36 ft (4.072 m) at 1545 hours; 8,000 ft³/s (227 m³/s) Apr. 24, gage height, 18.10 ft (5.517 m) at 1000 hours; 1,060 ft³/s (30.0 m³/s) June 29, gage height, 13.19 ft (4.020 m) at 0815 hours; minimum daily, 0.36 ft³/s (0.010 m³/s) Nov. 13.

Water year 1977: Maximum discharge, 332 ft³/s (9.40 m³/s) July 16, gage height 9.19 ft (2.801 m); no peak above base of 1,000 ft³/s (28.3 m³/s); minimum daily, 0.13 ft³/s (.004 m³/s) Jan. 8, 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|--------|--------|
| 1 | | | | | | | | | | 28 | .71 | 6.2 |
| 2 | | | | | | | | | | 14 | .71 | 3.0 |
| 3 | | | | | | | | | | 11 | .80 | 2.0 |
| 4 | | | | | | | | | | 9.6 | .71 | 3.0 |
| 5 | | | | | | | | | | 8.8 | .55 | 35 |
| 6 | | | | | | | | | | 8.0 | .43 | 28 |
| 7 | | | | | | | | | | 7.2 | .43 | 21 |
| 8 | | | | | | | | | | 6.0 | .33 | 14 |
| 9 | | | | | | | | | | 5.0 | .33 | 12 |
| 10 | | | | | | | | | | 4.4 | 3.9 | 15 |
| 11 | | | | | | | | | | 4.0 | .71 | 21 |
| 12 | | | | | | | | | | 3.6 | .63 | 10 |
| 13 | | | | | | | | | | 3.3 | 13 | 6.7 |
| 14 | | | | | | | | | | 3.1 | 5.3 | 4.4 |
| 15 | | | | | | | | | | 2.9 | 1.0 | 3.0 |
| 16 | | | | | | | | | | 2.7 | 15 | 3.9 |
| 17 | | | | | | | | | | 2.4 | 13 | 3.9 |
| 18 | | | | | | | | | | 2.2 | 7.9 | 3.9 |
| 19 | | | | | | | | | | 2.1 | 11 | 3.9 |
| 20 | | | | | | | | | | 2.0 | 3.5 | 3.0 |
| 21 | | | | | | | | | | 1.9 | 2.0 | 2.5 |
| 22 | | | | | | | | | | 1.8 | .71 | 1.5 |
| 23 | | | | | | | | | | 1.7 | .63 | 1.0 |
| 24 | | | | | | | | | | 1.5 | .43 | .80 |
| 25 | | | | | | | | | | 3.9 | 14 | .92 |
| 26 | | | | | | | | | | 2.0 | 8.9 | .92 |
| 27 | | | | | | | | | | 1.2 | 1.2 | .80 |
| 28 | | | | | | | | | | .92 | 2.5 | 3.5 |
| 29 | | | | | | | | | | .80 | 59 | 46 |
| 30 | | | | | | | | | | .80 | 28 | 18 |
| 31 | | | | | | | | | | .71 | 12 | --- |
| TOTAL | --- | --- | --- | --- | --- | --- | --- | --- | --- | 147.53 | 209.31 | 279.84 |
| MEAN | --- | --- | --- | --- | --- | --- | --- | --- | --- | 4.76 | 6.75 | 9.33 |
| MAX | --- | --- | --- | --- | --- | --- | --- | --- | --- | 28 | 59 | 45 |
| MIN | --- | --- | --- | --- | --- | --- | --- | --- | --- | .71 | .33 | .80 |
| CF5M | --- | --- | --- | --- | --- | --- | --- | --- | --- | .07 | .10 | .13 |
| IN. | --- | --- | --- | --- | --- | --- | --- | --- | --- | .08 | .11 | .15 |
| AC-FT | --- | --- | --- | --- | --- | --- | --- | --- | --- | 293 | 415 | 555 |

05489190 MUCHAKINOCK CREEK NEAR EDDYVILLE, IA--CONTINUED

| DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1976 | | | | | | | | | | | | |
|--|--------|---------|------|-------|-------|------|-------|------|------|-------|-------|-------|
| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
| 1 | 8.1 | 9.1 | 264 | 13 | 12 | 39 | 44 | 86 | 33 | 57 | 4.9 | 1.2 |
| 2 | 4.0 | 12 | 78 | 15 | 4.9 | 40 | 39 | 76 | 29 | 44 | 6.1 | 1.2 |
| 3 | 2.5 | 14 | 56 | 14 | 5.9 | 37 | 36 | 63 | 27 | 34 | 7.1 | 1.2 |
| 4 | 2.0 | 6.8 | 47 | 10 | 6.7 | 236 | 32 | 56 | 22 | 30 | 7.1 | 1.1 |
| 5 | 1.2 | 2.4 | 44 | 8.1 | 1.4 | 427 | 30 | 62 | 20 | 27 | 7.1 | 1.0 |
| 6 | .97 | 1.9 | 39 | 11 | 4.1 | 152 | 31 | 66 | 19 | 25 | 7.1 | 1.5 |
| 7 | 1.1 | 1.8 | 33 | 12 | 5.0 | 107 | 27 | 50 | 18 | 24 | 7.1 | 1.1 |
| 8 | .91 | 4.3 | 33 | 12 | 8.6 | 81 | 23 | 46 | 17 | 22 | 7.1 | 1.2 |
| 9 | .83 | 6.6 | 30 | 13 | 13 | 70 | 22 | 45 | 16 | 19 | 7.1 | 1.0 |
| 10 | .82 | 11 | 27 | 15 | 18 | 64 | 22 | 44 | 320 | 15 | 4.6 | 1.1 |
| 11 | .89 | 5.2 | 26 | 16 | 16 | 58 | 24 | 42 | 197 | 13 | 2.3 | 1.2 |
| 12 | .72 | .44 | 23 | 17 | 12 | 46 | 20 | 40 | 65 | 11 | 3.4 | 1.4 |
| 13 | .57 | .36 | 23 | 20 | 12 | 61 | 21 | 44 | 76 | 10 | 5.4 | 1.4 |
| 14 | .88 | .46 | 49 | 26 | 10 | .62 | 22 | 45 | 440 | 14 | 4.0 | 1.4 |
| 15 | .76 | .71 | 49 | 20 | 7.9 | 50 | 23 | 48 | 280 | 46 | 6.9 | 1.4 |
| 16 | .71 | 2.0 | 38 | 19 | 16 | 44 | 25 | 208 | 102 | 13 | 4.7 | 1.4 |
| 17 | 1.2 | 2.8 | 42 | 14 | 21 | 40 | 38 | 151 | 69 | 8.0 | 2.8 | 1.4 |
| 18 | 2.7 | 3.4 | 29 | 12 | 38 | 41 | 67 | 90 | 52 | 6.9 | 2.9 | 1.4 |
| 19 | 4.0 | 3.7 | 31 | 15 | 26 | 40 | 88 | 64 | 42 | 5.9 | 2.3 | 1.4 |
| 20 | 4.6 | 7.1 | 35 | 15 | 20 | 34 | 72 | 54 | 37 | 6.1 | 1.9 | 1.4 |
| 21 | 4.9 | 9.9 | 25 | 15 | 32 | 31 | 368 | 43 | 33 | 12 | 1.8 | 1.4 |
| 22 | 7.0 | 8.3 | 22 | 16 | 34 | 27 | 194 | 38 | 28 | 9.1 | 1.6 | 1.5 |
| 23 | 7.2 | 4.9 | 22 | 17 | 43 | 28 | 228 | 36 | 25 | 7.8 | 1.4 | 1.5 |
| 24 | 7.9 | 4.9 | 20 | 18 | 50 | 29 | 3730 | 35 | 24 | 7.1 | 1.5 | 1.5 |
| 25 | 9.0 | 6.0 | 20 | 16 | 68 | 28 | 1010 | 31 | 23 | 6.3 | 1.8 | 1.8 |
| 26 | 8.3 | 6.9 | 19 | 13 | 56 | 28 | 323 | 28 | 19 | 5.9 | 1.4 | 9.5 |
| 27 | 7.2 | 7.9 | 16 | 9.9 | 49 | 39 | 217 | 26 | 18 | 7.4 | 1.3 | 7.2 |
| 28 | 7.0 | 7.8 | 14 | 14 | 45 | 33 | 155 | 25 | 596 | 18 | 1.3 | 1.8 |
| 29 | 7.6 | 270 | 11 | 18 | 41 | 32 | 118 | 97 | 682 | 11 | 1.6 | 1.3 |
| 30 | 6.7 | 941 | 12 | 19 | --- | 64 | 102 | 67 | 84 | 6.9 | 1.8 | .93 |
| 31 | 5.1 | --- | 13 | 15 | --- | 58 | --- | 41 | --- | 5.6 | 1.4 | --- |
| TOTAL | 117.36 | 1363.66 | 1190 | 468.0 | 676.5 | 2126 | 7151 | 1847 | 3413 | 528.0 | 118.8 | 53.83 |
| MEAN | 3.79 | 45.5 | 38.4 | 15.1 | 23.3 | 68.6 | 238 | 59.6 | 114 | 17.0 | 3.83 | 1.79 |
| MAX | 9.0 | 941 | 264 | 26 | 68 | 427 | 3730 | 208 | 682 | 57 | 7.1 | 9.5 |
| MIN | .57 | .36 | 11 | 8.1 | 1.4 | 27 | 20 | 25 | 16 | 5.6 | 1.3 | .93 |
| CFSM | .05 | .65 | .55 | .22 | .33 | .98 | 3.39 | .85 | 1.62 | .24 | .06 | .03 |
| IN. | .06 | .72 | .63 | .25 | .36 | 1.13 | 3.79 | .98 | 1.81 | .28 | .06 | .03 |
| AC-FT | 233 | 2700 | 2360 | 928 | 1340 | 4220 | 14180 | 3650 | 6770 | 1050 | 236 | 107 |

WTR YR 1976 TOTAL 19053.15 MEAN 52.1 MAX 3730 MIN .36 CFSM .74 IN 10.10 AC-FT 37790

| DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 | | | | | | | | | | | | |
|--|-------|------|-------|-------|-------|--------|-------|-------|-------|--------|--------|-------|
| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
| 1 | .65 | 4.0 | 1.0 | .90 | .49 | 1.2 | 7.3 | 2.6 | 1.5 | .50 | 2.8 | 7.3 |
| 2 | .93 | 3.1 | 1.0 | .94 | .60 | .96 | 7.0 | 5.6 | 1.4 | .54 | 1.7 | 15 |
| 3 | 1.1 | 2.8 | 1.0 | .60 | 1.0 | .92 | 6.6 | 3.4 | 1.1 | .41 | 1.1 | 21 |
| 4 | 1.9 | 2.1 | 1.0 | .44 | .26 | 1.0 | 8.4 | 9.8 | 1.2 | .36 | .74 | 6.9 |
| 5 | 26 | 1.6 | 1.1 | .31 | .28 | 1.0 | 12 | 75 | 1.9 | .32 | .73 | 4.7 |
| 6 | 14 | 1.5 | 1.1 | .23 | .68 | .75 | 8.0 | 19 | 1.1 | .28 | 1.1 | 4.5 |
| 7 | 4.3 | 1.4 | 1.0 | .15 | .92 | .66 | 6.3 | 12 | .78 | .22 | 15 | 4.0 |
| 8 | 2.9 | 1.7 | .94 | .13 | 1.1 | .60 | 5.1 | 8.0 | .83 | .30 | 3.2 | 3.3 |
| 9 | 2.3 | 2.3 | .90 | .13 | 1.2 | .90 | 5.2 | 6.2 | .94 | .22 | 12 | 4.0 |
| 10 | 2.1 | 2.2 | 1.0 | .35 | .60 | 1.3 | 5.5 | 5.6 | .95 | .20 | 6.5 | 6.1 |
| 11 | 2.1 | 2.2 | 1.1 | .54 | .46 | 33 | 5.2 | 4.6 | .82 | .17 | 2.1 | 4.1 |
| 12 | 1.8 | 2.1 | 1.2 | .74 | .52 | 65 | 4.7 | 4.0 | .87 | .15 | 1.2 | 17 |
| 13 | 1.5 | 2.0 | 1.3 | .81 | .68 | 15 | 4.4 | 3.8 | .91 | .16 | .98 | 50 |
| 14 | 1.6 | 2.0 | 1.6 | .80 | 1.7 | 8.2 | 3.5 | 3.4 | .75 | .20 | .79 | 14 |
| 15 | 1.8 | 1.9 | 2.5 | .70 | 1.8 | 5.4 | 3.3 | 4.0 | .70 | 4.3 | .71 | 7.7 |
| 16 | 1.8 | 1.9 | 2.9 | .59 | 1.8 | 4.6 | 3.1 | 4.0 | .74 | 93 | 3.7 | 6.0 |
| 17 | 1.4 | 1.9 | 2.9 | .50 | 1.8 | 4.0 | 3.1 | 3.8 | .71 | 12 | 3.1 | 36 |
| 18 | 1.4 | 1.8 | 2.3 | .40 | 1.9 | 3.3 | 2.7 | 3.1 | .66 | 3.7 | 1.8 | 25 |
| 19 | 1.9 | 1.8 | 1.6 | .54 | 2.0 | 2.9 | 3.2 | 3.1 | .58 | 1.4 | .89 | 11 |
| 20 | 1.6 | 1.7 | 1.2 | .49 | 2.0 | 3.1 | 4.8 | 3.8 | .60 | 1.6 | .53 | 7.5 |
| 21 | 2.2 | 1.6 | .82 | .53 | 2.1 | 3.9 | 12 | 4.8 | .53 | .96 | 60 | 5.8 |
| 22 | 2.1 | 1.6 | .92 | .52 | 2.4 | 6.3 | 7.2 | 5.0 | .53 | 1.8 | 19 | 4.7 |
| 23 | 2.1 | 1.6 | .95 | .60 | 2.8 | 8.9 | 5.9 | 3.8 | .66 | 1.2 | 7.5 | 4.2 |
| 24 | 2.2 | 1.7 | .52 | .71 | 2.7 | 4.8 | 4.3 | 2.7 | .74 | 2.8 | 2.7 | 21 |
| 25 | 2.2 | 2.0 | .66 | .78 | 2.1 | 3.5 | 3.8 | 2.3 | 1.1 | 2.4 | 1.4 | 17 |
| 26 | 2.3 | 2.2 | .54 | .69 | 1.8 | 3.1 | 3.6 | 2.0 | .69 | 1.4 | 39 | 9.4 |
| 27 | 2.3 | 1.7 | .50 | .73 | 1.7 | 4.0 | 3.7 | 1.9 | .57 | .95 | 17 | 6.0 |
| 28 | 2.3 | 1.5 | .50 | .71 | 1.7 | 43 | 3.5 | 2.0 | .50 | .73 | 41 | 4.9 |
| 29 | 2.3 | 1.3 | .42 | .60 | --- | 59 | 3.4 | 1.8 | .44 | .66 | 32 | 4.4 |
| 30 | 2.8 | 1.1 | .76 | .49 | --- | 15 | 2.8 | 1.4 | .40 | 1.7 | 9.1 | 9.2 |
| 31 | 2.9 | --- | 1.1 | .40 | --- | 8.7 | --- | 1.4 | --- | 9.4 | 7.3 | --- |
| TOTAL | 98.78 | 58.3 | 36.33 | 17.05 | 39.09 | 313.99 | 159.6 | 213.8 | 25.20 | 144.03 | 296.77 | 341.7 |
| MEAN | 3.19 | 1.94 | 1.17 | .65 | 1.40 | 10.1 | 5.32 | 6.90 | .84 | 4.65 | 9.57 | 11.4 |
| MAX | 26 | 4.0 | 2.9 | .94 | 2.8 | 65 | 12 | 75 | 1.9 | 93 | 60 | 80 |
| MIN | .65 | 1.1 | .42 | .13 | .26 | .60 | 2.7 | 1.4 | .40 | .15 | .63 | 3.3 |
| CFSM | .05 | .03 | .02 | .008 | .02 | .14 | .08 | .10 | .01 | .07 | .14 | .16 |
| IN. | .05 | .03 | .02 | .01 | .02 | .17 | .08 | .11 | .01 | .08 | .16 | .18 |
| AC-FT | 196 | 116 | 72 | 34 | 78 | 623 | 317 | 424 | 50 | 286 | 589 | 678 |

CAL YR 1976 TOTAL 16575.54 MEAN 45.3 MAX 3730 MIN .42 CFSM .65 IN 8.78 AC-FT 32880
WTR YR 1977 TOTAL 1744.64 MEAN 4.78 MAX 93 MIN .13 CFSM .07 IN .92 AC-FT 3460

DES MOINES RIVER BASIN

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) above mean sea level. 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.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--60 years, 4,999 ft³/s (142 m³/s), 5.08 in/yr (129 mm/yr), 3,622,000 acre-ft/yr (4,470 hm³/yr); median of yearly mean discharges, 4,160 ft³/s (118 m³/s), 4.2 in/yr (107 mm/yr), 3,010,000 acre-ft/yr (3,710 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, 16,400 ft³/s (464 m³/s) Sept. 2, gage height, 6.72 ft (2.048 m); minimum daily, 129 ft³/s (3.65 m³/s) Nov. 29.

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 | 276 | 396 | 363 | 332 | 340 | 260 | 1970 | 557 | 328 | 208 | 203 | 10800 |
| 2 | 275 | 385 | 407 | 276 | 335 | 276 | 1530 | 557 | 305 | 192 | 296 | 14200 |
| 3 | 283 | 342 | 276 | 270 | 330 | 370 | 1440 | 584 | 313 | 186 | 187 | 15200 |
| 4 | 281 | 259 | 267 | 300 | 310 | 228 | 1470 | 770 | 347 | 184 | 206 | 11200 |
| 5 | 567 | 353 | 374 | 185 | 290 | 350 | 1790 | 1920 | 341 | 201 | 214 | 12600 |
| 6 | 357 | 374 | 396 | 185 | 295 | 283 | 1640 | 654 | 348 | 274 | 293 | 10300 |
| 7 | 347 | 407 | 637 | 510 | 295 | 276 | 1490 | 570 | 253 | 157 | 9110 | 7880 |
| 8 | 317 | 374 | 303 | 250 | 300 | 279 | 1520 | 557 | 317 | 180 | 6210 | 7580 |
| 9 | 408 | 322 | 285 | 430 | 310 | 285 | 1470 | 557 | 328 | 220 | 7670 | 5280 |
| 10 | 218 | 312 | 353 | 325 | 260 | 296 | 1460 | 479 | 308 | 178 | 3800 | 4490 |
| 11 | 355 | 342 | 555 | 310 | 250 | 557 | 1180 | 499 | 338 | 166 | 1590 | 4410 |
| 12 | 337 | 332 | 294 | 285 | 415 | 854 | 907 | 547 | 344 | 184 | 561 | 4970 |
| 13 | 262 | 332 | 294 | 275 | 280 | 445 | 823 | 531 | 342 | 188 | 387 | 7480 |
| 14 | 370 | 332 | 294 | 320 | 315 | 463 | 597 | 560 | 342 | 188 | 364 | 6250 |
| 15 | 342 | 342 | 312 | 270 | 260 | 416 | 640 | 569 | 340 | 190 | 351 | 3750 |
| 16 | 326 | 353 | 342 | 300 | 260 | 268 | 649 | 603 | 310 | 554 | 563 | 2710 |
| 17 | 332 | 332 | 342 | 240 | 260 | 289 | 689 | 538 | 299 | 555 | 917 | 3980 |
| 18 | 350 | 353 | 322 | 210 | 250 | 352 | 648 | 381 | 299 | 367 | 668 | 6410 |
| 19 | 385 | 353 | 342 | 295 | 270 | 842 | 587 | 403 | 291 | 224 | 341 | 5570 |
| 20 | 391 | 312 | 555 | 300 | 290 | 1770 | 584 | 456 | 199 | 232 | 336 | 4100 |
| 21 | 314 | 322 | 905 | 320 | 312 | 2000 | 584 | 392 | 199 | 215 | 649 | 3900 |
| 22 | 303 | 322 | 154 | 305 | 259 | 1850 | 518 | 380 | 200 | 259 | 392 | 3030 |
| 23 | 329 | 322 | 396 | 300 | 461 | 1790 | 531 | 377 | 208 | 133 | 312 | 2230 |
| 24 | 361 | 322 | 363 | 285 | 703 | 1180 | 557 | 380 | 278 | 326 | 281 | 2470 |
| 25 | 385 | 342 | 322 | 270 | 432 | 1100 | 612 | 375 | 235 | 217 | 252 | 2730 |
| 26 | 514 | 342 | 312 | 265 | 408 | 717 | 696 | 376 | 202 | 195 | 1170 | 2350 |
| 27 | 503 | 322 | 322 | 260 | 407 | 710 | 584 | 237 | 199 | 155 | 5690 | 2550 |
| 28 | 385 | 242 | 478 | 295 | 281 | 1540 | 668 | 361 | 192 | 187 | 11600 | 3020 |
| 29 | 363 | 129 | 332 | 290 | --- | 2520 | 518 | 364 | 226 | 201 | 11900 | 2940 |
| 30 | 342 | 226 | 430 | 260 | --- | 2670 | 505 | 286 | 237 | 204 | 12800 | 2940 |
| 31 | 363 | --- | 491 | 280 | --- | 2370 | --- | 255 | --- | 462 | 13000 | --- |
| TOTAL | 10941 | 9798 | 11818 | 8998 | 9178 | 27616 | 28857 | 16075 | 8468 | 7382 | 92313 | 177320 |
| MEAN | 353 | 327 | 381 | 290 | 328 | 891 | 962 | 519 | 282 | 238 | 2978 | 5911 |
| MAX | 567 | 407 | 905 | 510 | 703 | 2670 | 1970 | 1920 | 348 | 555 | 13000 | 15200 |
| MIN | 218 | 129 | 154 | 185 | 250 | 228 | 505 | 237 | 192 | 133 | 187 | 2230 |
| AC-FT | 21700 | 19430 | 23440 | 17850 | 18200 | 54780 | 57240 | 31880 | 16800 | 14640 | 183100 | 351700 |
| CAL YR 1976 | TOTAL | 1448009 | MEAN | 3956 | MAX | 35200 | MIN | 129 | AC-FT | 2872000 | | |
| WTR YR 1977 | TOTAL | 408764 | MEAN | 1120 | MAX | 15200 | MIN | 129 | AC-FT | 810800 | | |

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) above mean sea level. Prior to Dec. 24, 1938, 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 poor. 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.--Five discharge measurements furnished by Corps of Engineers.

AVERAGE DISCHARGE.--68 years (1903-5, 1911-77), 5,447 ft³/s (154.3 m³/s) 5.27 in/yr (134 mm/yr), 3,946,000 acre-ft/yr (4,870 hm³/yr); median of yearly mean discharges, 4,660 ft³/s (132 m³/s), 4.5 in/yr (114 mm/yr), 3,380,000 acre-ft/yr (4,200 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, 18,800 ft³/s (532 m³/s) Aug. 8, gage height, 16.68 ft (5.084 m); minimum daily, 172 ft³/s (4.87 m³/s) July 29.

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 | 338 | 351 | 215 | 280 | 250 | 500 | 2420 | 487 | 277 | 252 | 380 | 12000 |
| 2 | 335 | 385 | 283 | 240 | 230 | 380 | 2060 | 654 | 286 | 236 | 408 | 11400 |
| 3 | 334 | 382 | 416 | 250 | 250 | 300 | 1700 | 714 | 303 | 205 | 283 | 16500 |
| 4 | 326 | 369 | 430 | 255 | 340 | 380 | 1760 | 1560 | 301 | 198 | 288 | 14800 |
| 5 | 492 | 306 | 354 | 300 | 320 | 250 | 2660 | 2780 | 677 | 183 | 222 | 13000 |
| 6 | 787 | 302 | 380 | 300 | 300 | 360 | 2150 | 2340 | 449 | 180 | 474 | 11300 |
| 7 | 519 | 349 | 412 | 250 | 310 | 300 | 1920 | 1400 | 353 | 214 | 7300 | 8210 |
| 8 | 421 | 373 | 300 | 285 | 315 | 290 | 1690 | 840 | 293 | 244 | 16600 | 6810 |
| 9 | 406 | 379 | 388 | 260 | 320 | 360 | 1610 | 731 | 272 | 202 | 12100 | 6320 |
| 10 | 350 | 342 | 376 | 420 | 330 | 500 | 1550 | 713 | 314 | 249 | 9360 | 4430 |
| 11 | 360 | 315 | 351 | 350 | 280 | 954 | 1490 | 597 | 295 | 229 | 3380 | 4160 |
| 12 | 306 | 332 | 315 | 320 | 260 | 2860 | 1260 | 545 | 338 | 200 | 1820 | 4460 |
| 13 | 365 | 375 | 403 | 300 | 420 | 1800 | 1060 | 591 | 339 | 181 | 945 | 13100 |
| 14 | 311 | 330 | 352 | 290 | 300 | 787 | 975 | 534 | 326 | 184 | 521 | 11600 |
| 15 | 314 | 394 | 421 | 320 | 330 | 617 | 689 | 552 | 320 | 192 | 456 | 5870 |
| 16 | 358 | 350 | 412 | 280 | 270 | 548 | 725 | 531 | 315 | 207 | 473 | 4000 |
| 17 | 335 | 348 | 432 | 310 | 270 | 391 | 746 | 558 | 307 | 524 | 611 | 3630 |
| 18 | 329 | 336 | 463 | 270 | 270 | 338 | 748 | 519 | 289 | 726 | 1060 | 7190 |
| 19 | 354 | 337 | 445 | 220 | 260 | 388 | 720 | 451 | 284 | 525 | 964 | 7020 |
| 20 | 351 | 369 | 368 | 300 | 285 | 1010 | 772 | 340 | 287 | 240 | 389 | 5050 |
| 21 | 370 | 332 | 454 | 315 | 300 | 1830 | 1010 | 461 | 262 | 243 | 1060 | 4260 |
| 22 | 344 | 323 | 315 | 330 | 310 | 2090 | 1040 | 416 | 212 | 270 | 1010 | 4020 |
| 23 | 319 | 329 | 398 | 315 | 275 | 2150 | 826 | 403 | 212 | 290 | 583 | 3100 |
| 24 | 334 | 349 | 259 | 300 | 460 | 2030 | 693 | 385 | 226 | 245 | 483 | 2850 |
| 25 | 387 | 339 | 483 | 280 | 700 | 1560 | 734 | 379 | 285 | 203 | 317 | 2860 |
| 26 | 372 | 345 | 468 | 270 | 450 | 1310 | 684 | 370 | 283 | 333 | 369 | 2840 |
| 27 | 405 | 336 | 430 | 260 | 410 | 942 | 828 | 360 | 234 | 222 | 3850 | 2430 |
| 28 | 492 | 188 | 413 | 280 | 450 | 1140 | 757 | 351 | 220 | 193 | 8230 | 2730 |
| 29 | 406 | 200 | 420 | 310 | --- | 5750 | 677 | 252 | 215 | 172 | 11000 | 2950 |
| 30 | 376 | 210 | 361 | 290 | --- | 3290 | 770 | 387 | 224 | 183 | 11100 | 3060 |
| 31 | 372 | --- | 420 | 265 | --- | 2940 | --- | 364 | --- | 269 | 12000 | --- |
| TOTAL | 11868 | 9975 | 11937 | 9015 | 9265 | 38345 | 36724 | 21565 | 8998 | 7994 | 108036 | 201950 |
| MEAN | 383 | 333 | 385 | 291 | 331 | 1237 | 1224 | 696 | 300 | 258 | 3485 | 6732 |
| MAX | 787 | 394 | 483 | 420 | 700 | 5750 | 2660 | 2780 | 677 | 726 | 16600 | 16500 |
| MIN | 306 | 188 | 215 | 220 | 230 | 250 | 677 | 252 | 212 | 172 | 222 | 2430 |
| AC-FT | 23540 | 19790 | 23680 | 17880 | 18380 | 76060 | 72840 | 42770 | 17850 | 15860 | 214300 | 400600 |

| | | | | | | | | | | |
|-------------|-------|---------|------|------|-----|-------|-----|-----|-------|---------|
| CAL YR 1976 | TOTAL | 1517862 | MEAN | 4147 | MAX | 58000 | MIN | 188 | AC-FT | 3011000 |
| WTR YR 1977 | TOTAL | 475672 | MEAN | 1303 | MAX | 16600 | MIN | 172 | AC-FT | 943500 |

MISSOURI RIVER BASIN

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 right 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). Prior to May 5, 1976, at site 3.2 mi (5.1 km) downstream.

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 1,222.54 ft (372.630 m) above mean sea level. 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 fair except those for winter period, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--29 years, 288 ft³/s (8.156 m³/s), 2.44 in/yr (62 mm/yr), 208,700 acre-ft/yr (257 hm³/yr); median of yearly mean discharges, 230 ft³/s (6.51 m³/s), 2.0 in/yr (51 mm/yr), 167,000 acre-ft/yr (206 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.--Maximum discharge, 2,980 ft³/s (84.4 m³/s) Mar. 13, gage height, unknown, no peak above base of 3,000 ft³/s (85.0 m³/s); maximum gage height, 10.95 ft (3.341 m) Mar. 11, from floodmark, backwater from ice; no flow Jan. 9 to Feb. 2.

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 | 8.6 | 12 | 5.2 | .40 | .00 | 1.7 | 139 | 83 | 56 | 40 | 87 | 75 |
| 2 | 8.4 | 12 | 5.0 | .30 | .00 | 1.7 | 148 | 77 | 50 | 38 | 64 | 72 |
| 3 | 8.8 | 12 | 5.0 | .20 | .02 | 1.7 | 148 | 77 | 43 | 34 | 53 | 69 |
| 4 | 9.6 | 12 | 5.0 | .10 | .03 | 1.7 | 146 | 88 | 37 | 29 | 40 | 69 |
| 6 | 8.6 | 12 | 4.9 | .06 | .03 | 1.7 | 132 | 117 | 31 | 26 | 33 | 64 |
| 6 | 7.6 | 12 | 4.8 | .04 | .03 | 2.0 | 129 | 119 | 25 | 26 | 30 | 61 |
| 7 | 9.6 | 12 | 4.7 | .03 | .04 | 3.0 | 124 | 99 | 23 | 28 | 26 | 121 |
| 8 | 10 | 12 | 4.6 | .02 | .06 | 5.0 | 119 | 82 | 20 | 26 | 24 | 74 |
| 9 | 10 | 12 | 4.6 | .00 | .10 | 10 | 114 | 74 | 19 | 38 | 40 | 61 |
| 10 | 10 | 12 | 4.6 | .00 | .15 | 50 | 105 | 67 | 18 | 41 | 26 | 53 |
| 11 | 11 | 10 | 4.6 | .00 | .20 | 300 | 101 | 59 | 18 | 52 | 22 | 49 |
| 12 | 11 | 9.0 | 4.6 | .00 | .30 | 1730 | 97 | 55 | 17 | 52 | 19 | 52 |
| 13 | 9.1 | 10 | 4.6 | .00 | .28 | 2620 | 101 | 52 | 17 | 55 | 17 | 56 |
| 14 | 9.1 | 10 | 4.6 | .00 | .25 | 2300 | 111 | 49 | 17 | 53 | 16 | 53 |
| 15 | 9.6 | 10 | 4.6 | .00 | .23 | 980 | 122 | 46 | 18 | 52 | 74 | 49 |
| 16 | 8.8 | 10 | 4.6 | .00 | .26 | 489 | 124 | 44 | 71 | 46 | 1050 | 47 |
| 17 | 9.1 | 10 | 4.7 | .00 | .28 | 400 | 122 | 40 | 77 | 38 | 735 | 49 |
| 18 | 9.9 | 11 | 5.0 | .00 | .30 | 328 | 117 | 36 | 83 | 40 | 470 | 49 |
| 19 | 11 | 11 | 5.2 | .00 | .35 | 284 | 116 | 34 | 129 | 52 | 320 | 49 |
| 20 | 12 | 11 | 5.0 | .00 | .50 | 244 | 114 | 34 | 194 | 43 | 231 | 44 |
| 21 | 12 | 10 | 4.5 | .00 | .80 | 207 | 117 | 41 | 182 | 37 | 185 | 43 |
| 22 | 12 | 10 | 3.0 | .00 | 1.0 | 193 | 121 | 53 | 151 | 24 | 162 | 46 |
| 23 | 11 | 10 | 2.8 | .00 | 1.5 | 169 | 119 | 62 | 125 | 18 | 133 | 47 |
| 24 | 11 | 11 | 2.6 | .00 | 2.0 | 155 | 116 | 55 | 105 | 293 | 119 | 52 |
| 25 | 12 | 12 | 2.5 | .00 | 1.8 | 151 | 116 | 46 | 87 | 74 | 111 | 59 |
| 26 | 11 | 11 | 2.5 | .00 | 1.8 | 144 | 111 | 40 | 74 | 43 | 111 | 74 |
| 27 | 10 | 8.5 | 2.0 | .00 | 1.7 | 140 | 105 | 44 | 61 | 33 | 113 | 83 |
| 28 | 9.9 | 7.0 | 1.5 | .00 | 1.7 | 136 | 97 | 53 | 61 | 34 | 111 | 85 |
| 29 | 10 | 6.0 | 1.0 | .00 | --- | 144 | 90 | 56 | 52 | 236 | 103 | 83 |
| 30 | 10 | 5.5 | .80 | .00 | --- | 144 | 88 | 62 | 44 | 200 | 92 | 164 |
| 31 | 12 | --- | .60 | .00 | --- | 142 | --- | 62 | --- | 127 | 83 | --- |
| TOTAL | 312.7 | 313.0 | 119.70 | 1.15 | 15.71 | 11478.5 | 3509 | 1906 | 1905 | 1928 | 4700 | 1951 |
| MEAN | 10.1 | 10.4 | 3.86 | .037 | .56 | 370 | 117 | 61.5 | 63.5 | 62.2 | 152 | 65.0 |
| MAX | 12 | 12 | 5.2 | .40 | 2.0 | 2620 | 148 | 119 | 194 | 293 | 1050 | 164 |
| MIN | 7.6 | 5.5 | .60 | .00 | .00 | 1.7 | 88 | 34 | 17 | 18 | 16 | 43 |
| CFSM | .006 | .007 | .002 | .000 | .000 | .23 | .07 | .04 | .04 | .04 | .10 | .04 |
| IN. | .01 | .01 | .00 | .00 | .00 | .27 | .08 | .04 | .04 | .05 | .11 | .05 |
| AC-FT | 620 | 621 | 237 | 2.3 | 31 | 22770 | 6960 | 3780 | 3780 | 3820 | 9320 | 3870 |

CAL YR 1976 TOTAL 59430.40 MEAN 162 MAX 2090 MIN .60 CFSM .10 IN 1.39 AC-FT 117900
WTR YR 1977 TOTAL 28139.76 MEAN 77.1 MAX 2620 MIN .00 CFSM .05 IN .66 AC-FT 55820

06486500 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) above mean sea level. 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.--49 years, 820 ft³/s (23.22 m³/s), 594,100 acre-ft/yr (733 hm³/yr); median of yearly mean discharges, 710 ft³/s (20.1 m³/s), 514,000 acre-ft/yr (630 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.--Maximum discharge, 8,270 ft³/s (149 m³/s) Mar. 15, gage height, 13.60 ft (4.145 m) at 1300 hours; no other peak above base of 3,500 ft³/s (99.1 m³/s); minimum daily, 4 ft³/s (0.11 m³/s) Jan. 17.

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 | 41 | 55 | 32 | 14 | 5.8 | 37 | 574 | 239 | 169 | 375 | 284 | 166 |
| 2 | 40 | 56 | 30 | 13 | 6.0 | 38 | 549 | 224 | 151 | 307 | 208 | 160 |
| 3 | 38 | 60 | 32 | 12 | 5.9 | 40 | 529 | 225 | 136 | 279 | 162 | 157 |
| 4 | 45 | 55 | 33 | 11 | 5.7 | 41 | 523 | 227 | 128 | 237 | 132 | 143 |
| 5 | 40 | 54 | 34 | 10 | 5.5 | 43 | 501 | 251 | 118 | 215 | 114 | 138 |
| 6 | 39 | 55 | 33 | 9.8 | 5.4 | 45 | 472 | 260 | 103 | 212 | 103 | 138 |
| 7 | 40 | 55 | 32 | 9.2 | 7.5 | 47 | 460 | 277 | 93 | 200 | 93 | 151 |
| 8 | 40 | 53 | 29 | 8.5 | 10 | 50 | 440 | 245 | 86 | 178 | 85 | 155 |
| 9 | 40 | 55 | 27 | 7.9 | 15 | 55 | 417 | 217 | 80 | 183 | 92 | 179 |
| 10 | 39 | 59 | 25 | 7.2 | 20 | 60 | 388 | 198 | 74 | 180 | 87 | 140 |
| 11 | 41 | 55 | 26 | 6.6 | 25 | 70 | 355 | 187 | 73 | 176 | 89 | 126 |
| 12 | 42 | 53 | 20 | 6.0 | 28 | 85 | 337 | 177 | 69 | 186 | 79 | 444 |
| 13 | 40 | 52 | 30 | 5.6 | 30 | 1000 | 342 | 168 | 69 | 166 | 74 | 175 |
| 14 | 41 | 51 | 32 | 5.1 | 28 | 3880 | 345 | 159 | 65 | 179 | 67 | 145 |
| 15 | 41 | 50 | 34 | 4.8 | 26 | 4940 | 355 | 151 | 65 | 164 | 62 | 161 |
| 16 | 40 | 51 | 35 | 4.3 | 25 | 4120 | 348 | 145 | 67 | 144 | 61 | 190 |
| 17 | 40 | 52 | 39 | 4.0 | 23 | 3350 | 337 | 135 | 104 | 134 | 407 | 269 |
| 18 | 41 | 53 | 41 | 4.1 | 24 | 2950 | 320 | 130 | 117 | 138 | 1720 | 158 |
| 19 | 46 | 54 | 42 | 4.2 | 26 | 2530 | 337 | 125 | 116 | 123 | 1600 | 141 |
| 20 | 47 | 51 | 40 | 4.5 | 27 | 2100 | 328 | 137 | 126 | 113 | 974 | 135 |
| 21 | 40 | 48 | 38 | 4.7 | 28 | 1800 | 319 | 131 | 159 | 128 | 621 | 126 |
| 22 | 47 | 46 | 35 | 4.9 | 30 | 1430 | 317 | 145 | 194 | 116 | 438 | 124 |
| 23 | 49 | 44 | 34 | 5.1 | 31 | 1150 | 355 | 147 | 250 | 102 | 349 | 122 |
| 24 | 52 | 45 | 31 | 5.4 | 32 | 980 | 337 | 167 | 400 | 121 | 308 | 123 |
| 25 | 52 | 44 | 32 | 5.1 | 32 | 859 | 308 | 192 | 529 | 160 | 255 | 125 |
| 26 | 55 | 42 | 33 | 4.8 | 33 | 770 | 305 | 189 | 507 | 205 | 247 | 127 |
| 27 | 53 | 39 | 35 | 4.5 | 34 | 705 | 285 | 255 | 609 | 258 | 248 | 154 |
| 28 | 55 | 37 | 34 | 4.8 | 35 | 543 | 274 | 297 | 557 | 247 | 229 | 170 |
| 29 | 57 | 34 | 20 | 5.0 | --- | 518 | 250 | 198 | 475 | 165 | 211 | 174 |
| 30 | 57 | 33 | 22 | 5.3 | --- | 504 | 247 | 179 | 448 | 150 | 195 | 188 |
| 31 | 55 | --- | 17 | 5.5 | --- | 559 | --- | 175 | --- | 287 | 185 | --- |
| TOTAL | 1401 | 1491 | 996 | 207.0 | 604.8 | 35050 | 11257 | 5954 | 6229 | 5039 | 9791 | 4907 |
| MEAN | 45.2 | 49.7 | 32.1 | 6.68 | 21.6 | 1150 | 375 | 192 | 208 | 168 | 315 | 154 |
| MAX | 57 | 60 | 42 | 14 | 35 | 4940 | 574 | 297 | 609 | 375 | 1720 | 444 |
| MIN | 38 | 33 | 17 | 4.0 | 5.4 | 27 | 247 | 125 | 65 | 102 | 61 | 122 |
| CFSM | .005 | .005 | .004 | .001 | .002 | .13 | .04 | .02 | .02 | .02 | .04 | .02 |
| IN | .01 | .01 | .00 | .00 | .00 | .15 | .05 | .02 | .03 | .02 | .04 | .02 |
| AC-FT | 2780 | 2960 | 1980 | 411 | 1200 | 70720 | 22250 | 11020 | 12350 | 11580 | 19420 | 9730 |

CAL YR 1976 TOTAL 126702.0 MEAN 346 MAX 3230 MIN 17 CFSM .04 IN .82 AC-FT 251300
WTR YR 1977 TOTAL 84355.8 MEAN 231 MAX 4940 MIN 4.0 CFSM .03 IN .35 AC-FT 167300

MISSOURI RIVER MAIN STEM

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 meridian, 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) above mean sea level. 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, 1905, 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 winter period, which are poor. Flow regulated by upstream main-stem reservoirs. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--80 years, 31,970 ft³/s (905.4 m³/s), 23,160,000 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, 11.6 ft (3.54 m), Jan. 29, 1977, from graph based on gage-heights furnished by Iowa Public Power 14.0 miles (22.5 km) downstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 40,100 ft³/s (1,140 m³/s) Oct. 2, gage height, 20.73 ft (6.319 m); minimum daily, 9,000 ft³/s (255 m³/s) Jan. 29; minimum gage height, 11.6 ft (3.54 m), Jan. 29, from graph based on gage-heights furnished by Iowa public Power 14.0 miles (22.5 km) downstream.

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 | 38900 | 37300 | 35600 | 19300 | 14000 | 16300 | 33600 | 33000 | 30800 | 32000 | 37000 | 32000 |
| 2 | 38900 | 37800 | 38900 | 19300 | 17000 | 16000 | 35900 | 33000 | 30800 | 33300 | 37800 | 31600 |
| 3 | 38600 | 37600 | 37800 | 19500 | 18000 | 16800 | 32800 | 33300 | 31000 | 33600 | 37300 | 32600 |
| 4 | 38300 | 37000 | 36200 | 20000 | 18000 | 16500 | 31000 | 33300 | 31000 | 33000 | 37000 | 32000 |
| 5 | 38100 | 36200 | 31800 | 19700 | 17800 | 15900 | 31000 | 33000 | 30800 | 33300 | 37600 | 31600 |
| 6 | 37800 | 36200 | 28800 | 18900 | 18400 | 15900 | 29800 | 32300 | 30800 | 33800 | 35900 | 31300 |
| 7 | 37000 | 36700 | 26000 | 19500 | 18500 | 15900 | 30800 | 31600 | 30600 | 34800 | 34300 | 31300 |
| 8 | 36700 | 37300 | 23500 | 19700 | 18500 | 16000 | 31000 | 32000 | 31000 | 34600 | 34800 | 31000 |
| 9 | 36400 | 37300 | 21400 | 20000 | 19700 | 16900 | 32300 | 32300 | 31800 | 34800 | 36700 | 30800 |
| 10 | 35400 | 37300 | 21900 | 20100 | 20200 | 16500 | 31000 | 31800 | 33000 | 33000 | 34000 | 30800 |
| 11 | 35600 | 37300 | 20200 | 20100 | 20500 | 17700 | 32600 | 31300 | 33000 | 34600 | 31600 | 30800 |
| 12 | 36400 | 36700 | 21900 | 20100 | 21100 | 17900 | 32600 | 31600 | 34300 | 34300 | 32300 | 31800 |
| 13 | 36200 | 36400 | 21100 | 20400 | 20700 | 17500 | 32300 | 31800 | 35100 | 33300 | 32300 | 32300 |
| 14 | 36200 | 36200 | 21200 | 20100 | 19500 | 18500 | 32600 | 33000 | 33300 | 33600 | 33800 | 30300 |
| 15 | 35600 | 36200 | 21200 | 20300 | 15500 | 20300 | 30800 | 33000 | 33000 | 32800 | 33600 | 31000 |
| 16 | 35600 | 35900 | 21400 | 20500 | 15800 | 21000 | 31300 | 32800 | 34000 | 33300 | 34300 | 32800 |
| 17 | 35900 | 36400 | 21400 | 20500 | 16200 | 20500 | 31800 | 33000 | 34800 | 33600 | 33300 | 32800 |
| 18 | 36200 | 36400 | 21500 | 20500 | 16900 | 21200 | 30800 | 33300 | 34300 | 33600 | 30600 | 32800 |
| 19 | 36400 | 36400 | 21600 | 20500 | 16700 | 24600 | 31300 | 33800 | 32300 | 33300 | 33000 | 32800 |
| 20 | 35900 | 36700 | 20400 | 20500 | 16500 | 28000 | 31300 | 34000 | 30600 | 34300 | 34600 | 32000 |
| 21 | 36200 | 36400 | 19700 | 20500 | 17300 | 31600 | 31800 | 33800 | 31300 | 36400 | 34300 | 32600 |
| 22 | 36200 | 36400 | 22000 | 20500 | 17800 | 32000 | 30600 | 33800 | 32800 | 34800 | 34800 | 33000 |
| 23 | 36400 | 36400 | 21700 | 20500 | 16900 | 30600 | 30600 | 33300 | 35600 | 32600 | 34300 | 33000 |
| 24 | 37000 | 36400 | 20500 | 19000 | 16800 | 32600 | 29800 | 31300 | 32600 | 33000 | 33800 | 34300 |
| 25 | 36400 | 36700 | 21800 | 15700 | 16300 | 34000 | 31000 | 32000 | 30000 | 33000 | 33300 | 34000 |
| 26 | 36700 | 37000 | 21200 | 13600 | 16300 | 31800 | 32000 | 32300 | 31000 | 33300 | 33000 | 33600 |
| 27 | 37000 | 36700 | 21200 | 13800 | 16300 | 32300 | 31000 | 34300 | 31000 | 33000 | 31000 | 33600 |
| 28 | 36400 | 35900 | 21100 | 12600 | 16300 | 32300 | 31600 | 33300 | 32600 | 33000 | 30800 | 33000 |
| 29 | 36400 | 35400 | 20400 | 9000 | --- | 33300 | 32000 | 31800 | 33800 | 35100 | 31000 | 33800 |
| 30 | 36700 | 34600 | 20200 | 11000 | --- | 32300 | 32800 | 31300 | 32800 | 36200 | 31800 | 33300 |
| 31 | 37300 | --- | 19700 | 13000 | --- | 29800 | --- | 31600 | --- | 35900 | 33600 | --- |
| TOTAL | 1138800 | 1097200 | 743300 | 568700 | 493500 | 722500 | 949800 | 1012000 | 969800 | 1049200 | 1053500 | 968600 |
| MEAN | 36740 | 36570 | 23980 | 18350 | 17630 | 23310 | 31660 | 32650 | 32330 | 33850 | 33980 | 32290 |
| MAX | 38900 | 37800 | 38900 | 20500 | 21100 | 34000 | 35900 | 34300 | 35600 | 36400 | 37800 | 34300 |
| MIN | 35400 | 34600 | 19700 | 9000 | 14000 | 15900 | 29800 | 31300 | 30000 | 32000 | 30600 | 30300 |
| AC-FT | 2259000 | 2176000 | 1474000 | 1128000 | 978900 | 1433000 | 1884000 | 2007000 | 1924000 | 2081000 | 2090000 | 1921000 |

CAL YR 1976 TOTAL 12692800 MEAN 34680 MAX 41100 MIN 12000 AC-FT 25180000
WTR YR 1977 TOTAL 10766900 MEAN 29500 MAX 38900 MIN 9000 AC-FT 21360000

MISSOURI RIVER MAIN STEM

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.

WATER TEMPERATURES: October 1971 to September 1976.

SUSPENDED-SEDIMENT DISCHARGE: October 1971 to September 1976.

EXTREMES FOR PERIOD OF DAILY RECORD.--

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.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | DIS- SOLVED SILICA (SIO2) (MG/L) (00955) | TOTAL IRON (FE) (UG/L) (01045) | DIS- SOLVED IRON (FE) (UG/L) (01046) | TOTAL MAN- GANESE (MN) (UG/L) (01055) | SUS- PEN- DED MAN- GANESE (MN) (UG/L) (01054) | DIS- SOLVED MAN- GANESE (MN) (UG/L) (01056) | TOTAL CAL- CIUM (CA) (MG/L) (00916) | DIS- SOLVED CAL- CIUM (CA) (MG/L) (00916) |
|-----------|------|--|---|--|---|--|--|---|--|---|
| OCT 12... | 1515 | 38000 | 8.5 | -- | -- | -- | -- | -- | 52 | 55 |
| NOV 09... | 1500 | 35200 | 6.9 | -- | -- | -- | -- | -- | -- | 54 |
| DEC 14... | 1130 | 22000 | 7.1 | 3100 | 30 | 80 | 70 | 10 | 57 | 59 |
| JAN 24... | 1130 | 20000 | 8.1 | -- | -- | -- | -- | -- | 65 | 61 |
| FEB 08... | 1300 | 19400 | 7.2 | -- | -- | -- | -- | -- | 58 | 59 |
| MAR 08... | 1430 | 15400 | 11 | 4800 | 20 | 160 | 140 | 20 | 53 | 57 |
| APR 11... | 1200 | 33100 | 8.0 | -- | -- | -- | -- | -- | 60 | 61 |
| MAY 11... | 1430 | 33400 | 7.4 | -- | -- | -- | -- | -- | 58 | 56 |
| JUN 07... | 1700 | 31200 | 8.1 | 1900 | 60 | 110 | 110 | 0 | 56 | 58 |
| JUL 06... | 1530 | 33700 | 8.1 | -- | -- | -- | -- | -- | 63 | 57 |
| AUG 08... | 1600 | 35000 | 8.1 | -- | -- | -- | -- | -- | 62 | 57 |
| SEP 06... | 1730 | 32600 | 9.6 | 2200 | 120 | 140 | 140 | 0 | 60 | 58 |

| DATE | TOTAL MAG- NE- SIUM (MG) (00927) | DIS- SOLVED MAG- NE- SIUM (MG) (00925) | TOTAL SODIUM (NA) (MG/L) (00929) | DIS- SOLVED SODIUM (NA) (MG/L) (00930) | TOTAL PO- TAS- SIUM (K) (MG/L) (00937) | DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935) | BICAR- BONATE (CO3) (MG/L) (00440) | CAR- BONATE (CO3) (MG/L) (00445) | ALKA- LITY AS CACO3 (MG/L) (00410) | DIS- SOLVED SULFATE (SO4) (MG/L) (00945) |
|-----------|---|--|--|---|--|---|--|--|---|---|
| OCT 12... | 18 | 22 | 49 | 60 | 3.9 | 5.0 | 191 | 0 | 157 | 190 |
| NOV 09... | 22 | 21 | 56 | 74 | -- | 4.8 | 188 | 0 | 164 | 190 |
| DEC 14... | 22 | 23 | 65 | 66 | 4.5 | 4.8 | 192 | 0 | 157 | 200 |
| JAN 24... | 21 | 23 | 55 | 64 | 4.4 | 4.8 | 200 | 0 | 160 | 200 |
| FEB 08... | 23 | 24 | 60 | 62 | 4.9 | 4.9 | 192 | 0 | 160 | 190 |
| MAR 08... | 19 | 21 | 47 | 56 | 5.2 | 5.8 | 180 | 0 | 150 | 170 |
| APR 11... | 22 | 21 | 60 | 60 | 5.1 | 5.1 | 180 | 0 | 150 | 190 |
| MAY 11... | 21 | 21 | -- | 65 | 5.5 | 4.9 | 180 | 0 | 150 | 190 |
| JUN 07... | 19 | 18 | 61 | 63 | 5.5 | 5.1 | 180 | 0 | 150 | 180 |
| JUL 05... | 20 | 19 | 67 | 63 | 5.2 | 4.8 | 180 | 0 | 150 | 180 |
| AUG 08... | 21 | 20 | 70 | 73 | 4.9 | 5.3 | 190 | 0 | 160 | 210 |
| SEP 06... | 21 | 21 | 71 | 67 | 6.0 | 5.5 | 190 | 0 | 160 | 200 |

MISSOURI RIVER MAIN STEM

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued
(National Stream Quality Accounting Network Station)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940) | DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950) | TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630) | TOTAL AMMONIA NITRO- GEN (N) (MG/L) (00610) | TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605) | TOTAL KJEL- DAHL GEN (N) (MG/L) (00625) | TOTAL NITRO- GEN (N) (MG/L) (00600) | TOTAL NITRO- GEN (N) (MG/L) (71887) | TOTAL PHOS- PHORUS (P) (MG/L) (00655) | DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300) |
|-----------|--|---|---|---|---|---|--|--|--|---|
| OCT 12... | 9.4 | .5 | .06 | .00 | .35 | .35 | .41 | 1.8 | .05 | 454 |
| NOV 09... | 10 | .5 | .07 | .02 | .36 | .38 | .45 | 2.0 | .05 | 425 |
| DEC 14... | 11 | .6 | .08 | .04 | .39 | .43 | .51 | 2.3 | .05 | 474 |
| JAN 24... | 10 | .5 | .07 | .03 | .16 | .19 | .26 | 1.2 | .04 | 422 |
| FEB 08... | 9.7 | .5 | .01 | .02 | .37 | .39 | .40 | 1.8 | .02 | 445 |
| MAR 08... | 9.0 | .4 | .11 | .12 | .23 | .35 | .46 | 2.0 | .07 | 427 |
| APR 11... | 10 | .4 | .07 | .01 | .72 | .73 | .80 | 3.5 | .06 | 467 |
| MAY 11... | 10 | .6 | .04 | .04 | .39 | .43 | .47 | 2.1 | .05 | 476 |
| JUN 07... | 9.1 | .6 | .00 | .01 | .71 | .72 | .72 | 3.2 | .05 | 435 |
| JUL 05... | 10 | .5 | .03 | .04 | .13 | .17 | .20 | .89 | .08 | 460 |
| AUG 08... | 11 | .6 | .01 | .01 | .25 | .26 | .27 | 1.2 | .05 | 474 |
| SEP 06... | 13 | .6 | .00 | .00 | .56 | .56 | .56 | 2.5 | .05 | 462 |

| DATE | DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301) | DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303) | DIS- SOLVED SOLIDS (TONS PER DAY) (70302) | TOTAL RESI- DUE (MG/L) (00500) | HARD- NESS (CA, MG) (MG/L) (00900) | NON- CAR- BONATE HARD- NESS (MG/L) (00902) | PERCENT SODIUM (00932) | SODIUM AD- SORP- TION RATIO (00931) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) |
|-----------|---|---|---|--|--|--|------------------------------|--|---|--------------------------|
| OCT 12... | 445 | .62 | 46600 | 516 | 230 | 71 | 36 | 1.7 | 670 | 7.5 |
| NOV 09... | 454 | .58 | 40400 | 590 | 220 | 67 | 41 | 2.2 | 680 | 8.6 |
| DEC 14... | 466 | .64 | 28200 | 685 | 240 | 85 | 37 | 1.8 | 750 | 7.5 |
| JAN 24... | 470 | .57 | 22800 | 547 | 250 | 83 | 36 | 1.8 | 750 | 7.3 |
| FEB 08... | 452 | .61 | 23300 | 473 | 250 | 89 | 35 | 1.7 | 840 | 7.9 |
| MAR 08... | 419 | .58 | 17800 | 494 | 230 | 81 | 34 | 1.6 | 710 | 7.1 |
| APR 11... | 444 | .64 | 41700 | 555 | 240 | 91 | 35 | 1.7 | 660 | 7.3 |
| MAY 11... | 444 | .65 | 42900 | 505 | 230 | 79 | 38 | 1.9 | 700 | 7.3 |
| JUN 07... | 431 | .59 | 36600 | 514 | 220 | 71 | 38 | 1.9 | 650 | 7.2 |
| JUL 05... | 433 | .63 | 41900 | 561 | 220 | 73 | 38 | 1.8 | 700 | 7.4 |
| AUG 08... | 479 | .64 | 44800 | 564 | 220 | 69 | 41 | 2.1 | 740 | 7.8 |
| SEP 06... | 469 | .63 | 40700 | 523 | 230 | 75 | 38 | 1.9 | 725 | 7.5 |

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued
(National Stream Quality Accounting Network Station)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TEMPER- ATURE (DEG C) (00010) | TUR- BID- ITY (JTU) (00070) | DIS- SOLVED OXYGEN (MG/L) (00300) | PER- CENT SATUR- ATION (00301) | CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340) | CARBON DIOXIDE (CO2) (MG/L) (00405) | TOTAL PHYTO- PLANK- TON (CELLS PER ML) (60050) | FECAL COLI- FORM (.7UM-MF COL./ 100 ML) (31625) | FECAL STREP- TOCOCCI KF AGAR (COL. PER 100 ML) (31673) | TOTAL/ ORGANIC CARBON (C) (MG/L) (00680) |
|-----------|--|---|---|--|---|---|---|---|---|---|
| OCT 12... | 17.0 | 15 | 11.0 | 113 | 11 | 9.7 | 650 | B11 | 40 | -- |
| NOV 09... | 6.0 | 15 | 11.7 | 98 | 300 | .8 | 32 | B4 | B7 | -- |
| DEC 14... | .0 | 10 | 16.6 | 118 | 21 | 9.7 | 590 | B3 | B14 | 6.0 |
| JAN 24... | .0 | 8 | 15.6 | 111 | 6 | 16 | 3500 | 16 | 110 | -- |
| FEB 08... | .0 | 4 | 14.4 | 102 | 9 | 3.9 | -- | B1 | B21 | -- |
| MAR 08... | 6.5 | 15 | 12.0 | 101 | 17 | 23 | -- | 19 | 42 | 9.1 |
| APR 11... | 12.5 | 20 | 11.2 | 109 | 23 | 14 | -- | 22 | 110 | -- |
| MAY 11... | 17.0 | 20 | 10.3 | 110 | 20 | 14 | 3500 | B4 | 30 | -- |
| JUN 07... | 23.0 | 15 | 9.2 | 110 | 12 | 18 | 4800 | 23 | 46 | 5.3 |
| JUL 05... | 25.0 | 30 | 9.4 | 116 | 33 | 11 | 16000 | B30 | 36 | -- |
| AUG 08... | 29.0 | 20 | 9.4 | 117 | 11 | 4.8 | 5800 | 56 | 240 | -- |
| SEP 06... | 23.0 | 20 | 9.4 | 112 | 45 | 7.6 | 5000 | B10 | 740 | 4.2 |

| DATE | TOTAL ARSENIC (AS) (UG/L) (01002) | SUS- PENDE D ARSENIC (AS) (UG/L) (01001) | DIS- SOLVED ARSENIC (AS) (UG/L) (01000) | TOTAL CAD- MIUM (CD) (UG/L) (01027) | SUS- PENDE D CAD- MIUM (CD) (UG/L) (01026) | DIS- SOLVED CAD- MIUM (CD) (UG/L) (01025) | TOTAL CHRO- MIUM (CR) (UG/L) (01034) | SUS- PENDE D CHRO- MIUM (CR) (UG/L) (01031) | DIS- SOLVED CHRO- MIUM (CR) (UG/L) (01030) | TOTAL COBALT (CO) (UG/L) (01037) |
|-----------|---|---|--|--|--|---|---|---|--|--|
| NOV 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC 14... | 4 | 2 | 2 | 0 | 0 | 0 | 20 | 17 | 3 | 0 |
| JAN 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR 08... | 3 | 1 | 2 | 40 | 24 | 16 | 10 | 10 | 0 | 2 |
| APR 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN 07... | 2 | 0 | 3 | 10 | -- | 8 | 10 | 10 | 0 | <50 |
| JUL 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP 06... | 4 | 3 | 1 | 10 | 9 | 1 | 0 | 0 | 30 | <50 |

MISSOURI RIVER MAIN STEM

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued
(National Stream Quality Accounting Network Station)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | SUS- PENDE COBALT (CO) (UG/L) (01036) | DIS- SOLVED COBALT (CO) (UG/L) (01035) | TOTAL COPPER (CU) (UG/L) (01042) | SUS- PENDE COPPER (CU) (UG/L) (01041) | DIS- SOLVED COPPER (CU) (UG/L) (01040) | TOTAL LEAD (PB) (UG/L) (01051) | SUS- PENDE LEAD (PB) (UG/L) (01050) | DIS- SOLVED LEAD (PB) (UG/L) (01049) | TOTAL MERCURY (HG) (UG/L) (71900) | SUS- PENDE MERCURY (HG) (UG/L) (71895) |
|-----------|--|---|--|--|---|--|--|---|---|---|
| NOV 09... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC 14... | 0 | 0 | 5 | 0 | 5 | 10 | 6 | 4 | .1 | .1 |
| JAN 24... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| FEB 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAR 08... | 2 | 0 | 36 | 25 | 11 | 23 | 17 | 6 | .0 | .0 |
| APR 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY 11... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN 07... | -- | 0 | 10 | 0 | 20 | <100 | -- | 17 | .0 | .0 |
| JUL 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| AUG 08... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP 06... | <50 | 0 | 10 | 0 | 13 | <100 | <100 | 0 | .0 | .0 |

| DATE | DIS- SOLVED MERCURY (HG) (71890) | TOTAL SELE- NIUM (SE) (UG/L) (01147) | SUS- PENDE SELE- NIUM (SE) (UG/L) (01146) | DIS- SOLVED SELE- NIUM (SE) (UG/L) (01145) | TOTAL ZINC (ZN) (UG/L) (01092) | SUS- PENDE ZINC (ZN) (UG/L) (01091) | DIS- SOLVED ZINC (ZN) (UG/L) (01090) | SUS- PENDE SEDI- MENT (MG/L) (80154) | SUS- PENDE SEDI- MENT (T/DAY) (80155) |
|-----------|--|---|---|--|--|--|---|---|--|
| NOV 09... | -- | -- | -- | -- | -- | -- | -- | 877 | 83400 |
| DEC 14... | .0 | 2 | 0 | 2 | 30 | 30 | 4 | 254 | 15100 |
| JAN 24... | -- | -- | -- | -- | -- | -- | -- | 470 | 25400 |
| FEB 08... | -- | -- | -- | -- | -- | -- | -- | 924 | 48400 |
| MAR 08... | .0 | 1 | 1 | 0 | 30 | 20 | 10 | 1120 | 46600 |
| APR 11... | -- | -- | -- | -- | -- | -- | -- | 549 | 49100 |
| MAY 11... | -- | -- | -- | -- | -- | -- | -- | 89 | 8030 |
| JUN 07... | .0 | 2 | -- | 2 | 30 | 20 | 10 | 316 | 26600 |
| JUL 05... | -- | -- | -- | -- | -- | -- | -- | 162 | 14700 |
| AUG 08... | -- | -- | -- | -- | -- | -- | -- | 277 | 26200 |
| SEP 06... | .0 | 2 | 0 | 2 | 30 | 20 | 10 | -- | -- |

| DATE | TIME | TEMPER- ATURE (DEG C) (00010) | INSTAN- TANEOUS DIS- CHARGE (CFS) (00051) | SUS- PENDE SEDI- MENT (MG/L) (80154) | SUS- PENDE SEDI- MENT (T/DAY) (80155) | SUS. SED. SIEVE DIAM. % FINER THAN .062 MM (70331) |
|-----------|------|--|--|---|--|---|
| NOV 09... | 1600 | 6.0 | 36200 | 877 | 83400 | 11 |
| DEC 14... | 1130 | .0 | 22000 | 254 | 15100 | 37 |
| JAN 24... | 1130 | .0 | 20000 | 470 | 25400 | 22 |
| FEB 08... | 1300 | .0 | 19400 | 924 | 48400 | 7 |
| MAR 08... | 1430 | 6.5 | 15400 | 1120 | 46600 | 12 |
| APR 11... | 1200 | 12.5 | 33100 | 549 | 49100 | 16 |
| MAY 11... | 1430 | 17.0 | 33400 | 89 | 8030 | 80 |
| JUN 07... | 1700 | 23.0 | 31200 | 316 | 26600 | 29 |
| JUL 05... | 1530 | 25.0 | 33700 | 162 | 14700 | 63 |
| AUG 08... | 1600 | 25.0 | 35000 | 277 | 26200 | 26 |

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued
(National Stream Quality Accounting Network Station)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TOTAL ALDRIN (UG/L) (39330) | ALDRIN IN BOTTOM MA- TERIAL (UG/KG) (39333) | TOTAL ATRA- ZINE (UG/L) (39630) | TOTAL CHLOR- DANE (UG/L) (39350) | CHLOR- DANE IN BOTTOM MA- TERIAL (UG/KG) (39351) | TOTAL ODD (UG/L) (39360) | DDO IN BOTTOM MA- TERIAL (UG/KG) (39363) | TOTAL DDE (UG/L) (39365) | DDE IN BOTTOM MA- TERIAL (UG/KG) (39368) | TOTAL DDT (UG/L) (39370) | TOTAL D1- AZINON (UG/L) (39570) |
|--------------|--------------------------------------|---|---|--|---|-----------------------------------|--|-----------------------------------|--|-----------------------------------|---|
| NOV 09... | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| FEB 08... | ND | -- | ND | ND | -- | ND | -- | ND | -- | ND | ND |
| APR 29... | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| AUG 05... | ND | -- | ND | ND | -- | ND | -- | ND | -- | ND | ND |

| DATE | DI- AZINON IN BOTTOM MA- TERIAL (UG/KG) (39571) | TOTAL DI- ELDRIN (UG/L) (39380) | DI- ELDRIN IN BOTTOM MA- TERIAL (UG/KG) (39383) | TOTAL ENDRIN (UG/L) (39390) | ENDRIN IN BOTTOM MA- TERIAL (UG/KG) (39393) | TOTAL ETHION (UG/L) (39398) | ETHION IN BOTTOM MA- TERIAL (UG/KG) (39399) | TOTAL HEPTA- CHLOR (UG/L) (39410) | HEPTA- CHLOR IN BOTTOM MA- TERIAL (UG/KG) (39413) | TOTAL HEPTA- CHLOR EPOXIDE (UG/L) (39420) | HEPTA- CHLOR EPOXIDE IN BOT- TOM MA- TERIAL (UG/KG) (39423) |
|--------------|--|---|--|--------------------------------------|---|--------------------------------------|---|---|--|--|--|
| NOV 09... | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| FEB 08... | -- | ND | -- | ND | -- | ND | -- | ND | -- | ND | -- |
| APR 29... | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| AUG 05... | -- | ND | -- | ND | -- | ND | -- | ND | -- | ND | -- |

| DATE | TOTAL LINDANE (UG/L) (39340) | LINDANE IN BOTTOM MA- TERIAL (UG/KG) (39343) | TOTAL MALA- THION (UG/L) (39530) | MALA- THION IN BOTTOM MA- TERIAL (UG/KG) (39531) | TOTAL METH- OXY- CHLOR (UG/L) (39480) | METHOX- YCHLOR IN BOT- TOM MA- TERIAL (UG/KG) (39481) | TOTAL METHYL PARA- THION (UG/L) (39600) | METHYL PARA- THION IN BOT- TOM MA- TERIAL (UG/KG) (39601) | TOTAL METHYL TRI- THION (UG/L) (39790) | METHYL TRI- THION IN BOT- TOM MA- TERIAL (UG/KG) (39791) | TOTAL PARA- THION (UG/L) (39540) |
|--------------|---------------------------------------|--|--|---|--|---|--|--|---|---|--|
| NOV 09... | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| FEB 08... | ND | -- | ND | -- | ND | -- | ND | -- | ND | -- | ND |
| APR 29... | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| AUG 05... | ND | -- | ND | -- | ND | -- | ND | -- | ND | -- | ND |

| DATE | PARA- THION IN BOTTOM MA- TERIAL (UG/KG) (39541) | TOTAL TOX- APHENE (UG/L) (39400) | TOX- APHENE IN BOTTOM MA- TERIAL (UG/KG) (39403) | TOTAL TRI- THION (UG/L) (39786) | TRI- THION IN BOTTOM MA- TERIAL (UG/KG) (39787) | TOTAL 2,4-D (UG/L) (39730) | 2,4-D IN BOTTOM MA- TERIAL (UG/KG) (39731) | TOTAL 2,4,5-T (UG/L) (39740) | 2,4,5-T IN BOTTOM MA- TERIAL (UG/KG) (39741) | TOTAL SILVEX (UG/L) (39760) | SILVEX IN BOTTOM MA- TERIAL (UG/KG) (39761) |
|--------------|---|--|---|---|--|-------------------------------------|--|---------------------------------------|--|--------------------------------------|---|
| NOV 09... | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| FEB 08... | -- | ND | -- | ND | -- | ND | -- | ND | -- | ND | -- |
| APR 29... | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| AUG 05... | -- | ND | -- | ND | -- | ND | -- | ND | -- | ND | -- |

ND Not detected; detection limit is 0.10 UG/KG.

MISSOURI RIVER MAIN STEM

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued
(National Stream Quality Accounting Network Station)

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

| DATE TIME | OCT 12,76 1515 | NOV 9,76 1500 | DEC 14,76 1130 | JAN 24,77 1130 | FEB 8,77 1300 |
|---------------------|-------------------|------------------|-------------------|-------------------|------------------|
| TOTAL CELLS/ML | 650 | 32 | 590 | 3500 | 11000 |
| DIVERSITY: DIVISION | 1.0 | 0.0 | 0.0 | 0.1 | 0.0 |
| ..CLASS | 1.0 | 0.0 | 0.0 | 0.1 | 0.0 |
| ..ORDER | 1.3 | 0.0 | 1.0 | 0.1 | 0.2 |
| ...FAMILY | 1.4 | 0.8 | 1.4 | 0.2 | 0.2 |
|GENUS | 1.4 | 1.5 | 2.0 | 0.2 | 0.2 |

| 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 | | | | | | | | | | |
| ...OOCYSTACEAE | | | | | | | | | | |
| ...ANKISTRODESMUS | -- | - | -- | - | -- | - | 25 | 1 | -- | - |
| ...VOLVOCALES | | | | | | | | | | |
| ...CHLAMYDOMONADACEAE | | | | | | | | | | |
| ...CHLAMYDOMONAS | -- | - | -- | - | -- | - | -- | - | -- | - |
| ...PHACOTACEAE | | | | | | | | | | |
| ...PHACOTUS | -- | - | -- | - | -- | - | -- | - | -- | - |
| ...VOLVOCAEAE | | | | | | | | | | |
| ...PANDORINA | 330# | 52 | -- | - | -- | - | -- | - | -- | - |
| CHRYSOPHYTA | | | | | | | | | | |
| ..BACILLARIOPHYCEAE | | | | | | | | | | |
| ...CENTRALES | | | | | | | | | | |
| ...COSCINODISCACEAE | | | | | | | | | | |
| ...CYCLOTELLA | 250# | 39 | -- | - | 220# | 38 | 37 | 1 | 190 | 2 |
| ...MELOSIRA | -- | - | -- | - | -- | - | -- | - | -- | - |
| ...STEPHANODISCUS | -- | - | * 0 | | 140# | 24 | -- | - | -- | - |
| ...PENNALES | | | | | | | | | | |
| ...ACHNANTHACEAE | | | 8# | 25 | 14 | 2 | -- | - | -- | - |
| ...RHOICOSPHEINIA | -- | - | -- | - | -- | - | -- | - | -- | - |
| ...CYMBELLACEAE | | | | | | | * 0 | | -- | - |
| ...CYMBELLA | -- | - | -- | - | -- | - | -- | - | -- | - |
| ...DIATOMACEAE | | | | | | | * 0 | | -- | - |
| ...DIATOMA | -- | - | -- | - | 28 | 5 | -- | - | -- | - |
| ...FRAGILARIACEAE | | | | | | | | | | |
| ...ASTERIONELLA | -- | - | -- | - | 180# | 31 | 3400# | 98 | 10000# | 98 |
| ...FRAGILARIA | -- | - | -- | - | -- | - | -- | - | -- | - |
| ...SYNEDRA | 42 | 6 | -- | - | -- | - | -- | - | -- | - |
| ...GOMPHONEMACEAE | | | | | | | | | | |
| ...GOMPHONEMA | -- | - | -- | - | -- | - | -- | - | -- | - |
| ...NAVICULACEAE | | | | | | | | | | |
| ...GVROSIGMA | -- | - | -- | - | -- | - | -- | - | -- | - |
| ...NAVICULA | -- | - | 16# | 50 | -- | - | -- | - | -- | - |
| ...PINNULARIA | -- | - | 8# | 25 | -- | - | -- | - | -- | - |
| ...NITZSCHIAEAE | | | | | | | | | | |
| ...NITZSCHIA | -- | - | -- | - | 7 | 1 | * 0 | | * 0 | |
| ...SURIPELLACEAE | | | | | | | | | | |
| ...SURIPELLA | 21 | 3 | -- | - | -- | - | -- | - | * 0 | |
| ..CHRYSOPHYCEAE | | | | | | | | | | |
| ...CHRYSOMONADALES | | | | | | | | | | |
| ...OCHROMONADACEAE | | | | | | | | | | |
| ...DINOBYRON | -- | - | -- | - | -- | - | -- | - | * 0 | |
| CYANOPHYTA (BLUE-GREEN ALGAE) | | | | | | | | | | |
| ..CYANOPHYCEAE | | | | | | | | | | |
| ...HORMOGONALES | | | | | | | | | | |
| ...NOSTOCACEAE | | | | | | | | | | |
| ...ANABAENA | -- | - | -- | - | -- | - | -- | - | -- | - |
| ...OSCILLATORIACEAE | | | | | | | | | | |
| ...LYNGBYA | -- | - | -- | - | -- | - | -- | - | -- | - |
| ...OSCILLATORIA | -- | - | -- | - | -- | - | -- | - | * 0 | |
| EUGLENOPHYTA (EUGLENOIDS) | | | | | | | | | | |
| ..CRYPTOPHYCEAE | | | | | | | | | | |
| ...CRYPTOMONIDALES | | | | | | | | | | |
| ...CRYPTOCHRYSIDACEAE | | | | | | | | | | |
| ...CHROOMONAS | -- | - | -- | - | -- | - | -- | - | * 0 | |
| ...CRYPTOMONODACEAE | | | | | | | | | | |
| ...CRYPTOMONAS | -- | - | -- | - | -- | - | -- | - | * 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%

| DATE TIME | MAY 14,77 1430 | JUN 7,77 1700 | JUL 5,77 1530 | AUG 8,77 1600 | SEP 6,77 1730 |
|---------------------|-------------------|------------------|------------------|------------------|------------------|
| TOTAL CELLS/ML | 3500 | 4800 | 16000 | 5800 | 5000 |
| DIVERSITY: DIVISION | 0.6 | 1.4 | 1.2 | 1.1 | 1.1 |
| ..CLASS | 0.6 | 1.4 | 1.3 | 1.1 | 1.1 |
| ..ORDER | 1.0 | 1.8 | 2.1 | 1.8 | 1.8 |
| ...FAMILY | 1.6 | 2.5 | 3.0 | 2.5 | 2.5 |
|GENUS | 1.7 | 3.1 | 3.7 | 2.7 | 2.7 |

06486000 MISSOURI RIVER AT SIOUX CITY, IA---Continued
(National Stream Quality Accounting Network Station)

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

| DATE TIME | MAY 14, 77 1430 | | JUN 7, 77 1700 | | JUL 5, 77 1530 | | AUG 8, 77 1600 | | SEP 6, 77 1730 | |
|-------------------------------|--------------------|--------------|-------------------|--------------|-------------------|--------------|-------------------|--------------|-------------------|--------------|
| 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 | -- | - | | - | * | 0 | -- | - | 32 | 1 |
| ..COELASTRACEAE | | | | | | | | | | |
| ..COELASTRUM | -- | - | 120 | 3 | 1000 | 6 | 49 | 1 | 140 | 3 |
| ..HYDRODICTYACEAE | | | | | | | | | | |
| ..PEDIASTRUM | -- | - | -- | - | -- | - | -- | - | 290 | 6 |
| ..MICRACTINIACEAE | | | | | | | | | | |
| ..GOLENKINIA | -- | - | -- | - | -- | - | -- | - | * | 0 |
| ..MICRACTINIUM | -- | - | -- | - | -- | - | 270 | 5 | -- | - |
| ..OOCYSTACEAE | | | | | | | | | | |
| ..ANKISTRODESMSUS | 28 | 1 | 190 | 4 | 450 | 3 | 29 | 1 | 96 | 2 |
| ..CHODATELLA | -- | - | -- | - | -- | - | -- | - | * | 0 |
| ..DICTYOSPHAERIUM | -- | - | 150 | 3 | | | 430 | 7 | -- | - |
| ..FRANCEIA | -- | - | -- | - | * | 0 | -- | - | -- | - |
| ..KIRCHNERIELLA | -- | - | -- | - | 260 | 2 | * | 0 | -- | - |
| ..NEPHROCYTIUM | | | | | 190 | 1 | -- | - | -- | - |
| ..OOCYSTIS | 110 | 3 | 750# | 16 | 640 | 4 | 39 | 1 | 340 | 7 |
| ..SELENASTRUM | -- | - | 160 | 3 | -- | - | -- | - | 100 | 2 |
| ..TETRAEDRON | -- | - | | | * | 0 | -- | - | * | 0 |
| ..TREUBARIA | -- | - | -- | - | -- | - | -- | - | * | 0 |
| ..WESTELLA | -- | - | -- | - | * | 0 | 78 | 1 | -- | - |
| ..SCENEDESMACEAE | | | | | | | | | | |
| ..ACTINASTRUM | 110 | 3 | -- | - | * | 0 | 360 | 6 | -- | - |
| ..CRUCIGENIA | -- | - | 55 | 1 | -- | - | -- | - | -- | - |
| ..SCENEDESMUS | 260 | 7 | 1200# | 26 | 4900# | 29 | 180 | 3 | 880# | 17 |
| ..TETRASTRUM | -- | - | -- | - | 1300 | 8 | -- | - | -- | - |
| ..TETRASPORALES | | | | | | | | | | |
| ..PALMELLACEAE | | | | | | | | | | |
| ..SPHAEROCYSTIS | -- | - | -- | - | -- | - | -- | - | 1300# | 25 |
| ..ULOTRICHIALES | | | | | | | | | | |
| ..ULOTRICHACEAE | | | | | | | | | | |
| ..HORMIDIUM | -- | - | -- | - | 190 | 1 | -- | - | -- | - |
| ..VOLVOCALES | | | | | | | | | | |
| ..CHLAMYDOMONADACEAE | | | | | | | | | | |
| ..CHLAMYDOMONAS | -- | - | 27 | 1 | 770 | 5 | 130 | 2 | 100 | 2 |
| ..PHACOTACEAE | | | | | | | | | | |
| ..PHACOTUS | -- | - | -- | - | 320 | 2 | 290 | 5 | -- | - |
| ..VOLVOCAEAE | | | | | | | | | | |
| ..PANDORINA | -- | - | -- | - | 1000 | 6 | -- | - | -- | - |
| CHRYSTOPHYTA | | | | | | | | | | |
| ..BACILLARIOPHYCEAE | | | | | | | | | | |
| ..CENTRALES | | | | | | | | | | |
| ..COSCINODISCACEAE | | | | | | | | | | |
| ..CYCLOTELLA | 310 | 9 | -- | - | 830 | 5 | 29 | 1 | * | 0 |
| ..MELOSIRA | 28 | 1 | -- | - | -- | - | -- | - | -- | - |
| ..STEPHANODISCUS | -- | - | 27 | 1 | -- | - | -- | - | * | 0 |
| ..PENNIALES | | | | | | | | | | |
| ..FRAGILARIACEAE | | | | | | | | | | |
| ..ASTERIONELLA | 2300# | 68 | 210 | 4 | -- | - | -- | - | -- | - |
| ..FRAGILARIA | -- | - | -- | - | 260 | 2 | -- | - | -- | - |
| ..SYNEDRA | -- | - | 360 | 7 | -- | - | -- | - | -- | - |
| ..GOMPHONEMACEAE | | | | | | | | | | |
| ..GOMPHONEMA | -- | - | -- | - | -- | - | -- | - | * | 0 |
| ..NAVICULACEAE | | | | | | | | | | |
| ..GYROSIGMA | -- | - | -- | - | -- | - | -- | - | * | 0 |
| ..NAVICULA | * | 0 | * | 0 | -- | - | * | 0 | -- | - |
| ..NITZSCHIA | 230 | 7 | -- | - | 640 | 4 | 120 | 2 | * | 0 |
| ..SURIARELLACEAE | | | | | | | | | | |
| ..SURIARELLA | * | 0 | -- | - | -- | - | -- | - | -- | - |
| ..XANTHOPHYCEAE | | | | | | | | | | |
| ..HETEROCOCCALES | | | | | | | | | | |
| ..CENTRITRACTACEAE | | | | | | | | | | |
| ..CENTRITRACTUS | -- | - | -- | - | 130 | 1 | -- | - | -- | - |
| CYANOPHYTA (BLUE-GREEN ALGAE) | | | | | | | | | | |
| ..CYANOPHYCEAE | | | | | | | | | | |
| ..CHROCOCCOCCALES | | | | | | | | | | |
| ..CHROCOCCOCCAEAE | | | | | | | | | | |
| ..AGMENELLUM | -- | - | -- | - | 1500 | 9 | -- | - | -- | - |
| ..ANACYSTIS | -- | - | 790# | 17 | 960 | 6 | 550 | 9 | 1700# | 33 |
| ..HORMOGONALES | | | | | | | | | | |
| ..NOSTOCACEAE | | | | | | | | | | |
| ..ANABAENA | -- | - | 690 | 14 | 260 | 2 | 2900# | 50 | -- | - |
| ..OSCILLATORIACEAE | | | | | | | | | | |
| ..LYNGBYA | -- | - | -- | - | 640 | 4 | -- | - | -- | - |
| ..OSCILLATORIA | -- | - | -- | - | -- | - | 220 | 4 | -- | - |
| EUGLENOPHYTA (EUGLENOIDS) | | | | | | | | | | |
| ..CRYPTOPHYCEAE | | | | | | | | | | |
| ..CRYPTOMONIDALES | | | | | | | | | | |
| ..CRYPTOMONODACEAE | | | | | | | | | | |
| ..CRYPTOMONAS | -- | - | -- | - | -- | - | 49 | 1 | -- | - |
| ..EUGLENOPHYCEAE | | | | | | | | | | |
| ..EUGLENALES | | | | | | | | | | |
| ..EUGLENACEAE | | | | | | | | | | |
| ..EUGLENA | -- | - | -- | - | * | 0 | -- | - | * | 0 |
| ..TRACHELOMONAS | -- | - | -- | - | -- | - | -- | - | * | 0 |
| PYRRHOPHYTA (FIRE ALGAE) | | | | | | | | | | |
| ..DINOPHYCEAE | | | | | | | | | | |
| ..PERIDINIALES | | | | | | | | | | |
| ..GLENODINIACEAE | | | | | | | | | | |
| ..GLENODINIUM | -- | - | -- | - | * | 0 | -- | - | -- | - |

FLOYD RIVER BASIN

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 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) above mean sea level.

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, 44.5 ft³/s (1.260 m³/s), 2.28 in/yr (58 mm/yr), 32,240 acre-ft/yr (39.6 hm³/yr); median of yearly mean discharges, 35 ft³/s (1.02 m³/s), 1.8 in/yr (46 mm/yr), 26,100 acre-ft/yr (32.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,200 ft³/s (346 m³/s) Mar. 28, 1962, gage height, 18.35 ft (5.593 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.--Maximum discharge, 148 ft³/s (4.19 m³/s) Jul. 24, gage height, 7.46 ft (2.274 m), no peak above base of 800 ft³/s (22.7 m³/s); no flow Feb. 15-21.

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 | 2.5 | 2.6 | 2.0 | .80 | .20 | .50 | 11 | 3.8 | 11 | 3.5 | 6.5 | 4.1 |
| 2 | 2.4 | 2.4 | 1.5 | .80 | .20 | .50 | 11 | 3.8 | 9.3 | 3.1 | 5.4 | 4.4 |
| 3 | 2.3 | 5.8 | 1.3 | .70 | .20 | .50 | 11 | 4.9 | 7.8 | 2.6 | 3.8 | 4.5 |
| 4 | 2.2 | 3.7 | 1.2 | .70 | .20 | .50 | 11 | 7.4 | 6.3 | 2.3 | 3.1 | 4.3 |
| 5 | 2.3 | 2.7 | 1.1 | .70 | .20 | .50 | 10 | 9.8 | 5.2 | 2.1 | 2.6 | 3.9 |
| 6 | 2.3 | 2.7 | 1.1 | .60 | .20 | .50 | 10 | 12 | 4.2 | 2.5 | 2.8 | 3.7 |
| 7 | 2.5 | 2.8 | 1.1 | .60 | .20 | 1.0 | 10 | 9.3 | 3.5 | 2.5 | 2.6 | 5.2 |
| 8 | 2.5 | 2.6 | 1.1 | .60 | .10 | 2.0 | 10 | 7.5 | 3.0 | 7.9 | 2.5 | 5.6 |
| 9 | 2.1 | 2.8 | 1.1 | .60 | .10 | 5.0 | 10 | 7.3 | 2.8 | 15 | 2.6 | 6.1 |
| 10 | 2.2 | 2.4 | 1.0 | .50 | .10 | 25 | 10 | 6.0 | 2.7 | 9.3 | 2.4 | 5.4 |
| 11 | 2.4 | 2.4 | 1.0 | .50 | .10 | 100 | 9.5 | 4.6 | 2.5 | 23 | 2.6 | 5.1 |
| 12 | 2.3 | 2.4 | 1.0 | .50 | .10 | 70 | 9.0 | 3.8 | 2.6 | 51 | 2.6 | 5.7 |
| 13 | 2.3 | 2.2 | 1.0 | .50 | .10 | 50 | 9.5 | 3.5 | 2.9 | 24 | 2.3 | 5.5 |
| 14 | 2.2 | 2.2 | 1.0 | .50 | .10 | 40 | 11 | 3.6 | 3.0 | 15 | 2.3 | 4.9 |
| 15 | 2.0 | 2.2 | 1.0 | .50 | .00 | 35 | 11 | 3.1 | 3.2 | 10 | 2.8 | 4.6 |
| 16 | 2.1 | 2.4 | 1.1 | .50 | .00 | 30 | 11 | 2.7 | 3.7 | 8.6 | 5.6 | 4.3 |
| 17 | 2.1 | 2.7 | 1.1 | .50 | .00 | 25 | 11 | 2.6 | 4.6 | 7.9 | 28 | 5.6 |
| 18 | 2.3 | 2.9 | 1.1 | .40 | .00 | 20 | 9.5 | 2.8 | 8.3 | 8.0 | 41 | 5.7 |
| 19 | 4.3 | 2.8 | 1.1 | .40 | .00 | 16 | 8.5 | 3.4 | 10 | 10 | 28 | 5.2 |
| 20 | 4.5 | 3.4 | 1.1 | .40 | .00 | 14 | 8.5 | 4.0 | 8.6 | 11 | 20 | 4.0 |
| 21 | 4.6 | 2.8 | 1.0 | .40 | .00 | 12 | 9.7 | 5.6 | 7.7 | 9.4 | 14 | 3.9 |
| 22 | 4.0 | 2.2 | 1.0 | .40 | .10 | 11 | 10 | 29 | 7.1 | 7.7 | 12 | 3.8 |
| 23 | 4.0 | 2.2 | 1.0 | .40 | .20 | 10 | 9.1 | 22 | 6.6 | 6.9 | 10 | 6.3 |
| 24 | 5.6 | 2.2 | 1.0 | .40 | .20 | 10 | 7.9 | 13 | 6.1 | 103 | 8.9 | 8.4 |
| 25 | 6.2 | 2.6 | 1.0 | .35 | .30 | 10 | 7.1 | 10 | 6.2 | 81 | 8.7 | 7.9 |
| 26 | 5.5 | 3.6 | 1.0 | .30 | .40 | 11 | 6.3 | 7.5 | 5.3 | 32 | 7.9 | 5.9 |
| 27 | 3.7 | 6.5 | 1.0 | .30 | .50 | 12 | 5.7 | 9.1 | 4.9 | 18 | 6.9 | 4.5 |
| 28 | 3.2 | 5.3 | .90 | .30 | .50 | 13 | 5.0 | 24 | 3.9 | 12 | 5.8 | 4.0 |
| 29 | 2.9 | 4.0 | .90 | .30 | --- | 12 | 4.4 | 33 | 3.5 | 10 | 5.5 | 4.5 |
| 30 | 2.8 | 3.0 | .90 | .30 | --- | 11 | 4.0 | 20 | 4.0 | 10 | 5.0 | 5.0 |
| 31 | 2.8 | --- | .80 | .30 | --- | 11 | --- | 15 | --- | 7.6 | 4.6 | --- |
| TOTAL | 95.1 | 90.5 | 33.50 | 15.05 | 4.30 | 559.00 | 271.7 | 294.1 | 160.5 | 516.9 | 258.8 | 153.0 |
| MEAN | 3.07 | 3.02 | 1.08 | .49 | .15 | 18.0 | 9.06 | 9.49 | 5.35 | 16.7 | 8.35 | 5.10 |
| MAX | 6.2 | 6.5 | 2.0 | .80 | .50 | 100 | 11 | 33 | 11 | 103 | 41 | 8.4 |
| MIN | 2.0 | 2.2 | .80 | .30 | .00 | .50 | 4.0 | 2.6 | 2.5 | 2.1 | 2.3 | 3.7 |
| CFSM | .01 | .01 | .004 | .002 | .001 | .07 | .03 | .04 | .02 | .06 | .03 | .02 |
| IN. | .01 | .01 | .00 | .00 | .00 | .08 | .04 | .04 | .02 | .07 | .04 | .02 |
| AC-FT | 189 | 180 | 66 | 30 | 8.5 | 1110 | 539 | 583 | 318 | 1030 | 513 | 303 |

CAL YR 1976 TOTAL 9570.57 MEAN 26.1 MAX 370 MIN .56 CFSM .10 IN 1.34 AC-FT 18980
WTR YR 1977 TOTAL 2452.45 MEAN 6.72 MAX 103 MIN .00 CFSM .03 IN .34 AC-FT 4860

06600300 WEST BRANCH FLOYD RIVER NEAR STRUBLE, IA

LOCATION.--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 right bank at downstream side of bridge on county highway 862, 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, 14 mi (23 km) upstream from Floyd River, and at mile 39.3 (63.2 km).

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) above mean sea level (State Highway Commission benchmark).

REMARKS.--Records fair except those for winter period and periods of no gage-height record Aug. 18-29, Aug. 30 to Sept. 30, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--22 years, 28.5 ft³/s (0.807 m³/s), 2.14 in/yr (54 mm/yr), 20,650 acre-ft/yr (25.5 hm³/yr); median of yearly mean discharges, 23 ft³/s (0.65 m³/s), 1.7 in/yr (43 mm/yr), 16,700 acre-ft/yr (20.6 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.--Maximum discharge, 273 ft³/s (7.73 m³/s) May 27, gage height, 6.45 ft (1.966 m), no peak above base of 400 ft³/s (11.3 m³/s); no flow Jan. 9 to Feb. 19.

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 | 1.2 | .86 | .35 | .15 | .00 | .20 | 1.4 | .96 | 1.8 | .45 | .47 | .07 |
| 2 | 1.5 | .77 | .35 | .10 | .00 | .20 | 1.9 | .99 | 1.6 | .41 | 19 | .50 |
| 3 | 1.4 | .86 | .35 | .08 | .00 | .20 | 3.4 | 1.5 | 1.5 | .30 | 14 | .40 |
| 4 | 2.2 | .86 | .35 | .06 | .00 | .20 | 2.1 | 1.6 | 1.3 | .28 | 1.9 | .30 |
| 5 | 2.8 | .84 | .35 | .05 | .00 | .20 | 1.9 | 1.3 | 1.2 | .10 | 1.1 | .20 |
| 6 | 1.6 | .82 | .34 | .04 | .00 | .30 | 1.0 | .93 | .94 | .29 | .86 | .15 |
| 7 | 1.2 | .80 | .33 | .03 | .00 | .40 | 1.6 | .82 | .95 | .31 | .96 | 1.0 |
| 8 | 3.0 | .80 | .33 | .02 | .00 | 1.0 | 1.4 | .83 | .85 | .71 | .77 | .50 |
| 9 | 2.1 | .80 | .33 | .00 | .00 | 10 | 1.4 | .92 | .79 | .35 | .96 | .40 |
| 10 | 2.2 | .80 | .33 | .00 | .00 | 50 | 1.3 | .81 | .61 | .22 | .79 | .20 |
| 11 | 1.6 | .75 | .33 | .00 | .00 | 150 | 1.4 | .71 | .63 | 1.6 | .81 | .15 |
| 12 | 1.4 | .60 | .33 | .00 | .00 | 60 | 1.6 | .72 | .64 | .63 | .76 | .80 |
| 13 | 1.4 | .50 | .33 | .00 | .00 | 20 | 2.0 | .67 | 1.2 | .42 | .67 | .40 |
| 14 | 1.2 | .50 | .34 | .00 | .00 | 10 | 2.3 | .69 | .98 | .17 | .64 | .30 |
| 15 | 1.1 | .50 | .35 | .00 | .00 | 6.0 | 1.9 | .72 | .71 | .35 | .71 | .20 |
| 16 | 1.1 | .50 | .36 | .00 | .00 | 3.9 | 1.8 | .78 | .83 | .26 | .81 | .15 |
| 17 | 1.3 | .55 | .38 | .00 | .00 | 2.8 | 1.4 | .92 | 1.4 | .39 | 1.1 | .30 |
| 18 | 1.6 | .60 | .40 | .00 | .00 | 2.2 | 1.3 | .79 | .91 | .18 | .80 | .20 |
| 19 | 2.1 | .70 | .38 | .00 | .00 | 2.1 | 1.2 | .88 | .38 | .07 | .60 | .15 |
| 20 | 1.6 | .70 | .35 | .00 | .02 | 1.8 | 1.3 | 1.7 | .35 | .05 | .50 | .10 |
| 21 | 1.5 | .65 | .34 | .00 | .05 | 2.1 | 1.5 | 5.8 | .50 | .32 | .40 | .09 |
| 22 | 1.1 | .60 | .33 | .00 | .10 | 1.9 | 1.6 | 12 | .53 | .21 | .35 | .10 |
| 23 | 1.1 | .50 | .33 | .00 | .20 | 1.3 | 1.1 | 4.8 | 1.0 | .37 | .30 | .30 |
| 24 | 1.5 | .50 | .33 | .00 | .20 | 1.2 | .92 | 1.7 | .62 | .23 | .25 | .20 |
| 25 | 1.2 | .50 | .33 | .00 | .20 | 1.2 | .82 | 2.5 | .39 | .81 | .24 | .15 |
| 26 | 1.1 | .40 | .33 | .00 | .20 | 1.2 | .80 | 1.9 | .30 | .80 | .18 | .10 |
| 27 | .86 | .43 | .33 | .00 | .20 | 1.2 | .85 | 76 | .30 | .29 | .14 | .09 |
| 28 | .86 | .40 | .33 | .00 | .20 | 1.5 | .91 | 14 | .34 | 11 | .11 | .09 |
| 29 | .96 | .38 | .30 | .00 | --- | 1.9 | .88 | 4.7 | .23 | 4.4 | .09 | .08 |
| 30 | .96 | .36 | .25 | .00 | --- | 1.9 | .88 | 2.8 | .84 | 2.2 | .08 | 1.0 |
| 31 | .77 | --- | .20 | .00 | --- | 1.5 | --- | 2.2 | --- | 1.1 | .08 | --- |
| TOTAL | 45.51 | 18.83 | 10.36 | .53 | 1.37 | 338.40 | 44.66 | 147.64 | 24.62 | 217.37 | 50.43 | 8.67 |
| MEAN | 1.47 | .63 | .33 | .017 | .049 | 10.9 | 1.49 | 4.76 | .82 | 7.01 | 1.63 | .29 |
| MAX | 3.0 | .86 | .40 | .15 | .20 | 150 | 3.4 | 76 | 1.8 | .81 | .19 | 1.0 |
| MIN | .77 | .36 | .20 | .00 | .00 | .20 | .30 | .67 | .23 | .05 | .08 | .07 |
| CFSM | .008 | .003 | .002 | .000 | .000 | .06 | .008 | .03 | .005 | .04 | .009 | .002 |
| IN. | .01 | .00 | .00 | .00 | .00 | .07 | .01 | .03 | .01 | .04 | .01 | .00 |
| AC-FT | 90 | 37 | 21 | 1.1 | 2.7 | 671 | 89 | 293 | 49 | 431 | 100 | 17 |

| | | | | | | | | |
|-------------|-------|---------|-----------|---------|---------|----------|---------|------------|
| CAL YR 1976 | TOTAL | 4967.22 | MEAN 13.6 | MAX 588 | MIN .20 | CFSM .08 | IN 1.02 | AC-FT 9850 |
| WTR YR 1977 | TOTAL | 908.39 | MEAN 2.49 | MAX 150 | MIN .00 | CFSM .01 | IN .19 | AC-FT 1800 |

FLOYD RIVER BASIN

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) above mean sea level. 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.--42 years (water years 1936-77), 173 ft³/s (4.899 m³/s), 2.66 in/yr (68 mm/yr), 125,300 acre-ft/yr (154 hm³/yr); median of yearly mean discharges, 140 ft³/s (3.96 m³/s), 2.2 in/yr (56 mm/yr), 101,000 acre-ft/yr (125 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.--Maximum discharge, 1,720 ft³/s (48.7 m³/s) July 24, gage height, 15.14 ft (4.615 m), no peak above base of 2,500 ft³/s (70.8 m³/s); minimum daily, 0.90 ft³/s (0.025 m³/s) Jan. 10-22.

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 | 15 | 17 | 12 | 3.0 | 1.0 | 10 | 43 | 22 | 39 | 23 | 20 | 18 |
| 2 | 15 | 16 | 11 | 2.2 | 1.0 | 10 | 50 | 22 | 35 | 14 | 19 | 15 |
| 3 | 14 | 15 | 11 | 1.8 | 1.1 | 10 | 52 | 19 | 34 | 10 | 15 | 19 |
| 4 | 14 | 14 | 11 | 1.6 | 1.1 | 10 | 50 | 22 | 33 | 8.1 | 21 | 24 |
| 5 | 15 | 14 | 10 | 1.4 | 1.1 | 11 | 48 | 23 | 29 | 6.8 | 15 | 14 |
| 6 | 13 | 15 | 9.6 | 1.2 | 1.1 | 13 | 44 | 20 | 22 | 30 | 14 | 12 |
| 7 | 14 | 15 | 9.2 | 1.1 | 1.1 | 20 | 39 | 21 | 21 | 85 | 15 | 29 |
| 8 | 14 | 12 | 8.8 | 1.0 | 1.2 | 40 | 36 | 22 | 19 | 488 | 16 | 23 |
| 9 | 14 | 19 | 8.4 | 1.0 | 1.8 | 60 | 34 | 21 | 16 | 287 | 125 | 26 |
| 10 | 15 | 15 | 8.2 | .90 | 2.5 | 100 | 34 | 19 | 14 | 89 | 35 | 16 |
| 11 | 15 | 10 | 8.0 | .90 | 3.3 | 200 | 29 | 17 | 15 | 81 | 33 | 13 |
| 12 | 13 | 9.5 | 8.0 | .90 | 3.5 | 500 | 28 | 16 | 14 | 114 | 29 | 158 |
| 13 | 12 | 11 | 8.0 | .90 | 3.2 | 400 | 40 | 16 | 14 | 99 | 25 | 28 |
| 14 | 13 | 15 | 8.0 | .90 | 2.8 | 250 | 36 | 15 | 14 | 72 | 24 | 18 |
| 15 | 11 | 20 | 8.2 | .90 | 2.5 | 150 | 34 | 14 | 13 | 45 | 30 | 13 |
| 16 | 11 | 27 | 8.2 | .90 | 2.5 | 104 | 31 | 13 | 28 | 30 | 44 | 11 |
| 17 | 12 | 30 | 8.4 | .90 | 2.7 | 86 | 30 | 12 | 41 | 22 | 24 | 11 |
| 18 | 13 | 29 | 9.0 | .90 | 3.0 | 72 | 29 | 14 | 50 | 22 | 21 | 17 |
| 19 | 15 | 25 | 8.6 | .90 | 3.5 | 59 | 28 | 15 | 34 | 25 | 34 | 13 |
| 20 | 16 | 24 | 7.8 | .90 | 4.0 | 54 | 29 | 43 | 18 | 19 | 45 | 12 |
| 21 | 15 | 18 | 7.0 | .90 | 6.0 | 47 | 32 | 35 | 14 | 29 | 42 | 12 |
| 22 | 14 | 17 | 6.6 | .90 | 8.0 | 44 | 27 | 41 | 16 | 24 | 31 | 12 |
| 23 | 14 | 16 | 6.4 | 1.0 | 10 | 41 | 22 | 178 | 433 | 20 | 27 | 14 |
| 24 | 16 | 30 | 6.4 | 1.0 | 12 | 37 | 19 | 82 | 57 | 658 | 24 | 22 |
| 25 | 15 | 33 | 6.4 | 1.0 | 12 | 34 | 19 | 50 | 26 | 74 | 22 | 15 |
| 26 | 16 | 22 | 6.4 | 1.0 | 12 | 35 | 20 | 35 | 18 | 121 | 22 | 13 |
| 27 | 17 | 17 | 6.4 | 1.0 | 12 | 33 | 20 | 190 | 15 | 116 | 20 | 14 |
| 28 | 19 | 15 | 6.0 | 1.0 | 11 | 37 | 20 | 278 | 16 | 63 | 18 | 13 |
| 29 | 19 | 13 | 5.6 | 1.0 | --- | 55 | 20 | 74 | 13 | 39 | 17 | 32 |
| 30 | 19 | 12 | 5.2 | 1.0 | --- | 47 | 22 | 58 | 86 | 29 | 16 | 18 |
| 31 | 18 | --- | 4.0 | 1.0 | --- | 42 | --- | 54 | --- | 22 | 21 | --- |
| TOTAL | 456 | 545.5 | 247.8 | 35.00 | 127.0 | 2611 | 965 | 1461 | 1197 | 2764.9 | 864 | 655 |
| MEAN | 14.7 | 18.2 | 7.99 | 1.13 | 4.54 | 84.2 | 32.2 | 47.1 | 39.9 | 89.2 | 27.9 | 21.8 |
| MAX | 19 | 33 | 12 | 3.0 | 12 | 500 | 52 | 278 | 433 | 658 | 125 | 158 |
| MIN | 11 | 9.5 | 4.0 | .90 | 1.0 | 10 | 19 | 12 | 13 | 6.8 | 14 | 11 |
| CFSM | .02 | .02 | .009 | .001 | .005 | .10 | .04 | .05 | .05 | .10 | .03 | .03 |
| IN. | .02 | .02 | .01 | .00 | .01 | .11 | .04 | .06 | .05 | .12 | .04 | .03 |
| AC-FT | 904 | 1080 | 492 | 69 | 252 | 5180 | 1910 | 2900 | 2370 | 5480 | 1710 | 1300 |

CAL YR 1976 TOTAL 24665.40 MEAN 67.4 MAX 910 MIN 4.0 CFSM .08 IN 1.04 AC-FT 48920
WTR YR 1977 TOTAL 11929.20 MEAN 32.7 MAX 658 MIN .90 CFSM .04 IN .50 AC-FT 23660

MISSOURI RIVER MAIN STEM

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 (818,850 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 1976 TO SEPTEMBER 1977

| DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | TOTAL CAL- CIUM (CA) (MG/L) (00916) | TOTAL MAG- NE- SIUM (MG) (MG/L) (00927) | TOTAL SODIUM (NA) (MG/L) (00929) | TOTAL PO- TAS- SIUM (K) (MG/L) (00937) | BICAR- BONATE (HCO3) (MG/L) (00440) | CAR- BONATE (CO3) (MG/L) (00445) | ALKA- LINITY AS CACO3 (MG/L) (00410) | DIS- SOLVED SULFATE (SO4) (MG/L) (00945) | DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940) |
|-------|------|--|--|---|--|--|---|--|---|---|--|
| OCT | | | | | | | | | | | |
| 12... | 1220 | 35400 | 80 | 20 | 58 | 4.0 | 187 | 0 | 153 | 190 | 12 |
| NOV | | | | | | | | | | | |
| 09... | 1145 | 35900 | 53 | 19 | 54 | 3.8 | 190 | 0 | 156 | 190 | 9.8 |
| DEC | | | | | | | | | | | |
| 14... | 1430 | 22000 | 63 | 24 | 69 | 5.0 | 196 | 0 | 161 | 200 | 11 |
| JAN | | | | | | | | | | | |
| 24... | 1330 | 20000 | 63 | 24 | 66 | 4.7 | 177 | 0 | 145 | 200 | 11 |
| FEB | | | | | | | | | | | |
| 08... | 1455 | 19400 | 53 | 20 | 56 | 4.0 | 196 | 0 | 161 | 190 | 10 |
| MAR | | | | | | | | | | | |
| 08... | 1030 | 15400 | 49 | 19 | 46 | 4.8 | 180 | 0 | 150 | 170 | 10 |
| APR | | | | | | | | | | | |
| 11... | 0850 | 33000 | 20 | 54 | 60 | 4.8 | 180 | 0 | 150 | 190 | 10 |
| MAY | | | | | | | | | | | |
| 11... | 1230 | 29900 | 52 | 19 | 55 | -- | 180 | 0 | 150 | 190 | 12 |
| JUN | | | | | | | | | | | |
| 07... | 1130 | 30200 | 55 | 18 | 58 | 5.5 | 150 | 0 | 120 | 180 | 12 |
| JUL | | | | | | | | | | | |
| 05... | 1140 | 32500 | -- | -- | -- | -- | 180 | 0 | 150 | 190 | 9.4 |
| AUG | | | | | | | | | | | |
| 08... | 1230 | 31500 | 61 | 21 | 70 | 5.0 | 190 | 0 | 160 | 200 | 13 |
| SEP | | | | | | | | | | | |
| 07... | 1215 | 30400 | 60 | 21 | 72 | 5.0 | 190 | 0 | 160 | 210 | 10 |

| DATE | TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630) | TOTAL AMMONIA NITRO- GEN (N) (MG/L) (00610) | TOTAL ORGANIC NITRO- GEN (N) (MG/L) (00605) | TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625) | TOTAL NITRO- GEN (N) (MG/L) (00600) | TOTAL NITRO- GEN (NO3) (MG/L) (71887) | TOTAL PHOS- PHORUS (P) (MG/L) (00665) | DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300) | DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303) | DIS- SOLVED SOLIDS (TONS PER DAY) (70302) |
|-------|---|---|---|---|--|--|--|---|---|---|
| OCT | | | | | | | | | | |
| 12... | .09 | .03 | .30 | .33 | .42 | 1.9 | .06 | 457 | .62 | 43700 |
| NOV | | | | | | | | | | |
| 09... | .10 | .05 | .37 | .42 | .52 | 2.3 | .07 | 443 | .60 | 42900 |
| DEC | | | | | | | | | | |
| 14... | .10 | .04 | .36 | .40 | .50 | 2.2 | .06 | 476 | .65 | 28300 |
| JAN | | | | | | | | | | |
| 24... | .07 | .07 | .36 | .43 | .50 | 2.2 | .04 | 483 | .66 | 26100 |
| FEB | | | | | | | | | | |
| 08... | .04 | .08 | .34 | .42 | .46 | 2.0 | .09 | 453 | .62 | 23700 |
| MAR | | | | | | | | | | |
| 08... | .10 | .22 | .18 | .40 | .50 | 2.2 | .15 | 434 | .59 | 18000 |
| APR | | | | | | | | | | |
| 11... | .10 | .01 | .66 | .67 | .77 | 3.4 | .06 | 455 | .62 | 40500 |
| MAY | | | | | | | | | | |
| 11... | .03 | .05 | .39 | .44 | .47 | 2.1 | .07 | 474 | .64 | 38300 |
| JUN | | | | | | | | | | |
| 07... | .01 | .01 | .27 | .28 | .29 | 1.3 | .09 | 429 | .58 | 35000 |
| JUL | | | | | | | | | | |
| 05... | .27 | .06 | .31 | .37 | .64 | 2.8 | .09 | 441 | .60 | 38700 |
| AUG | | | | | | | | | | |
| 08... | .03 | .01 | .26 | .27 | .30 | 1.3 | .05 | 471 | .64 | 40100 |
| SEP | | | | | | | | | | |
| 07... | .01 | .00 | .27 | .27 | .28 | 1.2 | .08 | 466 | .63 | 38200 |

MISSOURI RIVER MAIN STEM
06601200 MISSOURI RIVER AT DECATUR, NB--Continued
WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TOTAL RESI- DUE (MG/L) (00500) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) | TUR- BID- ITY (NTU) (00075) | DIS- SOLVED OXYGEN (MG/L) (00300) | PER- CENT SATUR- ATION (00301) | CHEM- ICAL OXYGEN DEMAND (HIGH LEVEL) (MG/L) (00340) | CARBON DIOXIDE (CO2) (MG/L) (00405) | FECAL COLI- FORM .7UM-MF (COL./ 100 ML) (31625) |
|--------------|--|---|--------------------------|--|---|---|--|---|---|---|
| OCT 12... | 510 | 680 | 7.4 | 15.0 | 20 | 10.8 | 111 | 14 | 12 | 43000 |
| NOV 09... | 542 | 700 | 8.2 | 6.0 | 25 | 12.0 | 100 | 8 | 1.9 | 100000 |
| DEC 14... | 731 | 700 | 7.7 | .0 | 15 | 17.4 | 124 | 14 | 6.3 | 822000 |
| JAN 24... | 560 | 760 | 7.3 | .0 | 15 | 15.4 | 110 | 10 | 14 | 6400 |
| FEB 08... | 499 | 840 | 7.9 | .0 | 6.0 | 14.4 | 102 | 12 | 3.9 | 844000 |
| MAR 08... | 520 | 710 | 7.1 | 5.0 | 15 | 11.8 | 96 | 14 | 23 | 12000 |
| APR 11... | 618 | 710 | 7.1 | 11.0 | 15 | 10.8 | 101 | 10 | 23 | 4500 |
| MAY 11... | 523 | 700 | 7.6 | 18.5 | 20 | 9.0 | 98 | 8 | 7.2 | 30000 |
| JUN 07... | 508 | 650 | 7.6 | 22.5 | 25 | 8.9 | 105 | 23 | 6.0 | 825000 |
| JUL 05... | 553 | 690 | 7.5 | 26.0 | 38 | 9.2 | 116 | 47 | 9.1 | 2900 |
| AUG 08... | 574 | 690 | 7.8 | 24.5 | 17 | 8.8 | 109 | 15 | 4.8 | 4900 |
| SEP 07... | 529 | 730 | 8.5 | 23.5 | 18 | 9.1 | 109 | 9 | 1.0 | 829000 |

06602020 WEST FORK DITCH AT HORNICK, IA
(Formerly published as West Fork ditch at Holly Springs)

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) above mean sea level. 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.--33 years (1940-69, 1975-77), 92.4 ft³/s (2.617 m³/s), 3.11 in/yr (79 mm/yr), 66,940 acre-ft/yr, (82.5 hm³/yr); median of yearly mean discharges, 82 ft³/s (2.32 m³/s), 2.8 in/yr (71 mm/yr), 59,400 acre-ft/yr (73.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,400 ft³/s (351 m³/s) Mar. 28, 1962, 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, 1960, from floodmark; minimum daily discharge, 0.2 ft³/s (0.006 m³/s) July 30, Aug. 17, 1956.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,800 ft³/s (51.0 m³/s) and maximum (*):

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) |
|---|------|---|-------------------------|--------|------|---|-------------------------|
| June 23 | 1945 | *2,200 62.3 | *15.20 4.633 | Aug. 9 | 0900 | 1,830 51.8 | 14.09 4.295 |
| Minimum daily discharge, 2.0 ft ³ /s (0.057 m ³ /s) Jan. 18-31. | | | | | | | |

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 | 14 | 16 | 12 | 6.5 | 2.1 | 21 | 24 | 16 | 17 | 46 | 17 | 25 |
| 2 | 14 | 16 | 12 | 6.0 | 2.2 | 21 | 30 | 15 | 15 | 23 | 20 | 17 |
| 3 | 14 | 16 | 11 | 5.5 | 2.5 | 21 | 35 | 16 | 14 | 21 | 17 | 51 |
| 4 | 14 | 15 | 11 | 5.0 | 2.8 | 21 | 33 | 18 | 13 | 19 | 78 | 77 |
| 5 | 13 | 20 | 11 | 4.5 | 3.0 | 21 | 29 | 29 | 13 | 18 | 21 | 26 |
| 6 | 13 | 15 | 10 | 4.0 | 3.0 | 21 | 25 | 25 | 12 | 34 | 17 | 19 |
| 7 | 13 | 16 | 10 | 3.5 | 3.0 | 21 | 22 | 17 | 11 | 78 | 16 | 18 |
| 8 | 13 | 22 | 10 | 3.2 | 3.5 | 25 | 21 | 16 | 11 | 127 | 17 | 31 |
| 9 | 14 | 15 | 9.5 | 3.0 | 4.5 | 30 | 20 | 15 | 11 | 64 | 882 | 18 |
| 10 | 14 | 17 | 9.5 | 2.8 | 6.0 | 50 | 20 | 14 | 11 | 34 | 179 | 23 |
| 11 | 15 | 15 | 9.5 | 2.7 | 10 | 100 | 19 | 14 | 11 | 30 | 36 | 19 |
| 12 | 15 | 16 | 9.5 | 2.6 | 13 | 70 | 20 | 14 | 12 | 27 | 25 | 251 |
| 13 | 16 | 17 | 9.5 | 2.5 | 15 | 50 | 26 | 13 | 19 | 23 | 21 | 64 |
| 14 | 14 | 17 | 9.5 | 2.4 | 15 | 45 | 28 | 13 | 14 | 21 | 19 | 20 |
| 15 | 15 | 17 | 9.5 | 2.3 | 13 | 40 | 26 | 13 | 14 | 19 | 18 | 16 |
| 16 | 17 | 17 | 9.6 | 2.2 | 13 | 36 | 22 | 12 | 25 | 20 | 74 | 15 |
| 17 | 14 | 17 | 10 | 2.1 | 14 | 32 | 22 | 12 | 47 | 20 | 44 | 80 |
| 18 | 14 | 18 | 11 | 2.0 | 14 | 29 | 21 | 12 | 50 | 19 | 19 | 17 |
| 19 | 15 | 18 | 11 | 2.0 | 15 | 28 | 20 | 23 | 35 | 19 | 17 | 16 |
| 20 | 16 | 17 | 10 | 2.0 | 16 | 27 | 20 | 51 | 31 | 65 | 16 | 15 |
| 21 | 15 | 18 | 9.6 | 2.0 | 18 | 25 | 20 | 22 | 23 | 445 | 16 | 15 |
| 22 | 15 | 16 | 9.4 | 2.0 | 20 | 25 | 19 | 29 | 20 | 36 | 22 | 22 |
| 23 | 15 | 15 | 9.0 | 2.0 | 22 | 24 | 18 | 78 | 855 | 19 | 20 | 28 |
| 24 | 15 | 16 | 9.0 | 2.0 | 22 | 23 | 17 | 42 | 431 | 436 | 17 | 30 |
| 25 | 16 | 16 | 9.0 | 2.0 | 22 | 21 | 16 | 26 | 67 | 364 | 16 | 24 |
| 26 | 15 | 16 | 9.0 | 2.0 | 22 | 21 | 16 | 20 | 36 | 60 | 16 | 18 |
| 27 | 17 | 15 | 9.0 | 2.0 | 22 | 21 | 16 | 34 | 29 | 31 | 16 | 16 |
| 28 | 16 | 14 | 8.5 | 2.0 | 22 | 23 | 15 | 37 | 25 | 24 | 15 | 15 |
| 29 | 15 | 13 | 8.0 | 2.0 | --- | 30 | 15 | 26 | 22 | 22 | 14 | 31 |
| 30 | 16 | 12 | 7.5 | 2.0 | --- | 29 | 15 | 24 | 27 | 19 | 15 | 23 |
| 31 | 16 | --- | 7.0 | 2.0 | --- | 25 | --- | 20 | --- | 17 | 20 | --- |
| TOTAL | 458 | 487 | 300.1 | 88.8 | 340.6 | 976 | 650 | 716 | 1921 | 2200 | 1740 | 1030 |
| MEAN | 14.8 | 16.2 | 9.68 | 2.86 | 12.2 | 31.5 | 21.7 | 23.1 | 64.0 | 71.0 | 56.1 | 34.3 |
| MAX | 17 | 22 | 12 | 6.5 | 22 | 100 | 35 | 78 | 855 | 445 | 882 | 251 |
| MIN | 13 | 12 | 7.0 | 2.0 | 2.1 | 21 | 15 | 12 | 11 | 17 | 14 | 16 |
| CFSM | .04 | .04 | .02 | .007 | .03 | .08 | .05 | .06 | .16 | .18 | .14 | .09 |
| IN. | .04 | .04 | .03 | .01 | .03 | .09 | .06 | .07 | .18 | .20 | .16 | .10 |
| AC-FT | 908 | 966 | 596 | 176 | 676 | 1940 | 1290 | 1420 | 3810 | 4360 | 3450 | 2040 |
| CAL YR 1976 | TOTAL | 12556.1 | MEAN 34.3 | MAX 388 | MIN 7.0 | CFSM .09 | IN 1.16 | AC-FT 24910 | | | | |
| WTR YR 1977 | TOTAL | 10907.5 | MEAN 29.9 | MAX 882 | MIN 2.0 | CFSM .07 | IN 1.01 | AC-FT 21640 | | | | |

MONONA-HARRISON DITCH BASIN

06502400 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) above mean sea level (Corps of Engineers bench mark). Prior to May 7, 1942, non-recording 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, non-recording 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 above 200 ft³/s (5.66 m³/s), which are fair, and those for winter period, 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.--19 years, 206 ft³/s (5.834 m³/s), 3.27 in/yr (83 mm/yr), 149,200 acre-ft/yr (184 hm³/yr); median of yearly mean discharges, 200 ft³/s (5.66 m³/s), 3.2 in/yr (81 mm/yr), 145,000 acre-ft/yr (180 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.--Peak discharges above base of 2,500 ft³/s (70.8 m³/s) and maximum (*):

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) |
|---------|------|---|-------------------------|--------|------|---|-------------------------|
| June 24 | 0500 | 2,750 77.9 | 14.61 4.453 | Aug. 9 | 1900 | *5,510 156 | *18.37 5.599 |

Minimum daily discharge, 18 ft³/s (0.51 m³/s) Feb. 16.

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 | 40 | 33 | 24 | 26 | 25 | 32 | 41 | 29 | 40 | 99 | 44 | 58 |
| 2 | 36 | 32 | 24 | 26 | 25 | 26 | 48 | 28 | 36 | 81 | 48 | 44 |
| 3 | 34 | 31 | 25 | 26 | 26 | 41 | 80 | 30 | 32 | 55 | 45 | 111 |
| 4 | 34 | 30 | 27 | 26 | 27 | 36 | 71 | 36 | 30 | 44 | 89 | 486 |
| 5 | 31 | 30 | 29 | 26 | 26 | 26 | 48 | 38 | 27 | 43 | 181 | 84 |
| 6 | 31 | 34 | 28 | 26 | 25 | 34 | 44 | 56 | 26 | 38 | 66 | 48 |
| 7 | 32 | 34 | 27 | 26 | 25 | 38 | 42 | 38 | 24 | 167 | 46 | 42 |
| 8 | 31 | 33 | 26 | 26 | 27 | 48 | 38 | 32 | 24 | 392 | 42 | 55 |
| 9 | 32 | 36 | 26 | 26 | 29 | 122 | 38 | 31 | 23 | 672 | 2170 | 52 |
| 10 | 31 | 36 | 26 | 26 | 27 | 139 | 39 | 31 | 25 | 138 | 1920 | 36 |
| 11 | 32 | 32 | 26 | 26 | 25 | 129 | 38 | 31 | 22 | 72 | 285 | 40 |
| 12 | 33 | 30 | 26 | 26 | 23 | 200 | 36 | 30 | 22 | 122 | 141 | 234 |
| 13 | 32 | 28 | 27 | 26 | 21 | 165 | 49 | 29 | 25 | 58 | 93 | 369 |
| 14 | 33 | 30 | 28 | 26 | 20 | 96 | 65 | 30 | 35 | 36 | 71 | 86 |
| 15 | 30 | 32 | 29 | 26 | 19 | 66 | 57 | 31 | 36 | 31 | 57 | 54 |
| 16 | 33 | 33 | 30 | 25 | 18 | 57 | 46 | 34 | 32 | 30 | 125 | 43 |
| 17 | 33 | 33 | 30 | 25 | 19 | 47 | 45 | 36 | 67 | 30 | 188 | 194 |
| 18 | 31 | 38 | 29 | 24 | 20 | 43 | 38 | 38 | 107 | 28 | 68 | 164 |
| 19 | 32 | 36 | 28 | 24 | 21 | 39 | 60 | 36 | 79 | 24 | 51 | 66 |
| 20 | 31 | 36 | 27 | 24 | 22 | 37 | 52 | 67 | 57 | 29 | 46 | 52 |
| 21 | 32 | 33 | 26 | 24 | 23 | 36 | 40 | 57 | 43 | 1660 | 43 | 48 |
| 22 | 33 | 28 | 25 | 24 | 27 | 33 | 42 | 47 | 35 | 792 | 40 | 46 |
| 23 | 32 | 26 | 25 | 24 | 37 | 32 | 37 | 61 | 312 | 162 | 50 | 67 |
| 24 | 32 | 26 | 26 | 24 | 27 | 35 | 36 | 89 | 1860 | 633 | 43 | 82 |
| 25 | 31 | 30 | 27 | 24 | 37 | 36 | 35 | 66 | 301 | 1300 | 39 | 85 |
| 26 | 32 | 29 | 27 | 25 | 42 | 36 | 32 | 50 | 119 | 220 | 40 | 57 |
| 27 | 32 | 27 | 27 | 25 | 35 | 35 | 30 | 53 | 88 | 103 | 40 | 48 |
| 28 | 32 | 26 | 27 | 25 | 39 | 38 | 30 | 126 | 72 | 75 | 36 | 46 |
| 29 | 33 | 25 | 26 | 25 | --- | 46 | 27 | 97 | 61 | 63 | 33 | 101 |
| 30 | 32 | 24 | 26 | 25 | --- | 59 | 27 | 56 | 60 | 55 | 36 | 91 |
| 31 | 33 | --- | 26 | 25 | --- | 46 | --- | 45 | --- | 50 | 62 | --- |
| TOTAL | 1006 | 931 | 830 | 782 | 737 | 1853 | 1313 | 1478 | 3720 | 7302 | 6248 | 2989 |
| MEAN | 32.5 | 31.0 | 26.8 | 25.2 | 26.3 | 59.8 | 43.8 | 47.7 | 124 | 236 | 202 | 99.6 |
| MAX | 40 | 38 | 30 | 26 | 42 | 200 | 80 | 126 | 1860 | 1660 | 2170 | 486 |
| MIN | 30 | 24 | 24 | 24 | 18 | 26 | 27 | 28 | 22 | 24 | 33 | 36 |
| CFSM | .04 | .03 | .03 | .03 | .03 | .07 | .05 | .05 | .14 | .26 | .22 | .11 |
| IN. | .04 | .04 | .03 | .03 | .03 | .08 | .05 | .06 | .15 | .30 | .26 | .12 |
| AC-FT | 2000 | 1850 | 1650 | 1550 | 1460 | 3680 | 2600 | 2930 | 7360 | 14480 | 12390 | 5930 |

| CAL YR 1976 | TOTAL | 246D6 | MEAN 67.2 | MAX 931 | MIN 24 | CFSM .08 | IN 1.02 | AC-FT 48810 |
|-------------|-------|-------|-----------|----------|--------|----------|---------|-------------|
| WTR YR 1977 | TOTAL | 29169 | MEAN 80.0 | MAX 2170 | MIN 18 | CFSM .09 | IN 1.21 | AC-FT 57900 |

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) above mean sea level.

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.--5 years, 405 ft³/s (11.47 m³/s), 3.55 in/yr (90 mm/yr), 293,400 acre-ft/yr (362 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); minimum daily, 0.70 ft³/s (0.020 m³/s) Feb. 4, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 930 ft³/s (26.3 m³/s) Mar. 14, gage height, 7.76 ft (2.365 m), no peak above base of 1,500 ft³/s (42.5 m³/s); minimum daily, 0.70 ft³/s (0.020 m³/s) Feb. 4.

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 | 24 | 28 | 7.8 | 6.7 | 1.4 | 28 | 154 | 101 | 74 | 46 | 22 | 28 |
| 2 | 20 | 28 | 8.1 | 6.5 | 1.1 | 37 | 182 | 96 | 62 | 39 | 18 | 28 |
| 3 | 18 | 26 | 8.4 | 6.3 | .88 | 50 | 222 | 94 | 52 | 36 | 14 | 28 |
| 4 | 17 | 24 | 8.3 | 6.2 | .70 | 30 | 220 | 91 | 47 | 35 | 13 | 28 |
| 5 | 15 | 24 | 8.1 | 6.0 | .84 | 24 | 198 | 103 | 42 | 30 | 12 | 27 |
| 6 | 15 | 23 | 7.9 | 5.5 | 1.2 | 19 | 173 | 104 | 36 | 31 | 10 | 23 |
| 7 | 15 | 23 | 7.6 | 5.1 | 1.6 | 19 | 156 | 94 | 32 | 47 | 9.8 | 39 |
| 8 | 16 | 21 | 7.6 | 4.7 | 1.9 | 34 | 148 | 87 | 30 | 42 | 9.6 | 40 |
| 9 | 16 | 21 | 7.5 | 4.4 | 2.4 | 80 | 136 | 86 | 28 | 36 | 8.4 | 42 |
| 10 | 15 | 22 | 7.4 | 4.0 | 3.0 | 144 | 123 | 90 | 23 | 36 | 8.8 | 40 |
| 11 | 16 | 20 | 7.4 | 3.7 | 3.1 | 300 | 112 | 80 | 22 | 50 | 9.5 | 38 |
| 12 | 17 | 17 | 7.4 | 3.4 | 3.4 | 640 | 111 | 72 | 22 | 44 | 9.5 | 32 |
| 13 | 17 | 16 | 7.4 | 3.2 | 3.3 | 790 | 198 | 65 | 20 | 43 | 8.6 | 28 |
| 14 | 17 | 19 | 7.5 | 2.9 | 3.2 | 888 | 251 | 63 | 19 | 38 | 8.3 | 23 |
| 15 | 16 | 20 | 7.6 | 2.7 | 3.0 | 664 | 222 | 59 | 18 | 35 | 16 | 19 |
| 16 | 16 | 21 | 7.6 | 2.5 | 3.2 | 367 | 200 | 58 | 58 | 30 | 119 | 16 |
| 17 | 16 | 22 | 7.6 | 2.3 | 3.7 | 273 | 183 | 56 | 80 | 35 | 175 | 21 |
| 18 | 16 | 26 | 7.3 | 2.1 | 4.4 | 236 | 167 | 52 | 98 | 49 | 144 | 19 |
| 19 | 20 | 27 | 7.3 | 2.0 | 5.3 | 202 | 190 | 49 | 140 | 55 | 111 | 23 |
| 20 | 21 | 27 | 7.3 | 1.8 | 6.2 | 168 | 208 | 52 | 145 | 47 | 80 | 21 |
| 21 | 24 | 25 | 7.1 | 1.7 | 7.3 | 150 | 218 | 54 | 128 | 55 | 64 | 17 |
| 22 | 26 | 24 | 7.0 | 1.5 | 8.7 | 132 | 232 | 55 | 111 | 38 | 51 | 16 |
| 23 | 28 | 23 | 7.0 | 1.4 | 10 | 130 | 208 | 56 | 96 | 29 | 42 | 21 |
| 24 | 32 | 23 | 7.1 | 1.3 | 12 | 123 | 182 | 57 | 82 | 24 | 37 | 25 |
| 25 | 34 | 28 | 7.3 | 1.2 | 14 | 115 | 163 | 56 | 73 | 22 | 33 | 27 |
| 26 | 35 | 28 | 7.9 | 1.2 | 17 | 111 | 149 | 51 | 64 | 20 | 31 | 30 |
| 27 | 30 | 17 | 7.7 | 1.2 | 20 | 110 | 138 | 52 | 56 | 18 | 28 | 28 |
| 28 | 27 | 15 | 7.6 | 1.2 | 23 | 118 | 128 | 55 | 49 | 26 | 26 | 24 |
| 29 | 26 | 12 | 7.3 | 1.3 | --- | 145 | 116 | 51 | 49 | 28 | 23 | 23 |
| 30 | 27 | 9.6 | 7.1 | 1.3 | --- | 170 | 106 | 50 | 53 | 33 | 21 | 22 |
| 31 | 28 | --- | 6.9 | 1.3 | --- | 166 | --- | 61 | --- | 27 | 26 | --- |
| TOTAL | 660 | 659.6 | 233.1 | 96.6 | 165.82 | 6463 | 5194 | 2150 | 1809 | 1124 | 1188.5 | 796 |
| MEAN | 21.3 | 22.0 | 7.52 | 3.12 | 5.92 | 208 | 173 | 69.4 | 60.3 | 36.3 | 38.3 | 26.5 |
| MAX | 35 | 28 | 8.4 | 6.7 | 23 | 888 | 251 | 104 | 145 | 55 | 175 | 42 |
| MIN | 15 | 9.6 | 6.9 | 1.2 | .70 | 19 | 106 | 49 | 18 | 18 | 8.3 | 16 |
| CFSM | .01 | .01 | .005 | .002 | .004 | .13 | .11 | .05 | .04 | .02 | .03 | .02 |
| IN. | .02 | .02 | .01 | .00 | .00 | .16 | .12 | .05 | .04 | .03 | .03 | .02 |
| AC-FT | 1310 | 1310 | 462 | 192 | 329 | 12820 | 10300 | 4260 | 3590 | 2230 | 2360 | 1580 |

CAL YR 1976 TOTAL 65008.70 MEAN 178 MAX 1540 MIN 6.9 CFSM .12 IN 1.56 AC-FT 128900
WTR YR 1977 TOTAL 20539.62 MEAN 56.3 MAX 888 MIN .70 CFSM .04 IN .49 AC-FT 40740

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 10 ft (3 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) above mean sea level. 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.--50 years (1918-24, 1928-31, 1936-77), 685 ft³/s (19.40 m³/s), 3.72 in/yr (94 mm/yr), 496,300 acre-ft/yr (612 hm³/yr); median of yearly mean discharge, 540 ft³/s (15.3 m³/s), 2.9 in/yr (74 mm/yr), 391,000 acre-ft/yr (482 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,800 ft³/s (844 m³/s) Apr. 7, 1955, 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.

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.--Maximum discharge, 4,840 ft³/s (137 m³/s) June 23, gage height, 15.06 ft (4.590 m) at 0845 hours, no other peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 9.5 ft³/s (0.27 m³/s) Jan. 2 to Feb. 1.

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 | 48 | 64 | 36 | 10 | 9.5 | 30 | 265 | 192 | 157 | 134 | 120 | 160 |
| 2 | 47 | 62 | 35 | 9.5 | 10 | 30 | 325 | 175 | 128 | 165 | 110 | 130 |
| 3 | 45 | 59 | 35 | 9.5 | 10 | 30 | 356 | 175 | 120 | 115 | 110 | 110 |
| 4 | 45 | 60 | 35 | 9.5 | 11 | 30 | 356 | 195 | 115 | 93 | 180 | 100 |
| 5 | 44 | 58 | 33 | 9.5 | 10 | 30 | 356 | 395 | 104 | 78 | 120 | 90 |
| 6 | 43 | 56 | 31 | 9.5 | 10 | 28 | 338 | 224 | 92 | 170 | 90 | 80 |
| 7 | 42 | 55 | 29 | 9.5 | 10 | 28 | 310 | 200 | 83 | 219 | 85 | 91 |
| 8 | 42 | 51 | 28 | 9.5 | 10 | 50 | 281 | 184 | 77 | 295 | 85 | 84 |
| 9 | 42 | 51 | 27 | 9.5 | 12 | 100 | 255 | 167 | 72 | 208 | 1100 | 81 |
| 10 | 42 | 55 | 26 | 9.5 | 16 | 200 | 235 | 150 | 71 | 148 | 350 | 104 |
| 11 | 42 | 45 | 25 | 9.5 | 18 | 800 | 214 | 140 | 67 | 136 | 79 | 105 |
| 12 | 42 | 35 | 25 | 9.5 | 17 | 1500 | 202 | 141 | 67 | 145 | 70 | 100 |
| 13 | 41 | 38 | 25 | 9.5 | 17 | 1300 | 240 | 135 | 67 | 145 | 65 | 105 |
| 14 | 40 | 40 | 26 | 9.5 | 16 | 1050 | 258 | 128 | 64 | 131 | 60 | 95 |
| 15 | 40 | 45 | 26 | 9.5 | 14 | 900 | 304 | 120 | 60 | 125 | 60 | 90 |
| 16 | 40 | 48 | 27 | 9.5 | 14 | 999 | 340 | 114 | 64 | 115 | 500 | 85 |
| 17 | 41 | 49 | 27 | 9.5 | 15 | 800 | 320 | 111 | 131 | 110 | 200 | 90 |
| 18 | 41 | 54 | 33 | 9.5 | 17 | 600 | 304 | 106 | 256 | 130 | 140 | 120 |
| 19 | 45 | 53 | 33 | 9.5 | 19 | 450 | 403 | 101 | 199 | 170 | 160 | 80 |
| 20 | 47 | 58 | 28 | 9.5 | 21 | 350 | 299 | 101 | 158 | 350 | 180 | 75 |
| 21 | 49 | 47 | 21 | 9.5 | 25 | 280 | 326 | 110 | 143 | 1000 | 300 | 70 |
| 22 | 49 | 45 | 19 | 9.5 | 35 | 240 | 330 | 143 | 152 | 500 | 250 | 200 |
| 23 | 52 | 47 | 17 | 9.5 | 40 | 230 | 320 | 120 | 1800 | 250 | 160 | 170 |
| 24 | 64 | 50 | 16 | 9.5 | 38 | 225 | 318 | 116 | 451 | 1100 | 130 | 200 |
| 25 | 75 | 60 | 16 | 9.5 | 35 | 220 | 295 | 110 | 227 | 463 | 120 | 130 |
| 26 | 71 | 60 | 16 | 9.5 | 33 | 210 | 270 | 104 | 176 | 302 | 110 | 110 |
| 27 | 75 | 35 | 16 | 9.5 | 32 | 210 | 252 | 134 | 145 | 183 | 100 | 90 |
| 28 | 72 | 45 | 14 | 9.5 | 31 | 220 | 234 | 196 | 125 | 160 | 90 | 100 |
| 29 | 72 | 40 | 13 | 9.5 | --- | 230 | 216 | 247 | 113 | 150 | 85 | 128 |
| 30 | 71 | 37 | 12 | 9.5 | --- | 250 | 206 | 221 | 117 | 130 | 90 | 119 |
| 31 | 66 | --- | 11 | 9.5 | --- | 261 | --- | 195 | --- | 120 | 400 | --- |
| TOTAL | 1575 | 1502 | 761 | 295.0 | 545.5 | 11881 | 8730 | 4950 | 5601 | 7540 | 5699 | 3292 |
| MEAN | 50.8 | 50.1 | 24.5 | 9.52 | 19.5 | 383 | 291 | 160 | 187 | 243 | 184 | 110 |
| MAX | 75 | 64 | 36 | 10 | 40 | 1500 | 403 | 395 | 1800 | 1100 | 1100 | 200 |
| MIN | 40 | 35 | 11 | 9.5 | 9.5 | 28 | 202 | 101 | 60 | 78 | 60 | 70 |
| CFSM | .02 | .02 | .01 | .004 | .008 | .15 | .12 | .06 | .08 | .10 | .07 | .04 |
| IN. | .02 | .02 | .01 | .00 | .01 | .18 | .13 | .07 | .08 | .11 | .08 | .05 |
| AC-FT | 3120 | 2980 | 1510 | 585 | 1080 | 23570 | 17320 | 9820 | 11110 | 14960 | 11300 | 6530 |

| | | | | | | | | |
|-------------|-------|----------|----------|----------|---------|----------|---------|--------------|
| CAL YR 1976 | TOTAL | 113873.0 | MEAN 311 | MAX 1830 | MIN 11 | CFSM .12 | IN 1.69 | AC-FT 225900 |
| WTR YR 1977 | TOTAL | 52371.5 | MEAN 143 | MAX 1800 | MIN 9.5 | CFSM .06 | IN .78 | AC-FT 103900 |

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) above mean sea level. 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.--36 years, 225 ft³/s (6.372 m³/s), 4.57 in/yr (116 mm/yr), 163,000 acre-ft/yr (201 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,700 ft³/s (445 m³/s) Feb. 19, 1971, gage height, 15.17 ft (4.624 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.

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

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) |
|---------|------|---|-------------------------|--------|------|---|-------------------------|
| July 20 | 2215 | *5,750 163 | *9.83 2.996 | Aug. 9 | 1515 | 4,480 127 | 8.75 2.667 |
| July 24 | 0700 | 4,980 141 | 9.19 2.801 | | | | |

Minimum daily discharge, 3.7 ft³/s (0.10 m³/s) Jan. 30 to Feb. 1.

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 | 31 | 36 | 18 | 8.0 | 3.7 | 21 | 65 | 33 | 50 | 43 | 40 | 193 |
| 2 | 30 | 36 | 17 | 7.0 | 3.8 | 20 | 177 | 32 | 37 | 40 | 41 | 97 |
| 3 | 28 | 34 | 17 | 6.5 | 3.9 | 20 | 194 | 32 | 32 | 39 | 41 | 85 |
| 4 | 30 | 36 | 17 | 6.0 | 4.0 | 20 | 145 | 53 | 30 | 36 | 40 | 75 |
| 5 | 31 | 31 | 17 | 5.6 | 4.0 | 20 | 112 | 77 | 26 | 33 | 44 | 63 |
| 6 | 31 | 32 | 16 | 5.4 | 4.0 | 22 | 90 | 58 | 24 | 32 | 40 | 58 |
| 7 | 31 | 33 | 16 | 5.2 | 4.0 | 30 | 78 | 64 | 22 | 55 | 38 | 57 |
| 8 | 30 | 30 | 16 | 5.0 | 4.2 | 50 | 68 | 56 | 21 | 54 | 37 | 63 |
| 9 | 30 | 36 | 16 | 4.8 | 5.5 | 90 | 60 | 47 | 23 | 41 | 2550 | 58 |
| 10 | 30 | 36 | 16 | 4.6 | 6.5 | 150 | 53 | 40 | 22 | 35 | 793 | 56 |
| 11 | 33 | 31 | 15 | 4.5 | 7.0 | 248 | 46 | 33 | 27 | 37 | 213 | 56 |
| 12 | 32 | 15 | 15 | 4.4 | 8.0 | 359 | 43 | 31 | 30 | 36 | 146 | 242 |
| 13 | 32 | 20 | 15 | 4.3 | 8.5 | 265 | 93 | 35 | 42 | 34 | 118 | 282 |
| 14 | 29 | 30 | 15 | 4.2 | 8.2 | 156 | 87 | 32 | 44 | 33 | 101 | 113 |
| 15 | 30 | 33 | 15 | 4.1 | 8.0 | 115 | 79 | 29 | 35 | 40 | 135 | 82 |
| 16 | 29 | 37 | 14 | 4.0 | 8.0 | 90 | 73 | 25 | 37 | 33 | 172 | 69 |
| 17 | 29 | 38 | 14 | 4.0 | 8.5 | 77 | 68 | 24 | 58 | 32 | 154 | 64 |
| 18 | 32 | 40 | 14 | 4.0 | 9.0 | 72 | 64 | 23 | 50 | 36 | 122 | 61 |
| 19 | 38 | 43 | 14 | 4.0 | 10 | 67 | 81 | 24 | 50 | 44 | 110 | 56 |
| 20 | 41 | 41 | 14 | 4.0 | 12 | 66 | 62 | 37 | 53 | 501 | 99 | 55 |
| 21 | 39 | 42 | 14 | 4.0 | 15 | 60 | 61 | 45 | 54 | 685 | 152 | 53 |
| 22 | 38 | 28 | 14 | 4.0 | 20 | 56 | 60 | 92 | 46 | 297 | 158 | 69 |
| 23 | 38 | 32 | 14 | 4.0 | 23 | 55 | 53 | 45 | 1120 | 168 | 125 | 85 |
| 24 | 40 | 34 | 15 | 4.0 | 25 | 53 | 51 | 34 | 578 | 1730 | 104 | 82 |
| 25 | 44 | 41 | 16 | 4.0 | 25 | 51 | 47 | 28 | 242 | 300 | 94 | 67 |
| 26 | 43 | 42 | 16 | 3.9 | 24 | 53 | 45 | 30 | 108 | 150 | 90 | 62 |
| 27 | 41 | 30 | 16 | 3.9 | 23 | 52 | 41 | 52 | 72 | 90 | 85 | 59 |
| 28 | 38 | 25 | 14 | 3.8 | 22 | 65 | 41 | 156 | 57 | 75 | 80 | 55 |
| 29 | 38 | 21 | 12 | 3.8 | --- | 101 | 38 | 133 | 49 | 59 | 78 | 63 |
| 30 | 40 | 19 | 10 | 3.7 | --- | 89 | 39 | 106 | 49 | 50 | 75 | 68 |
| 31 | 37 | --- | 9.0 | 3.7 | --- | 72 | --- | 67 | --- | 44 | 231 | --- |
| TOTAL | 1063 | 982 | 461.0 | 142.4 | 307.8 | 2665 | 2214 | 1573 | 3088 | 4882 | 6306 | 2548 |
| MEAN | 34.3 | 32.7 | 14.9 | 4.59 | 11.0 | 86.0 | 73.8 | 50.7 | 103 | 157 | 203 | 84.9 |
| MAX | 44 | 43 | 18 | 8.0 | 25 | 359 | 194 | 156 | 1120 | 1730 | 2550 | 282 |
| MIN | 28 | 15 | 9.0 | 3.7 | 3.7 | 20 | 38 | 23 | 21 | 32 | 37 | 53 |
| CFSM | .05 | .05 | .02 | .007 | .02 | .13 | .11 | .08 | .15 | .24 | .30 | .13 |
| IN. | .06 | .05 | .03 | .01 | .02 | .15 | .12 | .09 | .17 | .27 | .35 | .14 |
| AC-FT | 2110 | 1950 | 914 | 282 | 611 | 5290 | 4390 | 3120 | 6130 | 9680 | 12510 | 5050 |

| | | | | | | | | |
|-------------|-------|---------|-----------|----------|---------|----------|---------|-------------|
| CAL YR 1976 | TOTAL | 31733.0 | MEAN 86.7 | MAX 929 | MIN 9.0 | CFSM .13 | IN 1.76 | AC-FT 62940 |
| WTR YR 1977 | TOTAL | 26232.2 | MEAN 71.9 | MAX 2550 | MIN 3.7 | CFSM .11 | IN 1.46 | AC-FT 52030 |

LITTLE SIOUX RIVER BASIN

06607500 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 (7.6 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) above mean sea level (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.--19 years, 1,041 ft³/s (29.48 m³/s), 4.01 in/yr (102 mm/yr), 754,200 acre-ft/yr (930 hm³/yr); median of yearly mean discharges, 807 ft³/s (22.9 m³/s), 3.1 in/yr (79 mm/yr), 505,000 acre-ft/yr (720 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 (ft ³ /s) (m ³ /s) | Gage height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) |
|---------|------|---|-------------------------|--------|------|---|-------------------------|
| June 23 | 2300 | 4,800 136 | 15.14 4.615 | Aug. 9 | 2015 | *7,280 206 | *18.00 5.406 |

Minimum daily discharge, 17 ft³/s (0.48 m³/s) Jan. 18-20, Jan. 28 to Feb. 1.

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 | 94 | 118 | 76 | 21 | 17 | 80 | 393 | 266 | 249 | 203 | 176 | 511 |
| 2 | 90 | 116 | 72 | 20 | 18 | 80 | 488 | 248 | 219 | 180 | 176 | 277 |
| 3 | 85 | 109 | 70 | 19 | 19 | 84 | 667 | 249 | 188 | 229 | 161 | 232 |
| 4 | 80 | 101 | 70 | 19 | 20 | 90 | 589 | 256 | 176 | 197 | 163 | 201 |
| 5 | 78 | 105 | 66 | 19 | 20 | 100 | 539 | 299 | 150 | 167 | 253 | 176 |
| 6 | 82 | 109 | 62 | 19 | 20 | 120 | 502 | 450 | 137 | 150 | 176 | 166 |
| 7 | 78 | 105 | 60 | 19 | 20 | 200 | 450 | 323 | 143 | 304 | 139 | 139 |
| 8 | 78 | 107 | 58 | 19 | 22 | 240 | 409 | 280 | 118 | 320 | 132 | 145 |
| 9 | 85 | 107 | 56 | 19 | 25 | 266 | 380 | 253 | 117 | 275 | 3150 | 183 |
| 10 | 84 | 101 | 56 | 19 | 29 | 295 | 365 | 235 | 102 | 256 | 3010 | 159 |
| 11 | 85 | 94 | 56 | 19 | 35 | 336 | 333 | 215 | 96 | 220 | 621 | 172 |
| 12 | 85 | 90 | 56 | 19 | 37 | 1430 | 307 | 199 | 95 | 179 | 363 | 201 |
| 13 | 84 | 95 | 56 | 19 | 35 | 2040 | 354 | 191 | 108 | 174 | 267 | 617 |
| 14 | 82 | 100 | 56 | 19 | 32 | 1590 | 371 | 187 | 121 | 181 | 213 | 324 |
| 15 | 77 | 110 | 56 | 19 | 30 | 1220 | 361 | 184 | 108 | 183 | 203 | 207 |
| 16 | 75 | 115 | 58 | 18 | 30 | 1190 | 389 | 168 | 114 | 186 | 480 | 167 |
| 17 | 77 | 135 | 62 | 18 | 32 | 1210 | 425 | 160 | 126 | 196 | 473 | 161 |
| 18 | 82 | 118 | 68 | 17 | 34 | 856 | 410 | 155 | 140 | 161 | 372 | 200 |
| 19 | 89 | 113 | 66 | 17 | 36 | 667 | 410 | 152 | 234 | 178 | 271 | 156 |
| 20 | 92 | 118 | 55 | 17 | 45 | 573 | 490 | 160 | 236 | 224 | 296 | 143 |
| 21 | 94 | 110 | 45 | 18 | 60 | 495 | 391 | 174 | 204 | 2980 | 308 | 138 |
| 22 | 94 | 100 | 40 | 18 | 80 | 449 | 394 | 210 | 193 | 985 | 525 | 136 |
| 23 | 98 | 97 | 38 | 18 | 90 | 405 | 405 | 255 | 1490 | 519 | 387 | 259 |
| 24 | 100 | 100 | 37 | 19 | 100 | 389 | 383 | 188 | 2650 | 1360 | 279 | 297 |
| 25 | 100 | 110 | 36 | 19 | 96 | 365 | 370 | 167 | 822 | 1570 | 243 | 244 |
| 26 | 114 | 115 | 35 | 19 | 92 | 340 | 349 | 157 | 414 | 665 | 224 | 198 |
| 27 | 120 | 100 | 35 | 18 | 90 | 323 | 326 | 179 | 298 | 356 | 212 | 178 |
| 28 | 118 | 90 | 35 | 17 | 88 | 332 | 307 | 235 | 248 | 281 | 181 | 165 |
| 29 | 124 | 85 | 30 | 17 | --- | 385 | 287 | 294 | 226 | 245 | 160 | 170 |
| 30 | 122 | 80 | 25 | 17 | --- | 429 | 277 | 327 | 210 | 218 | 161 | 212 |
| 31 | 120 | --- | 23 | 17 | --- | 383 | --- | 296 | --- | 193 | 474 | --- |
| TOTAL | 2866 | 3153 | 1614 | 572 | 1252 | 16962 | 12121 | 7112 | 9732 | 13535 | 14249 | 6514 |
| MEAN | 92.5 | 105 | 52.1 | 18.5 | 44.7 | 547 | 404 | 229 | 324 | 437 | 460 | 217 |
| MAX | 124 | 135 | 76 | 21 | 100 | 2040 | 667 | 450 | 2650 | 2980 | 3150 | 617 |
| MIN | 75 | 80 | 23 | 17 | 17 | 80 | 277 | 152 | 95 | 150 | 132 | 136 |
| CFSM | .03 | .03 | .02 | .005 | .01 | .16 | .12 | .07 | .09 | .12 | .13 | .06 |
| IN. | .03 | .03 | .02 | .01 | .01 | .18 | .13 | .08 | .10 | .14 | .15 | .07 |
| AC-FT | 5680 | 6250 | 3200 | 1130 | 2480 | 33640 | 24040 | 14110 | 19300 | 26850 | 28260 | 12920 |

| CAL YR 1976 | TOTAL | 159572 | MEAN 436 | MAX 2460 | MIN 23 | CFSM .12 | IN 1.68 | AC-FT 316500 |
|-------------|-------|--------|----------|----------|--------|----------|---------|--------------|
| WTR YR 1977 | TOTAL | 89682 | MEAN 246 | MAX 3150 | MIN 17 | CFSM .07 | IN .95 | AC-FT 177900 |

06608500 SOLDIER RIVER AT PISGAH, IA

LOCATION.--Lat. 41°49'52", long 95°55'50", 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) above mean sea level. Prior to Oct. 11, 1954, nonrecording gage at same site and datum with supplementary water-stage recorder operating above 8.2 ft (2.50 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.--37 years, 123 ft³/s (3.433 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, 13,600 ft³/s (385 m³/s) Aug. 31, gage height, 23.85 ft (7.269 m) at 0700 hours, no other peak above base of 5,000 ft³/s (142 m³/s); minimum daily, 6.0 ft³/s (0.17 m³/s) Jan. 26 to Feb. 3.

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 | 18 | 21 | 12 | 7.0 | 6.0 | 23 | 46 | 23 | 23 | 77 | 22 | 360 |
| 2 | 16 | 20 | 11 | 7.0 | 6.0 | 23 | 85 | 22 | 18 | 41 | 30 | 172 |
| 3 | 16 | 19 | 10 | 7.0 | 6.0 | 30 | 108 | 23 | 53 | 33 | 21 | 988 |
| 4 | 17 | 18 | 9.5 | 7.0 | 6.0 | 35 | 75 | 24 | 22 | 32 | 19 | 236 |
| 5 | 17 | 19 | 9.5 | 7.0 | 6.0 | 40 | 57 | 67 | 16 | 28 | 128 | 90 |
| 6 | 18 | 20 | 9.0 | 7.0 | 6.0 | 50 | 48 | 106 | 13 | 25 | 67 | 60 |
| 7 | 14 | 20 | 8.5 | 7.0 | 6.0 | 60 | 42 | 66 | 12 | 23 | 35 | 58 |
| 8 | 15 | 20 | 8.0 | 7.0 | 6.0 | 100 | 42 | 38 | 12 | 21 | 26 | 59 |
| 9 | 16 | 23 | 8.0 | 7.0 | 6.5 | 148 | 34 | 31 | 11 | 20 | 1060 | 141 |
| 10 | 16 | 23 | 8.0 | 7.0 | 8.0 | 132 | 32 | 28 | 9.0 | 21 | 302 | 57 |
| 11 | 17 | 16 | 8.0 | 7.0 | 8.5 | 152 | 30 | 25 | 9.0 | 24 | 76 | 41 |
| 12 | 17 | 14 | 8.0 | 7.0 | 9.0 | 169 | 33 | 23 | 9.0 | 21 | 53 | 37 |
| 13 | 16 | 13 | 8.0 | 7.0 | 9.0 | 114 | 58 | 21 | 34 | 17 | 57 | 42 |
| 14 | 16 | 14 | 8.0 | 7.0 | 8.6 | 90 | 69 | 20 | 47 | 17 | 43 | 55 |
| 15 | 16 | 15 | 8.5 | 7.0 | 7.5 | 68 | 43 | 19 | 17 | 73 | 116 | 50 |
| 16 | 15 | 17 | 8.5 | 6.5 | 7.5 | 62 | 39 | 20 | 60 | 35 | 895 | 44 |
| 17 | 14 | 19 | 9.0 | 6.5 | 9.0 | 58 | 44 | 19 | 95 | 209 | 113 | 36 |
| 18 | 16 | 21 | 9.0 | 6.5 | 10 | 53 | 85 | 19 | 31 | 56 | 73 | 33 |
| 19 | 21 | 23 | 8.5 | 6.5 | 12 | 52 | 59 | 19 | 17 | 30 | 60 | 33 |
| 20 | 23 | 24 | 8.5 | 6.5 | 15 | 49 | 40 | 22 | 13 | 24 | 48 | 33 |
| 21 | 23 | 24 | 8.0 | 6.5 | 20 | 43 | 43 | 29 | 11 | 1200 | 44 | 30 |
| 22 | 22 | 28 | 8.0 | 6.5 | 22 | 43 | 44 | 48 | 12 | 174 | 78 | 30 |
| 23 | 23 | 22 | 7.5 | 6.5 | 24 | 42 | 36 | 44 | 1080 | 68 | 44 | 31 |
| 24 | 22 | 23 | 7.5 | 6.5 | 26 | 40 | 31 | 28 | 340 | 584 | 34 | 72 |
| 25 | 22 | 25 | 7.5 | 6.5 | 26 | 38 | 28 | 22 | 116 | 173 | 34 | 41 |
| 26 | 28 | 25 | 7.5 | 6.0 | 26 | 38 | 28 | 19 | 69 | 58 | 29 | 30 |
| 27 | 21 | 22 | 7.5 | 6.0 | 26 | 40 | 27 | 52 | 46 | 41 | 30 | 30 |
| 28 | 20 | 19 | 7.5 | 6.0 | 26 | 55 | 26 | 385 | 41 | 35 | 29 | 30 |
| 29 | 20 | 16 | 7.5 | 6.0 | --- | 103 | 24 | 99 | 32 | 32 | 27 | 36 |
| 30 | 20 | 14 | 7.0 | 6.0 | --- | 84 | 24 | 55 | 82 | 28 | 83 | 31 |
| 31 | 21 | --- | 7.0 | 6.0 | --- | 50 | --- | 36 | --- | 25 | 6340 | --- |
| TOTAL | 576 | 597 | 260.0 | 206.0 | 354.6 | 2084 | 1380 | 1452 | 2350.0 | 3245 | 10016 | 3014 |
| MEAN | 18.6 | 19.9 | 8.39 | 6.65 | 12.7 | 67.2 | 46.0 | 46.8 | 78.3 | 105 | 323 | 100 |
| MAX | 28 | 28 | 12 | 7.0 | 26 | 169 | 108 | 385 | 1080 | 1200 | 6340 | 988 |
| MIN | 14 | 13 | 7.0 | 6.0 | 6.0 | 23 | 24 | 19 | 9.0 | 17 | 19 | 30 |
| CFSM | .05 | .05 | .02 | .02 | .03 | .17 | .11 | .12 | .19 | .26 | .79 | .25 |
| IN. | .05 | .05 | .02 | .02 | .03 | .19 | .13 | .13 | .21 | .30 | .92 | .28 |
| AC-FT | 1140 | 1180 | 516 | 409 | 703 | 4130 | 2740 | 2880 | 4660 | 6440 | 19870 | 5980 |
| CAL YR 1976 | TOTAL | 16737.7 | MEAN 45.7 | MAX 1030 | MIN 7.0 | CFSM .11 | IN 1.53 | AC-FT 33200 | | | | |
| WTR YR 1977 | TOTAL | 25534.6 | MEAN 70.0 | MAX 6340 | MIN 6.0 | CFSM .17 | IN 2.33 | AC-FT 50650 | | | | |

BOYER RIVER BASIN

06609500 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 955: 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) above mean sea level (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.--45 years (water years 1919-24, 1939-77), 303 ft³/s (8,581 m³/s), 4.72 in/yr (120 mm/yr), 219,500 acre-ft/yr (271 hm³/yr); median of yearly mean discharge, 270 ft³/s (7.65 m³/s), 4.2 in/yr (107 mm/yr), 196,000 acre-ft/yr (242 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, 3,860 ft³/s (109 m³/s) Aug. 31, gage height, 11.38 ft (3.469 m), no peak above base of 6,000 ft³/s (170 m³/s); minimum daily, 2.5 ft³/s (0.071 m³/s) Jan. 18 to Feb. 2, Feb. 7.

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 | 27 | 38 | 18 | 9.8 | 2.5 | 70 | 73 | 34 | 37 | 62 | 16 | 828 |
| 2 | 26 | 35 | 17 | 9.7 | 2.5 | 80 | 72 | 33 | 29 | 44 | 18 | 222 |
| 3 | 28 | 32 | 17 | 9.6 | 2.6 | 90 | 136 | 37 | 26 | 28 | 15 | 1030 |
| 4 | 30 | 31 | 17 | 9.6 | 2.6 | 100 | 169 | 45 | 25 | 27 | 13 | 927 |
| 5 | 27 | 28 | 17 | 9.5 | 2.6 | 120 | 127 | 96 | 20 | 22 | 43 | 210 |
| 6 | 29 | 28 | 15 | 9.4 | 2.6 | 150 | 98 | 92 | 21 | 18 | 44 | 117 |
| 7 | 23 | 28 | 12 | 9.2 | 2.5 | 200 | 82 | 109 | 16 | 13 | 25 | 132 |
| 8 | 21 | 26 | 11 | 8.6 | 2.6 | 222 | 66 | 85 | 18 | 11 | 24 | 98 |
| 9 | 21 | 30 | 10 | 8.0 | 3.0 | 239 | 57 | 50 | 14 | 9.0 | 32 | 186 |
| 10 | 21 | 30 | 10 | 7.0 | 4.0 | 231 | 50 | 37 | 14 | 9.0 | 278 | 127 |
| 11 | 20 | 25 | 10 | 6.0 | 5.0 | 228 | 45 | 32 | 12 | 22 | 346 | 64 |
| 12 | 21 | 20 | 10 | 5.4 | 7.0 | 408 | 44 | 30 | 17 | 19 | 111 | 52 |
| 13 | 21 | 25 | 10 | 5.0 | 8.0 | 313 | 48 | 28 | 29 | 13 | 67 | 76 |
| 14 | 20 | 30 | 11 | 4.5 | 9.0 | 203 | 49 | 30 | 30 | 10 | 49 | 73 |
| 15 | 20 | 33 | 12 | 4.0 | 8.0 | 159 | 56 | 29 | 19 | 145 | 44 | 48 |
| 16 | 21 | 36 | 13 | 3.0 | 7.0 | 131 | 48 | 26 | 18 | 27 | 280 | 36 |
| 17 | 20 | 40 | 15 | 2.7 | 8.0 | 100 | 53 | 26 | 176 | 45 | 115 | 34 |
| 18 | 24 | 39 | 20 | 2.5 | 10 | 86 | 57 | 42 | 107 | 35 | 66 | 35 |
| 19 | 28 | 41 | 18 | 2.5 | 15 | 79 | 46 | 79 | 39 | 16 | 45 | 29 |
| 20 | 30 | 41 | 16 | 2.5 | 20 | 77 | 49 | 271 | 24 | 12 | 41 | 29 |
| 21 | 33 | 38 | 12 | 2.5 | 22 | 79 | 116 | 579 | 21 | 189 | 34 | 30 |
| 22 | 33 | 36 | 11 | 2.6 | 25 | 70 | 109 | 377 | 22 | 131 | 48 | 26 |
| 23 | 33 | 35 | 11 | 2.5 | 30 | 67 | 72 | 109 | 476 | 46 | 56 | 39 |
| 24 | 35 | 34 | 11 | 2.5 | 36 | 59 | 56 | 67 | 1440 | 351 | 45 | 74 |
| 25 | 38 | 39 | 12 | 2.5 | 45 | 58 | 47 | 43 | 345 | 93 | 39 | 61 |
| 26 | 37 | 40 | 13 | 2.5 | 50 | 57 | 41 | 39 | 200 | 59 | 32 | 44 |
| 27 | 36 | 28 | 15 | 2.5 | 55 | 58 | 38 | 153 | 103 | 32 | 31 | 35 |
| 28 | 41 | 23 | 13 | 2.5 | 60 | 78 | 37 | 275 | 137 | 25 | 28 | 32 |
| 29 | 40 | 20 | 11 | 2.5 | --- | 129 | 34 | 345 | 61 | 25 | 19 | 28 |
| 30 | 38 | 19 | 10 | 2.5 | --- | 146 | 33 | 60 | 42 | 24 | 22 | 32 |
| 31 | 39 | --- | 9.8 | 2.5 | --- | 97 | --- | 48 | --- | 18 | 2110 | --- |
| TOTAL | 881 | 948 | 406.8 | 156.0 | 446.5 | 4184 | 2008 | 3306 | 3538 | 1580.0 | 4135 | 4754 |
| MEAN | 28.4 | 31.6 | 13.1 | 5.03 | 15.9 | 135 | 66.9 | 107 | 118 | 51.0 | 133 | 158 |
| MAX | 41 | 41 | 20 | 9.8 | 60 | 408 | 169 | 579 | 1440 | 351 | 2110 | 1030 |
| MIN | 20 | 19 | 9.8 | 2.5 | 2.6 | 57 | 33 | 26 | 12 | 9.0 | 13 | 26 |
| CFSM | .03 | .04 | .02 | .006 | .02 | .16 | .08 | .12 | .14 | .06 | .15 | .18 |
| IN. | .04 | .04 | .02 | .01 | .02 | .18 | .09 | .14 | .15 | .07 | .18 | .20 |
| AC-FT | 1750 | 1880 | 807 | 309 | 886 | 8300 | 3980 | 6660 | 7020 | 3130 | 8200 | 9430 |

| | | | | | | | | |
|-------------|-------|---------|-----------|----------|---------|----------|---------|-------------|
| CAL YR 1976 | TOTAL | 33784.8 | MEAN 92.3 | MAX 1740 | MIN 9.8 | CFSM .11 | IN 1.44 | AC-FT 67010 |
| WTR YR 1977 | TOTAL | 26343.3 | MEAN 72.2 | MAX 2110 | MIN 2.6 | CFSM .08 | IN 1.13 | AC-FT 52250 |

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 m² (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 968.24 ft (292.072 m) above mean sea level. See WSP 1730 for history of changes prior to Sept. 30, 1936.

REMARKS.--Records good. Flow regulated by upstream main-stem reservoirs. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--49 years, 29,350 ft³/s (831.2 m³/s), 21,260,000 acre-ft/yr (26,200 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, 51,400 ft³/s (1,460 m³/s) Aug. 31, gage height, 10.37 ft (3.161 m); minimum daily, 11,500 ft³/s (326 m³/s) Jan. 31; minimum gage height observed, 2.62 ft (0.799 m) Mar. 7.

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 | 39600 | 37100 | 34400 | 20500 | 13000 | 16700 | 33200 | 33100 | 31900 | 33300 | 36900 | 41500 |
| 2 | 39500 | 37400 | 36300 | 21200 | 15000 | 17200 | 35300 | 33600 | 31700 | 32600 | 37700 | 35200 |
| 3 | 40100 | 37300 | 38400 | 21500 | 17000 | 17400 | 36800 | 33500 | 31500 | 32800 | 38200 | 32700 |
| 4 | 40000 | 37500 | 38300 | 21900 | 18000 | 17600 | 34600 | 33000 | 31300 | 33400 | 37800 | 37700 |
| 5 | 40000 | 37400 | 34500 | 22500 | 18000 | 18400 | 33000 | 33400 | 31400 | 33200 | 37800 | 35000 |
| 6 | 39600 | 36800 | 30200 | 22400 | 17500 | 18300 | 32300 | 33500 | 31400 | 33100 | 38600 | 32100 |
| 7 | 39300 | 36900 | 27000 | 22000 | 18000 | 17500 | 32000 | 32800 | 30900 | 34000 | 37500 | 31600 |
| 8 | 37700 | 36700 | 24400 | 21300 | 18500 | 17700 | 31000 | 32800 | 30700 | 35800 | 35700 | 31500 |
| 9 | 36800 | 37900 | 22800 | 19800 | 19000 | 17200 | 31700 | 32100 | 30400 | 36300 | 36400 | 31600 |
| 10 | 36200 | 38200 | 22000 | 20500 | 19500 | 17700 | 32300 | 32300 | 31400 | 35900 | 43500 | 32300 |
| 11 | 36100 | 38600 | 22000 | 20900 | 20000 | 18900 | 31300 | 32100 | 32700 | 34700 | 39000 | 31800 |
| 12 | 36500 | 38100 | 21600 | 21200 | 20500 | 18300 | 32300 | 31600 | 34100 | 34300 | 32000 | 31800 |
| 13 | 37200 | 37600 | 21600 | 21300 | 21000 | 21700 | 33100 | 31800 | 34600 | 34500 | 32200 | 32600 |
| 14 | 37300 | 37200 | 22200 | 20300 | 21000 | 22300 | 33000 | 31800 | 35600 | 33100 | 32300 | 33900 |
| 15 | 37700 | 37100 | 21600 | 19800 | 20000 | 20800 | 32800 | 33000 | 35100 | 34100 | 33800 | 31600 |
| 16 | 37100 | 36500 | 21800 | 21600 | 18000 | 22300 | 31200 | 33600 | 34000 | 34100 | 37700 | 31000 |
| 17 | 36900 | 36800 | 21800 | 21400 | 16700 | 25000 | 31300 | 33100 | 34600 | 35000 | 37200 | 33000 |
| 18 | 36300 | 37300 | 22000 | 20900 | 16400 | 26200 | 32100 | 33300 | 35800 | 34900 | 35300 | 34400 |
| 19 | 36900 | 37500 | 22200 | 20700 | 17200 | 26200 | 32100 | 33700 | 35300 | 33900 | 31600 | 34100 |
| 20 | 37100 | 37900 | 22500 | 21000 | 17900 | 29200 | 32900 | 33600 | 33600 | 33500 | 32300 | 33300 |
| 21 | 37100 | 38300 | 22100 | 21000 | 17500 | 35400 | 33200 | 34900 | 32000 | 37600 | 36000 | 32600 |
| 22 | 37100 | 37400 | 20500 | 21000 | 17600 | 34300 | 33300 | 35000 | 32300 | 42700 | 35100 | 32800 |
| 23 | 37100 | 37000 | 21000 | 21000 | 18800 | 30600 | 32500 | 33900 | 33300 | 37400 | 35000 | 34200 |
| 24 | 37300 | 36700 | 23100 | 21000 | 19100 | 30600 | 31400 | 34000 | 41600 | 34800 | 34800 | 33600 |
| 25 | 37700 | 37100 | 21500 | 20000 | 18300 | 34300 | 31000 | 31700 | 39400 | 37700 | 34000 | 34100 |
| 26 | 37300 | 38000 | 21500 | 16000 | 17700 | 35000 | 31700 | 31800 | 31700 | 36900 | 33600 | 34100 |
| 27 | 37400 | 38100 | 22000 | 15000 | 17200 | 33900 | 33300 | 33000 | 32300 | 34400 | 33400 | 33700 |
| 28 | 38000 | 38000 | 21500 | 14000 | 16700 | 35000 | 32700 | 36100 | 32800 | 34400 | 32400 | 33400 |
| 29 | 36700 | 36500 | 21800 | 13000 | --- | 35800 | 32200 | 36600 | 32300 | 34600 | 31300 | 33300 |
| 30 | 36600 | 35300 | 21200 | 12000 | --- | 36600 | 32500 | 33700 | 33300 | 35600 | 32100 | 34300 |
| 31 | 36900 | --- | 20800 | 11500 | --- | 34600 | --- | 31900 | --- | 37000 | 41700 | --- |
| TOTAL | 1167200 | 1120300 | 764600 | 608200 | 505100 | 782700 | 978100 | 1030300 | 999000 | 1085600 | 1102900 | 1004800 |
| MEAN | 37650 | 37340 | 24660 | 19620 | 18040 | 25250 | 32600 | 33240 | 33300 | 35020 | 35580 | 33490 |
| MAX | 40100 | 38600 | 38400 | 22500 | 21000 | 36600 | 36800 | 36600 | 41600 | 42700 | 43500 | 41500 |
| MIN | 36100 | 35300 | 20500 | 11500 | 13000 | 16700 | 31000 | 31600 | 30400 | 32600 | 31300 | 31000 |
| AC-FT | 2315000 | 2222000 | 1517000 | 1206000 | 1002000 | 1552000 | 1940000 | 2044000 | 1982000 | 2153000 | 2188000 | 1993000 |

| | | | | | | | | | | |
|-------------|-------|----------|------|-------|-----|-------|-----|-------|-------|----------|
| CAL YR 1976 | TOTAL | 13024900 | MEAN | 35590 | MAX | 47000 | MIN | 13200 | AC-FT | 25830000 |
| WTR YR 1977 | TOTAL | 11148800 | MEAN | 30540 | MAX | 43500 | MIN | 11500 | AC-FT | 22110000 |

MOSQUITO CREEK BASIN

06610520 MOSQUITO CREEK NEAR EARLING, IA

LOCATION.--Lat 41°45'10", long 95°27'50", in N1/2 SE1/4 sec.11, T.80 N., R.40 W., Shelby County, Hydrologic Unit 10230006, on right bank at stream-stabilization structure 1,300 ft (396 m) downstream from bridge on State Highway 191, 0.5 mi (0.8 km) downstream from small left-bank tributary and 2.3 mi (3.7 km) southwest of Earling.

DRAINAGE AREA.--32.0 mi² (82.9 km²).

PERIOD OF RECORD.--August 1965 to current year.

GAGE.--Duplex water-stage recorder. Datum of gage is 1,222.56 ft (372.636 m) above mean sea level. Gage heights obtained of headwater (base gage) and tailwater (supplementary gage) elevations at stream-stabilization structure.

REMARKS.--Records fair except those for winter period, and periods of no gage-height record July 17 to Aug. 4 and Aug. 30 to Sept. 1, which are poor. The stabilization structure is a dam approximately 16 ft (5 m) high constructed of sheet piling and derrick stone. The crest of the cut-off piling is rectangular in shape at low stages and trapezoidal at high stages. Daily discharges computed from headwater gage readings. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--12 years, 15.2 ft³/s (0.430 m³/s), 6.45 in/yr (164 mm/yr), 11,010 acre-ft/yr (13.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s (340 m³/s) Sept. 11, 1972, gage height, 31.18 ft (9.504 m), from floodmarks; no flow for several days in 1970-72, 77.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximum (*):

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) |
|---------|------|---|-------------------------|---------|------|---|-------------------------|
| May 21 | 0015 | *3,650 103 | *24.45 7.452 | Sept. 3 | 0830 | 1,500 42.5 | ---- |
| July 17 | ---- | 1,170 33.1 | 21.34 6.050 | Sept. 9 | 0045 | 2,130 60.3 | 22.72 6.925 |
| Aug. 31 | 0600 | 2,200 62.3 | ----- | | | | |

No flow May 12-17, July 4, 5, 14.

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 | .40 | .71 | .25 | .15 | .14 | 3.0 | 2.2 | .03 | .43 | .29 | .16 | 10 |
| 2 | .30 | .78 | .23 | .14 | .14 | 3.5 | 2.5 | .03 | .22 | .03 | .15 | 2.0 |
| 3 | .22 | .78 | .22 | .14 | .15 | 3.5 | 3.0 | .03 | .22 | .07 | .14 | 200 |
| 4 | .71 | .78 | .21 | .14 | .15 | 3.5 | 4.0 | .22 | .22 | .00 | .20 | 4.0 |
| 5 | .57 | .78 | .20 | .14 | .15 | 4.0 | 2.4 | .57 | .17 | .00 | 23 | 2.0 |
| 6 | .43 | .78 | .19 | .14 | .15 | 5.0 | 1.5 | .43 | .07 | .03 | 1.1 | 1.0 |
| 7 | .29 | .71 | .18 | .14 | .15 | 2.5 | 1.4 | .36 | .03 | .03 | .78 | 22 |
| 8 | .36 | .71 | .17 | .14 | .15 | 1.7 | 1.3 | .22 | .07 | .07 | .43 | 8.5 |
| 9 | .36 | .78 | .17 | .14 | .20 | 4.7 | 1.3 | .17 | .03 | .07 | 1.1 | 160 |
| 10 | .17 | .71 | .17 | .14 | .20 | 2.9 | 1.2 | .07 | .03 | .12 | .85 | 10 |
| 11 | .22 | .71 | .17 | .14 | .25 | 3.8 | 1.2 | .03 | .00 | .64 | .78 | 8.0 |
| 12 | .17 | .65 | .17 | .14 | .30 | 2.7 | 1.2 | .00 | .03 | .29 | .50 | 7.7 |
| 13 | .12 | .60 | .17 | .14 | .30 | 2.5 | 1.2 | .00 | 4.1 | .07 | .57 | 7.7 |
| 14 | .17 | .60 | .18 | .14 | .25 | 2.3 | 1.2 | .00 | 1.1 | .00 | .43 | 6.3 |
| 15 | .17 | .62 | .18 | .14 | .20 | 2.2 | 1.2 | .00 | .36 | .36 | 2.4 | 6.6 |
| 16 | .22 | .66 | .19 | .14 | .20 | 2.2 | 1.2 | .00 | .36 | .22 | 16 | 7.4 |
| 17 | .22 | .68 | .19 | .14 | .25 | 2.1 | 1.2 | .00 | 8.4 | 500 | .78 | 8.7 |
| 18 | .43 | .75 | .21 | .14 | .30 | 2.1 | 1.2 | 40 | 1.2 | 10 | .43 | 9.0 |
| 19 | .57 | .57 | .19 | .14 | .40 | 2.0 | 1.3 | 8.0 | .50 | 2.0 | .50 | 9.7 |
| 20 | .57 | .50 | .18 | .14 | .60 | 2.0 | 1.5 | 142 | .36 | 1.0 | .50 | 14 |
| 21 | .57 | .47 | .16 | .14 | .80 | 1.9 | 2.0 | 459 | .29 | .60 | .50 | 15 |
| 22 | .50 | .45 | .15 | .14 | 1.0 | 1.8 | 1.1 | 12 | .43 | 10 | .50 | 17 |
| 23 | .50 | .42 | .15 | .14 | 1.2 | 1.8 | .60 | 6.0 | 14 | 2.0 | .43 | 26 |
| 24 | .57 | .38 | .15 | .14 | 1.4 | 1.8 | .30 | 3.1 | .78 | 1.0 | .42 | 16 |
| 25 | .43 | .35 | .15 | .14 | 1.6 | 1.8 | .15 | 1.1 | .36 | 50 | .40 | 4.5 |
| 26 | .43 | .33 | .16 | .14 | 1.9 | 1.9 | .10 | 3.7 | .17 | 5.0 | .38 | 1.5 |
| 27 | .43 | .31 | .17 | .14 | 2.3 | 2.0 | .08 | 11 | .03 | 1.0 | .36 | .90 |
| 28 | .50 | .29 | .16 | .14 | 2.5 | 2.4 | .05 | 2.2 | .22 | .50 | .32 | 1.2 |
| 29 | .50 | .28 | .15 | .14 | --- | 3.5 | .04 | .92 | .17 | .30 | .29 | 1.5 |
| 30 | .64 | .26 | .15 | .14 | --- | 3.0 | .03 | .71 | .78 | .20 | .40 | 2.4 |
| 31 | .71 | --- | .15 | .14 | --- | 2.5 | --- | .71 | --- | .18 | 500 | --- |
| TOTAL | 12.45 | 17.40 | 5.52 | 4.35 | 17.33 | 82.6 | 37.65 | 692.60 | 35.13 | 586.07 | 554.80 | 590.60 |
| MEAN | .40 | .58 | .18 | .14 | .62 | 2.66 | 1.26 | 22.3 | 1.17 | 18.9 | 17.9 | 19.7 |
| MAX | .71 | .78 | .25 | .15 | 2.5 | 5.0 | 4.0 | 459 | 14 | 500 | 500 | 200 |
| MIN | .12 | .26 | .15 | .14 | 1.4 | 1.7 | .03 | .00 | .00 | .00 | .14 | .90 |
| CFSM | .01 | .02 | .006 | .004 | .02 | .08 | .04 | .70 | .04 | .59 | .56 | .62 |
| IN. | .01 | .02 | .01 | .01 | .02 | .10 | .04 | .81 | .04 | .68 | .64 | .69 |
| AC-FT | 25 | 35 | 11 | 8.6 | 34 | 164 | 75 | 1370 | 70 | 1160 | 1100 | 1170 |

| | | | | | | | | |
|-------------|-------|---------|-----------|---------|---------|----------|---------|------------|
| CAL YR 1976 | TOTAL | 1253.04 | MEAN 3.42 | MAX 53 | MIN .12 | CFSM .11 | IN 1.46 | AC-FT 2490 |
| WTR YR 1977 | TOTAL | 2636.50 | MEAN 7.22 | MAX 500 | MIN .00 | CFSM .23 | IN 3.06 | AC-FT 5230 |

06807000 MISSOURI RIVER AT NEBRASKA CITY, NB
(National stream-quality accounting network station)

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 Waubesa Highway Bridge at Nebraska City, and at mile 562.6 (905.2 km).

DRAINAGE AREA.--410.00 mi² (1,062,000 km²), approximately. The 3,959 mi² (10,254 km²) in Great Divide basin are not included.

WATER-DISCHARGE RECORDS

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) above mean sea level, datum of 1929, 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. Corps of Engineers gage height tele-meter at station.

AVERAGE DISCHARGE.--48 years, 35,160 ft³/s (995.7 m³/s), 25,470,000 acre-ft/yr (31,400 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 414,000 ft³/s (11,700 m³/s) Apr. 19, 1952; maximum gage height, 27.66 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, 64,100 ft³/s (1,820 m³/s) Sept. 1, gage height, 13.73 ft (4.186 m); maximum gage height, 17.37 ft (5.294 m) Feb. 13, backwater from ice; minimum daily discharge, 13,000 ft³/s (368 m³/s) Jan. 31; minimum gage height, 4.79 ft (1.460 m) Jan. 9.

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 | 41300 | 40000 | 36400 | 23200 | 14000 | 24600 | 37900 | 38200 | 41600 | 37900 | 37500 | 57800 |
| 2 | 41100 | 40400 | 37700 | 23200 | 15000 | 23800 | 38400 | 38600 | 42000 | 36800 | 38200 | 52800 |
| 3 | 41100 | 40400 | 40000 | 23600 | 15800 | 23800 | 40800 | 39000 | 42300 | 36400 | 38200 | 49600 |
| 4 | 41600 | 40600 | 39500 | 23300 | 17800 | 23400 | 41600 | 38600 | 39500 | 36400 | 38400 | 58600 |
| 5 | 41300 | 40600 | 38000 | 23000 | 19000 | 22400 | 41800 | 40800 | 38800 | 35900 | 39000 | 56300 |
| 6 | 41100 | 40200 | 35000 | 23100 | 20000 | 24400 | 39700 | 39500 | 37900 | 35400 | 39500 | 47000 |
| 7 | 41100 | 40000 | 33000 | 23100 | 20000 | 23000 | 38400 | 38600 | 36600 | 35400 | 38800 | 41300 |
| 8 | 40800 | 39700 | 28900 | 22900 | 20000 | 22600 | 37900 | 39000 | 36400 | 36200 | 37500 | 39300 |
| 9 | 39700 | 40000 | 26000 | 21700 | 20000 | 23000 | 36800 | 38800 | 36400 | 37000 | 48000 | 37500 |
| 10 | 39300 | 40600 | 25200 | 21500 | 20000 | 23000 | 36800 | 38200 | 36100 | 37200 | 50000 | 37600 |
| 11 | 38200 | 40800 | 24600 | 22000 | 21000 | 24400 | 36600 | 37700 | 36600 | 37500 | 47800 | 36400 |
| 12 | 37200 | 41600 | 24800 | 21900 | 22000 | 25800 | 36800 | 37900 | 37200 | 36800 | 39000 | 36400 |
| 13 | 37900 | 41600 | 24200 | 21900 | 23000 | 27000 | 37700 | 38200 | 38000 | 37900 | 37000 | 36600 |
| 14 | 39300 | 40600 | 25200 | 21800 | 24000 | 28200 | 37900 | 37900 | 37900 | 36400 | 36400 | 37700 |
| 15 | 39500 | 39600 | 25400 | 21100 | 24000 | 29400 | 38400 | 37700 | 37800 | 37000 | 36100 | 37900 |
| 16 | 39700 | 40600 | 26800 | 21000 | 25000 | 27400 | 37500 | 37700 | 36500 | 37500 | 48000 | 37200 |
| 17 | 40000 | 40000 | 26000 | 21000 | 28000 | 27800 | 39000 | 37500 | 37500 | 38200 | 45600 | 37700 |
| 18 | 40400 | 39700 | 26800 | 20000 | 28000 | 28200 | 40400 | 37900 | 38800 | 38800 | 43000 | 38400 |
| 19 | 40400 | 39300 | 25600 | 19000 | 28000 | 28900 | 39500 | 38800 | 40000 | 37500 | 40400 | 38200 |
| 20 | 40400 | 40200 | 25600 | 18000 | 28000 | 28000 | 39300 | 39700 | 40200 | 36600 | 38400 | 37000 |
| 21 | 40400 | 40800 | 25600 | 18800 | 28000 | 31400 | 40200 | 40400 | 38200 | 38600 | 40000 | 37200 |
| 22 | 39500 | 40800 | 24600 | 20600 | 28000 | 37000 | 40000 | 43300 | 37700 | 43600 | 41800 | 36600 |
| 23 | 39700 | 40200 | 24000 | 21200 | 27800 | 39000 | 43300 | 48000 | 38200 | 41300 | 41100 | 39000 |
| 24 | 40000 | 40000 | 26800 | 20000 | 27800 | 37700 | 42000 | 50300 | 42000 | 38400 | 39000 | 38400 |
| 25 | 40400 | 39000 | 26000 | 20000 | 27800 | 38400 | 40800 | 45600 | 43800 | 43000 | 37700 | 38400 |
| 26 | 40400 | 40000 | 24800 | 19000 | 27600 | 40200 | 40600 | 41100 | 38800 | 40400 | 37000 | 38200 |
| 27 | 39700 | 40200 | 25000 | 17000 | 26200 | 38400 | 39700 | 40600 | 36400 | 38400 | 36800 | 37700 |
| 28 | 40200 | 39500 | 24800 | 16000 | 25000 | 39000 | 39500 | 47600 | 36600 | 37900 | 36800 | 37200 |
| 29 | 40000 | 38400 | 24400 | 15000 | --- | 40000 | 38400 | 51000 | 36800 | 38200 | 37200 | 37000 |
| 30 | 39600 | 37600 | 24500 | 14000 | --- | 40200 | 37900 | 47000 | 37600 | 36600 | 36400 | 37200 |
| 31 | 39300 | --- | 23400 | 13000 | --- | 39700 | --- | 41300 | --- | 37000 | 61200 | --- |
| TOTAL | 1240500 | 1202800 | 865900 | 630900 | 650800 | 930100 | 1175600 | 1266500 | 1154100 | 1172200 | 1251800 | 1228100 |
| MEAN | 40020 | 40090 | 27930 | 20350 | 23240 | 30000 | 38190 | 40850 | 38470 | 37810 | 40380 | 40940 |
| MAX | 41600 | 41600 | 40000 | 23600 | 28000 | 40200 | 43300 | 51000 | 43800 | 43600 | 51200 | 68600 |
| MIN | 37200 | 37500 | 23400 | 13000 | 14000 | 22400 | 36600 | 37500 | 36100 | 35400 | 36100 | 36400 |
| AC-FT | 2461000 | 2386000 | 1718000 | 1251000 | 1291000 | 1845000 | 2332000 | 2512000 | 2289000 | 2325000 | 2483000 | 2436000 |
| CAL YR 1976 TOTAL | 14281700 | | | 39020 | | 61600 | | 14300 | | 28330000 | | |
| WTR YR 1977 TOTAL | 12769300 | | | 34980 | | 58600 | | 13000 | | 25330000 | | |

MISSOURI RIVER MAIN STEM

06807000 MISSOURI RIVER AT NEBRASKA CITY, NB--Continued.
(National Stream Quality Accounting Network Station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1951 to current year. Daily sediment loads August 1957 to September 1971 in reports of Corps of Engineers.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: May 1951 to current year (discontinued).
WATER TEMPERATURES: May 1951 to current year (discontinued).
SEDIMENT DISCHARGE: October 1971 to September 1976.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 994 micromhos Dec. 17, 1962; minimum daily, 273 micromhos June 17, 1964.
WATER TEMPERATURES: Maximum daily, 31°C July 26, 1977; minimum, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,220 mg/L May 19, 1974; minimum daily mean, 137 mg/L Jan. 14, 1975.
SEDIMENT LOADS: Maximum daily, 1,590,000 tons (1,440,000 tonnes) May 19, 1974; minimum daily, 4,050 tons (3,670 tonnes) Jan. 17, 1972.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 850 micromhos Jan. 22; minimum daily, 470 micromhos Sept. 3.
WATER TEMPERATURES: Maximum daily, 31°C July 26; minimum daily, 0.0°C on many days during winter period.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | 660 | 700 | 625 | 670 | 750 | 610 | 600 | 650 | 600 | 650 | 700 | 680 |
| 2 | 670 | 690 | 710 | 710 | 750 | 590 | 590 | 660 | 600 | 650 | 700 | 530 |
| 3 | 690 | 660 | 610 | 850 | 780 | 640 | 660 | 650 | 580 | 660 | 700 | 470 |
| 4 | 660 | 660 | 750 | 700 | 800 | 650 | 650 | 680 | 600 | 680 | 700 | 550 |
| 5 | 660 | 650 | 710 | 680 | 810 | 690 | 640 | 660 | 620 | 680 | 700 | 530 |
| 6 | 620 | 690 | 700 | 710 | 800 | 650 | 670 | 650 | 620 | 680 | 670 | 550 |
| 7 | 680 | 660 | 580 | 700 | 760 | 610 | 650 | 650 | 620 | 690 | 700 | 610 |
| 8 | 670 | 650 | 650 | 670 | 750 | 640 | 670 | 650 | 630 | 700 | 590 | 690 |
| 9 | 670 | 650 | 740 | 750 | 720 | 650 | 670 | 640 | 650 | 700 | 600 | 670 |
| 10 | 660 | 660 | 600 | 700 | 700 | 660 | 670 | 660 | 650 | 700 | 640 | 680 |
| 11 | 650 | 650 | 660 | 700 | 710 | 700 | 670 | 650 | 680 | 680 | 550 | 600 |
| 12 | 670 | 650 | 730 | 730 | 690 | 660 | 670 | 660 | 680 | 700 | 620 | 680 |
| 13 | 670 | 650 | 800 | 760 | 700 | 620 | 670 | 660 | 670 | 750 | 650 | 700 |
| 14 | 660 | 650 | 630 | 640 | 710 | 640 | 680 | 660 | 670 | 700 | 670 | 740 |
| 15 | 650 | 650 | 780 | 660 | 700 | 580 | 700 | 660 | 670 | 700 | 680 | 680 |
| 16 | 650 | 700 | 800 | 710 | 680 | 600 | 680 | 660 | 670 | 680 | 660 | 670 |
| 17 | 660 | 700 | 790 | 700 | 710 | 600 | 670 | 690 | 670 | 700 | 660 | 640 |
| 18 | 660 | 710 | 770 | 800 | 690 | 600 | 650 | 690 | 670 | 670 | 630 | 680 |
| 19 | 670 | 710 | 590 | 780 | 690 | 600 | 650 | 680 | 670 | 680 | 640 | 700 |
| 20 | 670 | 710 | 750 | 800 | 700 | 610 | 640 | 630 | 650 | 700 | 650 | 680 |
| 21 | 660 | 695 | 780 | 800 | 650 | 600 | 630 | 650 | 650 | 700 | 650 | 700 |
| 22 | 700 | 700 | 550 | 850 | 670 | 610 | 650 | 630 | 650 | 680 | 650 | 700 |
| 23 | 660 | 710 | 760 | 810 | 640 | 590 | 620 | 600 | 650 | 640 | 640 | 680 |
| 24 | 690 | 740 | 780 | 770 | 620 | 570 | 600 | 580 | 650 | 690 | 650 | 700 |
| 25 | 700 | 710 | 750 | 800 | 600 | 600 | 610 | 560 | 640 | 550 | 660 | 740 |
| 26 | 700 | 700 | 750 | 700 | 600 | 600 | 630 | 580 | 580 | 660 | 660 | 750 |
| 27 | 700 | 700 | 740 | 750 | 600 | 650 | 650 | 600 | 610 | 690 | 700 | 750 |
| 28 | 690 | 700 | 740 | 710 | 660 | 630 | 660 | 560 | 640 | 690 | 680 | 710 |
| 29 | 660 | 725 | 700 | 740 | --- | 650 | 660 | 560 | 630 | 660 | 680 | 700 |
| 30 | 660 | 725 | 650 | 720 | --- | 670 | 660 | 560 | 650 | 680 | 670 | 700 |
| 31 | 660 | --- | 690 | --- | --- | 620 | --- | 570 | --- | 700 | 540 | --- |
| MEAN | 669 | 685 | 705 | 736 | 701 | 625 | 651 | 634 | 641 | 680 | 655 | 662 |

WTR YR 1977 MEAN 670 MAX 850 MIN 470

06807000 MISSOURI RIVER AT NEBRASKA CITY, NB--Continued.
(National Stream Quality Accounting Network Station)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-------------|------|------|-----|-----|------|------|------|------|------|------|------|------|
| 1 | 17.0 | 8.5 | 0.0 | 0.0 | 0.0 | 1.5 | 8.5 | 16.5 | 23.0 | 25.0 | 26.0 | 23.0 |
| 2 | 18.0 | 9.0 | 0.5 | 0.0 | 0.0 | 1.5 | 8.5 | 18.5 | 23.5 | 24.5 | 26.0 | 22.0 |
| 3 | 19.0 | 9.0 | 0.5 | 0.0 | 0.5 | 2.5 | 8.0 | 18.0 | 23.5 | 25.0 | 25.0 | 23.0 |
| 4 | 18.5 | 8.0 | 0.5 | 0.0 | 0.5 | 2.0 | 6.5 | 19.0 | 23.5 | 25.5 | 25.5 | 22.0 |
| 5 | 17.0 | 7.0 | 0.5 | 0.0 | 0.0 | 2.0 | 6.0 | 18.0 | 25.5 | 26.0 | 25.5 | 22.0 |
| 6 | 15.5 | 7.0 | 0.0 | 0.0 | 0.0 | 2.0 | 9.0 | 19.0 | 24.5 | 26.0 | 25.5 | 24.0 |
| 7 | 15.5 | 6.5 | 0.0 | 0.0 | 0.0 | 2.0 | 9.0 | 19.5 | 24.5 | 27.0 | 26.0 | 24.5 |
| 8 | 15.0 | 7.0 | 0.0 | 0.0 | 0.0 | 4.0 | 9.5 | 19.0 | 24.5 | 26.5 | 26.0 | 25.0 |
| 9 | 14.5 | 7.0 | 0.0 | 0.0 | 0.0 | 5.5 | 11.5 | 19.0 | 24.0 | 26.5 | 24.5 | 24.0 |
| 10 | 15.0 | 7.0 | 0.0 | 0.0 | 0.5 | 8.0 | 13.5 | 19.5 | 23.5 | 27.0 | 25.0 | 23.0 |
| 11 | 16.0 | 6.0 | 0.0 | 0.0 | 0.5 | 8.5 | 14.0 | 19.0 | 25.0 | 25.5 | 24.5 | 22.0 |
| 12 | 16.0 | 4.5 | 0.0 | 0.0 | 0.5 | 9.0 | 14.0 | 19.5 | 24.0 | 25.5 | 24.5 | 21.0 |
| 13 | 16.5 | 3.5 | 0.0 | 0.0 | 0.5 | 9.0 | 14.5 | 20.5 | 22.0 | 26.0 | 25.0 | 20.5 |
| 14 | 16.5 | 2.5 | 0.5 | 0.0 | 0.5 | 7.0 | 15.0 | 20.5 | 23.0 | 26.5 | 23.5 | 20.5 |
| 15 | 15.0 | 4.0 | 0.5 | 0.0 | 0.0 | 7.0 | 15.0 | 21.0 | 24.0 | 27.0 | 23.5 | 21.0 |
| 16 | 13.5 | 4.0 | 1.0 | 0.0 | 0.0 | 8.0 | 16.5 | 21.5 | 24.0 | 27.0 | 23.5 | 20.5 |
| 17 | 13.0 | 6.0 | 2.0 | 0.0 | 0.5 | 8.5 | 17.0 | 21.5 | 24.0 | 28.0 | 23.5 | 21.0 |
| 18 | 11.0 | 5.5 | 2.0 | 0.0 | 0.5 | 8.0 | 18.0 | 21.5 | 24.0 | 26.5 | 23.0 | 23.0 |
| 19 | 10.5 | 6.0 | 1.5 | 0.0 | 0.5 | 6.5 | 18.5 | 21.5 | 24.0 | 28.0 | 23.0 | 21.0 |
| 20 | 10.0 | 5.0 | 0.5 | 0.0 | 0.5 | 6.5 | 18.0 | 21.0 | 23.5 | 28.0 | 23.0 | 20.0 |
| 21 | 10.0 | 4.5 | 0.0 | 0.0 | 0.0 | 5.5 | 16.0 | 21.0 | 24.0 | 27.0 | 23.5 | 20.0 |
| 22 | 9.5 | 4.0 | 0.0 | 0.0 | 1.0 | 5.5 | 15.0 | 20.5 | 23.5 | 27.0 | 23.0 | 20.0 |
| 23 | 9.5 | 3.5 | 0.0 | 0.0 | 1.0 | 5.0 | 15.5 | 20.5 | 24.0 | 27.0 | 23.5 | 20.0 |
| 24 | 10.0 | 3.5 | 0.0 | 0.0 | 2.0 | 6.5 | 15.0 | 21.5 | 25.0 | 27.0 | 23.5 | 19.5 |
| 25 | 9.0 | 6.0 | 0.0 | 0.0 | 2.0 | 8.5 | 15.0 | 23.0 | 25.0 | 26.5 | 23.0 | 20.0 |
| 26 | 8.0 | 4.5 | 0.0 | 0.0 | 2.0 | 9.5 | 16.0 | 23.0 | 25.5 | 31.0 | 23.5 | 19.0 |
| 27 | 7.0 | 3.5 | 0.0 | 0.0 | 2.0 | 10.0 | 16.5 | 23.5 | 27.0 | 26.5 | 24.5 | 19.5 |
| 28 | 8.0 | 1.5 | 1.0 | 0.0 | 2.0 | 11.0 | 18.5 | 23.0 | 27.0 | 27.0 | 23.5 | 19.5 |
| 29 | 7.0 | 0.5 | 0.0 | 0.0 | --- | 10.0 | 16.5 | 23.0 | 26.0 | 25.5 | 23.5 | 19.5 |
| 30 | 8.0 | 0.5 | 0.0 | 0.0 | --- | 8.5 | 16.5 | 23.0 | 25.0 | 26.5 | 24.5 | 19.5 |
| 31 | 8.0 | --- | 0.0 | 0.0 | --- | 8.0 | --- | 22.0 | --- | 26.5 | 23.5 | --- |
| MEAN | 13.0 | 5.0 | 0.5 | 0.0 | 0.5 | 6.5 | 13.5 | 20.5 | 24.5 | 26.5 | 24.0 | 21.5 |
| WTR YR 1977 | MEAN | 13.0 | | MAX | 31.0 | MIN | 0.0 | | | | | |

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | DIS- SOLVED SILICA (SIO2) (MG/L) (00955) | TOTAL IRON (FE) (UG/L) (01045) | DIS- SOLVED IRON (FE) (UG/L) (01046) | TOTAL MAN- GANESE (MN) (UG/L) (01055) | SUS- PENDE MAN- GANESE (MN) (UG/L) (01054) | DIS- SOLVED MAN- GANESE (MN) (UG/L) (01056) | DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915) | DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925) |
|-----------|------|--|---|--|---|--|--|---|---|--|
| OCT 05... | 1100 | 40200 | 9.2 | -- | -- | -- | -- | -- | 54 | 21 |
| NOV 02... | 1400 | 40800 | 9.6 | -- | -- | -- | -- | -- | 56 | 20 |
| DEC 06... | 1240 | E39000 | 8.4 | 3400 | 20 | 140 | 140 | 0 | 58 | 22 |
| JAN 03... | 1100 | 24500 | 13 | -- | -- | -- | -- | -- | 59 | 25 |
| FEB 15... | 1145 | 22000 | 14 | -- | -- | -- | -- | -- | 59 | 20 |
| MAR 14... | 1330 | 27700 | 16 | 13000 | 20 | 590 | 580 | 10 | 54 | 18 |
| APR 19... | 1330 | 38500 | 11 | -- | -- | -- | -- | -- | 55 | 14 |
| MAY 17... | 1010 | 37900 | 9.1 | -- | -- | -- | -- | -- | 58 | 20 |
| JUN 14... | 1200 | 38900 | -- | 12000 | 30 | 540 | -- | 0 | 58 | 18 |
| JUL 19... | 1115 | 37400 | 9.4 | -- | -- | -- | -- | -- | 54 | 18 |
| AUG 15... | 1230 | 35700 | 9.9 | -- | -- | -- | -- | -- | 58 | 19 |
| SEP 09... | 1315 | 37500 | 12 | 9000 | 30 | 330 | 330 | 0 | 58 | 19 |

MISSOURI RIVER MAIN STEM

06807000 MISSOURI RIVER AT NEBRASKA CITY, NB--Continued.
(National Stream Quality Accounting Network Station)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | DIS- SOLVED SODIUM (NA) (MG/L) (00930) | DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935) | BICAR- BONATE (HCO3) (MG/L) (00440) | CAR- BONATE (CO3) (MG/L) (00445) | ALKA- LINITY AS CACO3 (MG/L) (00410) | DIS- SOLVED SULFATE (SO4) (MG/L) (00945) | DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940) | DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950) | TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630) | TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625) |
|-----------|---|---|---|--|---|---|--|---|---|---|
| OCT 05... | 64 | 5.0 | 190 | 0 | 156 | 180 | 14 | .5 | .08 | .55 |
| NOV 02... | 60 | 4.8 | 194 | 0 | 159 | 180 | 16 | .6 | .20 | .48 |
| DEC 06... | 70 | 4.3 | 195 | 0 | 160 | 190 | 15 | .5 | .15 | .53 |
| JAN 03... | 68 | 5.8 | 224 | 0 | 184 | 200 | 20 | .5 | .25 | .56 |
| FEB 18... | 60 | 5.8 | 196 | 0 | 160 | 160 | 20 | .5 | .24 | .77 |
| MAR 14... | 50 | 7.0 | 190 | 0 | 160 | 130 | 23 | .4 | .59 | 2.1 |
| APR 19... | 56 | 6.4 | 180 | 0 | 150 | 160 | 17 | .4 | .19 | 1.5 |
| MAY 17... | 65 | 6.0 | 190 | 0 | 160 | 180 | 16 | .4 | .10 | .77 |
| JUN 14... | 64 | 6.0 | 180 | 0 | 150 | 180 | 18 | .6 | .16 | 1.0 |
| JUL 19... | 66 | 6.1 | 180 | 0 | 150 | 180 | 14 | .6 | .14 | .85 |
| AUG 15... | 67 | 5.7 | 190 | 0 | 160 | 190 | 14 | .6 | .28 | .89 |
| SEP 09... | 65 | 6.2 | 180 | 0 | 150 | 180 | 21 | .6 | .19 | .67 |

| DATE | TOTAL NITRO- GEN (N) (MG/L) (00600) | TOTAL NITRO- GEN (NO3) (MG/L) (71887) | TOTAL PHOS- PHORUS (P) (MG/L) (00665) | DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300) | DIS- SOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301) | DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303) | DIS- SOLVED SOLIDS (TONS PER DAY) (70302) | HARD- NESS (CA,MG) (MG/L) (00900) | NON- CAR- BONATE HARD- NESS (MG/L) (00902) | PERCENT SODIUM (00932) |
|-----------|--|--|--|---|---|---|---|---|--|------------------------------|
| OCT 05... | .63 | 2.8 | .09 | 453 | 441 | .63 50300 | | 220 | 65 | 38 |
| NOV 02... | .68 | 3.0 | .11 | 455 | 443 | .62 50100 | | 220 | 63 | 36 |
| DEC 06... | .68 | 3.0 | .12 | 477 | 464 | .65 -- | | 240 | 75 | 39 |
| JAN 03... | .81 | 3.6 | .12 | 520 | 502 | .71 34400 | | 250 | 67 | 36 |
| FEB 15... | 1.0 | 4.5 | .33 | 442 | 436 | .60 26300 | | 230 | 69 | 36 |
| MAR 14... | 2.7 | 12 | .54 | 407 | 392 | .55 30400 | | 210 | 53 | 33 |
| APR 19... | 1.7 | 7.5 | .41 | 418 | 409 | .57 43500 | | 200 | 47 | 38 |
| MAY 17... | .87 | 3.9 | .20 | 452 | 448 | .61 46300 | | 230 | 71 | 38 |
| JUN 14... | 1.2 | 5.1 | .40 | 438 | -- | .60 46000 | | 220 | 71 | 38 |
| JUL 19... | .99 | 4.4 | .20 | 468 | 437 | .64 47300 | | 210 | 61 | 40 |
| AUG 15... | 1.2 | 5.2 | .21 | 482 | 458 | .66 46500 | | 220 | 67 | 39 |
| SEP 09... | .86 | 3.8 | .28 | 437 | 451 | .59 44200 | | 220 | 75 | 38 |

MISSOURI RIVER MAIN STEM

06807000 MISSOURI RIVER AT NEBRASKA CITY, NE--Continued.
(National Stream Quality Accounting Network Station)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | SODIUM AD- SORP- TION RATIO (00931) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) | TUR- BID- ITY (JTU) (00070) | CARBON DIOXIDE (CO ₂) (MG/L) (00405) | TOTAL PHYTO- PLANK- TON (CELLS PER ML) (60050) | FECAL COLI- FORM (.7UM-MF (COL./ 100 ML) (31625) | FECAL STREPTO- COCCI KF AGAR (COL. PER 100 ML) (31673) | TOTAL ORGANIC CARBON (C) (MG/L) (00680) |
|-----------|--|---|--------------------------|--|---|--|---|--|---|--|
| OCT 05... | 1.9 | 690 | 8.3 | 15.5 | 20 | 1.5 | 25000 | 66000 | 2400 | -- |
| NOV 02... | 1.8 | 700 | 8.8 | 9.0 | 30 | .5 | 5000 | 24000 | 7600 | -- |
| DEC 06... | 2.0 | 700 | 7.9 | .0 | 10 | 3.9 | 1800 | 25000 | 16000 | 5.6 |
| JAN 03... | 1.9 | 850 | 7.5 | .0 | 8 | 11 | 810 | 14000 | 21000 | -- |
| FEB 15... | 1.7 | 710 | 7.1 | .0 | 7 | 25 | 25000 | 7800 | 4000 | -- |
| MAR 14... | 1.5 | 650 | 7.3 | 8.0 | 80 | 15 | -- | 43000 | 69000 | 11 |
| APR 19... | 1.7 | 700 | 7.4 | 18.0 | 20 | 11 | -- | 25000 | 19000 | -- |
| MAY 17... | 1.9 | 760 | 7.8 | 21.0 | 40 | 4.8 | 4000 | 24000 | 35000 | -- |
| JUN 14... | 1.9 | 670 | 7.7 | 23.0 | 110 | 5.7 | 20000 | 63000 | 34000 | 22 |
| JUL 19... | 2.0 | 690 | 7.1 | 27.5 | 110 | 23 | 6500 | 47000 | 42000 | -- |
| AUG 15... | 2.0 | 750 | 7.6 | 22.5 | 55 | 7.6 | 3400 | 7400 | 8500 | -- |
| SEP 09... | 1.9 | 680 | 7.9 | 24.5 | 85 | 3.6 | 16000 | 19000 | 27000 | 4.4 |

| DATE | TOTAL ARSENIC (AS) (UG/L) (01002) | SUS- PENDE D ARSE NIC (AS) (UG/L) (01001) | DIS- SOLVED ARSENIC (AS) (UG/L) (01000) | TOTAL CAD- MIUM (CD) (UG/L) (01027) | SUS- PENDE L CAD- MIUM (CD) (UG/L) (01026) | DIS- SOLVED CAD- MIUM (CD) (UG/L) (01025) | TOTAL CHRO- MIUM (CR) (UG/L) (01034) | SUS- PENDE D CHRO- MIUM (CR) (UG/L) (01031) | DIS- SOLVED CHRO- MIUM (CR) (UG/L) (01030) | TOTAL COBAL T (CO) (UG/L) (01037) |
|-----------|---|---|--|--|--|---|---|---|--|--|
| OCT 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC 06... | 4 | 2 | 2 | 2 | 0 | 2 | 10 | 10 | 0 | 0 |
| MAR 14... | 9 | 6 | 3 | 2 | 1 | 1 | 20 | 20 | 0 | 8 |
| APR 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN 14... | 11 | 9 | 2 | 10 | -- | 3 | 10 | -- | 0 | <50 |
| AUG 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP 09... | 4 | 3 | 1 | <10 | <9 | 1 | 20 | 20 | 0 | <50 |

| DATE | SUS- PENDE D COBAL T (CO) (UG/L) (01036) | DIS- SOLVED COBAL T (CO) (UG/L) (01035) | TOTAL COPPER (CU) (UG/L) (01042) | SUS- PENDE D COPPER (CU) (UG/L) (01041) | DIS- SOLVED COPPER (CU) (UG/L) (01040) | TOTAL LEAD (PB) (UG/L) (01051) | SUS- PENDE D LEAD (PB) (UG/L) (01050) | DIS- SOLVED LEAD (PB) (UG/L) (01049) | TOTAL MERCURY (HG) (UG/L) (71900) | SUS- PENDE D MERCURY (HG) (UG/L) (71895) |
|-----------|--|---|--|--|---|--|--|---|---|---|
| OCT 05... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| NOV 02... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DEC 06... | 0 | 0 | 6 | 0 | 6 | 140 | 140 | 4 | .1 | .0 |
| MAR 14... | 8 | 0 | 25 | 20 | 5 | 25 | 20 | 5 | .0 | .0 |
| APR 19... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MAY 17... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| JUN 14... | -- | 0 | 20 | -- | 10 | <100 | -- | 3 | .0 | -- |
| AUG 15... | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP 09... | <49 | 1 | 20 | 15 | 5 | <100 | <99 | 1 | .1 | .1 |

MISSOURI RIVER MAIN STEM

06807000 MISSOURI RIVER AT NEBRASKA CITY, NB--Continued.
(National Stream Quality Accounting Network Station)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | DIS- SOLVED MERCURY (HG) (UG/L) (71890) | TOTAL SELE- NIUM (SE) (UG/L) (01147) | SUS- PENDE SELE- NIUM (SE) (UG/L) (01146) | DIS- SOLVED SELE- NIUM (SE) (UG/L) (01145) | TOTAL ZINC (ZN) (UG/L) (01092) | SUS- PENDE ZINC (ZN) (UG/L) (01091) | DIS- SOLVED ZINC (ZN) (UG/L) (01090) | SUS- PENDE SEDI- MENT (MG/L) (80154) | SUS- PENDE SEDI- MENT DIS- CHARGE (T/DAY) (80155) |
|-----------|--|---|---|--|--|--|---|---|--|
| OCT 05... | -- | -- | -- | -- | -- | -- | -- | 165 | 17900 |
| NOV 02... | -- | -- | -- | -- | -- | -- | -- | 667 | 73500 |
| DEC 06... | .1 | 2 | 0 | 2 | 40 | 30 | 10 | 265 | -- |
| MAR 14... | .0 | 2 | 1 | 1 | 50 | 30 | 20 | 405 | 30300 |
| APR 19... | -- | -- | -- | -- | -- | -- | -- | 634 | 65900 |
| MAY 17... | -- | -- | -- | -- | -- | -- | -- | 567 | 58000 |
| JUN 14... | .0 | 2 | 1 | 1 | 60 | -- | 20 | -- | -- |
| AUG 15... | -- | -- | -- | -- | -- | -- | -- | 906 | 87300 |
| SEP 09... | .0 | 2 | 0 | 3 | 40 | 30 | 10 | 1010 | 102000 |

| DATE | TIME | TEMPER- ATURE (DEG C) (00010) | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | SUS- PENDE SEDI- MENT (MG/L) (80154) | SUS- PENDE SEDI- MENT DIS- CHARGE (T/DAY) (80155) | SUS. SED. SIEVE DIAM. X FINER THAN .062 MM (70331) |
|-----------|------|--|--|---|--|---|
| OCT 05... | 1100 | 15.5 | 40200 | 165 | 17900 | -- |
| NOV 02... | 1400 | 9.0 | 40800 | 667 | 73500 | 20 |
| MAR 14... | 1330 | 8.0 | 27700 | 405 | 30300 | 98 |
| APR 19... | 1330 | 18.0 | 38500 | 634 | 65900 | 66 |
| MAY 17... | 1010 | 21.0 | 37900 | 567 | 58000 | 28 |
| AUG 15... | 1230 | 22.5 | 35700 | 906 | 87300 | 23 |
| SEP 09... | 1315 | 24.5 | 37500 | 1010 | 102000 | 30 |

MISSOURI RIVER MAIN STEM

06807000 MISSOURI RIVER AT NEBRASKA CITY, NB--Continued.
(National Stream Quality Accounting Network Station)

WATER-QUALITY RECORDS

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

| DATE TIME | OCT 5,76 1100 | NOV 2,76 1400 | DEC 6,76 1240 | JAN 3,77 1100 | FEB 15,77 1145 |
|---------------------|------------------|------------------|------------------|------------------|-------------------|
| TOTAL CELLS/ML | 26000 | 5000 | 1800 | 810 | 25000 |
| DIVERSITY: DIVISION | 1.5 | 0.6 | 1.6 | 1.2 | 1.0 |
| ..CLASS | 1.5 | 0.6 | 1.5 | 1.2 | 1.0 |
| ..ORDER | 1.7 | 0.8 | 2.0 | 1.8 | 1.1 |
| ...FAMILY | 1.9 | 0.8 | 2.1 | 2.1 | 1.1 |
|GENUS | 2.1 | 0.8 | 2.1 | 0.0 | 1.1 |

| 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 | -- | - | 49 | 1 | -- | - | -- | - | -- | - |
| ...OOCYSTACEAE | | | | | | | | | | |
| ...ANKISTRODESMUS | 500 | 2 | -- | - | 9 | 1 | * | 0 | -- | - |
| ...DICTYOSPHAERIUM | -- | - | -- | - | -- | - | -- | - | -- | - |
| ...KIRCHNERIELLA | * | 0 | -- | - | -- | - | -- | - | -- | - |
| ...TREUBARIA | 500 | 2 | -- | - | -- | - | -- | - | -- | - |
| ...SCENEDESMACEAE | | | | | | | | | | |
| ...SCENEDESMUS | 3500 | 14 | 200 | 4 | 56 | 3 | 45 | 6 | -- | - |
| ..VOLVOCALES | | | | | | | | | | |
| ...CHLAMYDOMONADACEAE | | | | | | | | | | |
| ...CHLAMYDOMONAS | 250 | 1 | -- | - | -- | - | 6 | 1 | * | 0 |
| ...PHACOTACEAE | | | | | | | | | | |
| ...PHACOTUS | -- | - | -- | - | 19 | 1 | -- | - | -- | - |
| CHRYSTOPHYTA | | | | | | | | | | |
| .BACILLARIOPHYCEAE | | | | | | | | | | |
| ..CENTRALES | | | | | | | | | | |
| ...COSCINODISCEAE | | | | | | | | | | |
| ...CYCLOTILLA | 2000 | 8 | 150 | 3 | -- | - | 79 | 10 | 560 | 2 |
| ...MELOSIRA | 4200* | 17 | -- | - | -- | - | 51 | 6 | -- | - |
| ...STEPHANODISCUS | -- | - | -- | - | 680* | 37 | -- | - | -- | - |
| ..PENNALES | | | | | | | | | | |
| ...FRAGILARIACEAE | | | | | | | | | | |
| ...ASTERIONELLA | -- | - | -- | - | 310* | 17 | 330* | 41 | 8800* | 35 |
| ...FRAGILARIA | -- | - | -- | - | -- | - | 28 | 3 | -- | - |
| ...NAVICULACEAE | -- | - | -- | - | -- | - | * | 0 | -- | - |
| ...DIPLONEIS | -- | - | -- | - | -- | - | * | 0 | -- | - |
| ...NAVICULA | * | 0 | 49 | 1 | 9 | 1 | 11 | 1 | -- | - |
| ...NITZSCHIA | | | | | | | | | | |
| ...NITZSCHIA | 370 | 1 | -- | - | -- | - | 17 | 2 | -- | - |
| ...SURIRELLACEAE | | | | | | | | | | |
| ...SURIRELLA | -- | - | -- | - | -- | - | * | 0 | -- | - |
| CYANOPHYTA (BLUE-GREEN ALGAE) | | | | | | | | | | |
| .CYANOPHYCEAE | | | | | | | | | | |
| ..CHROCOCCOCCALES | | | | | | | | | | |
| ...CHROCOCCOCCAEAE | | | | | | | | | | |
| ...AGMENELLUM | | | | | | | | | | |
| ...ANACYSTIS | 250 | 1 | 98 | 2 | -- | - | -- | - | -- | - |
| ...HORMOGONALES | | | | | | | | | | |
| ...NOSTOCACEAE | | | | | | | | | | |
| ...ANABAENOPSIS | -- | - | -- | - | -- | - | -- | - | -- | - |
| ...OSCILLATORIACEAE | | | | | | | | | | |
| ...LYNGBYA | 14000* | 53 | -- | - | 630* | 35 | -- | - | -- | - |
| ...OSCILLATORIA | -- | - | 4400* | 88 | -- | - | 220* | 27 | 16000* | 62 |
| EUGLENOPHYTA (EUGLENIDS) | | | | | | | | | | |
| .CRYPTOPHYCEAE | | | | | | | | | | |
| ..CRYPTOMONIDALES | | | | | | | | | | |
| ...CRYPTOCHRYSIDACEAE | | | | | | | | | | |
| ...CHROOMONAS | -- | - | -- | - | 94 | 5 | -- | - | -- | - |
| ...CRYPTOMONODACEAE | | | | | | | | | | |
| ...CRYPTOMONAS | -- | - | -- | - | -- | - | -- | - | -- | - |
| .EUGLENOPHYCEAE | | | | | | | | | | |
| ..EUGLENALES | | | | | | | | | | |
| ...EUGLENACEAE | | | | | | | | | | |
| ...EUGLENA | -- | - | -- | - | -- | - | -- | - | -- | - |
| ...TRACHELOMONAS | * | 0 | 49 | 1 | -- | - | -- | - | -- | - |
| PYRRHOPHYTA (FIRE ALGAE) | | | | | | | | | | |
| .DINOPHYCEAE | | | | | | | | | | |
| ..GYMNODINIALES | | | | | | | | | | |
| ...GYMNODINIACEAE | | | | | | | | | | |
| ...GYMNODINIUM | -- | - | -- | - | 9 | 1 | -- | - | -- | - |

| DATE TIME | MAY 17,77 1010 | JUN 14,77 1200 | JUL 19,77 1115 | AUG 15,77 1230 | SEP 9,77 1315 |
|---------------------|-------------------|-------------------|-------------------|-------------------|------------------|
| TOTAL CELLS/ML | 4000 | 20000 | 6500 | 3400 | 16000 |
| DIVERSITY: DIVISION | 0.8 | 1.1 | 1.7 | 1.4 | 1.5 |
| ..CLASS | 0.8 | 1.1 | 1.7 | 1.4 | 1.5 |
| ..ORDER | 1.2 | 1.3 | 2.0 | 2.1 | 2.2 |
| ...FAMILY | 3.2 | 2.3 | 2.9 | 2.9 | 2.9 |
|GENUS | 3.6 | 3.6 | 3.3 | 3.7 | 3.6 |

MISSOURI RIVER MAIN STEM

06807000 MISSOURI RIVER AT NEBRASKA CITY, NB--Continued.
(National Stream Quality Accounting Network Station)

PHYTOPLANKTON ANALYSES, OCTOBER 1976 TO SEPTEMBER 1977

| DATE TIME | MAY 17,77 1010 | | JUN 14,77 1200 | | JUL 19,77 1115 | | AUG 15,77 1230 | | SEP 9,77 1315 | |
|--------------------------------------|-------------------|--------------|-------------------|--------------|-------------------|--------------|-------------------|--------------|------------------|--------------|
| 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 | -- | - | -- | - | 180 | 3 | * | 0 | -- | - |
| ..COELASTRACEAE | | | | | | | | | | |
| ..COELASTRUM | -- | - | 360 | 2 | 330 | 5 | -- | - | -- | - |
| ..HYDRODICTYACEAE | | | | | | | | | | |
| ..PEDIASTRUM | -- | - | 410 | 2 | 400 | 6 | -- | - | 1300 | 8 |
| ..MICRACTINIACEAE | | | | | | | | | | |
| ..GOLENKINIA | -- | - | * | 0 | * | 0 | -- | - | * | 0 |
| ..OOCYSTACEAE | | | | | | | | | | |
| ..ANKISTRODESMUS | 200 | 5 | 620 | 3 | -- | - | 110 | 3 | 400 | 2 |
| ..DICTYOSPHAERIUM | -- | - | 1700 | 8 | -- | - | 280 | 8 | 2000 | 12 |
| ..KIRCHNERIELLA | -- | - | * | 0 | -- | - | * | 0 | 240 | 1 |
| ..OOCYSTIS | -- | - | 210 | 1 | -- | - | -- | - | 480 | 3 |
| ..SELENASTRUM | -- | - | 160 | 1 | -- | - | 53 | 2 | -- | - |
| ..TETRAEDRON | -- | - | 100 | 1 | -- | - | * | 0 | -- | - |
| ..TREUBARIA | -- | - | -- | - | 150 | 2 | -- | - | -- | - |
| ..SCENEDESMACEAE | | | | | | | | | | |
| ..ACTINASTRUM | -- | - | 2800 | 14 | -- | - | 220 | 7 | -- | - |
| ..CRUCIGENIA | -- | - | 1000 | 5 | 100 | 2 | 110 | 3 | 320 | 2 |
| ..SCENEDESMUS | 290 | 7 | 6500* | 32 | 1900* | 30 | 940* | 27 | 2100 | 13 |
| ..TETRASTRUM | -- | - | 830 | 4 | -- | - | -- | - | 320 | 2 |
| ..TETRASPORALES | | | | | | | | | | |
| ..PALMELLACEAE | | | | | | | | | | |
| ..SPHAEROCYSTIS | -- | - | -- | - | -- | - | -- | - | 640 | 4 |
| ..VOLVOCALES | | | | | | | | | | |
| ..CHLAMYDOMONADACEAE | | | | | | | | | | |
| ..CHLAMYDOMONAS | -- | - | 210 | 1 | -- | - | 240 | 7 | -- | - |
| ..PHACOTACEAE | | | | | | | | | | |
| ..PHACOTUS | -- | - | * | 0 | -- | - | 140 | 4 | -- | - |
| ..ZYGNEMATALES | | | | | | | | | | |
| ..DESMIDIACEAE | | | | | | | | | | |
| ..CLOSTERIUM | -- | - | -- | - | -- | - | -- | - | 160 | 1 |
| ..COSMARIUM | -- | - | -- | - | 50 | 1 | -- | - | -- | - |
| ..CHLOROCOCCALES | | | | | | | | | | |
| ..OOCYSTACEAE | | | | | | | | | | |
| ..GLOEOACTINIUM | -- | - | -- | - | -- | - | 110 | 3 | -- | - |
| CHRYSTOPHYTA | | | | | | | | | | |
| ..BACILLARIOPHYCEAE | | | | | | | | | | |
| ..CENTRALES | | | | | | | | | | |
| ..COSCINODISCAEAE | | | | | | | | | | |
| ..CYCLOTELLA | 260 | 6 | 830 | 4 | 300 | 5 | 400 | 12 | 2500 | 15 |
| ..MELOSIRA | 29 | 1 | 100 | 1 | 400 | 6 | 26 | 1 | -- | - |
| ..STEPHANODISCUS | -- | - | -- | - | 450 | 7 | -- | - | 240 | 1 |
| ..PENNALES | | | | | | | | | | |
| ..ACHNANTHACEAE | | | | | | | | | | |
| ..ACHNANTHES | 58 | 1 | 210 | 1 | -- | - | -- | - | -- | - |
| ..COCCONEIS | 58 | 1 | -- | - | * | 0 | * | 0 | -- | - |
| ..CYMBELLACEAE | | | | | | | | | | |
| ..CYMBELLA | 87 | 2 | * | 0 | -- | - | -- | - | -- | - |
| ..EPITHEMIA | 260 | 6 | -- | - | -- | - | -- | - | -- | - |
| ..DIATOMACEAE | | | | | | | | | | |
| ..DIATOMA | 260 | 6 | -- | - | 180 | 3 | -- | - | -- | - |
| ..FRAGILARIACEAE | | | | | | | | | | |
| ..ASTERIONELLA | -- | - | 990 | 5 | -- | - | -- | - | -- | - |
| ..FRAGILARIA | 640* | 16 | 880 | 4 | -- | - | 130 | 4 | -- | - |
| ..HANNAEA | 29 | 1 | -- | - | -- | - | -- | - | -- | - |
| ..SYNEDRA | 410 | 10 | -- | - | 230 | 3 | -- | - | -- | - |
| ..GOMPHONEMACEAE | | | | | | | | | | |
| ..GOMPHONEMA | 200 | 5 | -- | - | -- | - | -- | - | -- | - |
| ..NAVICULACEAE | -- | - | -- | - | -- | - | -- | - | -- | - |
| ..NAVICULA | 490 | 12 | * | 0 | 75 | 1 | 26 | 1 | -- | - |
| ..PINNULARIA | -- | - | -- | - | -- | - | -- | - | 160 | 1 |
| ..NITZSCHACEAE | | | | | | | | | | |
| ..HANTZSCHIA | -- | - | * | 0 | -- | - | -- | - | -- | - |
| ..NITZSCHIA | 520 | 13 | 410 | 2 | * | 0 | 130 | 4 | 240 | 1 |
| ..SURIRELLACEAE | | | | | | | | | | |
| ..SURIRELLA | -- | - | * | 0 | -- | - | -- | - | -- | - |
| CYANOPHYTA (BLUE-GREEN ALGAE) | | | | | | | | | | |
| ..CYANOPHYCEAE | | | | | | | | | | |
| ..CHROCOCCOCCALES | | | | | | | | | | |
| ..CHROCOCCOCCAEAE | | | | | | | | | | |
| ..AGMENELLUM | -- | - | -- | - | 1500* | 22 | -- | - | 3000* | 18 |
| ..ANACYSTIS | -- | - | -- | - | -- | - | 110 | 3 | 160 | 1 |
| ..HORMOGONALES | | | | | | | | | | |
| ..NOSTOCACEAE | | | | | | | | | | |
| ..ANABAENOPSIS | -- | - | 620 | 3 | -- | - | -- | - | -- | - |
| ..OSCILLATORIACEAE | | | | | | | | | | |
| ..LYNGBYA | -- | - | -- | - | -- | - | -- | - | 2200 | 14 |
| ..OSCILLATORIA | 230 | 6 | 1200 | 6 | -- | - | 250 | 7 | -- | - |
| EUGLENOPHYTA (EUGLENOIDS) | | | | | | | | | | |
| ..CRYPTOPHYCEAE | | | | | | | | | | |
| ..CRYPTOMONIDALES | | | | | | | | | | |
| ..CRYPTOCHRYSIDACEAE | | | | | | | * | 0 | -- | - |
| ..CHROMONAS | | | | | | | | | | |
| ..CRYPTOMONADACEAE | -- | - | -- | - | -- | - | 53 | 2 | -- | - |
| ..CRYPTOMONAS | | | | | | | | | | |
| ..EUGLENOPHYCEAE | | | | | | | | | | |
| ..EUGLENALES | | | | | | | | | | |
| ..EUGLENACEAE | | | | | | | | | | |
| ..EUGLENA | -- | - | -- | - | -- | - | 26 | 1 | -- | - |
| ..TRACHELOMONAS | -- | - | -- | - | 180 | 3 | * | 0 | -- | - |

06B07410 WEST NISHNABOTNA RIVER AT HANCOCK, IA

LOCATION.--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 downstream end of right pier of bridge on county highway 630, 0.6 mi (1.0 km) west of Hancock school, and 3.0 mi (4.8 km) downstream from Jim Creek.

DRAINAGE AREA.--609 mi² (1,577 km²).

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,085.94 ft (330.995 m) above mean sea level.

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

AVERAGE DISCHARGE.--18 years, 262 ft³/s (7.420 m³/s), 5.84 in/yr (148 mm/yr), 189,800 acre-ft/yr (234 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.--Maximum discharge, 1,110 ft³/s (31.4 m³/s) Sept. 1, gage height, 4.70 ft (1.433 m), no peak above base of 4,000 ft³/s (113 m³/s); minimum daily, 9.2 ft³/s (0.26 m³/s) July 9.

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 | 49 | 48 | 25 | 18 | 11 | 100 | 66 | 29 | 22 | 26 | 20 | 578 |
| 2 | 46 | 45 | 23 | 18 | 11 | 95 | 66 | 29 | 18 | 22 | 22 | 188 |
| 3 | 45 | 45 | 22 | 17 | 11 | 90 | 63 | 29 | 16 | 20 | 20 | 228 |
| 4 | 54 | 42 | 21 | 17 | 11 | 88 | 73 | 38 | 16 | 15 | 18 | 610 |
| 5 | 54 | 38 | 21 | 16 | 11 | 86 | 67 | 50 | 15 | 14 | 86 | 411 |
| 6 | 50 | 43 | 20 | 16 | 10 | 85 | 59 | 50 | 14 | 11 | 273 | 169 |
| 7 | 49 | 44 | 18 | 16 | 10 | 85 | 53 | 161 | 11 | 11 | 53 | 106 |
| 8 | 45 | 39 | 16 | 16 | 11 | 95 | 52 | 63 | 11 | 10 | 38 | 88 |
| 9 | 46 | 49 | 15 | 16 | 13 | 111 | 49 | 50 | 10 | 9.2 | 46 | 242 |
| 10 | 48 | 48 | 14 | 16 | 15 | 119 | 45 | 39 | 9.7 | 10 | 38 | 376 |
| 11 | 46 | 40 | 14 | 15 | 20 | 160 | 43 | 38 | 9.7 | 24 | 29 | 135 |
| 12 | 48 | 38 | 14 | 15 | 25 | 217 | 42 | 33 | 14 | 30 | 25 | 91 |
| 13 | 45 | 38 | 14 | 15 | 30 | 156 | 46 | 28 | 19 | 16 | 22 | 74 |
| 14 | 44 | 40 | 15 | 15 | 30 | 119 | 48 | 28 | 37 | 13 | 21 | 60 |
| 15 | 42 | 56 | 16 | 15 | 25 | 102 | 46 | 26 | 33 | 12 | 22 | 52 |
| 16 | 42 | 54 | 17 | 14 | 25 | 94 | 44 | 26 | 18 | 30 | 69 | 48 |
| 17 | 39 | 32 | 18 | 14 | 34 | 84 | 42 | 26 | 16 | 78 | 39 | 46 |
| 18 | 43 | 29 | 20 | 14 | 45 | 77 | 40 | 25 | 34 | 169 | 44 | 45 |
| 19 | 48 | 34 | 21 | 14 | 50 | 76 | 43 | 25 | 24 | 50 | 31 | 38 |
| 20 | 53 | 44 | 19 | 14 | 80 | 73 | 45 | 38 | 14 | 30 | 28 | 32 |
| 21 | 50 | 43 | 18 | 14 | 100 | 74 | 46 | 164 | 14 | 28 | 46 | 31 |
| 22 | 48 | 37 | 18 | 14 | 120 | 74 | 46 | 115 | 16 | 203 | 26 | 29 |
| 23 | 48 | 35 | 18 | 14 | 130 | 67 | 45 | 57 | 18 | 64 | 24 | 48 |
| 24 | 50 | 37 | 19 | 14 | 140 | 61 | 40 | 44 | 31 | 159 | 21 | 258 |
| 25 | 49 | 48 | 20 | 14 | 150 | 60 | 34 | 38 | 31 | 339 | 22 | 178 |
| 26 | 46 | 48 | 21 | 14 | 140 | 60 | 32 | 31 | 34 | 95 | 28 | 94 |
| 27 | 46 | 45 | 23 | 14 | 120 | 61 | 32 | 35 | 25 | 52 | 26 | 68 |
| 28 | 45 | 40 | 23 | 13 | 110 | 79 | 31 | 31 | 187 | 39 | 38 | 57 |
| 29 | 46 | 35 | 21 | 13 | --- | 117 | 28 | 28 | 53 | 35 | 27 | 49 |
| 30 | 49 | 28 | 19 | 12 | --- | 97 | 32 | 24 | 31 | 28 | 22 | 44 |
| 31 | 50 | --- | 18 | 12 | --- | 73 | --- | 24 | --- | 22 | 452 | --- |
| TOTAL | 1463 | 1242 | 581 | 459 | 1488 | 2935 | 1398 | 1422 | 801.4 | 1664.2 | 1665 | 4473 |
| MEAN | 47.2 | 41.4 | 18.7 | 14.8 | 53.1 | 94.7 | 46.6 | 45.9 | 26.7 | 53.7 | 53.7 | 149 |
| MAX | 54 | 56 | 25 | 18 | 150 | 217 | 73 | 164 | 187 | 339 | 452 | 610 |
| MIN | 39 | 28 | 14 | 12 | 10 | 60 | 28 | 24 | 9.7 | 9.2 | 18 | 29 |
| CFSM | .08 | .07 | .03 | .02 | .09 | .16 | .08 | .08 | .04 | .09 | .09 | .25 |
| IN. | .09 | .08 | .04 | .03 | .09 | .18 | .09 | .09 | .05 | .10 | .10 | .27 |
| AC-FT | 2900 | 2460 | 1150 | 910 | 2950 | 5820 | 2770 | 2820 | 1590 | 3300 | 3300 | 8870 |

CAL YR 1976 TOTAL 52468.0 MEAN 143 MAX 3330 MIN 14 CFSM .24 IN 3.20 AC-FT 104100
WTR YR 1977 TOTAL 19591.6 MEAN 53.7 MAX 610 MIN 9.2 CFSM .09 IN 1.20 AC-FT 38860

NISHNABOTNA RIVER BASIN

06B0B500 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 16.2 mi (26.1 km) upstream from confluence with East Nishnabotna River.

DRAINAGE AREA.--1,326 mi² (3,434 km²).

PERIOD OF RECORD.--June 1948 to current year.

REVISED RECORDS.--WSP 1440: Drainage area. WRD Iowa 1974: 1973 (M). WRD IA-76-1: 1975 (P).

GAGE.--Water-stage recorder. Datum of gage is 932.99 ft (284.375 m) above mean sea level, 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.--29 years, 533 ft³/s (15.09 m³/s), 5.46 in/yr (139 mm/yr), 386,200 acre-ft/yr (476 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 (6.888 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.--Maximum discharge, 10,200 ft³/s (289 m³/s) Sept. 4, gage height, 18.14 ft (5.529 m) at 1930 hours, no other peak above base of 6,500 ft³/s (184 m³/s); minimum daily, 59 ft³/s (1.67 m³/s) Jan. 31 to Feb. 2, July 9, 10.

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 | 136 | 140 | 120 | 85 | 59 | 136 | 192 | 82 | 98 | 82 | 76 | 1300 |
| 2 | 131 | 135 | 115 | 80 | 59 | 155 | 191 | 83 | 88 | 71 | 73 | 1810 |
| 3 | 126 | 130 | 110 | 76 | 60 | 218 | 189 | 393 | 85 | 67 | 70 | 765 |
| 4 | 133 | 128 | 110 | 72 | 60 | 249 | 221 | 152 | 83 | 65 | 69 | 4050 |
| 5 | 148 | 128 | 110 | 70 | 60 | 178 | 210 | 796 | 78 | 63 | 75 | 2850 |
| 6 | 146 | 130 | 105 | 70 | 60 | 170 | 191 | 240 | 74 | 64 | 198 | 933 |
| 7 | 136 | 131 | 100 | 68 | 60 | 193 | 173 | 178 | 73 | 65 | 290 | 570 |
| 8 | 132 | 130 | 95 | 68 | 60 | 189 | 156 | 1420 | 73 | 63 | 170 | 434 |
| 9 | 131 | 132 | 90 | 68 | 62 | 203 | 148 | 625 | 73 | 59 | 1400 | 370 |
| 10 | 131 | 139 | 86 | 66 | 66 | 218 | 139 | 220 | 72 | 59 | 397 | 331 |
| 11 | 131 | 134 | 85 | 66 | 70 | 290 | 128 | 172 | 70 | 81 | 202 | 600 |
| 12 | 129 | 113 | 85 | 66 | 74 | 485 | 122 | 160 | 77 | 84 | 110 | 416 |
| 13 | 125 | 110 | 85 | 64 | 78 | 430 | 128 | 145 | 98 | 70 | 90 | 344 |
| 14 | 128 | 110 | 88 | 64 | 80 | 307 | 135 | 135 | 102 | 68 | 80 | 295 |
| 15 | 115 | 120 | 92 | 64 | 80 | 238 | 136 | 128 | 82 | 63 | 85 | 257 |
| 16 | 115 | 140 | 96 | 62 | 84 | 198 | 133 | 120 | 85 | 60 | 887 | 239 |
| 17 | 115 | 162 | 100 | 60 | 90 | 182 | 129 | 118 | 76 | 79 | 331 | 439 |
| 18 | 120 | 170 | 110 | 60 | 100 | 168 | 131 | 120 | 73 | 204 | 150 | 282 |
| 19 | 132 | 170 | 120 | 60 | 120 | 175 | 138 | 118 | 73 | 240 | 111 | 229 |
| 20 | 138 | 161 | 110 | 60 | 150 | 189 | 130 | 160 | 72 | 142 | 100 | 210 |
| 21 | 137 | 152 | 100 | 60 | 180 | 180 | 135 | 162 | 73 | 103 | 86 | 206 |
| 22 | 138 | 136 | 90 | 60 | 250 | 167 | 128 | 271 | 77 | 95 | 130 | 198 |
| 23 | 138 | 138 | 90 | 60 | 300 | 164 | 118 | 255 | 76 | 152 | 98 | 1630 |
| 24 | 162 | 140 | 95 | 60 | 320 | 155 | 112 | 160 | 74 | 191 | 77 | 1430 |
| 25 | 165 | 149 | 100 | 60 | 218 | 154 | 102 | 130 | 88 | 225 | 75 | 582 |
| 26 | 141 | 152 | 110 | 60 | 201 | 154 | 95 | 115 | 75 | 315 | 76 | 515 |
| 27 | 135 | 150 | 115 | 60 | 174 | 161 | 91 | 178 | 71 | 205 | 109 | 376 |
| 28 | 134 | 140 | 115 | 60 | 145 | 189 | 89 | 198 | 145 | 118 | 228 | 310 |
| 29 | 135 | 130 | 105 | 60 | --- | 308 | 81 | 95 | 230 | 110 | 108 | 258 |
| 30 | 141 | 125 | 95 | 60 | --- | 274 | 80 | 105 | 170 | 98 | 88 | 289 |
| 31 | 143 | --- | 90 | 59 | --- | 218 | --- | 105 | --- | 77 | 3450 | --- |
| TOTAL | 4167 | 4125 | 3115 | 2008 | 3320 | 6695 | 4151 | 7339 | 2684 | 3438 | 9489 | 22518 |
| MEAN | 134 | 138 | 101 | 64.8 | 119 | 216 | 138 | 237 | 89.5 | 111 | 306 | 751 |
| MAX | 165 | 170 | 120 | 85 | 320 | 485 | 221 | 1420 | 230 | 315 | 3450 | 4050 |
| MIN | 115 | 110 | 85 | 59 | 59 | 136 | 80 | 92 | 70 | 59 | 69 | 198 |
| CFSM | .10 | .10 | .08 | .05 | .09 | .16 | .10 | .18 | .07 | .08 | .23 | .57 |
| IN. | .12 | .12 | .09 | .06 | .09 | .19 | .12 | .21 | .08 | .10 | .27 | .63 |
| AC-FT | 8270 | 8180 | 6180 | 3980 | 6590 | 13280 | 8230 | 14560 | 5320 | 6820 | 18820 | 44660 |

CAL YR 1976 TOTAL 140789 MEAN 385 MAX 7800 MIN 85 CFSM .29 IN 3.95 AC-FT 279300
WTR YR 1977 TOTAL 73050 MEAN 200 MAX 4050 MIN 59 CFSM .15 IN 2.05 AC-FT 144900

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, and 5.4 mi (8.7 km) southwest of junction of U.S. Highway 6 and State Highway 83 in Atlantic.

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) above mean sea level. 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.--17 years, 209 ft³/s (5,919 m³/s), 6.51 in/yr (165 mm/yr), 151,400 acre-ft/yr (187 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.--Maximum discharge, 4,230 ft³/s (120 m³/s) Sept. 3, gage height, 10.29 ft (3.135m) at 2130 hours, no other peak above base of 3,000 ft³/s (85.0 m³/s); minimum daily 2.5 ft³/s (0.071 m³/s) July 10.

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 | 48 | 33 | 19 | 16 | 12 | 80 | 50 | 20 | 14 | 17 | 14 | 658 |
| 2 | 46 | 31 | 19 | 16 | 11 | 90 | 60 | 29 | 14 | 19 | 20 | 399 |
| 3 | 46 | 33 | 19 | 16 | 11 | 105 | 67 | 31 | 14 | 17 | 12 | 826 |
| 4 | 45 | 31 | 19 | 16 | 11 | 114 | 80 | 35 | 12 | 16 | 11 | 1890 |
| 5 | 49 | 31 | 19 | 16 | 11 | 98 | 72 | 44 | 13 | 14 | 234 | 1130 |
| 6 | 46 | 34 | 18 | 16 | 11 | 94 | 63 | 43 | 11 | 14 | 528 | 384 |
| 7 | 47 | 34 | 18 | 15 | 11 | 90 | 56 | 46 | 8.5 | 12 | 85 | 203 |
| 8 | 43 | 33 | 18 | 15 | 11 | 85 | 50 | 43 | 10 | 9.5 | 33 | 138 |
| 9 | 40 | 37 | 18 | 15 | 12 | 100 | 44 | 29 | 10 | 3.5 | 44 | 140 |
| 10 | 37 | 35 | 18 | 15 | 12 | 100 | 41 | 26 | 11 | 2.5 | 51 | 330 |
| 11 | 35 | 31 | 17 | 15 | 12 | 140 | 37 | 24 | 11 | 19 | 31 | 130 |
| 12 | 35 | 28 | 17 | 15 | 13 | 252 | 35 | 20 | 13 | 15 | 14 | 89 |
| 13 | 35 | 26 | 17 | 16 | 13 | 148 | 35 | 20 | 22 | 15 | 9.5 | 85 |
| 14 | 34 | 25 | 17 | 15 | 15 | 105 | 35 | 20 | 22 | 11 | 7.5 | 69 |
| 15 | 34 | 25 | 17 | 14 | 15 | 83 | 33 | 20 | 22 | 9.5 | 8.5 | 53 |
| 16 | 33 | 25 | 17 | 14 | 15 | 74 | 31 | 26 | 19 | 9.5 | 55 | 44 |
| 17 | 33 | 25 | 17 | 14 | 17 | 62 | 30 | 17 | 17 | 86 | 50 | 43 |
| 18 | 34 | 26 | 17 | 14 | 19 | 63 | 31 | 17 | 20 | 151 | 69 | 44 |
| 19 | 40 | 27 | 17 | 14 | 22 | 63 | 40 | 15 | 16 | 72 | 30 | 34 |
| 20 | 43 | 27 | 17 | 13 | 25 | 58 | 37 | 17 | 14 | 30 | 25 | 26 |
| 21 | 30 | 26 | 16 | 13 | 20 | 56 | 37 | 20 | 16 | 26 | 14 | 24 |
| 22 | 35 | 23 | 16 | 13 | 31 | 56 | 40 | 17 | 20 | 30 | 6.5 | 20 |
| 23 | 40 | 22 | 16 | 13 | 35 | 51 | 33 | 17 | 24 | 51 | 6.5 | 264 |
| 24 | 40 | 22 | 16 | 13 | 40 | 48 | 30 | 19 | 99 | 193 | 3.5 | 915 |
| 25 | 35 | 22 | 16 | 13 | 45 | 46 | 28 | 15 | 91 | 444 | 3.5 | 414 |
| 26 | 30 | 22 | 16 | 13 | 50 | 44 | 29 | 14 | 44 | 74 | 12 | 225 |
| 27 | 34 | 21 | 16 | 12 | 60 | 50 | 28 | 13 | 31 | 33 | 43 | 154 |
| 28 | 30 | 20 | 16 | 12 | 70 | 71 | 28 | 13 | 44 | 24 | 69 | 120 |
| 29 | 33 | 20 | 16 | 12 | --- | 127 | 26 | 16 | 22 | 25 | 71 | 105 |
| 30 | 34 | 19 | 16 | 12 | --- | 85 | 28 | 14 | 19 | 19 | 37 | 98 |
| 31 | 35 | --- | 16 | 12 | --- | 50 | --- | 14 | --- | 15 | 690 | --- |
| TOTAL | 1195 | 814 | 531 | 437 | 638 | 2698 | 1224 | 722 | 703.5 | 1476.5 | 2287.5 | 9054 |
| MEAN | 38.5 | 27.1 | 17.1 | 14.1 | 22.3 | 87.0 | 41.1 | 23.3 | 23.5 | 47.6 | 73.8 | 302 |
| MAX | 49 | 37 | 19 | 16 | 70 | 252 | 60 | 46 | 99 | 444 | 690 | 1890 |
| MIN | 30 | 19 | 16 | 12 | 11 | 44 | 20 | 13 | 8.5 | 2.5 | 3.5 | 20 |
| CFSM | .09 | .06 | .04 | .03 | .05 | .20 | .08 | .05 | .05 | .11 | .17 | .69 |
| IN | .19 | .07 | .05 | .04 | .05 | .23 | .11 | .06 | .06 | .13 | .20 | .77 |
| AC-FT | 2370 | 1610 | 1050 | 867 | 1270 | 5350 | 2450 | 1420 | 1400 | 2930 | 4540 | 17960 |

CAL YR 1976 TOTAL 59168.0 MEAN 162 MAX 2970 MIN 16 CFSM .37 IN 5.05 AC-FT 117400
WTR YR 1977 TOTAL 21790.5 MEAN 59.7 MAX 1090 MIN 2.5 CFSM .14 IN 1.86 AC-FT 43220

NISHNABOTNA RIVER BASIN

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.

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) above mean sea level, unadjusted. 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, 1956, water-stage recorder, all at site 0.8 mi (0.8 km) upstream at datum 5.00 ft (1.524 m) higher. June 14, 1956, to Sept. 30, 1959, 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.--47 years (water years 1918-24, 1936-77), 369 ft³/s (10.45 m³/s), 5.61 in/yr (142 mm/yr), 267,300 acre-ft/yr (330 hm³/yr); median of yearly mean discharges, 350 ft³/s (9.91 m³/s), 5.3 in/yr (136 mm/yr), 254,000 acre-ft/yr (310 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,000 ft³/s (1,080 m³/s) Sept. 13, 1972, gage height, 27.43 ft (8.361 m); maximum gage height, 28.23 ft (8.605 m) June 13, 1947, present datum; minimum daily discharge, 8 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 (ft ³ /s) (m ³ /s) | Gage height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) |
|---------|------|--|----------------------|---------|------|--|----------------------|
| Aug. 28 | 0130 | *6,820 193 | *14.35 4.374 | Sept. 2 | 0800 | 5,560 160 | 13.33 4.053 |
| Aug. 31 | 0900 | 5,900 167 | 13.55 4.130 | | | | |

Minimum daily discharge, 27 ft³/s (0.76 m³/s) Jan. 18 to Feb. 2.

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 | 74 | 94 | 64 | 45 | 27 | 80 | 167 | 69 | 52 | 40 | 41 | 1840 |
| 2 | 72 | 87 | 64 | 40 | 27 | 85 | 164 | 68 | 48 | 36 | 39 | 2820 |
| 3 | 86 | 82 | 64 | 38 | 28 | 133 | 174 | 71 | 44 | 33 | 40 | 1100 |
| 4 | 101 | 78 | 64 | 36 | 30 | 228 | 208 | 75 | 44 | 31 | 38 | 2140 |
| 5 | 113 | 74 | 62 | 35 | 30 | 189 | 211 | 139 | 42 | 31 | 37 | 2200 |
| 6 | 104 | 75 | 60 | 34 | 29 | 119 | 179 | 119 | 41 | 30 | 324 | 986 |
| 7 | 89 | 76 | 56 | 33 | 28 | 114 | 153 | 105 | 40 | 30 | 623 | 544 |
| 8 | 80 | 74 | 54 | 32 | 30 | 126 | 134 | 174 | 39 | 29 | 181 | 397 |
| 9 | 83 | 75 | 54 | 31 | 33 | 162 | 113 | 137 | 36 | 28 | 181 | 337 |
| 10 | 74 | 79 | 54 | 30 | 37 | 169 | 101 | 84 | 35 | 28 | 113 | 349 |
| 11 | 77 | 76 | 54 | 30 | 42 | 202 | 93 | 73 | 32 | 50 | 109 | 400 |
| 12 | 74 | 50 | 54 | 30 | 50 | 396 | 87 | 69 | 33 | 55 | 85 | 280 |
| 13 | 76 | 60 | 56 | 30 | 55 | 336 | 86 | 66 | 39 | 49 | 63 | 252 |
| 14 | 73 | 65 | 56 | 30 | 60 | 244 | 87 | 62 | 54 | 38 | 55 | 229 |
| 15 | 68 | 78 | 57 | 30 | 60 | 194 | 91 | 61 | 51 | 32 | 52 | 205 |
| 16 | 67 | 90 | 58 | 29 | 55 | 173 | 95 | 61 | 44 | 30 | 196 | 186 |
| 17 | 67 | 85 | 60 | 28 | 60 | 133 | 89 | 69 | 38 | 40 | 106 | 603 |
| 18 | 72 | 93 | 65 | 27 | 65 | 119 | 86 | 62 | 35 | 92 | 92 | 244 |
| 19 | 75 | 93 | 80 | 27 | 75 | 121 | 91 | 61 | 31 | 232 | 97 | 205 |
| 20 | 83 | 90 | 70 | 27 | 90 | 127 | 99 | 69 | 28 | 118 | 78 | 183 |
| 21 | 90 | 88 | 60 | 27 | 110 | 114 | 107 | 71 | 29 | 74 | 73 | 171 |
| 22 | 88 | 70 | 56 | 27 | 140 | 106 | 101 | 69 | 35 | 57 | 63 | 146 |
| 23 | 91 | 76 | 56 | 27 | 170 | 100 | 95 | 68 | 35 | 63 | 50 | 1150 |
| 24 | 114 | 75 | 56 | 27 | 210 | 91 | 86 | 66 | 34 | 88 | 46 | 1680 |
| 25 | 106 | 75 | 57 | 27 | 212 | 86 | 82 | 64 | 117 | 245 | 46 | 1220 |
| 26 | 90 | 74 | 60 | 27 | 169 | 83 | 75 | 59 | 121 | 415 | 44 | 642 |
| 27 | 89 | 70 | 64 | 27 | 122 | 85 | 73 | 55 | 61 | 135 | 338 | 382 |
| 28 | 87 | 70 | 64 | 27 | 101 | 147 | 73 | 51 | 69 | 76 | 1930 | 311 |
| 29 | 86 | 66 | 60 | 27 | --- | 322 | 69 | 51 | 79 | 60 | 410 | 274 |
| 30 | 87 | 64 | 55 | 27 | --- | 301 | 68 | 51 | 47 | 54 | 208 | 335 |
| 31 | 92 | --- | 50 | 27 | --- | 201 | --- | 52 | --- | 46 | 2760 | --- |
| TOTAL | 2627 | 2302 | 1843 | 939 | 2145 | 5086 | 3337 | 2351 | 1434 | 2356 | 8418 | 21610 |
| MEAN | 84.7 | 76.7 | 59.5 | 30.3 | 76.6 | 164 | 111 | 75.8 | 47.8 | 76.3 | 272 | 720 |
| MAX | 114 | 94 | 80 | 45 | 212 | 396 | 211 | 174 | 121 | 415 | 2760 | 2820 |
| MIN | 67 | 50 | 50 | 27 | 27 | 80 | 68 | 51 | 28 | 28 | 37 | 146 |
| CFSM | .10 | .09 | .07 | .03 | .09 | .18 | .12 | .09 | .05 | .09 | .30 | .81 |
| IN. | .11 | .10 | .08 | .04 | .09 | .21 | .14 | .10 | .06 | .10 | .35 | .90 |
| AC-FT | 5210 | 4570 | 3660 | 1860 | 4250 | 10090 | 6620 | 4660 | 2840 | 4690 | 16700 | 42860 |

| CAL YR 1976 | TOTAL | 121768 | MEAN 333 | MAX 10000 | MIN 50 | CFSM .37 | IN 5.07 | AC-FT 241500 |
|-------------|-------|--------|----------|-----------|--------|----------|---------|--------------|
| WTR YR 1977 | TOTAL | 54458 | MEAN 149 | MAX 2820 | MIN 27 | CFSM .17 | IN 2.27 | AC-FT 108000 |

NISHNABOTNA RIVER BASIN

197

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA

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 1.6 mi (2.6 km) downstream from confluence of East Nishnabotna and West Nishnabotna Rivers and 2 mi (3.2 km) northeast of Hamburg, and at mile 13.2 (21.2 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. WRD Iowa. 1974: 1973.

GAGE.--Water-stage recorder. Datum of gage is 894.17 ft (272.543 m) above mean sea level. 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.--50 years, 1,008 ft³/s (28.55 m³/s), 4.88 in/yr (124 mm/yr), 730,300 acre-ft/yr (900 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, 27.42 ft (8.358 m) Sept. 15, 1972; 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 (ft ³ /s) (m ³ /s) | Gage height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) |
|---------|------|---|-------------------------|---------|------|---|-------------------------|
| Aug. 31 | 2100 | 12,000 343 | 23.16 7.059 | Sept. 4 | 2300 | *12,200 346 | *23.24 7.084 |

Minimum daily discharge, 94 ft³/s (2.66 m³/s) July 10.

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 | 229 | 268 | 180 | 210 | 110 | 321 | 466 | 197 | 170 | 195 | 133 | 7540 |
| 2 | 224 | 259 | 180 | 210 | 115 | 337 | 441 | 197 | 162 | 141 | 119 | 4790 |
| 3 | 216 | 240 | 180 | 220 | 120 | 412 | 417 | 345 | 154 | 126 | 110 | 5040 |
| 4 | 234 | 237 | 190 | 220 | 130 | 491 | 539 | 362 | 152 | 114 | 111 | 6350 |
| 5 | 265 | 234 | 190 | 200 | 130 | 517 | 553 | 653 | 146 | 108 | 122 | 8110 |
| 6 | 262 | 237 | 190 | 190 | 135 | 445 | 490 | 546 | 139 | 101 | 162 | 3950 |
| 7 | 243 | 240 | 190 | 180 | 140 | 403 | 420 | 398 | 131 | 106 | 293 | 2370 |
| 8 | 227 | 245 | 180 | 150 | 140 | 412 | 364 | 574 | 128 | 103 | 678 | 1700 |
| 9 | 219 | 243 | 180 | 130 | 145 | 433 | 336 | 1420 | 122 | 96 | 3240 | 1350 |
| 10 | 214 | 243 | 180 | 120 | 160 | 475 | 309 | 465 | 117 | 94 | 1720 | 1150 |
| 11 | 214 | 251 | 180 | 115 | 170 | 588 | 280 | 335 | 113 | 126 | 566 | 1210 |
| 12 | 214 | 204 | 190 | 110 | 180 | 832 | 257 | 275 | 275 | 166 | 398 | 1390 |
| 13 | 209 | 145 | 200 | 105 | 200 | 970 | 254 | 246 | 218 | 143 | 263 | 1230 |
| 14 | 209 | 170 | 210 | 100 | 220 | 773 | 259 | 233 | 162 | 119 | 213 | 970 |
| 15 | 216 | 190 | 220 | 96 | 220 | 580 | 274 | 220 | 188 | 114 | 199 | 858 |
| 16 | 194 | 245 | 230 | 95 | 210 | 500 | 268 | 206 | 166 | 116 | 1130 | 790 |
| 17 | 192 | 286 | 250 | 95 | 220 | 428 | 265 | 200 | 150 | 101 | 882 | 1210 |
| 18 | 201 | 292 | 240 | 97 | 240 | 384 | 262 | 204 | 139 | 152 | 398 | 1440 |
| 19 | 219 | 295 | 220 | 100 | 270 | 347 | 274 | 200 | 122 | 308 | 278 | 814 |
| 20 | 248 | 283 | 200 | 105 | 300 | 358 | 274 | 263 | 114 | 332 | 244 | 702 |
| 21 | 248 | 268 | 190 | 105 | 320 | 369 | 308 | 285 | 158 | 269 | 229 | 650 |
| 22 | 257 | 240 | 210 | 105 | 335 | 341 | 305 | 313 | 222 | 211 | 209 | 598 |
| 23 | 254 | 234 | 220 | 110 | 400 | 314 | 275 | 389 | 164 | 178 | 220 | 999 |
| 24 | 257 | 245 | 220 | 115 | 500 | 298 | 255 | 263 | 143 | 229 | 160 | 3860 |
| 25 | 311 | 259 | 220 | 120 | 592 | 292 | 233 | 218 | 141 | 272 | 138 | 2180 |
| 26 | 280 | 262 | 210 | 125 | 550 | 289 | 220 | 199 | 184 | 350 | 143 | 1650 |
| 27 | 257 | 160 | 200 | 120 | 470 | 289 | 211 | 211 | 206 | 602 | 239 | 1130 |
| 28 | 254 | 180 | 200 | 115 | 372 | 301 | 208 | 275 | 182 | 365 | 6590 | 922 |
| 29 | 254 | 200 | 200 | 110 | --- | 529 | 198 | 218 | 308 | 296 | 2630 | 818 |
| 30 | 257 | 190 | 200 | 110 | --- | 760 | 192 | 182 | 371 | 213 | 970 | 766 |
| 31 | 265 | --- | 200 | 110 | --- | 613 | --- | 178 | --- | 162 | 8490 | --- |
| TOTAL | 7343 | 7045 | 6250 | 4093 | 7094 | 14401 | 9407 | 10270 | 5147 | 6008 | 31277 | 66537 |
| MEAN | 237 | 235 | 202 | 132 | 253 | 465 | 314 | 331 | 172 | 194 | 1009 | 2218 |
| MAX | 311 | 295 | 250 | 220 | 592 | 970 | 553 | 1420 | 371 | 602 | 8490 | 8110 |
| MIN | 192 | 145 | 180 | 95 | 110 | 289 | 192 | 178 | 113 | 94 | 110 | 598 |
| CFSM | .08 | .08 | .07 | .05 | .09 | .17 | .11 | .12 | .06 | .07 | .36 | .79 |
| IN. | .10 | .09 | .08 | .05 | .09 | .19 | .12 | .14 | .07 | .08 | .41 | .88 |
| AC-FT | 14560 | 13970 | 12400 | 8120 | 14070 | 28550 | 18660 | 20370 | 10210 | 11920 | 62040 | 132000 |

| CAL YR | TOTAL | MEAN | MAX | MIN | CFSM | IN | AC-FT |
|---------|--------|------|-------|-----|------|------|--------|
| YR 1976 | 301363 | 823 | 13100 | 145 | .29 | 4.00 | 597800 |
| YR 1977 | 174872 | 479 | 8490 | 94 | .17 | 2.32 | 346900 |

TARKIO RIVER BASIN

06B11840 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 1952-67.

REVISED RECORDS.--WSP 1919: 1960 (M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,104.67 ft (336.703 m) above mean sea level.

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. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--20 years, 25.7 ft³/s (0.728 m³/s), 7.08 in/yr (180 mm/yr), 18,620 acre-ft/yr (23.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,600 ft³/s (637 m³/s) June 9, 1957, 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 1,600 ft³/s (42.5 m³/s) and maximum (*):

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage height (ft) (m) |
|---------|------|---|-------------------------|----------|------|---|-------------------------|
| Aug. 27 | 2345 | 4,240 120 | 16.34 4.980 | Sept. 2 | 0500 | 4,160 118 | 16.26 4.956 |
| Aug. 31 | 0715 | *7,020 199 | *18.47 5.630 | Sept. 17 | 0645 | 2,670 75.6 | 14.46 4.407 |

No flow Nov. 28 to Dec. 21, Dec. 30 to Feb. 10.

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 | .22 | .96 | .00 | .00 | .00 | .85 | 2.3 | .95 | .45 | .24 | .02 | 192 |
| 2 | .15 | .78 | .00 | .00 | .00 | 1.7 | 6.4 | 2.0 | .16 | .10 | .02 | 1120 |
| 3 | .16 | .42 | .00 | .00 | .00 | 8.3 | 5.3 | 2.6 | .10 | .07 | .01 | 209 |
| 4 | 2.1 | .42 | .00 | .00 | .00 | 2.0 | 19 | 2.2 | .09 | .04 | .01 | 310 |
| 5 | 2.0 | .51 | .00 | .00 | .00 | .85 | 11 | 14 | .08 | .03 | .01 | 145 |
| 6 | 1.1 | .80 | .00 | .00 | .00 | 1.4 | 7.2 | 2.6 | .07 | .03 | .01 | 96 |
| 7 | .61 | 1.2 | .00 | .00 | .00 | 1.7 | 5.1 | 2.1 | .06 | .02 | .01 | 70 |
| 8 | .43 | .89 | .00 | .00 | .00 | 2.3 | 3.6 | 6.6 | .05 | .02 | .01 | 62 |
| 9 | .53 | .85 | .00 | .00 | .00 | 2.3 | 2.8 | 4.2 | .04 | .01 | 15 | 63 |
| 10 | .62 | .62 | .00 | .00 | .00 | 2.7 | 2.4 | 1.9 | .03 | .01 | 4.3 | 49 |
| 11 | .62 | .85 | .00 | .00 | 2.0 | 23 | 1.7 | 1.5 | .02 | .03 | 1.6 | 46 |
| 12 | .62 | .42 | .00 | .00 | 3.2 | 18 | 1.4 | 1.2 | .02 | .60 | 1.11 | 69 |
| 13 | .54 | .10 | .00 | .00 | 3.7 | 5.4 | 1.5 | 1.4 | .02 | .07 | .09 | 59 |
| 14 | .53 | .10 | .00 | .00 | 5.4 | 3.2 | 1.5 | 1.4 | .04 | .05 | .06 | 44 |
| 15 | .22 | .62 | .00 | .00 | 2.0 | 2.0 | 1.2 | 1.1 | .33 | .04 | .05 | 40 |
| 16 | .17 | .85 | .00 | .00 | .62 | 1.4 | 1.4 | .85 | .11 | .03 | 21 | 37 |
| 17 | .15 | .85 | .00 | .00 | 1.7 | 1.4 | 1.3 | 1.1 | .05 | .02 | 7.0 | 670 |
| 18 | .59 | 1.7 | .00 | .00 | 2.7 | 1.4 | 1.7 | .85 | .04 | .02 | 1.3 | 103 |
| 19 | .62 | 1.4 | .00 | .00 | 3.7 | 1.4 | 2.3 | 1.4 | .03 | .01 | .07 | 76 |
| 20 | .61 | 1.4 | .00 | .00 | 3.7 | 2.0 | 5.1 | 3.2 | .04 | .01 | 11 | 64 |
| 21 | .46 | .62 | .00 | .00 | 3.7 | 2.0 | 6.1 | 2.0 | .04 | .04 | 6.5 | 58 |
| 22 | .41 | .42 | .01 | .00 | 7.5 | 1.4 | 3.2 | 1.7 | .05 | .01 | 2.3 | 51 |
| 23 | 1.0 | .42 | .03 | .00 | 16 | 1.1 | 2.5 | 1.1 | .22 | .01 | .38 | 404 |
| 24 | 2.3 | .62 | .03 | .00 | 4.8 | .85 | 1.8 | .85 | .22 | .05 | .60 | 163 |
| 25 | 1.5 | 1.1 | .03 | .00 | 2.3 | .85 | 1.9 | .85 | .42 | .23 | .50 | 82 |
| 26 | 1.1 | .85 | .03 | .00 | 1.4 | .85 | 2.0 | .79 | .23 | .10 | .40 | 66 |
| 27 | .85 | .62 | .05 | .00 | 1.1 | 1.1 | 1.4 | .58 | .07 | .05 | 428 | 57 |
| 28 | .92 | .00 | .06 | .00 | 1.1 | 13 | 1.1 | .62 | 2.1 | .03 | 1170 | 52 |
| 29 | .98 | .00 | .02 | .00 | --- | 16 | 1.1 | .95 | 1.4 | .03 | 51 | 50 |
| 30 | 1.0 | .00 | .00 | .00 | --- | 4.8 | .75 | .87 | .88 | .02 | 29 | 82 |
| 31 | 1.1 | --- | .00 | .00 | --- | 2.3 | --- | .85 | --- | .02 | 1870 | --- |
| TOTAL | 24.21 | 20.39 | .26 | .00 | 66.62 | 127.55 | 105.05 | 64.32 | 7.46 | 2.04 | 3620.36 | 4569 |
| MEAN | .78 | .68 | .008 | .000 | 2.38 | 4.11 | 3.50 | 2.07 | .25 | .066 | 117 | 152 |
| MAX | 2.3 | 1.7 | .06 | .00 | 16 | 23 | 19 | 14 | 2.1 | .60 | 1870 | 1120 |
| MIN | .15 | .00 | .00 | .00 | .00 | .85 | .75 | .58 | .02 | .01 | .01 | 37 |
| CFSM | .02 | .01 | .000 | .000 | .05 | .08 | .07 | .04 | .005 | .001 | 2.37 | 3.08 |
| IN. | .02 | .02 | .00 | .00 | .05 | .10 | .08 | .05 | .01 | .00 | 2.73 | 3.45 |
| AC-FT | 48 | 40 | .5 | .00 | 132 | 253 | 208 | 128 | 15 | 4.0 | 7180 | 9060 |

| | | | | | | | | |
|-------------|-------|---------|-----------|----------|---------|----------|---------|-------------|
| CAL YR 1976 | TOTAL | 8960.43 | MEAN 24.5 | MAX 2310 | MIN .00 | CFSM .50 | IN 6.76 | AC-FT 17770 |
| WTR YR 1977 | TOTAL | 8607.26 | MEAN 23.6 | MAX 1870 | MIN .00 | CFSM .48 | IN 6.49 | AC-FT 17070 |

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 Nemaha River, and at mile 498.0 (801.3 km).

DRAINAGE AREA (REVISED).--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 1886 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) above mean sea level. Prior to Sept. 13, 1950, nonrecording gage at site 80 ft (24 m) upstream at same datum.

REMARKS.--Records good except those for winter period, which are poor. 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.--28 years, 39,020 ft³/s (1,105 m³/s), 28,270,000 acre-ft/yr (34,900 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, 83,100 ft³/s (2,350 m³/s) Sept. 5, gage height, 16.87 ft (5.142 m); maximum gage height, 17.25 ft (5.258 m) Jan. 28, backwater from ice; minimum daily discharge, 14,000 ft³/s (396 m³/s) Feb. 1; minimum gage height, 5.36 ft (1.634 m) Jan. 9.

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 | 42000 | 40200 | 37000 | 24000 | 14000 | 26100 | 40700 | 38500 | 42300 | 37400 | 37200 | 69700 |
| 2 | 41700 | 40400 | 36600 | 24000 | 15000 | 25900 | 38900 | 38300 | 41400 | 36600 | 37400 | 57700 |
| 3 | 41600 | 40600 | 38400 | 23800 | 16000 | 25800 | 41400 | 39000 | 43000 | 36000 | 37800 | 69700 |
| 4 | 42600 | 40800 | 40200 | 23600 | 18000 | 25400 | 43100 | 38900 | 40100 | 35800 | 38200 | 76500 |
| 5 | 42700 | 41500 | 39700 | 23000 | 19000 | 24600 | 42800 | 40200 | 39100 | 35900 | 38100 | 77700 |
| 6 | 42200 | 41200 | 36100 | 24000 | 19500 | 24300 | 41500 | 41200 | 38400 | 35400 | 40300 | 62500 |
| 7 | 41600 | 40700 | 33500 | 24000 | 20000 | 24800 | 39100 | 40500 | 37000 | 35200 | 39500 | 49300 |
| 8 | 41000 | 39600 | 30000 | 23500 | 20000 | 23300 | 38800 | 39500 | 36300 | 35300 | 38200 | 43200 |
| 9 | 39700 | 40000 | 26900 | 23000 | 21000 | 24000 | 38400 | 43400 | 36000 | 36400 | 42800 | 41000 |
| 10 | 39400 | 40500 | 26300 | 22500 | 21000 | 24300 | 37800 | 39300 | 36300 | 36600 | 57000 | 39200 |
| 11 | 38800 | 40500 | 26200 | 22500 | 21000 | 25400 | 38400 | 39700 | 36200 | 37500 | 49500 | 38300 |
| 12 | 37800 | 41200 | 25300 | 22000 | 22000 | 27700 | 38000 | 38300 | 36600 | 36600 | 43900 | 47900 |
| 13 | 37700 | 42000 | 25100 | 22000 | 23000 | 28000 | 38300 | 38200 | 38400 | 37300 | 38300 | 61900 |
| 14 | 39100 | 41700 | 25400 | 22000 | 24000 | 29100 | 39200 | 37900 | 38200 | 37100 | 38200 | 46400 |
| 15 | 40500 | 39500 | 26000 | 22000 | 26000 | 31100 | 40400 | 38000 | 38000 | 36300 | 38900 | 41500 |
| 16 | 40400 | 39400 | 25900 | 22000 | 27000 | 29900 | 40200 | 37700 | 37600 | 37700 | 47600 | 40700 |
| 17 | 40400 | 40200 | 26300 | 22500 | 27900 | 29000 | 39100 | 37900 | 36800 | 37600 | 49300 | 39200 |
| 18 | 41100 | 40100 | 26400 | 21000 | 27800 | 29300 | 42400 | 37400 | 38000 | 39300 | 44400 | 41200 |
| 19 | 41100 | 40300 | 26000 | 20000 | 27500 | 29700 | 41100 | 39500 | 39000 | 38100 | 41000 | 40200 |
| 20 | 41200 | 40600 | 25800 | 19000 | 27000 | 29000 | 40500 | 43700 | 40500 | 36400 | 38300 | 39200 |
| 21 | 41700 | 41400 | 25900 | 18500 | 28000 | 30100 | 41200 | 40800 | 38800 | 35900 | 38400 | 38800 |
| 22 | 41200 | 41700 | 25300 | 20500 | 29000 | 35000 | 41000 | 41800 | 37400 | 41000 | 40700 | 38100 |
| 23 | 41000 | 40700 | 24400 | 21000 | 27300 | 40500 | 41500 | 45200 | 36800 | 43800 | 41900 | 38200 |
| 24 | 40700 | 40600 | 25000 | 20000 | 29100 | 39600 | 44000 | 49500 | 37600 | 38200 | 39500 | 46200 |
| 25 | 41200 | 39700 | 26600 | 20000 | 29300 | 38600 | 41000 | 46300 | 44700 | 41400 | 38600 | 42800 |
| 26 | 41400 | 40100 | 25800 | 19500 | 29300 | 41300 | 40300 | 42100 | 41400 | 41400 | 38300 | 40600 |
| 27 | 40900 | 40600 | 26100 | 18500 | 28300 | 41900 | 40000 | 40600 | 36200 | 39400 | 38400 | 39700 |
| 28 | 40800 | 40500 | 26100 | 17500 | 27000 | 40800 | 40000 | 46500 | 36800 | 37700 | 49500 | 38900 |
| 29 | 41200 | 39200 | 25600 | 16500 | --- | 43100 | 39400 | 56600 | 37500 | 41000 | 47300 | 38400 |
| 30 | 40500 | 37900 | 24800 | 15500 | --- | 42800 | 39100 | 56200 | 37500 | 37600 | 41500 | 38100 |
| 31 | 40000 | --- | 24800 | 15000 | --- | 43100 | --- | 46100 | --- | 36900 | 48600 | --- |
| TOTAL | 1263200 | 1213400 | 883500 | 652900 | 664000 | 973500 | 1207600 | 1298800 | 1153900 | 1168800 | 1298600 | 1422800 |
| MEAN | 40750 | 40450 | 28500 | 21060 | 23710 | 31400 | 40250 | 41900 | 38460 | 37700 | 41890 | 47430 |
| MAX | 42700 | 42000 | 40200 | 24000 | 29300 | 43100 | 44000 | 56600 | 44700 | 43800 | 57000 | 77700 |
| MIN | 37700 | 37900 | 24400 | 15000 | 14000 | 23300 | 37800 | 37400 | 36000 | 35200 | 37200 | 38100 |
| AC-FT | 2506000 | 2407000 | 1752000 | 1295000 | 1317000 | 1931000 | 2395000 | 2576000 | 2289000 | 2318000 | 2576000 | 2822000 |
| CAL YR 1976 | TOTAL | 14736700 | MEAN | 40260 | MAX | 69100 | MIN | 15000 | AC-FT | 29230000 | | |
| WTR YR 1977 | TOTAL | 13201000 | MEAN | 36170 | MAX | 77700 | MIN | 14000 | AC-FT | 26180000 | | |

NODAWAY RIVER BASIN

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) above mean sea level. Prior to July 5, 1925, and May 28, 1936, to Mar. 26, 1967, nonrecording gage at same site and datum.

REMARKS.--Records good prior to Aug. 28 and fair thereafter, 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 1.05 ft³/s (0.030 m³/s).

COOPERATION.--Average pumpage furnished by Clarinda water works.

AVERAGE DISCHARGE.--47 years (1918-24, 1936-77), 321 ft³/s (9.091 m³/s), 5.72 in/yr (145 mm/yr), 232,600 acre-ft/yr (287 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 (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) |
|---------|------|---|-------------------------|----------|------|---|-------------------------|
| Aug. 28 | 0330 | 15,000 425 | 14.26 4.346 | Sept. 4 | 1845 | 7,120 202 | 9.80 2.987 |
| Aug. 31 | 1700 | 24,800 702 | 18.27 5.569 | Sept. 17 | 1030 | 6,560 186 | 9.40 2.865 |
| Sept. 2 | 1900 | *27,600 782 | *19.28 5.877 | Sept. 24 | 0045 | 8,200 232 | 10.53 3.210 |

Minimum daily discharge, 12 ft³/s (0.34 m³/s) July 20.

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 | 40 | 42 | 17 | 22 | 16 | 75 | 130 | 51 | 29 | 20 | 14 | 5220 |
| 2 | 39 | 40 | 17 | 21 | 16 | 80 | 127 | 51 | 26 | 17 | 15 | 18200 |
| 3 | 36 | 39 | 18 | 20 | 16 | 123 | 173 | 62 | 26 | 20 | 13 | 10500 |
| 4 | 53 | 37 | 19 | 19 | 17 | 173 | 230 | 58 | 26 | 16 | 14 | 5000 |
| 5 | 52 | 38 | 20 | 19 | 17 | 132 | 341 | 73 | 25 | 15 | 22 | 3280 |
| 6 | 46 | 40 | 18 | 19 | 17 | 92 | 252 | 176 | 21 | 16 | 28 | 1130 |
| 7 | 46 | 37 | 17 | 18 | 17 | 82 | 187 | 105 | 20 | 20 | 23 | 676 |
| 8 | 42 | 37 | 16 | 18 | 20 | 85 | 154 | 86 | 21 | 19 | 36 | 495 |
| 9 | 40 | 42 | 15 | 17 | 21 | 86 | 127 | 80 | 20 | 17 | 1360 | 438 |
| 10 | 40 | 40 | 15 | 17 | 22 | 101 | 116 | 60 | 21 | 17 | 253 | 370 |
| 11 | 39 | 36 | 15 | 17 | 30 | 142 | 103 | 53 | 22 | 33 | 103 | 282 |
| 12 | 41 | 20 | 15 | 17 | 40 | 427 | 92 | 45 | 21 | 29 | 66 | 364 |
| 13 | 40 | 28 | 16 | 17 | 40 | 341 | 84 | 40 | 26 | 21 | 42 | 549 |
| 14 | 39 | 45 | 17 | 17 | 38 | 176 | 84 | 41 | 30 | 19 | 41 | 370 |
| 15 | 36 | 54 | 18 | 17 | 35 | 120 | 84 | 41 | 26 | 17 | 41 | 272 |
| 16 | 35 | 54 | 19 | 16 | 38 | 98 | 82 | 40 | 23 | 18 | 134 | 229 |
| 17 | 34 | 49 | 20 | 15 | 45 | 86 | 78 | 43 | 22 | 19 | 137 | 2610 |
| 18 | 36 | 43 | 21 | 15 | 60 | 75 | 77 | 53 | 23 | 19 | 60 | 1040 |
| 19 | 37 | 43 | 22 | 15 | 80 | 71 | 80 | 46 | 20 | 14 | 47 | 605 |
| 20 | 38 | 42 | 23 | 15 | 90 | 73 | 86 | 57 | 18 | 12 | 501 | 850 |
| 21 | 42 | 41 | 24 | 15 | 100 | 71 | 90 | 46 | 19 | 19 | 161 | 517 |
| 22 | 40 | 33 | 22 | 15 | 130 | 71 | 103 | 45 | 28 | 20 | 81 | 492 |
| 23 | 44 | 38 | 23 | 15 | 150 | 67 | 84 | 62 | 25 | 18 | 56 | 2340 |
| 24 | 47 | 42 | 25 | 15 | 170 | 64 | 67 | 54 | 24 | 18 | 38 | 4690 |
| 25 | 46 | 43 | 27 | 15 | 200 | 62 | 60 | 40 | 22 | 36 | 30 | 1360 |
| 26 | 45 | 30 | 35 | 15 | 140 | 58 | 58 | 32 | 20 | 20 | 34 | 726 |
| 27 | 40 | 28 | 40 | 16 | 100 | 62 | 55 | 32 | 17 | 19 | 167 | 599 |
| 28 | 41 | 20 | 35 | 16 | 80 | 90 | 51 | 37 | 77 | 18 | 8440 | 468 |
| 29 | 43 | 17 | 30 | 16 | --- | 454 | 50 | 36 | 40 | 18 | 1550 | 423 |
| 30 | 44 | 17 | 25 | 16 | --- | 386 | 50 | 34 | 29 | 16 | 435 | 453 |
| 31 | 45 | --- | 23 | 16 | --- | 179 | --- | 37 | --- | 15 | 13000 | --- |
| TOTAL | 1286 | 1115 | 667 | 521 | 1745 | 4203 | 3355 | 1716 | 767 | 595 | 26942 | 64548 |
| MEAN | 41.5 | 37.2 | 21.5 | 16.8 | 62.3 | 136 | 112 | 55.4 | 25.6 | 19.2 | 869 | 2152 |
| MAX | 53 | 54 | 40 | 22 | 200 | 454 | 341 | 176 | 77 | 36 | 13000 | 18200 |
| MIN | 34 | 17 | 15 | 15 | 16 | 58 | 50 | 32 | 17 | 12 | 13 | 229 |
| CFSM | .05 | .05 | .03 | .02 | .08 | .18 | .15 | .07 | .03 | .03 | 1.14 | 2.82 |
| IN. | .06 | .05 | .03 | .03 | .09 | .21 | .16 | .08 | .04 | .03 | 1.32 | 3.15 |
| AC-FT | 2550 | 2210 | 1320 | 1030 | 3460 | 8340 | 6650 | 3400 | 1520 | 1180 | 53440 | 128000 |

| | | | | | | | | |
|-------------|-------|--------|----------|-----------|--------|----------|---------|--------------|
| CAL YR 1976 | TOTAL | 125197 | MEAN 342 | MAX 19500 | MIN 15 | CFSM .45 | IN 6.11 | AC-FT 248300 |
| WTR YR 1977 | TOTAL | 107460 | MEAN 294 | MAX 18200 | MIN 12 | CFSM .39 | IN 5.25 | AC-FT 213100 |

06817000 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 TEMPERATURE: October 1975 to current year.

SEDIMENT RECORDS: 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. No daily temperature record for several days, Dec-Feb, Apr. to Sept.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum observed, 470 micromhos Jan. 16, 1975; minimum, 130 micromhos June 15, 1976.

TEMPERATURE: Maximum observed, 27.5°C May 24, 1977; minimum, 0.0°C several days most years.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 15,700 mg/L Sept. 2, 1977; minimum daily mean, 5 mg/L Dec. 14, 1977.

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 observed, 440 micromhos Dec. 21; minimum, 140 micromhos Sept. 3.

TEMPERATURE: Maximum observed, 27.5°C May 24; minimum, 0.0°C several days.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 15,700 mg/L Sept. 2; minimum daily mean, 5 mg/L Dec. 14.

SEDIMENT LOADS: Maximum daily, 991,000 tons (899,000 tonnes) Sept. 2; minimum daily, 0.23 ton (0.21 tonne) Dec. 14.

WATER QUALITY DATA, OCTOBER 1976 TO SEPTEMBER 1977

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | 320 | 370 | 390 | 320 | 320 | 360 | --- | 380 | 380 | 380 | 370 | 150 |
| 2 | 320 | 360 | 415 | 320 | 380 | 340 | 380 | 380 | 390 | 380 | --- | 160 |
| 3 | 320 | 370 | 335 | 320 | 290 | 340 | 400 | 370 | 400 | --- | --- | 140 |
| 4 | 290 | 370 | 340 | 300 | 310 | 320 | 380 | 380 | 390 | 380 | 370 | 200 |
| 5 | 340 | 360 | 410 | 320 | 290 | 320 | 370 | 390 | 390 | 380 | 340 | --- |
| 6 | 340 | --- | 360 | 310 | 340 | 340 | 360 | 320 | 390 | --- | 330 | 310 |
| 7 | 340 | --- | 400 | 320 | 380 | 340 | 380 | --- | 390 | 390 | 330 | 350 |
| 8 | 340 | --- | 420 | 330 | 380 | 360 | 400 | 340 | 390 | 370 | 350 | 380 |
| 9 | --- | --- | 300 | 340 | 320 | 360 | --- | 350 | 390 | 370 | 250 | 390 |
| 10 | --- | --- | 325 | 330 | --- | 350 | --- | 390 | 390 | 370 | 210 | 390 |
| 11 | 300 | --- | --- | 320 | 340 | --- | 380 | 400 | 380 | 370 | 310 | --- |
| 12 | 310 | 350 | --- | 320 | 390 | 340 | 400 | 400 | 380 | 320 | 350 | 400 |
| 13 | 330 | --- | 300 | 370 | 420 | 320 | 400 | 400 | 320 | 340 | 370 | --- |
| 14 | 330 | --- | 435 | 320 | 320 | 360 | 400 | 380 | --- | 340 | 390 | 380 |
| 15 | --- | --- | 380 | 320 | 320 | 380 | 400 | 380 | 340 | 350 | 400 | 400 |
| 16 | --- | 340 | 420 | 320 | --- | 400 | 380 | 390 | --- | 370 | 360 | 420 |
| 17 | --- | --- | 420 | 310 | 320 | 420 | 380 | 390 | 360 | 370 | 240 | 220 |
| 18 | 380 | 390 | --- | 400 | --- | --- | 380 | 350 | 360 | 360 | 310 | 230 |
| 19 | 400 | 390 | 380 | 320 | 380 | 420 | --- | 350 | 370 | 340 | --- | 330 |
| 20 | 390 | --- | --- | 320 | 300 | 410 | 380 | 350 | 370 | 355 | --- | 380 |
| 21 | 385 | --- | 440 | 320 | --- | 410 | 380 | 380 | 340 | 370 | --- | 400 |
| 22 | 350 | 380 | 370 | 310 | 420 | 415 | 400 | 360 | 330 | 360 | 260 | 390 |
| 23 | --- | 380 | 295 | 350 | 320 | 420 | --- | --- | 365 | 360 | 340 | 390 |
| 24 | --- | 390 | 320 | 290 | 320 | 410 | --- | 355 | 270 | 360 | 340 | 210 |
| 25 | 380 | --- | 300 | 320 | 280 | 420 | 400 | 360 | 370 | 340 | 400 | 270 |
| 26 | 380 | --- | 300 | 330 | 280 | --- | 320 | 380 | 380 | 430 | 410 | 350 |
| 27 | 380 | --- | --- | 310 | 290 | --- | 390 | 390 | 380 | 430 | 410 | 380 |
| 28 | 370 | --- | 290 | 310 | 320 | --- | --- | 380 | 280 | 360 | 160 | 390 |
| 29 | 380 | --- | 300 | 320 | --- | 360 | 390 | 370 | 340 | 360 | 180 | 400 |
| 30 | --- | 430 | 325 | 310 | --- | 320 | 390 | 370 | 350 | --- | 240 | 400 |
| 31 | --- | --- | 340 | 340 | --- | 340 | --- | 380 | --- | --- | 150 | --- |

NODAWAY RIVER BASIN

06817000 NODAWAY RIVER AT CLARINDA, IA--Continued

WATER-QUALITY RECORDS

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ONCE-DAILY

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-----|------|-----|-----|-----|-----|------|------|------|------|------|------|------|
| 1 | --- | 9.0 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 22.0 |
| 2 | 15.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3 | 16.5 | 8.0 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4 | --- | 3.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5 | --- | 2.0 | --- | --- | --- | --- | 10.0 | --- | --- | --- | --- | --- |
| 6 | 15.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 7 | 12.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 14.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 9 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 10 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 23.0 | --- |
| 11 | 13.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 12 | 15.5 | 2.0 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 13 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 14 | 15.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 15 | --- | --- | --- | --- | --- | 5.5 | --- | --- | --- | --- | --- | --- |
| 16 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 17 | --- | --- | 0.0 | --- | --- | 8.0 | --- | --- | --- | --- | --- | --- |
| 18 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 19 | 4.0 | 6.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 20 | 10.0 | --- | --- | --- | --- | --- | 18.0 | --- | --- | 20.0 | --- | --- |
| 21 | 5.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 20.5 |
| 22 | 10.0 | --- | --- | --- | --- | --- | --- | --- | 21.5 | --- | --- | --- |
| 23 | --- | 2.0 | --- | --- | 0.5 | 7.0 | --- | --- | --- | --- | --- | --- |
| 24 | --- | --- | --- | --- | --- | 11.0 | --- | 27.5 | --- | --- | 21.5 | --- |
| 25 | 9.5 | --- | --- | --- | --- | 12.0 | --- | --- | --- | --- | --- | --- |
| 26 | 6.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 27 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 28 | 6.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 29 | --- | --- | --- | --- | --- | 9.0 | --- | --- | --- | --- | 21.0 | --- |
| 30 | --- | 0.0 | --- | --- | --- | 8.5 | --- | --- | --- | --- | --- | --- |
| 31 | --- | --- | --- | 0.0 | --- | --- | --- | --- | --- | --- | --- | --- |

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DAY | MEAN CONCENTRATION (MG/L) | | LOADS (T/DAY) | | MEAN CONCENTRATION (MG/L) | | LOADS (T/DAY) | | MEAN CONCENTRATION (MG/L) | | LOADS (T/DAY) | | MEAN CONCENTRATION (MG/L) | | LOADS (T/DAY) | | MEAN CONCENTRATION (MG/L) | | LOADS (T/DAY) | |
|-------|---------------------------|-------|---------------|-------|---------------------------|-------|---------------|-------|---------------------------|-------|---------------|---------|---------------------------|--|---------------|--|---------------------------|--|---------------|--|
| | | | | | | | | | | | | | | | | | | | | |
| | OCTOBER | | NOVEMBER | | DECEMBER | | JANUARY | | FEBRUARY | | MARCH | | | | | | | | | |
| 1 | 22 | 2.4 | 20 | 2.3 | 56 | 2.6 | 104 | 6.2 | 30 | 1.3 | 15 | 3.0 | | | | | | | | |
| 2 | 23 | 2.4 | 18 | 1.9 | 34 | 1.6 | 94 | 5.3 | 34 | 1.5 | 34 | 7.3 | | | | | | | | |
| 3 | 16 | 1.6 | 9 | 0.95 | 22 | 1.1 | 32 | 1.7 | 33 | 1.4 | 95 | 32 | | | | | | | | |
| 4 | 44 | 6.3 | 14 | 1.4 | 14 | 0.72 | 32 | 1.6 | 39 | 1.8 | 277 | 129 | | | | | | | | |
| 5 | 23 | 3.2 | 23 | 2.4 | 9 | 0.49 | 47 | 2.4 | 33 | 1.5 | 252 | 90 | | | | | | | | |
| 6 | 11 | 1.4 | 28 | 3.0 | 10 | 0.49 | 34 | 1.7 | 40 | 1.8 | 155 | 39 | | | | | | | | |
| 7 | 13 | 1.6 | 23 | 2.3 | 10 | 0.46 | 22 | 1.1 | 38 | 1.7 | 110 | 24 | | | | | | | | |
| 8 | 10 | 1.1 | 27 | 2.7 | 10 | 0.43 | 22 | 1.1 | 38 | 2.1 | 77 | 18 | | | | | | | | |
| 9 | 9 | 0.97 | 32 | 3.6 | 19 | 0.77 | 30 | 1.4 | 34 | 1.9 | 60 | 14 | | | | | | | | |
| 10 | 15 | 1.6 | 29 | 3.1 | 17 | 0.69 | 32 | 1.5 | 45 | 2.7 | 64 | 17 | | | | | | | | |
| 11 | 16 | 1.7 | 23 | 2.2 | 18 | 0.73 | 45 | 2.1 | 45 | 3.6 | 230 | 88 | | | | | | | | |
| 12 | 16 | 1.8 | 17 | 0.92 | 18 | 0.73 | 20 | 0.92 | 19 | 2.1 | 2270 | 2990 | | | | | | | | |
| 13 | 14 | 1.5 | 13 | 0.98 | 17 | 0.73 | 30 | 1.4 | 31 | 3.3 | 2250 | 2230 | | | | | | | | |
| 14 | 26 | 2.7 | 11 | 1.3 | 5 | 0.23 | 30 | 1.4 | 36 | 3.7 | 690 | 328 | | | | | | | | |
| 15 | 28 | 2.7 | 11 | 1.6 | 6 | 0.29 | 18 | 0.83 | 30 | 2.8 | 248 | 80 | | | | | | | | |
| 16 | 24 | 2.3 | 10 | 1.5 | 17 | 0.87 | 27 | 1.2 | 27 | 2.8 | 135 | 36 | | | | | | | | |
| 17 | 19 | 1.7 | 17 | 2.2 | 20 | 1.1 | 32 | 1.3 | 23 | 2.8 | 132 | 31 | | | | | | | | |
| 18 | 11 | 1.1 | 22 | 2.6 | 16 | 0.91 | 25 | 1.0 | 24 | 3.9 | 114 | 23 | | | | | | | | |
| 19 | 7 | 0.70 | 21 | 2.4 | 14 | 0.83 | 12 | 0.49 | 30 | 6.5 | 80 | 15 | | | | | | | | |
| 20 | 8 | 0.82 | 22 | 2.5 | 55 | 3.4 | 14 | 0.57 | 24 | 5.8 | 58 | 11 | | | | | | | | |
| 21 | 13 | 1.5 | 23 | 2.5 | 17 | 1.1 | 15 | 0.61 | 14 | 3.8 | 55 | 11 | | | | | | | | |
| 22 | 12 | 1.3 | 23 | 2.0 | 35 | 2.1 | 18 | 0.73 | 9 | 3.2 | 55 | 11 | | | | | | | | |
| 23 | 15 | 1.8 | 16 | 1.6 | 59 | 3.7 | 25 | 1.0 | 50 | 20 | 40 | 7.2 | | | | | | | | |
| 24 | 15 | 1.9 | 9 | 1.0 | 40 | 2.7 | 17 | 0.69 | 145 | 67 | 47 | 8.1 | | | | | | | | |
| 25 | 12 | 1.5 | 9 | 1.0 | 38 | 2.8 | 30 | 1.2 | 151 | 82 | 67 | 11 | | | | | | | | |
| 26 | 12 | 1.5 | 10 | 0.81 | 30 | 2.8 | 37 | 1.5 | 106 | 40 | 66 | 10 | | | | | | | | |
| 27 | 10 | 1.1 | 22 | 1.7 | 25 | 2.7 | 14 | 0.60 | 63 | 17 | 62 | 10 | | | | | | | | |
| 28 | 31 | 3.4 | 50 | 2.7 | 24 | 2.3 | 9 | 0.39 | 47 | 10 | 98 | 24 | | | | | | | | |
| 29 | 14 | 1.6 | 48 | 2.2 | 27 | 2.2 | 35 | 1.5 | --- | --- | 3400 | 5260 | | | | | | | | |
| 30 | 14 | 1.7 | 65 | 3.0 | 28 | 1.9 | 22 | 0.95 | --- | --- | 4280 | 4980 | | | | | | | | |
| 31 | 15 | 1.8 | --- | --- | 62 | 3.9 | 21 | 0.91 | --- | --- | 1020 | 493 | | | | | | | | |
| TOTAL | --- | 58.69 | --- | 60.36 | --- | 47.37 | --- | 45.29 | --- | 298.0 | --- | 17030.6 | | | | | | | | |

06817000 NODAWAY RIVER AT CLARINDA, IA--Continued

WATER-QUALITY RECORDS

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| 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 | 540 | 190 | 47 | 6.5 | 73 | 5.7 | 50 | 2.7 | 90 | 3.4 | 6660 | 127000 |
| 2 | 287 | 98 | 37 | 5.1 | 65 | 4.6 | 102 | 4.7 | 55 | 2.2 | 15700 | 991000 |
| 3 | 418 | 195 | 50 | 8.4 | 103 | 7.2 | 97 | 5.2 | 56 | 2.0 | 6980 | 228000 |
| 4 | 443 | 275 | 95 | 15 | 95 | 6.7 | 56 | 2.4 | 46 | 1.7 | 1970 | 26600 |
| 5 | 1070 | 985 | 107 | 21 | 68 | 4.6 | 77 | 3.1 | 50 | 3.0 | 3020 | 26700 |
| 6 | 650 | 442 | 522 | 248 | 137 | 7.8 | 63 | 2.7 | 49 | 3.7 | 1560 | 4760 |
| 7 | 360 | 182 | 200 | 57 | 98 | 5.3 | 70 | 3.8 | 45 | 2.8 | 680 | 1240 |
| 8 | 264 | 110 | 170 | 39 | 116 | 6.6 | 79 | 4.1 | 79 | 7.7 | 470 | 628 |
| 9 | 239 | 82 | 218 | 47 | 126 | 6.8 | 144 | 6.6 | 1850 | 10800 | 495 | 585 |
| 10 | 220 | 69 | 139 | 23 | 131 | 7.4 | 265 | 12 | 560 | 477 | 320 | 320 |
| 11 | 198 | 55 | 80 | 11 | 116 | 6.9 | 136 | 12 | 112 | 31 | 255 | 194 |
| 12 | 133 | 33 | 119 | 14 | 119 | 6.7 | 92 | 7.2 | 67 | 12 | 500 | 491 |
| 13 | 93 | 21 | 131 | 14 | 107 | 7.5 | 70 | 4.0 | 42 | 4.8 | 548 | 812 |
| 14 | 75 | 17 | 105 | 12 | 114 | 9.2 | 63 | 3.2 | 40 | 4.4 | 350 | 350 |
| 15 | 63 | 14 | 112 | 12 | 80 | 5.6 | 70 | 3.2 | 25 | 2.8 | 210 | 154 |
| 16 | 58 | 13 | 86 | 9.3 | 64 | 4.0 | 103 | 5.0 | 678 | 245 | 168 | 104 |
| 17 | 50 | 11 | 95 | 11 | 76 | 4.5 | 75 | 3.8 | 580 | 215 | 7320 | 70700 |
| 18 | 25 | 5.2 | 122 | 18 | 102 | 6.3 | 83 | 4.3 | 88 | 14 | 3080 | 11400 |
| 19 | 26 | 5.6 | 131 | 16 | 92 | 5.0 | 97 | 3.7 | 140 | 18 | 795 | 1300 |
| 20 | 48 | 11 | 134 | 21 | 46 | 2.2 | 67 | 2.2 | 1200 | 1620 | 370 | 849 |
| 21 | 50 | 12 | 139 | 17 | 50 | 2.6 | 78 | 4.0 | 680 | 296 | 345 | 482 |
| 22 | 44 | 12 | 40 | 4.9 | 49 | 3.7 | 62 | 3.3 | 365 | 80 | 262 | 348 |
| 23 | 36 | 8.2 | 102 | 17 | 52 | 3.5 | 45 | 2.2 | 154 | 23 | 2660 | 40100 |
| 24 | 27 | 4.9 | 147 | 21 | 38 | 2.5 | 74 | 3.6 | 123 | 13 | 5430 | 75200 |
| 25 | 22 | 3.6 | 190 | 21 | 78 | 4.6 | 56 | 5.4 | 89 | 7.2 | 2140 | 9420 |
| 26 | 17 | 2.7 | 128 | 11 | 77 | 4.2 | 58 | 3.1 | 76 | 7.0 | 900 | 1760 |
| 27 | 27 | 4.0 | 120 | 10 | 75 | 3.4 | 45 | 2.3 | 861 | 2040 | 573 | 927 |
| 28 | 32 | 4.4 | 126 | 13 | 387 | 80 | 61 | 3.0 | 5400 | 143000 | 421 | 532 |
| 29 | 30 | 4.1 | 130 | 13 | 348 | 38 | 78 | 3.8 | 2280 | 12500 | 320 | 365 |
| 30 | 43 | 5.8 | 96 | 8.8 | 97 | 7.6 | 60 | 2.6 | 682 | 901 | 430 | 526 |
| 31 | --- | --- | 77 | 7.7 | --- | --- | 62 | 2.5 | 12100 | 617000 | --- | --- |
| TOTAL | --- | 2875.6 | --- | 752.7 | --- | 270.7 | --- | 131.7 | --- | 789337.7 | --- | 1622847 |

TOTAL LOAD FOR YEAR: 2433755.61 TONS.

| DATE | TIME | TEMPER- ATURE (DEG C) (00010) | NUMBER OF SAM- PLING POINTS (00063) | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | SUS- PEN- DED SEDI- MENT (MG/L) (80154) | SUS- PEN- DED SEDI- MENT CHARGE (T/DAY) (80155) | SUS. SED. FALL DIAM. % FINER THAN .002 MM (70337) | SUS. SED. FALL DIAM. % FINER THAN .004 MM (70338) |
|-------|------|--|--|--|---|--|--|--|
| OCT | | | | | | | | |
| 21... | 1055 | 5.5 | 3 | 39 | -- | -- | -- | -- |
| MAR | | | | | | | | |
| 12... | 1400 | -- | -- | 359 | 3060 | 2970 | 62 | 64 |
| 29... | 1415 | 9.0 | -- | 562 | 4280 | 6490 | 54 | 59 |
| 30... | 1100 | 8.0 | 3 | 384 | -- | -- | -- | -- |
| JUN | | | | | | | | |
| 22... | 1040 | 21.5 | 3 | 30 | -- | -- | -- | -- |
| AUG | | | | | | | | |
| 09... | 1655 | 23.0 | -- | 1180 | 2360 | 7520 | 64 | 70 |
| 31... | 0830 | -- | -- | 13340 | 9780 | 352000 | 35 | 41 |
| SEP | | | | | | | | |
| 02... | 0745 | -- | -- | 17280 | 15400 | 718000 | 34 | 40 |
| 17... | 0820 | -- | -- | 5080 | 12000 | 165000 | 40 | 43 |
| 21... | 1700 | -20.5 | 3 | 486 | -- | -- | -- | -- |
| 24... | 0930 | -- | -- | 4480 | 6200 | 75000 | 40 | 44 |

NODAWAY RIVER BASIN

06B17000 NODAWAY RIVER AT CLARINDA, IA--Continued

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | SUS. SED. FALL DIAM. % FINER THAN .008 MM (70339) | SUS. SED. FALL DIAM. % FINER THAN .016 MM (70340) | SUS. SED. FALL DIAM. % FINER THAN .062 MM (70342) | SUS. SED. FALL DIAM. % FINER THAN .125 MM (70343) | SUS. SED. FALL DIAM. % FINER THAN .250 MM (70344) | SUS. SED. FALL DIAM. % FINER THAN .500 MM (70345) | SUS. SED. FALL DIAM. % FINER THAN .062 MM (70331) | BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164) | BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165) |
|-------|--|--|--|--|--|--|--|--|--|
| OCT | | | | | | | | | |
| 21... | -- | -- | -- | -- | -- | -- | -- | 0 | 1 |
| MAR | | | | | | | | | |
| 12... | 68 | 72 | 98 | -- | -- | -- | -- | -- | -- |
| 29... | 66 | 79 | -- | -- | -- | -- | 99 | -- | -- |
| 30... | -- | -- | -- | -- | -- | -- | -- | 1 | 3 |
| JUN | | | | | | | | | |
| 22... | -- | -- | -- | -- | -- | -- | -- | 1 | 1 |
| AUG | | | | | | | | | |
| 09... | 76 | 81 | 99 | 99 | 100 | -- | -- | -- | -- |
| 31... | 42 | 53 | 97 | 99 | 100 | -- | -- | -- | -- |
| SEP | | | | | | | | | |
| 02... | 40 | 50 | 92 | 97 | 100 | -- | -- | -- | -- |
| 17... | 43 | 55 | 93 | 97 | 100 | -- | -- | -- | -- |
| 21... | -- | -- | -- | -- | -- | -- | -- | 1 | 1 |
| 24... | 46 | 58 | 94 | 97 | 99 | 100 | -- | -- | -- |

| DATE | 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) | BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173) |
|-------|--|--|--|--|--|--|--|--|
| OCT | | | | | | | | |
| 21... | 14 | 42 | 81 | 89 | 92 | 95 | 98 | 100 |
| MAR | | | | | | | | |
| 12... | -- | -- | -- | -- | -- | -- | -- | -- |
| 29... | -- | -- | -- | -- | -- | -- | -- | -- |
| 30... | 9 | 39 | 66 | 79 | 86 | 90 | 97 | 100 |
| JUN | | | | | | | | |
| 22... | 15 | 50 | 67 | 75 | 80 | 86 | 95 | 100 |
| AUG | | | | | | | | |
| 09... | -- | -- | -- | -- | -- | -- | -- | -- |
| 31... | -- | -- | -- | -- | -- | -- | -- | -- |
| SEP | | | | | | | | |
| 02... | -- | -- | -- | -- | -- | -- | -- | -- |
| 17... | -- | -- | -- | -- | -- | -- | -- | -- |
| 21... | 10 | 29 | 44 | 60 | 71 | 82 | 95 | 97 |
| 24... | -- | -- | -- | -- | -- | -- | -- | -- |

06818750 PLATTE RIVER NEAR DIAGONAL, IA

LOCATION.--Lat 40°46'02", long 94°24'45", 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) upstream 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) above mean sea level.

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, 120 ft³/s (3.398 m³/s), 7.51 in/yr (191 mm/yr), 86,940 acre-ft/yr (107 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 flood ark by local resident, discharge, 6,360 ft³/s (180 m³/s).

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

| Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) |
|---------|------|---|-------------------------|----------|------|---|-------------------------|
| Aug. 28 | 1100 | 2,780 78.7 | 15.83 4.825 | Sept. 18 | 0100 | 2,590 73.3 | 15.23 4.642 |
| Sept. 1 | 0700 | 3,300 93.5 | 17.00 5.182 | Sept. 24 | 0400 | 2,010 56.9 | 13.57 4.136 |
| Sept. 2 | 1415 | *4,250 120. | *19.28 5.876 | | | | |

Minimum daily discharge, 0.74 ft³/s (0.021 m³/s) Jan. 4-7.

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 | 3.1 | 3.5 | 4.0 | .77 | .90 | 19 | 26 | 6.8 | 6.5 | 4.6 | 4.5 | 2320 |
| 2 | 3.1 | 3.5 | 3.8 | .76 | .94 | 19 | 51 | 6.0 | 6.2 | 4.5 | 6.3 | 3060 |
| 3 | 3.1 | 3.4 | 3.7 | .75 | 1.0 | 19 | 56 | 6.9 | 5.0 | 5.3 | 7.6 | 2740 |
| 4 | 7.1 | 2.9 | 3.6 | .74 | 1.1 | 18 | 110 | 9.9 | 4.7 | 5.2 | 8.8 | 2190 |
| 5 | 5.6 | 2.4 | 3.5 | .74 | 1.3 | 18 | 135 | 8.2 | 4.4 | 4.6 | 11 | 726 |
| 6 | 3.5 | 3.0 | 3.9 | .74 | 1.4 | 18 | 62 | 5.4 | 4.3 | 2.5 | 11 | 292 |
| 7 | 3.4 | 3.1 | 3.3 | .74 | 1.7 | 18 | 44 | 4.7 | 3.5 | 2.8 | 8.8 | 175 |
| 8 | 3.8 | 3.1 | 2.7 | .75 | 2.0 | 18 | 35 | 3.9 | 2.9 | 4.1 | 12 | 129 |
| 9 | 4.2 | 3.2 | 2.6 | .75 | 2.3 | 17 | 27 | 4.0 | 2.3 | 5.6 | 477 | 101 |
| 10 | 3.6 | 3.9 | 2.6 | .75 | 2.7 | 17 | 23 | 3.0 | 2.2 | 5.9 | 146 | 89 |
| 11 | 3.4 | 3.1 | 2.2 | .76 | 3.5 | 20 | 19 | 2.6 | 2.0 | 7.2 | 41 | 65 |
| 12 | 4.3 | 3.0 | 2.0 | .76 | 4.2 | 30 | 15 | 2.1 | 2.4 | 5.6 | 28 | 75 |
| 13 | 5.3 | 3.0 | 2.0 | .77 | 4.3 | 45 | 15 | 2.6 | 2.5 | 2.7 | 28 | 389 |
| 14 | 3.1 | 3.0 | 2.1 | .78 | 4.0 | 55 | 15 | 1.9 | 2.3 | 1.2 | 32 | 183 |
| 15 | 3.1 | 3.0 | 2.3 | .80 | 3.8 | 35 | 14 | 1.7 | 2.7 | 1.2 | 33 | 121 |
| 16 | 3.1 | 3.4 | 2.4 | .81 | 3.7 | 25 | 12 | 2.1 | 4.5 | 1.2 | 42 | 100 |
| 17 | 3.1 | 4.0 | 2.5 | .82 | 4.2 | 20 | 11 | 1.9 | 3.8 | 1.3 | 39 | 1080 |
| 18 | 2.2 | 5.2 | 2.6 | .83 | 5.0 | 17 | 11 | 1.3 | 3.0 | 2.5 | 44 | 1340 |
| 19 | 3.8 | 5.2 | 2.6 | .84 | 6.0 | 15 | 11 | 1.4 | 2.2 | 1.4 | 41 | 302 |
| 20 | 2.1 | 6.1 | 2.6 | .85 | 6.8 | 13 | 12 | 2.5 | 2.0 | 1.4 | 42 | 176 |
| 21 | 2.1 | 6.9 | 2.5 | .86 | 7.7 | 12 | 14 | 3.5 | 4.3 | 1.3 | 43 | 133 |
| 22 | 2.1 | 6.6 | 2.4 | .86 | 8.4 | 11 | 15 | 2.0 | 3.1 | 1.4 | 43 | 110 |
| 23 | 2.1 | 6.7 | 1.7 | .87 | 9.2 | 8.0 | 13 | 2.1 | 2.7 | 1.4 | 47 | 309 |
| 24 | 2.5 | 6.4 | 1.4 | .88 | 10 | 6.0 | 10 | 2.6 | 2.8 | 1.4 | 45 | 1270 |
| 25 | 3.1 | 6.3 | 1.2 | .88 | 12 | 5.2 | 9.0 | 3.1 | 4.0 | 2.8 | 43 | 300 |
| 26 | 3.3 | 5.9 | 1.0 | .88 | 14 | 5.2 | 8.2 | 3.0 | 4.2 | 4.0 | 45 | 180 |
| 27 | 4.2 | 5.5 | .96 | .89 | 16 | 24 | 8.0 | 4.9 | 4.2 | 1.3 | 46 | 133 |
| 28 | 3.2 | 5.0 | .90 | .90 | 19 | 232 | 7.4 | 5.9 | 4.2 | 1.2 | 1640 | 109 |
| 29 | 3.1 | 4.7 | .86 | .89 | --- | 408 | 7.1 | 6.6 | 4.2 | 2.7 | 350 | 95 |
| 30 | 3.5 | 4.2 | .83 | .88 | --- | 72 | 6.9 | 7.4 | 4.2 | 3.8 | 95 | 90 |
| 31 | 3.6 | --- | .78 | .88 | --- | 38 | --- | 6.8 | --- | 5.4 | 1600 | --- |
| TOTAL | 106.8 | 129.2 | 71.53 | 25.18 | 157.14 | 1277.4 | 802.6 | 126.8 | 107.3 | 97.5 | 5060.0 | 18382 |
| MEAN | 3.45 | 4.31 | 2.31 | .81 | 5.61 | 41.2 | 26.8 | 4.09 | 3.58 | 3.15 | 163 | 613 |
| MAX | 7.1 | 6.9 | 4.0 | .90 | 19 | 408 | 135 | 9.9 | 6.5 | 7.2 | 1640 | 3060 |
| MIN | 2.1 | 2.4 | .78 | .74 | .90 | 5.2 | 6.9 | 1.3 | 2.0 | 1.2 | 4.5 | 65 |
| CFSM | .02 | .02 | .01 | .004 | .03 | .19 | .12 | .02 | .02 | .02 | .75 | 2.83 |
| IN. | .02 | .02 | .01 | .00 | .03 | .22 | .14 | .02 | .02 | .02 | .87 | 3.15 |
| AC-FT | 212 | 256 | 142 | 50 | 312 | 2530 | 1590 | 252 | 213 | 193 | 10040 | 36460 |

| | | | | | | | | |
|-------------|-------|----------|-----------|----------|---------|----------|---------|-------------|
| CAL YR 1976 | TOTAL | 35540.63 | MEAN 97.1 | MAX 5140 | MIN .78 | CFSM .45 | IN 6.09 | AC-FT 70490 |
| WTR YR 1977 | TOTAL | 26343.45 | MEAN 72.2 | MAX 3060 | MIN .74 | CFSM .33 | IN 4.52 | AC-FT 52250 |

PLATTE RIVER BASIN

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 355, 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) above mean sea level (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.--18 years, 49.9 ft³/s (1.413 m³/s), 7.36 in/yr (187 mm/yr), 35,150 acre-ft/yr (44.6 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 (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) |
|---------|------|---|-------------------------|----------|------|---|-------------------------|
| Aug. 9 | 1300 | 2,680 75.9 | 10.75 3.277 | Sept. 2 | 1015 | 2,370 67.1 | 9.12 2.780 |
| Aug. 28 | 0715 | 4,600 130 | 13.17 4.014 | Sept. 3 | 1715 | 2,890 81.8 | 10.16 3.097 |
| Aug. 31 | 0730 | *4,890 138 | *13.65 4.161 | Sept. 24 | 0145 | 2,080 58.9 | 8.50 2.591 |

No flow, Jan. 16 to Feb. 7, Aug. 2,3.

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 | .70 | .36 | .15 | .04 | .00 | 1.0 | 3.4 | .53 | .32 | .15 | .01 | 544 |
| 2 | .80 | .33 | .15 | .03 | .00 | .95 | 16 | .48 | .30 | .12 | .00 | 1310 |
| 3 | 1.1 | .35 | .15 | .03 | .00 | 3.0 | 18 | 1.7 | .29 | .15 | .00 | 1620 |
| 4 | 3.6 | .35 | .15 | .03 | .00 | 1.5 | 34 | 16 | .32 | .11 | .02 | 1060 |
| 6 | 1.2 | .34 | .15 | .02 | .00 | .95 | 42 | 3.6 | .33 | .08 | 1.3 | 342 |
| 6 | 1.1 | .47 | .13 | .02 | .00 | .90 | 17 | 2.3 | .30 | .07 | 1.8 | 82 |
| 7- | .79 | .41 | .10 | .02 | .00 | .85 | 12 | .97 | .27 | .10 | .06 | 51 |
| 8 | .67 | .36 | .09 | .02 | .01 | .85 | 8.7 | 2.6 | .24 | .77 | .17 | 37 |
| 9 | .67 | .52 | .08 | .02 | .02 | 1.0 | 6.0 | 5.8 | .27 | .15 | 1150 | 28 |
| 10 | .67 | .45 | .08 | .01 | .03 | 1.2 | 3.8 | 2.0 | .22 | .09 | 281 | 20 |
| 11 | .79 | .35 | .07 | .01 | .04 | 3.0 | 3.8 | .96 | .27 | 2.4 | 39 | 15 |
| 12 | .85 | .32 | .07 | .01 | .05 | 15 | 3.3 | .71 | 1.4 | .14 | 12 | 174 |
| 13 | .74 | .35 | .07 | .01 | .06 | 2.0 | 2.9 | .43 | .70 | .07 | 6.2 | 265 |
| 14 | .72 | .38 | .07 | .01 | .04 | 1.0 | 2.5 | .37 | .44 | .05 | 1.5 | 71 |
| 15 | .60 | .40 | .07 | .01 | .03 | .90 | 2.5 | .34 | .34 | .05 | .92 | 44 |
| 16 | .58 | .42 | .07 | .00 | .03 | .80 | 2.3 | .32 | .27 | .03 | 43 | 39 |
| 17 | .72 | .44 | .08 | .00 | .10 | .70 | 2.1 | .32 | .34 | .02 | 26 | 34 |
| 18 | .62 | .46 | .08 | .00 | .20 | .65 | 1.6 | .35 | .79 | .03 | 6.6 | 37 |
| 19 | .65 | .46 | .09 | .00 | .40 | .60 | 1.7 | .44 | .31 | .02 | 2.2 | 25 |
| 20 | .41 | .51 | .10 | .00 | 1.0 | .58 | 1.1 | 1.6 | .27 | .03 | 33 | 17 |
| 21 | .37 | .50 | .09 | .00 | 3.0 | .56 | 1.5 | .60 | 2.7 | .02 | 7.8 | 15 |
| 22 | .34 | .41 | .08 | .00 | 5.0 | .54 | 1.3 | 1.1 | 1.8 | .02 | 11 | 13 |
| 23 | .38 | .46 | .08 | .00 | 8.0 | .52 | 1.1 | .60 | .32 | .02 | 3.7 | 180 |
| 24 | .47 | .53 | .08 | .00 | 10 | .50 | .71 | .40 | .23 | .02 | 1.3 | 817 |
| 25 | .34 | .56 | .09 | .00 | 7.0 | .50 | .49 | .32 | .22 | .10 | .46 | 62 |
| 26 | .41 | .48 | .10 | .00 | 5.0 | .60 | .43 | .34 | .16 | .03 | .36 | 35 |
| 27 | .36 | .25 | .12 | .00 | 3.0 | 30 | .40 | .35 | .17 | .01 | 1.1 | 24 |
| 28 | .34 | .20 | .10 | .00 | 1.5 | 5.0 | .46 | .71 | 21 | .01 | 2770 | 19 |
| 29 | .34 | .18 | .08 | .00 | --- | 20 | .43 | .52 | .24 | .02 | 478 | 18 |
| 30 | .74 | .17 | .06 | .00 | --- | 16 | .47 | .40 | .21 | .02 | 60 | 17 |
| 31 | .53 | --- | .05 | .00 | --- | 4.0 | --- | .37 | --- | .01 | 2450 | --- |
| TOTAL | 22.60 | 11.77 | 2.94 | .29 | 44.51 | 115.65 | 191.99 | 47.54 | 35.04 | 4.91 | 7397.50 | 7015 |
| MEAN | .73 | .39 | .095 | .009 | 1.59 | 3.73 | 6.40 | 1.53 | 1.17 | .16 | 239 | 234 |
| MAX | 3.6 | .56 | .16 | .04 | 10 | 30 | 42 | 16 | 21 | 2.4 | 2770 | 1620 |
| MIN | .34 | .17 | .05 | .00 | .00 | .50 | .40 | .32 | .16 | .01 | .00 | 13 |
| CFSM | .008 | .004 | .001 | .000 | .02 | .04 | .07 | .02 | .01 | .002 | 2.60 | 2.54 |
| IN. | .01 | .00 | .00 | .00 | .02 | .05 | .08 | .02 | .01 | .00 | 2.99 | 2.83 |
| AC-FT | 45 | 23 | 5.8 | .6 | 88 | 229 | 381 | 94 | 70 | 9.7 | 14670 | 13910 |

| | | | | | | | | |
|-------------|-------|----------|-----------|----------|---------|----------|---------|-------------|
| CAL YR 1976 | TOTAL | 17881.29 | MEAN 48.9 | MAX 3070 | MIN .05 | CFSM .53 | IN 7.22 | AC-FT 35470 |
| WTR YR 1977 | TOTAL | 14889.74 | MEAN 40.8 | MAX 2770 | MIN .00 | CFSM .44 | IN 6.01 | AC-FT 29530 |

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.6S 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) above mean sea level. 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--10 years, 29.4 ft³/s (0.833 m³/s), 7.60 in/yr (193 mm/yr), 21,300 acre-ft/yr (26.3 hm³/yr); median of yearly discharges, 25 ft³/s (0.71 m³/s), 6.5 in/yr (165 mm/yr), 18,100 acre-ft/yr (223 hm³/yr).

EXTREMES FOR PERIOD OF RECORD--Maximum discharge, 11,400 ft³/s (323 m³/s) Apr. 24, 1976, gage height, 25.80 ft (7.864 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, 15,000 ft³/s (425 m³/s), 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--Maximum discharge, 320 ft³/s (9.06 m³/s) Sept. 2, gage height, 13.60 ft (4.145 m), no peak above base of 500 ft³/s (14.2 m³/s); no flow Oct. 1-Feb. 7, May 12-15, 17-19, 26-29, 31, June 1-July 7, July 9, 10, 12-24, 26-Aug. 1, Sept. 21-23.

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 | .20 | 1.7 | .18 | .00 | .00 | .00 | 26 |
| 2 | .00 | .00 | .00 | .00 | .00 | .20 | 5.5 | .20 | .00 | .00 | .05 | 105 |
| 3 | .00 | .00 | .00 | .00 | .00 | .20 | 3.1 | .21 | .00 | .00 | .03 | 65 |
| 4 | .00 | .00 | .00 | .00 | .00 | .20 | 28 | .23 | .00 | .00 | .02 | 71 |
| 5 | .00 | .00 | .00 | .00 | .00 | .20 | 16 | .17 | .00 | .00 | .04 | 17 |
| 6 | .00 | .00 | .00 | .00 | .00 | .21 | 5.4 | .25 | .00 | .00 | .14 | 3.8 |
| 7 | .00 | .00 | .00 | .00 | .00 | .21 | 3.7 | .45 | .00 | .00 | .18 | 1.4 |
| 8 | .00 | .00 | .00 | .00 | .10 | .21 | 2.4 | .22 | .00 | .29 | .81 | .62 |
| 9 | .00 | .00 | .00 | .00 | .40 | .21 | 1.9 | .09 | .00 | .00 | 3.2 | .25 |
| 10 | .00 | .00 | .00 | .00 | 1.0 | .21 | 1.2 | .03 | .00 | .00 | 5.8 | .13 |
| 11 | .00 | .00 | .00 | .00 | 3.5 | .22 | .88 | .01 | .00 | .10 | 2.5 | .09 |
| 12 | .00 | .00 | .00 | .00 | 10 | 30 | .65 | .00 | .00 | .00 | 1.0 | 2.6 |
| 13 | .00 | .00 | .00 | .00 | 5.0 | 15 | .68 | .00 | .00 | .00 | .18 | 22 |
| 14 | .00 | .00 | .00 | .00 | 1.8 | 10 | .71 | .00 | .00 | .00 | .14 | 6.7 |
| 15 | .00 | .00 | .00 | .00 | .80 | 7.0 | .53 | .00 | .00 | .00 | .12 | 1.4 |
| 16 | .00 | .00 | .00 | .00 | .27 | 5.0 | .53 | .15 | .00 | .00 | .61 | .66 |
| 17 | .00 | .00 | .00 | .00 | .25 | 4.0 | .59 | .00 | .00 | .00 | .49 | .57 |
| 18 | .00 | .00 | .00 | .00 | .23 | 3.2 | .74 | .00 | .00 | .00 | .38 | .35 |
| 19 | .00 | .00 | .00 | .00 | .22 | 2.7 | .70 | .00 | .00 | .00 | .38 | .16 |
| 20 | .00 | .00 | .00 | .00 | .21 | 2.3 | 11 | .01 | .00 | .00 | .38 | .03 |
| 21 | .00 | .00 | .00 | .00 | .21 | 5.0 | 47 | .52 | .00 | .00 | .38 | .00 |
| 22 | .00 | .00 | .00 | .00 | .21 | 11 | 5.8 | 2.2 | .00 | .00 | .34 | .00 |
| 23 | .00 | .00 | .00 | .00 | 3.0 | .60 | 3.6 | .27 | .00 | .00 | .34 | .00 |
| 24 | .00 | .00 | .00 | .00 | 2.0 | .24 | 1.9 | .07 | .00 | .00 | .34 | 13 |
| 25 | .00 | .00 | .00 | .00 | 1.1 | .16 | .96 | .05 | .00 | .05 | .88 | 3.1 |
| 26 | .00 | .00 | .00 | .00 | .70 | .15 | .73 | .00 | .00 | .00 | 71 | .90 |
| 27 | .00 | .00 | .00 | .00 | .20 | .32 | .54 | .00 | .00 | .00 | 3.5 | .35 |
| 28 | .00 | .00 | .00 | .00 | .20 | 48 | .41 | .00 | .00 | .00 | 25 | .12 |
| 29 | .00 | .00 | .00 | .00 | --- | 20 | .25 | .00 | .00 | .00 | 5.7 | .05 |
| 30 | .00 | .00 | .00 | .00 | --- | 4.4 | .18 | .05 | .00 | .00 | .66 | 1.7 |
| 31 | .00 | --- | .00 | .00 | --- | 2.3 | --- | .00 | --- | .00 | .80 | --- |
| TOTAL | .00 | .00 | .00 | .00 | 31.40 | 173.64 | 147.28 | 5.36 | .00 | .44 | 126.39 | 343.98 |
| MEAN | .0000 | .0000 | .0000 | .0000 | 1.12 | 5.60 | 4.91 | .17 | .0000 | .014 | 4.08 | 11.5 |
| MAX | .00 | .00 | .00 | .00 | 10 | 48 | 47 | 2.2 | .00 | .29 | 71 | 105 |
| MIN | .00 | .00 | .00 | .00 | .00 | .15 | .18 | .00 | .00 | .00 | .00 | .00 |
| CFSM | .0000 | .0000 | .0000 | .0000 | .02 | .11 | .09 | .003 | .0000 | .0000 | .08 | .22 |
| IN. | .00 | .00 | .00 | .00 | .02 | .12 | .10 | .00 | .00 | .00 | .09 | .24 |
| AC-FT | .00 | .00 | .00 | .00 | 62 | 344 | 292 | 11 | .00 | .9 | 251 | 682 |

| | | | | | | | | |
|-------------|-------|----------|-----------|----------|---------|----------|---------|-------------|
| CAL YR 1976 | TOTAL | 10969.07 | MEAN 30.0 | MAX 3330 | MIN .00 | CFSM .57 | IN 7.77 | AC-FT 21760 |
| WTR YR 1977 | TOTAL | 828.49 | MEAN 2.27 | MAX 105 | MIN .00 | CFSM .04 | IN .59 | AC-FT 1640 |

GRAND RIVER BASIN

06897950 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 1976 TO SEPTEMBER 1977

| DATE | TIME | INSTANTANEOUS DIS- CHARGE (CFS) (00061) | DIS- SOLVED SILICA (SI02) (MG/L) (00955) | TOTAL IRON (FE) (UG/L) (01045) | TOTAL MANGANESE (MN) (UG/L) (01055) | DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915) | DIS- SOLVED MAG- NE- SIUM (MG/L) (00925) | DIS- SOLVED SODIUM (NA) (MG/L) (00930) | PERCENT SODIUM (00932) | SODIUM AD- SORP- TION RATIO (00931) | DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935) |
|-----------|------|---|---|--|---|---|--|---|------------------------------|--|---|
| MAR 23... | 1055 | .62 | 3.7 | -- | -- | 74 | 18 | 24 | 16 | .7 | 4.8 |
| APR 19... | 1045 | .69 | 5.3 | 670 | 360 | 72 | 17 | 14 | 11 | .4 | 5.8 |
| MAY 25... | 0840 | .06 | 6.6 | -- | -- | 78 | 18 | 12 | 9 | .3 | 6.0 |
| SEP 14... | 0800 | 7.1 | 9.9 | -- | -- | 39 | 8.6 | 6.0 | 8 | .2 | 9.3 |

| DATE | DIS- SOLVED SOLIDS (TONS PER DAY) (70302) | HARD- NESS (CA,MG) (MG/L) (00900) | NON- CAR- BONATE HARD- NESS (MG/L) (00902) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH | TEMPER- ATURE (DEG C) (00010) | CARBON DIOXIDE (CO2) (MG/L) (00405) | IMME- DIATE COLI- FORM (COL. PER 100 ML) (31501) | FECAL COLI- FORM (COL. PER 100 ML) (31625) | FECAL STREP- TOCOCCI KF AGAR (COL. PER 100 ML) (31673) |
|-----------|---|---|--|---|-----|--|---|---|--|---|
| MAR 23... | .58 | 260 | 75 | 510 | -- | 7.0 | -- | -- | -- | -- |
| APR 19... | .64 | 250 | 45 | 420 | 8.0 | 18.0 | 4.0 | 5600 | 700 | 10000 |
| MAY 25... | .05 | 270 | 49 | 490 | 8.0 | 20.5 | 4.3 | 300 | -- | 520 |
| SEP 14... | 3.37 | 130 | 18 | 300 | 7.4 | 15.0 | 8.9 | -- | -- | -- |

| DATE | BICAR- BONATE (HCO3) (MG/L) (00440) | CAR- BONATE (CO3) (MG/L) (00445) | ALKA- LINITY AS CACO3 (MG/L) (00410) | DIS- SOLVED SULFATE (SO4) (MG/L) (00945) | DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940) | DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950) | TOTAL NITRITE PLUS NITRATE (N) (MG/L) (00630) | TOTAL PHOS- PHORUS (P) (MG/L) (00665) | DIS- SOLVED SOLIDS (RESI- DUE AT 180 C) (MG/L) (70300) | DIS- SOLVED SOLIDS (SUM OF CONSTI- TUENTS) (MG/L) (70301) | DIS- SOLVED SOLIDS (TONS PER AC-FT) (70303) |
|-----------|---|--|---|---|--|---|---|--|---|--|---|
| MAR 23... | 224 | -- | 184 | 78 | 11 | .1 | .01 | .04 | 349 | 324 | .47 |
| APR 19... | 250 | 0 | 205 | 65 | 11 | .2 | .01 | .06 | 342 | 313 | .47 |
| MAY 25... | 270 | 0 | 221 | 50 | 9.7 | .2 | .02 | .06 | 324 | 314 | .44 |
| SEP 14... | 140 | 0 | 110 | 29 | 4.9 | .2 | .59 | .35 | -- | 176 | .24 |

| DATE | CYANIDE (CN) (MG/L) (00720) | TOTAL ARSENIC (AS) (UG/L) (01002) | TOTAL BARIUM (BA) (UG/L) (01007) | TOTAL CAD- MIUM (CD) (UG/L) (01027) | TOTAL CHRO- MIUM (CR) (UG/L) (01034) | TOTAL COPPER (CU) (UG/L) (01042) | TOTAL LEAD (PB) (UG/L) (01051) | TOTAL MERCURY (HG) (UG/L) (71900) | TOTAL SELE- NIUM (SE) (UG/L) (01147) | TOTAL SILVER (AG) (UG/L) (01077) | TOTAL ZINC (ZN) (UG/L) (01092) |
|-----------|--------------------------------------|---|--|--|---|--|--|---|---|--|--|
| APR 19... | .00 | 2 | 200 | 2 | 10 | 3 | 35 | .0 | 0 | 0 | 20 |

| DATE | TOTAL ALDRIN (UG/L) (39330) | ALDRIN IN BOTTOM MA- TERIAL (UG/KG) (39333) | TOTAL CHLOR- DANE (UG/L) (39350) | CHLOR- DANE IN BOTTOM MA- TERIAL (UG/KG) (39351) | TOTAL DDD (UG/L) (39360) | DDD IN BOTTOM MA- TERIAL (UG/KG) (39363) | TOTAL DDE (UG/L) (39365) | DDE IN BOTTOM MA- TERIAL (UG/KG) (39368) | TOTAL DDT (UG/L) (39370) | DDT IN BOTTOM MA- TERIAL (UG/KG) (39373) | TOTAL DI- AZINON (UG/L) (39570) |
|-----------|--------------------------------------|---|--|---|-----------------------------------|--|-----------------------------------|--|-----------------------------------|--|---|
| MAR 23... | .00 | .0 | .0 | 0 | .00 | .0 | .00 | .0 | .00 | .0 | .00 |

0689750 ELK CREEK NEAR DECATUR CITY, IA--Continued
(Hydrologic bench-mark station)

WATER-QUALITY RECORDS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

| DATE | TOTAL DI- ELDRIN (UG/L) (39380) | DI- ELDRIN IN BOTTOM MA- TERIAL (UG/KG) (39383) | TOTAL ENDO- SULFAM (UG/L) (39388) | TOTAL ENDRIN (UG/L) (39390) | ENDRIN IN BOTTOM MA- TERIAL (UG/KG) (39393) | TOTAL ETHION (UG/L) (39398) | TOTAL HEPTA- CHLOR (UG/L) (39410) | HEPTA- CHLOR IN BOTTOM MA- TERIAL (UG/KG) (39413) | TOTAL HEPTA- CHLOR EPOXIDE (UG/L) (39420) | HEPTA- CHLOR EPOXIDE IN BOT- TOM MA- TERIAL (UG/KG) (39423) | TOTAL LINDANE (UG/L) (39340) |
|--------------|---|--|---|--------------------------------------|---|--------------------------------------|---|--|--|--|---------------------------------------|
| MAR 23... | .00 | .2 | .00 | .00 | .0 | .00 | .00 | .0 | .00 | .0 | .00 |

| DATE | LINDANE IN BOTTOM MA- TERIAL (UG/KG) (39343) | TOTAL METHYL PARA- THION (UG/L) (39530) | TOTAL METHYL TRI- THION (UG/L) (39600) | TOTAL PARA- THION (UG/L) (39790) | TOTAL PCB (UG/L) (39540) | TOTAL PCB (UG/L) (39516) | PCB IN BOTTOM MA- TERIAL (UG/KG) (39519) | POLY- CHLO- RINATED NAPH- THA- LENES (UG/L) (39250) | TOTAL TRI- THION (UG/L) (39786) | TOTAL 2,4-D (UG/L) (39730) |
|--------------|--|--|---|--|-----------------------------------|-----------------------------------|--|--|---|-------------------------------------|
| MAR 23... | .0 | .00 | .00 | .00 | .00 | .0 | 0 | .00 | .00 | .01 |

| DATE | TOTAL 2,4,5-T (UG/L) (39740) | TOTAL SILVEX (UG/L) (39760) | DIS- SOLVED GROSS ALPHA AS U-NAT. (UG/L) (80030) | SUS- PENDE GROSS ALPHA AS U-NAT. (UG/L) (80040) | DIS- SOLVED GROSS BETA AS CS-137 (PC/L) (03515) | SUS- PENDE GROSS BETA AS CS-137 (PC/L) (03516) | DIS- SOLVED GROSS BETA AS SR90 /Y90 (PC/L) (80050) | SUS- PENDE GROSS BETA AS SR90 /Y90 (PC/L) (80060) | DIS- SOLVED RA-226 (RADON METHOD) (PC/L) (09511) | DIS- SOLVED NATURAL URANIUM (U) (UG/L) (22703) |
|--------------|---------------------------------------|--------------------------------------|---|--|--|---|--|---|--|--|
| MAR 23... | .00 | .00 | <5.3 | <.4 | 8.4 | 1.7 | 6.8 | 1.5 | .05 | 2.9 |

| DATE | TIME | TEMPER- ATURE (DEG C) (00010) | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | SUS- PENDE SEDI- MENT (MG/L) (80154) | SUS- PENDE SEDI- MENT DIS- CHARGE (T/DAY) (80155) | SUS- SED. SIEVE DIAM. X FINER THAN .062 MM (70331) |
|--------------|------|--|--|---|--|---|
| APR 19... | 1045 | 18.0 | .69 | 33 | .06 | 97 |
| MAY 25... | 0840 | 20.5 | .06 | 86 | .01 | 84 |

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) above mean sea level. May 14, 1918, to July 2, 1925, July 14, 1941, to Feb. 24, 1942, nonrecording gage, and Feb. 26, 1942, to Feb. 8, 1967, 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 poor. Several observations of water temperature were made during the year. National Weather Service gage height telemeter at station.

AVERAGE DISCHARGE.--42 years (1918-24, 1941-77), 362 ft³/s (10,252 m³/s), 7.01 in/yr (178 mm/yr), 262,300 acre-ft/yr (329 hm³/yr); median of yearly mean discharges, 300 ft³/s (8.50 m³/s) 6.8 in/yr (147 mm/yr) 217,000 acre-ft/yr (277 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.--Maximum discharge, 3,120 ft³/s (88.4 m³/s) Sept. 3, gage height, 6.12 ft (1.865 m), no peak above base of 4,500 ft³/s (127 m³/s); minimum daily, 0.17 ft³/s (0.005 m³/s) July 6, 7.

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 | 12 | 12 | 5.3 | 2.7 | 3.1 | 63 | 174 | 24 | 9.3 | .90 | 1.4 | 906 |
| 2 | 12 | 12 | 5.0 | 2.7 | 3.1 | 62 | 111 | 25 | 8.6 | .55 | 3.6 | 2680 |
| 3 | 11 | 11 | 4.7 | 2.7 | 3.3 | 61 | 96 | 24 | 8.2 | .70 | 2.5 | 3030 |
| 4 | 10 | 11 | 4.8 | 2.7 | 3.8 | 61 | 150 | 23 | 7.1 | .90 | 2.1 | 2890 |
| 5 | 13 | 11 | 5.1 | 2.7 | 4.0 | 59 | 281 | 26 | 7.1 | .90 | 3.5 | 2070 |
| 6 | 11 | 12 | 4.9 | 2.7 | 4.9 | 59 | 253 | 37 | 7.1 | .17 | 10 | 658 |
| 7 | 9.2 | 17 | 4.0 | 2.7 | 5.5 | 58 | 195 | 42 | 6.7 | .17 | 9.2 | 364 |
| 8 | 9.1 | 11 | 4.3 | 2.7 | 5.5 | 57 | 155 | 43 | 5.7 | .70 | 17 | 241 |
| 9 | 8.8 | 10 | 4.2 | 2.7 | 6.6 | 57 | 105 | 43 | 4.5 | 1.2 | 48 | 183 |
| 10 | 7.9 | 9.7 | 4.4 | 2.7 | 7.9 | 56 | 79 | 43 | 3.8 | 4.0 | 84 | 155 |
| 11 | 7.0 | 8.5 | 4.0 | 2.7 | 9.5 | 56 | 67 | 38 | 3.8 | 4.4 | 40 | 150 |
| 12 | 9.7 | 7.7 | 4.4 | 2.7 | 15 | 73 | 59 | 33 | 3.8 | 3.6 | 15 | 148 |
| 13 | 8.6 | 8.1 | 4.8 | 2.8 | 16 | 129 | 52 | 27 | 3.8 | 2.5 | 7.8 | 206 |
| 14 | 7.5 | 8.2 | 5.2 | 2.8 | 18 | 182 | 47 | 23 | 3.8 | 1.4 | 6.5 | 248 |
| 15 | 6.9 | 7.8 | 5.4 | 2.8 | 18 | 117 | 43 | 20 | 3.8 | .55 | 4.9 | 230 |
| 16 | 6.3 | 8.4 | 5.6 | 2.9 | 19 | 74 | 41 | 20 | 3.5 | 4.2 | 7.4 | 170 |
| 17 | 5.8 | 9.3 | 5.8 | 2.9 | 20 | 56 | 40 | 20 | 3.0 | 3.6 | 5.8 | 152 |
| 18 | 5.2 | 10 | 6.0 | 3.0 | 21 | 44 | 40 | 18 | 2.8 | 3.6 | 4.2 | 1920 |
| 19 | 5.5 | 10 | 6.1 | 3.0 | 22 | 35 | 38 | 16 | 2.6 | 2.5 | 2.9 | 1930 |
| 20 | 5.5 | 10 | 5.9 | 3.0 | 24 | 34 | 39 | 15 | 2.5 | 1.7 | 2.3 | 625 |
| 21 | 5.3 | 9.8 | 5.7 | 3.1 | 25 | 32 | 373 | 15 | 1.4 | 2.5 | 2.4 | 287 |
| 22 | 5.7 | 9.7 | 6.2 | 3.1 | 27 | 32 | 221 | 20 | 2.6 | 2.4 | 2.3 | 203 |
| 23 | 5.9 | 9.9 | 4.3 | 3.0 | 29 | 33 | 103 | 24 | 2.7 | 1.7 | .90 | 172 |
| 24 | 5.5 | 11 | 4.0 | 3.0 | 33 | 31 | 75 | 25 | 2.6 | 1.7 | .70 | 163 |
| 25 | 5.1 | 11 | 3.8 | 3.0 | 37 | 30 | 56 | 16 | 2.5 | 2.8 | .70 | 734 |
| 26 | 5.1 | 11 | 3.5 | 3.0 | 42 | 29 | 45 | 13 | 2.6 | 2.4 | 117 | 611 |
| 27 | 5.6 | 7.7 | 3.3 | 3.0 | 49 | 27 | 39 | 11 | 5.2 | 1.7 | 330 | 268 |
| 28 | 6.6 | 6.6 | 3.1 | 3.0 | 57 | 52 | 35 | 12 | 2.4 | 1.9 | 113 | 192 |
| 29 | 14 | 6.0 | 3.0 | 3.0 | --- | 581 | 29 | 13 | 1.4 | 2.2 | 361 | 162 |
| 30 | 15 | 5.6 | 2.9 | 3.0 | --- | 526 | 25 | 12 | 1.4 | 1.9 | 956 | 153 |
| 31 | 12 | --- | 2.8 | 3.0 | --- | 292 | --- | 10 | --- | 1.9 | 342 | --- |
| TOTAL | 257.8 | 293.0 | 141.5 | 88.8 | 529.2 | 3058 | 3066 | 731 | 126.3 | 61.34 | 2504.10 | 21791 |
| MEAN | 8.32 | 9.77 | 4.56 | 2.86 | 18.9 | 98.6 | 102 | 23.6 | 4.21 | 1.98 | 80.8 | 726 |
| MAX | 15 | 17 | 6.1 | 3.1 | 57 | 581 | 373 | 43 | 9.3 | 4.4 | 956 | 3030 |
| MIN | 5.1 | 5.6 | 2.8 | 2.7 | 3.1 | 27 | 25 | 10 | 1.4 | .17 | .70 | 148 |
| CFSM | .01 | .01 | .007 | .004 | .03 | .14 | .15 | .03 | .006 | .003 | .12 | 1.04 |
| IN. | .01 | .02 | .01 | .00 | .03 | .16 | .16 | .04 | .01 | .00 | .13 | 1.16 |
| AC-FT | 511 | 581 | 281 | 176 | 1050 | 6070 | 6080 | 1450 | 251 | 122 | 4970 | 43220 |
| CAL YR 1976 TOTAL | 120839.70 | | | 330 | | 11300 | | MIN 2.8 | | | | |
| WTR YR 1977 TOTAL | 32648.04 | | | MEAN 89.4 | | MAX 3030 | | MIN .17 | | | | |
| | | | | | | | | CFSM .47 | IN 6.41 | AC-FT 239700 | | |
| | | | | | | | | CFSM .13 | IN 1.73 | AC-FT 64760 | | |

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) above mean sea level.

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

AVERAGE DISCHARGE.--19 years, 69.2 ft³/s (1.960 m³/s), 9.04 in/yr (230 mm/yr), 50.140 acre-ft/yr (61.8 hm³/yr); median of yearly mean discharges, 51 ft³/s (1.44 m³/s), 6.7 in/yr (170 mm/yr), 36.900 acre-ft/yr (45.5 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 for several days in 1968 and 1975, and many days in 1977.

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.--Maximum discharge, 1,460 ft³/s (41.3 m³/s) Aug. 9, gage height, 10.84 ft (3.304 m), no peak above base of 4,500 ft³/s (127 m³/s); no flow Oct. 13-17, Dec. 31 - Feb. 7, June 2, 3, 6, 7, 15, 16 and July 6-8.

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 | .10 | 1.9 | .38 | .00 | .00 | 4.2 | 8.7 | 1.0 | .02 | .09 | .53 | 193 |
| 2 | .10 | 1.0 | .37 | .00 | .00 | 4.3 | 8.9 | .55 | .00 | .05 | 14 | 241 |
| 3 | .98 | .60 | .36 | .00 | .00 | 4.3 | 6.8 | .55 | .00 | .37 | 18 | 401 |
| 4 | 6.2 | .58 | .35 | .00 | .00 | 4.2 | 107 | .70 | .02 | .30 | 13 | 332 |
| 5 | 19 | .34 | .34 | .00 | .00 | 4.1 | 72 | .55 | .04 | .02 | 63 | 74 |
| 6 | 1.6 | .33 | .34 | .00 | .00 | 4.0 | 19 | 2.9 | .00 | .00 | 47 | 30 |
| 7 | .70 | .42 | .33 | .00 | .00 | 3.8 | 9.0 | 3.1 | .00 | .00 | 189 | 16 |
| 8 | .55 | .43 | .33 | .00 | .05 | 3.2 | 6.8 | .90 | .69 | .00 | 48 | 9.2 |
| 9 | .40 | .71 | .32 | .00 | .20 | 2.1 | 1.6 | .47 | 1.1 | .68 | 392 | 5.4 |
| 10 | .23 | .91 | .31 | .00 | .26 | 1.4 | .85 | .11 | .31 | .56 | 39 | 2.2 |
| 11 | .16 | .80 | .31 | .00 | .45 | 22 | 3.7 | .05 | 1.1 | 4.4 | 7.6 | 1.4 |
| 12 | .16 | .61 | .30 | .00 | .55 | 49 | 2.6 | .03 | .32 | 2.4 | .23 | 132 |
| 13 | .00 | .62 | .30 | .00 | .69 | 18 | 3.4 | 1.2 | .03 | .59 | 11 | 221 |
| 14 | .00 | .63 | .29 | .00 | .84 | 7.5 | .85 | .05 | .02 | .06 | 18 | 49 |
| 15 | .00 | .63 | .29 | .00 | 1.0 | 1.8 | 1.0 | 4.1 | .00 | 2.3 | 28 | 29 |
| 16 | .00 | .81 | .29 | .00 | 1.2 | .84 | 1.6 | 16 | .00 | 7.3 | 43 | 21 |
| 17 | .00 | 1.1 | .28 | .00 | 1.4 | .60 | 1.4 | 9.6 | .01 | 2.1 | 44 | 65 |
| 18 | .55 | 1.1 | .28 | .00 | 1.5 | .53 | 1.2 | 5.4 | .19 | .86 | 52 | 71 |
| 19 | .23 | 1.0 | .28 | .00 | 1.7 | .33 | 1.4 | 5.5 | .08 | .65 | 55 | 25 |
| 20 | .16 | 1.0 | .28 | .00 | 1.9 | .40 | 49 | 9.7 | .08 | .39 | 58 | 11 |
| 21 | .23 | 1.8 | .28 | .00 | 2.1 | .61 | 265 | 19 | .44 | .21 | 53 | 5.7 |
| 22 | .23 | .52 | .28 | .00 | 2.4 | .81 | 54 | 80 | 2.2 | .38 | 60 | 2.5 |
| 23 | .70 | .44 | .28 | .00 | 2.8 | .96 | 27 | 12 | 1.2 | .09 | 66 | 2.3 |
| 24 | .55 | .59 | .28 | .00 | 3.2 | .75 | 16 | 6.9 | .64 | .31 | 71 | 4.4 |
| 25 | .40 | .66 | .28 | .00 | 3.6 | .81 | 9.4 | 5.9 | .05 | 2.0 | 64 | 5.8 |
| 26 | .40 | .68 | .27 | .00 | 3.8 | .70 | 4.9 | .48 | .12 | 1.4 | 58 | 5.0 |
| 27 | .40 | .50 | .26 | .00 | 4.0 | .69 | 2.5 | .67 | .14 | 2.0 | 51 | 2.4 |
| 28 | .55 | .43 | .24 | .00 | 4.1 | 148 | 1.0 | 1.4 | .63 | 1.3 | 41 | .42 |
| 29 | .70 | .41 | .23 | .00 | --- | 121 | 1.0 | .25 | .38 | 1.3 | 27 | .16 |
| 30 | 1.4 | .39 | .05 | .00 | --- | 27 | 1.9 | .14 | .44 | 1.3 | 18 | 5.0 |
| 31 | 1.0 | --- | .00 | .00 | --- | 12 | --- | .12 | --- | .62 | 18 | --- |
| TOTAL | 37.68 | 21.94 | 8.78 | .00 | 37.74 | 449.93 | 689.50 | 189.33 | 10.25 | 34.14 | 1666.36 | 1962.88 |
| MEAN | 1.22 | .73 | .28 | .000 | 1.35 | 14.5 | 23.0 | 6.11 | .34 | 1.10 | 53.8 | 65.4 |
| MAX | 19 | 1.9 | .38 | .00 | 4.1 | 148 | 265 | 80 | 2.2 | 7.3 | 392 | 401 |
| MIN | .00 | .33 | .00 | .00 | .00 | .33 | .85 | .03 | .00 | .00 | .23 | .16 |
| CFSM | .01 | .007 | .003 | .000 | .01 | .14 | .22 | .06 | .003 | .01 | .52 | .60 |
| IN. | .01 | .01 | .00 | .00 | .01 | .16 | .25 | .07 | .00 | .01 | .60 | .70 |
| AC-FT | 75 | 44 | 17 | .00 | 75 | 892 | 1370 | 376 | 20 | 68 | 3310 | 3890 |

| | | | | | | | | |
|-------------|-------|----------|-----------|----------|---------|----------|---------|-------------|
| CAL YR 1976 | TOTAL | 19847.99 | MEAN 54.2 | MAX 3890 | MIN .00 | CFSM .52 | IN 7.10 | AC-FT 39370 |
| WTR YR 1977 | TOTAL | 5108.53 | MEAN 14.0 | MAX 401 | MIN .00 | CFSM .14 | IN 1.83 | AC-FT 10130 |

CHARITON RIVER BASIN

06903400 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 10280201, 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 1965 to current year. Occasional low-flow measurements, water years 1958-50, 1962, 1964.

GAGE.--Water-stage recorder. Datum of gage is 917.96 ft (279.794 m) above mean sea level (levels by U.S. Weather Bureau from a 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.

AVERAGE DISCHARGE.--12 years, 96.5 ft³/s (2.733 m³/s), 7.20 in/yr (183 mm/yr), 69,910 acre-ft/yr (86.2 hm³/yr); median of yearly mean discharges, 82 ft³/s (2.32 m³/s), 6.1 in/yr (155 mm/yr), 59,400 acre-ft/yr (73.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,320 ft³/s (179 m³/s) Aug. 8, 1970, gage height, 20.15 ft (6.142 m); maximum gage height, 20.20 ft (6.157 m) Oct. 12, 1973; 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 21.65 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.--Maximum discharge, 1,490 ft³/s (42.2 m³/s) Aug. 27, gage height, 17.27 ft (5.264 m), at 0430 hours; no other peak above base of 1,200 ft³/s (34.0 m³/s); no flow Aug. 1.

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 | .19 | 2.8 | .24 | .23 | .19 | 9.6 | 36 | 4.9 | 2.5 | .15 | .00 | 327 |
| 2 | .14 | 2.3 | .24 | .23 | .21 | 8.6 | 24 | 4.8 | 1.9 | .11 | .01 | 496 |
| 3 | .05 | 2.0 | .24 | .23 | .23 | 11 | 21 | 4.8 | 1.4 | .12 | .02 | 522 |
| 4 | .09 | .35 | .24 | .23 | .25 | 15 | 98 | 5.1 | 1.2 | .11 | .05 | 479 |
| 5 | 3.2 | .82 | .24 | .23 | .25 | 11 | 248 | 4.6 | 1.1 | .10 | .21 | 314 |
| 6 | 4.4 | .53 | .24 | .23 | .25 | 9.0 | 106 | 4.0 | .79 | .06 | 1.2 | 137 |
| 7 | 2.1 | .29 | .24 | .23 | .25 | 8.2 | 83 | 4.5 | .76 | .05 | .40 | 45 |
| 8 | 1.4 | .29 | .25 | .23 | .24 | 7.5 | 37 | 4.5 | .65 | .05 | .31 | 22 |
| 9 | 1.4 | .47 | .25 | .23 | .35 | 8.0 | 20 | 3.9 | .62 | .02 | .54 | 11 |
| 10 | 1.0 | .53 | .25 | .23 | .45 | 8.6 | 13 | 3.5 | .55 | .07 | 122 | 6.3 |
| 11 | .67 | .67 | .25 | .24 | 3.5 | 11 | 9.7 | 3.1 | .56 | .11 | 19 | 3.9 |
| 12 | .67 | .40 | .25 | .24 | 33 | 100 | 7.4 | 2.7 | .64 | .12 | 12 | 7.9 |
| 13 | .97 | .19 | .25 | .24 | 30 | 66 | 6.4 | 2.5 | .49 | .21 | 15 | 486 |
| 14 | .53 | .24 | .25 | .24 | 25 | 45 | 6.6 | 2.4 | .49 | .32 | 8.0 | 216 |
| 15 | .35 | .53 | .25 | .24 | 21 | 39 | 6.0 | 1.9 | .37 | .50 | 4.6 | 90 |
| 16 | .29 | .40 | .25 | .24 | 20 | 19 | 5.5 | 2.7 | .34 | 1.2 | 19 | 49 |
| 17 | .29 | .67 | .25 | .25 | 19 | 13 | 5.0 | 3.9 | .32 | 1.1 | 14 | 560 |
| 18 | .47 | .35 | .25 | .25 | 18 | 11 | 4.9 | 2.6 | .49 | .62 | 6.8 | 784 |
| 19 | .47 | .97 | .25 | .26 | 20 | 9.4 | 5.4 | 1.8 | .43 | .34 | 4.3 | 337 |
| 20 | .67 | 1.3 | .25 | .26 | 22 | 9.8 | 16 | 1.7 | .43 | .12 | 2.6 | 114 |
| 21 | .82 | 1.4 | .25 | .26 | 21 | 10 | 120 | 2.5 | .29 | .12 | 1.5 | 41 |
| 22 | .74 | 2.0 | .25 | .26 | 20 | 14 | 80 | 4.8 | .38 | .05 | .81 | 22 |
| 23 | 1.3 | 2.2 | .25 | .26 | 27 | 21 | 110 | 5.0 | .21 | .05 | .60 | 15 |
| 24 | 1.2 | 3.2 | .25 | .25 | 34 | 19 | 56 | 4.3 | .19 | .10 | .37 | 43 |
| 25 | 1.6 | 3.6 | .24 | .23 | 21 | 13 | 22 | 4.2 | .15 | .09 | .34 | 61 |
| 26 | 1.5 | 1.3 | .24 | .22 | 17 | 11 | 13 | 5.8 | .15 | .06 | 656 | 25 |
| 27 | 1.4 | .68 | .24 | .19 | 15 | 11 | 9.2 | 4.6 | .12 | .04 | 1150 | 21 |
| 28 | 1.2 | .28 | .24 | .17 | 11 | 133 | 6.9 | 3.4 | .15 | .03 | 494 | 13 |
| 29 | 1.1 | .25 | .23 | .16 | --- | 403 | 5.8 | 3.7 | .09 | .03 | 567 | 8.5 |
| 30 | 1.5 | .23 | .23 | .17 | --- | 187 | 5.2 | 8.1 | .09 | .03 | 154 | 7.1 |
| 31 | 2.2 | --- | .23 | .18 | --- | 100 | --- | 4.8 | --- | .01 | 136 | --- |
| TOTAL | 33.91 | 31.24 | 7.58 | 7.11 | 380.17 | 1341.7 | 1187.0 | 121.1 | 17.85 | 6.09 | 3514.41 | 5263.7 |
| MEAN | 1.09 | 1.04 | .24 | .23 | 13.6 | 43.3 | 39.6 | 3.91 | .60 | .20 | 113 | 175 |
| MAX | 4.4 | 3.6 | .25 | .26 | 34 | 403 | 248 | 8.1 | 2.5 | 1.2 | 1150 | 784 |
| MIN | .05 | .19 | .23 | .16 | .19 | 7.5 | 4.9 | 1.7 | .09 | .01 | .00 | 3.9 |
| CFSM | .006 | .006 | .001 | .001 | .08 | .24 | .22 | .02 | .003 | .001 | .62 | .96 |
| IN. | .01 | .01 | .00 | .00 | .08 | .27 | .24 | .02 | .00 | .00 | .72 | 1.08 |
| AC-FT | 67 | 62 | 15 | 14 | 754 | 2660 | 2350 | 240 | 35 | 12 | 6970 | 10440 |

CAL YR 1976 TOTAL 31910.90 MEAN 87.2 MAX 3340 MIN .05 CFSM .48 IN 6.52 AC-FT 63300
WTR YR 1977 TOTAL 11911.86 MEAN 32.6 MAX 1150 MIN .00 CFSM .18 IN 2.43 AC-FT 23630

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) above mean sea level (Corps of Engineers bench mark).

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

AVERAGE DISCHARGE.--10 years, 94.9 ft³/s (2.688 m³/s), 7.67 in/yr (195 mm/yr) 68,760 acre-ft/yr (84.8 hm³/yr); median of yearly mean discharges, 82 ft³/s (2.322 m³/s), 6.6 in/yr (168 mm/yr) 59,400 acre-ft/yr (73.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,660 ft³/s (217 m³/s) Aug. 8, 1970, gage height, 21.32 ft (6.498 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 25.5 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 (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) | Date | Time | Discharge (ft ³ /s) (m ³ /s) | Gage Height (ft) (m) |
|---------|------|---|-------------------------|----------|------|---|-------------------------|
| Aug. 26 | 1615 | *4,520 128 | *18.75 5.715 | Sept. 13 | 0745 | 2,940 83.3 | 15.27 4.654 |

No flow July 6, 7, 21-24, 28-31, and Aug. 1.

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 | 2.1 | 5.9 | .50 | .25 | .16 | 15 | 19 | 4.5 | 2.2 | .17 | .00 | 512 |
| 2 | 2.0 | 5.5 | .50 | .25 | .16 | 15 | 24 | 4.6 | 1.5 | .13 | .06 | 756 |
| 3 | 2.2 | 5.5 | .50 | .25 | .16 | 28 | 20 | 4.3 | 1.0 | .24 | .35 | 340 |
| 4 | 4.3 | 5.6 | .49 | .24 | .16 | 33 | 168 | 4.4 | 45 | .16 | .04 | 219 |
| 5 | 23 | 7.0 | .48 | .24 | .15 | 26 | 174 | 5.2 | 21 | .01 | 1.2 | 73 |
| 6 | 22 | 5.4 | .38 | .24 | .14 | 17 | 55 | 7.1 | 4.4 | .00 | 12 | 36 |
| 7 | 6.1 | 3.6 | .38 | .23 | .14 | 12 | 32 | 7.5 | 2.3 | .00 | 183 | 19 |
| 8 | 2.6 | 2.6 | .38 | .23 | .16 | 11 | 20 | 5.5 | 1.6 | .04 | 126 | 9.1 |
| 9 | 1.5 | 2.2 | .39 | .22 | .35 | 9.6 | 15 | 4.2 | 1.1 | .23 | 337 | 5.9 |
| 10 | 1.5 | 2.2 | .40 | .22 | 1.0 | 11 | 11 | 3.2 | 1.2 | .14 | 284 | 5.0 |
| 11 | 1.7 | 2.4 | .40 | .21 | 4.0 | 27 | 8.9 | 2.6 | 1.2 | .21 | 45 | 3.5 |
| 12 | 1.6 | 2.3 | .41 | .20 | 15 | 218 | 6.7 | 2.2 | 1.3 | .36 | 29 | 195 |
| 13 | 1.8 | 2.1 | .42 | .20 | 16 | 71 | 6.7 | 1.9 | 3.4 | .29 | 19 | 2160 |
| 14 | 2.9 | 1.8 | .43 | .19 | 25 | 34 | 7.4 | 1.8 | 2.2 | .18 | 8.9 | 343 |
| 15 | 3.6 | 2.1 | .44 | .19 | 31 | 20 | 7.3 | 2.0 | 1.5 | .06 | 24 | 63 |
| 16 | 3.6 | 2.1 | .44 | .18 | 22 | 16 | 6.5 | 2.4 | 1.0 | .39 | 20 | 28 |
| 17 | 4.1 | 1.3 | .44 | .18 | 18 | 11 | 5.8 | 4.1 | .69 | .30 | 16 | 812 |
| 18 | 4.9 | 1.8 | .44 | .18 | 22 | 9.7 | 5.7 | 3.3 | .57 | .19 | 10 | 264 |
| 19 | 5.7 | 1.5 | .43 | .17 | 27 | 7.3 | 5.6 | 1.9 | .41 | .05 | 7.0 | 62 |
| 20 | 5.8 | 1.7 | .43 | .17 | 27 | 7.7 | 6.7 | 2.1 | .30 | .02 | 4.3 | 23 |
| 21 | 5.2 | 1.8 | .42 | .17 | 31 | 12 | 57 | 2.9 | .27 | .00 | 3.4 | 12 |
| 22 | 4.7 | 1.8 | .41 | .17 | 42 | 21 | 40 | 5.6 | .76 | .00 | 2.7 | 8.3 |
| 23 | 5.5 | 1.7 | .40 | .17 | 57 | 37 | 26 | 9.9 | .58 | .00 | 3.1 | 6.8 |
| 24 | 5.3 | 1.6 | .38 | .17 | 40 | 26 | 17 | 4.0 | .52 | .00 | 3.6 | 95 |
| 25 | 5.0 | 1.8 | .37 | .18 | 31 | 15 | 11 | 33 | .42 | 3.2 | 3.6 | 48 |
| 26 | 4.7 | 2.1 | .35 | .18 | 23 | 11 | 8.2 | 7.7 | .26 | 1.1 | 2720 | 13 |
| 27 | 4.5 | 55 | .33 | .15 | 17 | 9.6 | 6.7 | 3.2 | .17 | .11 | 362 | 4.5 |
| 28 | 4.1 | 12 | .31 | .13 | 14 | 338 | 5.6 | 2.3 | .27 | .00 | 106 | 2.0 |
| 29 | 3.7 | 3.0 | .29 | .15 | --- | 450 | 4.6 | 9.9 | .30 | .00 | 121 | 1.3 |
| 30 | 4.1 | .80 | .27 | .16 | --- | 63 | 4.2 | 7.8 | .21 | .00 | 32 | 5.1 |
| 31 | 5.0 | --- | .25 | .16 | --- | 28 | --- | 3.8 | --- | .00 | 17 | --- |
| TOTAL | 154.8 | 146.20 | 12.46 | 6.03 | 464.58 | 1609.9 | 785.6 | 164.9 | 97.63 | 7.58 | 4501.25 | 6124.5 |
| MEAN | 4.99 | 4.87 | .40 | .19 | 16.6 | 51.9 | 26.2 | 5.32 | 3.25 | .24 | 145 | 204 |
| MAX | 23 | 55 | .50 | .25 | 57 | 450 | 174 | 33 | 45 | 3.2 | 2720 | 2160 |
| MIN | 1.5 | .80 | .25 | .13 | .14 | 7.3 | 4.2 | 1.8 | .17 | .00 | .00 | 1.3 |
| CFSM | .03 | .03 | .002 | .001 | .10 | .31 | .16 | .03 | .02 | .001 | .86 | 1.21 |
| IN. | .03 | .03 | .00 | .00 | .10 | .36 | .17 | .04 | .02 | .00 | 1.00 | 1.36 |
| AC-FT | 307 | 290 | 25 | 12 | 921 | 3190 | 1560 | 327 | 194 | 15 | 8930 | 12150 |

| CAL YR 1976 | TOTAL | 33784.07 | MEAN 92.3 | MAX 5340 | MIN .21 | CFSM .55 | IN 7.48 | AC-FT 67010 |
|-------------|-------|----------|-----------|----------|---------|----------|---------|-------------|
| WTR YR 1977 | TOTAL | 14075.43 | MEAN 38.6 | MAX 2720 | MIN .00 | CFSM .23 | IN 3.12 | AC-FT 27920 |

CHARITON RIVER BASIN

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 mean sea level.

REMARKS.--Reservoir is formed by earthfill dam completed in 1969. Storage began in November 1969. Release is controlled by two hydraulically controlled slide gates, 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) above mean sea level, contents 552,000 acre-ft (681 hm³). Conservation pool level is at elevation 904.0 ft (275.54 m), contents 205,000 acre-ft (253 hm³). 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, 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, 269,000 acre-ft (332 hm³) Sept. 19, 20; maximum elevation, 909.27 ft (277.145 m) Sept. 20; minimum daily contents, 190,000 acre-ft (234 hm³) Feb. 8-11; minimum elevation, 902.62 ft (275.119 m) Feb. 7-10.

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 | | | | |

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
INSTANTANEOUS OBSERVATIONS AT 0800

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|------------------|-------------|--------|-------------|--------|----------|---------|--------|--------|--------|--------|---------|---------|
| 1 | 199000 | 197000 | 194000 | 192000 | 191000 | 194000 | 204000 | 207000 | 207000 | 203000 | 198000 | 231000 |
| 2 | 199000 | 197000 | 194000 | 192000 | 191000 | 194000 | 205000 | 207000 | 206000 | 202000 | 198000 | 237000 |
| 3 | 198000 | 197000 | 194000 | 192000 | 191000 | 194000 | 205000 | 207000 | 206000 | 202000 | 198000 | 240000 |
| 4 | 199000 | 197000 | 194000 | 192000 | 191000 | 194000 | 206000 | 207000 | 207000 | 202000 | 198000 | 243000 |
| 5 | 200000 | 196000 | 194000 | 192000 | 191000 | 194000 | 208000 | 208000 | 207000 | 202000 | 198000 | 245000 |
| 6 | 200000 | 196000 | 194000 | 192000 | 191000 | 194000 | 208000 | 208000 | 207000 | 201000 | 199000 | 246000 |
| 7 | 200000 | 196000 | 194000 | 192000 | 191000 | 194000 | 208000 | 208000 | 207000 | 201000 | 202000 | 246000 |
| 8 | 200000 | 196000 | 193000 | 192000 | 190000 | 194000 | 208000 | 208000 | 207000 | 201000 | 202000 | 245000 |
| 9 | 200000 | 195000 | 193000 | 192000 | 190000 | 194000 | 208000 | 208000 | 206000 | 202000 | 204000 | 245000 |
| 10 | 199000 | 195000 | 193000 | 192000 | 190000 | 194000 | 207000 | 207000 | 206000 | 202000 | 206000 | 243000 |
| 11 | 199000 | 195000 | 193000 | 192000 | 190000 | 194000 | 207000 | 207000 | 205000 | 202000 | 207000 | 241000 |
| 12 | 199000 | 195000 | 193000 | 192000 | 191000 | 195000 | 207000 | 207000 | 205000 | 202000 | 208000 | 241000 |
| 13 | 199000 | 195000 | 193000 | 192000 | 191000 | 197000 | 207000 | 207000 | 205000 | 201000 | 208000 | 248000 |
| 14 | 199000 | 195000 | 193000 | 192000 | 192000 | 197000 | 207000 | 207000 | 206000 | 201000 | 207000 | 255000 |
| 15 | 199000 | 195000 | 193000 | 192000 | 192000 | 198000 | 206000 | 207000 | 205000 | 201000 | 207000 | 257000 |
| 16 | 198000 | 194000 | 193000 | 192000 | 192000 | 197000 | 206000 | 207000 | 205000 | 202000 | 208000 | 258000 |
| 17 | 198000 | 194000 | 193000 | 192000 | 192000 | 197000 | 206000 | 206000 | 205000 | 202000 | 208000 | 260000 |
| 18 | 198000 | 194000 | 193000 | 192000 | 192000 | 198000 | 206000 | 206000 | 205000 | 202000 | 208000 | 265000 |
| 19 | 198000 | 194000 | 193000 | 191000 | 192000 | 197000 | 206000 | 206000 | 205000 | 202000 | 208000 | 269000 |
| 20 | 198000 | 194000 | 193000 | 192000 | 192000 | 197000 | 206000 | 206000 | 203000 | 201000 | 208000 | 269000 |
| 21 | 198000 | 194000 | 193000 | 191000 | 192000 | 197000 | 207000 | 206000 | 204000 | 201000 | 208000 | 268000 |
| 22 | 197000 | 194000 | 193000 | 191000 | 193000 | 198000 | 207000 | 207000 | 204000 | 201000 | 207000 | 268000 |
| 23 | 197000 | 194000 | 193000 | 191000 | 193000 | 198000 | 208000 | 207000 | 204000 | 201000 | 207000 | 266000 |
| 24 | 198000 | 194000 | 192000 | 191000 | 193000 | 198000 | 208000 | 207000 | 204000 | 201000 | 207000 | 266000 |
| 25 | 198000 | 194000 | 192000 | 191000 | 193000 | 198000 | 208000 | 207000 | 204000 | 201000 | 207000 | 266000 |
| 26 | 197000 | 194000 | 192000 | 191000 | 194000 | 198000 | 208000 | 207000 | 204000 | 200000 | 210000 | 265000 |
| 27 | 197000 | 194000 | 192000 | 191000 | 194000 | 198000 | 208000 | 207000 | 203000 | 199000 | 221000 | 264000 |
| 28 | 197000 | 194000 | 192000 | 191000 | 194000 | 198000 | 207000 | 207000 | 203000 | 199000 | 226000 | 263000 |
| 29 | 197000 | 194000 | 192000 | 191000 | --- | 202000 | 207000 | 207000 | 203000 | 199000 | 229000 | 262000 |
| 30 | 197000 | 194000 | 192000 | 191000 | --- | 204000 | 207000 | 207000 | 203000 | 199000 | 229000 | 261000 |
| 31 | 197000 | --- | 192000 | 191000 | --- | 205000 | --- | 207000 | --- | 198000 | 230000 | --- |
| MAX | 200000 | 197000 | 194000 | 192000 | 194000 | 205000 | 208000 | 208000 | 207000 | 203000 | 230000 | 269000 |
| MIN | 197000 | 194000 | 192000 | 191000 | 190000 | 194000 | 204000 | 206000 | 203000 | 198000 | 198000 | 231000 |
| * | 903.25 | 902.93 | 902.78 | 902.65 | 902.93 | 903.95 | 904.14 | 904.12 | 903.77 | 903.33 | 906.19 | 908.61 |
| * | -2,000 | -3,000 | -2,000 | -1,000 | +3,000 | +11,000 | +3,000 | 0 | -4,000 | -5,000 | +32,000 | +30,000 |
| CAL YR 1976..... | MAX 277,000 | | MIN 183,000 | | * +7,000 | | | | | | | |
| WTR YR 1977..... | MAX 269,000 | | MIN 190,000 | | *+62,000 | | | | | | | |

* Elevation, in feet, at end of month

* Change in contents, in acre-feet

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 800 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.--549 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) above mean sea level. 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 May 17 and 7.0 ft³/s (0.20 m³/s) May 18 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 telometer at station.

AVERAGE DISCHARGE.--21 years, 295 ft³/s (8.354 m³/s) 7.30 in/yr (185 mm/yr), 213,700 acre-ft/yr (263 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; minimum daily, 0.1 ft³/s (0.003 m³/s) Oct. 12-14, 17-24, 1957, Oct. 11, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 803 ft³/s (22.7 m³/s) Aug. 30; maximum gage height, 10.58 ft (3.225 m) Sept. 13, backwater from Walnut Creek; minimum daily, 14 ft³/s (0.396 m³/s) Nov. 12-16.

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 | 15 | 16 | 16 | 16 | 17 | 18 | 18 | 20 | 19 | 18 | 17 | 18 |
| 2 | 15 | 16 | 16 | 16 | 17 | 18 | 17 | 20 | 19 | 18 | 17 | 18 |
| 3 | 15 | 87 | 16 | 16 | 18 | 18 | 17 | 20 | 19 | 18 | 18 | 18 |
| 4 | 16 | 72 | 16 | 16 | 18 | 18 | 52 | 20 | 19 | 17 | 18 | 18 |
| 5 | 16 | 18 | 16 | 16 | 18 | 17 | 98 | 20 | 19 | 17 | 17 | 18 |
| 6 | 16 | 18 | 16 | 16 | 18 | 17 | 99 | 20 | 19 | 17 | 19 | 18 |
| 7 | 16 | 18 | 15 | 17 | 18 | 17 | 99 | 20 | 20 | 17 | 19 | 467 |
| 8 | 15 | 18 | 16 | 17 | 17 | 17 | 99 | 20 | 19 | 19 | 19 | 507 |
| 9 | 16 | 16 | 16 | 17 | 17 | 18 | 99 | 20 | 20 | 19 | 18 | 507 |
| 10 | 16 | 16 | 16 | 17 | 19 | 17 | 100 | 20 | 21 | 19 | 17 | 515 |
| 11 | 16 | 15 | 16 | 17 | 20 | 18 | 99 | 20 | 21 | 18 | 18 | 513 |
| 12 | 16 | 14 | 16 | 17 | 18 | 18 | 96 | 19 | 22 | 17 | 17 | 116 |
| 13 | 17 | 14 | 16 | 18 | 18 | 16 | 96 | 20 | 22 | 17 | 17 | 18 |
| 14 | 17 | 14 | 16 | 18 | 18 | 17 | 96 | 21 | 22 | 19 | 17 | 18 |
| 15 | 17 | 14 | 16 | 18 | 18 | 16 | 96 | 21 | 18 | 19 | 17 | 18 |
| 16 | 17 | 14 | 16 | 18 | 19 | 17 | 96 | 21 | 19 | 18 | 17 | 18 |
| 17 | 18 | 17 | 16 | 18 | 19 | 18 | 96 | 21 | 19 | 17 | 17 | 18 |
| 18 | 17 | 18 | 16 | 18 | 18 | 17 | 103 | 18 | 19 | 17 | 17 | 18 |
| 19 | 18 | 18 | 16 | 18 | 18 | 18 | 44 | 18 | 18 | 17 | 17 | 144 |
| 20 | 17 | 18 | 16 | 18 | 18 | 17 | 19 | 18 | 17 | 17 | 17 | 508 |
| 21 | 17 | 17 | 16 | 18 | 18 | 18 | 20 | 18 | 18 | 16 | 17 | 509 |
| 22 | 17 | 17 | 16 | 18 | 17 | 18 | 20 | 18 | 18 | 16 | 17 | 511 |
| 23 | 17 | 17 | 16 | 18 | 19 | 17 | 20 | 18 | 16 | 16 | 16 | 512 |
| 24 | 17 | 17 | 16 | 18 | 18 | 17 | 20 | 18 | 17 | 16 | 16 | 516 |
| 25 | 17 | 15 | 16 | 18 | 18 | 17 | 20 | 18 | 17 | 16 | 17 | 513 |
| 26 | 17 | 17 | 16 | 18 | 18 | 17 | 20 | 18 | 17 | 17 | 17 | 512 |
| 27 | 16 | 16 | 16 | 18 | 18 | 18 | 20 | 18 | 17 | 17 | 18 | 511 |
| 28 | 16 | 16 | 16 | 20 | 18 | 22 | 20 | 19 | 17 | 17 | 18 | 508 |
| 29 | 16 | 16 | 16 | 19 | --- | 18 | 20 | 19 | 18 | 17 | 18 | 508 |
| 30 | 16 | 16 | 16 | 17 | --- | 17 | 20 | 19 | 17 | 17 | 725 | 325 |
| 31 | 16 | --- | 16 | 17 | --- | 17 | --- | 18 | --- | 17 | 23 | --- |
| TOTAL | 509 | 617 | 496 | 541 | 505 | 543 | 1749 | 598 | 563 | 537 | 1252 | 8418 |
| MEAN | 16.4 | 20.6 | 16.0 | 17.5 | 18.0 | 17.5 | 58.3 | 19.3 | 18.8 | 17.3 | 40.4 | 281 |
| MAX | 18 | 87 | 16 | 20 | 20 | 22 | 103 | 21 | 22 | 19 | 725 | 516 |
| MIN | 15 | 14 | 16 | 16 | 17 | 16 | 17 | 18 | 16 | 16 | 16 | 18 |
| AC-FT | 1010 | 1220 | 984 | 1070 | 1000 | 1080 | 3470 | 1190 | 1120 | 1070 | 2480 | 16700 |
| CAL YR 1976 | TOTAL | 92036 | MEAN | 251 | MAX | 1190 | MIN | 12 | AC-FT | 182600 | | |
| WTR YR 1977 | TOTAL | 16328 | MEAN | 44.7 | MAX | 725 | MIN | 14 | AC-FT | 32390 | | |

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or floodflow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at partial-record stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. Discharge measurements made at miscellaneous sites for both low flow and high flow are given in a third or fourth table.

Low-flow partial-record stations

Measurements of streamflow in the area covered by this report made at low-flow partial-record stations are given in the following table. These measurements were made during periods of base flow when streamflow is primarily from ground-water storage. These measurements, when correlated with the simultaneous discharge of a nearby stream where continuous records are available, will give a picture of the low-flow potentiality of a stream. The column headed "Period of record" shows the period in which measurements were made for most water years at the same, or practically the same, site.

DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | MEASUREMENTS DATE | DISCHARGE (CFS) |
|------------------------|--------------------------------------|---|-----------------------|--------------------|-------------------|-----------------|
| UPPER IOWA RIVER BASIN | | | | | | |
| 05387300 | UPPER IOWA R AT CHESTER, IOWA. | LAT 4330XX, LONG 9222XX, IN SE 1/4 SEC. 10, T.100 N., R.13 W., HOWARD COUNTY, AT BRIDGE AT NORTH CITY LIMITS OF CHESTER. | 141 | 1957- | 07-13-77 | 6.3 |
| 05387400 | UPPER IOWA R NR KENDALVILLE, IOWA. | LAT 4328XX, LONG 9202XX, NEAR CENTER OF SEC.21, T.100 N., R.10 W., WINNESHIEK COUNTY, AT BRIDGE, 1 MILE NORTH OF KENDALVILLE. | 273 | 1957- | 07-13-77 | 20 |
| 05388100 | CANOE CR NR DECORAH, IOWA | LAT 4321XX, LONG 9141XX, IN NE 1/4 SEC. 33, T.99 N., R.7 W., WINNESHIEK COUNTY, AT BRIDGE, 7 MILES NORTHEAST OF DECORAH. | 58.9 | 1957- | 07-14-77 | 7.6 |
| 05388300 | BEAR CR NR HIGHLANDVILLE, IOWA. | LAT 4327XX, LONG 9137XX, IN SE 1/4 SEC. 25, T.100 N., R.7 W., WINNESHIEK COUNTY, AT BRIDGE, 3 MILES EAST OF HIGHLANDVILLE. | 53.4 | 1957- | 07-14-77 | 20 |
| VILLAGE CREEK BASIN | | | | | | |
| 05388350 | VILLAGE CR AT VILLAGE CREEK, IOWA. | LAT 4319XX, LONG 9114XX, IN NW 1/4 SEC. 18, T.98 N., R.3 W., ALLAMAKEE COUNTY, AT BRIDGE IN VILLAGE CREEK. | 58.5 | 1957- | 07-14-77 | 23 |
| PAINT CREEK BASIN | | | | | | |
| 05388500 | PAINT CR AT WATERVILLE, IOWA. | LAT 431237, LONG 911821, IN NW 1/4 SEC. 22, T.97 N., R.4 W., ALLAMAKEE COUNTY, AT BRIDGE 0.5 MILE NORTHWEST OF WATERVILLE. | 42.8 | *1952-73. 1974- | 07-14-77 | 4.9 |
| YELLOW RIVER BASIN | | | | | | |
| 05388800 | YELLOW R AT MYRON, IOWA. | LAT 4310XX, LONG 9132XX, IN NE 1/4 SEC. 3, T.96 N., R.6 W., ALLAMAKEE COUNTY, AT BRIDGE, 0.5 MILE SOUTH OF MYRON. | 59.5 | 1957- | 07-14-77 | 6.1 |
| 05389000 | YELLOW R AT ION, IOWA. | LAT 4307XX, LONG 9116XX, IN SW 1/4 SEC. 24, T.96 N., R.4 W., ALLAMAKEE COUNTY, AT BRIDGE, 7.5 MILES NORTHWEST OF MCGREGOR. | 221 | *1934-51. 1957- | 07-14-77 | 32 |
| TURKEY RIVER BASIN | | | | | | |
| 05411550 | NB TURKEY R NR VERNON SPRINGS, IOWA. | LAT 4321XX, LONG 9211XX, IN SW 1/4 SEC. 31, T.99 N., R.11 W., HOWARD COUNTY, AT BRIDGE, 3 MILES WEST OF VERNON SPRINGS. | 40.1 | 1957- | 07-13-77 | 1.9 |
| 05411850 | TURKEY R NR VERNON SPRINGS, IOWA | LAT 4320XX, LONG 9207XX, IN NW 1/4 SEC. 2, T.98 N., R.11 W., HOWARD COUNTY, AT BRIDGE, 2.5 MILES SOUTH OF VERNON SPRINGS. | 87.0 | 1957- | 07-13-77 | 4.0 |
| 05411800 | TURKEY R AT SPILLVILLE, IOWA. | LAT 431228, LONG 915656, IN NE 1/4 SEC. 19, T.97 N., R.9 W., WINNESHIEK COUNTY, AT BRIDGE AT NORTH EDGE OF SPILLVILLE. | 177 | *1956-73. 1974- | 07-13-77 | 16 |

DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | MEASUREMENTS DATE | DISCHARGE (CFS) |
|-------------------------------|--|--|-----------------------|---------------------|-------------------|-----------------|
| TURKEY RIVER BASIN--CONTINUED | | | | | | |
| 05411620 | L TURKEY R NR WAUCOMA, IOWA. | LAT 4301XX, LONG 9159XX, IN NW 1/4 SEC. 25, T.95 N., R.10 W., FAYETTE COUNTY, AT BRIDGE, 4 MILES SOUTHEAST OF WAUCOMA. | 102.0 | 1957- | 07-13-77 | 9.1 |
| 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 SOUTHWEST OF LOURDES. | 75.8 | 1957- | 07-13-77 | 1.6 |
| 05411800 | L TURKEY R NR ALPHA, IOWA. | LAT 4301XX, LONG 9167XX, IN SW 1/4 SEC. 30, T.95 N., R.9 W., FAYETTE COUNTY, AT BRIDGE, 3 MILES NORTHEAST OF ALPHA. | 319 | 1957- | 07-13-77 | 26 |
| 05412100 | ROBERTS CR NR ST. OLAF, IOWA. | LAT 425549, LONG 912303, IN NW 1/4 SEC. 25, T.94 N., R.5 W., CLAYTON COUNTY, AT BRIDGE NEAR NORTH CITY LIMITS OF ST. OLAF. | 70.7 | 1957- | 07-13-77 | 8.3 |
| 05412150 | ROBERTS CR AT ST. OLAF, IOWA. | LAT 425542, LONG 912301, IN SW 1/4 SEC. 25, T.94 N., R.5 W., CLAYTON COUNTY, AT BRIDGE NEAR EAST CITY LIMITS OF ST. OLAF. | 101 | 1957- | 07-13-77 | 9.1 |
| 05412200 | VOLGA R NR FAYETTE, IOWA. | LAT 4249XX, LONG 9153XX, IN SW 1/4 SEC. 35, T.93 N., R.9 W., FAYETTE COUNTY, AT BRIDGE, 4.5 MILES SOUTHWEST OF FAYETTE. | 53.0 | 1957- | 07-12-77 | 4.3 |
| 05412300 | L VOLGA R NR FAYETTE, IOWA. | LAT 4249XX, LONG 9153XX, NEAR S 1/4 CORNER OF SEC.35, T.93 N., R.9 W., FAYETTE COUNTY, AT BRIDGE, 4 MILES SOUTHWEST OF FAYETTE. | 31.0 | 1957- | 07-12-77 | 2 |
| 05412400 | VOLGA R AT LITTLE-PORT, IOWA. | LAT 424514, LONG 912208, IN SE 1/4 SEC. 25, T.92 N., R.5 W., CLAYTON COUNTY, AT BRIDGE IN LITTLEPORT. | 348 | 1957- | 07-12-77 | 52 |
| LITTLE MAQUOKETA RIVER BASIN | | | | | | |
| 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 NORTHEAST OF RICKARDSVILLE. | 21.6 | 1957- | 07-13-77 | .04 |
| MAQUOKETA RIVER BASIN | | | | | | |
| 05416300 | MAQUOKETA R NR DUNDEE, IOWA. | LAT 423655, LONG 913344, IN SW 1/4 SEC. 9, T.90 N., R.6 W., DELAWARE COUNTY, AT BRIDGE, 2.5 MILES NORTH OF DUNDEE. | 61.1 | 1957- | 07-13-77 | 6.6 |
| 05416400 | SF MAQUOKETA R NR DUNDEE, IOWA. | LAT 423608, LONG 913513, IN SW 1/4 SEC. 17, T.90 N., R.6 W., DELAWARE COUNTY, AT BRIDGE, 2.5 MILES NORTHWEST OF DUNDEE. | 54.8 | 1957- | 07-13-77 | 1.6 |
| 05417000 | MAQUOKETA RIVER NR MANCHESTER, IOWA | LAT 422722, LONG 912556, IN NW 1/4 SEC. 9, T.88 N., R.5 W., DELAWARE COUNTY, 2.3 MILES SOUTHEAST OF MANCHESTER | 305 | 1933-73. + 1977- | 07-13-77 | 30 |
| 05417540 | PLUM CR NR EARLVILLE, IOWA. | LAT 422604, LONG 911358, IN NE 1/4 SEC. 18, T.88 N., R.3 W., DELAWARE COUNTY, AT BRIDGE, 4 MILES SOUTHEAST OF EARLVILLE. | 65.7 | 1957- | 07-13-77 | 5.8 |
| 05417560 | MAQUOKETA R NR HOPKINTON, IOWA. | LAT 4222XX, LONG 9116XX, IN NE 1/4 SEC. 11, T.87 N., R.4 W., DELAWARE COUNTY, AT BRIDGE, 2 MILES NORTHWEST OF HOPKINTON. | 454 | 1957- | 07-13-77 | 58 |
| 05417580 | BUCK CR NR HOPKINTON, IOWA. | LAT 4221XX, LONG 9117XX, IN SE 1/4 SEC. 10, T.87 N., R.4 W., DELAWARE COUNTY, AT BRIDGE, 2.5 MILES NORTHWEST OF HOPKINTON. | 50.7 | 1957- | 07-13-77 | 3.1 |
| 05417600 | MAQUOKETA R NR SCOTCH GROVE, IOWA. | LAT 4212XX, LONG 9101XX, NEAR CENTER OF SEC.6, T.85 N., R.1 W., JONES COUNTY, AT BRIDGE ON STATE HIGHWAY 136, 6 MILES NORTHEAST OF SCOTCH GROVE. | 704 | 1957- | 07-12-77 | 85 |
| 05417700 | BEAR CREEK NR MONMOUTH, IOWA. | LAT 420218, LONG 905259, IN NE 1/4 SE 1/4 SEC. 31, T.84 N., R.1 E., JACKSON COUNTY, AT BRIDGE, 2.8 MILES SOUTH OF MONMOUTH. | 61.3 | 1957- | 07-12-77 | 5.5 |

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | MEASUREMENTS DATE | DISCHARGE (CFS) |
|----------------------------------|--|--|-----------------------|------------------|-------------------|-----------------|
| MAQUOKETA RIVER BASIN--CONTINUED | | | | | | |
| 05418100 | NF MAQUOKETA R AT DYERSVILLE, IOWA. | LAT 422905, LONG 910726, IN NW 1/4 SEC. 31, T.89 N., R.2 W., DUBUQUE COUNTY, AT BRIDGE, IN DYERSVILLE. | 80.2 | 1957- | 07-13-77 | 6.7 |
| 05418200 | WHITEWATER CR AT FILLMORE, IOWA. | LAT 421907, LONG 905526, IN NE 1/4 SEC. 26, T.87 N., R.1 W., DUBUQUE COUNTY, AT BRIDGE ON U.S. HIGHWAY 151, 0.5 MILE WEST OF FILLMORE. | 91.9 | 1957- | 07-13-77 | 8.6 |
| 05418300 | LYTLE CR NR BERNARD, IOWA. | LAT 421757, LONG 904656, IN SE 1/4 SEC. 36, T.87 N., R.1 E., DUBUQUE COUNTY, AT BRIDGE, 2.5 MILES SOUTHEAST OF BERNARD. | 62.7 | 1957- | 07-13-77 | 7.9 |
| 05418350 | LYTLE CR NR FULTON, IOWA. | LAT 4212XX, LONG 9045XX, NEAR CENTER OF SEC.5, T.85 N., R.2 E., JACKSON COUNTY, AT BRIDGE, 5 MILES NORTHWEST OF FULTON. | 114 | 1957- | 07-12-77 | 20 |
| 05418400 | NF MAQUOKETA R NR FULTON, IOWA. (DISCONTINUED) | LAT 4211XX, LONG 9044XX, IN SE 1/4 SEC. 9, T.85 N., R.2 E., JACKSON COUNTY, AT BRIDGE, 3 MILES NORTHWEST OF FULTON. | 499 | 1957- | 07-12-77 | 79 |
| 05418650 | DEEP CR NR CHARLOTTE, IOWA. | LAT 4200XX, LONG 9024XX, NEAR CENTER OF SEC.17, T.83 N., R.5 E., CLINTON COUNTY, AT BRIDGE, 4 MILES NORTHEAST OF CHARLOTTE. | 67.7 | 1957- | 07-12-77 | 2.4 |
| 05418700 | DEEP CR NR PRESTON, IOWA. | LAT 4203XX, LONG 9026XX, NEAR N 1/4 CORNER OF SEC.31, T.84 N., R.5 E., JACKSON COUNTY, AT BRIDGE, 2 MILES WEST OF PRESTON. | 91.9 | 1957- | 07-12-77 | 3.4 |
| ELK RIVER BASIN | | | | | | |
| 05420300 | ELK R NR ALMONT, IOWA. | LAT 420039, LONG 901205, NEAR CENTER OF SEC.12, T.83 N., R.6 E., CLINTON COUNTY, AT BRIDGE, 2.5 MILES NORTH OF ALMONT. | 55.9 | 1957- | 07-12-77 | 4.4 |
| WAPSIPINICON RIVER BASIN | | | | | | |
| 05420540 | WAPSIPINICON R NR RICEVILLE, IOWA. | LAT 4320XX, LONG 9234XX, IN NE 1/4 SEC. 12, T.98 N., R.15 W., MITCHELL COUNTY, AT BRIDGE, 2.5 MILES SOUTH OF RICEVILLE. | 72.3 | 1957- | 07-13-77 | 6.7 |
| 05420580 | WAPSIPINICON R NR IONIA, IOWA. | LAT 4301XX, LONG 9223XX, IN NW 1/4 SEC. 33, T.95 N., R.13 W., CHICKASAW COUNTY, AT BRIDGE, 4 MILES SOUTHEAST OF IONIA. | 161 | 1957- | 07-13-77 | 7.4 |
| 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 | 1957- | 07-13-77 | 2.3 |
| 05420660 | WAPSIPINICON R NR NEW HAMPTON, IOWA | LAT 4259XX, LONG 9222XX, IN NW 1/4 SEC. 10, T.94 N., R.13 W., CHICKASAW COUNTY, AT BRIDGE, 5 MILES SOUTHWEST OF NEW HAMPTON. | 291 | 1957- | 07-13-77 | 12 |
| 05420680 | WAPSIPINICON R NR TRIPOLI, IOWA. | LAT 4250XX, LONG 9215XX, IN SW 1/4 SEC. 27, T.93 N., R.12 W., BREMER COUNTY, AT BRIDGE ON STATE HIGHWAY 93, 2 MILES NORTH OF TRIPOLI. | 343 | 1957- | 07-14-77 | 15 |
| 05420700 | EF WAPSIPINICON R NR FREDERICKSBURG, IOWA. | LAT 4301XX, LONG 9213XX, IN NW 1/4 SEC. 36, T.95 N., R.12 W., CHICKASAW COUNTY, AT BRIDGE, 3 MILES NORTH OF FREDERICKSBURG. | 62.2 | 1957- | 07-13-77 | 2.6 |
| 05420720 | EF WAPSIPINICON R NR TRIPOLI, IOWA. | LAT 4251XX, LONG 9214XX, IN NW 1/4 SEC. 26, T.93 N., R.12 W., BREMER COUNTY, AT BRIDGE ON STATE HIGHWAY 93, 3 MILES NORTH OF TRIPOLI. | 144 | 1957- | 07-13-77 | 6.5 |
| 05420740 | WAPSIPINICON R AT TRIPOLI, IOWA. | LAT 4248XX, LONG 9214XX, IN SW 1/4 SEC. 2, T.92 N., R.12 W., BREMER COUNTY, AT BRIDGE, 1.5 MILES EAST OF TRIPOLI. | 498 | 1957- | 07-13-77 | 18 |

DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | MEASUREMENTS DATE | DISCHARGE (CFS) |
|-------------------------------------|---|--|-----------------------|--------------------|-------------------|-----------------|
| WAPSIPINICON RIVER BASIN--CONTINUED | | | | | | |
| 05420800 | CRANE CR NR DENVER, IOWA. | LAT 423832, LONG 921521, IN NW 1/4 SEC. 3, T.90 N., R.12 W., BLACK HAWK COUNTY, AT BRIDGE, 5 MILES SOUTHEAST OF DENVER. | 63.6 | 1957- | 07-14-77 | 3.0 |
| 05420820 | CRANE CR AT DUNKERTON, IOWA. | LAT 4234XX, LONG 9210XX, IN SW 1/4 SEC. 29, T.90 N., R.11 W., BLACK HAWK COUNTY, AT BRIDGE, NEAR WEST CITY LIMITS OF DUNKERTON. | 101 | 1957- | 07-12-77 | 3.1 |
| 05420840 | L WAPSIPINICON R NR WESTGATE, IOWA. | LAT 4247XX, LONG 9205XX, IN NE 1/4 SEC. 13, T.92 N., R.11 W., BREMER COUNTY, AT BRIDGE, 4.5 MILES NORTHWEST OF WESTGATE. | 57.4 | 1957- | 07-12-77 | 5.6 |
| 05420860 | BUCK CR NR LITTLETON, IOWA. | LAT 4235XX, LONG 9203XX, NEAR CENTER OF SEC.29, T.90 N., R.10 W., BUCHANAN COUNTY, AT BRIDGE, 3 MILES NORTHWEST OF LITTLETON. | 57.0 | 1957- | 07-14-77 | .35 |
| 05420900 | L WAPSIPINICON R AT LITTLETON, IOWA. | LAT 4233XX, LONG 9202XX, IN NE CORNER SEC.9, T.89 N., R.10 W., BUCHANAN COUNTY, AT BRIDGE, 0.5 MILE NORTH OF LITTLETON. | 205 | 1957- | 07-14-77 | 14 |
| 05420940 | OTTER CR NR OTTERVILLE, IOWA. | LAT 4233XX, LONG 9157XX, NEAR SW CORNER OF SEC.5, T.89 N., R.9 W., BUCHANAN COUNTY, AT BRIDGE, 2 MILES NORTH OF OTTERVILLE. | 101 | 1957- | 07-14-77 | 4.9 |
| 05421500 | WAPSIPINICON R AT STONE CITY, IOWA. | LAT 4207XX, LONG 9121XX, IN NE 1/4 SEC. 6, T.84 N., R.4 W., JONES COUNTY, AT BRIDGE, IN STONE CITY. | 1324 | *1903-14. 1957- | 07-12-77 | 54 |
| 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 NORTH-EAST OF WINTHROP. | 68.2 | 1957- | 07-14-77 | .71 |
| 05421700 | BUFFALO CR NR STONE CITY, IOWA. | LAT 4208XX, LONG 9121XX, NEAR E 1/4 CORNER SEC.30, T.85 N., R.4 W., JONES COUNTY, AT BRIDGE, 2 MILES NORTH OF STONE CITY. | 217 | 1957- | 07-12-77 | 5.5 |
| 05421800 | YANKEE RUN AT WHEATLAND, IOWA. | LAT 414934, LONG 905025, IN NE 1/4 SEC. 16, T.81 N., R.1 E., CLINTON COUNTY, AT BRIDGE, NEAR SOUTH CITY LIMITS OF WHEATLAND. | 52.2 | 1957- | 07-12-77 | 4.0 |
| 05421850 | MUD CR NR PLAINVIEW, IOWA. | LAT 414202, LONG 904526, IN SW 1/4 SEC. 29, T.80 N., R.2 E., SCOTT COUNTY, AT BRIDGE, 2.5 MILES NORTHEAST OF PLAINVIEW. | 109 | 1957- | 07-12-77 | 12 |
| 05421900 | SILVER CR NR DE WITT, IOWA. | LAT 414709, LONG 903313, IN SE 1/4 SEC. 25, T.81 N., R.3 E., CLINTON COUNTY, AT BRIDGE, 2.5 MILES SOUTH OF DE WITT. | 60.8 | 1957- | 07-12-77 | 5.2 |
| 05422100 | BROPHYS CR NR LOW MOOR, IOWA. | LAT 414856, LONG 902414, NEAR N 1/4 CORNER SEC.20, T.81 N., R.5 E., CLINTON COUNTY, AT BRIDGE, ON U. S. HIGHWAY 30, 3 MILES NW OF LOW MOOR. | 72.8 | 1957- | 07-12-77 | 5.4 |
| FLINT RIVER BASIN | | | | | | |
| 05469700 | FLINT R NR BURLINGTON, IOWA. | LAT 405200, LONG 911203, IN NE 1/4 SEC. 16, T.70 N., R.3 W., DES MOINES COUNTY, AT BRIDGE, 6 MILES NW OF BURLINGTON. | 107 | 1958- | 07-13-77 | .04 |
| SKUNK RIVER BASIN | | | | | | |
| 05469800 | S SKUNK R NR ELLSWORTH, IOWA. | LAT 4219XX, LONG 9335XX, NEAR N 1/4 CORNER OF SEC.36, T.87 N., R.24 W., HAMILTON COUNTY, AT BRIDGE ON STATE HIGHWAY 175, NEAR WEST CITY LIMITS OF ELLSWORTH. | 54.9 | 1957- | 07-11-77 | .04 |
| 05469850 | MUD LAKE DRAINAGE DITCH 71 AT JEWELL, IOWA. | LAT 4219XX, LONG 9338XX, IN NW 1/4 SEC. 28, T.87 N., R.24 W., HAMILTON COUNTY, AT BRIDGE, 1 MILE NORTH OF JEWELL. | 64.1 | 1957- | 07-11-77 | .17 |
| 05469950 | S SKUNK R AT RANDALL, IOWA. | LAT 4214XX, LONG 9335XX, IN NE 1/4 SEC. 25, T.86 N., R.24 W., HAMILTON COUNTY, AT BRIDGE, 1 MILE EAST OF RANDALL. | 160 | 1957- | 07-11-77 | .42 |

DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | MEASUREMENTS DATE | DISCHARGE (CFS) |
|------------------------------|---|---|-----------------------|--------------------|-------------------|-----------------|
| SKUNK RIVER BASIN--CONTINUED | | | | | | |
| 05470200 | SQUAW CR NR STANHOPE, IOWA. | LAT 421234, LONG 934707, NEAR N 1/4 CORNER OF SEC.5, T.85 N., R.25 W., BOONE COUNTY, AT BRIDGE, 5 MILES SOUTH OF STANHOPE. | 62.6 | 1957- | 07-11-77 | 0 |
| 05471050 | S SKUNK R AT COLFAX, IOWA. | LAT 414055, LONG 931447, IN NW 1/4 SEC. 1, T.79 N., R.21 W., JASPER COUNTY, AT BRIDGE ON STATE HIGHWAY 117, AT NORTH CITY LIMITS OF COLFAX. | 803 | 1957- | 07-11-77 | 8.7 |
| 05471100 | EB INDIAN CR NR NEVADA, IOWA. | LAT 4102XX, LONG 9322XX, NEAR N 1/4 CORNER OF SEC.2, T.83 N., R.22 W., STORY COUNTY, AT BRIDGE, 4 MILES NE OF NEVADA. | 65.7 | 1957- | 07-11-77 | 0 |
| 05471150 | WB INDIAN CR NR IOWA CENTER, IOWA. | LAT 4156XX, LONG 9326XX, IN NW 1/4 SEC. 8, T.82 N., R.22 W., STORY COUNTY, AT BRIDGE, 2 MILES NW OF IOWA CENTER. | 65.9 | 1957- | 07-11-77 | 0 |
| 05471180 | INDIAN CR NR IOWA CENTER, IOWA. | LAT 4155XX, LONG 9325XX, NEAR CENTER OF SEC.15, T.82 N., R.22 W., STORY COUNTY, AT BRIDGE, 1 MILE SW OF IOWA CENTER. | 203 | 1957- | 07-11-77 | 0 |
| 05471200 | INDIAN CR NR MINGO, IOWA. | LAT 414817, LONG 931826, IN NW 1/4 SEC. 28, T.81 N., R.21 W., JASPER COUNTY, AT BRIDGE 2.9 MILES NORTHWEST OF MINGO. | 276 | *1958-74. 1975- | 07-11-77 | .84 |
| 05471350 | CLEAR CR NR MINGO, IOWA. | LAT 4147XX, LONG 9316XX, IN SW 1/4 SEC. 35, T.81 N., R.21 W., JASPER COUNTY, AT BRIDGE, 1 MILE NE OF MINGO. | 84.1 | 1957- | 07-11-77 | 0 |
| 05471400 | ELK CR NR TAINTOR, IOWA. | LAT 4129XX, LONG 9251XX, IN NE 1/4 SEC. 7, T.77 N., R.17 W., MAHASKA COUNTY, AT BRIDGE, 6 MILES SW OF TAINTOR. | 59.9 | 1957- | 07-11-77 | .08 |
| 05472100 | N SKUNK R NR NEWTON, IOWA. | LAT 4147XX, LONG 9302XX, IN NW 1/4 SEC. 35, T.81 N., R.19 W., JASPER COUNTY, AT BRIDGE, 6 MILES NORTH OF NEWTON. | 101 | 1957- | 07-11-77 | .10 |
| 05472300 | N SKUNK R NR SEARSBORO, IOWA. | LAT 4132XX, LONG 9242XX, NEAR CENTER OF SEC.27, T.78 N., R.16 W., POWESHIEK COUNTY, AT BRIDGE, 3.5 MILES SOUTH OF SEARSBORO. | 358 | 1957- | 07-11-77 | 2.8 |
| 05472400 | MIDDLE CR NR ROSE HILL, IOWA. | LAT 412042, LONG 922825, IN NE 1/4 SEC. 33, T.76 N., R.14 W., MAHASKA COUNTY, AT BRIDGE, 2 MILES NW OF ROSE HILL. | 58.5 | 1957- | 07-11-77 | 0 |
| 05472450 | CEDAR CR NR SIGOURNEY, IOWA. | LAT 411842, LONG 921333, IN SE 1/4 SEC. 10, T.75 N., R.12 W., KEOKUK COUNTY, AT BRIDGE, 2 MILES SW OF SIGOURNEY. | 92.5 | 1957- | 07-11-77 | .01 |
| 05473000 | SKUNK R AT COPPOCK, IOWA. | LAT 4110XX, LONG 9143XX, IN NE 1/4 SEC. 1, T.73 N., R.8 W., JEFFERSON COUNTY, AT BRIDGE ON STATE HIGHWAY 78, 0.5 MILE WEST OF COPPOCK. | 2916 | *1913-44. 1957- | 07-11-77 | 49 |
| 05473020 | EF CROOKED CR NR WINFIELD, IOWA. | LAT 4109XX, LONG 9126XX, IN NE 1/4 SEC. 9, T.73 N., R.5 W., HENRY COUNTY, AT BRIDGE, 2 MILES NORTH OF WINFIELD. | 65.3 | 1958- | 07-11-77 | .06 |
| 05473050 | CROOKED CR NR COPPOCK, IOWA. | LAT 4112XX, LONG 9142XX, IN NE 1/4 SEC. 30, T.74 N., R.7 W., WASHINGTON COUNTY, AT BRIDGE, 2 MILES NE OF COPPOCK. | 259 | 1957- | 07-11-77 | .92 |
| 05473100 | WALNUT CR AT GERMANVILLE, IOWA. | LAT 4106XX, LONG 9146XX, IN SW 1/4 SEC. 27, T.73 N., R.8 W., WASHINGTON COUNTY, AT BRIDGE, 1 MILE WEST OF GERMANVILLE. | 66.3 | 1957- | 07-11-77 | .03 |
| 05473200 | CEDAR CR NR HIGHLAND CENTER, IOWA. | LAT 410630, LONG 922158, IN SW 1/4 SEC. 21, T.73 N., R.13 W., WAPELLO COUNTY, AT BRIDGE, 1 MILE SW OF HIGHLAND CENTER. | 73.6 | 1957- | 07-11-77 | .01 |
| 05473250 | COMPETINE CR BELOW FORKS NR BATAVIA IOWA. | LAT 4102XX, LONG 9207XX, IN NE 1/4 SEC. 21, T.72 N., R.11 W., JEFFERSON COUNTY, AT BRIDGE, 3 MILES NE OF BATAVIA. | 68.8 | 1957- | 07-11-77 | .01 |

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

221

DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | MEASUREMENTS DATE | DISCHARGE (CFS) |
|------------------------------|----------------------------------|---|-----------------------|------------------|-------------------|-----------------|
| SKUNK RIVER BASIN--CONTINUED | | | | | | |
| 05473300* | CEDAR CR NR BATAVIA, IOWA. | LAT 4101XX, LONG 9207XX, IN NW 1/4 SEC. 27, T.72 N., R.11 W., JEFFERSON COUNTY, AT BRIDGE ON U.S. HIGHWAY 30, 2.5 MILES NE OF BATAVIA. | 252 | 1957- | 07-11-77 | .14 |
| 05473350 L | CEDAR CR NR SALEM, IOWA. | LAT 4051XX, LONG 9141XX, IN SW 1/4 SEC. 17, T.70 N., R.7 W., HENRY COUNTY, AT BRIDGE, 4 MILES WEST OF SALEM. | 55.0 | 1958- | 07-11-77 | 0 |
| 05473400 | CEDAR CR NR OAKLAND MILLS, IOWA. | LAT 4055XX, LONG 9140XX, IN NW 1/4 SEC. 28, T.71 N., R.7 W., HENRY COUNTY, AT BRIDGE, 3 MILES WEST OF OAKLAND MILLS. | 522 | 1958- | 07-11-77 | 14 |
| 05473450 | BIG CR AT MT. PLEASANT, IOWA. | LAT 4100XX, LONG 9132XX, IN NW 1/4 SEC. 34, T.72 N., R.6 W., HENRY COUNTY, AT BRIDGE, 3 MILES NE OF MT. PLEASANT. | 58.0 | 1958- | 07-11-77 | .02 |
| DEVILS CREEK BASIN | | | | | | |
| 05474190 | DEVILS CR NR VIELE, IOWA. | LAT 403703, LONG 912534, IN SW 1/4 SEC. 10, T.67 N., R.5 W., LEE COUNTY, AT BRIDGE, 1 MILE NE OF VIELE. | 20.0 | 1958- | 07-13-77 | 0 |
| 05474200 | SUGAR CR NR FRANKLIN, IOWA. | LAT 403954, LONG 912839, IN NE 1/4 SEC. 30, T.68 N., R.5 W., LEE COUNTY, AT BRIDGE, 2 MILES EAST OF FRANKLIN. | 75.6 | 1958- | 07-13-77 | D |
| 05474300 | SUGAR CR NR VIELE, IOWA. | LAT 403639, LONG 912624, IN SE 1/4 SEC. 9, T.67 N., R.5 W., LEE COUNTY, AT BRIDGE, 0.5 MILE WEST OF VIELE. | 109 | 1958- | 07-13-77 | .08 |
| DES MOINES RIVER BASIN | | | | | | |
| 05481900 | BEAVER CR AT GRANGER, IOWA. | LAT 414539, LONG 935101, IN SW 1/4 SEC. 2, T.80 N., R.26 W., DALLAS COUNTY, AT BRIDGE, 1.5 MILES WEST OF GRANGER. | 314 | 1957- | 07-06-77 | 0 |
| 05482100 N | RACCOON R NR REMBRANDT, IOWA. | LAT 4247XX, LONG 9505XX, IN NE 1/4 SEC. 21, T.92 N., R.36 W., BUENA VISTA COUNTY, AT BRIDGE, 5 MILES SE OF REMBRANDT. | 77.4 | 1957- | 07-05-77 | 1.9 |
| 05482120 N | RACCOON R NR TRUESDALE, IOWA. | LAT 4242XX, LONG 9505XX, IN NE 1/4 SEC. 15, T.91 N., R.36 W., BUENA VISTA COUNTY, AT BRIDGE, 6 MILES SE OF TRUESDALE. | 164 | 1957- | 07-05-77 | 2.4 |
| 05482180 L | CEDAR CR NR FONDA, IOWA. | LAT 4237XX, LONG 9451XX, IN NW 1/4 SEC. 15, T.90 N., R.34 W., POCAHONTAS COUNTY, AT BRIDGE, 2 MILES NORTH OF FONDA. | 83.5 | 1957- | 07-05-77 | 0 |
| 05482200 B | CEDAR CR AT FONDA, IOWA. | LAT 4235XX, LONG 9451XX, IN SW 1/4 SEC. 22, T.90 N., R.34 W., POCAHONTAS COUNTY, AT BRIDGE ON STATE HIGHWAY 5, AT NORTH CITY LIMITS OF FONDA. | 196 | 1957- | 07-05-77 | 0 |
| 05482220 B | CEDAR CR AT SAC CITY, IOWA. | LAT 4224XX, LONG 9459XX, IN SE 1/4 SEC. 25, T.88 N., R.36 W., SAC COUNTY, AT BRIDGE, 1 MILE SE OF SAC CITY. | 342 | 1957- | 07-06-77 | .47 |
| 05482320 | INDIAN CR NR LAKE VIEW, IOWA. | LAT 4220XX, LONG 9500XX, IN NW 1/4 SEC. 24, T.87 N., R.36 W., SAC COUNTY, AT BRIDGE, 4 MILES NE OF LAKE VIEW. | 90.2 | 1957- | 07-06-77 | 1.4 |
| 05482360 | CAMP CR NR LYTTON, IOWA. | LAT 4223XX, LONG 9450XX, IN NW 1/4 SEC. 5, T.87 N., R.34 W., CALHOUN COUNTY, AT BRIDGE, 3 MILES SE OF LYTTON. | 62.0 | 1957- | 07-06-77 | 0 |
| 05482380 | CAMP CR NR LAKE CITY, IOWA. | LAT 4217XX, LONG 9450XX, IN NW 1/4 SEC. 5, T.86 N., R.34 W., CALHOUN COUNTY, AT BRIDGE, 5 MILES NW OF LAKE CITY. | 147 | 1957- | 07-05-77 | 0 |
| 05482400 N | RACCOON R NR LAKE CITY, IOWA. | LAT 4216XX, LONG 9450XX, NEAR E 1/4 CORNER SEC.17, T.86 N., R.34 W., CALHOUN COUNTY, AT BRIDGE ON STATE HIGHWAY 175, 4 MILES WEST OF LAKE CITY. | 1003 | 1957- | 07-06-77 | 9.1 |
| 05482410 | LAKE CR NR ROCKWELL CITY, IOWA. | LAT 4224XX, LONG 9436XX, IN SW 1/4 SEC. 29, T.88 N., R.32 W., CALHOUN COUNTY, AT BRIDGE ON U.S. HIGHWAY 20, 1 MILE EAST OF ROCKWELL CITY. | 71.5 | 1957- | 07-05-77 | .05 |

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | MEASUREMENTS DATE | DISCHARGE (CFS) |
|-----------------------------------|---|---|-----------------------|------------------|----------------------|-----------------|
| DES MOINES RIVER BASIN--CONTINUED | | | | | | |
| 05482420 | LAKE CR NR LAKE CITY, IOWA. | LAT 4216XX, LONG 9447XX, IN SW 1/4 SEC. 14, T.86 N., R.34 W., CALHOUN COUNTY, AT BRIDGE, 3 MILES WEST OF LAKE CITY. | 128 | 1957- | 07-06-77 | 0 |
| 05482440 | PURGATORY CR NR LANESBORO, IOWA. | LAT 4210XX, LONG 9438XX, IN NE 1/4 SEC. 24, T.85 N., R.33 W., CARROLL COUNTY, AT BRIDGE, 3 MILES SE OF LANESBORO. | 65.0 | 1957- | 07-06-77 | 0 |
| 05482460 | E CEDAR CR NR SOMERS, IOWA. | LAT 422207, LONG 942703, IN NW 1/4 SEC. 10, T.87 N., R.31 W., CALHOUN COUNTY, AT BRIDGE, 1 MILE SW OF SOMERS. | 62.4 | 1957- | 07-05-77 | 0 |
| 05482480 | CEDAR CR NR CHURDAN, IOWA. | LAT 4208XX, LONG 9435XX, NEAR S 1/4 CORNER SEC.28, T.86 N., R.32 W., GREENE COUNTY, AT BRIDGE, 5 MILES SW OF CHURDAN. | 151 | 1957- | 07-06-77 | 0 |
| 05482700 | HARDIN CR NR CHURDAN, IOWA. | LAT 4210XX, LONG 9426XX, IN SW 1/4 SEC. 14, T.85 N., R.31 W., GREENE COUNTY, AT BRIDGE, 2 MILES EAST OF CHURDAN. | 74.0 | 1957- | 07-06-77 | 0 |
| 05483060 | HARDIN CR NR JEFFERSON, IOWA. | LAT 4201XX, LONG 9420XX, IN NW 1/4 SEC. 10, T.83 N., R.30 W., GREENE COUNTY, AT BRIDGE, 2 MILES EAST OF JEFFERSON. | 161 | 1957- | 07-06-77 | 0 |
| 05483100 | W BUTTRICK CR NR FARNHAMVILLE, IOWA. | LAT 4213XX, LONG 9422XX, IN NW 1/4 SEC. 4, T.85 N., R.30 W., GREENE COUNTY, AT BRIDGE, 5 MILES SE OF FARNHAMVILLE. | 80.1 | 1957- | 07-06-77 | 0 |
| 05483150 | E BUTTRICK CR NR GRAND JUNCTION, IOWA. | LAT 4204XX, LONG 9416XX, IN NE 1/4 SEC. 30, T.84 N., R.29 W., GREENE COUNTY, AT BRIDGE, 2.5 MILES NW OF GRAND JUNCTION. | 79.6 | 1957- | 07-06-77 | 0 |
| 05483200 | BUTTRICK CR NR GRAND JUNCTION, IOWA. | LAT 4202XX, LONG 9417XX, AT S 1/4 CORNER SEC.36, T.84 N., R.30 W., GREENE COUNTY, AT BRIDGE, 2.5 MILES WEST OF GRAND JUNCTION. | 202 | 1957- | 07-06-77 | 0 |
| 05483250 | GREEN BRIER CR NR JAMAICA, IOWA. | LAT 4151XX, LONG 9417XX, NEAR CENTER OF SEC.1, T.81 N., R.30 W., GUTHRIE COUNTY, AT BRIDGE, 1.5 MILES NE OF JAMAICA. | 65.8 | 1957- | 07-05-77 | 0 |
| 05483300 | N RACCOON R NR PERRY, IOWA. | LAT 4150XX, LONG 9408XX, NEAR CENTER OF SEC.8, T.81 N., R.28 W., DALLAS COUNTY, AT BRIDGE ON STATE HIGHWAY 141, 1 MILE WEST OF PERRY. | 2169 | 1957- | 07-06-77 | 25 |
| 05483310 | S RACCOON R NR GUTHRIE CENTER, IOWA. | LAT 4141XX, LONG 9432XX, IN SW 1/4 SEC. 36, T.80 N., R.32 W., GUTHRIE COUNTY, AT BRIDGE, 2 MILES NW OF GUTHRIE CENTER. | 77.2 | 1957- | 07-05-77 | 7.5 |
| 05483320 | BRUSHY FORK CR NR DEDHAM, IOWA. | LAT 4147XX, LONG 9454XX, IN SE 1/4 SEC. 22, T.82 N., R.34 W., CARROLL COUNTY, AT BRIDGE, 2 MILES SE OF DEDHAM. | 68.1 | 1957- | 07-05-77 | .10 |
| 05483330 | BRUSHY FORK CR NR GUTHRIE CENTER, IOWA. | LAT 4139XX, LONG 9427XX, NEAR CENTER OF SEC.15, T.79 N., R.31 W., GUTHRIE COUNTY, AT BRIDGE, 3.5 MILES SE OF GUTHRIE CENTER. | 142 | 1957- | 07-05-77 | 9.9 |
| 05483340 | S RACCOON R NR MONTEITH, IOWA. | LAT 4138XX, LONG 9425XX, IN SE 1/4 SEC. 23, T.79 N., R.31 W., GUTHRIE COUNTY, AT BRIDGE, 0.5 MILE EAST OF MONTEITH. | 267 | 1957- | 07-05-77 | 22 |
| 05483350 | M RACCOON R NR CARROLL, IOWA. | LAT 4203XX, LONG 9449XX, IN SE 1/4 SEC. 29, T.84 N., R.34 W., CARROLL COUNTY, AT BRIDGE, 2 MILES SE OF CARROLL. | 74.3 | 1957- | 07-06-77 | 1.1 |
| 05483360 | M RACCOON R NR GLIDDEN, IOWA. | LAT 4203XX, LONG 9446XX, NEAR CENTER OF SEC.35, T.84 N., R.34 W., GREENE COUNTY, AT BRIDGE, 2.5 MILES SW OF GLIDDEN. | 138 | 1957- | 07-06-77 | 1.5 |
| 05483380 | WILLOW CR NR SCRANTON, IOWA. | LAT 4154XX, LONG 9435XX, IN SW 1/4 SEC. 21, T.82 N., R.32 W., GREENE COUNTY, AT BRIDGE, 9 MILES SW OF SCRANTON. | 51.8 | 1957- | 07-06-77 | .16 |
| 05483400 | WILLOW CR NR BAYARD, IOWA. | LAT 4149XX, LONG 9433XX, IN SE 1/4 SEC. 15, T.81 N., R.32 W., GUTHRIE COUNTY, AT BRIDGE, 2 MILES SOUTH OF BAYARD. | 112 | 1957- | 07-05-77 07-06-77 | 2.0 1.3 |

DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | MEASUREMENTS DATE | DISCHARGE (CFS) |
|-----------------------------------|----------------------------------|---|-----------------------|------------------|----------------------|-----------------|
| DES MOINES RIVER BASIN--CONTINUED | | | | | | |
| 05483450 | M RACCOON R NR BAYARD, IOWA. | LAT 4147XX, LONG 9430XX, IN SE 1/4 SEC. 31, T.81 N., R.31 W., GUTHRIE COUNTY, AT BRIDGE ON STATE HIGHWAY 25, 6 MILES SE OF BAYARD. | 375 | 1957- | 07-05-77 07-06-77 | 13 12 |
| 05483620 | MOSQUITO CR NR LINDEN, IOWA. | LAT 4143XX, LONG 9415XX, NEAR S 1/4 CORNER SEC.200, T.80 N., R.29 W., DALLAS COUNTY, AT BRIDGE, 5 MILES NE OF LINDEN. | 67.4 | 1957- | 07-05-77 | 0 |
| 05483640 | MOSQUITO CR NR REDFIELD, IOWA. | LAT 4138XX, LONG 9413XX, IN NE 1/4 SEC. 27, T.79 N., R.29 W., DALLAS COUNTY, AT BRIDGE, 3 MILES NORTH OF REDFIELD. | 110 | 1957- | 07-05-77 | 0 |
| 05483660 | M RACCOON R AT REDFIELD, IOWA. | LAT 4136XX, LONG 9413XX, NEAR W 1/4 CORNER SEC.4, T.78 N., R.29 W., DALLAS COUNTY, AT BRIDGE NEAR WEST CITY LIMITS OF REDFIELD. | 609 | 1957- | 07-06-77 | 3.7 |
| 05484200 | PANTHER CR NR ADEL, IOWA. | LAT 4136XX, LONG 9406XX, NEAR N 1/4 CORNER SEC.5, T.78 N., R.28 W., DALLAS COUNTY, AT BRIDGE, 4 MILES SW OF ADEL. | 56.0 | 1957- | 07-05-77 | .03 |
| 05485600 | FOURMILE CR NR ANKENY, IOWA. | LAT 414354, LONG 933421, NEAR S 1/4 CORNER SEC.18, T.80 N., R.23 W., POLK COUNTY, AT BRIDGE, 1.5 MILES EAST OF ANKENY. | 59.3 | 1957- | 07-06-77 | 0 |
| 05485700 | NORTH R NR EARLHAM, IOWA | LAT 4224XX, LONG 9411XX, IN NE 1/4 SEC. 9, T. 76 N., R. 29 W., MADISON COUNTY, AT BRIDGE, 7 MILES SW OF EARLHAM. | 68.9 | 1957- | -7-06-77 | 0 |
| 05485850 | NB NORTH R NR WINTERSET, IOWA. | LAT 4126XX, LONG 9356XX, IN NE 1/4 SEC. 34, T.77 N., R.27 W., MADISON COUNTY, AT BRIDGE, 7 MILES NE OF WINTERSET. | 74.7 | 1957- | 07-06-77 | 0 |
| 05485900 | NORTH R NR WINTERSET, IOWA. | LAT 4126XX, LONG 9355XX, IN NW 1/4 SEC. 36, T.77 N., R.27 W., MADISON COUNTY, AT BRIDGE, 8 MILES NE OF WINTERSET. | 203 | 1957- | 07-06-77 | 0 |
| 05486100 | MIDDLE R NR CASEY, IOWA. | LAT 4130XX, LONG 9429XX, IN SW 1/4 SEC. 36, T.78 N., R.32 W., GUTHRIE COUNTY, AT BRIDGE, 1.5 MILES EAST OF CASEY. | 72.8 | 1957- | 07-06-77 | .02 |
| 05486150 | MIDDLE R AT MIDDLE RIVER, IOWA. | LAT 4120XX, LONG 9414XX, NEAR CENTER OF SEC.6, T.75 N., R.29 W., MADISON COUNTY, AT BRIDGE NEAR SOUTH CITY LIMITS OF MIDDLE RIVER. | 164 | 1957- | 07-06-77 | .05 |
| 05486300 | CLANTON CR AT EAST PERU, IOWA. | LAT 4114XX, LONG 9355XX, IN NE 1/4 SEC. 11, T.74 N., R.27 W., MADISON COUNTY, AT BRIDGE, NEAR EAST CITY LIMITS OF EAST PERU. | 84.5 | 1957- | 07-06-77 | 0 |
| 05486350 | CLANTON CR NR MARTENSDALE, IOWA. | LAT 4121XX, LONG 9345XX, IN NE 1/4 SEC. 32, T.76 N., R.25 W., WARREN COUNTY, AT BRIDGE, 2 MILES SW OF MARTENSDALE. | 159 | 1957- | 07-06-77 | .15 |
| 05486400 | MIDDLE R AT MARTENSDALE, IOWA. | LAT 4122XX, LONG 9344XX, IN SE 1/4 SEC. 21, T.76 N., R.25 W., WARREN COUNTY, AT BRIDGE ON STATE HIGHWAY 92, 0.5 MILE SE OF MARTENSDALE. | 451 | 1957- | 07-06-77 | .16 |
| 05486700 | SOUTH R NR NEW VIRGINIA, IOWA. | LAT 4113XX, LONG 9344XX, IN NE 1/4 SEC. 16, T.74 N., R.25 W., WARREN COUNTY, AT BRIDGE, 2.5 MILES NORTH OF NEW VIRGINIA. | 65.4 | 1957- | 07-06-77 | 0 |
| 05486900 | SQUAW CR NR JAMISON, IOWA. | LAT 4108XX, LONG 9344XX, IN NE 1/4 SEC. 16, T.73 N., R.25 W., CLARKE COUNTY, AT BRIDGE, 0.5 MILE NW OF JAMISON. | 60.8 | 1957- | 07-06-77 | 0 |
| 05487100 | SQUAW CR NR INDIANOLA, IOWA. | LAT 4118XX, LONG 9336XX, IN NE 1/4 SEC. 15, T.75 N., R.24 W., WARREN COUNTY, AT BRIDGE, 4 MILES SW OF INDIANOLA. | 134 | 1957- | 07-06-77 | 0 |
| 05487200 | SOUTH R NR INDIANOLA, IOWA. | LAT 4120XX, LONG 9335XX, IN NE 1/4 SEC. 2, T.75 N., R.24 W., WARREN COUNTY, AT BRIDGE, 2 MILES SW OF INDIANOLA. | 278 | 1957- | 07-06-77 | .17 |
| 05487400 | OTTER CR NR NORWOOD, IOWA. | LAT 4109XX, LONG 9332XX, IN SW 1/4 SEC. 5, T.73 N., R.23 W., LUCAS COUNTY, AT BRIDGE, 3 MILES NW OF NORWOOD. | 102 | 1957- | 07-06-77 | 0 |

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | MEASUREMENTS DATE | DISCHARGE (CFS) |
|-----------------------------------|------------------------------------|--|-----------------------|------------------|-------------------|-----------------|
| DES MOINES RIVER BASIN--CONTINUED | | | | | | |
| 05487450 | OTTER CR NR MILO, IOWA. | LAT 411702, LONG 932909, IN NE 1/4 SEC. 22, T.75 N., R.23 W., WARREN COUNTY, AT BRIDGE ON STATE HIGHWAY 205, 2 MILES WEST OF MILO. | 155 | 1957- | 07-06-77 | 0 |
| 05487700 | WHITE BREAST CR NR WOODBURN, IOWA. | LAT 405836, LONG 933514, IN SE 1/4 SEC. 2, T.71 N., R.24 W., CLARKE COUNTY, AT BRIDGE, 2 MILES SOUTH OF WOODBURN. | 82.9 | 1957- | 07-06-77 | 0 |
| 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 | 1957- | 07-06-77 | 0 |
| 05487900 | WHITE BREAST CR NR NEWBERN, IOWA. | LAT 4110XX, LONG 9321XX, IN SE 1/4 SEC. 35, T.74 N., R.22 W., WARREN COUNTY, AT BRIDGE, 2 MILES WEST OF NEWBERN. | 243 | 1957- | 07-06-77 | .03 |
| 05488200 | ENGLISH CR NR KNOXVILLE, IOWA. | LAT 411615, LONG 930526, NEAR CENTER OF SEC.30, T.75 N., R.19 W., MARION COUNTY, AT BRIDGE, 3 MILES SOUTH OF KNOXVILLE. | 73.0 | 1957- | 07-07-77 | 0 |
| 05488300 | ENGLISH CR NR HARVEY, IOWA. | LAT 4120XX, LONG 9257XX, NEAR E 1/4 CORNER SEC.5, T.75 N., R.18 W., MARION COUNTY, AT BRIDGE, 1.5 MILES NW OF HARVEY. | 108 | 1957- | 07-07-77 | 0 |
| 05488550 | CEDAR CR AT MELROSE, IOWA. | LAT 4058XX, LONG 9303XX, IN SW 1/4 SEC. 4, T.71 N., R.19 W., MONROE COUNTY, AT BRIDGE NEAR SOUTH CITY LIMITS OF MELROSE. | 23.9 | 1957- | 07-06-77 | 0 |
| 05488600 | CEDAR CR NR ALBIA, IOWA. | LAT 4101XX, LONG 9253XX, IN NE 1/4 SEC. 26, T.72 N., R.18 W., MONROE COUNTY, AT BRIDGE ON U.S. HIGHWAY 34, 4 MILES WEST OF ALBIA. | 102 | 1958- | 07-06-77 | 0 |
| 05488700 | CEDAR CR NR LOVILIA, IOWA. | LAT 4107XX, LONG 9256XX, NEAR S 1/4 CORNER SEC.16, T.73 N., R.18 W., MONROE COUNTY, AT BRIDGE, 2 MILES SW OF LOVILIA. | 211 | 1957- | 07-06-77 | .04 |
| 05488800 | N CEDAR CR NR LOVILIA, IOWA. | LAT 4109XX, LONG 9303XX, IN NE 1/4 SEC. 4, T.73 N., R.19 W., MONROE COUNTY, AT BRIDGE, 7.5 MILES NW OF LOVILIA. | 61.3 | 1957- | 07-06-77 | 0 |
| 05488900 | N CEDAR CR NR MARYSVILLE, IOWA. | LAT 4111XX, LONG 9301XX, IN SE 1/4 SEC. 26, T.74 N., R.19 W., MARION COUNTY, AT BRIDGE, 3 MILES WEST OF MARYSVILLE. | 111 | 1958- | 07-07-77 | 0 |
| 05489300 | N AVERY CR NR CHILLICOTHE, IOWA. | LAT 4106XX, LONG 9233XX, IN SE 1/4 SEC. 26, T.73 N., R.15 W., WAPELLO COUNTY, AT BRIDGE, 1 MILE NW OF CHILLICOTHE. | 60.1 | 1957- | 07-06-77 | .03 |
| 05489400 | S AVERY CR AT CHILLICOTHE, IOWA. | LAT 4105XX, LONG 9232XX, AT E 1/4 CORNER SEC.36, T.73 N., R.15 W., WAPELLO COUNTY, AT BRIDGE, NEAR SOUTH CITY LIMITS OF CHILLICOTHE. | 51.6 | 1957- | 07-06-77 | 0 |
| 05489900 | SOAP CR NR ASH GROVE, IOWA. | LAT 4051XX, LONG 9236XX, IN SW 1/4 SEC. 21, T.70 N., R.15 W., DAVIS COUNTY, AT BRIDGE, 3 MILES SW OF ASH GROVE. | 97.3 | 1958- | 07-07-77 | .01 |
| 05490100 | SOAP CR NR FLORIS, IOWA. | LAT 405337, LONG 921553, NEAR CENTER OF SEC.5, T.70 N., R.12 W., DAVIS COUNTY, AT BRIDGE, 4 MILES NE OF FLORIS. | 243 | 1958- | 07-07-77 | 1.3 |
| 05490200 | LICK CR AT KILBOURN, IOWA. | LAT 4048XX, LONG 9158XX, IN SW 1/4 SEC. 1, T.69 N., R.10 W., VAN BUREN COUNTY, AT BRIDGE NEAR EAST CITY LIMITS OF KILBOURN. | 82.7 | 1958- | 07-08-77 | 0 |
| 05490300 | CHEQUEST CR NR TROY, IOWA. | LAT 404717, LONG 921101, IN SE 1/4 SEC. 12, T.69 N., R.12 W., DAVIS COUNTY, AT BRIDGE, 3 MILES NE OF TROY. | 85.0 | 1958- | 07-07-77 | 0 |
| 05490400 | CHEQUEST CR NR PITTSBURG, IOWA. | LAT 404541, LONG 920057, NEAR CENTER OF SEC.21, T.69 N., R.10 W., DAVIS COUNTY, AT BRIDGE, 1.5 MILES NW OF PITTSBURG. | 123 | 1958- | 07-08-77 | .04 |
| 05490700 | SUGAR CR NR CHARLESTON, IOWA. | LAT 4034XX, LONG 9134XX, IN NW 1/4 SEC. 33, T.67 N., R.6 W., LEE COUNTY, AT BRIDGE, 2 MILES SW OF CHARLESTON. | 62.3 | 1958- | 07-08-77 | 0 |

DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | MEASUREMENTS DATE | DISCHARGE (CFS) |
|-----------------------------------|------------------------------------|---|-----------------------|--------------------------|--|--|
| DES MOINES RIVER BASIN--CONTINUED | | | | | | |
| 05491000 | SUGAR CREEK NR KEOKUK, IOWA. | LAT 402633, LONG 912824, IN NW 1/4 SE 1/4 SEC. 7, T.65 N., R.5 W., LEE COUNTY, AT BRIDGE ON COUNTY HIGHWAY W62, 6 MILES NW OF KEOKUK. | 105 | +1922-31, 1958-73, 1977- | 07-08-77 | 0 |
| FOX RIVER BASIN | | | | | | |
| 05494300 | FOX RIVER AT BLOOMFIELD | LAT 404610, LONG 922595, IN SW 1/4 SE 1/4 SEC. 13, T.69 N., R.14 W., DAVIS COUNTY, AT BRIDGE ON COUNTY HIGHWAY V20, 1.3 MILES NW OF BLOOMFIELD. | 87.7 | 1957-73, 1977- | 07-07-77 | 0 |
| 05494500 | FOX R AT CANTRIL, IOWA. | LAT 4039XX, LONG 9203XX, IN SW 1/4 SEC. 30, T.68 N., R.10 W., VAN BUREN COUNTY, AT BRIDGE ON STATE HIGHWAY 2, 1 MILE NE OF CANTRIL. | 161 | +1941-51, 1958- | 07-07-77 | .59 |
| FLOYD RIVER BASIN | | | | | | |
| 06600060 | FLOYD R BELOW SHELTON, IOWA. | LAT 430738, LONG 955327, IN N 1/2 SEC. 23, T.96 N., R.43 W., SIOUX COUNTY, AT BRIDGE, 4 MILES SOUTHWEST OF SHELTON. | 165 | 1958- | 10-28-76 04-12-77 06-08-77 07-12-77 08-30-77 | 3.6 6.5 3.7 17 3.5 |
| LITTLE SIOUX RIVER BASIN | | | | | | |
| 06604500 | OCHEYEDAN R NR BIGELOW, MINN. | LAT 4327XX, LONG 9537XX, IN SE 1/4 SEC. 24, T.100 N., R.41 W., OSCEOLA COUNTY, AT BRIDGE IN IOWA, 4.5 MILES SE OF BIGELOW. | 68.7 | 1958- | 06-06-77 | .09 |
| 06604600 | L OCHEYEDAN R NR MAY CITY, IOWA. | LAT 4317XX, LONG 9528XX, IN NE 1/4 SEC. 29, T.98 N., R.39 W., OSCEOLA COUNTY, AT BRIDGE, 3 MILES SOUTH OF MAY CITY. | 54.2 | 1958- | 06-06-77 | .32 |
| 06604700 | OCHEYEDAN R NR MAY CITY, IOWA. | LAT 4316XX, LONG 9527XX, NEAR N 1/4 CORNER SEC.34, T.98 N., R.39 W., OSCEOLA COUNTY, AT BRIDGE, 4 MILES SE OF MAY CITY. | 226 | 1958- | 06-06-77 | 4.2 |
| 06604900 | STONEY CR NR EVERLY, IOWA. | LAT 430922, LONG 951458, IN NE 1/4 SEC. 7, T.96 N., R.37 W., CLAY COUNTY, AT BRIDGE, 4 MILES SE OF EVERLY. | 81.6 | 1958- | 06-06-77 | 1.5 |
| 07605000 | OCHEYEDAN R NR SPENCER, IOWA. | LAT 430744, LONG 951237, IN SW 1/4 SEC. 15, T.96 N., R.37 W., CLAY COUNTY, AT BRIDGE, 3 MILES SW OF SPENCER. | 426 | 1958- | 06-06-77 | 11 |
| BOYER RIVER BASIN | | | | | | |
| 06609400 | BOYER R NR DENISON, IOWA. | LAT 4200XX, LONG 9523XX, IN NE 1/4 SEC. 16, T.83 N., R.39 W., CRAWFORD COUNTY, AT BRIDGE, 2 MILES SW OF DENISON. | 517 | 1957- | 02-03-77 03-03-77 03-17-77 04-05-77 05-02-77 06-01-77 07-12-77 08-01-77 | 2.1 28 41 69 14 17 14 4.9 |
| NODAWAY RIVER BASIN | | | | | | |
| 06816300 | W NODAWAY R NR CUMBERLAND, IOWA. | LAT 4112XX, LONG 9452XX, IN SW 1/4 SEC. 15, T.74 N., R.35 W., CASS COUNTY, AT BRIDGE, 4 MILES SOUTH OF CUMBERLAND. | 65.1 | 1957- | 07-19-77 | .61 |
| 06816350 | SEVENMILE CR NR LYMAN, IOWA. | LAT 4115XX, LONG 9459XX, IN SE 1/4 SEC. 33, T.75 N., R.36 W., CASS COUNTY, AT BRIDGE ON U.S. HIGHWAY 71, 1.5 MILES NORTH OF LYMAN. | 60.8 | 1957- | 07-19-77 | .69 |
| 06816400 | SEVENMILE CR NR MORTON MILL, IOWA. | LAT 4106XX, LONG 9500XX, IN NW 1/4 SEC. 33, T.73 N., R.36 W., MONTGOMERY COUNTY, AT BRIDGE, 1 MILE NW OF MORTON HILL. | 124 | 1957- | 07-20-77 | 11 |
| 06816550 | W NODAWAY R NR VILLISCA, IOWA. | LAT 4055XX, LONG 9500XX, NEAR CENTER OF SEC.28, T.71 N., R.36 W., MONTGOMERY COUNTY, AT BRIDGE NEAR WEST CITY LIMITS OF VILLISCA. | 344 | 1957- | 07-20-77 | 14 |
| 06816600 | M NODAWAY R NR BRIDGEWATER, IOWA. | LAT 4110XX, LONG 9439XX, IN NE 1/4 SEC. 33, T.74 N., R.33 W., ADAIR COUNTY, AT BRIDGE, 5 MILES SE OF BRIDGEWATER. | 89.3 | 1957- | 07-19-77 | 0 |

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | MEASUREMENTS DATE | DISCHARGE (CFS) |
|----------------------------------|--------------------------------------|--|-----------------------|------------------|-------------------|-----------------|
| NODAWAY RIVER BASIN -- CONTINUED | | | | | | |
| 0681670D | WF M NODAWAY R NR FONTANELLE, IOWA. | LAT 4119XX, LONG 9439XX, NEAR CENTER OF SEC.4, T.75 N., R.33 W., ADAIR COUNTY, AT BRIDGE, 5 MILES NW OF FONTANELLE. | 67.9 | 1957- | 07-19-77 | .34 |
| 06816800 | WF M NODAWAY R NR BRIDGEWATER, IOWA. | LAT 4111XX, LONG 9439XX, NEAR CENTER OF SEC.28, T.74 N., R.33 W., ADAIR COUNTY, AT BRIDGE, 4.5 MILES SOUTH OF BRIDGEWATER. | 128 | 1957- | 07-19-77 | 3.8 |
| 06816900 | M NODAWAY R NR VILLISCA, IOWA. | LAT 4055XX, LONG 9459XX, IN NW 1/4 SEC. 34, T.71 N., R.36 W., MONTGOMERY COUNTY, AT BRIDGE ON U.S. HIGHWAY 71, 1 MILE SOUTH OF VILLISCA. | 341 | 1957- | 07-20-77 | 1.9 |
| 06817050 | E NODAWAY R NR WILLIAMSON, IOWA. | LAT 4106XX, LONG 9433XX, IN NW 1/4 SEC. 28, T.73 N., R.32 W., ADAMS COUNTY, AT BRIDGE, 3 MILES SE OF WILLIAMSON. | 54.2 | 1957- | 07-19-77 | 0 |
| 06817100 | E NODAWAY R NR SHAMBAUGH, IOWA. | LAT 4038XX, LONG 9501XX, IN NE 1/4 SEC. 6, T.67 N., R.36 W., PAGE COUNTY, AT BRIDGE, 2 MILES SE OF SHAMBAUGH. | 333 | 1957- | 07-20-77 | .60 |
| 06817200 | NODAWAY R NR BRADYVILLE, IOWA. | LAT 4037XX, LONG 9501XX, NEAR CENTER OF SEC.18, T.67 N., R.36 W., PAGE COUNTY, AT BRIDGE, 3 MILES NORTH OF BRADYVILLE. | 1135 | 1957- | 07-20-77 | 13 |
| PLATTE RIVER BASIN | | | | | | |
| 06818600 | PLATTE R NR KENT, IOWA. | LAT 4057XX, LONG 9429XX, IN SW 1/4 SEC. 13, T.71 N., R.32 W., AT BRIDGE, 2 MILES WEST OF KENT. | 77.9 | 1957- | 07-19-77 | .06 |
| 06818660 | E PLATTE R NR KNOWLTON, IOWA. | LAT 4054XX, LONG 9426XX, IN NW 1/4 SEC. 4, T.70 N., R.31 W., RINGGOLD COUNTY, AT BRIDGE, 7 MILES NW OF KNOWLTON. | 66.8 | 1957- | 07-19-77 | 0 |
| 06818700 | PLATTE R NR KNOWLTON, IOWA. | LAT 4052XX, LONG 9426XX, IN NW 1/4 SEC. 16, T.70 N., R.31 W., RINGGOLD COUNTY, AT BRIDGE, 6 MILES NW OF KNOWLTON. | 179 | 1959- | 07-19-77 | .10 |
| 06819100 | WB 102 R NR GRAVITY, IOWA. | LAT 4049XX, LONG 9449XX, IN SE 1/4 SEC. 31, T.70 N., R.34 W., TAYLOR COUNTY, AT BRIDGE, 5 MILES NW OF GRAVITY. | 52.2 | 1957- | 07-19-77 | 0 |
| 06819120 | WB 102 R BELOW MB NR GRAVITY, IOWA. | LAT 4048XX, LONG 9449XX, IN NW 1/4 SEC. 7, T.69 N., R.34 W., TAYLOR COUNTY, AT BRIDGE, 4.5 MILES NW OF GRAVITY. | 106 | 1957- | 07-19-77 | 0 |
| 06819140 | WB 102 R NR NEW MARKET, IOWA. | LAT 4044XX, LONG 9451XX, IN SW 1/4 SEC. 35, T.69 N., R.35 W., TAYLOR COUNTY, AT BRIDGE, 2.75 MILES EAST OF NEW MARKET. | 123 | 1967- | 07-19-77 | 0 |
| 06819150 | WF 102 R NR NEW MARKET, IOWA. | LAT 4043XX, LONG 9451XX, IN NW 1/4 SEC. 10, T.68 N., R.35 W., TAYLOR COUNTY, AT BRIDGE, 3 MILES SE OF NEW MARKET. | 183 | 1967- | 07-19-77 | 0 |
| 06819180 | EF 102 R NR BEDFORD, IOWA. | LAT 4044XX, LONG 9439XX, IN NE 1/4 SEC. 4, T.68 N., R.33 W., TAYLOR COUNTY, AT BRIDGE, 3 MILES NE OF BEDFORD. | 60.4 | 1957- | 07-19-77 | 0 |
| 06819196 | MF 102 R NR BEDFORD, IOWA. | LAT 4035XX, LONG 9449XX, IN NE 1/4 SEC. 26, T.67 N., R.35 W., TAYLOR COUNTY, AT BRIDGE, 7 MILES SW OF BEDFORD. | 59.8 | 1957- | 07-19-77 | 0 |
| GRAND RIVER BASIN | | | | | | |
| 06896100 | GRAND R AT KNOWLTON, IOWA. | LAT 4050XX, LONG 9420XX, IN SE 1/4 SEC. 29, T.70 N., R.30 W., RINGGOLD COUNTY, AT BRIDGE NEAR EAST CITY LIMITS OF KNOWLTON. | 67.5 | 1957- | 07-19-77. | .01 |
| 06896150 | GRAND R NR BLOCKTON, IOWA. | LAT 4037XX, LONG 9425XX, IN SW 1/4 SEC. 10, T.67 N., R.31 W., RINGGOLD COUNTY, AT BRIDGE, 3.5 MILES EAST OF BLOCKTON. | 207 | 1967- | 07-19-77 | .15 |
| 06896200 | EF GRAND R NR MT. AYR, IOWA. | LAT 4043XX, LONG 9410XX, IN SE 1/4 SEC. 3, T.68 N., R.29 W., RINGGOLD COUNTY, AT BRIDGE ON STATE HIGHWAY 2, 3 MILES EAST OF MT. AYR. | 64.7 | 1957- | 07-19-77 | 0 |
| 06896250 | EF GRAND R SOUTH OF MT. AYR, IOWA. | LAT 4035XX, LONG 9414XX, IN SW 1/4 SEC. 19, T.67 N., R.29 W., RINGGOLD COUNTY, AT BRIDGE, 9 MILES SOUTH OF MT. AYR. | 95.9 | 1957- | 07-19-77 | 0 |

DISCHARGE MEASUREMENTS MADE AT LOW-FLOW PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | MEASUREMENTS DATE | DISCHARGE (CFS) |
|--------------------------------|----------------------------------|--|-----------------------|------------------|-------------------|-----------------|
| GRAND RIVER BASIN -- CONTINUED | | | | | | |
| 06897770 | THOMPSON R NR HEBRON, IOWA. | LAT 4114XX, LONG 9416XX, IN SW 1/4 SEC. 1, T.74 N., R.30 W., ADAIR COUNTY, AT BRIDGE, 2 MILES SE OF HEBRON. | 80.0 | 1957- | 07-19-77 | 1.0 |
| 06897800 | THREEMILE CR NR AFTON, IOWA. | LAT 4102XX, LONG 9408XX, NEAR CENTER OF SEC.13, T.72 N., R.29 W., ADAIR COUNTY, AT BRIDGE 3 MILES EAST OF AFTON. | 54.8 | 1957- | 07-19-77 | 0 |
| 06897820 | THOMPSON R NR AFTON, IOWA. | LAT 4102XX, LONG 9406XX, IN SW 1/4 SEC. 17, T.72 N., R.28 W., UNION COUNTY, AT BRIDGE ON U.S. HIGHWAY 34 AND 169, 5 MILES EAST OF AFTON. | 231 | 1957- | 07-19-77 | .02 |
| 06897880 | TWELVEMILE CR NR ARISPE, IOWA. | LAT 4056XX, LONG 9406XX, IN SE 1/4 SEC. 17, T.71 N., R.28 W., UNION COUNTY, AT BRIDGE, 6 MILES EAST OF ARISPE. | 68.0 | 1957- | 07-19-77 | 0 |
| 06897900 | THOMPSON R NR GRAND RIVER, IOWA. | LAT 4052XX, LONG 9358XX, IN NE 1/4 SEC. 16, T.70 N., R.27 W., DECATUR COUNTY, AT BRIDGE, 3.5 MILES NORTH OF GRAND RIVER. | 401 | 1957- | 07-20-77 | .05 |
| 06897940 | LONG CR NR VAN WERT, IOWA. | LAT 4049XX, LONG 9352XX, IN NE 1/4 SEC. 32, T.70 N., R.26 W., DECATUR COUNTY, AT BRIDGE, 5 MILES SE OF VAN WERT. | 117 | 1957- | 07-20-77 | 0 |
| 06898300 | WELDON R EAST OF LEON, IOWA. | LAT 404518, LONG 933805, IN SE 1/4 SEC. 20, T.69 N., R.24 W., DECATUR COUNTY, AT BRIDGE ON STATE HIGHWAY 2, 6 MILES EAST OF LEON. | 72.4 | 1957- | 07-20-77 | .01 |
| 06898450 | WELDON R NR PLEASANTON, IOWA. | LAT 403540, LONG 933620, IN NW 1/4 SEC. 22, T.67 N., R.24 W., DECATUR COUNTY, AT BRIDGE, 7 MILES EAST OF PLEASANTON. | 228 | 1957- | 07-20-77 | .04 |
| 06898470 | LITTLE R NR LEON, IOWA. | LAT 403936, LONG 934459, IN SE 1/4 SEC. 29, T.68 N., R.25 W., DECATUR COUNTY, AT BRIDGE, 6 MILES SOUTH OF LEON. | 69.2 | 1957- | 07-20-77 | 0 |
| CHARITON RIVER BASIN | | | | | | |
| 06903300 | CHARITON R NR DERBY, IOWA. | LAT 4057XX, LONG 9328XX, IN NW 1/4 SEC. 13, T.71 N., R.23 W., LUCAS COUNTY, AT BRIDGE, 1.5 MILES NORTH OF DERBY. | 71.0 | 1957- | 07-21-77 | 0 |
| 06903350 | WOLF CR NR CHARITON, IOWA. | LAT 4056XX, LONG 9316XX, IN SE 1/4 SEC. 16, T.71 N., R.21 W., LUCAS COUNTY, AT BRIDGE, 5 MILES SE OF CHARITON. | 65.0 | 1957- | 07-21-77 | 0 |
| 06903600 | SF CHARITON R NR CAMBRIA, IOWA. | LAT 4049XX, LONG 9323XX, IN NW 1/4 SEC. 3, T.69 N., R.22 W., WAYNE COUNTY, AT BRIDGE, 2 MILES SOUTH OF CAMBRIA. | 58.0 | 1957- | 07-20-77 | 0 |
| 06903550 | SF CHARITON R NR CORYDON, IOWA. | LAT 4049XX, LONG 9319XX, IN NW 1/4 SEC. 6, T.69 N., R.21 W., AT BRIDGE ON STATE HIGHWAY 14, 4 MILES NORTH OF CORYDON. | 68.1 | 1957- | 07-20-77 | 0 |
| 06904150 | SHOAL CR NR CINCINNATI, IOWA. | LAT 4037XX, LONG 9252XX, IN SW 1/4 SEC. 6, T.67 N., R.17 W., APPANOOSE COUNTY, AT BRIDGE, 3 MILES EAST OF CINCINNATI. | 56.6 | 1958- | 07-21-77 | 0 |

* Operated as a continuous-record gaging station

* Also a crest-stage partial-record station

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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 1977

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | DATE | ANNUAL MAXIMUM GAGE HEIGHT (FEET) | DIS-CHARGE (CFS) |
|------------------------------|---|---|-----------------------|------------------|----------|-----------------------------------|------------------|
| UPPER IOWA RIVER BASIN | | | | | | | |
| 05308310 | 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- | 1977 | A | (+) |
| WEXFORD CREEK BASIN | | | | | | | |
| 05308400 | 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- | 1977 | A | (+) |
| PAINT CREEK BASIN | | | | | | | |
| 05308600 | 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 SOUTH-EAST OF WATERVILLE. | 56.0 | 1953- | 03-28-77 | 8.52 | 1,350 |
| 05308700 | 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- | 03-28-77 | 3.59 | 260 |
| 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 W., HOWARD COUNTY, AT BRIDGE ON STATE HIGHWAY 9, ABOUT 5 MILES WEST OF CRESCO. | 19.8 | 1966- | 1977 | A | (+) |
| 05411650 | CRANE CR TR NR SARATOGA, IOWA. | LAT 4322XX, LONG 9223XX, NEAR SOUTHEAST CORNER OF SEC.21, T.99 N., R.13 W., HOWARD COUNTY, AT BRIDGE ON STATE HWY 9, 1 MILE EAST OF SARATOGA. | 4.06 | 1983- | 1977 | A | (+) |
| 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- | 1977 | A | (+) |
| LITTLE MAQUOKETA RIVER BASIN | | | | | | | |
| 05414350 | 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- | 1977 | 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- | 02-28-77 | A | (+) |
| 05414450* | MF LITTLE MAQUOKETA R 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- | 07-17-77 | 6.23 | 700 |
| 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 385 NR NORTH CITY LIMITS OF DUBUQUE. | 1.54 | 1951- | 1977 | A | (+) |
| MAQUOKETA RIVER BASIN | | | | | | | |
| 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- | 1977 | A | (+) |
| 05417590 | KITTY CR NR LANG-WORTHY, 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- | 1977 | A | (+) |

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | DATE | ANNUAL MAXIMUM GAGE HEIGHT (FEET) | 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- | 1977 | A | (+) |
| 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- | 1977 | A | (+) |
| 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- | 1977 | A | (+) |
| 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- | 04-03-77 | 86.17 | 1,210 |
| 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- | 04-03-77 | 84.62 | 1,810 |
| 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- | 02-25-77 | 83.32 | 240 |
| 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- | 1977 | A | (+) |
| 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- | 02-25-77 | 3.80 | 30 |
| 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- | 1977 | A | (+) |
| 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- | 02-25-77 | 5.25 | (+) |
| 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- | 09-18-77 | 15.83 | 600 |
| 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- | 1977 | A | (+) |
| 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- | 1977 | A | (+) |
| 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- | 1977 | 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- | 1977 | A | (+) |
| 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- | 1977 | A | (+) |
| 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- | 1977 | A | (+) |

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | DATE | ANNUAL MAXIMUM GAGE HEIGHT (FEET) | DISCHARGE (CFS) |
|-----------------------------|---|--|-----------------------|------------------|---------------|-----------------------------------|-----------------|
| IOWA RIVER BASIN--CONTINUED | | | | | | | |
| 05448900 | EB IOWA R TR NR GARNER, IOWA. | LAT 4306XX, 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- | 1977 | A | (+) |
| 05451955 | STEIN CR NR CLUTIER, IOWA. | LAT 420446, 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- | 03-19-75 1977 | 73.27 A | 1,180 B (+) |
| 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- | 08-18-77 | 85.81 | 3,500 |
| 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- | 08-16-77 | 22.91 | 1,450 |
| 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- | 08-16-77 | 28.49 | 2,700 |
| 06453850 | 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- | 08-16-77 | 19.56 | 170 |
| 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- | 08-16-77 | 14.75 | 400 |
| 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- | 08-16-77 | 26.04 | 1,300 |
| 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- | 05-16-77 | 13.00 | 3,300 |
| 05458140 | 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- | 08-16-77 | 26.70 | 3,700 |
| 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. | 68.7 | 1953- | 09-18-77 | 14.49 | 5,200 |
| 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- | 09-18-77 | 87.36 | 11,500 |
| 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- | 08-16-77 | 80.55 | 1,100 |
| 05455280 | S ENGLISH R NR BARNES CITY, IOWA. (DISC.) | LAT 4133XX, LONG 9228XX, NEAR NE CORNER SEC. 21, T.78 N., R. 14 W., POWESHIEK COUNTY, AT BRIDGE, 3 MILES NORTH OF BARNES CITY. | 2.51 | 1953-76. | -- | -- | -- |
| 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- | 08-16-77 | 11.00 | 310 |
| 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- | 08-16-77 | 8.65 | 33 |

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | ANNUAL MAXIMUM | | DISCHARGE (CFS) |
|-----------------------------|---------------------------------------|--|-----------------------|------------------|----------------|--------------------|-----------------|
| | | | | | DATE | GAGE HEIGHT (FEET) | |
| IOWA RIVER BASIN--CONTINUED | | | | | | | |
| 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- | 1977 | A | (+) |
| 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- | 1977 | A | (+) |
| 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- | 05-05-77 | 55.73 | 1,850 |
| 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- | 1977 | A | (+) |
| 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- | 1977 | A | (+) |
| 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- | 1977 | A | (+) |
| 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- | 1977 | A | (+) |
| 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- | 1977 | A | (+) |
| 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- | 1977 | A | (+) |
| 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- | 09-18-77 | 91.23 | (+) |
| 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- | 1977 | 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- | 08-16-77 | 82.74 | 2,000 |
| 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- | 06-30-77 | 87.64 | 2,000 |
| 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- | 08-08-77 | 88.29 | 600 |

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | DATE | ANNUAL MAXIMUM | DISCHARGE (CFS) |
|------------------------|---|--|-----------------------|------------------|----------|--------------------|-----------------|
| | | | | | | GAGE HEIGHT (FEET) | |
| 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. | 66.4 | 1966- | 08-08-77 | 89.05 | 1,670 |
| 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- | 08-16-77 | 88.69 | 510 |
| 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- | 1977 | A | (+) |
| 06472290 | 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 226, 1.8 MILES WEST OF SEARSBORO. | 52.7 | 1966- | 09-18-77 | 90.36 | 1,020 |
| 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, 1.6 MILES NW OF LACEY. | 23.0 | 1966- | 1977 | A | (+) |
| 05472446 | 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- | 08-16-77 | 86.36 | 200 |
| 06473300* | 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- | 08-08-77 | 77.92 | 3,200 |
| DES MOINES RIVER BASIN | | | | | | | |
| 05480930 | WHITE FOX CR AT CLARION, IOWA. | LAT 4244XX, LONG 9342XX, IN NW 1/4 SEC. 6, T.91 N., R.24 W., WRIGHT COUNTY, AT BRIDGE ON STATE HIGHWAY 3, 1.5 MILES EAST OF CLARION. | 13.3 | 1966- | 1977 | A | (+) |
| 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- | 08-16-77 | 84.97 | 410 |
| 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- | 08-08-77 | 88.67 | 630 |
| 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- | 1977 | 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- | 08-21-77 | 7.85 | 250 |
| 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- | 08-21-77 | 4.49 | (+) |
| 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 | 1961- | 1977 | 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- | 1977 | 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- | 1977 | A | (+) |
| 06487350 | 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 | 1965- | 1977 | A | (+) |

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | DATE | ANNUAL MAXIMUM GAGE HEIGHT (FEET) | DISCHARGE (CFS) |
|-----------------------------------|--------------------------------------|---|-----------------------|------------------|----------|-----------------------------------|-----------------|
| DES MOINES RIVER BASIN--CONTINUED | | | | | | | |
| 05487600 | 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- | 1977 | A | (+) |
| 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- | 08-26-77 | 16.05 | 6,500 |
| 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- | 08-08-77 | 86.14 | (+) |
| 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- | 1977 | A | (+) |
| 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- | 08-07-77 | 88.00 | 11,000 |
| 05489490 | BEAR CR AT OTTUMWA, IOWA. | LAT 410043, 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- | 08-07-77 | 92.13 | 4,300 |
| 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- | 08-07-77 | 5.20 | (+) |
| 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- | 1977 | A | (+) |
| 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- | 03-13-77 | 6.37 | 180 |
| 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- | 03-13-77 | 7.73 | (+) |
| 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- | 03-13-77 | 5.91 | 115 |
| 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- | 09-30-77 | 4.38 | 65 |
| 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- | 04-14-77 | 13.20 | 36 |
| 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- | 1977 | A | (+) |
| 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- | 08-16-77 | 83.01 | 49 |

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | DATE | ANNUAL MAXIMUM GAGE HEIGHT (FEET) | DISCHARGE (CFS) |
|-----------------------------|-------------------------------------|---|-----------------------|------------------|----------|-----------------------------------|-----------------|
| 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- | 06-23-77 | 9.38 | 2,100 |
| 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- | 06-23-77 | 34.70 | (+) |
| 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- | 1977 | A | (+) |
| 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- | 1977 | A | (+) |
| MONONA-HARRISON DITCH BASIN | | | | | | | |
| 08601480 | 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- | 1977 | A | (+) |
| 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- | 08-11-77 | 83.03 | 2,300 |
| 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- | 1977 | A | (+) |
| 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- | 1977 | A | (+) |
| 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- | 1977 | A | (+) |
| 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- | 1977 | A | (+) |
| 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- | 1977 | A | (+) |
| 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- | 1977 | A | (+) |
| 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- | 07-21-77 | 86.41 | (+) |

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | DATE | ANNUAL MAXIMUM GAGE HEIGHT (FEET) | DISCHARGE (CFS) |
|-------------------------|--------------------------------|---|-----------------------|------------------|----------|-----------------------------------|-----------------|
| 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- | 1977 | 80.08 | (+) |
| 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- | 08-30-77 | 74.34 | (+) |
| 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- | 05-21-77 | 78.95 | (+) |
| 06810800* | 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- | 05-21-77 | 18.93 | (+) |
| 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- | 1977 | 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- | 08-31-77 | 88.29 | 820 |
| 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 SOUTH OF AVOCA. | 3.21 | 1955- | 08-05-77 | 6.49 | 200 |
| 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- | 05-21-77 | 4.59 | 260 |
| 08807780 | 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- | 1977 | A | (+) |
| 06808880 | BLUEGRASS CR AT AUDUBON, IOWA. | LAT 4143XX, LONG 9466XX, 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- | 1977 | A | (+) |
| 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- | 08-27-77 | 11.59 | 1,400 |
| 06811800 | E TARKIO CR NR STANTON, IOWA. | LAT 4108XX, 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- | 08-27-77 | 11.61 | 1,600 |
| 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- | 1977 | A | (+) |
| 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- | 08-28-77 | 94.83 | 1,700 |

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1977--CONTINUED

| STATION NO. | STATION NAME | LOCATION | DRAINAGE AREA (SQ MI) | PERIOD OF RECORD | ANNUAL MAXIMUM | | |
|----------------------|---------------------------------|--|-----------------------|------------------|----------------|--------------------|-----------------|
| | | | | | DATE | GAGE HEIGHT (FEET) | DISCHARGE (CFS) |
| 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- | 1977 | A | (+) |
| PLATTE RIVER BASIN | | | | | | | |
| 06818598 | PLATTE R NR STRINGTOWN, 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- | 09-03-77 | 90.23 | 1,050 |
| 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- | 08-28-77 | 81.50 | 950 |
| 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- | 1977 | A | (+) |
| 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- | 1977 | A | (+) |
| 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- | 1977 | A | (+) |

* Also a low-flow partial-record station.

+ Discharge not determined.

A Peak stage did not reach bottom of gage.

B Revised.

C Ice affected.

DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1977

| Stream | Tributary to | Location | Drainage area (mi²) | Measured previously (water years) | Measurements | |
|--------------------------|----------------------|--|---------------------------|--|--------------|----------------------|
| | | | | | Date | Discharge (ft³/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, Iowa. | 118 | 1941-76 | 10-07-76 | 61.0 |
| | | | | | 11-18-76 | 62.1 |
| | | | | | 03-31-77 | 61.0 |
| | | | | | 04-27-77 | 55.8 |
| | | | | | 05-25-77 | 49.4 |
| | | | | | 06-22-77 | 49.0 |
| | | | | | 08-25-77 | 48.9 |
| 09-28-77 | 48.4 | | | | | |
| Turkey River Basin | | | | | | |
| South Cedar Creek | Turkey River | NW1/4 sec.31, T.93 N., R.3 W., Clayton County, at bridge on county highway, 2.5 miles south of Garnavilleo. | 5.59 | -- | 04-19-77 | 0.61 |
| | | | | | 06-22-77 | 0.51 |
| do | do | SW1/4 sec. 6, T.92 N., R.3 W., Clayton County, at bridge on county highway, 3.5 miles south of Garnavilleo. | 15.15 | -- | 04-19-77 | 2.13 |
| | | | | | 06-22-77 | 1.80 |
| Des Moines River basin | | | | | | |
| West Buttrick Creek | Buttrick Creek | E1/2 sec.12, T.87 N., R.30 W., Webster County, at bridge on county highway, at east edge of Callender. | 11.4 | 1971 | 07-06-77 | 0.0 |
| Des Moines River | Mississippi River | SW1/4 sec.3, T.77 N., R.22 W., Polk County, 0.9 mi (1.4 km) downstream from Middle River and 1.5 mi (2.4 km) southwest of Runnells. | 11,020 | | 02-04-77 | 121 |
| Floyd River basin | | | | | | |
| Floyd River | Missouri River | NE1/4 SE1/4 sec.34, T.96 N., R.43 W., Sioux County, 200 ft (61 m) upstream from unnamed slough, near gravel pit, and 1.1 mi (1.8 km) north of Hospers, Iowa. | 173 | 1975 | 10-28-76 | 3.11 |
| | | | | | 04-12-77 | 7.78 |
| | | | | | 06-08-77 | 3.11 |
| | | | | | 07-12-77 | 18.8 |
| 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 | 1957-76 | 02-03-77 | 2.13 |
| | | | | | 03-03-77 | 27.6 |
| | | | | | 03-17-77 | 40.7 |
| | | | | | 04-05-77 | 68.9 |
| | | | | | 06-02-77 | 13.6 |
| | | | | | 06-01-77 | 17.3 |
| | | | | | 07-12-77 | 13.8 |
| | | | | | 08-01-77 | 4.88 |
| 09-07-77 | 27.1 | | | | | |
| Keg Creek Basin | | | | | | |
| *06805900 Keg Creek | Missouri River | Lat 410056, long 954559, in NE1/4 sec.27, T.72 N., R.43 W., Mills County, at bridge, 2 miles SW of Glenwood. | 190 | 1957-76 | 11-05-76 | 16.1 |
| | | | | | 02-25-77 | 28.6 |
| | | | | | 04-12-77 | 18.8 |
| | | | | | 06-07-77 | 12.9 |
| | | | | | 09-30-77 | 35.0 |

* Also a low-flow partial-record station.

SEEPAGE INVESTIGATIONS

Discharge measurements were made during the 1977 water year on Oct. 6 on the Skunk River, on June 6 on the Little Sioux River and on June 6 and Oct. 18, 1977 on the Ocheyedan River to study channel gains and losses. The reach on the Little Sioux River was previously studied on Oct. 7, 1971 and Oct. 2, 1973.

| Stream | Location | Disch ft /s | Time | Temp C | Disch ft /s | Time | Temp C | pH | Spec Cond umhos |
|-----------------------|---|----------------|------|-----------|----------------|------|-----------|----|-----------------------|
| Oct. 6, 1976 | | | | | | | | | |
| South Skunk River | NE1/4 sec. 13, T.84N., R.24W., Story County. | 0.030 | 1025 | | | | | | |
| do | Center sec. 23, T.84N., R.24W., above sta. 05470000, Story Co. | 0.021 | 1110 | | | | | | |
| do | SW1/4 sec. 23, T.84N., R.24W., below sta. 05470000, Story Co. | 0.127 | 1140 | | | | | | |
| do | SW1/4 sec. 36, T.84N., R.24W., Story County. | 0.104 | 1230 | | | | | | |
| do | Center sec. 12, T.83N., R.24W., above Squaw C., Story County. | 0.004 | 1250 | | | | | | |
| do | Gaging sta. 05471000. | 0.057 | 1310 | | | | | | |
| do | Center sec. 24, T.83N., R.24W., below sewage effluent. | 13.2 | 1340 | | | | | | |
| do | South line sec. 32, T.83N., R.23W., Story County. | 10.3 | 1410 | | | | | | |
| June 6, 1977 | | | | | | | | | |
| Little Sioux River | SE1/4 sec. 17, T.99N., R.37W., Dickinson County. | 0.063 | 0950 | | | | | | |
| do | SE1/4 sec. 20, T.99N., R.37W., Dickinson County. | 0.086 | 1015 | | | | | | |
| do | SW1/4 sec. 33, T.99N., R.37W., Dickinson County. | 0.066 | 1100 | | | | | | |
| do | SW1/4 sec. 3, T.98N., R.37W., Dickinson County. | 1.031 | 1200 | | | | | | |
| do | SE1/4 sec. 16, T.98N., R.37W., Dickinson County. | 0.506 | 1340 | | | | | | |

SEEPAGE INVESTIGATIONS--CONTINUED

| Stream | Location | Disch | Time | Temp | Disch | Time | Temp | pH | Spec Cond umhos |
|--------------------------|---|--------------|------|------|---------------|------|------|-----|-----------------------|
| | | ft | | C | ft/s | | C | | |
| | | /s | | | | | | | |
| | | June 6, 1977 | | | Oct. 18, 1977 | | | | |
| Ocheyedan River | NE1/4 Sec. 12, T.100N., R.41W., Osceola County at State line. | 0.0 | | | 1.50 | 1050 | 9.0 | 8.2 | 1,020 |
| do | Low-flow station 06604500 | 0.09 | 1140 | 20.0 | 3.40 | 0940 | 8.5 | 8.2 | 950 |
| do | Crest-stage station 06604510 | -- | -- | -- | 4.02 | 0910 | 5.5 | 8.1 | 1,000 |
| do | SW1/4 sec. 5, T.99N., R.40W., Osceola County. | 0.53 | 1210 | 21.0 | 4.27 | 1150 | 9.5 | 8.3 | 980 |
| do | SW1/4 sec. 10, T.99N., R.40W., Osceola County. | 0.75 | 1240 | 21.0 | 6.63 | 1245 | 9.5 | 8.4 | 950 |
| do | NW1/4 sec. 23, T.99N., R.40W., Osceola County. | | | | 7.11 | 1345 | 10.5 | 8.2 | 950 |
| Ocheyedan River trib. | SE1/4 sec. 14, T.99N., R.40W., Osceola County. | | | | 0.0 | | | | |
| Ocheyedan River | NE1/4 sec. 1, T.98N., R.40W., Osceola County. | 0.18 | 1420 | 25.0 | 5.70 | 1310 | 10.5 | 8.6 | 900 |
| Ocheyedan River trib. | NE1/4 sec. 6, T.98N., R.39W., Osceola County. | 0.23 | 1440 | 25.0 | 2.08 | 1235 | 10.0 | 8.4 | 920 |
| Ocheyedan River | NW1/4 sec. 8, T.98N., R.39W., Osceola County. | | | | 8.16 | 1150 | 8.5 | 8.3 | 900 |
| do | SE1/4SW1/4 sec. 8, T.98N., R.39W., Osceola County. | 2.28 | 1500 | 25.0 | 7.97 | 1100 | 7.0 | 8.3 | 780 |
| L. Ocheyedan River | SW1/4 sec. 36, T.100N., R.41W., Osceola County. | 0.0 | | | 0.78 | 1125 | 9.0 | 8.1 | 1,220 |
| do | SE1/4 sec. 12, T.99N., R.41W., Osceola County. | | | | 2.47 | 1215 | 9.5 | 8.3 | 1,100 |
| do | NE1/4 sec. 19, T.99N., R.40W., Osceola County. | | | | 2.48 | 1545 | 11.5 | 8.5 | 1,030 |
| L. Ocheyedan River trib. | NW1/4 sec. 20, T.99N., R.40W., Osceola County. | | | | 0.77 | 1510 | 9.5 | 8.4 | 750 |
| L. Ocheyedan River | West line sec. 29, T.99N., R.40W., Osceola County. | | | | 3.71 | 1440 | 10.5 | 8.4 | 800 |
| do | NE1/4 sec. 32, T.99N., R.40W., Osceola County. | 0.49 | 1310 | 21.0 | 3.59 | 1400 | 9.5 | 8.4 | 1,030 |
| do | Low-flow station 06604600 | 0.32 | 1140 | | 5.24 | 1005 | 6.5 | 8.4 | 940 |
| Ocheyedan River | Low-flow station 06604700 | 4.17 | 1200 | 21.0 | 15.2 | 0900 | 6.0 | 8.3 | 920 |
| do | NE1/4 sec. 19, T.97N., R.38W., Clay County. | 5.91 | 1100 | | 20.73 | 0805 | 6.5 | 8.4 | 900 |
| do | NE1/4 sec. 31, T.97N., R.38W., Clay County. | 7.33 | 1030 | | 23.00 | 0830 | 6.5 | 8.2 | 900 |
| do | SW1/4 sec. 10, T.96N., R.38W., Clay County. | 7.65 | 1000 | 22.0 | 27.24 | 0900 | 6.5 | 8.2 | 910 |
| do | SE1/4NW1/4 sec. 11, T.96N., R.38W., Clay County. | | | | 24.83 | 0925 | 6.5 | 8.1 | 960 |
| Ocheyedan River trib. | NE1/4SE1/4 sec. 12, T.96N., R.38W., Clay County. | 0.0 | | | 0.42 | 0955 | 7.0 | 8.1 | 1,680 |
| Ocheyedan River | SW1/4NW1/4 sec. 7, T.96N., R.37W., Clay County. | 10.17 | 0845 | 22.0 | 25.29 | 1005 | 6.5 | 8.1 | 950 |
| Stoney Creek | Low-flow station 06604900 | 1.47 | 1645 | | 5.72 | 1035 | 6.5 | 8.3 | 850 |
| Ocheyedan River | SW1/4SW1/4 sec. 8, T.96N., R.37W., downstream from Stoney Creek, Clay County. | 10.34 | 0925 | | 25.94 | 1105 | 6.5 | 8.3 | 920 |
| do | Low-flow station 06605000 | 11.03 | 1540 | | 35.2 | 1130 | 6.5 | 8.3 | 910 |

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

Water-quality partial-record stations are particular sites where chemical-quality, biological and or sediment data are collected systematically over a period of years for use in hydrologic analyses. The data are collected usually less than quarterly.

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

| DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) |
|---|------|--|---|--------------------------|--|
| UPPER IOWA RIVER BASIN | | | | | |
| 05387300 - UPPER IOWA R AT CHESTER, IOWA (LAT 43 30 00 LONG 092 22 00) | | | | | |
| JUL , 1977 13... | 1325 | 6.3 | 230 | 8.6 | 27.0 |
| 05387400 - UPPER IOWA R NR KENDALVILLE, IOWA (LAT 43 28 00 LONG 092 02 00) | | | | | |
| JUL , 1977 13... | 0945 | 20 | 200 | 8.6 | 22.0 |
| 05388100 - CANOE CR NR DECORAH, IOWA (LAT 43 21 00 LONG 091 41 00) | | | | | |
| JUL , 1977 14... | 0925 | 7.6 | 480 | 7.9 | 24.0 |
| 05388300 - BEAR CR NR HIGHLANDVILLE, IOWA (LAT 43 27 00 LONG 091 37 00) | | | | | |
| JUL , 1977 14... | 1025 | 20 | 390 | 7.8 | 20.6 |
| VILLAGE CREEK BASIN | | | | | |
| 05388350 - VILLAGE CREEK AT VILLAGE CREEK, IOWA (LAT 43 18 40 LONG 091 14 12) | | | | | |
| JUL , 1977 14... | 1300 | 23 | 470 | 8.0 | 26.5 |
| YELLOW RIVER BASIN | | | | | |
| 05388800 - YELLOW R AT MYRON, IOWA (LAT 43 10 00 LONG 091 32 00) | | | | | |
| JUL , 1977 14... | 1600 | 6.1 | 400 | 7.8 | 24.0 |
| 05389000 - YELLOW RIVER AT ION, IOWA (LAT 43 07 00 LONG 091 16 00) | | | | | |
| JUL , 1977 14... | 1455 | 32 | 470 | 8.3 | -- |
| TURKEY RIVER BASIN | | | | | |
| 05411550 - NB TURKEY R NR VERNON SPRINGS, IOWA (LAT 43 21 00 LONG 092 11 00) | | | | | |
| JUL , 1977 13... | 1145 | 1.9 | 250 | 8.4 | 25.0 |
| 05411560 - TURKEY R NR VERNON SPRINGS, IOWA (LAT 43 20 00 LONG 092 07 00) | | | | | |
| JUL , 1977 13... | 1105 | 4.0 | 200 | 8.4 | 25.0 |
| 05411620 - L TURKEY R NR WAUCOMA, IOWA (LAT 43 01 00 LONG 091 59 00) | | | | | |
| JUL , 1977 13... | 1015 | 9.1 | 380 | 8.2 | 25.0 |
| 05411700 - CRANE CREEK NEAR LOURDES, IOWA (LAT 43 15 00 LONG 092 19 00) | | | | | |
| JUL , 1977 13... | 1620 | 1.6 | 210 | 8.7 | 30.0 |
| 05411800 - L TURKEY R NR ALPHA, IOWA (LAT 43 01 00 LONG 091 57 00) | | | | | |
| JUL , 1977 13... | 0900 | 26 | 310 | 8.4 | 23.0 |

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

| DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) |
|------|------|--|---|--------------------------|--|
|------|------|--|---|--------------------------|--|

TURKEY RIVER BASIN--CONTINUED

05412100 - ROBERTS C AB ST. OLAF, IOWA (LAT 42 55 49 LONG 091 23 03)

| | | | | | |
|------------|------|-----|-----|-----|----|
| JUL , 1977 | | | | | |
| 13... | 1500 | 8.3 | 480 | 8.5 | -- |

05412150 - ROBERTS C AT ST. OLAF, IOWA (LAT 42 55 42 LONG 091 23 01)

| | | | | | |
|------------|------|-----|-----|-----|----|
| JUL , 1977 | | | | | |
| 13... | 1430 | 9.1 | 580 | 8.4 | -- |

05412200 - VOLGA R NR FAYETTE, IOWA (LAT 42 49 00 LONG 091 53 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 12... | 1540 | 4.3 | 400 | 8.6 | 31.0 |

05412400 - VOLGA R AT LITTLEPORT, IOWA (LAT 42 45 14 LONG 091 22 08)

| | | | | | |
|------------|------|----|-----|-----|----|
| JUL , 1977 | | | | | |
| 12... | 1325 | 52 | 470 | 7.8 | -- |

LITTLE MAQUOKETA RIVER BASIN

05414450 - N FK L MAQUOKETA R NR RICKARDSVILLE, IOWA (LAT 42 35 09 LONG 090 51 20)

| | | | | | |
|------------|------|-----|-----|-----|----|
| JUL , 1977 | | | | | |
| 13... | 1215 | .04 | 480 | 8.6 | -- |

MAQUOKETA RIVER BASIN

05416300 - MAQUOKETA R NR DUNDEE, IOWA (LAT 42 36 55 LONG 091 33 44)

| | | | | | |
|------------|------|-----|-----|-----|----|
| JUL , 1977 | | | | | |
| 13... | 1630 | 6.6 | 500 | 8.4 | -- |

05416400 - SF MAQUOKETA R NR DUNDEE, IOWA (LAT 42 36 08 LONG 091 35 13)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 13... | 1650 | 1.6 | 550 | 8.3 | 29.0 |

05417540 - PLUM C NR EARLVILLE, IOWA (LAT 42 26 04 LONG 091 13 58)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 13... | 1125 | 5.8 | 560 | 8.1 | 26.5 |

05417560 - MAQUOKETA R NR HOPKINTON, IOWA (LAT 42 22 00 LONG 091 16 00)

| | | | | | |
|------------|------|----|-----|-----|------|
| JUL , 1977 | | | | | |
| 13... | 1235 | 55 | 570 | 8.2 | 26.5 |

05417580 - BUCK CR NR HOPKINTON, IOWA (LAT 42 21 00 LONG 091 17 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 13... | 1330 | 3.1 | 540 | 8.2 | 24.5 |

05417600 - MAQUOKETA R NR SCOTCH GROVE, IOWA (LAT 42 12 00 LONG 091 01 00)

| | | | | | |
|------------|------|----|-----|-----|------|
| JUL , 1977 | | | | | |
| 12... | 1525 | 85 | 520 | 8.6 | 31.5 |

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

| DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) |
|------|------|--|---|--------------------------|--|
|------|------|--|---|--------------------------|--|

MAQUOKETA RIVER BASIN--CONTINUED

05418100 - NF MAQUOKETA R AT DYERSVILLE, IOWA (LAT 42 29 05 LONG 091 08 26)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 13... | 1020 | 6.7 | 610 | 8.0 | 21.0 |

05418200 - WHITEWATER CR AT FILLMORE, IOWA (LAT 42 19 07 LONG 090 55 26)

| | | | | | |
|------------|------|-----|-----|-----|----|
| JUL , 1977 | | | | | |
| 13... | 1035 | 8.6 | 540 | 8.2 | -- |

05418300 - LYTLE C NR BERNARD, IOWA (LAT 42 17 57 LONG 090 46 56)

| | | | | | |
|------------|------|-----|-----|-----|----|
| JUL , 1977 | | | | | |
| 13... | 0945 | 7.9 | 600 | 8.0 | -- |

05418350 - LYTLE CR NR FULTON, IOWA (LAT 42 12 00 LONG 090 45 00)

| | | | | | |
|------------|------|----|-----|-----|------|
| JUL , 1977 | | | | | |
| 12... | 1700 | 20 | 500 | 8.5 | 29.0 |

05418400 - NF MAQUOKETA R NR FULTON, IOWA (LAT 42 11 00 LONG 090 44 00)

| | | | | | |
|------------|------|----|-----|-----|------|
| JUL , 1977 | | | | | |
| 12... | 1750 | 79 | 570 | 8.5 | 31.0 |

05418650 - DEEP CR NR CHARLOTTE, IOWA (LAT 42 00 00 LONG 090 24 00)

| | | | | | |
|------------|------|-----|-----|-----|----|
| JUL , 1977 | | | | | |
| 12... | 1550 | 2.4 | 550 | 8.5 | -- |

05418700 - DEEP CR NR PRESTON, IOWA (LAT 42 03 00 LONG 090 26 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 12... | 1740 | 3.4 | 590 | 8.4 | 34.0 |

ELK RIVER BASIN

05420300 - ELK C NR ALMONT, IOWA (LAT 42 00 39 LONG 090 12 05)

| | | | | | |
|------------|------|-----|-----|-----|----|
| JUL , 1977 | | | | | |
| 12... | 1640 | 4.4 | 580 | 8.6 | -- |

WAPSIPINICON RIVER BASIN

05420540 - WAPSIPINCON R NR RICEVILLE, IOWA (LAT 43 20 00 LONG 092 34 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 13... | 1420 | 6.7 | 450 | 8.4 | 26.5 |

05420580 - WAPSIPINICON R NR IONIA, IOWA (LAT 43 01 00 LONG 092 23 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 13... | 1320 | 7.4 | 330 | 8.2 | 25.0 |

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

| DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) |
|------|------|--|---|--------------------------|--|
|------|------|--|---|--------------------------|--|

WAPSIPINICON RIVER BASIN--CONTINUED

05420640 - LITTLE WAPSIPINICON RIVER AT ELMA, IOWA (LAT 43 14 00 LONG 092 27 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 13... | 1525 | 2.3 | 250 | 8.5 | 29.5 |

05420660 - WAPSIPINICON R NR NEW HAMPTON, IOWA (LAT 42 59 00 LONG 092 22 00)

| | | | | | |
|------------|------|----|-----|-----|------|
| JUL , 1977 | | | | | |
| 13... | 1430 | 12 | 370 | 8.4 | 27.0 |

05420680 - WAPSIPINICON R NR TRIPOLI, IOWA (LAT 42 05 00 LONG 092 15 00)

| | | | | | |
|------------|------|----|-----|-----|------|
| JUL , 1977 | | | | | |
| 14... | 1010 | 15 | 320 | 8.1 | 27.0 |

05420700 - EF WAPSIPINICON R NR FREDERICKSBURG, IOWA (LAT 43 01 00 LONG 092 13 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 13... | 1145 | 2.6 | 320 | 8.2 | 24.0 |

05420720 - EF WAPSIPINICON R NR TRIPOLI, IOWA (LAT 42 51 00 LONG 092 14 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 13... | 1555 | 6.5 | 500 | 8.2 | 28.0 |

05420740 - WAPSIPINICON R AT TRIPOLI, IOWA (LAT 42 48 00 LONG 092 14 00)

| | | | | | |
|------------|------|----|-----|-----|------|
| JUL , 1977 | | | | | |
| 13... | 1700 | 18 | 380 | 8.5 | 29.0 |

05420800 - CRANE C NR DENVER, IOWA (LAT 42 38 32 LONG 092 15 21)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 14... | 1150 | 3.0 | 400 | 8.7 | 30.0 |

05420820 - CRANE CR AT DUNKERTON, IOWA (LAT 42 34 00 LONG 092 10 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 12... | 1245 | 3.1 | 320 | 8.4 | 28.5 |

05420840 - L WAPSIPINICON R NR WESTGATE, IOWA (LAT 42 47 00 LONG 092 05 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 12... | 1430 | 5.6 | 400 | 8.1 | 29.5 |

05420860 - BUCK CR NR LITTLETON, IOWA (LAT 42 35 00 LONG 092 03 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 14... | 1120 | .35 | 560 | 8.6 | 31.0 |

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

| DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) |
|------|------|--|---|--------------------------|--|
|------|------|--|---|--------------------------|--|

WAPSIPINICON RIVER BASIN--CONTINUED

0542D900 - L WAPSIPINICON R AT LITTLETON, IOWA (LAT 42 33 00 LONG 092 02 00)

| | | | | | |
|------------|------|----|-----|-----|------|
| JUL , 1977 | | | | | |
| 14... | 1010 | 14 | 380 | 8.5 | 26.5 |

05420940 - OTTER CR NR OTTERVILLE, IOWA (LAT 42 33 00 LONG 091 57 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 14... | 0845 | 4.9 | 480 | 8.2 | 24.5 |

05421500 - WAPSIPINICON RIVER AT STONE CITY, IOWA (LAT 42 07 00 LONG 091 21 00)

| | | | | | |
|------------|------|----|-----|-----|------|
| JUL , 1977 | | | | | |
| 12... | 1245 | 54 | 470 | 8.2 | 29.0 |

05421550 - BUFFALO CREEK ABOVE WINTHROP, IOWA (LAT 42 30 00 LONG 091 44 00)

| | | | | | |
|------------|------|-----|-----|-----|----|
| JUL , 1977 | | | | | |
| 14... | 0850 | .71 | 330 | 8.0 | -- |

05421700 - BUFFALO CR NR STONE CITY, IOWA (LAT 42 08 00 LONG 091 21 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 12... | 1345 | 6.5 | 480 | 8.5 | 31.0 |

05421800 - YANKEE RUN AT WHEATLAND, IOWA (LAT 41 49 34 LONG 090 50 25)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 12... | 1300 | 4.0 | 650 | 8.4 | 31.5 |

05421850 - MUD CR NR PLAINVIEW, IOWA (LAT 41 42 02 LONG 090 45 26)

| | | | | | |
|------------|------|----|-----|-----|------|
| JUL , 1977 | | | | | |
| 12... | 1215 | 12 | 530 | 8.4 | 31.0 |

05421900 - SILVER C NR DE WITT, IOWA (LAT 41 47 09 LONG 090 33 13)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 12... | 1355 | 5.2 | 600 | 8.5 | 34.0 |

05422100 - BROPHYS C NR LOW MOOR, IOWA (LAT 41 48 56 LONG 090 24 14)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 12... | 1500 | 5.4 | 600 | 8.3 | 34.5 |

FLINT RIVER BASIN

05469700 - FLINT CR NR BURLINGTON, IOWA (LAT 40 52 00 LONG 091 12 03)

| | | | | | |
|------------|------|-----|-----|-----|----|
| JUL , 1977 | | | | | |
| 13... | 1600 | .04 | 590 | 8.0 | -- |

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

| DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) |
|---|------|--|---|--------------------------|--|
| SKUNK RIVER BASIN | | | | | |
| 05469800 - S SKUNK R NR ELLSWORTH, IOWA (LAT 42 19 00 LONG 093 35 00) | | | | | |
| JUL , 1977 | | | | | |
| 11... | 1015 | .04 | 800 | 8.0 | -- |
| 05469850 - MUD LAKE DRAINAGE DITCH 71 AT JEWELL, IOWA (LAT 42 19 05 LONG 093 38 05) | | | | | |
| JUL , 1977 | | | | | |
| 11... | 1040 | .17 | 670 | 8.5 | 21.0 |
| 05469950 - S SKUNK R AT RANDALL, IOWA (LAT 42 14 00 LONG 093 35 00) | | | | | |
| JUL , 1977 | | | | | |
| 11... | 0945 | .42 | 790 | 8.5 | 16.5 |
| 05471050 - S SKUNK R AT COLFAX, IOWA (LAT 41 40 55 LONG 093 14 47) | | | | | |
| JUL , 1977 | | | | | |
| 11... | 1105 | 8.7 | 720 | 7.8 | 24.5 |
| 05471400 - ELK CR NR TAINTOR, IOWA (LAT 41 29 00 LONG 092 51 00) | | | | | |
| JUL , 1977 | | | | | |
| 11... | 1135 | .08 | 400 | 8.0 | 29.5 |
| 05472100 - N SKUNK R NR NEWTON, IOWA (LAT 41 47 00 LONG 093 02 00) | | | | | |
| JUL , 1977 | | | | | |
| 11... | 1600 | .10 | 420 | 8.5 | 34.5 |
| 05472300 - N SKUNK R NR SEARSBORO, IOWA (LAT 41 32 00 LONG 092 42 00) | | | | | |
| JUL , 1977 | | | | | |
| 11... | 1105 | 2.8 | 580 | 8.1 | 24.5 |
| 05472450 - CEDAR CR NR SIGOURNEY, IOWA (LAT 41 18 42 LONG 092 13 33) | | | | | |
| JUL , 1977 | | | | | |
| 11... | 1545 | .01 | 700 | 7.8 | 29.5 |
| 05473000 - SKUNK RIVER AT COPPOCK, IOWA (LAT 41 10 00 LONG 091 43 00) | | | | | |
| JUL , 1977 | | | | | |
| 11... | 1145 | 46 | 590 | 7.2 | 30.0 |
| 05473020 - EF CROOKED CR NR WINFIELD, IOWA (LAT 41 09 00 LONG 091 26 00) | | | | | |
| JUL , 1977 | | | | | |
| 11... | 1500 | .06 | 500 | 8.0 | 34.0 |
| 05473050 - CROOKED C NR COPPOCK, IOWA (LAT 41 12 00 LONG 091 42 00) | | | | | |
| JUL , 1977 | | | | | |
| 11... | 1445 | .92 | 600 | 7.6 | 30.0 |

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

| DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) |
|------|------|--|---|--------------------------|--|
|------|------|--|---|--------------------------|--|

SKUNK RIVER BASIN--CONTINUED

05473100 - WALNUT CR AT GERMANVILLE, IOWA (LAT 41 06 00 LONG 091 46 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 11... | 1340 | .03 | 610 | 8.4 | 33.0 |

05473200 - CEDAR CR NR HIGHLAND CENTER, IOWA (LAT 41 06 30 LONG 092 21 58)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 11... | 1040 | .01 | 510 | 8.5 | 24.5 |

05473250 - COMPETINE CR BELOW FORKS NR BATAVIA, IOWA (LAT 41 02 00 LONG 092 07 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 11... | 1255 | .01 | 600 | 8.3 | 25.0 |

05473300 - CEDAR CREEK NR BATAVIA, IOWA (LAT 41 01 00 LONG 092 07 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 11... | 1125 | .14 | 550 | 8.3 | 30.5 |

05473400 - CEDAR CR NR OAKLAND MILLS, IOWA (LAT 40 55 00 LONG 091 40 00)

| | | | | | |
|------------|------|----|-----|-----|------|
| JUL , 1977 | | | | | |
| 11... | 1530 | 14 | 750 | 8.5 | 31.0 |

05473450 - BIG CR AT MT PLEASANT, IOWA (LAT 41 00 00 LONG 091 32 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 11... | 1825 | .02 | 500 | 8.8 | 30.0 |

DEVILS CREEK BASIN

05474200 - SUGAR CR NR FRANKLIN, IOWA (LAT 40 39 54 LONG 091 28 39)

| | | | | | |
|------------|------|-----|-----|----|------|
| JUL , 1977 | | | | | |
| 13... | 1300 | .04 | 600 | -- | 34.0 |

05474300 - SUGAR CR NR VIELE, IOWA (LAT 40 36 39 LONG 091 26 24)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 13... | 1130 | .08 | 660 | 7.5 | 34.0 |

DES MOINES RIVER BASIN

05482100 - N RACCOON R NR REMBRANDT, IOWA (LAT 42 47 00 LONG 095 06 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 05... | 0905 | 1.9 | 750 | 8.6 | 23.0 |

05482120 - N RACCOON R NR TRUESDALE, IOWA (LAT 42 42 00 LONG 095 05 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 05... | 1005 | 2.4 | 660 | 8.9 | 25.0 |

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

| DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) |
|---|------|--|---|--------------------------|--|
| DES MOINES RIVER BASIN--CONTINUED | | | | | |
| 05482220 - B CEDAR CR AT SAC CITY, IOWA (LAT 42 24 00 LONG 094 59 00) | | | | | |
| JUL , 1977 | | | | | |
| 06... | 0820 | .47 | 850 | 8.5 | 26.0 |
| 05482320 - INDIAN CR NR LAKE VIEW, IOWA (LAT 42 20 00 LONG 095 00 00) | | | | | |
| JUL , 1977 | | | | | |
| 06... | 1140 | 1.4 | 650 | 8.5 | 29.0 |
| 05482400 - N RACCOON R NR LAKE CITY, IOWA (LAT 42 16 00 LONG 094 50 00) | | | | | |
| JUL , 1977 | | | | | |
| 06... | 1300 | 9.1 | 600 | 9.0 | 27.0 |
| 05482410 - LAKE CR NR ROCKWELL CITY, IOWA (LAT 42 24 00 LONG 094 36 00) | | | | | |
| JUL , 1977 | | | | | |
| 06... | 1515 | .05 | 4000 | 8.8 | 33.5 |
| 05483300 - N RACCOON R NR PERRY, IOWA (LAT 41 50 00 LONG 094 08 00) | | | | | |
| JUL , 1977 | | | | | |
| 06... | 1250 | 25 | 620 | -- | 28.0 |
| 05483310 - S RACCOON R NR GUTHRIE CENTER, IOWA (LAT 41 41 00 LONG 094 32 00) | | | | | |
| JUL , 1977 | | | | | |
| 06... | 1035 | 7.6 | 360 | -- | 26.0 |
| 05483320 - BRUSHY FORK CR NR DEDHAM, IOWA (LAT 41 47 00 LONG 094 54 00) | | | | | |
| JUL , 1977 | | | | | |
| 06... | 1045 | .10 | 450 | 8.4 | 29.5 |
| 05483330 - BRUSHY FORK CR NR GUTHRIE CENTER, IOWA (LAT 41 39 00 LONG 094 27 00) | | | | | |
| JUL , 1977 | | | | | |
| 06... | 1240 | 9.9 | 320 | -- | 32.0 |
| 05483340 - S RACCOON R NR MONTEITH, IOWA (LAT 41 38 00 LONG 094 25 00) | | | | | |
| JUL , 1977 | | | | | |
| 06... | 1150 | 22 | 330 | -- | 31.0 |
| 05483350 - M RACCOON R NR CARROLL, IOWA (LAT 42 03 00 LONG 094 49 00) | | | | | |
| JUL , 1977 | | | | | |
| 06... | 1055 | 1.1 | 1300 | 8.0 | 26.0 |

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

| DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) |
|--|------|--|---|--------------------------|--|
| DES MOINES RIVER BASIN--CONTINUED | | | | | |
| 05483360 - M RACCOON R NR GLIDDEN, IOWA (LAT 42 03 00 LONG 094 46 00) | | | | | |
| JUL , 1977 | | | | | |
| 06... | 1130 | 1.5 | 1200 | -- | 29.5 |
| 05483380 - WILLOW CR NR SCRANTON, IOWA (LAT 41 54 00 LONG 094 36 00) | | | | | |
| JUL , 1977 | | | | | |
| 06... | 1000 | .16 | 470 | -- | 26.5 |
| 05483400 - WILLOW CR NR BAYARD, IOWA (LAT 41 49 00 LONG 094 33 00) | | | | | |
| JUL , 1977 | | | | | |
| 05... | 0900 | 2.0 | 440 | -- | 22.0 |
| 06... | 1155 | 1.3 | 390 | -- | 28.0 |
| 05483450 - M RACCOON R NR BAYARD, IOWA (LAT 41 47 00 LONG 094 30 00) | | | | | |
| JUL , 1977 | | | | | |
| 05... | 0945 | 13 | 530 | -- | 30.0 |
| 06... | 1250 | 12 | 490 | -- | 28.0 |
| 05483660 - M RACCOON R AT REDFIELD, IOWA (LAT 41 36 00 LONG 094 13 00) | | | | | |
| JUL , 1977 | | | | | |
| 06... | 1120 | 3.7 | 520 | -- | 29.0 |
| 05484200 - PANTHER CR NR ADEL, IOWA (LAT 41 36 00 LONG 094 06 00) | | | | | |
| JUL , 1977 | | | | | |
| 05... | 1430 | .03 | 580 | -- | 32.0 |
| 05486100 - MIDDLE R NR CASEY, IOWA (LAT 41 30 00 LONG 094 29 00) | | | | | |
| JUL , 1977 | | | | | |
| 06... | 1055 | .02 | 530 | 8.4 | 30.0 |
| 05486150 - MIDDLE R AT MIDDLE RIVER, IOWA (LAT 41 20 00 LONG 094 14 00) | | | | | |
| JUL , 1977 | | | | | |
| 06... | 1200 | .05 | 630 | 8.6 | 31.5 |
| 05486350 - CLANTON CR NR MARTENSDALE, IOWA (LAT 41 21 00 LONG 093 45 00) | | | | | |
| JUL , 1977 | | | | | |
| 06... | 1205 | .15 | 490 | 8.2 | 30.0 |
| 05486400 - MIDDLE R AT MARTENSDALE, IOWA (LAT 41 22 00 LONG 093 44 00) | | | | | |
| JUL , 1977 | | | | | |
| 06... | 1240 | .16 | 570 | 8.2 | 34.5 |
| 05487200 - SOUTH R NR INDIANOLA, IOWA (LAT 41 20 00 LONG 093 35 00) | | | | | |
| JUL , 1977 | | | | | |
| 06... | 1025 | .17 | 550 | 8.2 | 31.5 |
| 05487700 - WHITE BREAST CR NR WOODBURN, IOWA (LAT 40 58 35 LONG 093 35 14) | | | | | |
| APR , 1977 | | | | | |
| 26... | 1600 | 10 | 573 | 8.1 | 16.1 |
| AUG | | | | | |
| 12... | 1400 | 1.5 | 495 | 8.2 | 24.9 |

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

| DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) |
|--|------|--|---|--------------------------|--|
| DES MOINES RIVER BASIN--CONTINUED | | | | | |
| 05487900 - WHITE BREAST CREEK NEAR NEWBORN, IOWA (LAT 41 10 00 LONG 093 21 00) | | | | | |
| JUL , 1977 | | | | | |
| 06... | 1715 | .03 | 530 | 8.4 | 30.0 |
| 05487950 - WOLF CREEK NR LACONA, IOWA (LAT 41 13 10 LONG 093 19 40) | | | | | |
| APR , 1977 | | | | | |
| 26... | 1030 | .06 | 580 | 8.5 | 12.3 |
| 05487980 - WHITE BREAST CREEK NEAR DALLAS, IOWA (LAT 41 14 41 LONG 093 16 08) | | | | | |
| APR , 1977 | | | | | |
| 21... | 1630 | 106 | 600 | 7.9 | 15.5 |
| AUG | | | | | |
| 12... | 1700 | 6.4 | 320 | 8.0 | 27.7 |
| 05488050 - BUTCHER CREEK NR KNOXVILLE, IOWA (LAT 41 19 54 LONG 093 10 35) | | | | | |
| APR , 1977 | | | | | |
| 21... | 1100 | .29 | 1900 | 4.2 | 14.8 |
| 05488300 - ENGLISH R NR HARVEY, IOWA (LAT 41 20 00 LONG 092 57 00) | | | | | |
| APR , 1977 | | | | | |
| 20... | 1600 | .64 | 900 | 8.2 | 21.2 |
| 05488550 - CEDAR CR AT MELROSE, IOWA (LAT 40 58 00 LONG 093 03 00) | | | | | |
| JUL , 1977 | | | | | |
| 06... | 1245 | .00 | 810 | 7.9 | 30.0 |
| 05488600 - CEDAR CR NR ALBIA, IOWA (LAT 41 01 00 LONG 092 53 00) | | | | | |
| APR , 1977 | | | | | |
| 19... | 1000 | 5.0 | 605 | 8.2 | 19.3 |
| AUG | | | | | |
| 12... | 1000 | 31 | 430 | 7.8 | 19.3 |
| 05488700 - CEDAR CR NR LOVILIA, IOWA (LAT 41 07 00 LONG 092 56 00) | | | | | |
| JUL 1977 | | | | | |
| 06... | 1100 | .04 | 590 | 7.4 | 25.0 |
| 05488900 - N CEDAR CR NR MARYSVILLE, IOWA (LAT 41 11 00 LONG 093 01 00) | | | | | |
| APR , 1977 | | | | | |
| 19... | 1800 | 1.7 | 645 | 8.0 | 20.5 |
| JUL | | | | | |
| 07... | 1115 | .00 | 720 | 8.1 | 29.0 |
| 05489000 - CEDAR CREEK NEAR BUSSEY, IOWA (LAT 41 13 09 LONG 092 54 38) | | | | | |
| APR , 1977 | | | | | |
| 20... | 1000 | 13 | 740 | 7.9 | 17.4 |
| AUG | | | | | |
| 11... | 1500 | 163 | 275 | 7.5 | 23.3 |

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

| DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) |
|------|------|--|---|--------------------------|--|
|------|------|--|---|--------------------------|--|

DES MOINES RIVER BASIN--CONTINUED

05489300 - M AVERY CR NR CHILLICUNE, IOWA (LAT 41 06 00 LONG 092 33 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 06... | 1740 | .03 | 510 | 7.6 | 31.0 |

05489900 - SOAP CR NR ASH GROVE, IOWA (LAT 40 51 00 LONG 092 36 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 07... | 1800 | .01 | 500 | 7.9 | 26.0 |

05490100 - SOAP CR NR FLORIS, IOWA (LAT 40 53 37 LONG 092 15 53)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 07... | 1050 | 1.3 | 730 | 7.8 | 31.0 |

05490300 - CHEQUEST CR NR TROY, IOWA (LAT 40 47 17 LONG 092 11 01)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 07... | 1530 | .00 | 660 | 7.2 | 30.0 |

FOX RIVER BASIN

05494500 - FOX RIVER AT CANTRIL, IOWA (LAT 40 39 35 LONG 092 03 40)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 07... | 1745 | .59 | 610 | 8.0 | 30.0 |

LITTLE SIOUX RIVER BASIN

06604700 OCHEYEDAN R NR MAY CITY, IOWA (LAT 43 16 00 LONG 095 27 00)

| | | | | | |
|------------|------|-----|----|----|------|
| JUL , 1977 | | | | | |
| 06... | 1215 | 4.2 | -- | -- | 21.0 |

NODAWAY RIVER BASIN

06816300 - W NODAWAY R NR CUMBERLAND, IOWA (LAT 41 12 00 LONG 094 52 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 19... | 1355 | .61 | 370 | 8.1 | 29.0 |

06816350 - SEVENMILE CR NR LYMAN, IOWA (LAT 41 15 00 LONG 094 59 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 19... | 1305 | .69 | 290 | 7.7 | 33.5 |

06816400 - SEVENMILE CR NR MORTONS MILL, IOWA (LAT 41 06 00 LONG 095 00 00)

| | | | | | |
|------------|------|----|-----|-----|------|
| JUL , 1977 | | | | | |
| 20... | 1435 | 11 | 310 | 7.8 | 35.5 |

06816550 - W NODAWAY R NR VILLISCA, IOWA (LAT 40 55 00 LONG 095 00 00)

| | | | | | |
|------------|------|----|-----|-----|------|
| JUL , 1977 | | | | | |
| 20... | 1335 | 14 | 325 | 8.2 | 33.5 |

06816700 - WF M NODAWAY R NR FONTANELLE, IOWA (LAT 41 19 00 LONG 094 39 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 19... | 1500 | .34 | 460 | 7.8 | 35.0 |

WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
ANALYSES OF MISCELLANEOUS STATIONS

| DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) (00061) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) (00095) | PH (UNITS) (00400) | TEMPER- ATURE (DEG C) (00010) |
|------|------|--|---|--------------------------|--|
|------|------|--|---|--------------------------|--|

NODAWAY RIVER BASIN--CONTINUED

06816800 - WF M NODAWAY R NR BRIDGEWATER, IOWA (LAT 41 11 00 LONG 094 39 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 19... | 1605 | 3.8 | 360 | 7.9 | 33.5 |

06816900 - M NODAWAY R NR VILLISCA, IOWA (LAT 40 55 00 LONG 094 59 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 20... | 1250 | 1.9 | 490 | 8.2 | 33.0 |

06817100 - E NODAWAY R NR SHAMBAUGH, IOWA (LAT 40 38 00 LONG 095 01 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 20... | 1135 | .60 | 460 | 7.9 | 32.0 |

06817200 - NODAWAY R NR BRADYVILLE, IOWA (LAT 40 37 00 LONG 095 01 00)

| | | | | | |
|------------|------|----|-----|-----|------|
| JUL , 1977 | | | | | |
| 20... | 1055 | 13 | 420 | 8.2 | 29.0 |

PLATTE RIVER BASIN

06818600 - PLATTE R NR KENT, IOWA (LAT 40 57 00 LONG 094 29 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 19... | 1105 | .06 | 720 | 7.7 | 27.0 |

06818700 - PLATTE R NR KNOWLTON, IOWA (LAT 40 52 00 LONG 094 26 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 19... | 1205 | .10 | 650 | 7.8 | 31.0 |

06896100 - GRAND R AT KNOWLTON, IOWA (LAT 40 50 00 LONG 094 20 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 19... | 1435 | .01 | 510 | 8.1 | 35.0 |

06896150 - GRAND R NR BLOCKTON, IOWA (LAT 40 37 00 LONG 094 25 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 19... | 1710 | .15 | 450 | 8.5 | 33.0 |

06897770 - THOMPSON R NR HEBRON, IOWA (LAT 41 14 00 LONG 094 16 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 19... | 1205 | 1.0 | 770 | 8.0 | 29.0 |

06897820 - THOMPSON R NR AFTON, IOWA (LAT 41 02 00 LONG 094 06 00)

| | | | | | |
|------------|------|-----|-----|-----|------|
| JUL , 1977 | | | | | |
| 19... | 1315 | .02 | 470 | 7.9 | 35.0 |

06897900 - THOMPSON R NR GRAND RIVER, IOWA (LAT 40 52 00 LONG 093 58 00)

| | | | | | |
|------------|------|-----|----|----|------|
| JUL , 1977 | | | | | |
| 20... | 1225 | .05 | -- | -- | 32.5 |

06898300 - WELDON R EAST OF LEON, IOWA (LAT 40 45 18 LONG 093 38 05)

| | | | | | |
|------------|------|-----|----|----|------|
| JUL , 1977 | | | | | |
| 20... | 1100 | .01 | -- | -- | 28.5 |

06898450 - WELDON R NR PLEASANTON, IOWA (LAT 40 35 40 LONG 093 36 20)

| | | | | | |
|------------|------|-----|----|----|------|
| JUL , 1977 | | | | | |
| 20... | 0930 | .04 | -- | -- | 27.0 |

GROUND-WATER LEVELS

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 |
|---------------|-------------|--------------|-------------|--------------|-------------|---------------|-------------|
| Dec. 16, 1976 | 61.00 | Mar. 8, 1977 | 60.50 | May 18, 1977 | 71.00 | Aug. 13, 1977 | 75.00 |

Cerro Gordo County

430456N0932536.1. Local number 95-22-3abbal. 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 24.50 below lsd, Aug. 4, 1977. Records available: 1941 to current year.

| | | | | | |
|---------------|-------|--------------|-------|--------------|-------|
| Feb. 14, 1977 | 21.43 | May 12, 1977 | 24.30 | Aug. 4, 1977 | 24.50 |
|---------------|-------|--------------|-------|--------------|-------|

430927N0931142.1. Local number 96-20-3cddb1. Minneapolis & St. Louis RR. Co. Drilled unused artesian well in St. Peter Sandstone of Middle Ordovician age, diam 12 to 10 in, depth 805 ft, cased 12-in 0-30, 10-in 614-730. Lsd 1,114 ft above msl. MP top of wood cover, at lsd. Highest water level 32.71 below lsd, May 7, 1951; lowest 59.45 below lsd Feb. 28, 1959. Records available: 1941 to current year.

| | | | |
|--------------|-------|-----------|--|
| May 12, 1977 | 45.00 | Destroyed | |
|--------------|-------|-----------|--|

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, 2.00 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.

| | | | | | |
|---------------|------|--------------|------|--------------|------|
| Feb. 15, 1977 | 9.02 | May 12, 1977 | 8.19 | Aug. 4, 1977 | 9.03 |
|---------------|------|--------------|------|--------------|------|

430658N0932810.1. Local number 96-22-20cadcl. W. Saine 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.

| | | | | | |
|---------------|-------|--------------|-------|--------------|-------|
| Feb. 14, 1977 | 44.23 | May 12, 1977 | 46.52 | Aug. 4, 1977 | 51.37 |
|---------------|-------|--------------|-------|--------------|-------|

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, 1965 and Feb. 7, 1977. Records available: 1957 to current year.

| | | | | | | | |
|--------------|------|---------------|-------|---------------|------|--------------|------|
| Oct. 7, 1976 | 8.89 | Jan. 21, 1977 | 9.78 | Apr. 21, 1977 | 5.37 | July 7, 1977 | 7.97 |
| Oct. 24 | 8.52 | Feb. 7 | 10.03 | May 7 | 5.58 | July 21 | 7.52 |
| Nov. 8 | 8.73 | Feb. 21 | 9.47 | May 18 | 7.03 | Aug. 8 | 4.85 |
| Nov. 21 | 9.28 | Mar. 7 | 8.69 | May 21 | 6.95 | Aug. 22 | 6.00 |
| Dec. 7 | 9.47 | Mar. 21 | 7.88 | June 7 | 8.10 | Sept. 7 | 6.95 |
| Dec. 21 | 9.55 | Apr. 7 | 5.88 | June 21 | 8.36 | Sept. 21 | 7.07 |
| Jan. 7, 1977 | 9.66 | | | | | | |

Recorder discontinued October 1977.

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
1976-77

| Day | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 5 | 131.06 | 131.13 | 132.04 | 132.33 | 132.53 | 132.89 | 131.90 | 131.07 | 131.73 | 132.47 | 132.90 | 131.74 |
| 10 | 130.94 | 131.24 | 132.00 | 132.03 | 132.44 | 132.52 | 131.50 | 131.10 | 131.93 | ----- | ----- | 132.11 |
| 15 | 131.05 | 131.33 | 131.60 | 132.08 | 132.67 | 132.73 | 131.60 | 131.30 | 132.17 | ----- | ----- | 131.62 |
| 20 | 131.01 | 131.37 | 131.77 | 132.36 | 132.41 | 132.75 | 131.33 | 131.25 | 132.15 | 132.94 | 132.44 | 131.77 |
| 25 | 131.13 | 130.98 | 131.86 | 132.46 | 132.37 | 132.49 | 131.15 | 131.30 | 132.26 | 132.85 | 132.32 | 131.17 |
| Eom | 131.46 | 131.70 | 132.17 | 132.46 | 132.35 | 132.49 | 131.29 | 131.47 | 132.25 | 132.65 | 131.72 | 131.20 |

e Estimated

425940N0911947.1. Local number 95-4-32ddddd1. 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 |
|---------------|-------------|--------------|-------------|--------------|-------------|------|-------------|
| Nov. 28, 1976 | 90.00 | Jan. 7, 1977 | 92.00 | May 18, 1977 | 95.32 | | |

Des Moines County

404844N0911427.1. Local number 69-3-6aab1. 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, 1.51 ft above lsd. Highest water level 162.70 below lsd, Mar. 27, 1950; lowest 201.24 below lsd, Aug. 1, 1977. Records available: 1950 to current year.

| Date | Water level | Date | Water level | Date | Water level | Date | Water level |
|---------------|-------------|---------------|-------------|---------------|-------------|--------------|-------------|
| Oct. 17, 1976 | 198.67 | Jan. 22, 1977 | 198.35 | Apr. 18, 1977 | 198.94 | Aug. 1, 1977 | 201.24 |
| Nov. 20 | 198.00 | Feb. 25 | 198.19 | May 16 | 199.39 | Aug. 29 | 200.98 |
| Dec. 20 | 198.11 | Mar. 27 | 198.27 | June 25 | 200.41 | Sept. 19 | 200.59 |

Recorder discontinued October 1977.

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.

| Date | Water level | Date | Water level | Date | Water level | Date | Water level |
|---------------|-------------|---------------|-------------|---------------|-------------|--------------|-------------|
| Oct. 20, 1976 | 77.68 | Jan. 22, 1977 | 77.87 | Apr. 18, 1977 | 78.11 | Aug. 1, 1977 | 78.97 |
| Nov. 20 | 77.75 | Feb. 25 | 77.62 | May 16 | 78.29 | Aug. 29 | 79.07 |
| Dec. 20 | 77.63 | Mar. 27 | 77.81 | June 25 | 78.55 | Sept. 19 | 79.80 |

Recorder discontinued October 1977.

Emmet County

432927N0943455.1. Local number 100-32-11ddcd1. Okamapedan 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 71.07 below lsd, Aug. 2, 1977. Records available: 1939 to current year.

| Date | Water level | Date | Water level | Date | Water level | Date | Water level |
|--------------|-------------|---------------|-------------|-------------|-------------|--------------|-------------|
| Jan. 5, 1977 | 70.69 | Jan. 31, 1977 | 70.45 | May 2, 1977 | 70.60 | Aug. 2, 1977 | 71.07 |

Grundy County

422605N0925600.1 Local number 86-18-15dbb1. 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 35.95 below lsd, Nov. 18, 1974; lowest 96.81 below lsd, Sept. 27, 1960. Records available: 1960 to current year.

| Date | Water level | Date | Water level | Date | Water level | Date | Water level |
|--------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| Nov. 4, 1976 | 36.84 | Feb. 10, 1977 | 36.66 | June 16, 1977 | 36.84 | Sept. 7, 1977 | 36.91 |

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. 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 190.00 below lsd, June 6, 1968. Records available: 1946-50, 1953-57, 1959 to current year. Water levels affected by pumping.

| Date | Water level | Date | Water level | Date | Water level | Date | Water level |
|---------------|-------------|--------------|-------------|------|-------------|------|-------------|
| Feb. 15, 1977 | p204.75 | June 2, 1977 | p204.75 | | | | |

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.

| Date | Water level | Date | Water level | Date | Water level | Date | Water level |
|--------------|-------------|--------------|-------------|--------------|-------------|---------------|-------------|
| Nov. 2, 1976 | 11.85 | Feb. 2, 1977 | 14.69 | June 2, 1977 | 10.08 | Sept. 8, 1977 | 9.49 |

Jasper County

414205N0925920.1. Local number 80-18-31abb1. 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.

| Date | Water level | Date | Water level | Date | Water level | Date | Water level |
|--------------|-------------|---------------|-------------|--------------|-------------|---------------|-------------|
| Nov. 4, 1976 | 16.38 | Feb. 17, 1977 | 19.61 | June 1, 1977 | 16.32 | Sept. 7, 1977 | 4.74 |

GROUND-WATER LEVELS

Johnson County

414107N0913229.1. Local number 79-6-4aaaa1. Forest View Trailer Court. Drilled unused artesian well in limestone of Silurian age, diam 6 in, depth 280 ft, cased to 96 ft. Lsd 736 ft above ms1. MP top of casing, 1.00 ft above lsd. Highest water level 106.19 ft below lsd, Feb. 14, 1972; 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
1976-77

| Day | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|--------|---------------|
| 5 | 141.79 | 129.91 | 119.44 | 114.92 | 112.13 | 110.21 | 108.27 | 128.15 | 139.17 | 139.03 | 139.04 | ----- |
| 10 | 140.33 | 126.38 | 118.46 | 114.08 | 111.43 | 109.83 | 108.50 | 129.97 | 139.29 | 139.83 | 138.40 | ----- |
| 15 | 140.61 | 124.15 | 116.89 | 113.64 | 111.49 | 109.66 | 113.90 | ----- | 138.85 | 140.75 | 138.25 | e134.00 |
| 20 | 138.42 | 123.12 | 116.60 | 113.06 | 111.00 | 109.10 | 120.23 | ----- | 134.01 | 138.81 | 139.82 | 137.30 134.00 |
| 25 | 133.18 | 121.03 | 115.86 | 112.54 | 110.52 | 108.63 | 123.96 | 135.55 | 138.57 | 139.83 | 136.18 | ----- |
| Eom | 130.10 | 120.61 | 115.49 | 112.37 | 110.58 | 108.77 | 126.43 | 138.41 | 139.15 | e139.05 | 134.75 | e133.56 |

e Estimated.

414316N0912520.1. Local number 80-5-22cbcb1. 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 ms1. MP top of casing 4.20 ft above lsd. Highest water level 5.78 below lsd, Sept. 20, 1977; lowest dry, Dec. 2-31, 1965, Nov. 8 to Dec. 31, 1964. Records available: 1941-56, 1958 to current year.

| | | | | | | | |
|---------------|-----|---------------|-------|---------------|-------|----------------|------|
| Oct. 21, 1976 | Dry | Jan. 20, 1977 | Dry | June 22, 1977 | 17.76 | Sept. 20, 1977 | 6.78 |
| Nov. 23 | Dry | Feb. 18 | Dry | July 20 | 17.46 | | |
| Dec. 17 | Dry | May 17 | 15.19 | Aug. 22 | 5.90 | | |

414315N0912620.2. 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 ms1. 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. 21, 1976 | 20.78 | Jan. 20, 1977 | 20.99 | May 17, 1977 | 19.80 | Aug. 22, 1977 | 17.94 |
| Nov. 23 | 20.95 | Feb. 18 | 20.80 | June 22 | 20.89 | Sept. 20 | 15.41 |
| Dec. 17 | 20.90 | Mar. 18 | 20.60 | July 20 | 20.90 | | |

Linn County

415422N0914226.1. Local number 82-7-18cdcd1. Lester Petrak. Dug unused water-table well in glacial drift, diam 4 ft, depth 14 ft, cribbed with brick. Lsd 835 ft above ms1. MP base of recorder shelter, 0.08 ft above lsd. Highest water level 1.09 below lsd, Aug. 4, 1958; 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
1976-77

| Day | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|-----|--------|--------|--------|--------|--------|------|-------|------|-------|------|------|------|
| 5 | 10.10 | 10.56 | e10.88 | e11.30 | e11.71 | 9.84 | 3.52 | 6.08 | 7.17 | 8.23 | 8.30 | 4.59 |
| 10 | 10.18 | 10.60 | e10.95 | e11.37 | e11.71 | 9.64 | 3.24 | 6.27 | 7.43 | 8.48 | 4.74 | 4.87 |
| 15 | 10.30 | 10.65 | e11.00 | e11.43 | e11.61 | 9.06 | 3.53 | 6.51 | 7.54 | 8.72 | 4.84 | 5.02 |
| 20 | e10.40 | 10.70 | 11.11 | e11.48 | 11.12 | 8.23 | ----- | 6.80 | e7.74 | 8.62 | 4.08 | 3.84 |
| 25 | 10.48 | 10.76 | 11.17 | e11.57 | 10.54 | 7.12 | 5.93 | 6.62 | 7.97 | 8.36 | 4.45 | 4.13 |
| Eom | 10.54 | e10.83 | e11.24 | e11.65 | 10.23 | 4.28 | 6.17 | 6.93 | 8.14 | 8.27 | 4.40 | 4.48 |

e Estimated.

415816N0913934.1. Local number 83-7-28adda1. The Kacena Co., Inc. (formerly Collins Radio). Drilled unused artesian well in limestone of Silurian age, diam 10 in, depth 420 ft, cased to 75. Lsd 735 ft above ms1. MP top of well cover, 6.15 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.

| Date | Water level | Date | Water level | Date | Water level | Date | Water level |
|---------------|-------------|---------------|-------------|--------------|-------------|---------------|-------------|
| Oct. 21, 1976 | 86.76 | Jan. 20, 1977 | 82.21 | Apr. 2, 1977 | 80.60 | June 22, 1977 | 84.55 |
| Nov. 23 | 82.41 | Feb. 20 | 79.87 | July 20 | 83.66 | July 20 | 87.12 |
| Dec. 20 | 84.73 | Mar. 18 | 81.33 | May 19 | 83.11 | Sept. 21 | 87.12 |

Recorder temporarily discontinued because of construction.

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 6 in, depth 282 ft, cased. Lsd 805 ft above ms1. 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.

| | | | | | | | |
|---------------|--------|---------------|--------|---------------|-------|---------------|--------|
| Oct. 21, 1976 | 105.61 | Jan. 20, 1977 | 100.49 | Apr. 22, 1977 | 97.37 | July 20, 1977 | 102.03 |
| Nov. 23 | 104.70 | Feb. 18 | 100.27 | May 17 | 97.86 | Aug. 22 | 105.64 |
| Dec. 17 | 105.89 | Mar. 18 | 97.89 | June 22 | 99.28 | Sept. 21 | 104.86 |

Linn County.--Continued.

420526N0913707.1. Local number 84-7-13bcb1. 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 ms1. 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. 21, 1976 | 13.52 | Jan. 20, 1977 | 15.19 | Apr. 22, 1977 | 3.10 | July 21, 1977 | 8.79 |
| Nov. 23 | 14.27 | Feb. 18 | 15.00 | May 17 | 6.98 | Aug. 22 | 3.55 |
| Dec. 20 | 14.79 | Mar. 23 | 5.65 | June 20 | 7.87 | Sept. 21 | 2.26 |

Lyon County

432140N0955963.1. Local number 99-44-26ddd1. 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 ms1. 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.

| | | | | | |
|--------------|------|-------------|------|---------------|------|
| Jan. 1, 1977 | 6.37 | May 5, 1977 | 3.75 | July 12, 1977 | 4.09 |
|--------------|------|-------------|------|---------------|------|

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 ms1. 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, Nov. 30, 1974. Records available: 1960 to current year.

| | | | | | | | |
|---------------|--------|-------------|--------|---------------|--------|--------------|--------|
| Jan. 21, 1977 | 113.84 | May 5, 1977 | 113.60 | July 12, 1977 | 113.84 | Aug. 9, 1977 | 113.86 |
|---------------|--------|-------------|--------|---------------|--------|--------------|--------|

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 1,068 ft, cased 0-657. Lsd 1,067 ft above ms1. MP plug in well cover, 1.20 ft above lsd (since Jan. 1, 1971). Highest water level 261.62 below lsd, Nov. 20, 1962; lowest 267.44 below lsd, Sept. 13, 1974. Records available: 1962 to current year. Records prior to April 1970 are from recording gage; subsequent records are periodic tape measurements.

| Date | Water level | Date | Water level | Date | Water level | Date | Water level |
|--------------|-------------|---------------|-------------|---------------|-------------|------|-------------|
| Nov. 4, 1976 | 268.12 | Feb. 17, 1977 | 267.83 | Sept. 9, 1977 | 268.17 | | |

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 ms1. 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, 1976 | 6.25 | Dec. 29, 1976 | 6.54 | Mar. 23, 1977 | 5.49 | July 9, 1977 | 6.99 |
| 23 | 6.25 | Jan. 13, 1977 | 6.50 | Apr. 12 | 5.15 | 22 | 7.75 |
| Nov. 4 | 6.13 | 24 | 6.36 | 26 | 5.95 | Aug. 17 | 5.95 |
| 10 | 6.22 | Feb. 11 | 6.29 | May 14 | 5.15 | 25 | 6.33 |
| 24 | 6.25 | 25 | 6.35 | 26 | 5.33 | Sept. 13 | 4.65 |
| Dec. 11 | 6.40 | Mar. 12 | 4.75 | June 17 | 5.83 | 24 | 4.30 |

411541N0931234.1. Local number 75-20-31bbad1. Miss Amanda Elliot. Drilled unused water-table well in glacial drift, diam 15 in, depth 29 ft, lined with tile. Lsd 920 ft above ms1. MP hole in top of plank platform, 1.31 ft above lsd. Highest water level 2.31 below lsd, June 11, 1947; lowest 27.42 below lsd, Oct. 28, 1953. Records available: 1940 to current year.

| | | | | | |
|--------------|-------|---------------|-------|-----------|--|
| Nov. 4, 1976 | 14.53 | Feb. 17, 1977 | 16.23 | Destroyed | |
|--------------|-------|---------------|-------|-----------|--|

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 ms1. MP top of casing, at lsd. Highest water level 4.92 below lsd, July 13, 1951; lowest 46.40 below lsd, Feb. 10, 1977. Records available: 1949 to current year.

| | | | | | | | |
|--------------|-------|---------------|-------|---------------|-------|---------------|-------|
| Nov. 4, 1976 | 45.30 | Feb. 10, 1977 | 46.40 | June 16, 1977 | 44.61 | Sept. 9, 1977 | 39.30 |
|--------------|-------|---------------|-------|---------------|-------|---------------|-------|

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 ms1. 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.

| | | | | | | | |
|---------------|-------|---------------|-------|---------------|-------|---------------|-------|
| Oct. 15, 1976 | 14.16 | Jan. 17, 1977 | 13.83 | Apr. 17, 1977 | 14.46 | July 11, 1977 | 14.82 |
| Nov. 16 | 14.47 | Feb. 12 | 14.84 | May 18 | 14.57 | Aug. 13 | 14.24 |
| Dec. 14 | 13.74 | Mar. 17 | 14.72 | June 16 | 14.86 | Sept. 15 | 13.28 |

GROUND-WATER LEVELS

Muscatine County

412120N0910804.4. Local number 75-2-30cbsa1. 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, 3.70 ft above lsd. Highest water level 8.51 below lsd, May 16, 1973; lowest 15.03 below lsd, June 30, 1977. Records available: 1966 to current year.

Water level at noon, from recorder graph, water year October 1 to September 30
1976-77

| Day | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|-----|--------|--------|--------|--------|--------|-------|--------|-------|-------|-------|--------|-------|
| 5 | 14.24 | e14.38 | e14.57 | 14.55 | e14.85 | 14.95 | e14.51 | 14.18 | 14.31 | 14.85 | e14.90 | 12.85 |
| 10 | 14.28 | e14.41 | e14.60 | e14.68 | e14.87 | 14.99 | 14.32 | 14.20 | 14.64 | 14.90 | e14.30 | 12.86 |
| 15 | 14.30 | 14.44 | e14.63 | e14.77 | 14.90 | 15.01 | 14.22 | 14.22 | 14.74 | 15.02 | 13.13 | 12.88 |
| 20 | 14.31 | 14.47 | 14.63 | e14.79 | 14.92 | 15.00 | 14.18 | 14.24 | 14.85 | 14.96 | 12.90 | 12.92 |
| 25 | 14.33 | 14.49 | 14.65 | e14.81 | 14.94 | 15.00 | 14.17 | 14.26 | 14.98 | 14.75 | 12.84 | |
| Eom | e14.35 | e14.53 | 14.66 | e14.83 | 14.95 | 14.88 | 14.17 | 14.29 | 15.03 | 14.75 | 12.84 | |

e Estimated

Page County

404257N0951512.1. Local number 68-38-7cca1. 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. 15, 1976 | 14.02 | Jan. 14, 1977 | 14.55 | Apr. 15, 1977 | 14.15 | July 12, 1977 | 14.22 |
| Nov. 18 | 14.24 | Feb. 11 | 14.63 | May 16 | 13.17 | Aug. 17 | 5.62 |
| Dec. 14 | 14.68 | Mar. 14 | 15.24 | June 23 | 13.85 | Sept. 15 | 8.72 |

Sac County

423013N0951753.1. Local number 89-38-25bsa1. 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.

| | | | | | | | |
|---------------|--------|---------------|--------|--------------|--------|--------------|--------|
| Dec. 22, 1976 | 230.40 | Feb. 17, 1977 | 229.65 | May 24, 1977 | 240.10 | Aug. 8, 1977 | 230.28 |
|---------------|--------|---------------|--------|--------------|--------|--------------|--------|

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. 20, 1976 | e 7.80 | Jan. 20, 1977 | 11.55 | Apr. 20, 1977 | 6.30 | July 20, 1977 | 7.57 |
| Nov. 20 | e10.00 | Feb. 22 | 11.25 | May 20 | 5.00 | Aug. 22 | 3.48 |
| Dec. 21 | 10.93 | Mar. 21 | 11.13 | June 20 | 7.40 | Sept. 20 | 3.49 |

e Estimated.

423013N0942147.1. Local number 89-30-22dda1. 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 44.55 below lsd, May 24, 1977. Records available: 1942-45, 1947 to current year.

| | | | | | |
|---------------|-------|--------------|-------|--------------|-------|
| Feb. 17, 1977 | 38.00 | May 24, 1977 | 44.55 | Aug. 8, 1977 | 44.45 |
|---------------|-------|--------------|-------|--------------|-------|

Note.--Measurements were discontinued in 1977 for the following wells:

| | | |
|--------------------|------------------|----------------------------|
| Cerro Gordo County | 430527N0931142.1 | Local number 96-20-3cddb1. |
| Greene County | 420051N0942233.1 | Local number 83-30-8cbb1. |
| Marion County | 411541N0931234.1 | Local number 75-20-31bbd1. |

INDEX

| | Page | | Page |
|--|---------|---|---------|
| Accuracy of data..... | 21 | Data, accuracy of..... | 21-22 |
| Acknowledgment..... | 3 | ground-water level records, explanation of... | 24-25 |
| Acre-foot, definition of..... | 3 | other available..... | 22 |
| Algae, definition of..... | 3 | surface water records, collection and | |
| Aquifer, definition of..... | 4 | computation of..... | 16-21 |
| Artesian, definition of..... | 4 | collected by other agencies..... | 22 |
| Artificial substrate, definition of..... | 12 | water quality records, collection and | |
| Ash mass, definition of..... | 5 | examination of..... | 22 |
| | | Definition of terms..... | 3 |
| Bacteria, definition of..... | 4 | Des Moines River, at Estherville..... | 120 |
| Beaver Creek (tributary to Iowa River) at | | at Fort Dodge..... | 124 |
| New Hartford..... | 87 | at Humboldt..... | 121 |
| Beaver Creek (tributary to Des Moines River) | | at Keosauqua..... | 159 |
| near Grimes..... | 134 | at Ottumwa..... | 158 |
| Bed material, definition of..... | 4 | below Des Moines..... | 146-147 |
| Big Bear Creek at Ladora..... | 63 | below Raccoon River, at Des Moines..... | 142 |
| Big Cedar Creek near Varina..... | 135 | East Fork, at Dakota City..... | 128-133 |
| Big Creek near Mount Pleasant..... | 110 | near Saylorville..... | 126 |
| Big Sioux River at Akron..... | 161 | near Stratford..... | 154 |
| Big Sioux River basin, crest-stage partial- | | near Tracy..... | 154 |
| record stations in..... | 233 | Des Moines River basin, crest-stage partial- | |
| gaging-station records in..... | 160-161 | record stations in..... | 232-233 |
| Biochemical oxygen demand, definition of..... | 5 | discharge measurements at miscellaneous | |
| Biomass, definition of..... | 5 | sites in..... | 237 |
| Black Hawk Creek at Hudson..... | 90 | gaging-station records in..... | 120-159 |
| Boone River near Webster City..... | 125 | low-flow partial-record stations in..... | 221-225 |
| Bottom material, definition of..... | 5 | water-quality partial-record stations in..... | 246-250 |
| Boyer River at Logan..... | 182 | Devils Creek basin, low-flow partial- | |
| Boyer River basin, crest-stage partial- | | record stations in..... | 221 |
| record stations in..... | 235 | water-quality partial-record stations in..... | 246 |
| discharge measurements at miscellaneous | | Discharge, definition of..... | 6 |
| sites in..... | 237 | Discontinued stations, gaging..... | 33 |
| gaging-station records in..... | 182 | water-quality..... | 34 |
| low-flow partial-record stations in..... | 225 | Dissolved, definition of..... | 6 |
| | | Diversity index, definition of..... | 6 |
| Cedar Creek (tributary to Des Moines River) | | Downstream order and station number..... | 14 |
| near Bussey..... | 155 | Drainage area, definition of..... | 7 |
| Cedar River, at Cedar Falls..... | 88-89 | Drainage basin, definition of..... | 7 |
| at Cedar Rapids..... | 99 | | |
| at Charles City..... | 79 | East Nishnabotna River, at Red Oak..... | 196 |
| at Gilbertville..... | 92-93 | near Atlantic..... | 195 |
| at Janesville..... | 81 | Elk Creek near Decatur City..... | 207 |
| at Waterloo..... | 91 | Elk River basin, low-flow partial- | |
| near Bertram..... | 101-102 | record stations in..... | 218 |
| near Cosmoville..... | 103 | water-quality partial-record stations in..... | 242 |
| near Pao..... | 97-98 | English River at Kalona..... | 77 |
| West Fork, at Finchford..... | 82 | Example of site numbers for wells..... | 15 |
| Cells/volume, definition of..... | 5 | | |
| Cfs-day, definition of..... | 5 | Flint River basin, low-flow partial- | |
| Chariton River, near Chariton..... | 212 | record stations in..... | 219 |
| near Rathbun..... | 215 | water-quality partial-record stations in..... | 244 |
| South Fork, near Promise City..... | 213 | Floyd River, at Alton..... | 170 |
| Chariton River basin, crest-stage partial- | | at James..... | 172 |
| record stations in..... | 236 | West Branch, near Struble..... | 171 |
| gaging-station records in..... | 212-215 | Floyd River basin, crest-stage partial- | |
| low-flow partial-record stations in..... | 227 | record stations in..... | 234 |
| Chemical oxygen demand, definition of..... | 5 | discharge measurements at miscellaneous | |
| Chlorophyll, definition of..... | 5 | sites in..... | 237 |
| Clear Creek near Coralville..... | 67 | gaging-station records in..... | 170-172 |
| Clear Lake at Clear Lake..... | 85 | low-flow partial-record stations in..... | 225 |
| Collection of data, surface-water records..... | 16 | Fourmile Creek (tributary to Des Moines River) | |
| water-quality records..... | 22 | at Des Moines..... | 148 |
| ground-water level records..... | 24 | Fourmile Creek near Lincoln..... | 94 |
| Color unit, definition of..... | 6 | near Traer..... | 96 |
| Contents, definition of..... | 6 | Fox River basin, crest-stage partial- | |
| Control, definition of..... | 6 | record stations in..... | 233 |
| Cooperation..... | 2 | low-flow partial-record stations in..... | 225 |
| Coralville Lake near Coralville..... | 65 | water-quality partial-record stations in..... | 250 |
| Crest-stage stations, maximum stage and | | | |
| discharge, made at partial-record | | Gage height (G.H.), definition of..... | 7 |
| stations in..... | 228-236 | Gaging station, definition of..... | 7 |
| Cubic feet per second per square mile, | | Grand River basin, gaging-station records in..... | 207-211 |
| definition of..... | 6 | low-flow partial-record stations in..... | 226-227 |
| Cubic foot per second, definition of..... | 6 | water-quality partial-record stations in..... | 251 |
| | | Ground water, by county, level data..... | 252 |

| | Page | | Page |
|--|---------|--|---------|
| Half Mile Creek near Gladbrook..... | 95 | National stream-quality accounting network, (NASQAN) definition of..... | 16 |
| Hardin Creek, East Fork, near Churdan..... | 138 | Natural substrates, definition of..... | 12 |
| Hardness, definition of..... | 7 | Nishnabotna River above Hamburg..... | 197 |
| Hydrologic bench-mark station, definition of..... | 16 | Nishnabotna River basin, crest-stage partial-record stations in..... | 235 |
| Hydrologic conditions..... | 3 | gaging-station records in..... | 193-197 |
| graph of..... | 29 | Nodaway River at Clarinda..... | 200-204 |
| Hydrologic unit, definition of..... | 7 | Nodaway River basin, crest-stage partial- record stations in..... | 235 |
| Instantaneous discharge, definition of..... | 6 | gaging-station records in..... | 200-204 |
| Introduction..... | 1 | low-flow partial-record stations in..... | 225-226 |
| Iowa River, at Iowa City..... | 68-71 | water-quality partial-record stations in..... | 250-251 |
| at Marengo..... | 64 | North Raccoon River, near Jefferson..... | 137 |
| at Marshalltown..... | 58 | near Sac City..... | 135 |
| at Wapello..... | 104 | North River near Norwalk..... | 149 |
| near Lone Tree..... | 78 | North Skunk River near Sigourney..... | 109 |
| Iowa River basin, crest-stage partial- record stations in..... | 229-231 | Numbering system for wells..... | 14 |
| gaging-station records in..... | 58-104 | | |
| Keg Creek basin, discharge measurements at miscellaneous sites in..... | 237 | One Hundred and Two River, East Fork, near Bedford..... | 206 |
| Lake Red Rock near Pella..... | 153 | Organism, definition of..... | 8 |
| Lakes and Reservoirs: | | Organism count/area, definition of..... | 8 |
| Clear Lake at Clear Lake..... | 85 | Organism count/volume, definition of..... | 8 |
| Coralville Lake near Coralville..... | 214 | | |
| Rathbun Lake near Rathbun..... | 127 | Paint Creek basin, crest-stage partial- record stations in..... | 228 |
| Red Rock, Lake, near Pella..... | 153 | low-flow partial-record stations in..... | 216 |
| Saylorville Lake near Saylorville..... | 127 | Partial-record station, definition of..... | 8 |
| Little Cedar River near Ionia..... | 80 | Particle size, definition of..... | 8 |
| Little Maquoketa River near Durango..... | 47 | Particle size classification, definition of..... | 8 |
| Little Maquoketa River basin, crest-stage partial-record stations in..... | 228 | Percent composition, definition of..... | 9 |
| gaging-station records in..... | 47 | Periphyton, definition of..... | 9 |
| low-flow partial-record stations in..... | 217 | Perry Creek basin, crest-stage partial- record stations in..... | 234 |
| water-quality partial-record stations in..... | 241 | Pesticides, definition of..... | 9 |
| Little Sioux River, at Correctionville..... | 178 | Pesticide program, explanation of..... | 16 |
| at Linn Grove..... | 177 | Phytoplankton, definition of..... | 9 |
| near Turin..... | 180 | Picrocurie (PC, pCi), definition of..... | 9 |
| Little Sioux River basin, crest-stage partial-record stations in..... | 234 | Pine Creek near Muscatine..... | 57 |
| gaging-station records in..... | 177-180 | Plankton, definition of..... | 9 |
| low-flow partial-record stations in..... | 225 | Platte River near Diagonal..... | 205 |
| seepage investigations in..... | 238-239 | Platte River basin, crest-stage partial- record stations in..... | 236 |
| water-quality partial-record stations in..... | 250 | gaging-station records in..... | 205-206 |
| Lizard Creek near Clare..... | 123 | low-flow partial-record stations in..... | 226 |
| Low-flow partial-record stations..... | 215-227 | water-quality partial-record stations in..... | 251 |
| | | Polychlorinated biphenyls (PCBs), definition of..... | 10 |
| Map of Iowa, water discharge stations..... | 30 | Prairie Creek near Fairfax..... | 100 |
| water-quality stations..... | 31 | Primary productivity, definition of..... | 10 |
| ground water observation wells..... | 32 | Publications on techniques of water-resources investigations..... | 26 |
| Maple River at Mapleton..... | 179 | | |
| Maquoketa River near Maquoketa..... | 48 | Radiochemical program, explanation of..... | 16 |
| Maquoketa River basin, crest-stage partial-record stations in..... | 228 | Raccoon River at Van Meter..... | 141 |
| gaging-station records in..... | 48 | Ralston Creek, at Iowa City..... | 72-75 |
| low-flow partial-record stations in..... | 217-218 | South Branch, at Iowa City..... | 76 |
| water-quality partial-record stations in..... | 241-242 | Rapid Creek near Iowa City..... | 56 |
| Methylene blue active substance, definition of..... | 7 | Rathbun Lake near Rathbun..... | 214 |
| Micrograms per gram (ug/g), definition of..... | 7 | Reservoirs (See lakes and reservoirs) | |
| Micrograms per liter (UG/L, ug/L), definition of..... | 7 | Richland Creek near Haven..... | 60 |
| Middle Raccoon River at Panora..... | 139 | Rock River near Rock Valley..... | 160 |
| Middle River near Indianola..... | 150 | Runoff, in inches, definition of..... | 10 |
| Milligrams per liter (MG/L, mg/l), definition of..... | 8 | | |
| Mississippi River, at Clinton..... | 49-53 | Salt Creek near Elberon..... | 61 |
| at Keokuk..... | 115-119 | Sediment, definition of..... | 10 |
| at McGregor..... | 42-45 | Sediment, explanation of..... | 24 |
| Missouri River, at Decatur, Nebraska..... | 173-174 | Seepage investigations..... | 238-239 |
| at Nebraska City, Nebraska..... | 185-192 | Shell Rock River, at Shell Rock..... | 86 |
| at Omaha, Nebraska..... | 183 | near Northwood..... | 83 |
| at Rulo, Nebraska..... | 199 | Skunk River at Augusta..... | 111 |
| at Sioux City..... | 162-169 | Skunk River basin, crest-stage partial- record stations in..... | 232 |
| Monona-Harrison ditch near Turin..... | 176 | gaging-station records in..... | 105-114 |
| Monona-Harrison ditch basin, crest-stage partial-record stations in..... | 234 | low-flow partial-record stations in..... | 219-221 |
| gaging-station records in..... | 175-76 | seepage investigations in..... | 238 |
| Mosquito Creek near Earling..... | 184 | water-quality partial-record stations in..... | 245-246 |
| Mosquito Creek basin, crest-stage partial- record stations in..... | 235 | Sodium adsorption ratio, definition of..... | 11 |
| gaging-station records in..... | 184 | Soldier River at Pisgah..... | 181 |
| Muchakinock Creek near Eddyville..... | 156 | Soldier River basin, crest-stage partial- record stations in..... | 235 |
| | | gaging-station records in..... | 181 |
| | | Solute, definition of..... | 11 |
| | | South Raccoon River at Redfield..... | 140 |

| | Page | | Page |
|--|---------|--|---------|
| South River near Ackworth..... | 151 | Upper Iowa River, at Decorah..... | 35-37 |
| South Skunk River, below Squaw Creek | | near Dorchester..... | 38-41 |
| near Ames..... | 107 | Upper Iowa River basin, crest-stage | |
| near Oskaloosa..... | 105 | partial-record stations in..... | 228 |
| Special networks and programs..... | 108 | discharge measurements at miscellaneous | |
| Specific conductance, definition of..... | 16 | sites in..... | 237 |
| Squaw Creek at Ames..... | 11 | gaging-station records in..... | 35-41 |
| Stage-discharge relation, definition of..... | 106 | low-flow partial-record stations in..... | 216 |
| Stage and water-discharge, explanation of..... | 12 | water-quality partial-record stations in..... | 240 |
| Station numbers, definition of..... | 16 | | |
| Streamflow, definition of..... | 14 | Village Creek basin, low-flow partial- | |
| Substrate, definition of..... | 12 | record stations in..... | 215 |
| Surface area, definition of..... | 12 | water-quality partial-record stations in..... | 240 |
| Surficial bed material, definition of..... | 12 | | |
| Suspended, definition of..... | 12 | Walnut Creek at Des Moines..... | 144 |
| Suspended sediment, definition of..... | 11 | Walnut Creek near Hartwick..... | 62 |
| Suspended-sediment concentration, definition of..... | 11 | Wapsipinicon River, at Independence..... | 55 |
| Suspended-sediment discharge, definition of..... | 11 | near De Witt..... | 56 |
| Suspended-sediment load, definition of..... | 11 | near Elma..... | 54 |
| | | Wapsipinicon River basin, crest-stage | |
| Tarkio River at Stanton..... | 198 | partial records in..... | 229 |
| Tarkio River basin, crest-stage partial- | | gaging-station records in..... | 54-56 |
| record stations in..... | 235 | low-flow partial-record stations in..... | 218-219 |
| gaging-station records in..... | 198 | water-quality partial-record stations in..... | 242-244 |
| Taxonomy, definition of..... | 12 | Water analysis, explanation of..... | 23 |
| Terms, definition of..... | 3-16 | Water-quality records, explanation of..... | 22 |
| Thermograph, definition of..... | 13 | Water-resources data (WRD), definition of..... | 14 |
| Thompson River at Davis City..... | 210 | Water-supply papers (WSP), definition of..... | 14 |
| Timber Creek near Marshalltown..... | 59 | Weighted average, definition of..... | 13 |
| Time-weighted average, definition of..... | 13 | Weldon River near Leon..... | 211 |
| Tons per acre-foot, definition of..... | 13 | West Fork ditch at Hornick..... | 175 |
| Tons per day, definition of..... | 13 | West Nishnabotna River, at Hancock..... | 193 |
| Total load, definition of..... | 13 | at Randolph..... | 194 |
| Total organism count, definition of..... | 8 | Wexford Creek basin, crest-stage | |
| Tritium network, definition of..... | 16 | partial-record stations in..... | 228 |
| Turkey River at Garber..... | 46 | | |
| Turkey River basin, crest-stage partial- | | White Breast Creek near Dallas..... | 152 |
| record stations in..... | 228 | Winnebago River at Mason City..... | 84 |
| discharge measurements at miscellaneous | | WRD, definition of..... | 14 |
| sites in..... | 237 | WSP, definition of..... | 14 |
| gaging-station records in..... | 46 | | |
| low-flow partial-record stations in..... | 216-217 | Yellow River basin, low flow partial-record | |
| water-quality partial-record stations in..... | 240-241 | stations in..... | 216 |
| | | water-quality partial-record stations in..... | 240 |

FACTORS FOR CONVERTING U.S. CUSTOMARY UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the U.S. customary units published herein to the International System of Units (SI). Subsequent reports will contain both the U.S. customary and SI unit equivalents in the station manuscript descriptions until such time that all data will be published in SI units.

| Multiply U.S. customary units | By | To obtain SI units |
|--|------------------------|--|
| <i>Length</i> | | |
| 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) |
| <i>Area</i> | | |
| 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) |
| <i>Volume</i> | | |
| 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) |
| <i>Flow</i> | | |
| 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) |
| <i>Mass</i> | | |
| tons (short) | 9.072×10^{-1} | megagrams (Mg) or metric tons |

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